

SPECIAL PREVIEWS: Lotus Write, Pen PCs, Hot Upgrades, and More!

PC WORLD

JANUARY 1992 \$3.95

FAST RELIEF

50 Instant DOS and Windows Tips

386 SAVINGS

25 Fast SX Systems
for Every Budget

FONTS A TO Z

Essential Guide
to 101 Font Packs

COLOR TO GO

First Look at the
New Color Notebooks

EASY DESKTOP PUBLISHING

Ready-to-Run Page
Layout Software



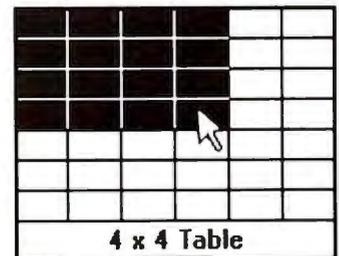
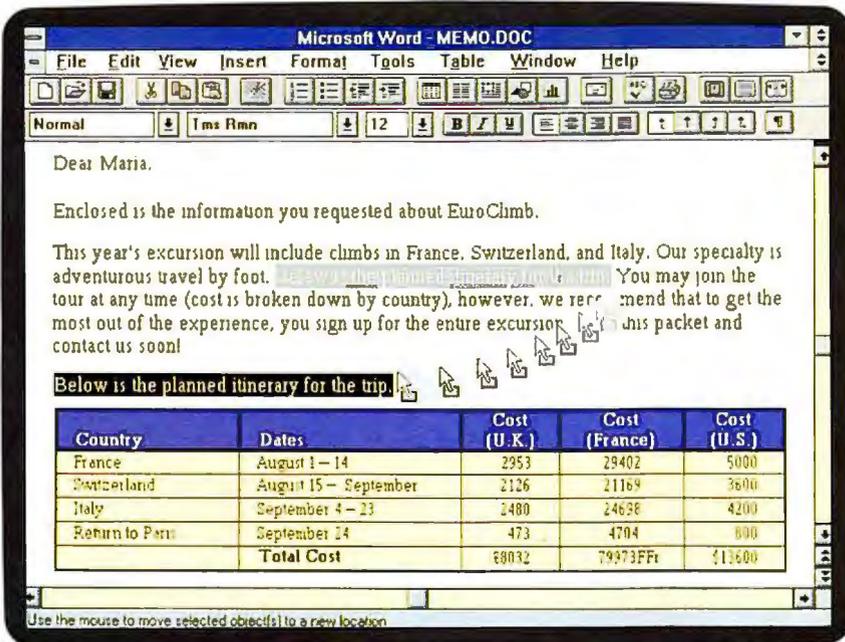
The first
word processor
that works
like second nature.

Microsoft

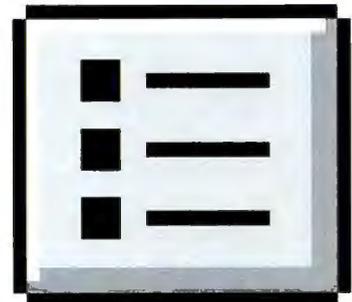
Introducing new Word



The Toolbar lets you do everyday things with the click of a button.



All it takes is one click on the Toolbar and presto, instant tables.



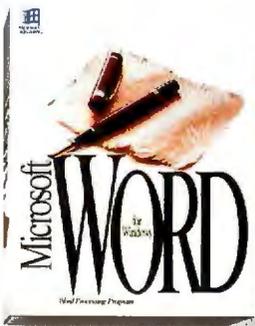
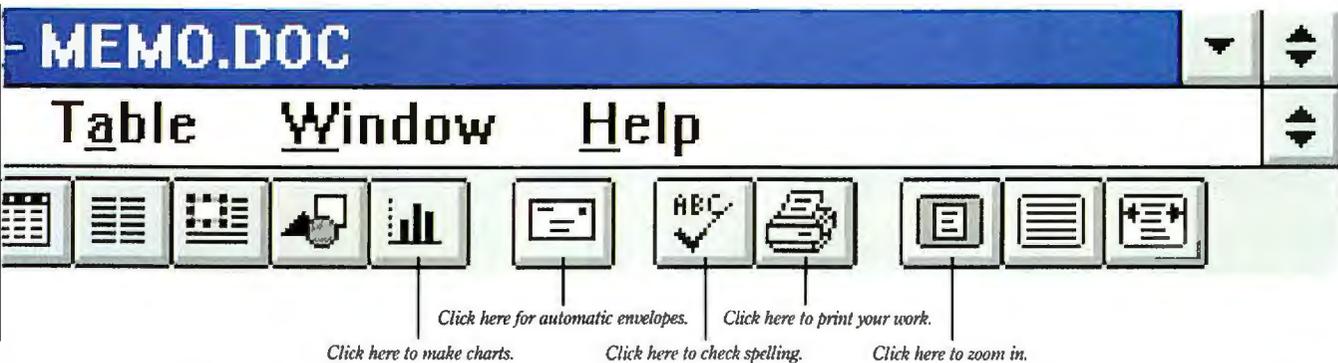
Click this Toolbar button and get instant bullets.

Rearranging a document couldn't be any easier. With new Word 2.0 you can drag and drop text wherever you want.



The mouse makes everyday tasks as easy as click, click, click.

Word for Windows 2.0.



When it comes to word processing, really nothing could be more natural than using the all-new Microsoft® Word for Windows™. You see, Word 2.0 makes those everyday word processing tasks easy.

Which means you can now concentrate on what you're actually doing. Rather than how you're actually going to do it.

This is possible for a number of reasons. Like our unique Toolbar™ feature. It lets you do those things you do most often with one simple click of a button.

Of course, looks count for something, too. With Word you can bring in a table of numbers from Microsoft Excel. Or with the new built-in drawing, chart-

ing and shading features, along with the ability to move anything on-screen with a drag and drop, you'll find yourself adding some very very cool effects.

But best of all, making the move is easy—so easy there's virtually no downtime. Just type in a WordPerfect® keystroke and Word demonstrates the equivalent command in your document. Plus your existing WordPerfect files (and other file formats) are perfectly usable in Word.

You can get all of this and a good deal more when you upgrade to Microsoft Word for Windows 2.0. And right now it'll only cost you a mere \$129.*

So why not pick up your telephone and give us a call at (800) 323-3577, Department X88.

You'll quickly see that nothing could be more natural.

PC WORLD

COVER STORIES

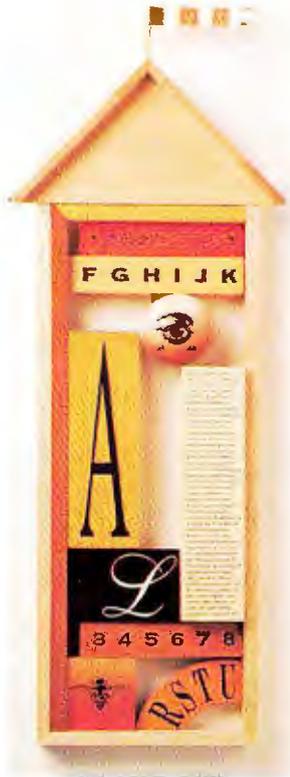
REVIEW

20-MHz SXs: Clones Turn Up the Heat Clones mean compromise? Not anymore. In this 25-system review, low-cost challengers take on their brand-name competitors with rock-solid performance and superb service and support. **Michael Goodwin and Susan Silvius** 150

FEATURES

50 Tips for DOS and Windows Start the new year off right with *PC World's* second annual collection of tips, tricks, and shortcuts from the pros. 202

Buyers' Guide: Fonts From basic plug-and-play cartridges to fancy scalable fonts for *Windows*, these 101 packages can dress any document to suit the occasion. **Catherine Smith** 220



No-Sweat Desktop Publishing
183

SPECIAL PREVIEW SECTION

Color notebook PCs, a 486 portable, two speedy system upgrades, color PostScript printers...just a tantalizing sample of the many new products showcased this month. In this special section, *PC World* editors bring you early looks at some of the best.

Sharp PC-6881 Notebook
73



Sharp PC-6881, Epson NB-SL/25C, AST Premium Exec 386SX/25C, Dell System 325NC	73
Lotus Write	81
Compaq Portable 486c	83
Sampo Valet SXL 25	85
NEC UltraLite SL/20P, Samsung PenMaster, Tusk All-Terrain SuperTablet	89
IBM PS/2 Model 57 Cached Processor Option	95
AcerPower 386SX	97
Dataproducts Jolt PS, Seiko Personal ColorPoint PS	101

Cover photograph by Robert Cardin
Digital composition by Varitel Select



Clones Turn
Up the Heat
150

INSIDE

NEWS

TOP OF THE NEWS 15

INDUSTRY OUTLOOK

New 386-compatible chips push the limits of Intel's CPU 57

Fax-modem boards project a sharper image 58

Work groups are getting the message with *Lotus Notes* ... 60

PC WORLD MARKETPLACE

Prices for 30 popular PCs in eight markets, and more ... 236

PRODUCT OUTLOOK

• Toshiba T4400SX 113

• *Micrografix Windows Draw* • Fahrenheit 1280 ... 114

• *Way You Work* • JetWay ... 116

• *DR DOS 6.0* • External Ethernet Adapter; External Token Ring Adapter; Pocket Ethernet Adapter II 118

• QMS-PS 815MR, QMS-PS 825MR • NetWare Lite ... 120

• *TurboTax 1991*, Andrew Tobias' *TaxCut 1991*

• FotoMan 122

• AST Advantage Line

• *QEMM-386 6.0* 124

• *The Far Side Computer Calendar* • ExpressWriter 201 126

• TravelMate 3000 WinSX ... 128

• IBM LaserPrinter 4029 Series 129

• BusinessStation 486ASX, PowerPro Array 130

REVIEW

No-Sweat Desktop Publishing

Scaled-down, affordable DTP programs help you put together professional-looking documents without the hassle of *PageMaker* or *Ventura Publisher*.
Deke McClelland 183

FEATURES

Manager's Guide to the New Software

Object-oriented programming promises more reliable, more cooperative, and less expensive application software. Can it deliver?
Alan Kaplan 228

Rate Your Satisfaction: Notebook PCs

Great screens? Light weight? Long battery life? Find out what *PC World* readers like—and dislike—about the current crop of 386 notebooks.
Christine Whyte 242

Road Test: Desktop Publishing

Veteran users of *PageMaker* and *Ventura Publisher* explain why their preferred page layout program outshines its archrival.
Alice LaPlante 246

HOW TO

The Help Screen

Formatting 360K floppies on high-density drives, and more. Karl Koessel and Robert Lauriston 35

Spreadsheets (A..Z)

Tracking down circular references and putting them to work. Richard Scoville 253

Word Processing Clinic

Customize *WordPerfect 5.1's* keyboard, change function keys in *Word for Windows*, and more. George Campbell 259

Data Basics

Automate sales tax in *dBASE*, and other tips. Steve Cummings 263

Publishing & Presentations

Redesigning an annual financial report. Richard Jantz 268

Communications Q&A

Download CompuServe files automatically under *Windows*, set up memory-efficient remote-control software, and more. Judy Heim 273

User Group Tips

Hands-on advice from users across the nation 275

Star-Dot-Star

A macro that prints documents backward, a formula for converting letter grades to numbers, and more.
Edited by Brett Glass 276

Instant Reference Card

Quicken 4.0, from setting up accounts to printing business, investment, and personal reports 279

DEPARTMENTS

In This Issue 13

Letters 21

Consumer Watch 43

Manager's File 53

The Home Office 322

INFORMATION

1991 *PC World Annual Index* 248

PC World Catalog 282

Advertiser Index 296

Products Featured in Editorial 300

PC World Mail-Order Shopping Guide 301



THERE'S A SIMPLE REASON
WHY NO SINGLE COMPUTER
CAN BE CONSIDERED
THE BEST VALUE IN THE INDUSTRY.

In an extremely competitive field, it takes more than just guts to say you're the best around. It takes proof. And that's something we have no shortage of.

Take the quality of our machines, for example. Our components come from the industry's leading manufacturers. We double check all parts for workmanship and compatibility in our own engineering department. We also "burn in" all our systems for at least 24 hours to insure everything is working perfectly.

Our prices are extremely low. Just take a look for yourself. Compare them to Dell and Northgate. You'll find that our PCs are consistently hundreds of dollars less. And perhaps even more important, they usually come with better features, too.

Our customer support team is outstanding. They were rated #1 for service and support in a magazine evaluation of the "10 Best Mail Order Companies." You see, as long as you own a PC Brand computer, we'll always be there to assist you any way we can. Take it from *PC Magazine*, "... PC Brand's service policy does outclass the competition."

Our 5 year limited warranty is simply the best. Not only is it the most extensive in the industry, it's also the most reassuring. And perhaps the best thing about it is that you'll probably never have to use it.

Of course, there are a few more things that make our PCs a great buy. Like a 30-day,

THERE'S A FIVE-WAY TIE FOR FIRST.

no-questions asked, money back guarantee, unlimited toll-free technical support by phone or fax, and on-site service in your home or office.

Hopefully now you have all the proof you need to see why PC Brand computers are the most valuable around. So if you'd like to order, or have any questions at all, give us a call at 1-800-PC BRAND. And don't settle for anything less than the industry's best. Or at least one of the top five.

PC BRAND

THERE'S A BIG DIFFERENCE BETWEEN
BUYING A PC AND BUYING PC BRAND.

386/SX-20 NOTEBOOK

- Intel 80386SX, 20MHz Processor • 2MB RAM expandable to 16MB • 1.44MB, 3.5" drive • 40MB IDE, 19ms hard drive† • Paper white VGA, non-glare CCFT backlit LCD • 640 x 480 resolution, 32 gray shades • Supports an external VGA • 1 parallel port/2 serial ports • External keyboard port • MS DOS 5 • Leather carrying case • 8.66" x 11" x 2.08," 6.5 lb.

Lease for \$68/month* **\$1,695**



386/SX-25 SYSTEM

- 80386SX, 25MHz Processor • 4MB RAM expandable to 32MB • 1.44MB, 3.5" drive • 1.2MB, 5.25" drive • 110MB IDE, 18ms hard drive • 16-bit VGA, 512K • Super VGA color monitor (1024 x 768 resolution) • 1 parallel port/2 serial ports • 101-key enhanced keyboard • Serial mouse • MS DOS 5 • MS Windows 3.0 • User Upgradable

Lease for \$64/month* **\$1,595**



486/SX-20 SYSTEM

- Intel 80486SX, 20MHz Processor • 4MB RAM expandable to 32MB • 1.44MB, 3.5" drive • 1.2MB, 5.25" drive • 110MB IDE, 18ms hard drive • 16-bit VGA, 512K • Super VGA color monitor (1024 x 768 resolution) • 1 parallel port/2 serial ports • 101-key enhanced keyboard • Serial mouse • MS DOS 5 • MS Windows 3.0 • User Upgradable

Lease for \$80/month* **\$1,995**



486/33 SYSTEM

- Intel 80486, 33MHz Processor • 4MB RAM expandable to 32MB • 1.44MB, 3.5" drive • 1.2MB, 5.25" drive • 200MB IDE, 18ms hard drive • 16-bit VGA with 1MB • Super VGA color monitor (1024 x 768 resolution) • 1 parallel port/2 serial ports • 101-key enhanced keyboard • Serial mouse • MS DOS 5 • MS Windows 3.0 • User Upgradable

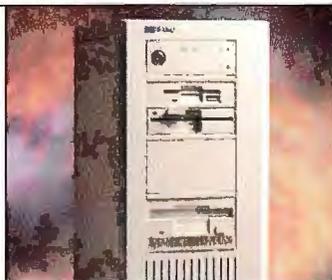
Lease for \$108/month* **\$2,695**



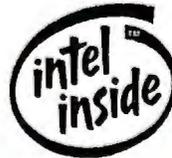
486/33 EISA CACHE SYSTEM

- Intel 80486, 33MHz Processor • External zero-wait state • 61KB static RAM cache • 8MB RAM expandable to 64MB • 1.44MB, 3.5" drive • 1.2MB, 5.25" drive • 200MB IDE, 18ms hard drive • 16-bit VGA with 1MB • Super VGA color monitor (1024 x 768 resolution) • 1 parallel port/2 serial ports • 101-key enhanced keyboard • Serial mouse • MS DOS 5 • MS Windows 3.0 • Tower Case

Lease for \$176/month* **\$4,395**



ABOVE SYSTEMS CAN BE CUSTOM CONFIGURED WITH A VARIETY OF HARD DRIVE, VIDEO AND CASE OPTIONS.



CALL 1-800-PC BRAND

1-800-722-7263 FAX: 1-800-722-7392

*Monthly lease rates based on length of lease.

TRW Customer Service Division. Free one-year on-site service for 386/SX, 386, 486/SX, and 486 EISA systems. Free on-site is available to most locations in the contiguous United States.

PC Brand reserves the right to amend specifications and prices without notice. Intel is a registered trademark of the Intel Corporation. The Intel Inside Logo is a trademark of the Intel Corporation. All other products or services are identified by the trademarks or service marks of their respective companies. ©1992 PC Brand, Moorpark, California.

All major credit cards, checks, money orders, direct wire and approved purchase orders accepted.

World's Smallest Portable Mass Storage

New! Parallel Port Connection
No Cards Needed!

Liberty Systems, after shipping quality small portable hard drives for 5 years, completes its product line with the addition of its 50, 70, 115, and 225 Series portable mass storage devices.

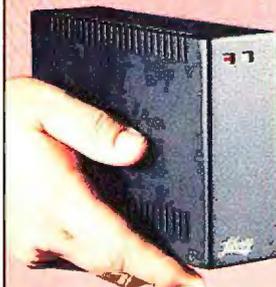
50cu.in. Series

20Mb Per Cartridge
Mac or IBM



- Hard Drives in 52, 105, 120MB
- Floptical/20Mb
- Battery Option

70cu.in. Series



Floptical®

- Hard Drives in 40Mb-425Mb
- DAT Drive 1.3 - 2.0 Gig
- Tape Drive 160 - 600Mb

425MB

Hard Drives

115cu.in. Series

90Mb Per Cartridge



- Erasable Optical 3.5" 128Mb Per Cartridge
- Sony CD-ROM
- Syquest 44Mb/88Mb
- Bernoulli 90MB
- Solid State Drive 40Mb

Bernoulli®

225cu.in. Series

90Mb Per Cartridge



Dual Bernoulli®

All Liberty drives include internal power supplies, and come with the necessary cables and software to connect directly to your PC or Mac. **Parallel port controller optional on all Liberty drives.** Works great on laptops, notebooks, and desktops. Fully IBM and Macintosh compatible.

Liberty
Systems

(408) 983-1127
fax (408) 243-2885

160 Saratoga Ave., Ste 38, Santa Clara, CA 95051

Circle 128 on reader service card

Philip Lemmons **Editor in Chief**

Eric Knorr **Editor**
Russell Ghitman **Executive Editor**
Cathryn Baskin **Managing Editor**

Senior Editors
Reviews Eric Brown
Features Steve Fox
News Mike Hogan

East Coast Editor
Eric Bender

Editorial
Acting Asst. Managing Editor Peggy Nauts
Technical Editor Karl Koessel
Assistant Technical Editor Susan J. Silvius
Associate Editors Bronwyn Fryer, Roberta Furger, Michael Goodwin
Assistant Editors Jeff Bertolucci, Rex Farrance, Susan Lusty, Melissa R. Riofrio, Lincoln Spector
Editorial Assistant Anita Hamilton

Copy Chief Jane Paulsen
Sr. Copy Editor Barbara Lewis
Copy Editors Bonnie Jacobson, Marla Miyashiro
Asst. to the Editor in Chief Cynthia Grossman
Administrative Assistant John Goddard

Electronic Typographer Henry Pham

Business Manager Scott Danish

Art & Design
Art Director Mitch Shostak
Associate Art Directors Robert Kaner, Greg Silva
Senior Designer Emily Wollenweber
Senior Design Associates Barbara Adamson, Laura Panbacker
Designer/Infographics Jeff Berlin
Asst. Designer/Infographics Hope Winslow
Production Artist Marlene Tobias

Contributing Editors
Anita Amirrezvani, Steve Bass, Jesse Berst, TJ Byers, George Campbell, Steve Cummings, Brett Glass, Judy Heim, Mark Henrieks, Richard Jantz, Alan Kaplan, Robert Lauriston, Robert Luhn, Carole Matthews, Martin Matthews, Richard Seoville, Ralph Soucie, Scott Spanbauer, John Walkenbach

David Bunnell **Founder**
Andrew Fluegelman **Founding Editor**

User Group Advisory Board
Tony Barcellos, Sacramento PC Users Group; Steve Bass, Pasadena IBM Users Group; Roger Bender, Microcomputer Managers Association (MMA); Jack Bolton, Atlanta PC User's Group; Brian Camenker, Boston Computer Society; Mary Dolce, Chicago Computer Society; Al Harrison, Houston Area League PC Users; David Hoffman, NYPC; Brian Livingston, MMA; Joseph Rigo, NYPC; Irving Samuels, Capital PC User Group; Jerry Schneider, Association of PC User Groups

Patrick Kenealy **President & Publisher**
Richard J. Marino **Associate Publisher**

HOW TO CONTACT PC WORLD

Unless otherwise indicated below, please direct all correspondence and inquiries as follows:

Mail

PC World Editorial, 501 Second St. #600, San Francisco, CA 94107
CompuServe: 74055,412
MCI Mail: PC World Editorial
Phone: 415/243-0500
Fax: 415/442-1891

Subscription Services/Address Changes
Call toll-free 800/234-3498 (303/447-9330 in Colorado), or write Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029. To place new orders, call 800/825-7595.

Letters to the Editor

PC World welcomes your comments and opinions. Address editorial correspondence to *Letters to the Editor*. Letters intended for publication should not exceed one double-spaced page. Be sure to include your name, city, and state. We reserve the right to edit all letters.

Help With Your PC Hardware or Software

If you have a problem, PC World may have the answer. Send written questions about PC products and procedures to *The Help Screen*. Send consumer-related questions and complaints to Roberta Furger, *Consumer Watch*.

Reader Submissions

PC World encourages readers to share technical solutions. We pay \$25 for each *Power Tip* published in the magazine, \$50 for *User Group Tips*, \$25 to \$200 for *Star-Dot-Star* items, and \$50 for any questions used in the *How To* section. Keep submissions brief (*Power Tips* and *User Group Tips* to 100 words or less). We cannot acknowledge unpublished submissions; accepted submissions will be acknowledged by payment.

New Product Information

Send hardware press releases to Melissa Riofrio, Assistant Editor; or call her at 415/978-3179. Send software product announcements to Susan Lusty, Assistant Editor; or call her at 415/978-3321.

Reprints and Permissions

You must have permission before reproducing any material from PC World. If you want to quote from or reprint any portion of any article or use artwork or photographs from the magazine, send a written request to PC World, Reprints and Permissions, 501 Second St. #600, San Francisco, CA 94107; include a phone number to ensure a fast response. To order reprints of PC World, call 415/978-3162.

Editorial Calendars

To receive a copy of PC World's Editorial Calendar, call your nearest regional PC World advertising sales office. See the Advertiser Index for phone numbers.

PC World™ (ISSN 0737-8939) is published monthly at \$29.90 for one year (12 issues), \$59.80 for two years (24 issues), \$89.70 for three years (36 issues) by PC World Communications, Inc., 501 Second St. #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for Canada and Mexico; add \$46 per year for airmail for all other countries. Canadian GST Registration #R124693680. Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to PC World, Subscription Dept., P.O. Box 55029, Boulder, CO 80322-5029. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415-243-0500; CompuServe 74055,412; MCI Mail PC World Editorial. PC World™ is an independent journal, not affiliated in any way with International Business Machines Corporation. IBM is a registered trademark of International Business Machines Corp. Copyright © 1992, PC World Communications, Inc. All rights reserved. The following are trademarks of PC World Communications, Inc.: Consumer Watch, PC World View, *, PC World.

Breaking the page barrier.



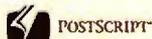
The new TI microLaser Turbo™ printers. High-performance graphics at record speed.

Give yourself a breakthrough. The TI microLaser Turbos race through popular graphics software like Ventura Publisher® and Harvard Graphics faster than other printers.

How?

The Turbos' RISC-based 8220 controller with PostScript® software from Adobe® processes information from the PC faster. So you spend less time waiting for graphic output.

Now give yourself all this speed and



PostScript Level 2 with 35 scalable fonts. Superior paper handling that includes a 250-sheet paper drawer that slides *inside* the printer. Automatic switching between HP LaserJet®/PostScript modes and PC/Mac® interfaces†. And two of the smallest footprints you'll find.

Plus, you can break the page barrier without breaking your budget. Designed for personal printing, the 9ppm microLaser

Turbo starts at \$2,249*. Ideal for shared printing, the 16ppm XL Turbo goes for \$3,649*.

Quick. Dial the number below for the name of your nearest TI dealer. And break some speed records of your own.

1-800-527-3500


**TEXAS
INSTRUMENTS**

71842

*Suggested retail price. †Requires optional AppleTalk® interface. microLaser Turbo is a trademark of Texas Instruments Incorporated. Ventura Publisher is a registered trademark of Ventura Software, Inc. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems Incorporated. HP LaserJet is a registered trademark of Hewlett-Packard. Mac and AppleTalk are registered trademarks of Apple Computer, Inc.

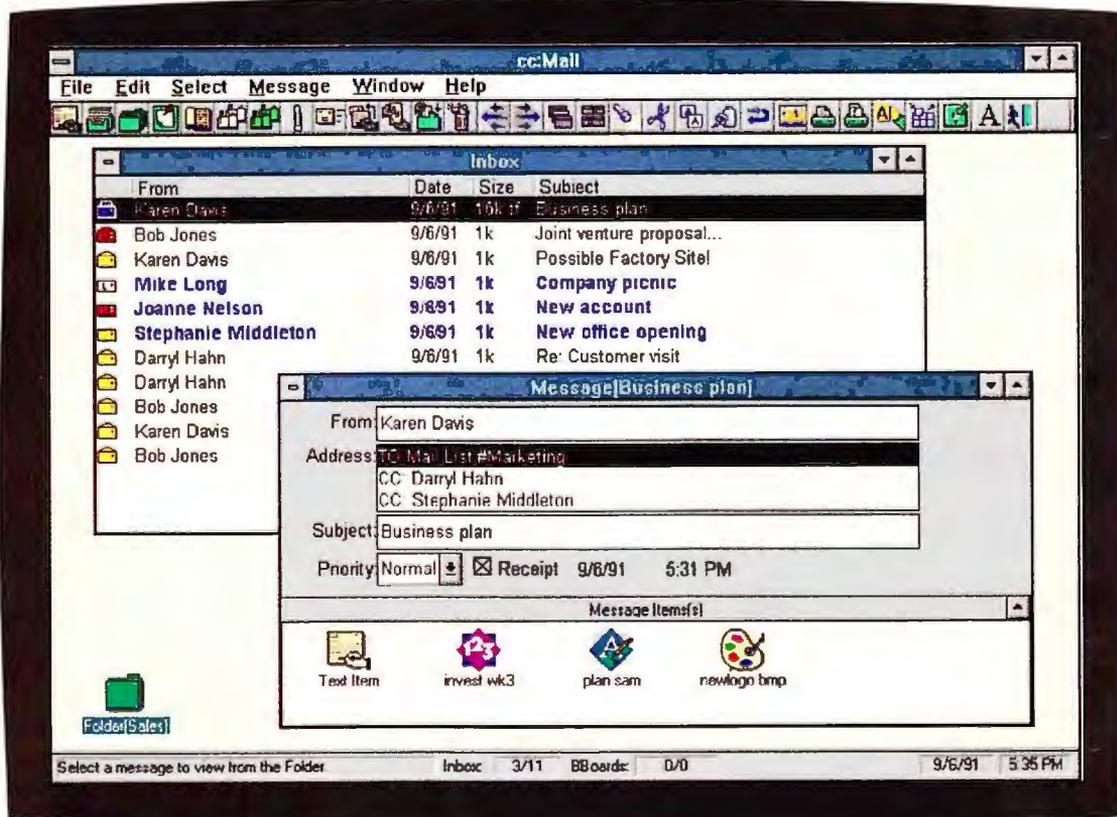
Circle 296 on reader service card

Why is cc:Mail the leader

cc:Mail is so easy to install, learn and use, you can have your electronic mail system up and running quickly.



cc:Mail can send information across all of these computing platforms to reach everyone in your organization.



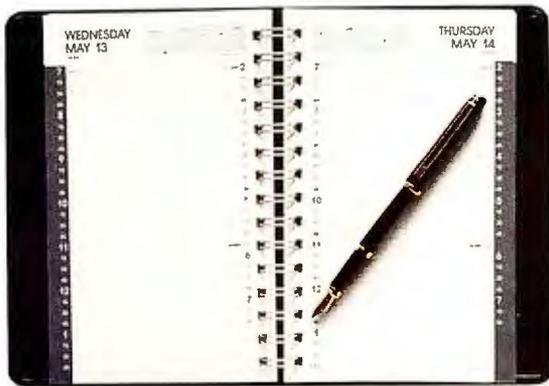
Over a million satisfied customers have already given cc:Mail a first-class rating. For example, Windows users love its easy-to-use interface, SmartIcons™ and application integration. And PC World says "Sending a cc:Mail message is easier than addressing an envelope and licking a stamp." 9/91*

...ding e-mail package?

cc:Mail is built on a state-of-the-art, third generation architecture which means your mail system will grow as your company grows.



You can send a file from any mail-enabled application, such as 1-2-3[®] for Windows and other industry leading software programs without leaving the application.



Keep things running on time with cc:Mail's advanced integrated calendaring and scheduling option.

It's easy to see why cc:Mail[™] from Lotus[®] is the world's leading electronic mail package. Because it delivers more than messages. It handles just about any electronic mail need you might have. No matter how large or small your workgroup is. With it you can send text, files, graphics and faxes across all major local area networks such as Novell[®], LAN Manager and Banyan[®]. Without needing new hardware.



**LAN TIMES
READERS
CHOICE**

1990
1991

Better still, it allows you to send electronic mail effortlessly back and forth from different platforms—such as DOS, Windows[™] 3.0, OS/2[®] and Macintosh[®]—across the same LAN. Plus, with cc:Mail you can access public mail and even mainframe mail quickly and easily.

Our newly released cc:Mail for Windows takes full advantage of Windows 3.0. Support of Dynamic Data Exchange lets you easily send other mail-enabled Windows files from within those applications. For example, you can send a report you've written with Ami Pro[™] for Windows across the country while the application is still on your desk top.

Plus, cc:Mail is the first package of its kind to take advantage of a new, fully scalable messaging architecture. This means cc:Mail will grow along with your business. Whether you're adding six new users, 6,000 or 60,000, cc:Mail is a proven solution. As *PC World* has said, "It's clearly a best buy." *PC World*, 9/91*

For a free demo disk of the cc:Mail Macintosh, Windows or DOS Platform Pack of your choice, call us today at 1-800-448-2500.

cc:Mail
25 User Pack



cc:Mail from Lotus

The "Notebook Of The Year" And Two Powerful Sequels.



Premium® Exec™ 386SX/20
Model 43V

New Lower Pricing!

\$2395

20 MHz, 386SX Processing
2 MB RAM, 40 MB Hard Drive
VGA Monochrome Display
With 32 Gray Shades

Premium Exec 386SX/25C
Color Model 63V/4

\$4995

25 MHz, 386SX Processing
4 MB RAM, 60 MB Hard Drive
VGA Color Display
With Up To 256 Colors

Premium Exec 386SX/25
Model 63V/4

New Lower Pricing!

\$2995

25 MHz, 386SX Processing
4 MB RAM, 60 MB Hard Drive
VGA Monochrome Display
With 32 Gray Shades

Only one year after its introduction, the Premium Exec 386SX/20 has become one of the most popular notebook computers today, with sales of more than 70,000 units and climbing.

And among industry experts, the Premium Exec 386SX/20 is winning such coveted awards as "Notebook of the Year," "Analyst's Choice," "Best Buy" and the "VIP Award."

So, you can be assured AST delivers the best combination of price, performance, quality and customer support on the market today.

And if you need a color display, or 25 MHz processing power, here are two more winners to meet your specific portable computing needs:

Premium Exec 386SX/25 For Split-Second Processing — When every minute counts, ask for this speed demon. It delivers super-fast 25 MHz speed to conquer any number of applications with ease. And at a cost comparable to other manufacturers' 20 MHz systems, AST's

Premium Exec 386SX/25 gives you a 25% increase in performance. Now that's value.

Premium Exec 386SX/25C For Fabulous Color At A Fabulous Price — Here's your chance to take advantage of a top-notch 256-color note-

Backed By AST's Award-Winning Service And Toll-Free Support

**For More Information On AST Products Call
1-800-876-4AST**

book with 25 MHz processing for only \$4995. Its bright, fast VGA display offers a resolution of 640 x 480, perfect for Windows-based software.

Made In America To Stringent Quality Standards — Designed and manufactured right here in the U.S., our Premium Exec notebooks offer state-of-the-art features and performance.

Backed By Award-Winning AST Service and Support — We're never out of touch. Whether you need to reach us by computer, telephone, mail, or even by FAX, you can count on AST for a full range of service and support programs. This includes ExecCare™, an optional program which guarantees your Premium Exec will be replaced within 24 hours.

Ask For The "Notebook Of The Year" — For the best all-around notebook computer, look to the experts. Their choice is unanimous — the Premium Exec. For more information, or the name of the dealer nearest you, call AST today at 1-800-876-4AST.

AST
COMPUTER
The Power Of Choice.

Prices are MSRP; dealer prices may vary. Awards: Notebook Of The Year, PC Laptop December 1991; VIP Portable Office November 1991; Analyst's Choice, PC Week April 1991; Best Buy, PC Magazine (British Edition) April 1991; AST markets products worldwide, outside of the United States and Canada call AST International on (714) 727-9292 or FAX to (714) 727-8585. AST, AST logo and Premium registered. Exec, ExecCare trademarks AST Research, Inc. Copyright © 1991 AST Research, Inc. All rights reserved.

Circle 10 on reader service card



The tips team: Bronwyn Fryer, Karl Koessel, Susan Lusty, Rex Farrance

Maybe you've always wanted to write an AUTOEXEC.BAT file that does handstands, or run your favorite DOS application under *Windows* without fearing for your life. But who's willing to expend the effort to perform such magic, even if the result saves valuable time day after day?

The short answer is, we are. Not only we the editors of *PC World*, but also consultants, authors, tech support people, and readers who have taken the time to solve pressing problems and share the answers with you. The fruits of this labor are our annual gift to the beleaguered user: tips unlimited.

This year our four-person editorial team searched high and low for the 50 best DOS and *Windows* tricks. Bronwyn Fryer, Rex Farrance, Karl Koessel, and Susan Lusty scoured BBS's, called tech support lines, broadcast all-points E-mail bulletins, and did some assiduous hacking of their own to find more efficient ways to make DOS and *Windows* do what you need them to.

There's something here for all types of users. Upset with *Windows*' File Manager? We can help. Wondering why your system software is gumming up performance or maxing out your hard disk? Hey, we've been tweaking this stuff for years. Even users who edit their CONFIG.SYS file almost daily may learn a trick or two.

You'll notice that about a quarter of these tips are specifically for DOS 5.0. This most popular of all DOS upgrades may be vastly easier to learn, but that doesn't mean it's completely intuitive. Our tips team shows you how to get the most from the graphical shell and from

ROBERT CARDIN

50 Ways to Save Your Sanity

such handy utilities as DOSKEY.

This issue's tips aren't just button pushing. The Special Preview Section offers tips of another kind: the pick of hot hardware and software to watch in 1992. We sent our staff on the road to bring you timely information about products bound to affect your purchasing plans in the coming year.

Frankly, we haven't seen such a whirlwind of new products since the PC was introduced. Who could have guessed that early this year we'd see battery-powered 5-pound color notebooks. Or low-end systems that accommodate multiple microprocessors (if you can keep track of which chip is which now that Intel has competition from AMD, IBM, and Chips and Technologies). Pen-based notebooks with applications that recognize your handwriting are arriving in force, while every DOS application and its brother marches toward *Windows*.

You'll find a taste of this and more in the Special Section. And later this year, you can depend on *PC World* to point out the star products in this Big Bang of new technology.

Last, to demonstrate that we not only give advice, we also take it, this issue features our first 25-system review. Many of you recommended we survey a larger field of products than just the usual suspects, especially because today's small manufacturers seem to be running rings around the likes of Compaq and IBM. In "20-MHz SXs: Clones Turn Up the Heat," you'll find the biggest herd of hardware ever, with the same thorough benchmarks and comparative ratings you've come to expect.

One more tip: It's going to be an exciting year, and you've come to the right place to stay on top of it all—from hot new products to advice that makes your job easier. ●

Eric Knorr

Eric Knorr
Editor

The perfect performance.

\$399



The Jumbo 120.

A photograph of a PC Week scoreboard from August 14, 1989. The scoreboard is titled "SCOREBOARD" and lists various attributes for the "Colorado Memory Systems' Jumbo Tape Backup". The attributes and their scores are: Reliability of backup process (10), Integrity of backup process (10), Ease of use (10), Speed of data backup (10), Quality of documentation (10), and Weighted Score (10). The scores are circled in red. The PC Week logo and date "August 14, 1989" are visible at the bottom.

Attributes	Colorado Memory Systems' Jumbo Tape Backup
Reliability of backup process	10
Integrity of backup process	10
Ease of use	10
Speed of data backup	10
Quality of documentation	10
Weighted Score	10

The encore.

\$499



Introducing the Jumbo 250.

The Jumbo 120 tape backup system scored a perfect 10 in a PC Week poll. Our new Jumbo, the 250, has the capability to store twice as much of your valuable data at twice the speed. Typically 250 megabytes, with data compression. Which begs the question - is there such a thing as more than perfect?

Check out the new Jumbo 250, and the Jumbo 120. Both feature unprecedented reliability, easy installation, unattended backup, data compression, Novell[®] certification, UNIX[®]/Xenix[®] support and QIC compatibility.

For more information, call 1-800-346-9881, fax (303) 667-0921, or write 800 S. Taft, Loveland, CO 80537.



Edited by RUSSELL GLITMAN

Intel, IBM to Create Chips

Integrating Functions on the CPU

Accelerating the race toward powerful and inexpensive new processors, Intel and IBM have agreed to jointly develop chips based on the 486 and future Intel processors. Due out in two years, the chips will integrate the processor with

other functions such as a bus adapter or graphics controller, offering users cheaper and more functional PCs.

Under the ten-year agreement, IBM can make as many as half the chips it requires. Intel will supply the remainder and also offer the new chips to other vendors. IBM will get the chips several months before its rivals. Intel will continue to offer other versions of the 486 and 586, adding to the blizzard of processor choices confronting customers.

Integrating more functions into the processor will not only drop costs but improve reliability and speed while reducing size and power requirements. The new Intel/IBM designs will be vastly more powerful, exploiting chips crammed with 4 to 8 million transistors (by comparison, today's 486 has 1.2 million). Instat vice president Dean McCarron suggests that functions may be added in roughly the following order: system logic, serial and parallel ports, a Micro Channel adapter, an XGA adapter, a hard drive controller, and eventually other features.

While other manufacturers could make similar develop-



The IBM-Intel alliance promises to create an array of CPU alternatives with specialized functions.

ment deals with Intel or other competing CPU suppliers, none can match IBM's impressive combination of experience and deep pockets. In contrast, Compaq has invested in Nexgen, a start-up CPU supplier, but is refocusing on "cutting overhead and using off-the-shelf components," notes International Data Corporation analyst Bruce Stephen.

Under the agreement, IBM can't create its own derivatives of the 486 as it did with the 386.

—Eric Bender

Compaq Cuts Costs, Prices

Moving quickly in November, new Compaq Computer chief executive Eckhard Pfeiffer launched a series of changes in his company's pricing, distribution, and support policies that virtually re-create the company.

The shake-up comes after a series of startling reversals at Compaq. The company reported its first-ever quarterly loss—a stinging \$70 million for the quarter ended September 30, 1991. Then, founding CEO Rod Canion was toppled during a marathon board meeting, and 1700 Compaq employees were laid off. Several other senior executives associated with Canion have since departed the company.

Taking a firm grip on the reins, former operations chief Pfeiffer followed through on a vow to reduce manufacturing costs, product cycles, and prices by slashing notebook prices 25 percent. Compaq will still sell powerful computers to the world's largest companies but will also challenge cross-

state rival Dell Computer and California's AST Research with a new line of low-cost PCs aimed at home, education, and other markets it has previously shunned.

Smaller firms like AST have logged record profits during recent quarters, in part by introducing new technology at rock-bottom prices. Their success also has come from their ability to find routes to customers besides the specialty retailers, to which Compaq had firmly tied itself. Pfeiffer is opening distribution, and says even mail order is under consideration. Dell and AST have also won customers with direct support—a policy Compaq was forced to emulate last year. Compaq is broadening its support policy to include General Electric Computer Service and TRW Customer Service maintenance.

Compaq is well positioned to be a low-cost, low-price supplier, says Kidder, Peabody analyst Dave Korus.

—Mike Hogan

Promoting Presentation Graphics Market

As the presentation graphics market shifts to *Windows*, vendors are courting users with an attractive but bewildering array of new products and discount promotions.

For instance, Microsoft is offering its \$495 *PowerPoint* for \$129 to those trading up from DOS competitors. Meanwhile Aldus and Lotus say they will swap their \$495 *Persuasion* and *Freelance for Windows* packages for \$99 and \$150, respectively.

The position of market leader *Harvard Graphics* has been under assault this year as Soft-

ware Publishing Corporation struggles to bring its own long-awaited *Windows* version to market, says Computer Intelligence analyst Dan Ness. In CI's polls of corporate users, *Harvard Graphics* slipped from its lofty 60 percent unit share a year ago to a still-impressive 48 percent this fall. To stop the slide, the \$595 *Harvard Graphics for Windows* will come with a \$125 swap promotion but won't reach users until February.

Meanwhile, *PowerPoint* has gained solid ground, jumping from only 5 percent last year to

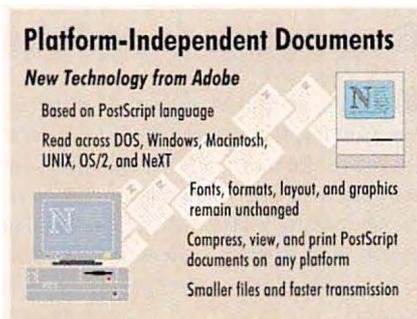
a 28 percent share. One of the first *Windows*-based solutions, *PowerPoint* lacks the functionality of newer programs like Claris Corporation's *Hollywood*, but casual users consider that a plus.

Microsoft reportedly plans a richer version for spring release with features like an outliner. But some *Harvard Graphics* users would rather wait for *HG Windows* than switch. "We need something that we won't have to totally relearn and that can import our existing graphics," explains Peter Forbes Pollack, managing director of New York's Financial Security Assurance. —Mike Hogan

Adobe's Master Document

One cherished convention of science fiction is the universal translator: a device that can convert any alien language to the native speaker's format. Now Adobe Systems has a similar plan: software that will let users electronically transmit, view, and print documents created with any application or platform—with all original formatting, fonts, and graphic elements intact.

Code-named Carousel, the technology is due this year and



With Adobe's technology, you can share documents across platforms and retain the format.

uses Adobe's PostScript as the common language to move documents across platforms and operating systems. Documents created in DOS, Windows, UNIX, or OS/2 or on Macintosh and NeXT platforms are

saved as special PostScript files and sent to any other Carousel-equipped machine. There Carousel displays the file—substantially reduced thanks to built-in image compression—with Adobe's Multiple Master fonts substituted for the original typefaces. Multiple Master fonts, which let users alter a typeface's weight, width, size, and style, can simulate any typeface, preserving the overall look and feel of the original document. The PostScript engine also renders any graphical elements that may be included.

Adobe CEO John Warnock likes to talk about the "ASCII jail," where a document gets

converted into strings of unformatted ASCII text before it can be viewed in a program or on a platform other than the one where it was created. Carousel could be the "get out of jail free" card, allowing E-mailers to send and receive true-to-life, formatted documents or enabling executives to send presentations to staff and clients.

Carousel could enable publishers to distribute multivolume manuals, directories, or other works digitally, with readers able to view them as they were meant to be seen. It could become known as WYSIWYP—what you see is what you publish. —Steve Fox

The Incredible Shrink-Wrapped LAN

Small businesses shopping for a local area network now have a one-stop-shop alternative. Both Northgate Computer Systems and Packard Bell are selling "shrink-wrapped" LANs: ready-to-use networks that come complete with PCs, server, network cabling, and installed software. Packard Bell bundles *Microsoft LAN Manager* with OS/2 and sells its LAN through discount retailers and computer superstores. The company's technicians then install the LAN. Northgate, which bundles Novell NetWare with its LAN, sells it through the mail-order channel and lets the buyer install the equipment. A four-node network can be bought for less than \$17,000.

"This is clearly for people who understand what they need and just want a place to get it as quickly and cheaply as they possibly can," says Jamie Lewis, editor in chief of *Clarke Burton Report*, a network industry newsletter.

"I'm highly skeptical," says

Roland Cole, president of the Association of Personal Computer User Groups.

Nonetheless, users are happy. Rich Bartone, president of Cruise Collection, a Los Angeles travel agency, purchased his five-node Packard Bell LAN at a Costco discount store after seeing a point-of-purchase display.

Far from impulsive, Bartone, who confesses to having "very little computer background," says he spent a lot of time pricing network hardware and operating systems like Novell NetWare 2.2 and *Lantastic* before opting for Packard Bell.

"Overall, I looked at the full program: hardware and software, installation, and on-site service," says Bartone, adding that he likes the one-stop-shop approach.

Installation went off without a hitch, and after one month, Bartone's network is running smoothly and he's one satisfied customer.

—Jeff Bertolucci

Borland Shows Windows Products

Borland Int'l plans to ship *Windows* versions of *Paradox* and *Quattro Pro* in the first quarter of 1992. Both promise innovative user interfaces and transparent access to a wide variety of data.

Built with Borland's object-oriented software technology, both applications let you click with the right-hand mouse button on any object (such as a field or chart) and get a menu or dialog box that shows the actions you can take on that object. "Even if you don't know this product, you can point to anything and click the right mouse button, and it will tell you what you can do," explains Borland chairman Philippe Kahn, who expects use of the right button to become standard in *Windows* and OS/2.

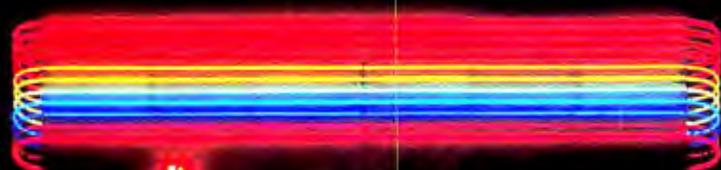
Paradox for Windows also includes a handy icon bar for common commands, a paint-package-like form builder, and an enhanced query screen. The interface and tools are identical to those in the upcoming *dBASE for Windows* except for the programming language.

Moreover, both will exploit

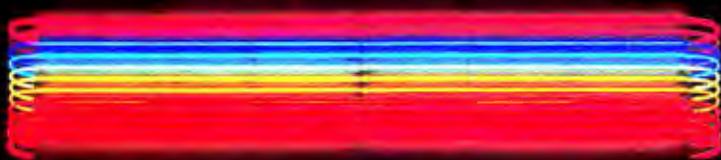
a new back-end "object layer engine," which promises to let each Borland package easily tap *Paradox*, *dBASE*, *Quattro*, *SQL*, and other data.

"The interface in *Paradox* is better than any *xBASE* [dBASE-compatible] product, and with *Windows* it's gotten better still," comments Pat Adams, head of DB Unlimited, a consulting company in Brooklyn. "But the object layer engine is the real killer." If users truly can get the data they need regardless of what package they're in, she says, "that's terrific—that's every MIS manager's dream and every end user's dream."

Quattro Pro for Windows takes a new twist on organizing worksheets in three dimensions: a notebook metaphor. The bottom of the screen displays notebook tabs for each file and smaller tabs for each page in the file. This approach makes it easier to copy, link, and consolidate worksheets. Additionally, Borland has made the package more customizable and extended the already strong suite of presentation skills. —Eric Bender



Las
Vegas
CONVENTION
CENTER



GATEWAY 2000 - IT'S



286 Systems
GATEWAY 2000 286/16



386 SX Systems
GATEWAY 2000 386 SX/20C



For the first time in the six-year history of *Computer Shopper* magazine's Best Buy competition, one company swept all of the awards in the desktop PC categories. At COMDEX/Fall '91 in Las Vegas, Gateway 2000 was awarded Best Buy honors for 286, 386SX, 386 and 486 systems.

"What's most meaningful about these awards," said Gateway 2000 President Ted Waitt, "is they are given by the readers of *Computer Shopper*, people who are buying and using PCs in the real world."

Our thanks to Gateway's own Semi-Gold Dancers played by employees from departments throughout the company.

Shopper readers voted in record numbers: 15,000 people cast over 100,000 votes for

FOUR • FABULOUS COMPUTERS • MORE • SAVVY PC USERS • YOU KNOW WHAT

products in 27 hardware and software categories. The vote on desktop PCs was a decisive victory for the Midwestern firm customers call the "cow company."

According to *Computer Shopper*, the Best Buy Awards have come to symbolize the best in service, quality, performance, support and product selection. This combination gives you the best value on the market.

IT'S A CLEAN SWEEP!



386 Systems
GATEWAY 2000 386/33C



486 Systems
GATEWAY 2000 486/33C



It's really no surprise Gateway 2000 systems were singled out as Best Buys since Gateway

be here for you. And Gateway's the only one with a great PC that comes in a cow-spotted box

WHAT COMPANY GIVES YOU THE BEST VALUE

• GATEWAY'S THE ONE

Sells more computers through the direct channel than any other PC manufacturer. This in itself is testament to the value Gateway 2000 offers.

suitable for use as a rec room end table.

See the look and you'll be convinced, too.

Call a Gateway 2000 sales representative today for all the details on the Best Buy system we'll build just for you.

Gateway's the one with the best prices on quality, fully-loaded, high-performance systems. Gateway's the one with the award-winning service organization that'll take good care of your system. Gateway's the one that's going to



8 0 0 - 5 2 3 - 2 0 0 0

THE LINE THAT SWEEP 'EM AWAY

16 MHZ 286

- Intel® 80286 Processor
- 2MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 40MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey™ Keyboard
- MS DOS® 5.0



\$1345

16 MHZ 386SX

- Intel® 80386SX Processor
- 2MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 40MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft® Mouse
- MS DOS 5.0
- MS Windows™ 3.0

\$1445

20 MHZ 386SX

- Intel® 80386SX Processor
- 32K Cache RAM
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 80MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



\$1745

25 MHZ 386

- Intel® 80386 Processor
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 80MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$1895

33 MHZ 386

- Intel® 80386 Processor
- 64K Cache RAM
- 4MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



\$2395

33 MHZ 486

- Intel® 80486 Processor
- 64K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



\$2945

33 MHZ 486 EISA

- Intel® 80486 Processor
- 128K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 340MB 15ms SCSI Drive with 128K Multi-Segmented Cache
- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$3895



BEST BUYS

- Get our 33 MHz 386 system, same configuration as listed, with a 120MB IDE hard drive instead of the 200MB drive.

\$2145

- Same features as our 33 MHz 486 system except this machine has 4MB RAM instead of 8, and a 120MB IDE hard drive instead of the 200MB drive in our standard configuration.

\$2495

INCLUDED WITH EVERY SYSTEM:

- One-year warranty • 30-day money-back guarantee • Lifetime toll-free technical support • Free on-site service to most locations • Free bulletin board technical support • Software and optional peripherals installed at factory • Software diskettes and comprehensive hardware and software manuals provided

Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CST)
Service Hours: 6am-Midnight Weekdays, 9am-2pm Saturdays (CST)

All prices are subject to change. Prices do not include shipping.



800-523-2000
610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023



LETTERS

Reactions and responses from the PC World community



One Hardware Standard

As a computer consultant, I read with interest your October *Industry Outlook* report on *Windows 3.1*. IBM, Apple, and Microsoft—working together or at each other's throat? It's all a little confusing for workers who want to get their jobs done, not argue the merits of rival platforms. The time has come for one hardware standard in different sizes and speeds. Then developers could unite their efforts to make computers easy to use. But I should be grateful: If developers didn't make their products so hard to understand and use, I'd be out of work.

Scott Gilbert

Santa Barbara, California

Clone-Killing Humor

I would have written sooner about your September cover headline "IBM's Clone

Killer," but it took me a while to stop laughing. IBM has adopted its usual ostrichlike posture with these 20-MHz 386SXs. I just bought a loaded 33-MHz 486DX clone with a tape backup and CD ROM drive for less than \$6000—one-quarter of what IBM would have charged. IBM started the PC revolution. Why has it abdicated its leadership to the mobs of clone makers?

Walter E. Murdock
Palo Alto, California

A WordPerfect Apology

We apologize for misinformation conveyed in the November preview of *WordPerfect 5.1 for Windows* ["Windows Gives WordPerfect a Shiny New Look"]. At press time, we had expected to ship the product in mid-October and charge \$125 for upgrades. We actually shipped in November and fortunately have been able to lower the upgrade fee to \$99 for licensed users of *WordPerfect* for DOS. Again, we apologize for any inconvenience this may have caused.

Liz Tanner
WordPerfect
Orem, Utah

Where's Gateway 2000?

I was disappointed that you omitted Gateway 2000's 25-MHz 386 from your October review "25-MHz 386 PCs: Get 'Em While They Last." We have two Gateway PCs at work: Both have operated flawlessly, and the company has provided excellent, responsive service. A current ad shows a 386/25—in the configuration you evaluated—for \$1995, with the addition of 1024 by 768 VGA, *Windows*, and a year's free on-site service as a bonus. Taking this value into account, along with the solid response that Gateway 2000 products got in your

World Class Awards voting and *Rate Your Satisfaction*, how could you leave them out?

Jonathan D. Biviano
Salem, Oregon

We received several letters inquiring about this issue. We did evaluate a Gateway 2000 386/25. But just before press time, Gateway stopped promoting the 386/25 cache model it sent us for review. The company's decision was based on its ability to provide a 33-MHz model at the same price as the 386/25 model we evaluated. Unfortunately, we didn't have time to reorder the noncache model and put it through its paces. —Ed.

Rating on Price

Your October review of 25-MHz 386s leaves me wondering why nobody reviews PCs the way people actually shop for them. Do you really believe that users set out with an undetermined amount of money to purchase the best 25-MHz 386 they can find? The Northgate received a Best Buy largely due to blazing performance, while the Fast-Micro received only a fair-to-good rating because of poor performance. I don't believe this comparison is fair: Does Northgate have a \$1600 to \$1700 machine that could outperform the Fast-Data you reviewed?

David Baril
Pawtucket, Rhode Island

Our reviews rate products on overall suitability to their purpose. The Eltech, Everex, and Northgate machines earned their Best Buys with a balance of performance, price, support, design, and expandability. The FastData 386/25 is the least expensive

PC in its class, but overall it didn't rate as highly as the Best Buy machines. As we mentioned, however, bargain hunters may find it irresistible. —Ed.

Traveling Lighter

I read your review "286 Notebooks: Traveling Light" in September, and I'm more convinced than ever that I already

have made the right notebook choice with my good old Tandy 200. I take long flights overseas, and battery life is everything to me. I use this text handler for writing memos, and I get 6 to 8 hours of battery life from four alkaline AA cells.

I. Switzer
Palm Springs, California

Big Brother Should Be Watching

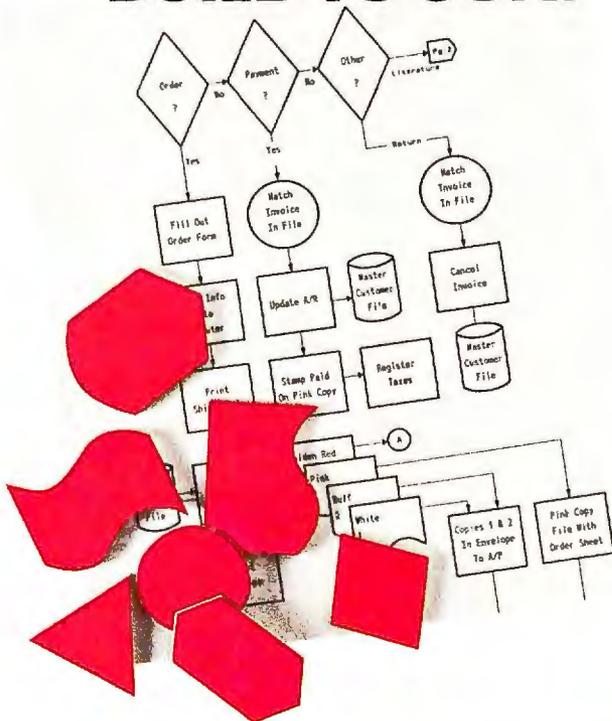
I disagree with Keith Nickerson's October *Network Q&A* on diskless workstations. He's right; security is the only good reason to use diskless workstations. But he's afraid that the company will seem like "Big Brother" if it implements this measure. Freedom of choice is a right to be cherished at home; it has limited application in the workplace. Companies should set standards and tell workers what applications to use and where to store the company's (not the workers') files. The workplace is not always one big happy family, and as an automation consultant, I've seen companies literally ruined by disgruntled employees. So keeping company data secure is not an option but a necessity.

David Reid
Palatine, Illinois

Better Learning With DOS 5.0

I find it sad that an educator like Stephen I. Klein overlooked the powerful tools of DOS 5.0 and recommended that his college not migrate to it [October *Letters*]. As a student of computer information systems, I see many students

BUILD TO SUIT.



Flow Charting™ 3

Now, you can create, update and print presentation-perfect flowcharts to your specifications—in no time!

Quick to master and a snap to use, Patton & Patton's flowcharting software is the standard of both large and small businesses around the world—and is available through all major software dealers.

See your dealer today! Or, for a "live," interactive demo disk, call: **800-525-0082**, ext. 2513
International: 408-778-6557, ext. 2513

Works on IBM & 100% compatible PC's, supports CGA/EGA/VGA and over 150 dot matrix and laser printers, with multiple print densities and 10 font sizes. Creates multi-page charts, portrait or landscape, on most standard paper sizes. Mouse or keyboard controlled.

IBM is a registered trademark of International Business Machines Corporation.



PATTON & PATTON
Software Corporation

Excellence in charting the flow of ideas!

POWER TIP NO. 230

Bold Numbers Form Clearer WordPerfect Outlines

If you use the outline feature in *WordPerfect*, text will wrap around to the left margin regardless of how far an outline element is indented. To make the outline easier to read, put the outline numbers in bold-face: Press <F6> before you press <Enter> to go to the next outline number. After the bold number appears, press <F6> to switch back to regular text.

Tom Crone
St. Louis Park, Minnesota

Circle 233 on reader service card

Performance That Improves With Age.

The world of tomorrow is full of uncertainty. Your business, your competition, the economy and certainly computer technology. The AcerPower 486SX personal workstation is one of the safest paths you can take to the future...because Acer is the company behind it.

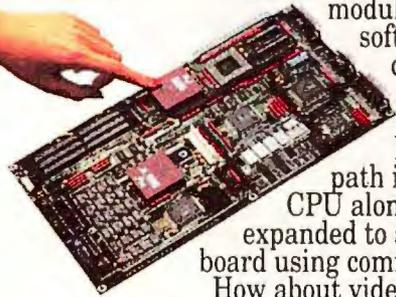


The AcerPower 486SX offers you today's latest technology with the easiest and least expensive means to future growth. Start with the new Intel486™ SX 20MHz processor whose performance exceeds today's 386DX-33MHz solutions – and whose cost is lower. Then tomorrow, when you need greater performance, upgrade your system to a 486DX-33MHz processor using Acer's ChipUp™ technology. By adding a CPU chip, not a module. No hardware or software changes. It can't get any easier or less expensive than this!

But, your growth path isn't limited to the CPU alone. Memory can be expanded to a full 98MB on-board using commercial SIMMs. How about video? UltraVGA 1024 x 768 x 16 colors. Expandable to 256 colors by adding additional memory.

At a price of \$2,495* the AcerPower 486SX is an exceptional value. We've included MS-DOS® 5.0, Microsoft® Windows™ 3.0 and PS/2®-style mouse. Along with much more to get you started.

The AcerPower 486SX is the smart investment for where you are today and where you need to be tomorrow.



Acer

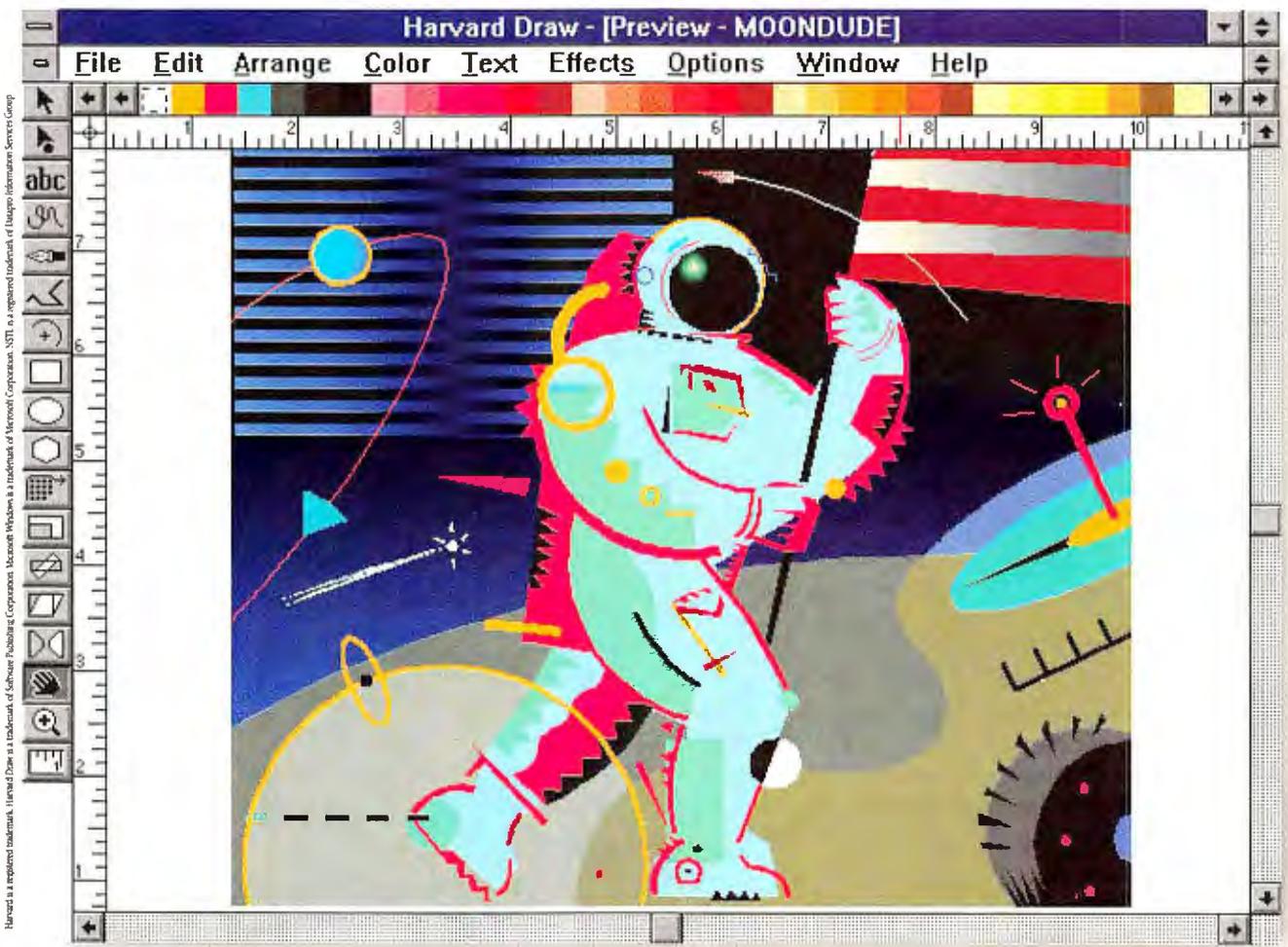
Your Global Partner in Computing

Acer America Corporation
401 Charcot Avenue • San Jose, CA 95131
1-800-SEE-ACER

*MSRP - Based on September 1, 1991 and subject to change without notice.

Acer and the Acer logo are registered trademarks and ChipUp is a trademark of Acer America Corporation and Acer Corporation. Intel Inside is a trademark of Intel Corporation. MS-DOS and Microsoft are registered trademarks and Windows is a trademark of Microsoft Corporation. PS/2 is a registered trademark of International Business Machines Corporation. Other products, brand names and companies mentioned are registered trademarks or trademarks of their respective companies.

Circle 3 on reader service card



2 hours and 28 minutes on Harvard Draw.

We urge you to draw

What can you do with Harvard® Draw for Windows™ that you can't do with CorelDRAW?

Save a great deal of time, that's what.*

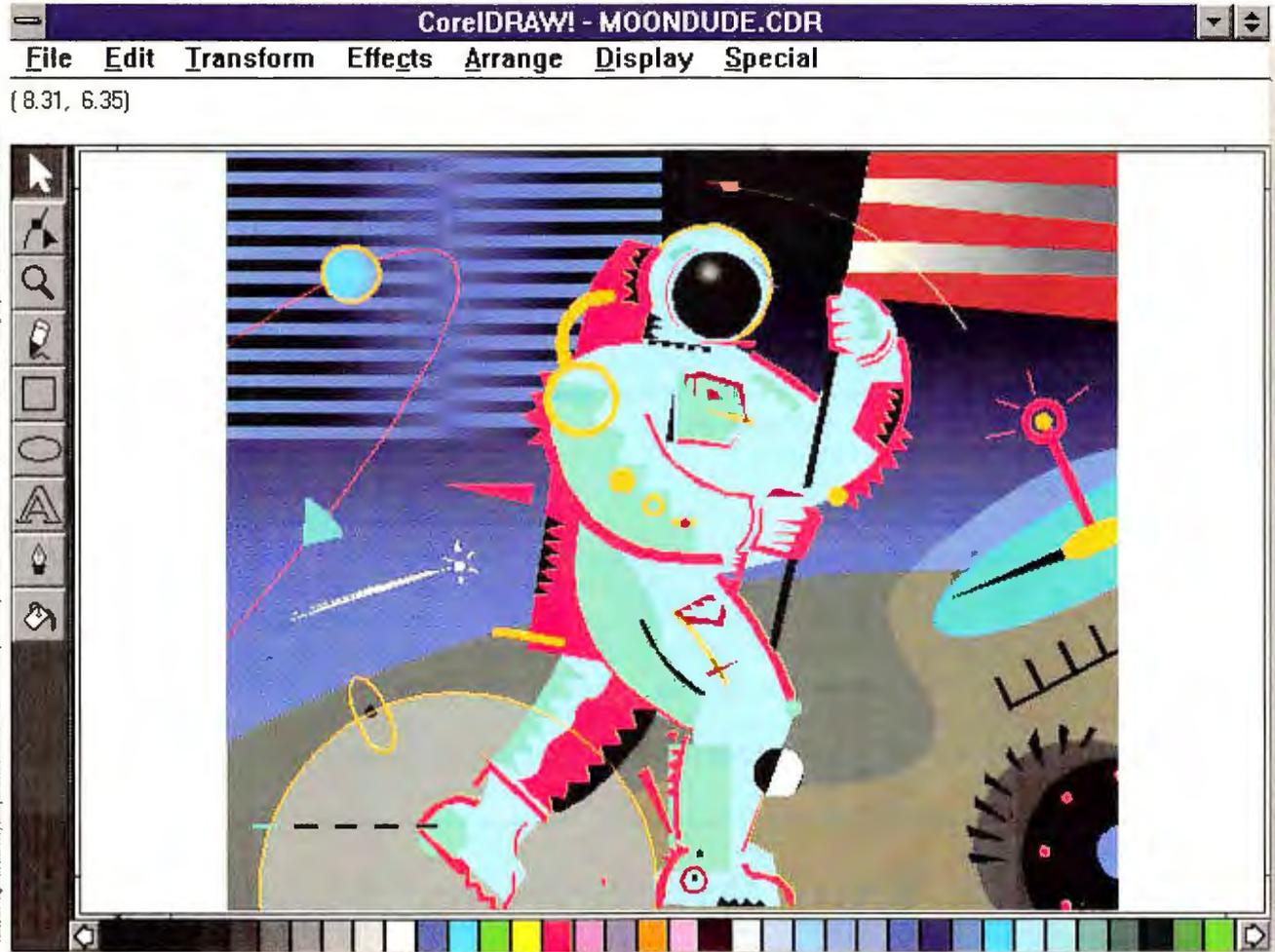
You see, Harvard Draw for Windows from Software Publishing Corporation lets you work a great deal faster than CorelDRAW.

\$99 Trade-Up Offer.
For a limited time, owners of qualifying drawing packages can trade up to Harvard Draw (MSRP \$595) for only \$99. Call today.

For instance, you can do your entire drawing in preview mode, complete with color fills and line widths. Which lets you see what you're drawing as you draw it.

Without jumping back and forth to wire frame. Our WYSIWYG text entry lets you save steps by typing text right into your drawing. Instead

We also urge you to call 1-800-336-8360, Operator 652, for a free Harvard Draw for Win



3 hours and 13 minutes on CorelDRAW.

your own conclusion.

of a dialog box. There's a multiple undo option so you can erase up to 16 actions in a row. And our integrated autotrace is right in the toolbox. So you don't have to leave the program to use it.



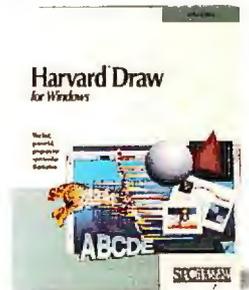
Moreover, in recent NSTL* benchmark tests, Harvard Draw proved several times faster than

CorelDRAW in screen re-draws and file saves. And faster in other ways as well.

The obvious conclusion? Harvard Draw for Windows is a winner. And you ought to try it.

Windows demo disk and a NSTL benchmark summary.

SPC SOFTWARE PUBLISHING CORPORATION



*Benchmarking was created by an experienced CorelDRAW user. For a summary of the test procedure and results visit to Harvard Draw, Software Publishing Corporation, 3155 Arden Road, San Jose, CA 95131

struggling with DOS 3.3. DOS 5.0's powerful improvements in function and interface make it the perfect operating system for educational use. It's too bad that decision makers in education bypass this kind of enhancement to DOS.

Dan P. Clark
Orange, California

Windows Accounting Differences

I'm distressed by the treatment of Teleware's *M.Y.O.B. 2.0* in your October *Windows* accounting review ["Windows Balances the Books"]. Teleware addressed the minor interface and documentation concerns before your review appeared. You wasted space on these trivialities while ignoring groundbreaking features. For example, you commented that the sample window shown lacked an OK button for "terminating an action." It doesn't need one! It's not an action window; it's an analysis and reference window. You're missing the mark if you expect sophisticated

reporting and graphing modules in *Windows* accounting. Modules symbolize the old straitjacket approach to accounting. If you're analyzing current receivables, you should be able to view the original invoice, jump to the customer's card and check the phone number, and review a list of prior contacts all without having to start a different module. *M.Y.O.B. for Windows* lets you dictate how to do your own accounting by providing a truly interactive program that's useful for an accountant but doesn't leave the neophyte behind.

Christopher P. Lee
Teleware
Rockaway, New Jersey

I received Teleware's update after my review of these packages was completed. I'm glad Teleware has addressed the interface deficiencies I noted, because they detracted from M.Y.O.B.'s more powerful features and general flexibility. The capabilities Mr.

Lee describes are useful, and although they are also found in some other accounting programs, M.Y.O.B. does let you easily move between and reference open accounting windows. Whether reporting and graphics are integrated or modular, they should be easy to use, and the interface changes should help M.Y.O.B., which has very good graphics features. However, traditional reporting functionality is one area where I feel all the Windows products are less robust than their DOS siblings.

—Richard Morochove

The Changing Price of DesignCAD

Why in the PC world did your October "Buyers' Guide: Low-Cost CAD" list only *DesignCAD 2D* and price it at \$349 when an ad from its publisher in the same issue lists *DesignCAD 2D* at \$299 and also promotes its latest product, *DesignCAD 3D*, for \$399?

Ralph Flye
Gunnison, Colorado



Your Passport to Translation!

The Language Assistant Series From MicroTac Software.

Translating text is fast and easy with the Language Assistant Series: Spanish Assistant, French Assistant, German Assistant and Italian Assistant.

The Language Assistants translate simple English documents by analyzing individual sentences. They translate words, search for phrases, conjugate verbs, provide gender and number agreement, and work with word order.

The Language Assistants instantly give you the power to communicate basic concepts in a foreign language, and provide a foundation for more advanced communication.

- ▶ Helps you translate and write while improving your foreign language skills
- ▶ Pop up help with powerful reference tools

- ▶ Easily add foreign and accented characters
- ▶ Plus: On-line bilingual dictionaries, verb conjugator, grammar help topics, and more!

Only \$79.95-Order Now!

Give your PC bilingual power with Spanish Assistant, French Assistant, German Assistant and Italian Assistant. 30-day money-back guarantee.

See Your Software Dealer or Call:
(800) 366-4170



FRENCH ITALIAN GERMAN

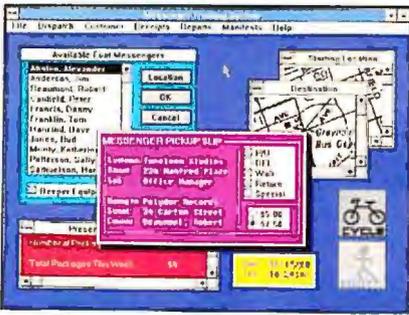
MICROTAC SOFTWARE
4655 Cass St., Suite 214, San Diego, CA 92109
(800) 366-4170 • (619) 272-5700 • Fax: (619) 272-9734

System Requirements:
IBM or compatible PC, DOS 2.0 or above, 512K RAM and a hard disk

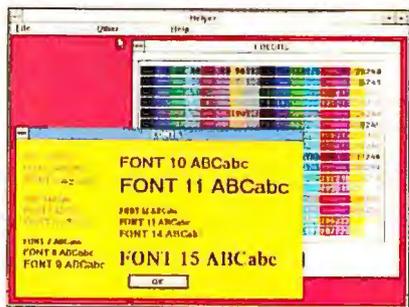
Free Developers' Workshops.
Call 1-800-645-3003 Today
For The Location Nearest You.

Attention All dBASE Users: Your Windows Have Arrived.

Introducing new dBFast™. The first and only dBASE™ compatible database and dBASE/X-Base language for Windows. It's the fastest, smartest and easiest way for millions of users and developers to join the Windows revolution.



dBFast helps you create powerful, graphical database applications quickly and easily with pull-down menus, check boxes, radio buttons and even bitmap images.



Your applications will really come to life with multiple colors and fonts.

Graphical, colorful dBFast will bring new life to all of your existing dBASE programs.

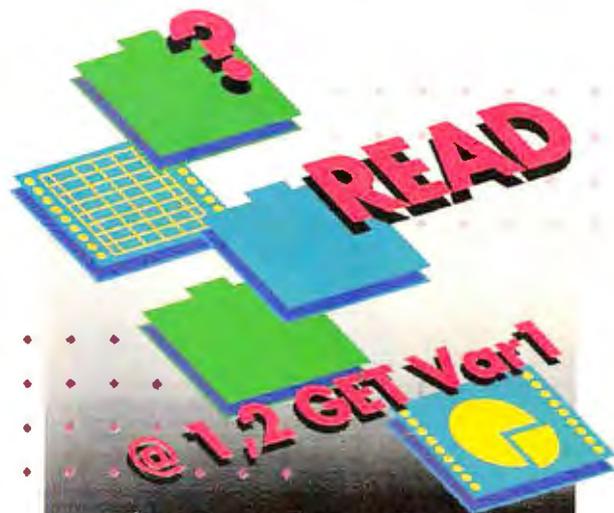
Liven them up with multiple, movable windows, pull-down menus, check boxes, dialog boxes, radio buttons, push buttons and bitmap pictures.



dBFast also helps you create new dBASE programs quickly and easily.

© Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787. All trade names referenced are trademarks or registered trademarks of their respective companies. dBASE is a registered trademark of Ashton-Tate Corporation.

dBFast™



The Complete dBASE
Compatible System
For Microsoft Windows

COMPUTER ASSOCIATES
Software support by design.

Unlike other Windows development systems that force you to learn a new language, dBFast allows dBASE, Fox and Clipper developers to use the language they already know with more than 200 extensions and an interactive editor, compiler and linker.

And full industry standard DDE and DLL protocols allow your programs to communicate with other

Windows applications.

So call 1-800-645-3003 and we'll rush you a free Demo Disk.

Call right now.

After all, haven't you waited long enough?

COMPUTER ASSOCIATES
Software superior by design.

dBFast™

Circle 42 on reader service card

**WE DROPPED THE PRICE
OF OUR COMPUTER,
SO YOU WON'T HAVE TO
BUY A CHEAP ONE.**



\$159



All prices and specifications are subject to change without notice. **Payment based on 36-month, open-end lease. Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell is a registered trademark and TechFax is a service mark of Dell Computer Corporation. 1991 J.D. Power and Associates® Computer End User Satisfaction Study, Phase I: Office Based Small to Medium Sized Businesses. Responses from Business End Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with between

1 and 499 employees. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J.D. Power and Associates is a registered service mark of J.D. Power and Associates. MS-DOS is a registered trademark and Windows is a trademark of Microsoft Corporation. ©386 and the Intel Inside Logo are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. [△]Service provided by third party provider. On-site service may not be available in certain remote locations. Shipping, handling and applicable sales tax not included in the price. ©1991 Dell Computer Corporation. All rights reserved.



Lease^o: \$60/MO.**

TECH STUFF

i386™SX 16 MHz processor ◀ 2 MB RAM (expandable to 6 MB) ◀ 40 MB - 28ms IDE Hard Drive ◀ 640 x 480 .39mm VGA Color Monitor ◀ 5.25" 1.2MB or 3.5" 1.44 MB Floppy Drive ◀ Supports resolutions up to 1024 x 768 ◀ Novell certified

SERVICE AND SUPPORT

On-site desk-side service contract included in the system price the first year^a ◀ Toll-free technical support hotline ◀ Toll-free TechFax™ line for 24-hour system information ◀ On-line Bulletin Board communication with technical staff and other users ◀ Self-diagnostic software ◀ Free factory installation of selected MS-DOS® software applications ◀ Backed by Dell which has become a \$546 million international business in only 7 years ◀ Information Service Support Forum on CompuServe

COMPANY AWARDS

Dell has won *PC Week* Corporate Satisfaction Polls an unprecedented 8 times ★ Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D. Power and Associates® Customer Satisfaction Index ★ Dell has won *PC World's* 1991 World Class Award for Best Service and Support/Hardware



To order, call. Please reference 11D58

8 0 0 - 2 8 3 - 0 0 8 8

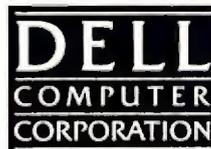
Mon-Fri. between 7am-9pm CT, Sat 8am-4pm CT, Sun 10am-3pm CT ◀ In Canada, (800) 668-3021 ◀ In Mexico, 95-800-010-0664 ◀ Custom-built and shipped with a 30-day no questions asked money-back guarantee

Now you don't have to settle for less just because you have less to spend.

Dell just lowered the price of the 316SX to \$1,599. Which gets you everything you need to run Windows™ for a price that won't make you jump out of one.

And even at this smaller price, you still get the big advantage of dealing directly with Dell. The company that's become one of the most awarded PC companies in the world by designing, building and rigorously testing our computers ourselves. By backing each one with a service and support package described as "overkill" by the editors of *PC Week*. And by doing it without the mark-ups and hassles of traditional retail channels. So though the Dell®316SX is quite inexpensive, it's anything but cheap. And now we've dropped the price.

So what are you waiting for? Pick up the phone.



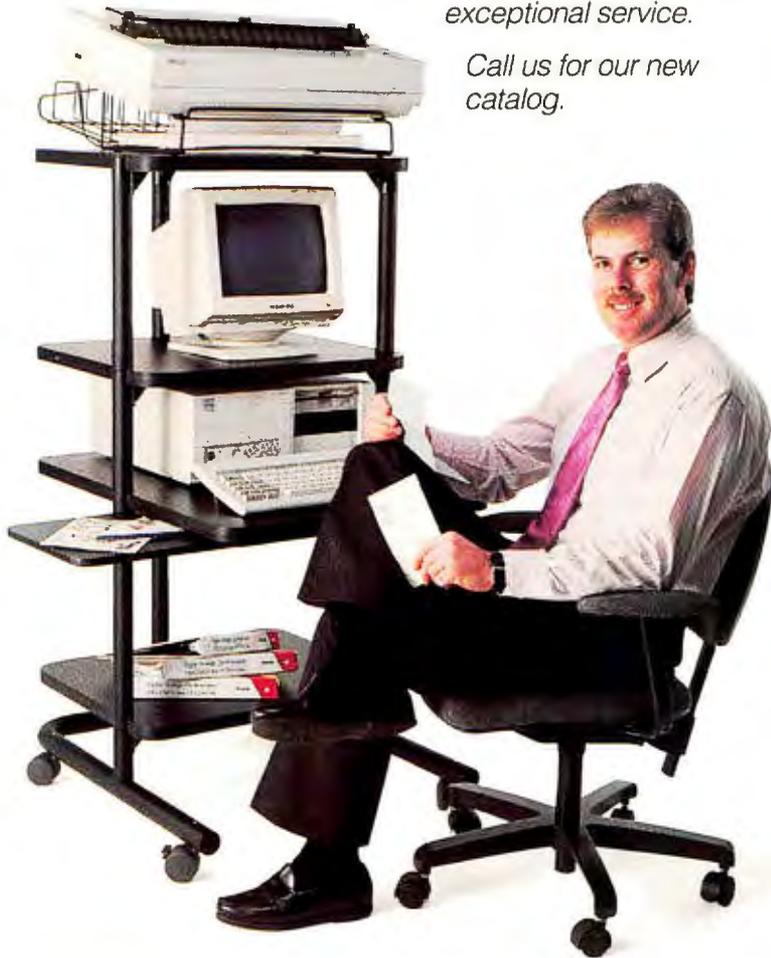
Circle 74 on reader service card

AnthroCart®

The best furniture you can buy for your equipment. Incredibly strong. Mobile. Flexible. Space saving. Lifetime warranty.

Choose different sizes and colors. Add the accessories you want. Discover Anthro's exceptional service.

Call us for our new catalog.



Free Catalog:
800-325-3841
6:30 AM to 5:00 PM PST



ANTHRO
Technology Furniture

3221 N.W. Yeon St.
Portland, OR 97210
(503)241-7113
Fax: (503)241-1619

GSA contract No GS-00F-5040A
Available for OEM applications
Made in USA
Prices start from \$159
We ship in 48 hours

Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.



LETTERS

Ad inclusions are often received after editorial deadlines, so this kind of late-breaking information sometimes appears first in an advertisement. For more information on DesignCAD, contact American Small Business Computers, One American Way, Pryor, OK 74361, 918/825-4844, 918/825-6359 (fax). —Ed

Corrections and Clarifications

Our November review "20-MHz Notebooks: SX Road Runners" had errors in the Service and Support section of the Features Evaluation. Altima doesn't have weekend support, and Librex does have central phone support.

Send your reactions, responses, and ideas to Letters, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your name, city, state, and phone number. We reserve the right to edit letters. ☺

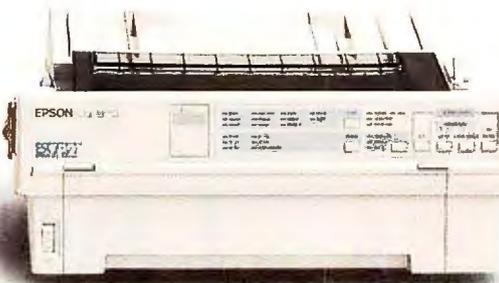
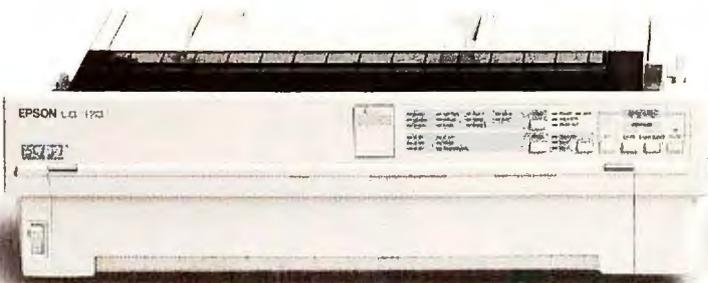
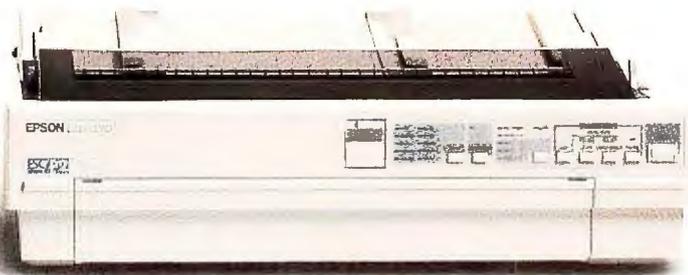
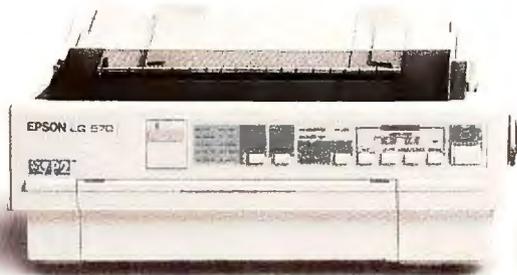
POWER TIP NO. 231

Quick Rip-Offs With Your Epson Compatible

Many Epson-compatible printers have an auto-advance feature that moves the paper to a tear-off position after a form-feed and a few seconds' pause. On my FX-1050 wide-carriage printer, I discovered that pressing the On Line button twice immediately after a formfeed eliminates the pause and forces the printer to advance the page right away. This saves a lot of thumb twirling when you're in a hurry and need to print several small documents.

Tom Swan
Lititz, Pennsylvania

Presenting
The Next Page
In Printer History.
From The Company
That Printed
The First.



Funny how history has a way of repeating itself. Year after year—actually for the past 25—Epson® has been the leader in dot matrix printing technology.

Introducing six reasons why that leadership is sure to continue: the letter-quality Epson LQ-570, LQ-870, LQ-1070, LQ-1170, ActionPrinter™ 5000 and ActionPrinter 5500.

More Paths To Success.

For sheer paper handling flexibility, no other printer—dot matrix, ink jet or laser—handles quite as well as these.

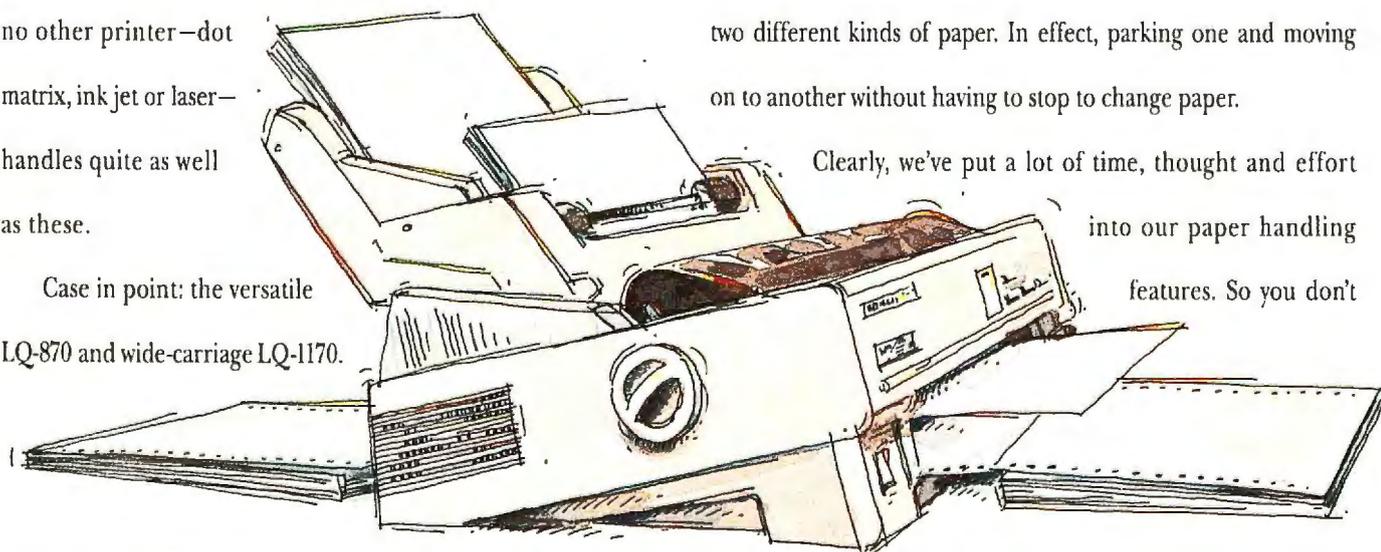
Case in point: the versatile LQ-870 and wide-carriage LQ-1170.

When fully loaded, these printers put as many as five types of paper at your fingertips. Everything from letterhead to continuous-form checks, four-part forms, tractor-feed paper, even envelopes.

All our printers can automatically handle 50 sheets using our optional single-sheet feeder. Add our high-capacity feeder and you're quickly up to 200.

Then there's Epson SmartPark™ paper handling. At the press of a button and flick of a lever, you can easily switch between two different kinds of paper. In effect, parking one and moving on to another without having to stop to change paper.

Clearly, we've put a lot of time, thought and effort into our paper handling features. So you don't



With five different paper paths to draw from at any moment, an Epson LQ printer is as versatile as it is dependable.

have to put much time, thought or effort into using them.

you'll get superior output quality and faster throughput speeds.

Scale New Heights.

Each new Epson printer comes with a new industry-setting standard—ESC/P2™. This breakthrough printer control system brings scalable fonts to dot matrix printing.

Simply put, type sizes are no longer as limited. So now you can do things with a 24-pin printer that before could only be done with a laser. And you don't have to give up one bit of paper handling flexibility to do it.

Graphically Superior.

What ESC/P2 does for type, it also does for graphics. Brilliantly.

It includes an enhanced Windows™ driver, exclusive to Epson.

When you print from any program running in Windows,

SCALABLE FONTS

With a new Epson I.Q. printer, you can print a variety of type in a variety of sizes, up to 32 point.

But don't just take our word for it. Take a look at the quality of our graphics instead.

Built For The Long Run.

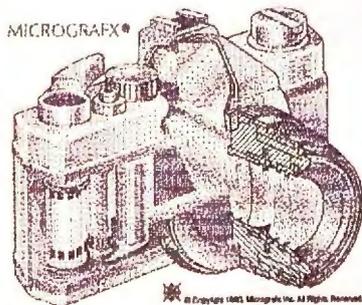
Epson printers aren't only designed with more firsts, they're designed to last. Each is backed by a generous 2-year limited warranty. As well as a helpful toll-free 800 number to provide you with dependable, expert assistance.



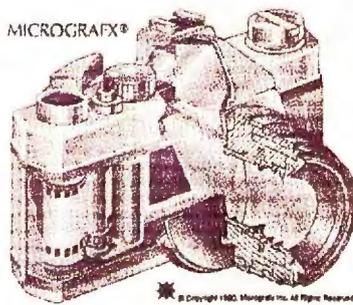
One more thing you can always depend on: Epson reliability.

It isn't a claim just any printer company can make. It's a quality—a character trait—our products have earned over time.

To see the latest printer innovations firsthand, visit your nearby Epson dealer, or call 800-289-3776. And see why, after more than 25 years, Epson is still the first name in dot matrix printing.



(Before.)



(Now.)

Epson's enhanced Windows driver improves not only the look of your text and graphics, but the speed at which they print.

EPSON



Desktops



Dot Matrix



Notebooks



Lasers



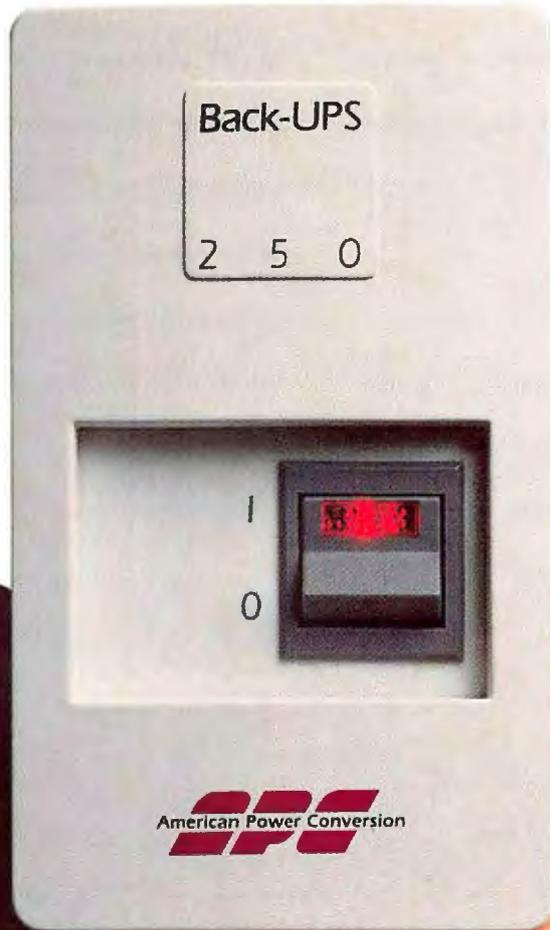
Servers

Get a hold of the best value in LAN power protection for just **\$169** suggested list price

Blackouts, brownouts, sags...
Your data and hardware are vulnerable to problems that surge suppressors and power directors are just not equipped to handle.

Now there's a complete Uninterruptible Power Supply solution to suit any budget. The Back-UPS™ 250 is reliable protection for LAN nodes, 386SX machines, 286, small PS/2 systems, and internetworking hardware such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS Series will increase your productivity by providing a cost-effective solution to power problems. Call for your free power protection handbook.



The **NEW Back-UPS 250** offers even more cost-effective protection for LAN nodes (typical runtime for a 386SX system is 10 minutes).

- Full-time surge protection and line filtering
- Models from 250 to 1200 Volt-Amps, many with LAN interface for automatic-shutdown of Novell, LAN Manager, LAN Server, LANtastic, Banyan, SCO Unix, SunOS, AIX etc.
- UL, CSA and Novell approved with a 2 year warranty
- 230V models available
- Ask about PowerChute® UPS monitoring software and Novell-compatible UPS monitoring boards



	Model	Application	List
NEW!	Back-UPS 250	386SX, 286, XT, AT, internet hardware, POS	\$169
NEW!	Back-UPS 400	Desktop 386, 486 systems, 286 servers	\$249
NEW!	Back-UPS 450	Tower 386, 486 systems, servers	\$329
NEW!	Back-UPS 600	Heavily configured systems, CAD/CAM workstations	\$449
	Back-UPS 800RT	Multiple systems, longer runtime applications	\$899
	Back-UPS 1200VX	Multiple systems, LAN hubs, small minis, telecom equipment	\$1199

The Back-UPS™
by American Power Conversion
800-541-8896, Dpt. P3
33-1-60078500 in Europe
Circle 45 on reader service card



THE HELP SCREEN

PC World offers answers and advice at every level

Karl Koessel and Robert Lauriston

Using 360K Disks in a High-Density Drive

Q. *I bought a used XT clone from a friend, figuring I'd no longer be stuck in the office all weekend when my workload got heavy. My plan hasn't worked, though, because I can't manage to transfer data from the 386 in my office to my XT at home.*

I know the XT can't read the high-density, 1.2MB disks the 386 uses, so I used `FORMAT A: /4` on the 386 to format a standard double-density disk to 360K. My XT couldn't read it. Next I formatted a 360K disk on my XT and took it back to the office. My 386 was able to read the disk just fine, so I saved a file to it and took it back home. My XT seemed to read the disk okay (the `DIR` command worked), but when I tried to retrieve the file, I got error messages.

I've tried half a dozen brands of disks without success. I even bought a disk drive cleaning kit and used it on both drives—still no luck. The crazy thing is, other people in the office with XTs at home don't have this problem. What's going on, and how can I fix it?

J. M. Fortier

Montreal, Quebec, Canada

A. It's not unusual to have this problem with 360K floppy drives, though as you've discovered from your co-workers, it's far from universal.

Your XT's 5¼-inch floppy drive writes 40 tracks on each side of a 360K disk. These tracks produce strong magnetic signals, so your 386 has no trouble reading them. The 5¼-inch drives in 286 (AT) and later systems use a smaller drive head that writes a thinner, magnetically weaker track, so they can fit 80 tracks on each side of a high-density 1.2MB disk. When you format 360K disks in these drives, the tracks are still just as narrow, and your XT's drive isn't sensitive enough to read them.

When you save a file from your 386 to a floppy formatted on your XT, the 386's drive rewrites the disk's File Allocation Table (or FAT, which DOS uses to keep track of where the parts of files are located on the disk), the disk's directory, and the parts of the disk that hold the file you're saving. Your `DIR` command works (sometimes) because the FAT and the directory occupy outer tracks, which, because they are longer, hold magnetic signals better than inner tracks do. But when your XT's drive tries to read the file data on the inner (now narrow and weak) tracks, you get error messages. Your co-workers don't have that problem with their XTs because some 360K drives are sensitive enough to read the weaker tracks.

One possible solution is to replace your existing drive with a new, more sensitive 360K unit. Another would be to install a high-density drive in your XT along with a special controller board. However, it doesn't make sense to invest that much money in an upgrade. For a couple hundred bucks more, you can pick up a new 286 clone

and get a high-density floppy drive with a major speed boost, too.

Back Up Laptop to Desktop's Tape Drive

Q. *I regularly back up my laptop's 30MB hard disk to my desktop's tape drive. I use LapLink to copy the laptop's files to a directory on the desktop's 150MB hard drive, back up that directory to tape, then delete the directory. This is tedious and seems like a waste of time—isn't there some way I can back up the laptop's hard drive directly to the desktop's tape?*

Carl E. Lindquist

Bridgewater, New Jersey

A. You want a "zero slot" LAN, like *The \$25 Network* or *LANtastic Z*. Both hook two computers together using a null-modem cable (just as *LapLink* does), and each computer's hard disk shows up as an additional logical drive on the other system. For example, if your desktop's hard disk is configured as one big C: drive, the laptop's hard drive would show up as D:. Then you just fire up your tape utility and back up D: straight to tape.

WHERE TO BUY

The \$25 Network

Information Modes
P.O. Drawer F
Denton, TX 76202
800/628-7992, 817/387-3339
LIST PRICE: \$25

Reader service no. 614

LANtastic Z

Artisoft, Inc.
Artisoft Campus
691 E. River Rd.
Tucson, AZ 85704
602/293-6363, 602/293-8065 (fax)
LIST PRICE: \$125

Reader service no. 615

I Can't Hear Myself Think

Q. *I like almost everything about my new 386. It's got plenty of RAM, ample hard disk space, and even a tape drive for easy backups. There's just one problem: The fan is so loud that when I get a long-distance phone call, I sometimes have to transfer it to another phone at a quieter desk. Can I replace the noisy fan with something better?*

Kate Walker
Archer, Florida

A. A California commodities trader encountered the same problem a few years ago. When he couldn't find a quieter fan, he started his own company, PC Power & Cooling, to make noise-busting replacement parts.

The company claims its Silencer power supplies are at least 70 percent quieter than others. (Because the power supply and fan are a single assembly, you need to replace the whole thing.) On top of that, a thermostat embedded in

the fan hub measures the exhaust temperature and adjusts the fan speed so it's no faster than necessary. Depending on room temperature and how many boards and drives you have in the box, PC Power says this may result in a 10 to 20 percent additional noise reduction. As a bonus, the Silencers have built-in line conditioning that compensates for spikes up to 6000 volts, brownouts as low as 80 volts, and surges up to 140 volts.

WHERE TO BUY

Silencer 220, Silencer 270
PC Power & Cooling, Inc.
5995 Avenida Encinas
Carlsbad, CA 92008
800/722-6555, 619/931-6988 (fax)
LIST PRICE: 220-watt \$139, 270-watt \$179
Reader service no. 617

Removing a Spaced-Out File

Q. *I recently installed a program on my hard disk, didn't like it, and decided to remove it. I was able to delete*

*every file but one—VAL ID.LST. The DOS command DEL VAL ID.LST doesn't work. I don't want to use DEL *.* because there are important files in the directory that I don't want to delete. How can I get rid of this file?*

Scott S. Handler
Corpus Christi, Texas

A. You can get rid of that file using DOS's single-character wild card, the question mark. Change to the file's directory and issue the DOS command **DIR VAL?ID.LST** to check the directory for similarly named files you want to keep. Then type **DEL** and press **<F3><Enter>** to delete the file. If you get an 'Access denied' message, use the command **ATTRIB -R VAL?ID.LST** to turn off the read-only flag, then use **DEL VAL?ID.LST** again.

Where Are My Megabytes?

Q. *I've had my 286 for almost five years now. Cleaning out some files, I came across the invoice for the system*

The Dental Flossopher

Vol. I No. 1

Well, I have finally gotten around to writing my own newsletter. This is not a professional printer's job by any stretch of the imagination, but I hope to inform and entertain those who are precious to me, my patients.

Thank you,
Dr. Jeff Ausen

Something to Cheer About?

I think so, but that is the question surrounding the current debate in dentistry over whether to use amalgam (things) or composite (things) restorative materials. The new technology of composite restoratives has served the dental profession well for many years, and there are some good reasons to imagine that composite restoratives could approach the performance of both longevity and appearance. Now, however, I think it is time that this debate should come to an end. Why do we still use amalgam restoratives that do not have the appearance of composite restoratives?

After all the decay has been removed from a tooth, it is weaker because it has a hole in it. If amalgam is to be placed, that hole must be made even larger, which further weakens the tooth. The amalgam that is then placed does nothing to strengthen the tooth that is filled. With composites the opposite is true. In fact, because composites are bonded into place the finished restored tooth is stronger than it was before it was decayed! In other words, the result is stronger than a virgin tooth. *This is absolutely revolutionary!*

Concerning the esthetics, or how all seen how those "silver" fillings does not seem important to some patients. But, there are the occasional smiles that you notice the black or silver guys. In these situations the difference that can be effected by bonded amalgams, when they fail, is composites.

The mercury content of amalgam is a sensitive issue. The American Dental Association believes amalgam is safe and that it does not harm because of the mercury level, but there are scientists that disagree. A strong movement in the Scandinavian countries to have amalgam outlawed. There have even been demonstrations and marches promoting such a ban. In this country there are presently 14 states that have had

Winter 1991

How Dr. Jeff Ausen keeps his patients smiling between fillings.

He uses Express Publisher 2.0 to create this clever and professional newsletter. It's a painless way for Dr. Jeff to "flossophize" and keep in touch with his patients.

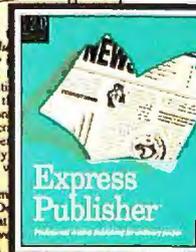
The leading DOS desktop publisher for under \$160. Express Publisher won *Compute Magazine's* 1991 Choice Award for ease of use and publishing power. It comes complete with eight fonts you can instantly size, and over 100 clip art images. Only Express Publisher gives you TextEffects™, which let you curve, rotate and shadow text for eye-catching logos, headlines, bursts and more.

Dr. Ausen uses Express Publisher to easily create professional-looking newsletters. And you can too - without taking a bite out of your time or your wallet.

SPECIAL OFFER: If you already own any other desktop publisher, trade up to Express Publisher for just \$49.95!*

To order, or for the dealer nearest you, call 1-800-851-2917, Ext. M130 7 a.m. - 5 p.m. PST

*Offer good only in the U.S. Send the title page of your current desktop publisher, this ad and a check for \$49.95 plus \$4.95 shipping & handling payable to Power Up Software. Residents of CA, CT, IL, MA, NY, TX, PA, WA add applicable sales tax. Please specify 3.5" or 5.25" disks. Offer expires 6/30/92. Express Publisher and TextEffects are trademarks and Power Up! is a registered trademark of Power Up Software Corp., 2929 Campus Drive, P.O. Box 7600, San Mateo, CA 94403-7600.



Express Publisher
Professional desktop publishing for ordinary people



Power Up!



DOS VERSION

swap hard drives or add boards without having to worry about interrupting other people's work. If the main server went down, the other one would take over immediately and transparently—the users wouldn't even realize that anything had happened. But until it's real for NetWare, you'll have to try one of the following alternatives.

If your network doesn't include Windows or Macintosh workstations, check out *No-Stop Network*. It uses a 9K TSR on each DOS workstation. Whenever a user writes to disk (saves a file) on the primary server, the TSR duplicates it on the backup server. If the primary server fails, the TSR redirects all that workstation's reads and writes to the secondary server. Data base transactions are not interrupted—the backup server simply continues the transaction, oblivious to the primary server's crash. *No-Stop* resynchronizes the servers after the primary server is brought back up, but all users have to log off for a few

minutes.

If your LAN includes Macs or PCs running *Windows*, check out *ARCserve*. This utility backs up selected directories to the secondary server as often as you choose—say, every 15 minutes. It's not as slick as *No-Stop*: When the primary server fails, users have to log on to the secondary file server manually, restart their applications, and reen-ter any data that was added after the last *ARCserve* backup. Also, files that are open at the time of the backup will not be copied to the secondary server. You can minimize this problem by using NetWare's Watchdog feature to log out all workstations momentarily at a time of minimal network usage and perform a backup then.

WHERE TO BUY

No-Stop Network

No-Stop Network, Ltd.
20 Waterside
New York, NY 10010
212/481-8488, 212/779-2956 (fax)

LIST PRICE: for 5 workstations \$1290, additional stations \$25 each
Reader service no. 618

ARCserve

Cheyenne Software, Inc.
55 Bryant Ave.
Roslyn, NY 11576
800/243-9462
LIST PRICE: for NetWare 2.x \$1195; for NetWare 3.x \$1895
Reader service no. 619

Send your questions to Robert Lauriston, CompuServe 73707,1731; MCI Mail 381-7106; Internet duck@well.sf.ca.us; or 415/442-1891 (fax); or mail them to The Help Screen, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☹

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.



The fast track to effective presentations.

The low-cost presentation graphics program that's easy to learn, use and remember.

New Express Presenter™ gives you everything you need to create and manage a complete winning business presentation – for under \$250. **More than just a pretty face.** There's more to a first class presentation than good-looking output. Create eye-catching charts or overheads using a wide variety of pre-formatted chart types, or easily edit your own designs. Express Presenter's unique StyleMasters™ and its Master Charts save time while ensuring professional layouts, fonts and colors. Using StyleMasters and Master Charts, it's easy to repeat logos, backgrounds and borders consistently across an entire presentation. Review and organize your presentation with title, slide and storyboard sorters. Add speaker notes and check for spelling errors automatically. True WYSIWYG draw and annotation features let you work *directly* on charts, saving guesswork and time.

Get high-powered presentations without the high price tag, with new Express Presenter.

PowerUp! To order, or for the dealer nearest you, call 1-800-851-2917 Ext. M600 7 a.m. - 5 p.m. PST

Express Presenter and StyleMasters are trademarks and PowerUp! is a registered trademark of PowerUp Software Corporation

One step ahead of the rest...

Quality

NOBEL 386SX \$1295

- INTEL 80386SX-16MHz CPU
- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 2 MB System RAM
- 52 MB IDE Hard Drive 17ms
- 14" VGA Anti Glare Color Monitor
- 16 Bit 512K SVGA Adapter
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- OmniKey/101 KBbyNorthgate

OPTIONS

- 20 MHz CPU, 32K Cache
- 2, 4, 8 MB System RAM
- 90, 125 MB Hard Drive

Service

NOBEL 386-33 \$1945

- INTEL 80386-33MHz CPU
- 64K Static Cache RAM
- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 4 MB (60 ns) System RAM
- 125 MB IDE Hard Drive w/ 64K Cache 16ms
- 14" Non-Int. Flicker Free 1024X768 SVGA monitor
- 16 Bit (1MB) SVGA Adapter
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- Tower or Desktop Case
- OmniKey/101 KBbyNorthgate

OPTIONS

- 25 MHz CPU
- 8, 16, 32 MB RAM
- 90, 200 MB Hard Drive
- 15" NI Flat Screen Display



Price

NOBEL 486SX \$2095

- INTEL 80486SX-20MHz CPU
- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 4 MB (60 ns) System RAM
- 125 MB IDE Hard Drive w/ 64K Cache 15ms
- 14" Non-Int. Flicker Free 1024X768 SVGA Monitor
- 16 Bit (1MB) SVGA Adapter
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- Tower or Desktop Case
- OmniKey/101 KBbyNorthgate

OPTIONS

- 8, 16, 32 MB RAM
- 90, 200 MB Hard Drive
- 15" NI Flat Screen Display

Power

NOBEL 486-33 \$2795

- INTEL 80486-33MHz CPU
- 258K Static Cache RAM**
- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 4 MB System RAM
- 200 MB IDE Hard Drive w/ 64K Cache 15ms
- 14" Non-Int. Flicker Free 1024X768 Color Monitor
- 16 Bit (1MB) SVGA Card
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- Tower or Desktop Case
- OmniKey/101 KBbyNorthgate

OPTIONS

- 25 Mhz CPU, 128K Cache
- 8, 16, 32, 64 MB RAM
- 125, 330 MB Hard Drive
- 15" NI Flat Screen Display

STANDARD SYSTEM FEATURES

- 30-Day Money Back Guarantee
- 2 Year Labor / 1 Year Parts Warranty
- Lifetime Toll Free Technical Support
- Government Purchase Orders
- Custom Configurations
- Free Overnight Replacement
- 48 Hours System Burn-In
- Corporate Leasing Options



ACCEL

... The Computer Company ®

1-800-486-6700

SALE HOURS: Weekdays 9:30 - 7:30 (EST)
Saturday 10:00 - 6:00 (EST)



Prices are subject to change. Prices do not include shipping. Money Back Guarantee excludes all shipping charges. OmniKey, MS DOS, Windows, Intel are trademarks or registered trademarks of their respective companies.

Circle 189 on reader service card



This is what you get
out of a \$4999,
plain paper, 300 dpi,
PostScript language
compatible printer.



Then again, so's this.

The choice is yours. You can stick with plain old black and white laser printing. Or you can pick the new Seiko Instruments Personal ColorPoint printer, and get rich laser-quality color documents.

You'll get sharp 300 dpi images on laser plain paper and transparencies. Speedy RISC processing. 100% PostScript language compatibility. And the ability to connect to Macintosh, PCs, and UNIX workstations simultaneously.

All for a monochrome price.

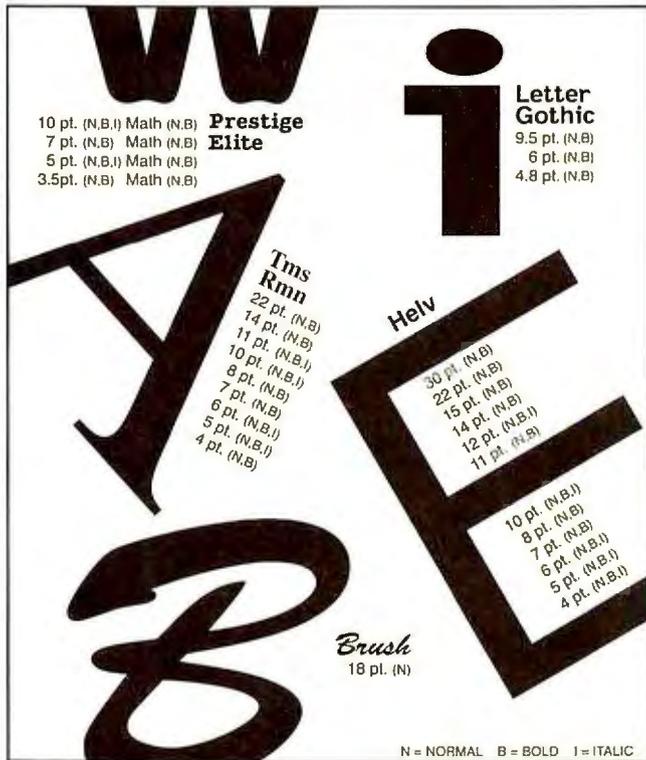
Which means switching to color is a black and white choice. So for your nearest Personal ColorPoint dealer, call 1-800-873-4561, department SI-P8.



Introducing the Personal ColorPoint printer.

SII 
Seiko Instruments

How to put all of these in your DeskJet printer,

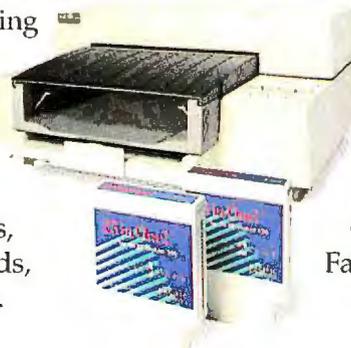


and keep more of these in your pocket.

When you want just the right fonts for both personal and business documents, turn to 25 in One!TM for DeskJet, the all-in-one printing solution from Pacific Data Products.

The 25 in One! for DeskJet package comes in two versions, one for the HP DeskJet Plus and the other for the HP DeskJet 500. Each version contains two megafont cartridges with all the high-quality bitmapped fonts you need for your word processing, spreadsheet, and desktop publishing applications. And since 25 in One! for DeskJet offers fonts that would require you to purchase seven HP DeskJet cartridges, you'll save something besides just shelf space...like CASH!

The suggested retail price for the HP DeskJet Plus or 500 version of 25 in One! for DeskJet is only \$149 — a substantial savings over having to purchase separate cartridges, whether you count it in Dollars, Pounds, Francs, Marks, Lira, or something else.



And 25 in One! for DeskJet includes 11 and 22 point fonts not offered in the HP cartridges.

25 in One! for DeskJet contains the most popular typefaces, including Tms Rmn, Helv, Prestige Elite and Letter Gothic, in the sizes and styles that you can use everyday. And it's compatible with the popular WordPerfect 5.1, Microsoft Word 5 and 5.5, and Microsoft Windows 3.0 software applications.

So if you're looking for more fonts for your HP DeskJet Plus or 500 printer, call your nearest dealer and ask for the low-cost, easy-to-use solution, 25 in One! for DeskJet. For information on our other popular, cost-effective printer enhancement products, contact Pacific Data Products, Inc., 9125 Rehco Road, San Diego, California 92121, U.S.A.

(619) 597-4695
Fax (619) 552-0889

PACIFIC
DATA PRODUCTS

Fonts displayed in the illustration above are from both versions of 25 in One! for DeskJet. The font selection for each version varies slightly.

25 in One! is a trademark of Pacific Data Products, Inc. HP and DeskJet are registered trademarks of Hewlett-Packard Company. All other trade names referenced are the trademarks or registered trademarks of the respective manufacturer.

EUROPEAN OFFICES: Geneva Tel (41) 22.41.26.50, Fax (41) 22.41.06.82, France Tel (33) 1 39 23 20 00, Fax (33) 1 39 63 31 20, U.K. Tel (44) 442 23 14 14, Fax (44) 442 23 65 40

©1991 Pacific Data Products, Inc.



CONSUMER WATCH

Advice and information for
the computer consumer

Christine Whyte

Recycling Toner Cartridges

Environmental alert to laser printer users: The EPA tells us that half of this country's 5500 operating landfills will be full by 1995. Discarded laser printer toner cartridges contribute in no small measure to this crisis. According to market researcher BIS Strategic Decisions in Norwell, Massachusetts, 98 percent of the 15 million cartridges sold in 1991 will eventually end up in landfills.

This is where you come in—by recycling your used toner cartridges and replacing them with remanufactured cartridges, you can reduce the number that are thrown away each year. Since only about 15 percent of cartridges were recycled in 1991, everyone's effort to recycle can make a difference.

You can also save money while helping the environment. Not only can you get cash for your old cartridges, you'll pay less for replacements: The typical street price for a remanufactured cartridge is \$40 to \$60 compared with \$75 to \$90 for a new one. Volume prices may be even lower.

What do you do with your used cartridges? Companies that sell remanufactured cartridges pay up to \$10 for

the Canon SX cartridge used in 70 percent of desktop laser printers, including Hewlett-Packard LaserJets. You can find these companies in the Yellow Pages under *Computer Supplies* or *Copier Supplies* and sometimes in ads in the business section of local newspapers or in computer publications. You can also call Cheryle White, editor of *Recharger* magazine, which maintains a data base of 5000 U.S. cartridge recyclers.

Two of the national companies are Qume and Dataproducts. Qume will send you a carton for your Canon SX cartridge with a prepaid UPS label; all cartridge parts will be recycled, and you'll receive \$5. Through its resellers, Dataproducts pays \$10 for each Canon SX cartridge, plus the shipping bill if you send 28 or more cartridges at a time. Many smaller companies provide free pickup and delivery and give you credit toward purchase of a new cartridge if you return a cartridge purchased from them.

Canon has a nationwide cartridge recycling program that applies to all Canon copiers, Canon fax equipment, and printers with Canon engines and disposable all-in-one cartridges (those that have a drum, drum developer, and toner in the same casing). Call Canon's toll-free number for instructions and a prepaid UPS shipping label (included with all Canon and Hewlett-Packard cartridges when you buy them). You won't get paid for your cartridge, but Canon donates 50 cents each to the National Wildlife Federation and the Nature Conservancy for every cartridge.

Lexmark International of Lexington, Kentucky, also has a nationwide cartridge recycling program for the six IBM LaserPrinter models in its 4019 and 4029 series. Upon request, Lex-

mark will send customers a postage-paid container for returning used cartridges. Lexmark gives returned cartridges to a workshop for handicapped adults that makes money by selling the parts to recycling companies.

Under Qume's Q-CARE program, large organizations can designate an employee fund or charity to receive the money from their recycling effort. The Dataproducts Imaging Supplies Division also participates in a fund-raising program; Seattle businesses give their used cartridges to a nonprofit group that feeds the hungry throughout Washington. Dataproducts pays the organization \$10 for each cartridge.

For every used cartridge collected from local corporations, Miami's Recycleneur Institute donates \$2 to a scholarship fund to help entrepreneurs break into the recycling business. The Recycleneur Institute will mail you a list of cartridge recycling companies in your area.

If you need to replace a used cartridge, find a company that remanufactures cartridges rather than simply recharging, or "drilling and filling" them with toner. The best value is a cartridge that's been dismantled, cleaned, tested, and refilled and had worn parts—particularly the drum—replaced. Before third-party replacement drums for Canon cartridges became available in January 1990, consumers often asked to get their own cartridge back to ensure they weren't getting someone else's older drum. That's no longer an issue. Today's replacement drums can be recycled five to ten times before degrading. Just make sure the remanufacturer guarantees a refund or replacement cartridge if you're unhappy with quality—something any reputable company

will do. Some firms offer customers the option to pay more to be assured of getting an unused drum.

When trying a company for the first time, check out its local business references. Buy one or two cartridges to test quality before committing to a larger purchase. Ask whether a company's remanufactured cartridge meets or exceeds original specifications. And insist on a written guarantee that your printer will be repaired or replaced with the same model if a remanufactured cartridge causes damage. Although experts in the cartridge recycling business say a good remanufactured cartridge entails no more risk than a new cartridge does, the printer warranty may not cover damage from a remanufactured cartridge.

INFORMATION

- Canon Clean Earth Campaign**
800/962-2708
- Dataproducts Imaging Supplies Division**
800/423-5095
- Lexmark Operation Resource**
800/848-9894
- Qume Corp.**
800/421-4326
- Recharger, Cheryl White**
714/359-8570
- Recycleneur Institute**
305/539-0701

SHOP TALK

Mail-Order Nightmares

Editor's note: PC World received seven complaints about two mail-order firms—Stargate Computer and 1 Stop Micro—reporting money paid for products that were never delivered. (At press time, PC World received eight more complaints about 1 Stop Micro.) These cautionary tales serve as reminders to protect yourself when purchasing through mail order: Get recommendations from people you trust; inquire about previous complaints with the local Better Business Bureau, U. S. postal inspector, and attorney general; keep a record of all verbal and written contacts with the company;

pay only by credit card, and notify the credit card company immediately if you are charged for an item you haven't received.

Stargate Computer: Dr. K. Raman of West Hartford, Connecticut, sent Stargate Computer a \$4384 check for a 25-MHz 486 computer and accessories advertised in *Computer Monthly*. In repeated calls to Stargate owner Ernest Brauch and other Stargate representatives, Raman was promised his computer would be delivered shortly. Seven months after sending his check to Brauch, Raman received a keyboard and monitor but nothing else.

Steven Reschly of Iowa City, Iowa, sent Stargate a \$1000 deposit for a 25-MHz 486 computer advertised in the *Mensa Bulletin*. After several scheduled delivery dates had passed with no sign of the computer, Reschly told Brauch that he wanted to cancel the order and get his deposit back. A year later, Reschly still hadn't recovered his deposit despite numerous phone calls to Brauch.

Brauch told *Consumer Watch* he would ship the rest of Raman's computer as soon as Raman made up his mind about what system he wanted. Raman claims he changed the order only when Brauch told Raman he couldn't match the original configuration and asked Raman to alter it. In early September, Brauch told Raman he would send the system in a week. As of late October, nine months after placing his initial order, Raman still had not received his computer.

In response to *Consumer Watch* inquiries about the Reschly matter, Brauch said the deposit was nonrefundable but would be credited toward the purchase of a new system. According to Burbank, California, postal inspector Gerald Gaines, Brauch is under investigation for numerous complaints about not supplying customers with equipment paid for and for supplying equipment inferior to what was ordered. The postal service's advice to consumers



BUG WATCH

Up-to-date information about hardware and software bugs

Excel 3.0

Excel 3.0 users may find their spreadsheet characters don't print even though the lines do. You may be able to fix this problem: First go into Excel's printer setup dialog box (select *File Printer setup* while any sheet is loaded, highlight the printer's name, and select *Setup OK*) and set the graphics resolution to 75 dots per inch (press **<Alt>-7<Enter><Enter>**). Then double-click the Windows Control Panel's Printers icon, make sure the printer's name is highlighted, select *Configure Setup*, and set the graphics resolution to 300 dots per inch (press **<Alt>-3<Enter><Enter><Enter>**). The problem involves differences in the way Excel and Windows use printer drivers. Microsoft is working on new drivers with several printer manufacturers. When these drivers become available, Microsoft will send them to any registered user who requests them. Microsoft Corp. 800/426-9400

Correction

In the October 1991 *Bug Watch*, we published an incorrect phone number for ordering Microsoft's fixed version of the MS-DOS 5 Task Swapper executable file. The correct numbers to call at Microsoft follow. Registered MS-DOS 5 Upgrade owners within 90 days of purchase: 206/646-5104. Registered owners after that 90 days (this call costs \$2 per minute): 900/896-9000.

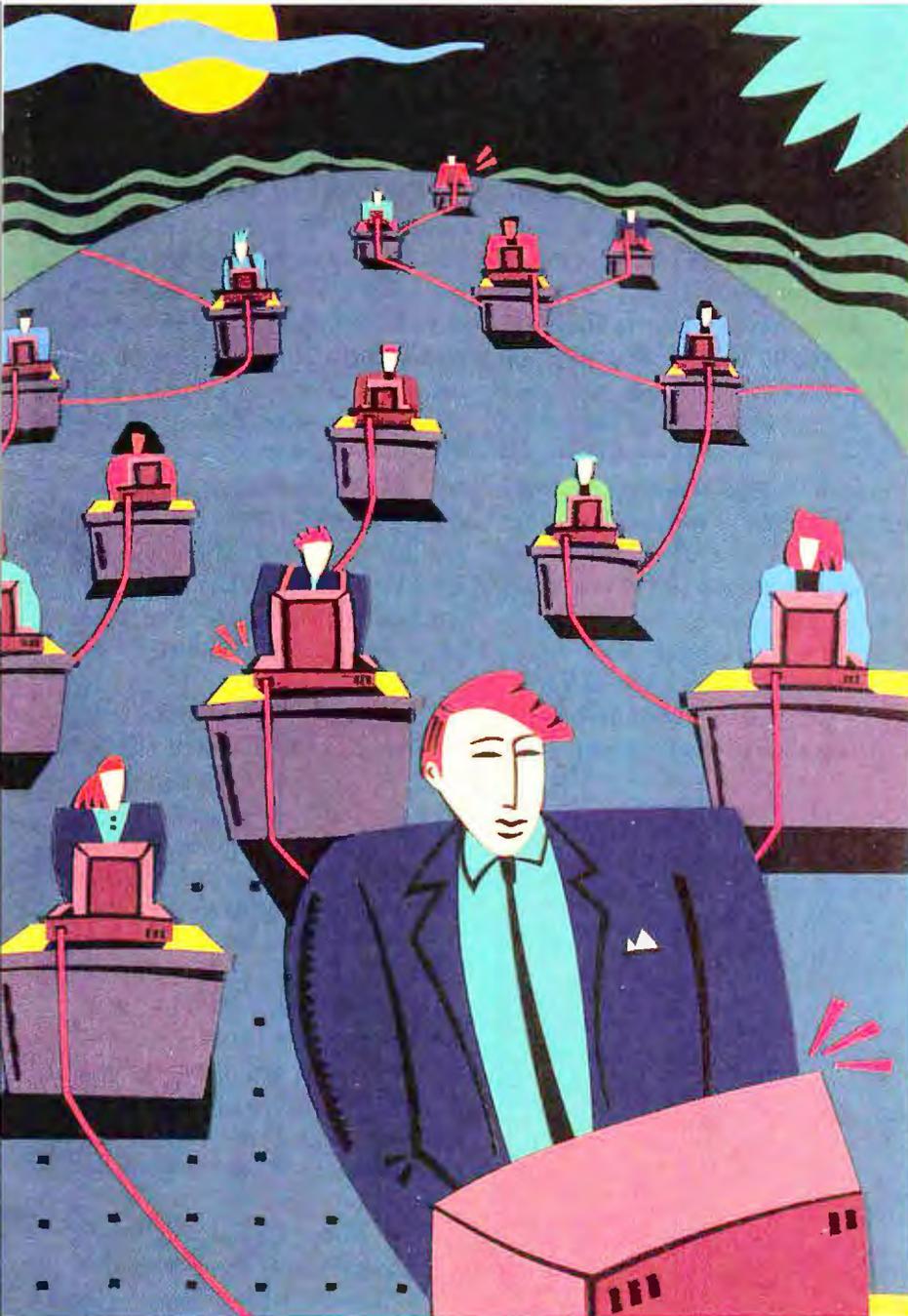
Customers who purchased MS-DOS 5 with a new PC from a PC manufacturer should contact the manufacturer for the fixed version.

Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and report on those with the broadest interest.
—Susan Lusty

who have had a similar problem with Stargate (or any other company) is to contact their local postal inspector and file a fraud complaint.

1 Stop Micro: Carmen Gibbs of Vicksburg, Mississippi, sent 1 Stop Mi-

CompuServe puts the whole world at your fingertips.



When you connect your computer to CompuServe, you join the world's largest international network of people with personal computers. You have access to more than a thousand services that offer a source of support, information, entertainment, communications, and benefits of all kinds.

A world of advantages.

CompuServe lets you take advantage of your personal computer in a thousand different ways.

For instance: communication. You'll get invaluable personal computer software and hardware support from other CompuServe members, as well as

product manufacturers, all over the world. Meet in special interest forums to discuss everything from science fiction to sharing software. And keep in touch through electronic mail and faxes, as well as by "talking" over 72 CB Simulator channels.

CompuServe also lets you shop coast-to-coast at hundreds of nationally known stores and take advantage of a world-class reference database. It gives you access to the latest national and international news. And our special financial files offer complete statistics on over 10,000 NYSE, AMEX, and OTC securities. You can even trade online with local discount brokers.

Global travel and world-class fun.

CompuServe also offers airline schedules, so you can check out the bargains and book your own flights on almost any airline worldwide. You can get travel news, frequent flier information, and country and travel facts. As well as listings from over 30,000 hotels.

Plus, there are games. Sports, trivia, educational, space fantasy... you can go it alone or compete against players from all over the world. Only on CompuServe can you test your wits in the only online TV-style game show with real prizes, or leave the earth entirely in one of our interactive space adventures.

Just give us a call.

To become a CompuServe member, you need a computer and a modem. We'll send you everything else, including a \$25.00 usage credit with your Membership Kit. In most places, you'll be able to go online with a local phone call.

To buy a CompuServe Membership Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call us today.

And put the whole world at *your* fingertips.

CompuServe

800 848-8199

Circle 33 on reader service card

EXTRA! EXTRA!

It's the latest and greatest news in printing since Gutenberg!

STOP THE PRESS PRINTERS

POSTSCRIPT LEVEL 2 WORK GROUP PRINTER



NOW JUST \$4488
Lease only \$150/mo

QuicKor 1X7 Laser

- 4 MB RAM
- Up to 16 ppm
- SCSI port
- 400 dpi
- 11 X 17 tabloid size
- 35 Genuine Adobe PostScript fonts
- Super fast RISC controller

PostScript Level 2

Exclusive Story from MacFriends!

MACKEY'S MONEY SAVERS
Buy our QuicKor TS or 1X7 Laser Printer and get a 40 MB hard drive loaded with 79 fantastic fonts!
JUST \$388

QuicKor TS

POSTSCRIPT LEVEL 2 PERSONAL LASER



WOW! NEW PRICE!!

What news! Since the manufacturer dropped the price, I can afford to move up to the next level!

NOW JUST \$1888
Lease for only \$65/mo

- 35 genuine Adobe P/S fonts
- Super fast RISC controller
- Compact design
- 2 MB RAM upgradeable to 10
- SCSI port for adding a hard drive
- Auto switch between 4 optional paper trays

Ask About **QuicKor Kare** Extended Service

800 331-1322
24 hour QUICKFAX (503) 286-8710
Local: (503) 286-9350

Mac Friends
First 100 orders receive \$238 font offer FREE! HURRY! Call Today!!

AMERICA'S MAC-ONLY STORE

QuicKor Card

cro a \$1023 cashier's check for a Hewlett-Packard LaserJet IIIP printer. When her printer didn't arrive on the promised delivery date, the company told Gibbs that it had been damaged in shipping and that she would have to wait for a printer on back order. Since the new delivery date was more than a month from the date Gibbs originally placed the order, she cancelled her order, and the company agreed to send her a refund. The check never arrived, and the company has not responded to her four follow-up calls.

When Joseph Ferri of Reading, Pennsylvania, mailed 1 Stop Micro an \$865 check for a hard drive, two memory boards, and a mouse, he was told the items were in stock and would be shipped via UPS. When several weeks passed and the products did not arrive, Ferri called the company, was told the ordered items were out of stock, and asked for a refund. He was passed around to several people before reaching Martin Martinez, the company's owner, who promised to return the money. Seven weeks after he placed his or-

der, Ferri had received neither products nor refund. Martinez has not returned Ferri's subsequent calls.

Eugenia Simpson and Thomas Simpson, Jr., of Omaha, Nebraska, placed two orders with 1 Stop Micro. The first order included memory chips, a hard drive, and a floppy drive. About three weeks after placing the order, the Simpsons called the company and were told the items had been shipped two days earlier via UPS ground service. Ten days later the products still had not arrived. When the Simpsons placed a second order for a hard drive a week after placing their first order, 1 Stop Micro said the item was out of stock. Two weeks later the company called to say the drive was in. The Simpsons requested UPS second-day delivery, but that drive never arrived either. 1 Stop Micro charged the Simpsons' credit card \$1569 for the first order. The Simpsons then cancelled both orders. 1 Stop Micro hasn't responded to the Simpsons' inquiries.

Bob Shetti of Stafford, Texas, used his Visa card to charge a \$1217 HP LaserJet IIIP ordered from 1 Stop Micro. Four days after ordering, Shetti was told his printer was on the way. Six days later a company representative said the printer had been mistakenly shipped by UPS ground service but would arrive shortly. Nine days later the company told Shetti the printer was found damaged in Colorado, and because the printers were now on back order, his Visa account would be credited for the full purchase amount. At press time, after a two-month delay, Shetti received the credit.

Frank Jobin of Downingtown, Pennsylvania, was told by 1 Stop Micro that the HP LaserJet III he ordered was in stock and would be delivered within ten days. When the printer didn't arrive as expected, Jobin was told there would be a week's delay before UPS could begin a trace on the printer; meanwhile 1 Stop charged Jobin's credit card account \$1525. A week later, Jobin cancelled the order. Forty-five days later, 1 Stop Micro

POWER TIP NO. 232

Time and Date Stamping WordStar Files

To place a time and date stamp on your WordStar files, use a Shorthand macro. Press <Esc>? and then a Shorthand character, say, T. Type <Ctrl>-P<Ctrl>-QS<Ctrl>-P<Ctrl>-QY<Ctrl>-P<Ctrl>-[@<Ctrl>-P<Ctrl>-[!<Ctrl>-P<Ctrl>-X. The line will look like this—
^Qs^Qy^[@^!^X—in the Definition box. When you want to insert a time and date stamp in a file, just press <Esc>T.

Mike Hogan
Senior Editor

IF YOU WANT TO WORK IN WINDOWS



BUT YOU NEED TO WORK IN DOS



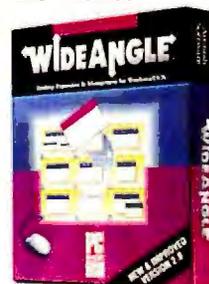
CLICK HERE:



If you love Windows, but you depend on DOS, you need WideAngle 2.0™. It makes Windows and DOS work together your way - without cumbersome application switching, window shuffling or desktop clutter. WideAngle 2.0 expands your windowing desktop to nine screen-sized workspaces, each of which holds multiple Windows applications or a DOS program. To go from one workspace to another, simply click on the interactive Power Ike™ icon, or use WideAngle's equally powerful hot keys. Click on XRAY View™ and 'see through' a screenful of windows to instantly find, activate, tile or close any

application. You can customize WideAngle to the way you work. Distribute applications in workspaces according to your own workflow. Create groups of programs to automatically launch. Select applications, like E-mail or utilities, you want to appear in every active workspace. The choices are yours. If you depend on DOS, WideAngle 2.0 makes moving to Windows easy. For more information, call 1-800-736-4198.

WIDEANGLE™



Attitash Software, Inc., 20 Trafalgar Square, Nashua, NH 03063
WideAngle™, Power Ike™, WideAngle Companion™, XRAY View™ and Attitash Software™ are trademarks of Attitash Software, Inc.

Circle 73 on reader service card

We never dreamed for creating the best PC

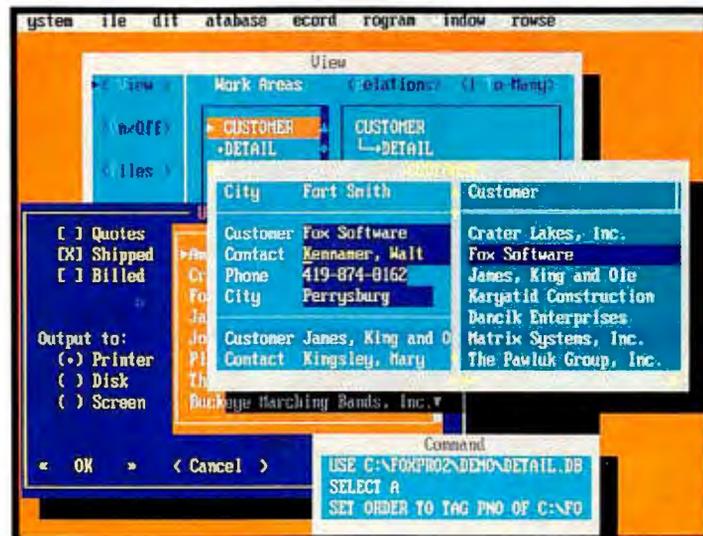
Object-oriented, event-driven operation means that you get the benefits of a Graphic User Interface (GUI) on your DOS PCs, and code that's reusable from application to application.

FoxPro 2.0 is the state-of-the-database-art, an object-oriented, event-driven DBMS that runs in DOS to protect your information systems investments.

Rushmore query optimization is unique to FoxPro and gets your answers as much as hundreds of times faster than competitive products.

4GL Tools (Fourth Generation Language) simplify the creation of Mac-like applications on your DOS PCs, using keyboard shortcuts or a mouse.

Event-driven operation allows you to work with any number of resizable, scrollable windows, get to all of your data all of the time.



For users, the View window makes it easy to work with multiple tables of data, RQBE (Relational Query By Example) simplifies the creation of business queries.

FoxPro 2.0 runs your industry-standard dBASE programs today, lets you build on your current systems for your needs tomorrow.

Optional Distribution Kit creates stand-alone .EXE files for distributing your applications.

Application Program Interface (API) links to external libraries written in C or assembler. Third-parties are currently developing communications, client/server access and other packages. (Optional Library Construction Kit available.)

Applications you write in FoxPro 2.0 can exchange data with our FoxBASE+/Mac on a LAN today, will run virtually unchanged under our Windows, Mac and UNIX versions currently in development (no release date yet).

Response to FoxPro 2.0 has been overwhelmingly favorable.

And that's the problem: the response has been overwhelming:

We're hearing of callers being on hold for 20 minutes or longer!

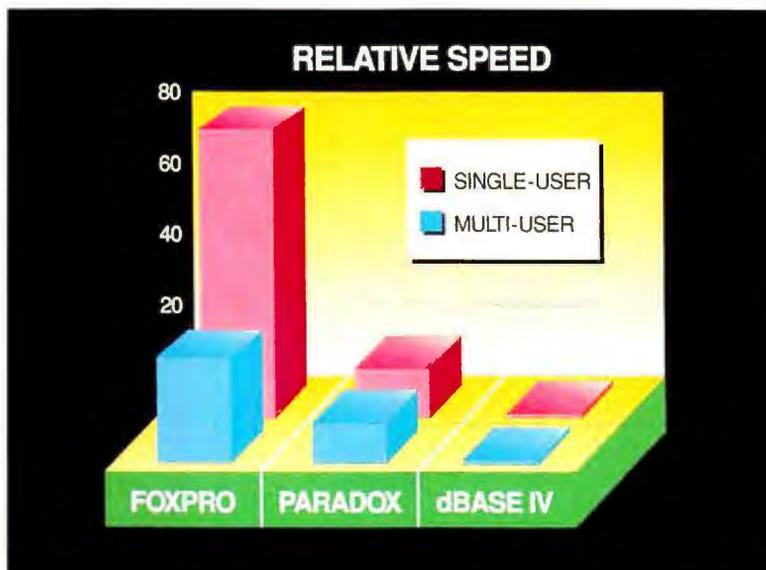
And this in spite of ramping up our support months in advance of the release.

Well, we're adding another 40 phone lines and hiring more people. And if that's not enough, we'll add even more.

In the meantime, we'd like to say

we'd be apologizing database in the world.

Results from an extensive suite of query tests independently performed by Micro Endeavors, Inc. and published in the 8/91 issue of Data Based Advisor.



FoxPro 2.0 is far faster than the other PC database management systems and raw compilers like Clipper, both single-user and on a LAN.

“Thanks” to the tens of thousands of you who put up with the wait, and “Sorry” to those who didn’t.

But please try again. We think we’ve got things under control now.

And FoxPro 2.0 really is worth the wait.

Call 1-800-837-FOX2 or 419-874-0162 again.

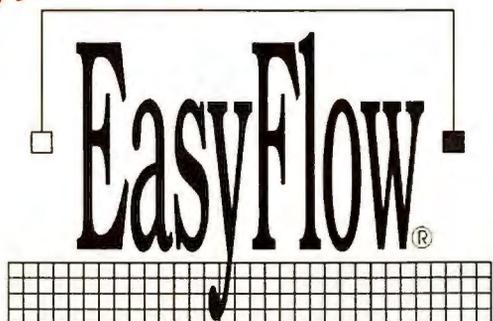
(We believe we’ve fixed it.)



Query benchmark tests performed by Micro Endeavors, Inc. (215) 449-4680. FoxPro and FoxBASE+/Mac are trademarks of Fox Holdings Inc.; other products and services are not. © Fox Holdings Inc. 1991

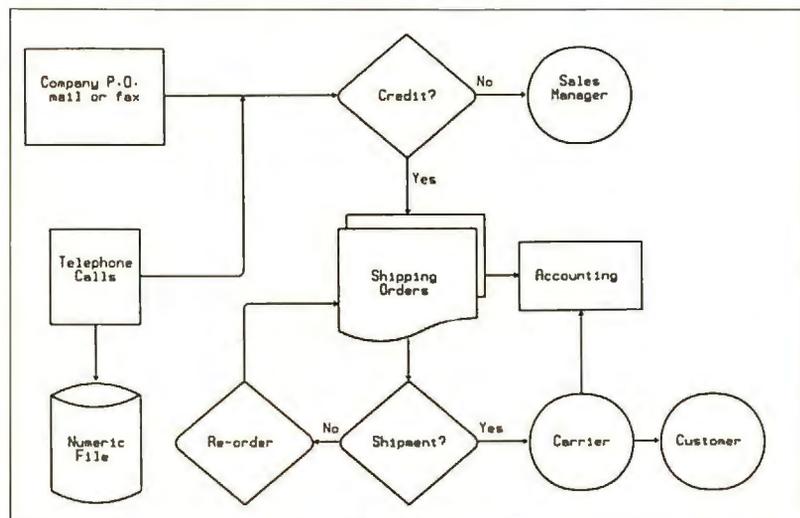
Circle 76 on reader service card

Announcing



Version 7.0

- FULL COLOR SUPPORT
- GLOBAL SEARCH & REPLACE
- AUTOMATIC LINE ROUTING
- OVER 270 OUTPUT DEVICES SUPPORTED
- NOVELL SUPPORT
- 3D CHARTING
- USER FRIENDLY
- FAST



In any business there are processes and procedures that must be documented. EasyFlow is a powerful program dedicated to the fast creation and modification of flowcharts, data-flow diagrams and organization charts. Unprecedented support for a wide range of desktop publishing and graphics programs allows for easy integration of charts into larger documentation. Alternate shape libraries for accounting diagrams, networking diagrams and fault-tree diagrams expand the usefulness of the program and are available for an additional cost. Ease of use, flexibility and speed along with FREE technical support and a NO RISK 30 Day Money Back Guarantee all combine to make EasyFlow the industry leader and corporate standard.

Recommended List Price \$280

Plus Shipping

ORDER HOTLINE 1-800-267-0668



HavenTree Software Limited
P.O. Box 1093 - M
Thousand Island Park, NY 13692
Information: (613) 544-6035 ext.47
Fax: (613) 544-9632



For your local dealer call: 800-724-0794

CONSUMER WATCH

had failed to credit Jobin's account.

After 1 Stop Micro's Martinez failed to respond to *Consumer Watch's* repeated inquiries, we talked to Jack Kincaid, the company's operations manager. Kincaid said that the company was having financial difficulties and he didn't know when the letter writers would receive their refunds.

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, 501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest. ☺

Christine Whyte is a freelance editor in San Francisco.

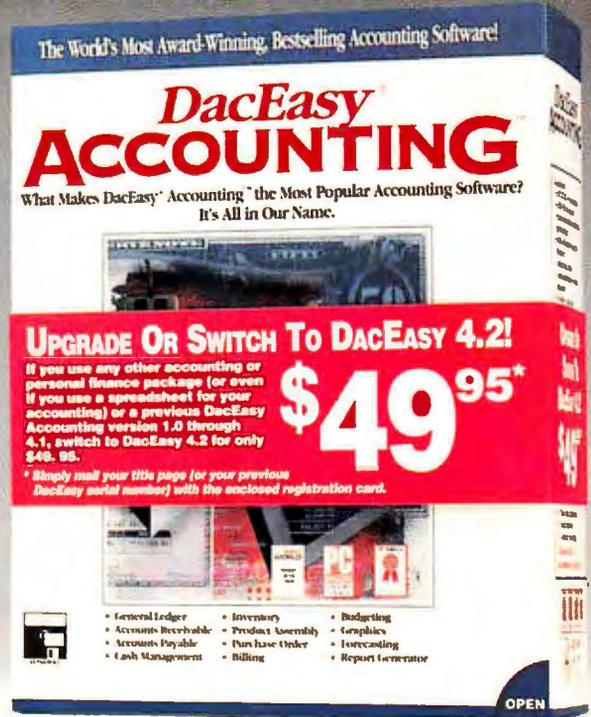
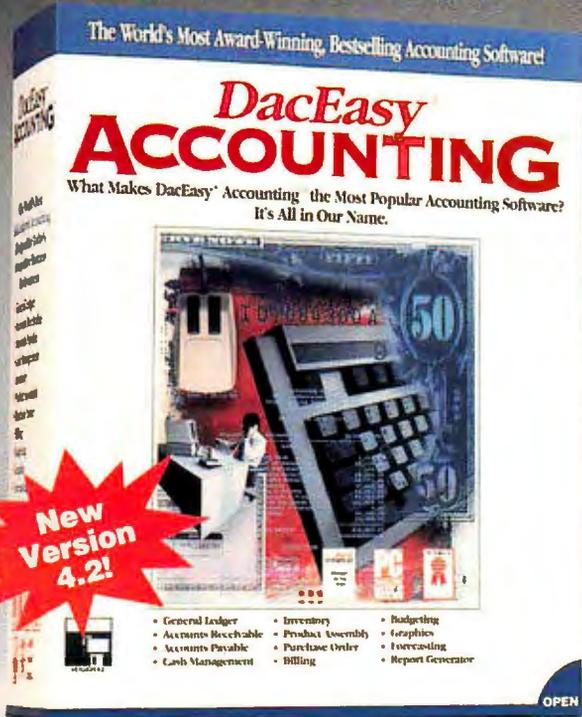
POWER TIP NO. 233

Easy Cleanup for WordStar File Directories

If you want to erase all but a few files in your WordStar work directory, you can protect the ones you want to keep by using the C protect/unprotect a file selection on the Opening menu and then deleting the unwanted files in a single pass. First make sure you don't have any program or other files that don't show on your WordStar directory. Protect the files you want to keep, then press Y*.* <Enter>. WordStar will begin deleting files, prompting you when it encounters one that's protected. Press S to skip each protected file. When finished, unprotect any files you want to be able to change.

Rex Farrance
Assistant Editor

A Deal. A Steal.



Choosing Your First Accounting System? Try DacEasy® Accounting™ 4.2 and Get a FREE Supply of Invoices or Statements.

Award-winning DacEasy Accounting is the easiest-to-use, full-featured accounting software you can buy. It takes just minutes to install, and before you know it, you'll be using the most popular Accounting software in the world to manage your business bookkeeping better than you ever thought possible.

New! DacEasy Accounting 4.2 includes 11 fully integrated modules, built into a flexible platform that accommodates the growing needs of a business for years to come! Choose from a variety of pre-defined charts of accounts and custom reports tailored to fit your sole proprietorship, partnership or corporation.

Here's the Deal. Buy DacEasy Accounting 4.2 for only \$149.95 (Suggested Retail), and receive your choice of statements or invoices to get your business started.

Or Get DacEasy Accounting and Payroll for \$199.95 - With FREE Invoices or Statements!

The DacEasy BonusPack combines the award-winning features of DacEasy Accounting with DacEasy Payroll, the most complete payroll and personnel management software, for an extra-value price of just \$199.95. You save \$50 off the separate item price!

Visit your local dealer or call: 1-800-DAC-EASY

1-800-322-3279 • FAX 214-250-3752

For Canadian Version with GST, call: 416-940-3314

- Send me DacEasy Accounting for just \$149.95, and include the FREE invoice or statement offer!
- Send me the DacEasy BonusPack for just \$199.95, and include the FREE invoice or statement offer!
- Send me DacEasy Accounting for just \$49.95. I have enclosed my title page or DacEasy serial number.

Phone: _____ Name: _____ Company Name: _____
 Address: _____ City: _____ State: _____ Zip: _____
 Payment: Check AMEX MasterCard Visa Card #: _____ Exp: _____ Signature: _____

In Texas add 8.25% sales tax. Mail to: 17950 Preston Road • Suite 800 • Dallas, Texas 75252

Media Code: PCW

30 Day Money Back Guarantee! On orders direct from DacEasy.

DacEasy, Inc.

Minimum Hardware Requirements: 640K IBM or compatibles. Hard disk. DOS 3.1 or later. Mouse optional. DacEasy, DacEasy Accounting, Payroll and BonusPack are trademarks of DacEasy, Inc. Copyright ©1991, DacEasy, Inc. All rights reserved.

Circle 94 on reader service card

"Fastest overall printer..."

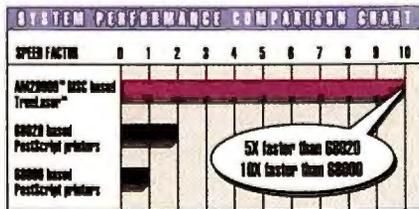
InfoWorld PostScript Printer comparison, June 10, 1991.



Now just \$1995.

The Power of RISC.

TrueLaser uses the powerful AMD 29000, 32-bit RISC processor. This powerful micro-processor gives TrueLaser the ability to process your graphics and text files many times faster than conventional PostScript printers. In addition, TrueLaser is specially optimized for greater speed when using Microsoft Windows, reducing your wait time and increasing your productivity.



TrueType and PostScript Fonts.

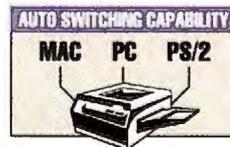
TrueLaser comes bundled with 35 TrueType fonts, Apple's new font standard, which gives you high quality output in even the smallest point sizes. TrueLaser is also compatible with all of Adobe's Type 1 and Type 3 fonts.

Affordable New Price.

TrueLaser gives you everything you need to produce stunning text and graphics output in half the time, along with a 1 year warranty that includes 6 months of on-site service.

Versatile.

TrueLaser works in just about any computing environment—Macintosh, IBM PC, or PS/2. It comes standard with the three most popular interfaces: AppleTalk, Centronics, and RS-232C. And because TrueLaser includes built-in automatic interface switching, sharing the TrueLaser is a snap.



For added versatility, TrueLaser also provides HP PCL compatibility. Call 1-800-654-4160 or 213-321-2121 for the name of the Microtek dealer nearest you.



MICROTEK
Better Images Through Innovation.

*Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502, (213) 321-2121; (800) 654-4160. *Microtek International Inc, No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu Taiwan, 30077, R.O.C., 886-35-772155
*Microtek Electronics Europe, GmbH., Schiefstraße 72, d-4000 Düsseldorf 11, F.R. Germany, 49-211-526070 * © 1990 Microtek Lab, Inc. All rights reserved. TrueLaser is a trademark of Microtek International, Inc. Windows and OS/2 are trademarks of Microsoft Corporation. TrueType, Macintosh and AppleTalk are trademarks of Apple Computer, Inc. IBM is a trademark of International Business Machines Corporation. PostScript is a trademark of Adobe Systems, Inc. Centronics is a trademark of Centronics Data Computer Corporation. All other trademarks or registered trademarks are the property of their respective holders.

Circle 162 on reader service card

MANAGER'S FILE #9

Choosing an Outside Training Firm

Alice LaPlante

When you shop for a PC training consultant, you may be overwhelmed by the range of choices. Virtually anyone with the remotest experience in the field may advertise "expertise" as a trainer. Although excellent training organizations exist, there are also any number of shoddy operations that will be happy to take your money without providing any measurable benefit. But if you're aware of the various training options and understand when it makes sense to hire a trainer, you can obtain valuable, cost-effective training for your employees.

If you don't have an in-house training staff, your first consideration is whether to hire an outside training firm. For most PC training needs, this isn't necessary. The PC managers we talked to said that 90 percent of their employees' training requirements could be satisfied with off-the-shelf software or video courses, many of which sell for under \$100 and can be used repeatedly by an unlimited number of people (see *Manager's File #6*, October 1991).

For employees who learn best from a human instructor, excellent classroom training is scheduled regularly at local training centers and community colleges. If your employees need to learn the basics of *1-2-3* or *Word-Perfect*, it doesn't make sense to hire a consultant to build a new curriculum for that purpose when effective options are readily available at a fraction of the cost.

There are times when hiring a training firm makes economic sense, however. If a substantial number of employees need training, hiring an instructor to teach at your work site may cost less than sending those em-

ployees to outside classes. The educational content is equivalent, and you'll gain convenience as well. You can also ask the instructor to focus on lessons that are relevant to the way your employees use their PCs.

Hiring a training firm is also practical if your employees are advanced users of complex technology—such as some desktop publishing or data base applications. Generic training packages and classes won't suffice in this situation.

In addition, more and more businesses are writing their own applications specific to their line of work, for which no off-the-shelf training exists. For example, a commercial airline might write an application for the purpose of auditing fares to make sure travel agents are getting the appropriate commissions, or a brokerage house might write their own stock quoting program. In such cases it is a virtual necessity to hire a professional consultant to design and implement proper training on the new software. Otherwise, employee productivity

could suffer dramatically.

New multimedia applications and sophisticated authoring tools for creating customized training applications are becoming affordable and easier to use. (See "Build Your Own Multimedia Presentation," November 1991.) These tools range from \$300 to \$400 prototyping tools that capture screens and add text, to more complex interactive authoring toolkits that cost several thousand dollars. Hiring an outside firm to design a computer-based training program can be cost-effective if such materials will be used repeatedly.

Finally, thanks to the abundance of books, videos, software, and classes, a good consultant may be able to provide just the right mix of training. This approach is substantially cheaper than designing an entire curriculum from scratch, yet incorporates the optimal learning methods for your employees. ♣

Alice LaPlante is a freelance writer in Palo Alto, California.

How to Shop for a Training Consultant

You can't always judge a training firm's quality by its paper credentials. These steps will help you choose wisely.

- ✓ Check at least three of the firm's business references; talk to employees who received training as well as to their managers.
- ✓ Request the trainers' resumes, and determine if they are full-time staff or contract workers (contract worker quality may be inconsistent).
- ✓ Inspect off-site training facilities for quality and adequate number of PCs.
- ✓ Ask for a detailed list of equipment, software, and other training materials the firm provides if training takes place at your office.
- ✓ Review all print, video, and software training materials for quality.
- ✓ Arrange for a pilot test or sample class before committing to a contract.
- ✓ Negotiate for revisions of training materials and/or follow-up instruction at no extra charge if training proves ineffective.

Everything you need to know about the difference between a Compaq PC with Intelligent Modularity and a merely upgradable PC.

These days, a lot of personal computers have upgradable processors and memory. But the new COMPAQ DESKPRO/M PCs have Intelligent Modularity, which goes far beyond ordinary upgradability. This unique design makes these PCs a smart investment for today and tomorrow.

Smart for today—

designed for today's needs and today's budgets. Intelligent Modularity puts all vital subsystems on separate boards so you can choose just the performance and features you need.

Since the parts are interchangeable, the whole office can standardize on one platform. And since the parts

Nobody else gives you all the advantages you get with the COMPAQ DESKPRO/M PCs.

	COMPAQ DESKPRO/M FAMILY	ALR BUSINESS VEISA	AST PREMIUM II	DELL POWERLINE DE	IBM PS/2 MODEL 90
1. Five-board modular design	Yes	No	No	No	No
2. Upgradable video without using an expansion slot	Yes	Yes	No	No	No
3. Separate I/O board for potential enhancements and ease of service	Yes	No	No	No	No
4. 14 levels of security including cable-lock provision	Yes	No	No	No	No
5. System configuration and ID number available in memory and accessible remotely	Yes	No	No	No	Yes
6. Power supply adequate for all expansion needs	240w	150w	145w	220w	194w

are easy to access, they're easy and inexpensive to service. Replacement parts cost less, too.

Keeping track of what's inside each PC is easy with our built-in Asset Management provision. Each COMPAQ

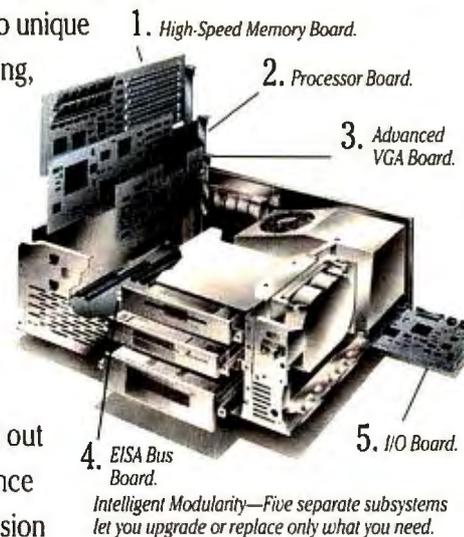
DESKPRO/M PC can tell you its serial number, how it's configured and what it has installed. Even remotely, over the network. A big time- and money-saver for MIS managers.

Smart for tomorrow—built to adapt to changing technology and changing needs. With Intelligent Modularity, upgrading and expanding only takes about five minutes.

And, thanks to unique

Compaq engineering, you get optimum performance no matter how you configure your system.

The 32-bit EISA expansion bus gets the most out of high-performance processors, expansion boards and peripherals. Superior thermals keep things cool, no matter how many options you add. And the 240-watt



power supply can take anything you plug in.

Call your Authorized COMPAQ Computer Dealer and ask to see the wonders of the COMPAQ DESKPRO/M PCs firsthand.

Call 1-800-231-0900, Operator 185. In Canada, call 1-800-263-5868, Operator 185.

Everything the boss needs to know.

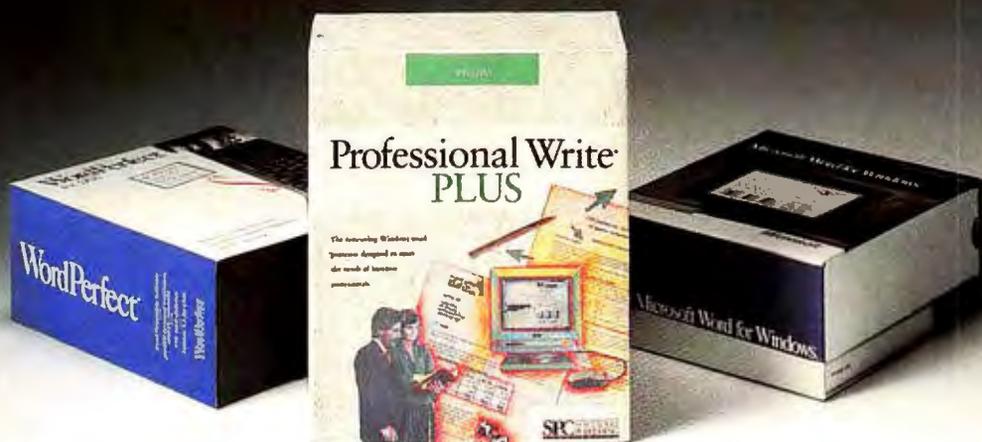


1. It's smart.
2. It's easy.
3. It's affordable.

COMPAQ

It simply works better.

In this year's word processing shootout, we laid some old assumptions to rest.



In the recent PC Week Labs shootout, Professional Write® PLUS for Windows™ not only stood up to the old standards. It walked all over them.

Judged to be superior in embedding graphics, updating data, and laying out columns, this Software Publishing Corporation package lets you create a more compelling document faster.

But our unique communications features are what really got the judges talking. We won bonus points for our integrated E-mail. And we offer the ability to attach electronic "post-it-like" notes to documents.

So, you can continue to work under old assumptions about what a word processor should do. Or you can work with Professional Write PLUS. And get on with the future.

SPC SOFTWARE
PUBLISHING
CORPORATION

We assume you'll want to judge for yourself. For a free demo disk, call 1-800-336-8360, Operator 569.

PC Week Shoot-Out for Document Processing, May 20, 1991. Products shown are WordPerfect® 5.1, and Microsoft Word for Windows 1.1. Professional Write PLUS is a trademark of Software Publishing Corporation. Windows is a trademark of Microsoft Corporation. © 1991 Software Publishing Corporation. All rights reserved.

INDUSTRY **I O** OUTLOOK

Edited by ERIC BENDER

New Chips Offer More Than Price/Performance

War Begins Among 386 Compatibles

AMD, Chips and Technologies, IBM Aim to Outdesign Intel



Telebit's Benny Sun bought several network servers based on AMD's 40-MHz chip and "experienced no problems whatsoever."

Battle lines are drawn for the CPU chip wars as clones of the 386 chip arrive in force.

Advanced Micro Devices (AMD), at press time the only manufacturer shipping a 386-compatible CPU, claims to have captured 10 percent of the 386 market. Chips and Technologies (C&T) has announced a family of 386 chips that will begin shipping early in 1992. IBM is showing a 386SX that almost doubles standard performance. Other vendors such as Cyrix and Nexgen should jump into the arena by midyear.

Analysts predict that Intel will not be able to halt this march with threats of legal action, and users will see faster machines at cheaper prices in addition to some tangible technical improvements. "These chips must be more than just faster and cheaper Intel clones," says David

Carnevale, vice president of Infocorp in Santa Clara, California. Intel is responding with a flurry of new chip flavors, including innovations such as 486 CPUs that run twice as fast as the system clock.

Different Strokes

AMD, in addition to offering higher clock speeds at lower prices than Intel, specializes in CPUs that consume less power. "As a direct result, there are already laptops on the market with significantly enhanced battery capabilities at very affordable prices," says Dean McCarron, vice president of Instat in Scottsdale, Arizona. Meanwhile Intel has had problems shipping a bug-free 20-MHz 386SL—its low-power version of the 386SX—and a 25-MHz version hasn't yet arrived.

Chips and Technologies redesigned the basic 386 CPU

from scratch and provided "a more efficient design," says Michael Slater, editor of the *Microprocessor Report* in Sebastopol, California. "At the same clock rate of Intel 386 CPUs, you will essentially have faster chips." More notably, the C&T family offers a feature called SuperState, which gives systems vendors a new way to design in features such as power management and automatic compression/decompression of files while avoiding incompatibility.

Chips and Technologies also announced a complete XT-on-a-chip called PC/Chip. "This will result in palmtops that provide about three times as much power as existing systems, at a greatly reduced price," says McCarron.

Performing on Price

Arche Technologies, which has been shipping systems based on AMD's Am386DX-40 since June, chose the chip on simple price/performance. "The price of the AMD 40-MHz chip was close to that of Intel's 33-MHz chip, but it greatly outperformed Intel's offering," explains an Arche executive.

Benny Sun, a programmer analyst at Telebit in San Jose, California, purchased several 40-MHz Arche systems to act as NetWare servers. He says that he is pleased with their price/performance and that he has "experienced no problems whatsoever."

AST chose AMD's 25-MHz 386SX chip for its lower power consumption and because at

the time there was no Intel alternative. AST also will employ Intel's 25-MHz 386SL chip when that's ready, says Genelle Trader, director of portable systems marketing for the Irvine, California, firm. Trader expects that Intel will offer better performance but at a higher price.

Mo Chughtai, an information systems consultant at Mattel Toys in El Segundo, California, was unaware that the CPU in his AST Premium Executive notebook was a non-Intel part until he had used the system for several weeks. He believes most end users won't notice or care; their faith rests in the system vendor. "This is a very fast, very compatible machine," Chughtai says.

—Alice LaPlante

386-Compatible Chips Arrive

New sources of 386-compatible CPUs

AMD

CPUs: 386SX, 386DX

Strategy: Undercutting Intel on price; lower power consumption; special models for notebooks and laptops.

Chips and Technologies

CPUs: 386SX, 386DX, 8086

Strategy: Higher performance at given clock speed; "SuperState" programmability for power management, other functions; PC/chip allows powerful, cheap palmtops with long battery life.

IBM

CPU: 386SX

Strategy: An 8K internal cache plus optimized instructions, doubling performance of equivalent Intel CPU.

The floodgates have opened on 386-compatible chips, with three suppliers shipping or about to ship alternative CPUs.

Modem and Fax Finally Tie the Knot

Falling Prices, Emerging Standards Push Sales

Suddenly the friendly interest between PC users and PC-based faxing has turned into a whirlwind romance.

Take the case of Strohn Systems. Strohn, a Toronto value-added reseller, had used its Intel SatisFaxtion fax-modem only sporadically before last summer's Canadian

ate, particularly if you're trying to send along something that's on paper rather than in electronic form (because you'll have to scan it in first), friendly *Windows* packages like *WinFax Pro* from Delrina in Toronto have eased the path for PC users.

Most important, "fax and

work with a wide variety of fax-modems. This standard is finally in sight.

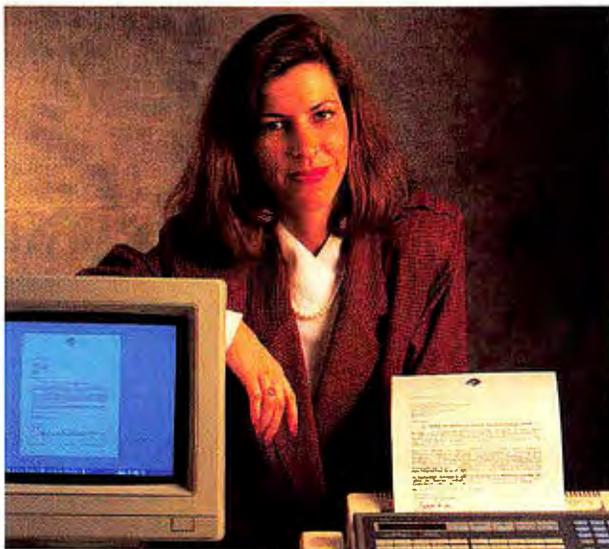
The first shot at a standard was the Intel/DCA Communicating Applications Specification, which lets you send faxes from within any application that's been suitably modified, not just communications packages. But CAS won little backing from Intel's rivals or from software developers.

Next came the Class One specification, which calls for fax processing handled in software rather than in standard fax hardware. The trade-off is a decrease in performance, so the majority of vendors weren't impressed.

The new hope is Class Two, an emerging hardware/software definition "which permits independent software vendors to develop products that will fit a wide market rather than a specific manufacturer's products," says John Copeland, senior software engineer for Hayes Microcomputer Products in Norcross, Georgia.

Class Two promises an end to boards that work only with idiosyncratic software written by the board builder. Instead, a powerful mainstream package will be bundled, or you'll buy whatever you like separately.

The trouble with Class Two is, its language and definitions aren't precise; it's "a chocolate pudding standard—it's mushy," says Larry Purcell, vice president of Alien Computing of Palmdale, California, maker of *Faxit for Windows*. As a result, two incompatible versions have both gained adherents, so buyers still must check extremely carefully to ensure that specific software and hardware products will work together.



A fax-modem saved the day for a Strohn Systems seminar by broadcasting invitations to prospects, says Charlene Smith.

postal strike. With 1000 seminar invitations to send and no way to mail them, marketing manager Charlene Smith wrote a *WordPerfect* macro that merged a three-page letter with prospects' fax numbers, and broadcast the lot from her PC. "Now that we know how, we plan to use it on a regular basis to keep in touch with our customers," says Smith.

Highly integrated chips have caused fax board street prices to dip toward \$100—far below the cost of stand-alone fax machines. Users applaud the high image quality and convenience of PC-based faxes. Although a stand-alone fax unit often is simpler to oper-

ate, particularly if you're trying to send along something that's on paper rather than in electronic form (because you'll have to scan it in first), friendly *Windows* packages like *WinFax Pro* from Delrina in Toronto have eased the path for PC users.

Most important, "fax and work with a wide variety of fax-modems. This standard is finally in sight.

The first shot at a standard was the Intel/DCA Communicating Applications Specification, which lets you send faxes from within any application that's been suitably modified, not just communications packages. But CAS won little backing from Intel's rivals or from software developers.

Next came the Class One specification, which calls for fax processing handled in software rather than in standard fax hardware. The trade-off is a decrease in performance, so the majority of vendors weren't impressed.

The new hope is Class Two, an emerging hardware/software definition "which permits independent software vendors to develop products that will fit a wide market rather than a specific manufacturer's products," says John Copeland, senior software engineer for Hayes Microcomputer Products in Norcross, Georgia.

Class Two promises an end to boards that work only with idiosyncratic software written by the board builder. Instead, a powerful mainstream package will be bundled, or you'll buy whatever you like separately.

The trouble with Class Two is, its language and definitions aren't precise; it's "a chocolate pudding standard—it's mushy," says Larry Purcell, vice president of Alien Computing of Palmdale, California, maker of *Faxit for Windows*. As a result, two incompatible versions have both gained adherents, so buyers still must check extremely carefully to ensure that specific software and hardware products will work together.

A Second-Class Standard

A true market explosion awaits a standard that lets a wide variety of PC applications

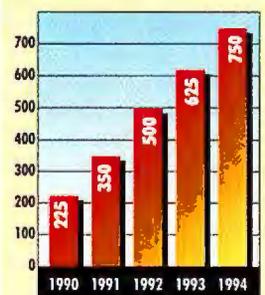
Embroidering the Fax

While software standards are being sorted out, computer fax is assuming new forms. One is multifunction peripherals such as Everex's LaserScript Fax, which merges PostScript printing with fax transmitting and receiving and even document copying. Plenty of vendors plan systems with similar twists, but BIS's Pirani questions whether users will snap them up; what happens, for instance, if you want to print while a fax is coming in?

The arrival of network fax raises other questions, in particular, how can gateways best distribute incoming faxes? But gateways save big bucks over stand-alone boards. And the ease of sending faxes from your workstation offsets any distribution handicaps, says Dave Deuchert, programmer analyst for Krack Corporation, an Addison, Illinois, equipment maker. Krack's NetWare net has a Facsys gateway from Optus Software of Somerset, New Jersey, that's "picking up speed all the time," says Deuchert. —Mark Henricks

Fax-Modem Shipments Boom

U.S. unit shipments, excluding network fax boards (in thousands)



Source: BIS Strategic Decisions

Cheap prices, friendlier software, and stabilizing standards are driving a rapid expansion in fax-modem sales, according to BIS Strategic Decisions.



For People Who'd Rather Switch than Fight!

The ultimate printer-sharing switch has arrived...

Here's the Logical Connection™!

It happens all the time: your entire office staff is having a "get-together" by the printer. And if you haven't found the solution to this bottleneck yet, it's time you got the connection: The Logical Connection.™

No more slow-downs.

The Logical Connection™ is the ultimate printer-sharing switch because it lets *everyone* share the same printers (or other peripherals), at the same time! With no downloading, disk-shuffling, cable-swapping, switch-flipping or any of the other thousand natural shocks that sharing's heir to. The Logical Connection™'s big, smart buffer (256K, 512K model also available) will spool each document for sequential printing, so your computers can keep right on working. But wait, there's more . . .

Long-distance switching.

What if your printers and computers are strung out all over the building? No problem, because you can "daisy-chain" up to 45 Logical Connections™ together. Over a single twisted-pair wire like telephone wire (which, by the way,

you probably already have *wired* all over the building). And each computer can choose which printer it wants to use, simply by issuing a pre-defined 8 character "selection string." Need more? Just hook a couple of Logical Connections™ up to a pair of cheap



problem. And if two devices have different handshaking, baud rates, word lengths, or parities, the Logical Connection™ will do all the conversions for you *automatically*, whenever they're needed. And it will never forget your configurations, because its memory is in battery-powered RAM.

Why fight it?

So if you'd like to give *all* your computers instant access to *all* your printers (and plotters and modems and whatever else you'd like to hook them up to), *all* the time, why fight it any longer? Make the switch. Get The Logical Connection™ at your leading computer dealer today, (over 14,000 dealers).

modems and let a roomful of computers talk to a roomful of printers across the country . . . or across the world.

Automatic Data Conversion

If you want to run a parallel daisy-wheel *and* a serial laser printer from the same computer port, no

the **Logical Connection**
Programmable Multi port Interface Device

\$395

Suggested retail price

800-238-9415

Circle 126 on reader service card

Corporate Users Take Notes Seriously

Group Communications Package Speeds Daily Work



Users can build their own Lotus Notes applications for sharing information, and the applications tend to proliferate.

It's been a well-kept corporate secret, but Lotus Notes is about to start a parade on Main Street. With sales of the pioneer group communications package quietly snowballing among the Fortune 1000, Lotus plans a big marketing push behind Notes—the first package to successfully demonstrate that *group productivity* doesn't mean just fancy electronic mail. "It's become an integral part of the way we do business," remarks one enthusiastic user.

Notes is designed to let you share information with your work group—from the administrative assistant in the next cubicle to a sales representative in Italy. Technically, it's a text-based network data base with a graphical Windows or OS/2 front end and an OS/2 server back end. More important is what Notes does: enable nontechnical professionals to create amazingly effective applications that work across local or wide area networks. Popular examples include sales management, customer service, project tracking, executive information systems, and in-house electronic publishing.

Just Share It

Chemical Bank in New York invested in Notes for 300 information system employees. Now the bank is using Notes in project tracking, document preparation, internal information gathering and dissemination, and other tasks, says project manager Gail McGee.

In a Notes application that tracks all development projects, employees in one group are able to "look at other projects and see synergies that may not be obvious to other people," McGee points out.

With Notes's knack for group discussion, sometimes a meeting can be shortened "when we say, Let's not discuss this here—let's set up a discussion on Notes." McGee adds that a report becomes "a much more valuable tool" when it's distributed via Notes, because it can be searched or annotated later. Other groups in the bank are lobbying to install Notes.

Other users point out that Notes lets you link up with crucial contacts outside your organization—a customer in Houston or a supplier in Hong Kong—in ways that simply weren't possible before. For instance, a Texas company can get instant updates on the status of component shipments due from Japan. And a few organizations, like Patricia Seybold's Office Computing Group in Boston, are beginning to distribute selected high-value information to subscribers via Notes.

Notes for the Masses

Two years ago when Notes debuted, it would set you back a cool \$62,500 for 200 users—minimum. Last spring when Notes 2.0 shipped, Lotus ex-

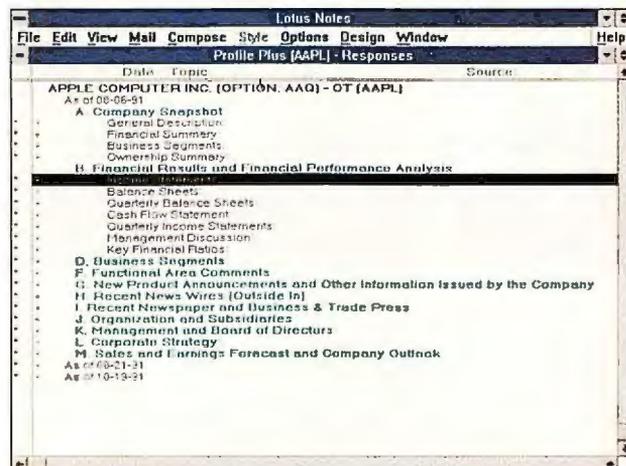
tended distribution to selected value-added resellers, and the entry point began to drop. Corporate Software, for instance, offers a 5-user starter kit with training and support for \$6360.

More than 80 firms are creating packages tuned to Notes. Some, like the Kodak/Lotus *Image-Enabled Notes*, add base functionality to the platform. Others add a new twist, such as *Quality at Work*, a package from Quality Management Decisions in Andover, Massachusetts that aims for "total quality management" throughout an organization. Hoover, from Sandpoint in Cambridge, Massachusetts, navigates what president Michael Kinkead calls "the electronic ocean: on-line data bases, broadcast news, CD ROM, and internal data bases." Hoover, he explains, "is a software agent that gets information from these sources, brings it back, parses it, and presents it in the user's context within Notes."

So far Notes has reached only about 100,000 users, analysts estimate, while Lotus's *cc:Mail* E-mail package broke the million-user barrier in 1991. But this year Lotus will put its muscle behind Notes, and IBM will comarket the product and build its back-end services into OS/2 nets.

Notes still lacks calendaring, true full-text search, and the underpinnings for applications designed to keep work flowing on schedule. It soon will be challenged by NCR's *Cooperation* and other group productivity entries. But currently, remarks Seybold vice president Dave Marshak, "for what it does, Notes has no competition." —Eric Bender ●

Mark Henricks is a PC World contributing editor in New York. Alice LaPlante is a freelance writer in Palo Alto, California.



Sandpoint's Hoover, which retrieves external data in easily accessible form, is among a host of packages that run on Notes.

A close-up photograph of an Intel 80386SX-20 processor chip mounted on a green printed circuit board (PCB). The chip is black with gold pins and has the Intel logo and model number printed on it. The PCB is densely packed with various components and traces, with some labels like 'U17', 'U20', 'C108', and 'C93' visible. The lighting is dramatic, highlighting the chip against the dark background of the board.

intel
NG 80386SX-20
STEP
C1080026
© 1985-87

ZEOS[®] just made
every other 386SX
obsolete.

Announcing...





That's right! Now you can own the incredible ZEOS 386SX-20 for as little as \$1195. The price is amazing but that's not all.

Should you decide to purchase it (and we think you will), you will be acquiring the most advanced personal computer system of its kind. Incorporating the very latest in personal computer technology, your new ZEOS 386SX-20 is quite simply the very best you can buy—at any price. Why?

Pe

FAST MEMORY. INCREDIBLE PERFORMANCE.

For starters, we're including incredibly fast *fifty-three nanosecond* DRAM. When we sat down to design this system we polled all the existing technology. We knew that while every 20MHz 386SX processor crunches data at the same rate, making that data available to the processor for immediate crunching is the key. The faster the DRAM (the computer's memory that holds the data for crunching), the faster the data got crunched.

Until now, the best way to get data to a 20MHz processor was to use "cache memory"; the next best is called page/interleaving. Yet a typical cache scheme of say 32K (only 1/16 of a megabyte) holds only a fraction of the memory's data for quick crunching by the processor. The rest of the system's memory is usually only 80 nanosecond (ns) or even slower 100ns DRAM. That's where ZEOS' blazing *53ns memory* comes in.

With the 53 nanosecond memory in your new ZEOS 386SX-20, your system's processor has *instant access* to all the memory in your system—without using a cache. This instant access to *all* your system's memory means your data is available for immediate crunching. Bottom line—an *incredibly* fast computer at a *very* reasonable price.

INCREDIBLY FAST. JUST FOR STARTERS.

Incredibly fast indeed! Yet that's only the start of your new high technology ZEOS 386SX system. We've captured the latest in other technologies as well. Take hard drives for instance.

Your new high speed ZEOS 386SX-20 system includes our IDE hard drive interface and floppy

z, ZERO-WAIT \$1195!

drive interface right on the motherboard. This not only saves you an expansion slot but enables us to provide you with the very latest (and fastest) IDE disk drives as well. Not only that, but your system will also accommodate additional hard drive technologies (including ESDI, SCSI, etc.) should you wish to add them. And your ZEOS Advanced Engineering Advantage

of pure clean power. This isn't some cheap power supply used to keep the price down—this is the *very best*. Because the very best is just what your system deserves. It deserves to live a long time too.

EXTRA COOLING. LONGER LIFE.

That's why you'll receive the unique *patent pending* ZEOS cooling system. This includes not just one but *two* whisper quiet cooling fans. Why two fans? Because we know that if, as an

Performance. Quality. Price. Support.

doesn't stop there.

On the I/O (Input/Output) side, we've freed up another slot for you too. We've taken the celebrated high speed ZEOS I/O card and put it right on the motherboard. The result is two fully software configurable *high speed* serial ports, the parallel port and even a game port *built right into* the motherboard!

ROOM TO EXPAND. POWER TOO.

If you should open up your system you'll see expansion room galore. Because at ZEOS, we always give you room to grow. That isn't just limited to more open expansion slots either. We give you our SpaceSaver case which has *seven* drive bays *yet is smaller* than most full size cases that have only five drive bays. But what of expansion *power*?

Having the room to expand is only part of the story, we give you the *power* to expand as well! Your new ZEOS 386SX-20 will have the best power supply money can buy and this baby will be pumping your system with a full 200 WATTS

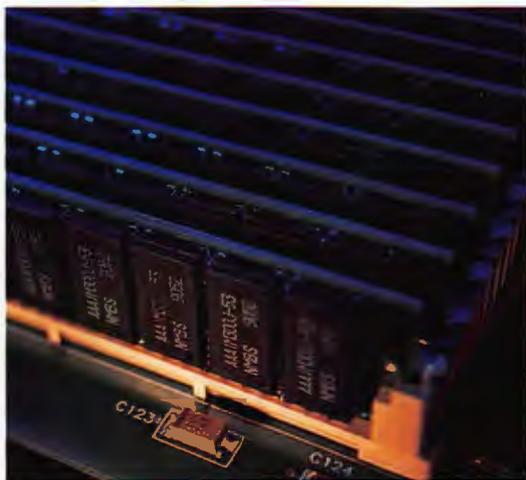
example, you lower the ambient interior temperature of your system by 10°C, you can up to double the life of the components inside! Now that's quality. Others don't do it. We do, because at ZEOS providing you with absolute quality and reliability are of primary importance. It's a case of quality. Speaking of which...

The beauty of your ZEOS case is much more than skin deep. The steel ZEOS uses is specified to be 0.20mm thicker than that of cases used by many of our competitors. And the fit is finely crafted to provide a rock solid system while meeting the stringent requirements of our Underwriters Laboratories listings. True, quality touches cost a *little* more but it all adds up to *value*, and *value* is why you're buying a ZEOS system!

Here we have discussed how your new ZEOS 386SX-20 provides you with stellar performance, unequalled quality and absolute reliability. With all of this, what more could there be? From ZEOS lots more.

ZEOS 386SX-20. Only \$1195!

INCREDIBLY FAST 53ns DRAM



24 HOUR A DAY TOLL FREE TECHNICAL SUPPORT!

Like ZEOS 24 Hour a Day Toll Free Technical Support. Most of our competitors still offer only part time technical support. Yet for the last two years ZEOS technicians have been standing watch for our customers—twenty-four hours a day, 365 days a year. We are *always* here for you, or anyone else using your ZEOS system, *any time* of the day or night.

And that's only the start of your ZEOS Customer Satisfaction Package. Add to it our 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and our Express Replacement Policy. You're going to be very satisfied. We don't just say it. *We guarantee it.*

ZEOS sets the pace for the industry in performance, in quality and reliability, and in service as well. When you buy from ZEOS, you are buying the *very best*. Perhaps that's why, in their service and reliability issue, *PC Magazine* discovered that ZEOS 386SX systems were rated #1 by customers: #1 in technical support, #1 in repair services, #1 in customers who would buy again!

So why not give us a call. Your ZEOS product partnership begins the moment you are greeted by your friendly ZEOS Systems Consultant. Calling on years of experience and knowledge, your ZEOS Systems Consultant is prepared to help answer *any* questions you might have. You'll find talking with your ZEOS consultant is just like talking with an old friend who happens to know quite a bit about computers. Good knowledgeable advice.

ORDER YOUR OWN ZEOS 386SX-20 TODAY!

Ordering is easy too. Simply pick up the phone and give us a call now at 800-423-5891. Buying your new ZEOS 386SX is perhaps the best purchase decision you'll ever make! After all, your satisfaction is absolutely *Guaranteed*.

ORDER NOW TOLL FREE: 800-423-5891

DON'T FORGET THE OPTIONS!

As *PC Magazine* said, ZEOS offers "more options than even the most configuration hungry hound could possibly need." Because every ZEOS system is custom built you may choose from a huge selection of hard drives, video packages and many other options. On-site service is available too. Call 800-423-5891 for details.

YOUR COMPLETE ZEOS 386SX-20 ZERO-WAIT HARD DRIVE SYSTEM INCLUDES ALL OF THESE FEATURES. AND MORE!

ONLY \$1195

- Genuine Intel® 80386SX 20MHz CPU. 8/20MHz Dual Speed, Keyboard selectable.
- 512K of High Speed 53ns DRAM providing Zero-Wait performance right up thru a total of 16MB on the motherboard.
- Fast 42MB IDE Hard Drive, Teac® 1.2MB Floppy Drive.
- ZEOS 14" Flat Screen High Res amber monitor with Tilt/Swivel Base.
- Genuine Hercules® Brand graphics controller!
- ZEOS/RS 101 key SpaceSaver Keyboard with pleasant Tactile/Click feel.
- Two High Speed Serial plus One Parallel and One Game port on the motherboard.
- 7-16 and 1-8 bit expansion slots.
- Speed demons appreciate our Shadow RAM/EMS capability, and full 387SX math coprocessor support.
- Includes our 7-bay ZEOS SpaceSaver case. Two cooling fans and 200 Watt power supply for added expandability and reliability. Top notch.
- 30 Day Absolute Satisfaction Money Back Guarantee, Full One Year Limited Warranty and our Express Replacement Policy.
- Wrap it all up with 24 Hour a Day, 365 Day per Year Toll Free Technical and Sales Support on your ZEOS Hotline. You've got a winner!

ORDER NOW TOLL FREE: 800-423-5891

FAX Orders Dial: 612-633-1325
In Minnesota Call: 612-633-4591
Hearing Impaired (TDD): 800-228-5389
Government Orders: 800-245-2449
Outside US and Canada Call:
612-633-6131
MasterCard, VISA, Discover, Am Exp,
Z-Card and COD.
Open 24 Hours a Day, 365 Days a year!



Your new ZE Only Feature for Featu

✓ Incredibly fast *53 nanosecond* DRAM giving true Zero Wait State performance. Your *entire* memory is like one huge cache, operating flat out at full processor speed.

✓ You may expand your system with up to 16 megabytes of memory right on the motherboard!

✓ Speaking of motherboards, your ZEOS 386SX-20 motherboard is designed and manufactured by ZEOS, right here in the USA.

✓ Your new system features the *exclusive* ZEOS seven bay desktop case, smaller than most five bay cases yet plenty of room for future expansion.

✓ *Two* whisper quiet cooling fans move more air through your system increasing reliability and component life. Others seldom offer this important added feature.

✓ Your *entire* system is UL® listed (not just the power supply). Few others offer this security; we wonder why.

✓ Eight slots. One for the video, seven more open providing plenty of room for future expansion. Designed for you!

✓ FCC Class B approved, of course.

CHECK YOUR EXCLUSIVE Z

✓ Two high speed serial ports, one parallel port and one game port.

✓ Our top quality 200 watt power supply providing you with plenty of power for your present *and* future needs.

✓ ZEOS uses *only* genuine Teac® floppy drives. Accept nothing less.

✓ Monochrome TTL systems feature Genuine Hercules® Brand graphics controllers. Only the best for you.

✓ VGA color systems feature our high-res ZEOS 1024x768 monitor with the incomparable SpeedStar Plus card!

CHECK

**Your new Z offers a co
features not
where else
obvious imp
others are su
to your ultim
No wonder
reported ZEO
to be #1 in "C
Would Buy A
you'll agree,
choice**

ZEOS 386SX-20.

\$1195!

Be Your #1 Choice!

ZEOS 386SX-20 ADVANTAGES:

Special package savings are available incorporating our most popular upgrades. Many packages include Microsoft® DOS plus Windows and a Mouse!

IT OUT!

ZEOS 386SX-20 combination of available anywhere. Many are of importance, while subtle yet critical date satisfaction. PC Magazine S 386SX owners Customers Who gain!" We think ZEOS is your #1 as well!

24 Hour a Day Toll Free Technical Support. You can call for advice any time of the day or night, 365 days a year!

Your new system is backed by our 30 Day Absolute Satisfaction Money Back Guarantee, One Full

For a limited time every ZEOS Windows system also comes with Lotus 1-2-3 for Windows plus Lotus' incredible new Windows word processor *Ami Pro 2.0!*

Everybody loves ZEOS'

Year Limited Warranty and our Express Replacement Policy.

Buy with confidence. ZEOS is a strong and rapidly growing public company (NASDAQ Symbol: ZEOS). We've been around since 1981. We'll be around for a long time to come as well.

ZEOS offers you a wide variety of payment options including MasterCard, VISA, Discover, American Express plus our own Z-Card, the ZEOS credit card featuring low consumer rates. Credit terms are also available along with attractive leasing programs to qualified corporate customers. We also ship COD if you wish.

Friendly ZEOS Systems Consultants are available 24 Hours a Day by calling 800-423-5891. You can call any time.

When you add it all up, there's nothing like buying from ZEOS. There is certainly nothing like the incredible ZEOS 386SX-20!

Why not give us a call right now!

CALL NOW TOLL FREE:

800-423-5891

The Incredible New ZEOS 386SX-20!

Only \$1195!

There is nothing else like it.
And starting complete at only \$1195,
there probably won't be for quite some time.
Come on in and take a look!

TAKE YOUR PICK!

Choose from 4 great money saving packages.

or specify your own custom configuration!

Your complete ZEOS 386SX-20 system! Package #1.

ONLY \$1195

Your complete 386SX-20 system for only \$1195. Including all the features described in the column to the left. Highlights include:

- Screaming ZEOS 20MHz 386SX motherboard.
- 512K of High Speed 53ns DRAM, 16MB motherboard capacity.
- Ultra-fast 42MB IDE Hard Drive.
- Genuine Teac® 1.2MB floppy.
- Shadow RAM/EMS capability, 387SX support.
- ZEOS 14" Flat Screen Tilt/Swivel Amber Monitor.
- Genuine Hercules® Graphics Card.
- Two Serial, one Parallel and one Game Port.
- ZEOS SuperCase: 2 Cooling Fans, 7 Bays, 200 Watt power supply.
- ZEOS R/S 101 keyboard.
- 30 Day Absolute Satisfaction Money Back Guarantee.
- One Full Year Limited Warranty, with Express Parts Replacement.
- 24 Hour a Day Toll Free Technical Support.

The Incredible Upgrade Package #2

ONLY \$1695

We take Package #1 and upgrade your Editor's Choice system to include:

- Top quality 16-bit high res 1024 VGA color graphics card.
- ZEOS 14" High Res 1024x768 VGA Color Monitor/Tilt & Swivel.
- One full Megabyte of 53ns DRAM.
- A second Teac floppy, 3.5" 1.44MB.
- Microsoft® DOS 5.0 with Disk Cache Software.



Lotus Software Bundle!

For a limited time only, order any ZEOS Windows system (like packages #3 and #4 at right) and we will also include Lotus 1-2-3 for Windows and Ami Pro 2.0— at no additional charge!

YOUR #1 CHOICE

From a family of eight *PC Magazine* Editor's Choice systems. The incredible ZEOS 386SX-20!

Incredible Upgrade Package #3

ONLY \$1995

Now take Two megabytes of memory and a larger hard drive and save even more! Your extras now include:

- High Speed 85MB IDE Hard Drive.
- Top quality 16-bit high res VGA color graphics card.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel.
- Two full Megabytes of High Speed 53ns DRAM.
- A second Teac floppy drive, 3.5" 1.44 MB.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a Microsoft mouse!

Incredible Upgrade Package #4

ONLY \$2295

Want an even bigger hard disk? Package #4 gives you all the extras *plus* our Fast 130MB hard drive. Outrageous savings!

- High Speed 130MB IDE Hard Drive.
- Top quality 16-bit high res 1024 VGA color graphics card.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel.
- Four full Megabytes of High Speed 53ns DRAM.
- A second Teac floppy drive, 3.5" 1.44 MB.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a Microsoft mouse!

**ORDER NOW TOLL FREE:
800-423-5891**

Computers Now!™

Our Most Popular 386SX-20. Ready to ship today!

RIGHT NOW. GUARANTEED!*

Yes, we can ship this new ZEOS 386SX today! We've built up an extra supply of our hottest selling ZEOS 386SX model including the Lotus software bundle.

Here's how it works. We have this incredible ZEOS 386SX-20 VGA system pre-built and ready to ship. While supplies last, we will ship this system to you *the day you order* subject to these conditions:

1. Your order must be received by 1PM Central Time M-F.
2. Credit Cards are subject to authorization.
3. Your order must be for the ZEOS 386SX system configured as shown here. Any other systems or upgrades are custom built and will take slightly longer.

*OUR GUARANTEE TO YOU:

If we accept your order for immediate shipment and fail to ship your system under the conditions outlined, we will ship it at *our expense* as soon as it is ready.

This offer is good only as long as these pre-built systems remain in stock; please give us a call to verify availability. This offer does not apply to other ZEOS systems or custom configurations.

IMMEDIATE SHIPMENT IS ONLY PART OF THE STORY.

This is not just any computer. It's the incredible ZEOS 386SX-20—from a family of Eight *Editor's Choice* systems! Plus, for a limited time only we'll be including Lotus 1-2-3 for Windows plus Ami Pro 2.0 at *no additional charge!*

So why not give us a call right now. If we hear from you by 1:00 this afternoon, we'll get your new system on the way to you today. Call now Toll Free 800-423-5891!



**Yes! We can ship
your new ZEOS system
Right Now!
Place your order
by 1:00 PM Central
Time and we'll ship
today. Guaranteed!***

The Incredible 20MHz ZEOS 386SX System. 2MB 53ns RAM, 85MB Drive, 1024 VGA Color & Lotus 1-2-3 & Ami Pro 2.0!

ONLY \$1995.

It's what everyone wants. Our new 386SX, loaded with features and ready to ship to you today!

- 386SX-20 CPU, 8/20MHz.
- 2MB of Zero-Wait 53ns DRAM, expandable to 16MB.
- 85MB High Speed IDE Hard Drive.
- 1.2MB and 1.44MB Teac® floppies.
- ZEOS 14" High Res 1024x768 VGA Color Monitor.
- High Speed 16-bit SpeedStar Plus VGA card with 1MB RAM!
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- High Speed ZEOS I/O with two Serial, one Parallel & one Game Port built in.
- 7-16, 1-8 bit expansion slots. 80387SX math coprocessor support.
- Rugged ZEOS SpaceSaver case with two cooling fans for added reliability and product life.
- Seven drive bays and our custom 200 Watt power supply for your future expansion.
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

**ORDER NOW TOLL FREE
800-423-5891**

FAX Orders Dial: 612-633-1325
In Minnesota Call: 612-633-4591
MasterCard, VISA,
Discover, AmEx,
Z-Card and COD
Open 24 Hours a
day, 365 Days
a year.



Purchase orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing programs available. All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty details. The following are trademarks of their respective corporations: Microsoft, MS-DOS and Windows of Microsoft Corporation; ZEOS, Computers Now!, SpaceSaver, SuperCase and Z-Card of ZEOS International Ltd. © ZEOS International Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company, NASDAQ symbol: ZEOS. Lotus is a registered trademark of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, a wholly-owned subsidiary of Lotus Development Corporation.

Apply Now for the Z•CARD!

NO ANNUAL FEE!

SEND FOR YOUR ZEOS CREDIT CARD



- **Low Consumer Rate!**
- **No Annual Fee!**

Now you can send for your own ZEOS Credit Card. It works just like a MasterCard or Visa for ZEOS purchases.

Fill out your Z•Card™ Application and mail it today to **ZEOS International, Z•Card Processing Center, 530 5th Avenue N.W.,**

St. Paul, MN 55112. We'll give you a call as soon as your credit line is established!*

Please complete all appropriate sections, *providing at least two years residence and employment history.* **THIS IS NOT A CREDIT AGREEMENT!** One will be sent to you upon authorization of an account. (This Form Must Be Signed To Process Your Order.) All Financed Purchases Are Subject To Credit Approval. **If You Have Any Credit Questions, Please Call 800-421-8942 For Assistance. Thank You!**

A married person may apply for individual credit. I am applying for (please check appropriate box):

- JOINT CREDIT** with another person. Complete entire application.
- INDIVIDUAL CREDIT** but rely on income or assets of another person as a basis for repaying the credit requested. Complete entire application.
- INDIVIDUAL CREDIT.** Do not complete Section C.**

**If you are a married Wisconsin applicant, you must provide your spouse's information as indicated, even though your spouse may not be signing the contract.

NOTICE TO WISCONSIN APPLICANTS: YOU MUST DISCLOSE YOUR MARITAL STATUS:

- married unmarried legally separated

A. YOUR PERSONAL INFORMATION

Name _____
 Home Phone (_____) _____
 Soc. Sec. No. _____ Date of Birth ____/____/____
 Address _____ Apt. _____
 City _____ State _____ Zip _____
 Since? (Mo./Yr.) _____ Buy Rent Other _____
 Previous Address _____
 City _____ State _____ Zip _____
 Employer _____ Since? (Mo./Yr.) _____
 Monthly Gross Salary \$ _____ Daytime Bus. Phone (_____) _____
 Previous Employer _____ From - To _____
 Occupation _____
 Income from alimony, child support or separate maintenance payments need not be disclosed if you do not wish to have it considered as basis for repaying this obligation.
 Additional Monthly Income \$ _____ Source: _____
 Name & Address of Nearest Relative Not Living With You _____
 _____ Relationship _____

B. CREDIT INFORMATION

PLEASE TELL US IF YOU HAVE: Checking Account Yes No
 Savings Account Yes No

	Y/N	How Many?		Y/N	How Many?
Bank Loan	_____	_____	Dept. Store Charge Card	_____	_____
VISA	_____	_____	Credit Union Account	_____	_____
MasterCard	_____	_____	Other Major Charge Cards	_____	_____
Finance Company Loan	_____	_____			

C. JOINT APPLICANT INFORMATION

Joint Applicant's Name _____
 Soc. Sec. No. _____ Date of Birth ____/____/____
 Address _____ Apt. _____
 City _____ State _____ Zip _____
 Home Phone (_____) _____ Date of Residence (Mo./Yr.) _____
 Joint Applicant's Employer _____ Since? (Mo./Yr.) _____
 Bus. Phone (_____) _____ Monthly Gross Salary \$ _____

CUSTOMER AUTHORIZATION

I authorize ZEOS International, Ltd. or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct to the best of my knowledge and belief.

Applicant's Signature _____
 Date _____

Joint Applicant's Signature _____
 Date _____

FOR MARRIED WISCONSIN APPLICANTS:
 I acknowledge that the obligation described herein is being incurred in the interest of my marriage or family.

Buyer's Signature _____ Date _____

There are costs associated with the use of this credit card. To obtain more information about these costs, call us at 800-421-8942 or 612-635-0613 or write to ZEOS, Z•Card Processing Center, 530 5th Avenue N.W., St. Paul, MN 55112.

NY—A consumer credit report may be requested in connection with this application or in connection with updates, renewals or extensions of any credit granted as a result of this application. If I subsequently ask for this information, I will be informed whether or not such a report was requested and, if so, the name and address of the agency that furnished the report.

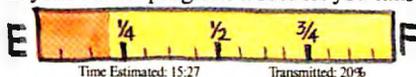
OH—THE OHIO LAWS AGAINST DISCRIMINATION REQUIRE THAT ALL CREDITORS MAKE CREDIT EQUALLY AVAILABLE TO ALL CREDITWORTHY CUSTOMERS AND THAT CREDIT REPORTING AGENCIES MAINTAIN SEPARATE CREDIT HISTORIES ON EACH INDIVIDUAL UPON REQUEST. THE OHIO CIVIL RIGHTS COMMISSION ADMINISTERS COMPLIANCE WITH THIS LAW.

*Financing not available in Alaska, Hawaii or outside the continental U.S.

How To Get Into PC Communications Without Jumping Out Of Windows

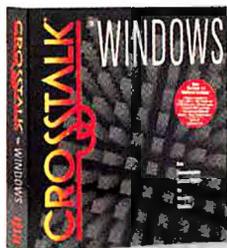
You forget how wonderful Windows™ is until you have to exit it to transfer a file.

Since most communications software won't work in Windows, you're left sitting on your hands watching a "gas gauge" as your file transfer crawls from start to finish. If your comm program would let you take



advantage of Windows multi-tasking, then you could minimize it to a simple icon while you carried on with something else (like the spreadsheet you promised your boss an hour ago).

Well, with Crosstalk® for Windows you can.



It's All In The Background.

Not only does it keep you in the point-and-click world of Windows, but more importantly, it lets you establish connections, and send and receive files—all in the background. In fact, while you're busy on another project, Crosstalk for Windows can be answering calls, dialing a queue of numbers, transferring data or keeping a VAX® link open. Think about it.

You can prepare "The Big Presentation" on your Windows word processor while Crosstalk for Windows is calling Dow Jones News/Retrieval® and capturing stock information. Then, you can cut and paste the appropriate Dow Jones data right into your presentation. Or import it transparently through DDE. You can even automate repetitious jobs (like that daily call to collect data from branch offices) by writing scripts or using the Learn feature.

Nobody Does Windows Like Crosstalk.

Compare the "stars" from Software Digest.

- ★★★★ Crosstalk for Windows Smartcom III
- ★★★★ Procomm Plus
- ★★★★ DynaComm Asynchronous Edition
- ★★★ Relay Gold
- ★★★ MicroPhone II for Windows

"Product of the Year" Software Digest called it the "Best of the graphical communications packages." And PC Magazine told Windows shoppers, "If you're a Windows fan shopping for a communications package, Crosstalk for Windows is a sure bet."

Take A Free Test Drive.

Spend 5 minutes with our working model—and you'll never want to jump out of Windows again.



For your free copy, call 1-800-348-DCA-1, ext. 83C.

CROSSTALK

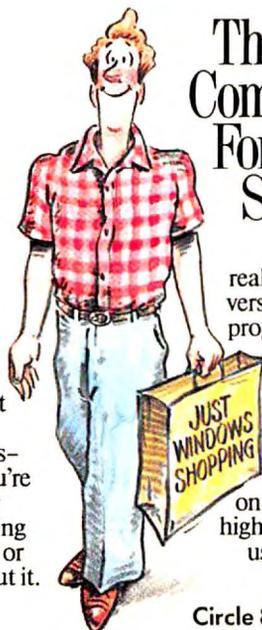
Another Communications Solution From DCA®

©1991 Digital Communications Associates, Inc. All rights reserved. DCA and Crosstalk are registered trademarks of Digital Communications Associates, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners. Reprinted from Software Digest Ratings Report, Vol. 7, No. 12.

Software Digest

Vol. 7 No. 12 1990
Crosstalk for Windows

1990
Crosstalk for Windows



The Ultimate Comm Package For Windows Shoppers.

Crosstalk for Windows really is one of the most versatile communications programs on the market today.

It supports the most popular protocols and emulations, including ZMODEM and VT™220/VT320. It can access shared modems on LANs and also supports high-speed modems. Yet, it uses only 150K RAM.

Info World named it

Circle 84 on reader service card

PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

Color and Light: The New Color Notebooks

Color notebooks—lightweight, compact, battery-powered, and delivering VGA hues in all their glory—are poised to make their appearance in the marketplace.



The Sharp PC-6881 will probably be the first notebook available with an active-matrix color screen. The result looks better than a standard VGA monitor.

Lincoln Spector

If you're a typical *Windows* user, the colors on your monitor not only serve to enliven your work, they may even help you distinguish a credit from a debit. But when you take your work on the road, you must sacrifice these lovely and useful colors in order to get the small size, the light weight, and

the battery-powered operation of a notebook.

But perhaps not for long. This past October, while attending COMDEX Fall in Las Vegas, I set out in search of the elusive color notebook. I found prototypes of four 256-color VGA notebooks: Sharp's PC-6881, Epson's NB-SL/25C, AST's Premium Exec 386SX/25C, and the Dell System

325NC. The best of them, the Sharp and the Epson, showed colors as bright and sharp as the best multisync monitor but without a multisync's flicker. The old refresh problems of standard LCDs—move the mouse and the cursor disappears from the screen—were solved. The flat screen finally moves faster than the eye.

When will the real note-

books arrive? Three of the four manufacturers told me their notebooks would ship in the first quarter of 1992, but they also said that their competitors' products would be late. Epson was the exception—and probably the most honest—promising only a second-quarter ship date.

When they finally do come out, color notebooks won't be cheap. The prices quoted ranged from "under \$5000" to "\$7549" to "we don't want to say just yet."

If you make traveling presentations, justifying that kind of expense shouldn't be difficult. The best flat displays look as good as VGA monitors and are perfect for showing small groups why your company or department is better than the others. Even a comparatively inexpensive color notebook can

SNAPSHOT

Sharp PC-6881

Sharp's super-lightweight color notebook boasts a beautiful screen as well as a built-in trackball.

KEY FEATURES

- Thin Film Transistor active-matrix color screen
- Built-in trackball
- PCMCIA card slot
- 5.5 pounds including battery

AVAILABILITY

First quarter 1992

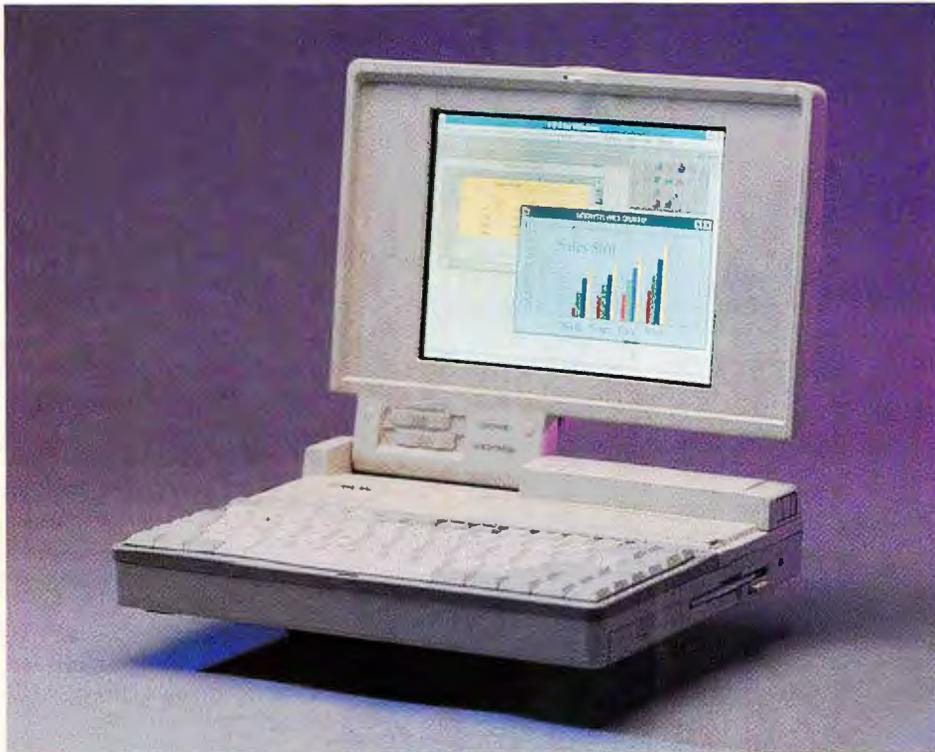
PRICING

Not available

Sharp Electronics

Sharp Plaza
Mahwah, New Jersey
07430
800/237-4277

Reader service no. 718



Epson's active-matrix notebook, the NB-SL/25C, is highly upgradable. Even the color screen can be an upgrade from the monochrome model.

be a blessing if you use colors to distinguish part of your spreadsheet or if you must redesign a slide while flying to meet a client.

Behind the Screen

The major difference between expensive and not-quite-as-expensive color notebooks is the color LCD technology used. You don't need to understand the technical details of active- and passive-matrix LCDs (see "Inside an Active-Matrix Color LCD," February 1991, page 78, if you feel you do), but you should know that active-matrix screens look much better, while passive screens cost less to make and use much less battery power.

No matter what kind of screen they had, all the color notebooks I saw used an Intel 386SL processor to extend battery life—an important issue even for passive-matrix notebooks. At this point, no one is sure how effective a power-saving tool the SL will be, but

all four laptops claim 2 to 3 hours of battery life with all power-saving features on.

The Sharper Image

Active-matrix machines will undoubtedly be the elite of the notebook scene, and Sharp's PC-6881 is about the ritziest way to travel while keeping your baggage light. Not only does this 5.5-pound system come with a spectacular active-matrix color screen, but in addition, its built-in trackball will spare you the hassles of carrying—and finding a place to roll—a mouse. And just in case Sharp and BIOS designer Phoenix Technologies find a better way to use the SL's power-saving features, they've incorporated a BIOS chip that can be upgraded through software.

What's more, the Sharp comes with a Personal Computer Memory Card International Association (PCMCIA) slot, an up-and-coming standard interface for credit

card-size expansion options. The number of PCMCIA cards available is small, but it includes several memory cards and at least one modem. As the standard catches on, it should give notebooks the type of third-party hardware expandability that AT-style expansion slots have given desktop systems for years.

If you want to upgrade the CPU, however, forget it. And you may want to with this unit: Of the four color notebooks I saw, this is the only one with a 20-MHz SL chip—the others all had faster 25s.

So how much will this beautiful color notebook cost you? As we went to press, Sharp wouldn't provide even a ballpark figure. But to give you some idea of what the price is likely to be, a company representative did say that the 6781, a monochrome sibling of the PC-6881, will list for something under \$5000. For active-matrix color, you'll pay considerably more.

An Active Alternative

Epson's active-matrix color notebook, the NB-SL/25C, will also cost considerably more than its monochrome sibling, but at least we know how much more. Configured with 4MB of RAM and a 60MB hard disk, the 7.3-pound NB-SL/25C will list for \$7549; the monochrome NB-SL/25 will list for \$4899 in the same configuration.

In order to keep costs and battery drain down, Epson will be using a new, proprietary active-matrix technology, Metal Insulator Metal, in place of the more traditional Thin Film Transistor technology that Sharp will have. Does it look as good? I didn't get a chance to put the two systems side by side, but I would be hard-pressed to say one screen looked better than the other.

SNAPSHOT

Epson NB-SL/25C

Epson's new active-matrix technology produces Thin Film Transistor-quality screens while keeping costs and power consumption relatively low.

KEY FEATURES

- Metal Insulator Metal active-matrix color screen
- Easily changable, upgradable hard disk
- Upgradable screen
- 20MB RAM capacity

AVAILABILITY

Second quarter 1992

PRICING

With 4MB of RAM and no hard disk \$6529; 40MB hard disk \$720, 60MB hard disk \$1020, 80MB hard disk \$1320

Epson America
20770 Madrona Ave.
Torrance, CA 90503
800/922-8911

Reader service no. 719

GREG PRESTON

Food for the senses at a price that makes sense: \$749*

Introducing CD Gallery™: The Interactive CD-ROM System from NEC.

Is this the offer you've been hungry for? Cash in big on the sensational world of CD-ROM with seven exciting software titles for the IBM PC and 100% compatibles, with all the necessary hardware including the amazing NEC CDR-36 CD-ROM reader, KOSS® SA/30 amplified stereo speakers and even stereo headphones, all for just \$749*. There's also a CD Gallery version available for the Macintosh at just \$699*. Or, if you want to upgrade to the NEC CDR-73, one of the fastest readers on the market, it's just \$1,050* for the IBM XT/AT. And it's all incredibly easy to set up and use. But don't chew on this offer too long because supplies are limited. Call 1-800-NEC-INFO for the nearest authorized NEC dealer to find out where you can pick up the ultimate feast for your mind.

*Manufacturer's suggested retail price, actual price may vary, call your dealer for actual pricing. Other versions available for PS 2, parallel SCSI & Macintosh. © 1991 NEC Technologies, Inc. CD Gallery is a trademark of NEC Technologies, Inc. The New Grolier Electronic Encyclopedia is a trademark of Grolier Incorporated. The Software Toolworks is a registered trademark of The Software Toolworks, Inc. Time Table of History is a trademark of Kopias, Inc. Battle Chess is a trademark of InterPlay Productions. Macintosh is a registered trademark of Apple Computer, Inc. IBM, XT, AT and PS 2 are registered trademarks of the International Business Machines Corp.



Because  is the way you want to go. **NEC**

C&C Computers and Communications

Circle 203 on reader service card



It's no match for active matrix, but the AST Premium Exec 386SX/25C may push the envelope on passive-matrix quality.

Epson's notebook won't come with a trackball or PCM-CIA slot, but it's still quite upgradeable. The 40MB, 60MB, and 80MB hard drives will be

as easy to change and replace as the battery, and the Epson accepts a full 20MB of RAM. Even the screen is upgradeable. If you buy a monochrome NB-SL/25, you'll be able to install a color screen at any Epson service center.

SNAPSHOT

AST Premium Exec 386SX/25C

AST's color notebook uses slower, less bright passive-matrix technology to keep the price down.

KEY FEATURES

- Passive-matrix color screen
- Choice of 60MB or 80MB hard drive
- Lightweight AC adapter

AVAILABILITY

January 1992

PRICE

With 4MB RAM and 60MB hard disk \$4995; with 80MB hard disk \$5295

AST Research
16215 Alton Pkwy.
P.O. Box 19658
Irvine, CA 92713-9658
800/876-4278

Reader service no. 720

Passive Restraint

If you can't afford an active-matrix notebook, you can buy bargain color with a passive-matrix system. The colors won't be as vivid, the contrast will be lower, and the screen won't rewrite as fast as you'd wish (passive-matrix screens aren't as slow as monochrome LCDs, but if you move your mouse quickly, the on-screen pointer disappears). You will, however, be able to buy a color notebook for under \$5000.

Their slow screens and subdued colors make passive-matrix notebooks a second-class choice for giving presentations, but if you design presentations, study graphs, or use color seriously to differentiate information, a good passive-matrix notebook is worth considering.

The pair of passive-matrix notebooks I saw at COMDEX

—AST's 7.5-pound Premium Exec 386SX/25C and Dell's 6.9-pound System 325NC—are similarly priced machines that will surely compete head-to-head. The AST will list for \$4995, and if other ASTs are any indication, it will sell on the street for considerably less. At press time Dell hadn't priced the 325NC but promised the notebook will sell for "significantly less than \$5000." Both notebooks will come with 4MB of RAM (expandable to 8MB in the AST and 12MB in the Dell). If you buy an AST, you can choose between a standard 60MB or an 80MB hard disk; the Dell will come only with an 80MB disk.

No passive-matrix display can compete with the beauty of active matrix, but some are much better than others. The AST's screen was markedly superior to the Dell's, with higher contrast and a faster response. But AST has warned me that the shipping system may not have the same screen as the prototype.

Many questions about color notebooks still remain unanswered. What will they really cost? When the screens are

SNAPSHOT

Dell System 325NC

Dell's color notebook uses less-expensive, less-striking passive-matrix technology.

KEY FEATURES

- Passive-matrix color
- Nickel-hydrate battery
- Fax-modem slot
- 12MB RAM capacity

PRICING

Less than \$5000

Dell Computer
9505 Arboretum Blvd.
Austin, TX 78759-7299
800/289-3355

Reader service no. 721

mass-produced, will they look as good as the prototypes? And will the batteries really last as long as the manufacturers promise? *PC World* will soon take an in-depth look at these colorful carryables. Stay tuned. ☎

Lincoln Spector is an assistant editor for PC World.



Dell's passive-matrix System 325NC won't do for professional presentations but could be cost-effective for color-hungry travelers.

PEACHTREE ACCOUNTING MAKES EVERY PENNY COUNT.

When you're running your own business, every financial decision is an important one. Make sure you're getting the most out of your business dollar with the best value in accounting software, The Peachtree Double Bonus Bundle ■

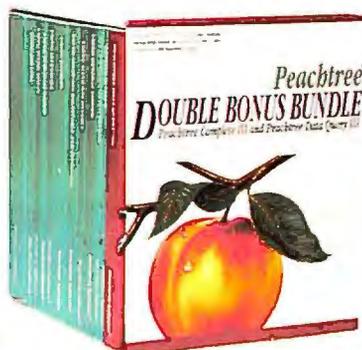
Peachtree Software has been the leader in accounting software for over 13 years. Now we've combined two high-powered programs into one value-packed bundle — Peachtree Complete® III, a comprehensive accounting system, and Peachtree Data Query® III, a custom reporting and analysis tool ■

Peachtree Complete III has nine powerful modules, each loaded with features you'd expect to find in much higher priced packages:

- General Ledger
- Invoicing
- Accounts Payable
- Purchase Order
- Accounts Receivable
- Fixed Assets
- Payroll
- Job Cost
- Inventory

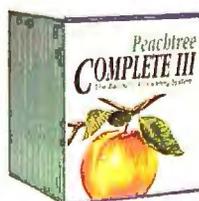
Easy to Use

The modular design of Peachtree Complete III makes it easy to implement the functions you need now, then add others as your business expands. Everything you need to start setting up accounts and processing your financial



\$298

information is included in the package. There's a Quick-Start Guide to help you load the program, as well as a DOS and Accounting Primer plus a nine-volume reference library. Each module has on-line tutorials that help you learn accounting as you install the program, and context-sensitive HELP is available any time you need assistance ■



\$199

Flexible, Powerful Reporting

The management reporting capabilities of Peachtree Data Query III give you a unique view of the accounting data in your Peachtree Complete III files. Whether you choose one of the 50 pre-defined reports or customize your own, PDQ lets you get to the meaning behind the numbers with historical reports and complex analyses to give you a more complete picture of your business finances ■

With PDQ you can even read and report on data from your Lotus 1-2-3® spreadsheets, and export data to Lotus 1-2-3, dBASE® and other popular applications with no re-keying of data and no risk to your files ■

Best of all, you won't sacrifice ease of use to get the power and performance your business needs. There's an on-line tutorial in each module, so you can learn accounting as you set up your files. Context sensitive HELP is on-line at all times. Peachtree provides a

thorough reference library, including a quick-start installation guide and Accounting Primer to assure that you'll be up and running quickly. Errors are handled with understandable, plain English messages and suggestions ■

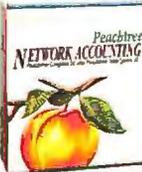
Highly Recommended

In a recent survey by *Accounting Today* magazine, Peachtree was recommended by accountants almost twice as often as the nearest competitor. When *Reseller Management* asked resellers which accounting package they recommend, Peachtree came out on top again, with 25% of resellers recommending it ■

Most importantly, users recommend Peachtree! Based on reader response, *Computer Shopper* named Peachtree Software the Best Buy in Accounting Software for 1990, and Peachtree Complete III received the 1991 World Class Award from *PC World*. More than 400,000 small businesses trust their accounting to Peachtree ■

We're Not Satisfied Until You Are

Convenient technical support may be purchased from Authorized Support Centers in over 80 cities across the country or through prepaid support contracts directly from Peachtree. We stand behind our products with an unconditional 60-day money back guarantee. If you aren't satisfied with your Peachtree product, simply return it within 60 days for a prompt refund ■



Give every workstation the power of Peachtree with Peachtree Complete Network Accounting!

Now your entire staff can access the full-featured accounting power of Peachtree Complete III plus the custom reporting capabilities of Peachtree Data Query III in one multi-user package — Peachtree Network Accounting. Multiple users may use a single module simultaneously. Most modules allow several operators to perform the same function at the same time for the same company. But don't worry — we've provided three levels of optional password security to protect your confidential accounting data. Peachtree Complete Network Accounting is available now for use with Novelle®, LANtastic™ and other NETBIOS compatible LANs. **\$695**

Call now to order

or for the name of a dealer in your area

1-800-247-3224

or to order by Fax 404-564-5888

Add \$12.50 shipping. In Georgia, add applicable sales tax. Telephone number required on all orders.



Peachtree Software

1505 Pavilion Place • Norcross, GA 30093

Hardware Specifications: Requires PC/MS-DOS version 3.1 or higher (supports DOS 5.0) with 640K of memory and a hard disk. For use with IBM® PC, PC XT, PC AT, Personal System/2™ and compatibles. Alternate media optionally available. Not copy protected. Product names referenced are trademarks and registered trademarks of their respective manufacturers.

The new UltraLite III. Is it a notebook, a desktop or a portable? Yes.



Did you know that NEC makes a wider range of computer products than anyone in the industry?

From one of the world's smallest and lightest notebooks, to the world's fastest supercomputer.

Our UltraLite® III is one of the best personal computers you can buy. In fact,

it's *three* of the best personal computers you can buy.

■ *First, the UltraLite III, when it's a notebook*, weighs just 4.8 pounds and measures a super-thin 1.5" x 9" x 11.5". It has 2MB of RAM (expandable to 10MB), a crisp, bright VGA screen, 60MB hard drive and 386SX processor running at 20 MHz. It also has a broad range of connectivity features, including



At 4.8 pounds, it's one of the smallest, lightest 386SX notebooks around.



serial and parallel ports, a Super VGA CRT port, a mouse port, and an optional internal modem or fax modem. Not to mention an optional external battery slice for a total of over five hours of power. All of which permits it to perform feats far beyond the reach of ordinary notebooks, far from home.

■ *Second, when it's a desktop*, it is a very high-performance machine indeed, delivering full desktop capacity. Nestled in its optional docking station, the UltraLite III gives you even more computing power. It can accept up to two AT[™] cards, and its standard 5¼" drive bay can house a hard or floppy drive, CD-ROM reader, tape backup or other storage device. Allowing you to build the exact computer system you need.

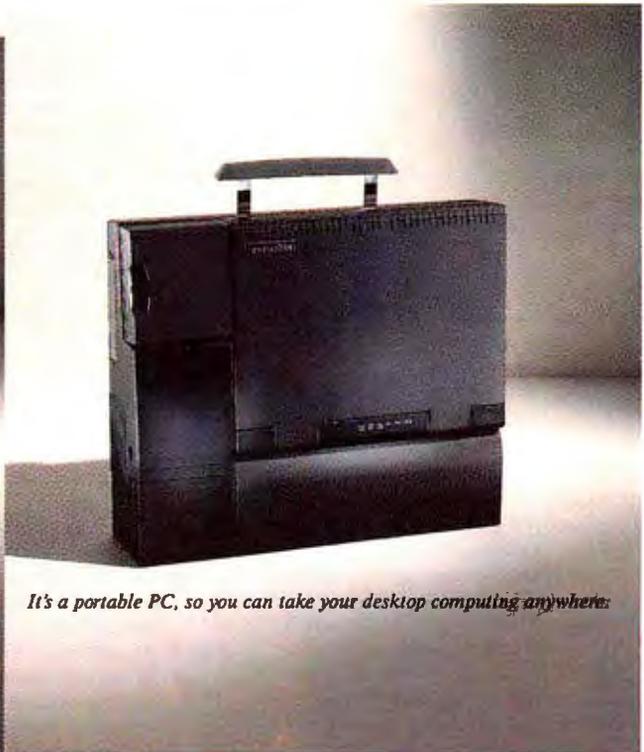
■ *Third, when it's a portable PC*, it's about as portable as you can get. Combined with its docking station, it weighs under 15 pounds and is comparable in size to most laptops. So you can set up your office whenever and wherever you need it.

The UltraLite III comes ready to run with MS-DOS[®] 5.0 and Windows[®] pre-installed. It also gives you something you can't get from anyone else, at any price: NEC. Fact is, NEC not only invented the notebook PC, we invented the docking station, as well.

For more information, call 1-800-NEC-INFO. Or call NEC FastFacts 1-800-366-0476, #ULITE3 (854833) for literature. The new UltraLite III. The answer to your every computing need.



It's a powerful 386SX desktop PC.



It's a portable PC, so you can take your desktop computing anywhere.

Because  is the way you want to go.

NEC



The Sharing Family With Peripheral Vision

Only Western Telematic's LASERNET sharing devices have true peripheral vision — the widest family of products to meet the needs of today's data sharing requirements. Whether it's a simple sharing set-up or a complex network — LASERNET has a device to fit your need and budget.

Western Telematic has peripheral vision in support software too! LASERNET provides



easy-to-use device-select software operable with both Windows™ or MS-DOS® applications.

You won't need glasses to see that LASERNET offers the widest selection

and best value for your money. Just take a close look at these LASERNET models and see which one fits your application:

HIGH-LEVEL



Multi-Link™

Serial/parallel device for twelve or more users. Expandable,

through dedicated high-speed link, up to 384 any-to-any, user-selectable ports, over 4000 feet. Perform printer/plotter sharing, modem/FAX sharing, PC-to-PC file transfer and more.

- 12 concurrent high-speed ports — 8 serial, 4 parallel
- High-speed link — up to 32 Multi-Link devices — 384 total ports!
- Dynamically allocated, field-expandable SIMM memory — 256 KB to 4 MB
- RJ-11 serial ports for snap-in cabling
- Any-port-to-any-port connectivity
- Any-port designation for printer or plotter
- Each port individually programmable
- Windows or DOS pop-up menu software for instant device selection and status
- Uses standard parallel PC-to-printer cables

12 any-to-any ports; buffered from 256 KB to 4 MBstart at \$795

GENERAL



PSU-82C/SP

Programmable sharing units for both serial/parallel printers,

plotters and PCs. Designed for CAD/CAE, high-level graphics, Desktop publishing or general applications.

- 4 concurrent serial and 4 parallel inputs (SP)
- 8 concurrent serial inputs (C)
- 1 serial and 1 parallel output
- Expandable buffer memory from 256 KB to 2 MB
- Separate baud rate, flow control, parity and messages for each port
- Pop-up menu software for easy printer/plotter selection
- Easy menu-driven configuration and set-up
- Prompt and response messages for plotter applications
- Support all laser printers including Post-Script® printers and all types of plotters.

8 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$595



QwikShare® III

Low-cost, expandable, all-parallel, high-speed printer sharing system. From one to

32 PCs independently share up to three remote and one local parallel laser/dot-matrix printer or plotter.

- Expandable to 32 PCs by adding Expansion Modules
- Memory expandable up to 4 MB
- Printer Select Switch — no software or TSR program required
- All parallel port connections — PCs, printers and plotters
- Maximum network distance — 4000 feet
- Quick and easy installation using snap-in, RJ-11 cable & standard parallel cables

Printer Server; buffered from 256 KB to 4 MBstart at \$295
Expansion Module with Printer Select Switch\$149 ea.



QwikShare® II

Low-cost, buffered printer sharing. Supplied with Windows and MS-DOS device-select software which provides pop-up menus for easy printer port selection.

- 6 RS-232 serial inputs - RJ-11 connectors
- 2 user-selectable laser/dot-matrix printer ports
- Expandable memory to 2MB using SIMMS
- Input speeds up to 115K baud

6 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$295

BASIC



QwikShare®

Complete, plug-n-go, "no-wait" sharing system. Up to six IBM PCs or compatibles can share a serial laser/dot-

matrix printer or plotter. Each system contains: sharing unit; super-fast spooling software; three — 9- and 25-pin connectors; four — 25 ft. PC cables; one — 5 ft. printer cable & connector. Compatible with most popular graphics, word processing and spreadsheet software including Microsoft® Windows™.

6 inputs; 1 output;\$195

LASERNET products are **made in U.S.A.**, and backed by a **3-year** limited warranty with service and technical support. To get a closer look at LASERNET, just call on our technical sales representatives.

**To order* or for More Information,
 Call Toll-Free
 1-800-854-7226**

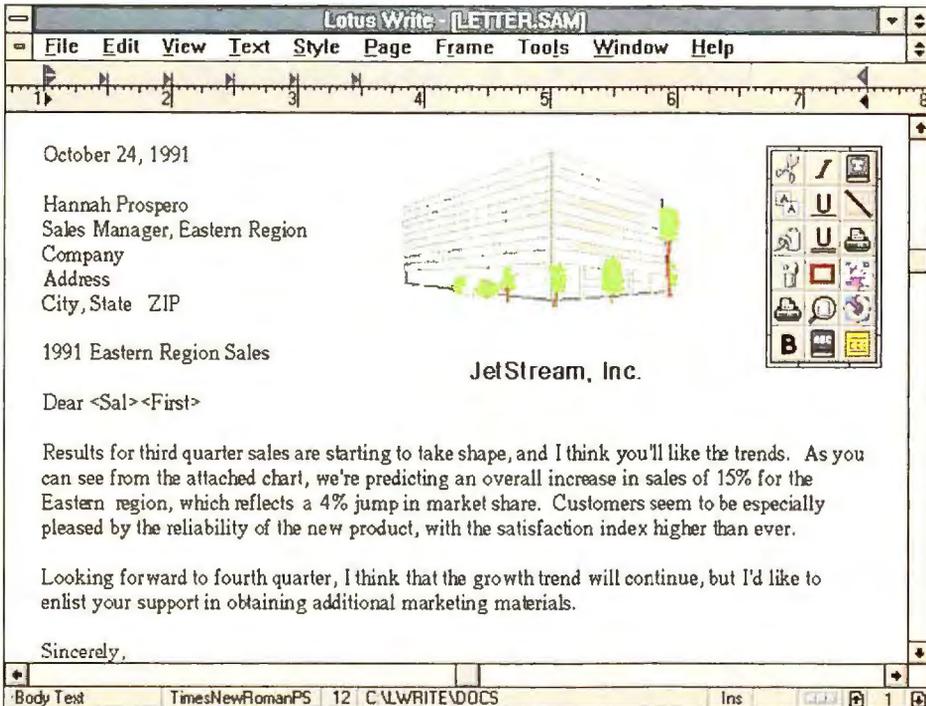
**wte: western™
 telematic inc.**
Making good connections.™

5 Sterling, Irvine, CA 92718 • FAX (714) 583-9514

*Visa, MC Accepted; Same Day Shipping

Lotus Write: A Slimmer Ami Pro

Lotus's new executive word processor is leaner yet strong.



Lotus Write gives you many of the powerful features you'll find in Ami Pro 2.0—such as customizable icons, a flexible ruler, and style sheets—at a lower price.

Bronwyn Fryer

With its full complement of hot editing and desktop publishing features, *Ami Pro 2.0* can be positively daunting to people who need less power. Enter *Lotus Write*, a coach-class version of *Ami Pro 2.0* with first-class service. This product combines basic word processing capabilities with *Ami Pro 2.0's* sweet interface.

Like Symantec's *JustWrite* and Software Publishing Corporation's *Professional Write Plus*, *Lotus Write* is for users who want a solid *Windows* word processor but seldom use the desktop publishing features becoming standard in high-end products. While *Lotus Write* lacks *JustWrite's* table of contents and tables and *Pro Write's* integrated grammar checker, it makes up for

these failings with other strengths, like flexible icons and a powerful outliner.

Amiable Behavior

Lotus Write inherits almost all the succulent features of *Ami Pro 2.0*, starting with customizable icons for access to frequently used functions. As in *Ami Pro*, you can move the icons or click them out of the way. You also get all four of *Ami Pro 2.0's* editable display views, and the product ships with Adobe Type Manager (ATM), so output will be crisp. Moreover, the same collapsible outliner enables you to organize documents quickly, and the powerful spelling checker and thesaurus help you prevent embarrassments.

If you do occasional layout work, you can use click-and-drag frames for inserting

graphics. You won't get the drawing and charting features of *Ami Pro*, but your consolation prizes are a clip-art library and easy importing of just about any graphics file.

To create professional-looking documents fast, you can choose from a dozen business templates. You can combine footnotes and endnotes into your document and use a mail-merge function when you're writing form letters. You can import files on the fly from many major word processing, data base, and spreadsheet programs. A built-in macro recorder makes it easy to record and play back macros.

Lotus Write even supports Object Linking and Embedding (OLE), so you can work with other applications and files from within your document, updating both at the

same time. For example, to read your mail or send *Lotus Write* documents, you can access *cc:Mail* or *Lotus Notes* from within *Lotus Write*.

So what's lacking? Besides heavy-duty charting and drawing features, Lotus has withheld *Ami Pro's* loftiest editing capabilities, such as tables, automatic index and table of contents generation, sorting, revision marking, and document comparison. Neither will you find *Ami Pro's* *powerfields* (variables you can embed in your document) nor its image processing knacks.

But if you're looking for a friendly, everyday program with an easy upgrade path to boot, *Lotus Write* may be just the ticket. ☉

Bronwyn Fryer is an associate editor for PC World.

SNAPSHOT

Lotus Write

WINDOWS This executive word processor gives everyday users a lot of powerful features along with a snazzy and friendly interface.

KEY FEATURES

- Customizable icons
- Outliner
- Macro recorder
- Spelling checker, thesaurus
- Adobe Type Manager

AVAILABILITY

February 1992

PRICING

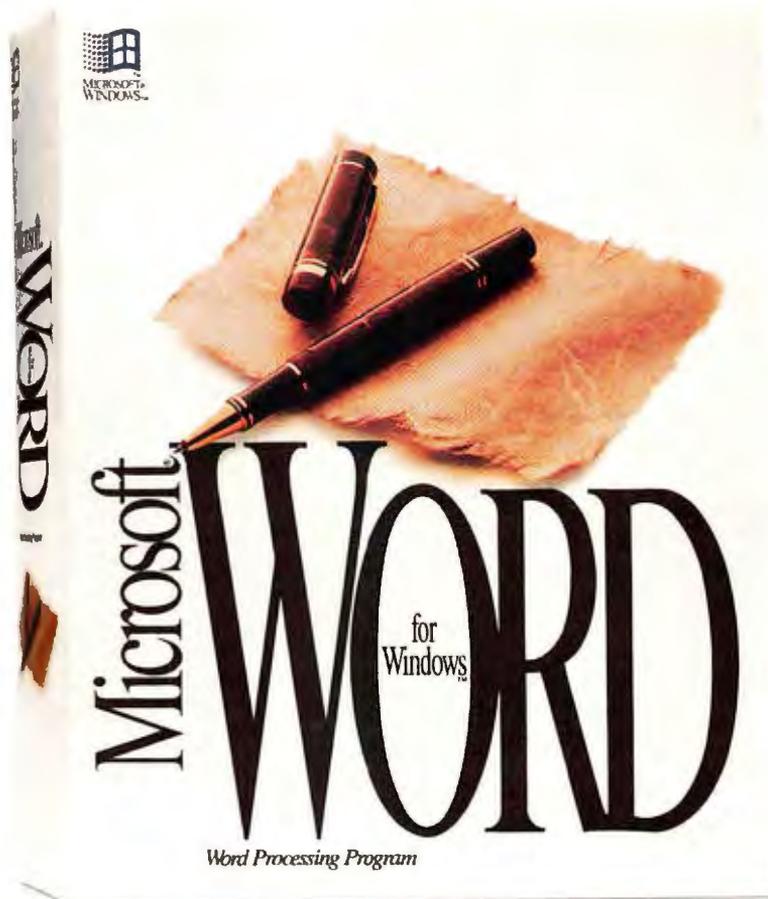
\$199, upgrade to *Ami Pro 2.0* \$149 (upgrade prices from competitive products unavailable at press time)

Lotus Development Corp.

Word Processing Division
5600 Glenridge Dr.
Atlanta, GA 30342
800/831-9679,
404/303-7624 (fax)

Reader service no. 725

Microsoft announces the best upgrade for WordPerfect users.



Special
Upgrade
Offer
\$129

If you're ready to join the millions of people moving from DOS* to the Microsoft® Windows™ environment, upgrade to Microsoft Word for Windows, the best-selling word processor for Windows.

While others are releasing their first-generation Windows programs, we've been refining ours. New Word for Windows version 2.0 features our new Toolbar™ that lets you create automatic bullets, envelopes, charts and more. All with a simple click. And our exclusive new "drag and drop" feature lets you instantly move text and graphics around the page.

Plus, moving from WordPerfect to Word is incredibly easy. Use your existing files** in Word without

losing any work. With the Help for WordPerfect™ feature you can type the WordPerfect command you know and Word automatically demonstrates the equivalent command right in your document. So why not follow our lead? Upgrade now for \$129.†

Call (800) 323-3577, Ext. W92 to order Word for Windows version 2.0 directly from Microsoft or for the name of an authorized Microsoft reseller near you.

Microsoft®

*As used herein, "DOS" refers to MS-DOS or PC-DOS operating systems. **File conversions available for WordPerfect versions 5.1, 5.0, 4.2, and 4.1. †Plus freight and applicable sales tax. Offer good for current licensees of WordPerfect, Multimate, WordStar, MS Word for DOS and DisplayWrite. Allow 2-4 weeks for delivery upon receipt by Microsoft. Offer expires March 31, 1992. Limit one per customer. Reseller prices may vary. Call for system requirements. Offer good only in the 50 United States. © 1991 Microsoft Corporation. All rights reserved. Printed in the U.S.A. In the United States, call (800) 323-3577, Ext. W92. For information only, in Canada, call (800) 563-9048. Outside the U.S. and Canada, call (206) 936-8661. Microsoft and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. WordPerfect is a registered trademark of WordPerfect Corporation.

Compaq Does a Power Lunch Box

The Portable 486c offers heavyweight performance without compromise but at an equally heavy price.



Offering 486 power and an active-matrix color screen that's better than a standard desktop VGA monitor, Compaq's Portable 486c weighs in at almost 18 pounds.

Mike Hogan

Compaq does nothing half way, so you can be sure that the *c* in Portable 486c stands for *color*, not *compromise*. But be ready to pay.

No flirting with second-best like passive-matrix color technology. This power portable travels first cabin with a screen that's better than any VGA-quality CRT: Its Sharp active-matrix liquid crystal display serves up 256 colors simultaneously from a palette of 4096 in VGA mode, along with a wide view.

The 10-inch diagonal display sits in a panel that tilts out from the lunch-box-style unit. Compaq's advanced graphics system speeds up screen response and can drive the display and an external monitor at

the same time—important for presentations.

Powered by a 33-MHz 486DX CPU, the Portable 486c ships with 4MB of RAM, expandable to 32MB with standard SIMMs. In addition to the 1.44MB floppy, you choose between a 19ms 120MB or a 12ms 210MB hard drive. There are even two 32-bit EISA slots and a half-sized modem slot—more slots than offered by current competitors or those machines announced for first-quarter release.

Weighty Concerns

Unfortunately, all this oomph doesn't travel without a little uuhmph. Compaq says the 17.6-pound Portable 486c is "substantially lighter" than many 386-based units," however, Toshiba's market-leading

T3200SXC weighs a tad less. The year-old T3200SXC packs only a 20-MHz 386SX and an active-matrix display with fewer colors in VGA mode. But the T3200SXC is also about \$2700 cheaper.

Still, you may just be one of those champagne-wishes-and-caviar-dreams travelers who can't live without a 486 CPU and EISA expansion slots. Specifically, you may be an architect, engineer, or software developer with disk- or graphics-heavy applications such as CAD, financial modeling, or desktop presentation.

The Portable 486c's 5.5-by-15.6-inch footprint and 11-inch height make it ideal for presentations. It's multimedia-ready, with a SCSI port for a CD ROM player, an audio input jack right next to a slot where a

sound board can be added, and front volume control.

Naturally, there's also a full complement of mouse, parallel, serial, and external VGA ports. And no 80-something keys for Compaq. This portable gives you a full 101 keys on a detachable keyboard.

With its ample power and storage, and better-than-CRT color, the Portable 486c could easily replace your desktop. But if you don't have CAD-sized applications, you'll probably prefer one of the slim new color notebooks backed up by a docking station. ☹

Mike Hogan is a senior editor for PC World.

SNAPSHOT

Portable 486c

With Compaq's top-of-the-line portable, you can have it all—including high performance, 101-key keyboard, and excellent color screen—but you pay the price in cost and weight.

KEY FEATURES

- Active-matrix color LCD
- VGA resolution with 256 colors from a palette of 4096
- 33-MHz 486 processor
- 120MB or 210MB hard drive
- Two EISA slots, proprietary modem slot

AVAILABILITY

Immediate

PRICING

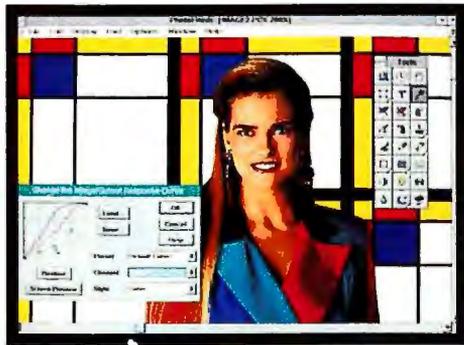
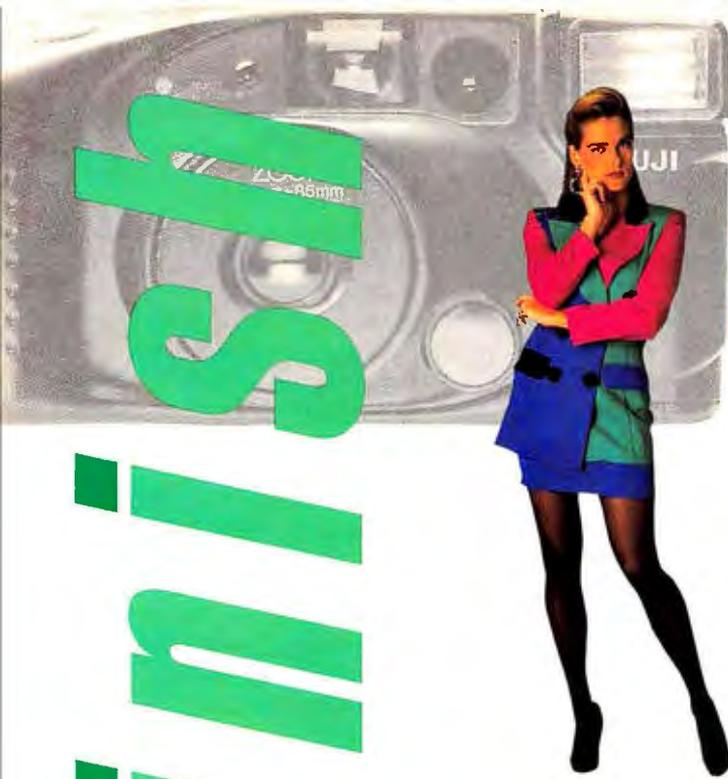
Model 120 with 19ms
120MB hard drive \$9999;
Model 210 with 12ms
210MB hard drive \$10,999

Compaq Computer Corp.

20555 SH 249
Houston, TX 77070-
2698
800/345-1518,
713/370-0670

Reader service no. 712

PhotoFinish



EXPRESS YOURSELF WITH FEWER WORDS

Photo-realistic images add excitement and impact to your communications that you just can't get any other way. Now with PhotoFinish™ it's easier than ever before to add real life drama to all your documents and presentations. Anyone from a novice to the demanding professional can achieve top-quality results. PhotoFinish combines impressive painting and powerful retouching capabilities in one easy-to-use Windows™ application.

Retouching Features Powerful image processing filters can be applied to the entire image or to a masked area. You're in complete control. Adjust color intensities, brightness, and contrast levels. Emphasize highlights and shadows, remove spots, sharpen, and blend images. Fine tune select details with professional retouch tools that let you blend, air brush, brighten, darken, smudge, smear, tint and clone. Use special effects filters for a mosaic look or to emboss, detect edges and add motion blur.

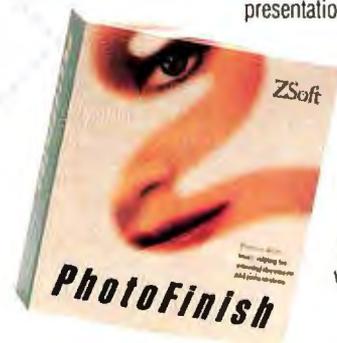
Vivid Color The combinations are endless – you can create and edit images with up to 16.7 million colors! Convert between black & white, 256 color, 256 gray scale, 24 bit color, and 16 color options. Device independence allows true color editing in all video modes.

Wide Ranging Scanning Capabilities Direct support for most flatbed and hand scanners including black & white, gray scale, and color. Precise stitching and de-skewing capabilities allow multiple scans to be joined as one image.

Complete Versatility Zoom from precise retouching to editing larger than screen size images. File format support covers PCX, TIF, GIF, BMP, TGA, MSP, and EPS. Print life size posters, output to film recorders, imagesetters, or any printer supported by Windows.

PhotoFinish is compatible with all major draw, presentation, page layout and word processing programs. And it's affordable – only **\$199.**

Bring your documents and presentations to life with PhotoFinish.



Visit your local dealer or call ZSoft Sales Department at 1-800-444-4780 for more information.

ZSoft
CORPORATION

450 Franklin Road, Suite 100, Marietta, Georgia 30067 • (404) 428-0008

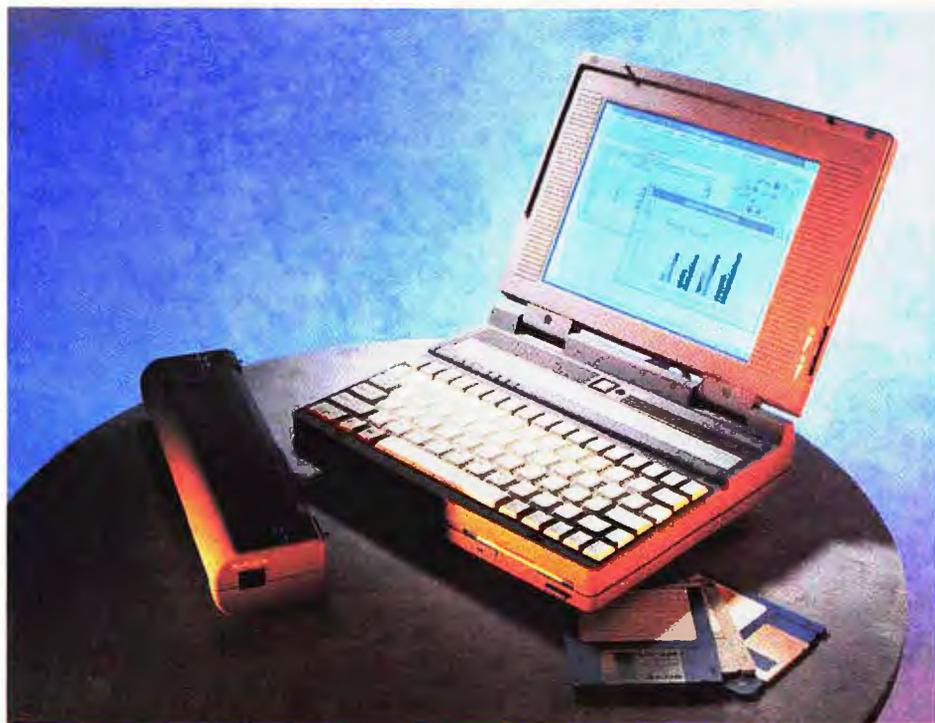
PhotoFinish is a trademark of ZSoft Corporation. Windows is a trademark of Microsoft Corporation.

CODE 4B

Circle 320 on reader service card

Sampo Notebook Blazes Ahead

The Valet SXL 25 is trimmer and lighter and goes further on batteries than the first 25-MHz notebooks.



Sampo's Valet SXL 25, here with 5-hour add-on battery, packs high performance in a small package.

Phil Lemmons

Sampo's Valet SXL notebook charges ahead in the race to bring you 25-MHz performance in a light, compact package with a tiny appetite for power.

Like the AST Premium Exec 386SX/25, previewed in November, the Valet SXL uses AMD's AM386-SXL-25 to speed processing and prolong battery life. But Sampo's machine weighs 14 ounces less at only 6 pounds 2 ounces, is a third of an inch thinner at 1.89 inches, and throws in a send/receive fax-modem for the same list price as the AST.

Sampo claims the Valet SXL has a battery life of 5 hours in ordinary use. Competitor AST claims 3-hour battery life for its 25-MHz notebook. An optional 2-pound 4-

ounce battery pack that screws into the back of the Valet provides 5 more hours of use, as does an optional replacement internal battery pack, according to Sampo. In short, the Valet is not only just as fast as its rival, it's trimmer, lighter, and goes further on batteries.

The standard Valet SXL comes with a 60MB hard disk, 4MB of memory expandable to 8MB, a 2400-baud modem that sends and receives faxes at 4800 baud, *Quicklink* communications software, and battery-check software that works with *Windows*. The standard model lists for \$2995; with an 80MB hard drive, it's \$3495. (In contrast, AST's 25-MHz Premium Exec 386SX/25 Model 63V/4, which lacks a fax-modem, listed at press time for the same price with 4MB of memory and a 60MB

drive, or \$3295 with 4MB of memory and an 80MB drive.) Sampo will also offer a 120MB drive version, but prices were not available at press time.

Notes From a Notebook User

How does the Valet SXL compare in use to a leading member of the previous generation of notebooks? Although the Valet weighs the same as the older Toshiba T2000SX I take on the road, they differ in most other respects.

The Sampo machine is a good inch smaller in width and depth and a half-inch thinner, fitting easily into a briefcase. But the Toshiba's nickel hydride battery recharges in about an hour. The prototype Valet SXL takes about 3 hours to recharge its nickel-cadmium battery.

When it comes to running

Windows, the 25-MHz Valet SXL was the clear performance winner; higher clock speed is the obvious explanation. While you can easily lose *Word for Windows*' cursor in the T2000 display, the Valet's 9½-inch LCD with VGA resolution and 32 levels of gray keep the cursor clear. Indeed, even with *Word*, *Excel*, *Windows Calendar*, and *Paintbrush* loaded simultaneously, performance was excellent, and the suspend/resume button never failed.

All in all, Sampo's Valet meets your every demand for work on the road: light weight, long battery life, built-in communications, and full *Windows* capability. ●

Phil Lemmons is PC World's editor in chief.

SNAPSHOT

Valet SXL 25

Sampo's entry raises the bar for 25-MHz notebooks.

KEY FEATURES

- 25-MHz, low-power AMD SXL processor
- 6 pounds 2 ounces
- 60MB, 80MB, or 120MB hard drive
- 32 shades of gray on 9½-inch VGA LCD
- Send/receive fax-modem
- Add-on battery pack for 5 hours additional use

AVAILABILITY

January

PRICING

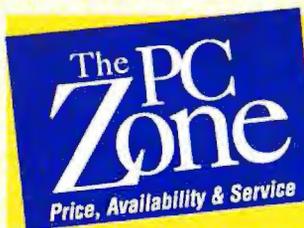
With 4MB RAM and 60MB drive \$2995; 80MB drive \$3495

Sampo Corp. of America

5550 Peachtree Industrial Blvd.
Norcross, GA 30071
404/449-6220,
404/447-1109 (fax)

Reader service no. 717

USA & CANADA • 1-800-252-0386 • OPEN 24 HOURS EVERY DAY



Our commitment:

- Consistent low pricing
- Knowledgeable Sales Advisors
- Quality products and latest versions
- Over 1500 products in stock
- Open 24 hours: Order between 9pm to 7am Eastern Time and shipping is free in USA
- Hassle-free ordering and *6 overnight delivery by Airborne Express

Now! You can place your PC Zone order through **CompuServe** Just Type: **Go MZ** Multiple Zones International

NOW! Our Canadian customers' orders, in most cases, delivered within 24 hours. By special arrangement with Canadian Customs all applicable duties and GST taxes will be charged when placing your order with the Zone. Your products can now be delivered hassle free through Customs without delay. Shipping charges as low as \$16 (US) via Airborne Express. Call for complete information.



WordPerfect Corp. WordPerfect for Windows

\$279

Takes full advantage of the graphical environment of Windows. Makes it easy to adjust tabs and margins, modify columns, create tables, change line spacing. Fonts and graphics are viewed on screen.

Competitive Upgrade \$129
Upgrade \$79

ONE STOP WINDOWS SHOPPING

Abacus	Illustrator Windows 1.0 298	Windows Express 54
Becker Tools For Windows 74	Adobe Postscript Cartridge 298	Icom Simulations
Adobe Systems	Aldus Corporation	Intermission 2.0 Windows 32
Entire Adobe Library Available.	Aldus PageMaker 4.0 488	Individual Software
Call for information.	Persuasion 2.0 348	Professor Windows 26
Adobe Typs Align For Windows .. 68	Application Tec	Informix
Adobe Typs Mgr. For Windows .. 58	Pictureze Windows 98	Wingz For Windows 319
Adobe Typs Sets for Business For	Pizzazz + 68	Intuit
Windows (ea.set) 94	Aristosoft (Aristocad)	Quicken For Windows 34
	More Windows 3.0 65	Lotus Corporation
	Asymetrix Corporation	Lotus 1-2-3 Win Tech Upgr 49
	Toolbook 1.5 For Windows 288	Lotus 123 Windows 399
	Atech Software	Lotus 123 Windows Live Upgr ... 89
	Pub. Powerpak For Window 48	Mathsoft
	Berkeley Systems Design	Mathcad 3.0 For Windows 314
	Alter Dark For Windows - Dual ... 28	Micrografx
	Bitstream Inc.	Charisma For Windows 339
	Face Lift 1.2 For Windows 58	Designer 3.1 458
	Borland International	Microsoft Corporation
	Turbo Pascal For Windows 124	Excel 3.0 For Windows 298
	Turbo Pascal Win Upgr 5.25 98	Office 1.6 For Win 484
	Brown-Wagh Publishing	Money For Windows 48
	More Fonts 3.0 For Windows 74	Publisher For Windows 138
	Caere Corporation	Quick C For Windows 138
	Omnipage 386 V3.0 Windows .. 468	Serial Mouse w/ Windows 144
	Crosstalk Communications	Works For Windows 2.0 138
	Crosstalk For Windows 1.2 122	Powerpoint For Windows 314
	Delrina Technology	Project For Windows 444
	Perform Pro Filler Windows 5 .. 146	Visual Basic For Windows 128
	Foresight Resources	Windows 3.0 89
	Drafax Cad For Windows 429	Windows 3.0 Software Dev Kit .. 314
	Futuresoft	Windows Entertainment Pack 26
	DynaComm 3270 Sync Win 3.0 178	Windows Productivity Pack 38
	hDC Computer	Word For Windows 1.1 304
	First Apps For Windows 48	OCR Systems
	File Apps 74	Readright For Windows V3.0 299



Symantec Norton Desktop

The complete Windows file management and utilities solution. It uniquely integrates the functionality of Windows 3.0 File Manager and Program Manager into one seamless desktop. It also includes automated backup and data recovery and other indispensable productivity tools.

\$98



NEW!

Microsoft Software for people, not computers

MS Money \$48

Make quick work out of ordinary budget and bill-paying chores! Use Microsoft Money to write checks, track expenses, create budgets, organize your assets and plan your financial future.

MS Publisher \$138

Now make your work look like a masterpiece! Microsoft Publisher gives you easy-to-use page layout, text and graphics tools to create first-class publications fast.

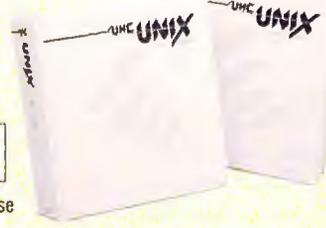
MS Works \$138

Microsoft Works combines the most important business tools in one easy-to-use program: word processing, spreadsheet analysis, data base management, charting and drawing.

UHC Unix System V Release 4

\$619

NEW!

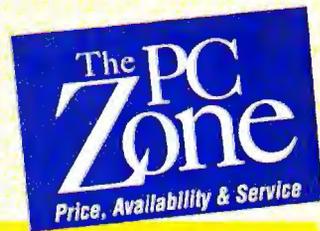


This major new release of UNIX operating system provides a wealth of new features and enhancements. It unifies the major variants of the UNIX operating system and also incorporates key features of Sun's SunOS system.

BUSINESS

Ashton Tale	Lotus Ami Pro 2.0 298
dBase IV 1.1 484	Microsoft Corporation
Borland International	MS Word 5.5 208
Paradox 3.5 504	MS Works 2.0 94
Paradox SE 65	Nantucket Corporation
Quattro Pro 318	Clipper 5.0 509
Quattro Pro SE 46	Software Publishing
Buttonware	Harvard Graphics 3.0 399
PC File 6.0 84	Professional Write 2.2 159
Fox Software	Symantec
Fox Pro 2.0 Single 488	Q & A 4.0 249
Lotus Corp	WordPerfect Corporation
Lotus 123 Rel 2.3 338	Letterperfect 1.0 125
Lotus 123 Rel 3.1+ 428	WordPerfect 5.1 239

Order Today-We'll Deliver It Tomorrow
Get Fast, Friendly Service from our PC Advisors



THE HOTTEST GAMES. CALL US!

Accolade	
Hardball II 5.25	29
J.Nick.Greatest 18 Hls 5.25	39
Jack Nicklaus Unltd. Golf	35
Ishido - Way Of Stones	31
Star Control	29
Test Drive III 5.25	37
Amaze Inc.	
Far Side Calendar Dos	49
Far Side Calendar Windows	49
Broderbund	
Simcity 1.07 For PC	29
Electronic Arts	
Hunt For Red October	18
John Madden Football	30
Chuck Yeager's Aft 2.0	30
Earl Weaver Baseball	27
Grand Slam Bridge	22
Populous	22
Starlight II	38
Secret Of Monkey Island	45
Stormovik Attack Fighter	12
PGA Golf	34
Harpoon	38
Life And Death	32
Das Boot - The Boat	19
M.Beacon Teaches Typing	33
Andretti's Racing Challenge	29
Chuck Yeager's Air Combat	39
Megafortress Flight Old Dog	39
Life & Death II:The Brain	29
Mediagenic	
Battle Chess II	29
Shanghai II	29
Microprose	
F-15 Strike Eagle II	38
F-19 Stealth Fighter	37
Red Storm Rising	30
Silent Service II	39
Microsoft Corporation	
Flight Simulator 4.0	38
Aircraft/Scenery Design Kit	28
Windows Entertainment Pk	26
Origin	
Ultima VI	45
Bad Blood	35
Wing Commander	45
W.C. Secret Missions	20
W.C. Secret Mission 2	20
W.C. II Speech Disk	14
W.C. II Vengeance	49
Savage Empire	39
Sierra	
Leisure Suit Larry 3: Patti DL	38
Black Cauldron	26
The Colonel's Bequest	38
Sorcerian	38
Space Quest I: Sarian	32
Space Quest III	38
King's Quest V - VGA	39

Sphere-Spectrum Holobyte	
Tetris	21
Vette!	24
Welltris	21
Spinnaker	
Sargon IV	31
The Software Toolworks	
Game Pack I (Dual Format)	35
Chessmaster 3000	31
Three Sixty	
Armor Alley	26
Toyogo	
Nemesis Go Master	38
Nemesis Joseki Genius	29
Nemesis Tactical Wizards	35
Nemesis Go Master Deluxe	87
Nemesis Go Junior	22
Ultra Software	
Teenage Mutant Ninja Turtle	26
Virgin Mastertronic	
Monopoly	24
Scrabble Deluxe Ed.	32
XOR	
NFL Challenge	59

Se Habla Español



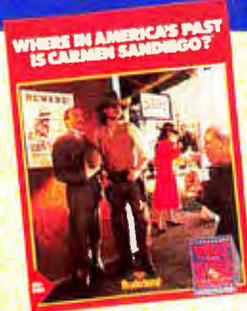
Microsoft Flight Simulator 4.0

\$38

The world's most popular flight adventure is now more true to life than ever! Now you can even create the plane, jet, or sailplane you've always wanted to fly...then put it to the test in challenging weather you select as you wing your way to any one of 118 airports. A new dynamic panning feature covers every angle.



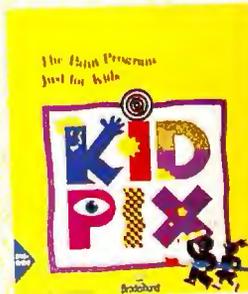
NEW FROM BRODERBUND SOFTWARE



Where in America's Past is Carmen Sandiego?

\$38

The newest in the Carmen Sandiego adventure series lets you travel to historical hideouts in North America between 986 to 2000 AD. All new villains, clues, graphics and animations!



Kid Pix

\$38
 Kid Pix is an amazing paint program created just for kids. It combines special effect art tools, picture stamps, sounds and magic screen transformations to turn the computer into a magical art studio. Every brush and tool has its own unique sound effect.

EDUCATION

Davidson & Associates	
Math Blaster Mystery for PC	34
New Math Blaster Plus	29
Individual Software	
Professor Windows	26
Learning Company	
Magic Spells	22
Math Rabbit	23
Outnumbered	32
Reader Rabbit	29
Treasure Mountain	32
Microsoft Corporation	
Learning DOS 3.0/DOS 5	35
Windows Productivity Pack	39
Personal Training Systems	
Lotus 1-2-3: Beg. Spreadsheets	79
Excel 3.0: Beg. Spreadsheets	79
PageMaker 4.0: Beg.	79
Simon And Schuster	
Typing Tutor V DOS	29
Typing Tutor V Window	30
The Software Toolworks	
World Atlas 2.0	41
True Basic	
Algebra 4.0	39
Calculus 4.0	42
Pre Calculus 4.0	42
Walt Disney Software	
Ducktales Quest For Gold	14
Mickey's 123's	34
Mickey's ABC'S	34
Zondervan Electronic Pub	
NIV PC Bible Study	99



Chipsoft TurboTax

\$48 NEW!
 Easy to use. You'll be up and running in minutes! Guides you to the tax forms you need with on-line help menus to explain IRS rules. On-screen displays look like official IRS forms. Free support for registered users by phone, mail, BBS, or toll-free fax.

TurboTax for Windows\$58

NEW!

Microspeed MicroTRAC Trackball



The MicroTRAC combines all the benefits of a trackball in a size smaller than a mouse. While other mice and trackballs have been designed with one application in mind, the MicroTRAC is ideal either on the desktop next to your keyboard or attached to the side of a laptop.

OVERNIGHT SHIPPING • 1-800-252-0386 • \$6 PER ORDER IN THE USA

CALL FOR OUR FREE CATALOG 1-800-252-0386 USA OR CANADA

* All major credit cards accepted. No surcharge.
 * Your credit card is not charged until your order is shipped. If we must ship a partial order, freight is not charged on back order. (USA only)
 * Most personal and company checks received by mail will clear immediately. All checks or purchase orders must have a phone number and contact person listed in order to be processed.
 * C D D orders are accepted. Limit \$1,000 per order. Cashier's check or money order only. Add \$5.00 per C D D order. (USA only)
 * Educational, government and corporate purchase orders are accepted.
 * All U.S. shipments insured at no extra charge.
 * No sales tax, except for Washington State residents (add 8.2%).
 * Prices and product availability subject to change without notice. All specials and promotions are limited to available stock. Please call for current prices.
 * All products covered by 120 day limited warranty.
 * Shipping is \$6 per order. We ship via Airborne Express Overnight service. (Some rural areas require an extra day for delivery).
 * Monitors are assessed an additional shipping charge. \$25.00 for Full Page. \$50.00 for Two Page. UPS Rates are also available upon request.
 * Orders placed by 9pm ET (6pm PT) weekdays for "in stock" items will ship that day for overnight delivery (barring system failure, etc.)
 * APD/FPO/PD box orders are shipped first class U.S. Mail.
 * Defective software will be replaced immediately, and hardware will be repaired or replaced at our discretion.
 * A Return Authorization Number required for any product returned. Customer Service Hotline: 1-800-248-9948. Please call weekdays from 9am to 9pm PT, 9am-11pm ET.
PC Zone 18005 NE 68th St, Suite A110 Redmond, WA 98052
International: 206-883-3088 • FAX: 206-881-3421

Give Us a Few Minutes and \$199⁹⁵ and We'll Network Your Small Business.



That's all you need to turn your scattered PCs into a fully functioning network that includes both software and hardware, guaranteed!

Easy to Buy. Now you can finally afford to share your resources like printers, hard drives and programs making data and equipment available to everyone who needs them. For only \$199.95, you can get the MainLanEasy Network Starter Kit which includes network boards, network software, E-Mail, interfaces for both DOS and WINDOWS and plenty of cabling. It's the only network that offers so much for so little, and its perfect for your growing small business. Plus, it's available everywhere!

Easy to Install. Networking your PCs has never been this easy. If you can plug in your phone, you can install MainLanEasy yourself in minutes. Just snap in the network boards, plug in the phone cabling to each PC and install the software. It's just that simple. Plus installation support is free, too.

Easy to Use. MainLanEasy works the way you do. Whether you use WINDOWS or DOS, or a combination of both, this network is designed to run transparently without a dedicated server. And, MainLanEasy makes logical use of menu icons so access to the network is quick. E-mail and MainLan's exclusive MainLOC password security are other features that you'd only expect to find on networks costing hundreds of dollars more. And MainLanEasy is compatible with all popular network software.

Easy to Expand. The MainLanEasy Starter Kit has everything needed to connect 2 PCs and it is easily expandable. Expansion adapters are only \$99.95 each, so that when you're business grows, you can afford to let your network grow, too. Plus, should you ever need a larger network, MainLan offers the exclusive 100% trade-in guarantee which lets you apply all of your MainLanEasy purchase price toward the economical MainLan Ethernet and MainLan 386 networks which expand to hundreds of nodes! It's a guarantee that finally makes expansion inexpensive!



MainLan's Family of Networks which has an installed base of over 100,000!

Networking doesn't have to be hard or expensive! MainLan has affordable solutions for your small business. So if you've got a few minutes and a small budget, we've got your network!

**To Order, For More Information, or
For the Dealer Nearest You Call:
1-800-999-6770**

**Unconditional 30-Day Money-Back
Guarantee When Ordered Directly.**

MEDIA CODE: PCW

MainLan, Inc. and DacEasy, Inc. are U.S. subsidiaries of the Sage Group plc. MainLan Inc., 1215 N. Highway 427, Ste 135, Longwood, FL 32750
© Copyright 1991 MainLan, Inc. MainLan is a trademark of MainLan, Inc. All company names and product names are trademarks of their respective corporations.

Circle 156 on reader service card

Pen PCs: Mission-Critical Note Takers That Return to Basics

Pen computers come in many shapes and sizes, but all give you the choice to change the way you work.

Russell Glitman

This year will be marked by the emergence of pen computers in all shapes and sizes running a variety of operating systems. To profile this new era, we're previewing three machines that characterize the best of the pen breeds: the NEC UltraLite SL/20P, the Samsung PenMaster, and the Tusk All-Terrain SuperTablet.

Pen computing brings a revolutionary return to simplicity. It provides a way of using computers that is immediately familiar: With varying degrees of enthusiasm, we all grew up using pen and paper. The pen permits direct interaction with software, facilitates navigation, and creates a new data type—digital ink.

The operating systems for the new machines—Micro-

soft's *Windows for Pen Computing* and Go Corporation's PenPoint—are expected to ship in March. Microsoft's environment will enable existing *Windows* applications to become "pen aware"—that is, they will let you use a pen to replace a mouse, and in addition to using the keyboard, you can use the pen to fill in fields or write notes. PenPoint, on the other hand, is fostering new "pen-centric" applications designed to run without a keyboard or cursor.

NEC Pen PC

For finger-dipping into pen computing, the NEC SL/20P is close to ideal. NEC is targeting the traditional notebook buyer; indeed, it has a penless version of this 20-MHz 386SL machine for \$4199. Spend an additional \$300, and you get a

pen, *Windows for Pen Computing*, NEC's *UltraDraw* sketch and drawing program, and voilà! you have a pen computer that gives you everything you could want in a notebook. If you opt for the notebook version and decide later you'd prefer the pen model, no problem. NEC will offer upgrades to the SL/20 for about \$300—just bring your machine to a dealer.

In any case, the machine comes with 2MB of RAM (expandable to 8MB), a 16K memory cache, an 80MB hard drive, and a series of customizable power management features that NEC claims will provide up to 7 hours of battery life. The SL/20P is a bit larger and heavier than the smallest notebooks, weighing in at 6.8 pounds (6.4 pounds for the penless SL/20) and measuring 9 by 11.5 by 2.2 inches.

Using the pen on what was designed as a notebook screen is a little awkward; the pen functions primarily as a navigation tool. Since the SL/20P also comes with a touch screen, you may prefer to let your fingers do the walking around *Windows*—but you'll never need a mouse.

Writing on the 9.4-inch screen requires you to support the back of it. This requirement is aggravated by the necessity of applying constant pressure to the pen. Unless the pen tip is fully depressed, the VGA screen doesn't register ink. Final pen design and screen housing modification were still under debate at press time.

Samsung's Super Slate

Samsung's PenMaster is the quintessential tablet pen computer. Company officials say it is designed for insurance, sales, real estate, and medical users who do most of their work on their feet or out of the office.

Although the PenMaster appears to be almost all screen, it's just 10 inches diagonal—typical for most laptops. A light 4.9 pounds, the PenMaster shares the NEC's 20-MHz 386SL processor and comes with 4MB of RAM (expandable to 20MB) and a 16K memory cache. Samsung intends to offer a 25-MHz version once the chip is available, and you can upgrade the cache to 64K.

What sets the PenMaster apart from earlier pen tablets, such as NCR's 3125 and Grid's GridPad, is the huge amount of hard disk space Samsung

SNAPSHOT

NEC UltraLite SL/20P

The SL/20P offers the benefits of both worlds—the familiarity of a keyboard and an entry to pen computing.

KEY FEATURES

- 20-MHz 386SL pen computer
- Touch screen
- 3 to 7 hours of battery life
- Manually activated 0-MHz standby mode
- Fax annotation

AVAILABILITY

Immediate

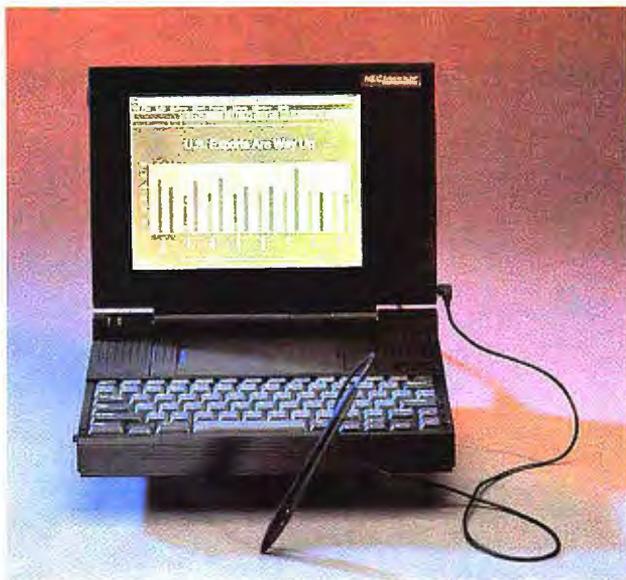
PRICING

SL/20 \$4199, SL/20P \$4499

NEC Technologies, Inc.

1414 Massachusetts Ave.,
Boxborough, MA 01719
508/264-8000

Reader service no. 713



If you're looking for a notebook but want to try out pen computing, the NEC UltraLite SL/20P is worth a drive.



Samsung's PenMaster is a 386SL tablet-style pen computer that weighs less than 5 pounds and runs up to 3 hours.

has packed into a trim case. Although PenMaster measures less than 1.5 by 11.5 by 9.3 inches, Samsung gives you the option of a 40MB, 60MB, 80MB, or 120MB internal hard drive. Like its tablet competitors, the PenMaster comes with a PCMCIA card slot, a

standard interface for credit card-size expansion options. It also has floppy drive and keyboard ports, and Samsung offers a fax-modem card.

The PenMaster can run PenPoint and Windows for Pen Computing as well as PenDOS, a pen operating environment from Communication Intelligence Corporation. PenDOS enables you to use the pen as a mouse substitute with DOS applications and for limited handwritten data entry.

Writing on the VGA backlit screen is almost like writing on paper. The machine has simple, easy-to-find controls. Its tetherless pen slips neatly into a cradle on the front panel—perhaps too easily, since an unexpected knock could dislodge it.

Samsung claims a 3-hour battery life with all components except the optional keyboard and 3½-inch floppy disk operating continuously. The company expects to offer the machine for under \$5000.

Four-by-Four Computing

The Tusk All-Terrain SuperTablet is a pen computer for your desk that you can also take with you—whether you're tapping into a corporate data base during a board meeting or taking notes in a driving rainstorm. This machine defines rugged: It's a water-

resistant tablet composed of Spectra, a ballistic composite material; and its two 124MB hard drives are mounted in a secret ultrashockproof material the company claims changes from solid to liquid upon impact and then back to solid.

The tablet, or *roving unit*, as Tusk officials call it, has many special features; the most striking is the paper-white super-VGA screen from Hitachi that has extremely crisp resolution. Other innovations include pen-operated display controls and user-definable soft "keys" on the margin of the screen.

The 6.5-pound roving unit is powered by a 20-MHz 386SL and attaches to a 2.5-pound deskbound keyboard unit via a 200-pin AT bus connector. A 3½-inch drive comes with the keyboard unit, and both units have a full array of ports, including VGA, serial, parallel, and phone. The roving unit also snaps on top of the keyboard unit for carrying. Company officials claim a battery life of 2.6 hours with all components running. Price should be under \$7000 when the machine ships in the first quarter of this year, and a 25-MHz version should also be available.

The Tusk can run PenPoint

SNAPSHOT

Tusk All-Terrain SuperTablet

This four-by-four computer is as rugged as they come and includes a suite of innovative features.

KEY FEATURES

- Super-VGA paper-white screen
- Water resistant
- Spectra ballistic composite case
- 6.5 pounds
- No shock damage up to 180G

AVAILABILITY

First quarter

PRICING

Less than \$7000

Tusk Inc.

1310 Gateway Rd.
Lake Park, FL 33403
800/275-8875,
407/844 4351 (fax)

Reader service no. 715

and Windows for Pen Computing, but its main advantage may be its ability to run just about anything just about anywhere. ●

Russell Glitman is executive editor for PC World.

SNAPSHOT

Samsung PenMaster

Samsung masters the tablet model with a pen computer that weighs less than 5 pounds and costs less than \$5000.

KEY FEATURES

- 4.9 pounds
- 120MB hard drive
- PCMCIA memory card slot
- 16K memory cache standard

AVAILABILITY

March or April

PRICING

Less than \$5000

Samsung Information Systems America, Inc.

3655 N. First St.
San Jose, CA 95134-1713
800/624-8999,
408/434-5653 (fax)

Reader service no. 714



Tusk's All-Terrain SuperTablet is the four-by-four of pen computers, featuring a water-resistant case.

Last year alone, over 160,000 businesses made Paciolli 2000™ their smart choice in accounting software.

For Only **\$49⁹⁵**



Pacioli 2000 is easy-to-learn. It's easy-to-use. It provides all the accounting features you need.

And best of all, while other packages cost hundreds, even thousands of dollars, *Pacioli 2000* costs only \$49.95.*

No wonder over 160,000 businesses have purchased *Pacioli 2000* in the past year alone.

They've discovered what you'll discover—that it's the smart accounting choice.

After all, *Pacioli 2000* makes

“...a full-featured package that adds the extra element of network support.”

Computer Reseller

managing your business finances easier than ever.

Easier, because it features *M2/S2™ (Multi-Module/Single-System)*. *M2/S2* fully integrates eight accounting modules in one system: *General Ledger, Accounts Receivable, Accounts Payable, Inventory Control, Billing, Purchasing, Budgeting, and Auditing.*

These modules, along with

“...the equal of other high end accounting programs in every way but cost.”

New York Times

pull-down menus, full mouse support, context-sensitive help and automatic installation, create a full-featured accounting program that's extremely “user-friendly”.

Pacioli 2000 also provides 36



“...the best software value of the year.”

PC Week

on-line accounting periods, and Multi-Company Support, allowing you to keep up to 999 companies on-line.

Plus, it's fully networkable — *with no additional user fees!* While other companies will charge you hundreds of dollars for network capabilities, we include it *at no extra cost.*

Pacioli 2000 is backed by a 90-day money-back guarantee (*less shipping charges*) when purchased directly from *M-USA*. And we include free 30-day technical support to registered users.

Also available to registered users are free offers for our complete *Payroll* system, and the *Pacioli 2000* video tutorial (*you pay only shipping and handling*).

So, when you choose an accounting software for your business, choose the program honored as a “Best Buy” by *PC World* magazine and *Computer Buyer's Guide and Handbook*. And hailed as the “Best Financial Software of 1991” by *Compute* magazine.

The program over 160,000 businesses have picked as their smart accounting choice.

Choose *Pacioli 2000*.

To order, visit your local software dealer.

Or call us at 1-800-777-4287, Operator 260.

*Suggested retail USA. Add \$7.50 S & H (and 8.25% sales tax for Texas residents).

Special Paciolli 2000 Canadian Version

is also now available.

Supports GST and PST.

Only **\$99.95 (Canadian)** suggested retail plus freight.

To order, call 1-800-668-0454, Operator 2600

Free offers not available in Canada.

M-USA Business Systems, Inc.
15806 Midway Road
Dallas, TX 75244-2195

Minimum Hardware Requirements: IBM or compatible computer with 500Kb of free memory available, hard disk, MS-DOS 2.1 or later (3.1 or later for networks), and 132 column dot matrix printer in compressed mode.

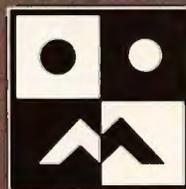
©1991 M-USA Business Systems, Inc. All rights reserved. Paciolli 2000, Paciolli 2000 Payroll, and M2/S2 are trademarks of M-USA Business Systems, Inc. All others are trademarks or registered trademarks of their owners.

M-USA
BUSINESS SYSTEMS, INC.

Circle 7 on reader service card



Please do not attempt this on just any computer. Now there's a computer that lets you choose how to work. You can write directly on the screen. Or use the keyboard. It's a fully-compatible 386 DOS®/Windows™ pentop computer



MOMENTA



*that's equipped with a wide range of unique, pen-specific software as well as a built-in fax (send and receive).
The Momenta™ Computer. Technology has finally caught up with the way you work. To learn more, call 1-800-MOMENTA.*

ALL COMPANY AND PRODUCT NAMES ARE TRADEMARKS OF THEIR RESPECTIVE COMPANIES.

Circle 163 on reader service card

Where Else Can You Get An Ocean View Like This?

Want to see more of the world?

Check out the view from our Windows.

Because now, with new World Atlas for Windows, you can see the world as you've never seen it before.

With just a quick click of the mouse, you can swiftly navigate the globe. And along the way, explore hundreds of impressively detailed, full color reference and relief maps, all developed by professional cartographers.

And while other Atlas programs may promise you the world, only ours can give you such a picturesque panorama of every major region.

Fascinating, detailed portraits of the world's great oceans.

Plus an extensive look at over 200 countries. With conversions for currency, weights and measures and time.

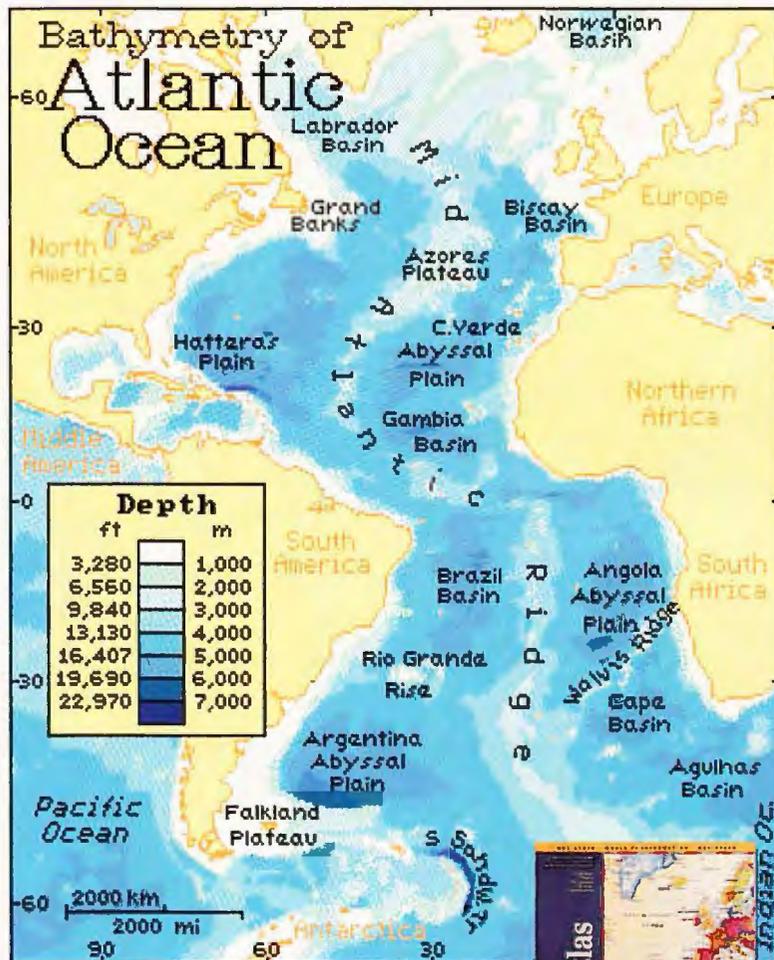
In addition to World Atlas' 4,000 statistical maps, you'll find comprehensive data on over 285 world and regional topics.

Analyze them. Chart them. Compare them.

Get an instant snapshot of crime in Costa Rica, inflation in Ireland, tourist attractions in Tanzania and much more. All of which you can use to quickly and easily create graphs, reports and custom maps.

And since World Atlas for Windows takes full advantage of the Windows environment, you can now copy and paste any map, graph or data into any Windows file. You can even create new categories and add your own data to the permanent database. Apart from Windows, World Atlas is available for IBM, Macintosh, Multimedia PC and CDROM.

So if you want to turn days of research into minutes, revolutionize your travel planning, or simply provide your kids with a better world, call



1-800-234-3088 to order your World Atlas for Windows or find your nearest dealer.

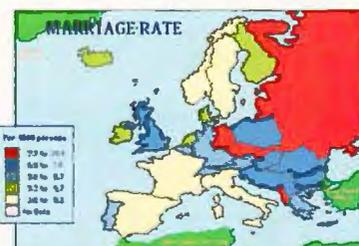
You may not live in a perfect world, but at least now you can own one.



What a relief.



Over 200 reference maps.

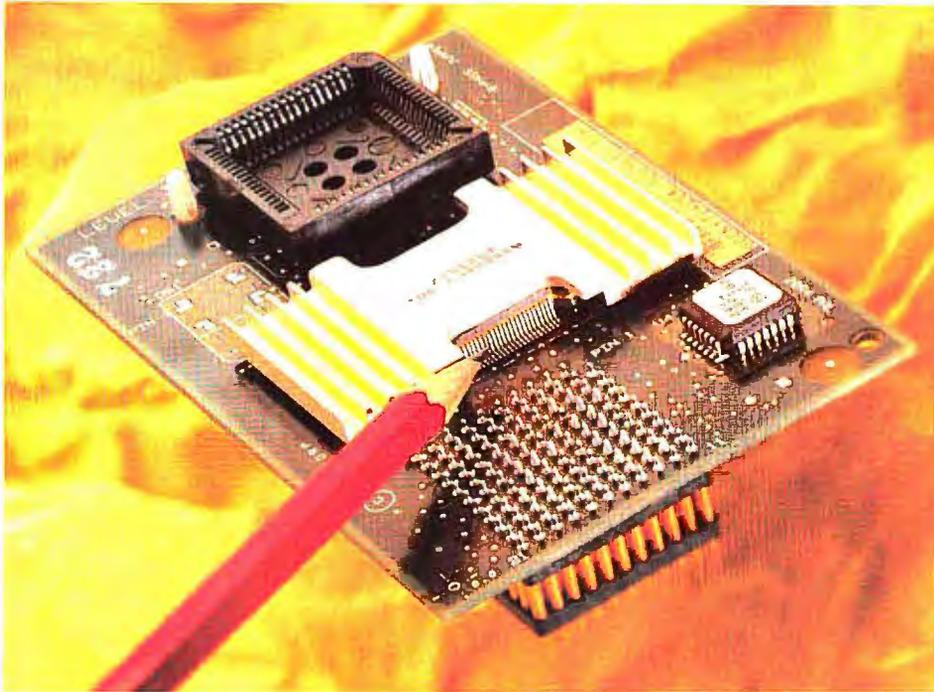


Nothing compares to our comparison maps.



A Processor Plus for PS/2s

Big Blue brews an attractive alternative to the 80386SX.



The 386 SLC processor upgrade board plugs into the Model 57's coprocessor socket to boost performance by 35 to 100 percent—but the chip's major role will be in new PS/2s.

Eric Bender

The walls are crumbling around the PC industry's last monopoly, processors based on Intel's 386 chip. One of the most promising alternatives comes from Intel's traditional ally: IBM.

A kind of cross between a 386SX and a 486, the IBM 386 SLC performs almost twice as fast as the Intel equivalent at the same clock speed. IBM began with Intel's own SX design, added an 8K internal cache and cache controller, and optimized performance for the most common instructions. The result is pin compatible with the SX and Intel's power-optimizing SL and has even passed Intel's own software compatibility test suite.

Popped into a PS/2 Model 57 for preliminary tests, the 20-MHz SLC accelerated sys-

tem performance dramatically, actually doubling throughput on one processor-intensive 1-2-3 test and posting an average gain of about 48 percent on our application benchmarks.

Pumping Up the PS/2

Give most vendors a new processor, and they slap it directly into a new system. IBM tends instead to preannounce a processor upgrade, which then trickles out for months until chip production ramps up and Big Blue can ship an out-of-the-box PS/2 in volume. That's the scheme with the SLC, currently offered only in a \$780 upgrade for the 6-month-old Model 57 and as part of a special multimedia Model 57.

The Cached Processor Option is a playing card-sized board with an SLC (hiding underneath a heat sink) and a

math coprocessor socket. You or your dealer simply plugs it, cautiously, into the 57's math coprocessor socket, which was designed with just this upgrade in mind. (Other PS/2s weren't, so there's no similar upgrade looming for the best-selling Model 55.) Run a quick reconfiguration program, and voilà! you have the world's fastest 386SX machine.

So IBM claims, and it may well be right. At press time *PC World* hadn't completed tests on the new crop of 25-MHz SX machines, but in many benchmarks the SLC-equipped Model 57 runs right with the pack of 25-MHz DX machines. In fact, it posts exactly the same time on our *WordPerfect 5.1* test as the October 1991 Best Buy Everex Step 386/25.

That's good news for buyers of the basic Model 57, which is no speed demon, but

it's still well short of the price/performance frontier. List price for a Model 57 with processor upgrade and 80MB drive is \$4405—in the same range as many 33-MHz 386 PCs. For that matter, AST's 20-MHz 486SX model costs less (\$3495) with equivalent memory and storage.

There's no mystery about why IBM's share of the PC market plummeted in 1991. Generally you pay a little more money and get a little less performance, and regardless of technical merits, the Micro Channel bus strikes most potential customers as a minus. But Big Blue can still reach back into its formidable technology arsenal and come up with a compelling product. The SLC is on the right track: It adds value without subtracting compatibility. Let's hope the prices are right for the upcoming SLC machines. ☛

Eric Bender is East Coast editor for PC World.

SNAPSHOT

PS/2 Model 57 Cached Processor Option

Reinventing the 80386SX to double performance, IBM offers a board that accelerates applications on the Model 57 by 35 percent or more.

KEY FEATURES

- Powerful SLC chip with on-chip cache and optimized instructions
- Upgrade plugs into coprocessor slot

AVAILABILITY

January 1992

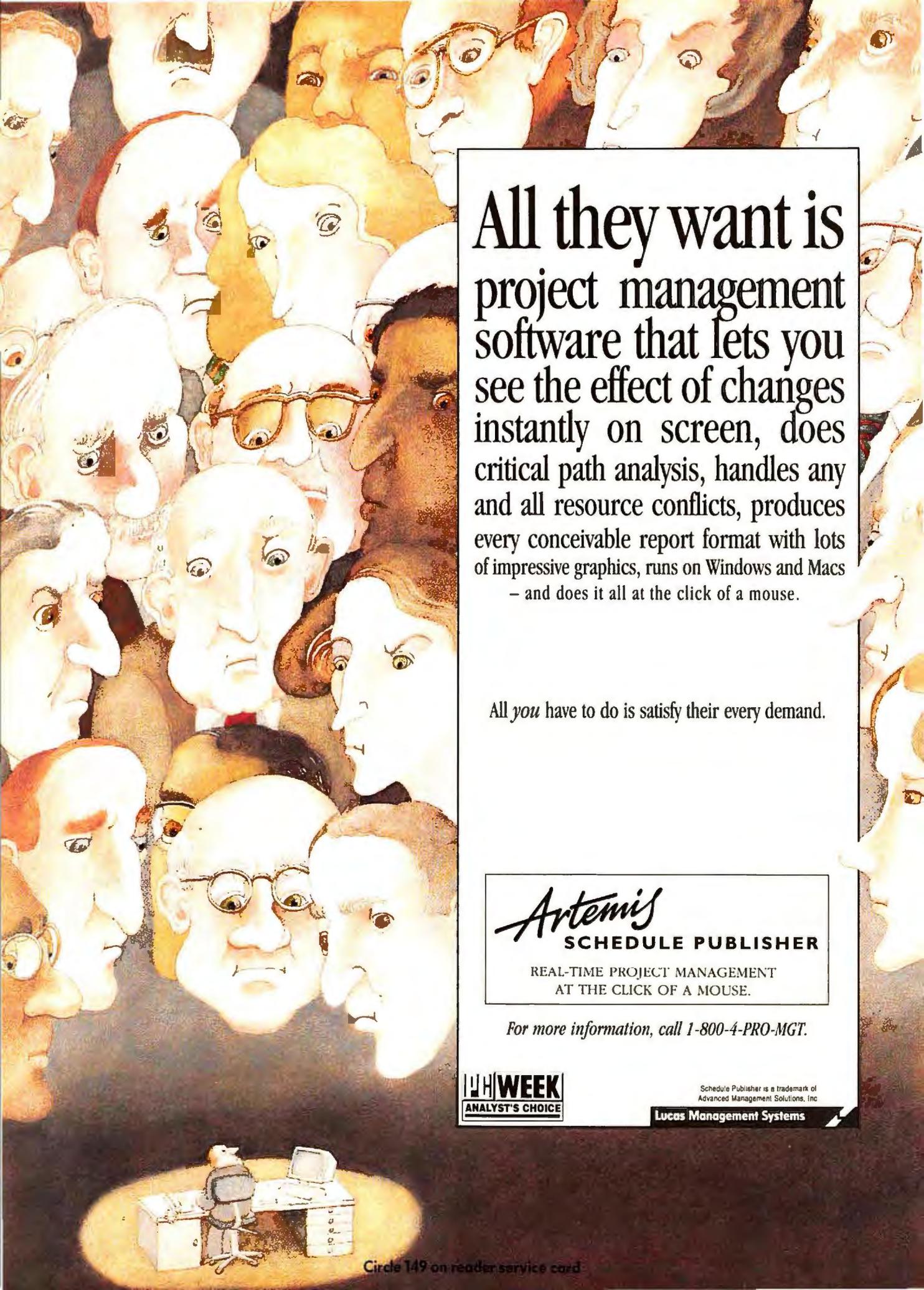
PRICING

\$780

IBM

Old Orchard Rd.
Armonk, NY 10504
800/426-9292

Reader service no. 716



All they want is project management software that lets you see the effect of changes instantly on screen, does critical path analysis, handles any and all resource conflicts, produces every conceivable report format with lots of impressive graphics, runs on Windows and Macs – and does it all at the click of a mouse.

All *you* have to do is satisfy their every demand.

Artemis

SCHEDULE PUBLISHER

REAL-TIME PROJECT MANAGEMENT
AT THE CLICK OF A MOUSE.

For more information, call 1-800-4-PRO-MGT.

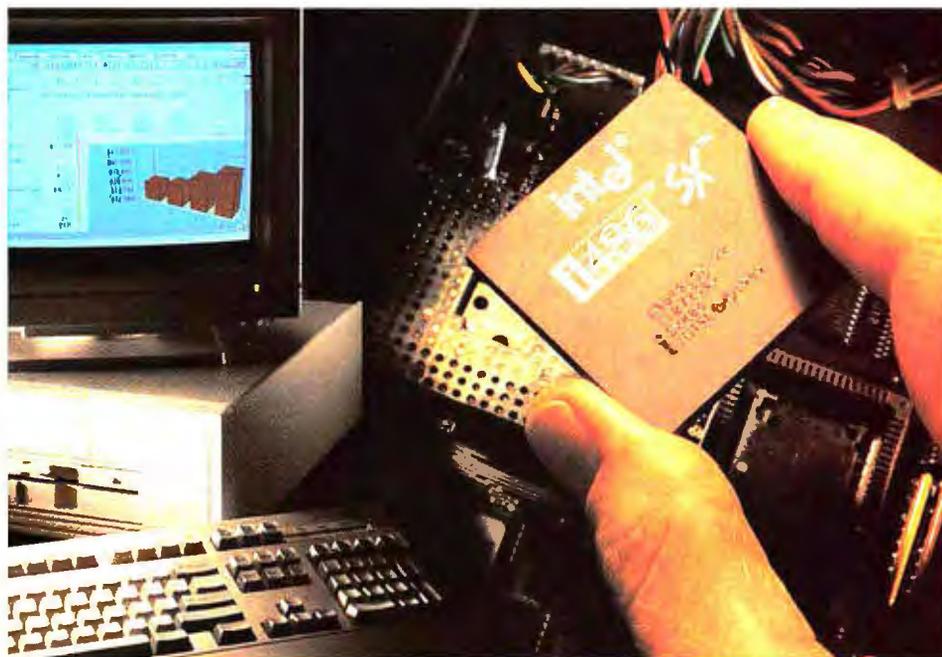
THE WEEK
ANALYST'S CHOICE

Schedule Publisher is a trademark of
Advanced Management Solutions, Inc.

Lucas Management Systems

Acer's Ultimate Upgrade

The AcerPower starts as a 386SX, but its 486SX socket lets you upgrade to 486 power in a flash.



With the AcerPower 386SX, you can upgrade to a 486SX for the price of the chip.

Eric Knorr

You know it's time to trade up when you install your incredibly powerful new spreadsheet—and it feels like you're chugging uphill. Wouldn't it be great if you could just deep-six your PC's old engine and pop in a new 486?

Acer thinks so, and they've built a machine that will let you do just that. The AcerPower 386SX is your basic 20-MHz 386SX system, except that it boasts the least expensive upgrade trick yet: a socket to hold a 20-MHz 486SX. Plug in the new chip, and you more than double processing performance. The BIOS instantly senses the 486SX's presence when you boot up, puts the old CPU to sleep (and the 387SX coprocessor, if present), and transfers control to the 486SX. No jumpers to set, no expensive upgrade boards

to install.

If you want 486 performance *and* math coprocessing, you need to install the full-fledged i486 (which does require moving a jumper) because there's no socket for a 487SX math coprocessor. If you do, you'll notice that the i486 offers the same 20-MHz performance as the 486SX (20 percent slower than the i486's usual minimum).

A Box With Hidden Potential

Except for its upgradable motherboard, the AcerPower 386SX bears an uncanny resemblance to Acer's 1120SX, reviewed in this issue (see "20-MHz SXs: Clones Turn Up the Heat"). It has the same compact footprint, cleanly styled chassis, and handy side-mounted keyboard and mouse ports. Both units also have room for four 16-bit expansion boards and four drives.

Surprisingly, at press time, pricing was also nearly identical. The base model 1120SX—with 2MB of RAM, built-in VGA, IDE hard drive interface, keyboard, DOS 5.0, and *Windows 3.0*—costs \$1495. Acer didn't have a firm price for the AcerPower yet but predicted the same configuration would cost \$1595. That may mean the AcerPower 386SX will replace the 1120SX as the company's entry-level SX desktop.

The AcerPower offers yet another upgrade perk. Add enough chips to the motherboard's video RAM sockets, and you'll have a full 1MB to play with—enough (with the right monitor) for 1024 by 768 resolution at 256 colors. For the handful of applications that let you indulge in photo-realistic color, the VGA chip will also enable you to display 32,768 colors at 640 by 480. An

excellent selection of video drivers for popular applications (including *Windows 3.0* and *AutoCAD*) should ensure that you'll actually be able to use these extended graphics features.

A Stealth Upgrade

Not many of us can cost-justify a 486 for our desktop, and Acer clearly is thinking of those of us who can't. Now you can stick your hands in your pockets and say, "Oh, that little Acer 386SX will be fine for me," knowing that in some respectable period of time, you'll be able to move up to a 486SX for a pittance. (Acer doesn't sell 486SX CPUs separately, but you can buy them at an electronics supply store for about \$300). Expect to see this clever scheme imitated by a slew of system makers in the near future. ●

Eric Knorr is the editor of PC World.

SNAPSHOT

AcerPower 386SX

Buy a 486SX chip, plug it into this upgradable 386SX's extra socket, and you'll double performance instantly.

KEY FEATURES

- Chip-only upgrade to 20-MHz 486SX or i486
- VGA upgradable to 32,768 colors
- Small footprint with room for four drives

AVAILABILITY

Immediate

PRICING

Tentatively \$1595 for base model

Acer America
401 Charcot Ave.
San Jose, CA 95131
800/733-2237,
408/922-0333

Reader service no. 724

If you've wished your WordPerfect[®]



Maybe your old word processor is a bit out of date. Perhaps the files aren't compatible with other word processors in your office. And it probably just doesn't have the power or the features of WordPerfect[®].

But it may still serve a purpose: because now, for a limited time, you may be able to turn your old word processor into a WordPerfect word processor. Just trade it in and get substantial savings on the WordPerfect version of

your choice. And if you haven't made the choice between DOS, Windows and OS/2, that's fine. Because when you trade up to WordPerfect, you can be licensed to use all three on one machine.

To take advantage of this special trade-up offer, you don't even have to give us your old software. Just show your WordPerfect dealer a proof-of-purchase such as your manual or a diskette from your old word processor, and you're all set.



word processor were you're in luck.



Each trade-up offer is a little different, depending on the WordPerfect version you want.

Users of certain DOS, Windows, and Macintosh word processors can trade theirs in to get the corresponding WordPerfect product for just \$150 (\$179 in Canada). You can even get LetterPerfect* for just \$89 (\$110 in Canada) when you trade in one of the appropriate word processors. And we also have a trade-up offer for those of you on UNIX, VAX or Data General machines.

If you want to know if your specific word processor

qualifies you for this limited offer, just call us at (800) 526-5169. We'll tell you if a trade-up offer is available for your software and give you more information about the version of WordPerfect you're interested in.

This offer ends on March 31, 1992. So don't wait to turn your old word processor into WordPerfect. The perfect time is now.

WordPerfect
CORPORATION

NOW'S THE PERFECT TIME



It goes without saying that businesses and organizations of every kind and size — as well as individuals — use forms every day to collect and process information. Dozens, hundreds, and sometimes even thousands of different paper forms.



But are paper forms really the most efficient way to process information? We think not.



Because now there's Perform ... software which allows you to design and fill forms electronically — efficiently and automatically, using the PCs you already have.

More versatile than you could ever imagine.

The way Perform works is simple. So simple in fact that virtually anyone can become a forms design expert in a matter of hours. With Perform you quickly create "intelligent" forms that automatically calculate and fill pre-programmed information, with the power of a spreadsheet — at the touch of a key.

But as easy as it is to use, and inexpensive to own, award winning Perform is much more than a form design and filling package. Perform can be a data entry link to your corporate database, for example. Or provide the core of a comprehensive company-wide information processing system,

Buy PerForm *form* software and get an *information* processing system free.

Product Feature	PerForm	PerForm PRO
WYSIWYG	GEM (included)	Windows 3.0
Additional filler products	yes	yes
Multi-platform fillers	no	yes
ASCII/dBASE database export/import	yes	yes
Read/write directly to database	no	yes
Intelligent field calculation features	9	74
Electronic security	no	yes
Fast mode for form filling	yes	yes
Support for printer macros and cartridges	no	yes
Color support	no	yes
Font software included	yes	yes
On-the-fly font scaling	no	yes
Over 100 standard forms included	yes	yes
Suggested list price	\$149	\$295

complete with an electronic signature feature which ensures total data security.

When you buy Perform for form design it's like getting an information processing system free!

Perform is versatile and powerful enough to enable you to automate the information processing needs of an entire organization. Or you can put it to work in a single department or work-group, or even in a home office.

How much Perform do you need?

There are two versions of Perform. To find out which is right for you, refer to the table in this ad. And whether you choose PerForm or PerForm PRO, you have taken an important step towards improving the way your business or organization handles

information. For more information on Perform and Perform PRO, ask your dealer. Or call toll-free today.



DELIRINA
Software For Improved
Office Performance

Circle 61 on reader service card

PerForm and PerForm PRO © 1991 Delrina Technology, Inc. All rights reserved. All product names mentioned are trademarks of their respective owners.

Records in Plain-Paper PostScript Color Printing

Dataproducts sets new price level for solid-ink color PostScript Level 2 printer; Seiko delivers thermal transfer PostScript color for less than \$5000.



The \$6995 Jolt PS from Dataproducts features 300-dpi, solid-ink color printing; Adobe PostScript Level 2; and a 200-sheet input tray. It produces high-quality color output on plain office paper.

Jeff Bertolucci

While still not cheap by any stretch of the imagination, today's color PostScript printers can be termed affordable. Just three years ago, it's doubtful you would have found a color PostScript printer for under \$10,000, but there's a plentiful selection today—with many more to come in the near future.

Joining the ranks of new 300-dpi color PostScript printers are Dataproducts' Jolt PS and Seiko's Personal Color-Point PS. Each offers PostScript's excellent graphics and font features, top-notch color

output, and the ability to print on plain office paper.

Solid-Ink Jolt

The Jolt PS printer from Dataproducts incorporates Adobe PostScript Level 2 and employs a solid-ink technology heretofore seen only in the Tektronix Phaser III PXi—and the Jolt PS costs \$3000 less than the Tektronix.

Like the recently introduced Phaser III PXi8bi, Dataproducts' Jolt PS (and its non-PostScript sibling, the \$4995 Jolt) uses its own proprietary solid-ink technology. The Dataproducts method melts solid, crayonlike, colored

ink pellets and "jets" them onto the paper. The ink quickly cools and solidifies, leaving a crisp—and thoroughly dry—image.

Driven by a powerful 24-MHz Weitek 8220 RISC chip, the Jolt PS comes with 6MB of RAM, and you can add a 4MB memory board for \$999.95. The Jolt PS is one of the few available printers that incorporate Adobe PostScript Level 2. This standard promises improved matching between screen color and printed output as well as support for data compression/decompression schemes that can speed up printing. However, since few—

if any—software packages currently support PostScript Level 2, you'll have to wait awhile before getting your money's worth.

The Jolt PS also comes with a Windows 3.0 driver; parallel, serial, and AppleTalk ports; a SCSI port for storing fonts on an optional external hard drive; and a 200-sheet input tray. Like other color PostScript printers, the Jolt PS is no speed demon. Its rated speed for text is only 2 pages per minute, 0.7 ppm for an entire page of graphics. Your mileage will vary with the complexity of your images.

The Jolt's solid-ink technology makes adding ink very easy. There's no liquid ink to spill on your clothes, no thermal transfer sheets to twist around your wrists. You simply lift up the hood of the printer and plug in the plastic

SNAPSHOT

Dataproducts Jolt PS

The Jolt PS uses solid-ink printing to produce crisp, 300-dpi color output on standard office paper.

KEY FEATURES

- Easy-to-load, solid ink pellets
- Adobe PostScript Level 2
- SCSI port for external hard drive
- \$3000 less than Tektronix' solid-ink printer

AVAILABILITY

Immediate

PRICING

\$6995, non-PostScript model
\$4995

Dataproducts Corp.

6219 De Soto Ave.
Woodland Hills, CA
91367
800/289-5658,
818/888-4000 (fax)

Reader service no. 722



Priced under \$5000, the Seiko Personal ColorPoint PS makes 300-dpi, PostScript color printing more affordable. It comes with 6MB of RAM, an Intel RISC processor, and 39 PostScript fonts in a laser printer-size box designed for the desktop.

cartridges, each of which contains 23 solid-ink pellets (one cartridge each for cyan, yellow, magenta, black). Each cartridge is keyed so you won't accidentally place the magenta packet in the yellow slot.

Ink cartridges aren't cheap, however—a set of four costs \$179.95. A single black cartridge runs \$45 and has enough ink to print 2000 “one-page business letters.” Each \$60 color cartridge can print about 400 pages containing a typical business graphic, such as a pie or bar chart, Data-products says.

At \$6995 the Jolt PS is still a bit pricey. But if you need PostScript quality and excellent color output for sales brochures or business documents, it definitely warrants your serious consideration.

Seiko's \$5000 Thermal Transfer

Seiko's Personal ColorPoint PS, while using the more traditional thermal wax transfer

method, also features PostScript (but not Level 2), plain paper printing, and sharp 300-dpi resolution. But what's most impressive about the printer is its price: \$4999. And that doesn't mean an empty printer box that you flesh out with listed “options” either. The Personal ColorPoint PS comes standard with a 16-MHz Intel 80960 RISC processor and 6MB of RAM, as well as 39 PostScript fonts.

Seiko sees the Personal ColorPoint PS as the printer of choice for business graphics and desktop publishing. Its small size (15.9 by 17.9 by 6.3 inches) means it fits comfortably on a desk; in fact, it's smaller than many black-and-white lasers. The Personal ColorPoint PS can print on cut-sheet laser quality plain paper, the thick paper stock used for flip charts, and overhead transparencies, but for best results, Seiko recommends thermal transfer paper (it's expensive, and it can increase

your color printing costs to 50 cents or more per page).

To ease printer configuration, Seiko includes a feature called input polling, which automatically seeks out and locks onto the active input port—parallel, serial, or AppleTalk. And you can use the printer's control panel to set each of the three input ports to accept commands either from PostScript or from the Hewlett-Packard Graphics Language (HP-GL) for pen plotter emulation.

The Personal ColorPoint PS comes with two interface slots, one for the PostScript controller and the other for add-in extras. If you need to store fonts on an optional external hard disk, an add-in card with a SCSI port will cost you an additional \$499. Another option is the \$1499 Quick-Capture video interface card, which allows you to capture and print screen images without a software driver. However, the QuickCapture board

forces you to print at the 72-dpi screen resolution instead of at the full 300-dpi resolution that the printer is capable of.

You can “lighten” color images produced by the Personal ColorPoint PS via the printer's control panel. This feature allows the printer to match the lighter range of colors that are produced by earlier generations of 300-dpi color printers, according to Seiko.

More Color, Lower Price

Both printers give you impressive color output at prices unheard of just a few years back. And while some business users may still balk at the prices, if you need eye-catching color graphics for business documents, sales brochures, or office presentations, the Jolt PS and Personal ColorPoint PS are worth a look. ☉

Jeff Bertolucci is an assistant editor for PC World.

SNAPSHOT

Seiko Personal ColorPoint PS

The Personal ColorPoint PS packs color PostScript and 300-dpi quality in a \$5000 printer.

KEY FEATURES

- Small footprint to fit on your desk
- Speedy RISC chip for fast processing
- Automatically locks onto active input port
- Prints on plain paper

AVAILABILITY

Immediate

PRICING

\$4999

Seiko Instruments USA Inc.

1130 Ringwood Ct.
San Jose, CA 95131
408/922-5900,
408/922-5800 (fax)

Reader service no. 723

**WE HAVE A FEW WORDS FOR PEOPLE
WHO DEMAND HIGH PERFORMANCE AND
EXPECT TO PAY PEANUTS FOR IT.**



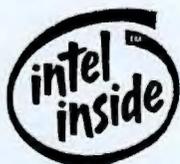
DELL
COMPUTER
CORPORATION

MORE POWER TO YOU.

You wanted it, you got it.

Introducing the Dell® 486P/20. A computer that gives you an i486™ SX processor at the price of an i386™ DX machine.

An incredible performance boost of up to 40% at virtually no additional cost.



Generating enough processing power to exploit the full potential of future versions of Microsoft® Windows™ and OS/2®

Making whatever software you run, run that much faster.

Giving you quicker recalcs, database compiles and screen refreshes.

In short, getting rid of excess wait.

And if that isn't impressive enough, the Dell 486P/20 comes with an upgradeable processor that can go from a 20 MHz i486SX chip all the way up to a high-end 33 MHz i486DX system, and even beyond.

Which, considering that we're talking about a computer under \$2,000, is nothing short of revolutionary.

A true power user's desktop. For its low price, the Dell 486P/20 has a lot of technical innovations you wouldn't expect to find on even higher end machines. Things like programmable Flash EPROMs, for example, that make conventional methods of upgrading system BIOS seem almost obsolete. You won't have to take this computer apart and lose your patience trying to pry out a reluctant chip. Just slip in a diskette—that's all.

Expanding memory is equally convenient. One of the few PCs to support 16 MB SIMMs, the 486P/20 carries 4 memory expansion sockets, on its main board. So as your needs grow, you can keep adding RAM in 1, 4, or 16 MB increments up to a total of 64 MB. That's plenty of room to run your networking software, Microsoft Windows and just about any high-performance graphics application.

And talking about graphics, a small expansion of video memory to 1 MB (512K is standard) will put over 32,000 colors at your disposal, letting you create images that approach photographic quality.

The 486P/20 also makes those images a lot easier on your eyes. It supports up

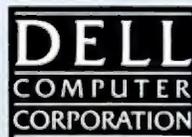
to 1024 x 768 non-interlaced video at a fast 70 Hz refresh rate for a flicker-free display. Unlike the kind you get on some competitive machines that are limited to 60 Hz non-interlaced.

An i486SX processor with the future built in. Because the Dell 486P/20 upgrades via a processor chip instead of traditional processor cards, upgrading takes the form of a single, economical step:

Just remove one chip and replace it with a higher performance version.

On the other hand, if you never need to upgrade at all, you don't end up having paid a price penalty to get the system in the first place. Either way, you win.

Apart from the processor, the 486P/20 is also designed to allow easy upgrading of hard disks, memory and video capability. So when your needs change, the rest of your computer can, too.



800-545-3557

TO ORDER, CALL PLEASE REFERENCE #11D57
HOURS: 7AM-9PM CT MON-FRI 8AM-4PM CT SAT 10AM-3PM CT SUN
IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.



1/1999



THE DELL 486P/20 20 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 50 MB HARD DRIVE, VGA COLOR MONITOR, AND 2 MB RAM.

THE MORE YOU GET, T

If your requirements call for a more powerful or specialized system than the one you can upgrade to 33 MHz and beyond.
even *better* deal with our higher-end i486 systems. From \$248 all the way up to a whopping \$1,348,
And if you still have any doubts, call us. We'll be happy to explain

MORE VALUE

The Dell 486P/20 is a 20 MHz i486SX general purpose workstation you can upgrade to 33 MHz and beyond.

For a configuration that costs so little, you sure get a lot.

Like programmable Flash EPROMs for easy BIOS upgradeability.

And an 80 MB hard disk drive with 15 ms access time.

And an 8 KB cache built into the processor for increased throughput.

And 4 MB of RAM on 32-bit SIMMs with gold-plated connectors for greater reliability.

And 2 floppy drives.

Surprised? Keep reading.

You'll also get a 1024 x 768 14" color monitor with long persistence phosphors.

And the power to display 32,000 colors simultaneously, if you expand video memory to 1 MB.

And factory-installed MS-DOS® 5.0 and Microsoft Windows 3.0.

And a Microsoft Mouse.

And, considering it's from Dell, a whole lot of peace of mind.

That, by itself, is worth a fortune.



THE DELL 486P/20 20 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 80 MB HARD DRIVE, SUPER VGA (1024 x 768) COLOR MONITOR,
3.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$248▽

MORE PRODUCTIVITY

The Dell 486D/25 is a sophisticated productivity workstation that was designed with your future in mind. To upgrade from a 25 MHz i486SX processor to a faster processor when available, all you'll need to do is replace a processor chip. Not a card. And starting with 4 MB, you can keep adding RAM up to a maximum of 64 MB.

This new system is priced on par with 33 MHz i386DX machines, yet performs up to 40% faster. And its sheer processing power is amply backed by a 100 MB hard drive with a 32 KB cache for increased throughput. A dual floppy drive completes the excellent storage arrangement.

A 1024 x 768 14" color monitor with a 70 Hz refresh rate gives you a flicker-free display. With 32,000 colors, if you make a small expansion of video RAM. Should anything go wrong, the built-in SmartVu™ diagnostic display can find the problem, even if the monitor goes down.

The 486D/25 comes with six expansion slots and five drive bays for added flexibility. You'll also get factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/25 25 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN™ 14C MONITOR,
3.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$748▽

▽ Savings calculated from Dell retail pricing as of Dec. 9, 1991. No other discounts apply. Promotional prices expire 2/29/92. All prices and specifications are subject to change without notice. Dell and Dell System are registered trademarks. UltraScan and SmartVu are trademarks of Intel Corporation. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. OS/2 is a registered trademark licensed to Microsoft Corporation. MS-DOS and Microsoft are registered trademarks and Windows is a registered trademark of Microsoft Corporation. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J.D. Power and Associates is a registered service mark of J.D. Power and Associates. Dell disclaims proprietorship.

THE MORE YOU SAVE.

As we've just mentioned, here's an amazing fact: feature for feature, you can get an outstanding graphics workstation. Except a high-end price tag. Your savings increase with the sophistication of the Dell System* you buy. So go ahead, read on. The more the more our i486 systems cost, the less they actually cost.

MORE SPEED

From desktop publishing to spreadsheet applications, there's one feature that's always welcome, and that's speed. With quick recalls and lightning fast screen refreshes, you'll get your work done faster with the Dell 486P/33.

The 33MHz i486DX processor generates up to 80% more performance than 33MHz i386DX systems. If that leaves you craving for more, you can upgrade to a faster i486 processor when available.

This 486P/33 configuration features a 100 MB hard drive with a phenomenal 15 ms average access time. An 8 KB cache in the processor boosts performance. And dual floppy drives allow you to read any diskette, regardless of MS-DOS format.

A 1024 x 768 non-interlaced big 15" color monitor with overscan gives you 30% more viewable area than the standard 14" you get with any competitively priced system. For even more versatility on desktop publishing or graphic-intensive applications, just expand video RAM to 1 MB and you'll get a 32,000 color, near-photograph quality display.

The system comes with 4 MB RAM on 32-bit SIMMs with gold-plated connectors, MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486P/33 33 MHz i486DX SYSTEM. *
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$948▽

MORE GRAPHICS

The Dell 486D/33 has every high-end feature you'd expect in an outstanding graphics workstation. Except a high-end price tag.

There's a superfast 33 MHz i486DX processor, with 8 KB internal cache. For even greater performance, all you'll need to do is replace a processor chip. So you can upgrade inexpensively as soon as new chips hit the market.

Should your workload, heaven forbid, triple by then, you'll still find the 200 MB hard disk more than adequate.

And as your requirements become increasingly more sophisticated, you can keep adding to the 486D/33's 8 MB RAM. With a maximum of 64 MB, there's plenty of room to grow.

Talking about room, we have a large 15" flat square monitor with 30% more viewable area than a standard 14" monitor, which makes those large spreadsheets and high resolution documents much easier to read.

The Dell 486D/33 comes with factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/33 33 MHz i486DX SYSTEM. *
SYSTEM INCLUDES 200 MB HARD DRIVE, ULTRASCAN (1024 x 768) 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 8 MB RAM.

SAVE \$1,348▽



Gold-plated SIMMs
increase system
reliability by
eliminating connection-
related errors.

There are plenty of companies anxious to sell i486 systems at a low price. All they really need is a supply of parts (the cheaper, the better) and a garage to assemble them in. Once the "production line" gets going, they place



The 486P/20 is one of the few computers to feature 16 MB SIMMs.

a few ads in the paper. After that, of course, it's anyone's guess as to which will last longer: the computer or the "company" it came from.

At Dell, on the other hand, we offer lower prices by cutting down on traditional retailer mark-ups, not quality. In fact, we're almost fanatical about the quality of every machine that leaves our state-of-the-art factory. That attitude is reflected in the way we design, test, manufacture and ship our i486 systems.



Our Black Box test makes sure your Dell computer never arrives this way.

To see how our i486 systems stand up to air

delivery, we use a Black Box. Or, in technical parlance, a portable accelerometer/thermometer. This little device is fitted into a test computer which we then send out through regular delivery channels, much as if you had ordered it yourself. When we bring it back, the "Black Box" tells us exactly what the computer went through, in terms of shock, vibration and temperature. This innovative test is part of a series that's been so

successful in helping us improve our packaging, we've won an international award for package design.

To make our computers more reliable, we cook them. After our computers are fully assembled and configured, randomly selected units are "burned-in" and tested at 104°F.

In perhaps the most grueling temperature test we've ever come up with, pilot Dell systems must survive a storage chamber where temperatures vary rapidly between -40°C and +60°C.

JUST BECAUSE YOU PAY LESS DOESN'T MEAN YOU GET LESS.

Our computers have a heart of gold.

At Dell, we take quality consciousness so seriously, we fit our i486 systems with SIMMs that have gold-plated connectors. If you're wondering what such expensive components are doing in relatively inexpensive computers, the answer is simple: they cost us a bit more, but by eliminating connection-related errors, they're worth their weight in gold.

It's exactly this kind of commitment to quality control that's enabled us to meet CSA, UL, TUV-GS, FCC and VDE standards, earning worldwide regulatory approvals.

There are thousands of ways to use a Dell i486 system. Dell i486 systems are tested for compatibility with major

peripherals, software applications, network topologies and network operating systems, including Banyan and Novell, in several hundred permutations per system. They're

even tested for AS-400 connectivity. So you can use our machines in virtually any environment.

50% fewer opportunities for things to go wrong. After the traditional computer manufacturer builds a system,

it goes to the dealer, who then does his own configuring. That's 2 stages of manufacturing, which means twice as many opportunities for things to go wrong.

A Dell i486 system, on the other hand, is manufactured only once. We custom-configure memory boards, network cards and advanced video, testing the system as a unit.

We even load select software packages you buy from us, at no cost to you. That includes MS-DOS 5.0, Microsoft Windows 3.0, and many popular applications programs.

With 20 diskettes and 2 hours to load and configure just one system, imagine the time you'll save and the potential hassles you'll avoid. Which gives you yet another reason to buy a Dell i486 system:

When you open the box, you're ready to go.



800-545-3557

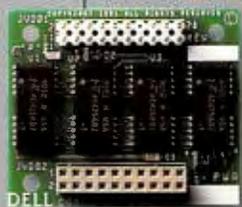
TO ORDER, CALL PLEASE REFERENCE #11D57
HOURS: 7AM-9PM CT MON-FRI 8AM-4PM CT SAT 10AM-3PM CT SUN
IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

And if you think that's rough, consider our shock test. Sample i486 computers are strapped to a guillotine-like apparatus which repeatedly drops them to the

ground. This tells us what we can do to improve their shock tolerance level.

Our power supply units undergo an equally rigorous quality control process. In a test that simulates several years of actual usage, randomly selected test units are switched on and off 1,200 times; only then can they be approved.

While our testing may seem a little extreme, it's based on a rather simple fact: if our machines don't fail with us, they haven't much chance of failing with you, either.



A small expansion of video memory gives you over 32,000 colors for a near photographic quality display.

WE THINK A COMPUTER SHOULD COME WITH MORE SUPPORT THAN THIS.

As a potential buyer, you'll receive lots of attention from most computer companies. Until they receive your check, that is. For all practical purposes, once the sale is closed, so is the company.

At Dell, on the other hand, half our story begins after you receive your computer. Despite our low prices, we've built a reputation for the highest level of support in the industry.

To begin with, a Dell expert works with you to figure out which computer, with which options, works best for you. We help you arrange financing from a wide variety of credit, lease and lease-to-buy plans. Then we test, pack and ship your

personalized personal computer to you via two-day air standard.

In the unlikely event that you have a problem with your computer, it won't last long. Our technical support staff solves 90% of reported problems over the phone. Usually in six minutes or less.

You can also get technical help 24 hours a day via our innovative TechFax™ line. Just dial up and detailed system information

will be automatically faxed back to you from the Dell Technical Library.

We even have a special section on CompuServe's PC vendor forum. So you can view other users'

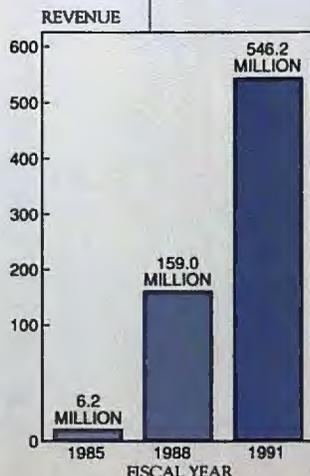
problems, and, more importantly, our solutions. But what makes our bulletin board special is that we constantly monitor what goes on there. Which means we can keep track of any small problems, and stop them before they become big ones.

But what if you have a problem that just can't be solved over the telephone?

On-site service is an ambiguous term.

To some enterprising vendors, it conveniently means that the replacement parts, and not the service technician, will arrive on-site. Which isn't as crazy as you may imagine; there are any number of do-it-yourself computer whiz kids in this business.

If you don't count yourself among their



Dell has built a \$546 million dollar business by building a relationship with every customer.

ranks, you'll prefer Dell's way of supporting our machines.

If needed, a trained technician can be at your home or office with a solution in hand, usually by the next business day.△

What's more, every time you call Dell Tech Support an entry is made in our customer database. So over time, we'll know your computer as well as you do. Maybe even better.

And you get all this support without getting

a bill. Because the price of your system includes on-site service coverage for a year, and phone support forever.

Buy a computer and get the company.

By standing firmly

behind every machine we've ever sold, we've built up a \$546 million company in just seven years, one customer at a time.

On the way, we've acquired quite a following. For example, the editors at PC Week have described the Dell service and support package as "overkill!" J.D. Power and Associates® ranked Dell "Best PC in Customer Satisfaction in Small to Medium Sized Businesses."

We've won PC Week's Customer Satisfaction Poll an unprecedented eight times.

And in the last 12 months alone, we've collected 53 product awards, including PC Magazine's Editor's Choice, InfoWorld's Buyer's Insurance and PC World's Best Buy and World Class Awards.

And it's not just the smaller users that are satisfied, either: Dell computers are now used

by over two-thirds of the FORTUNE 500® Overseas, it's been pretty much the

same story. We've more than doubled our overseas sales in the last 3 years in a row, and won in customer satisfaction surveys in the UK, Germany and France.

Still can't decide? Take 30 days to make up your mind. Within that time, if you aren't completely satisfied, just

return your Dell system and we'll refund your money, no questions asked.

We're proud to add, though, that this unconditional

guarantee has been used so sparingly, only 1.2% of the over half a million computers we've sold so far have ever come back.

What does keep coming back, in ever increasing numbers, are our customers. Over 70% of the people who buy a Dell computer buy another. That's perhaps the strongest statement of satisfaction any manufacturer could ever hope to receive.

So before you buy an i486 system, ask



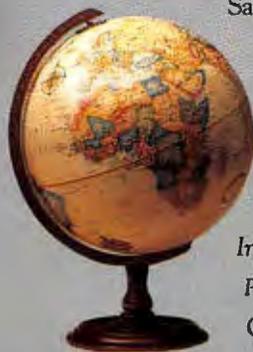
Every Dell Computer comes with a trained computer staff who knows your computer as well as you do. Maybe better.



Our 53 product awards in 1991 alone make Dell one of the most awarded PC companies in the world.

around; there are plenty of Dell users out there. And if there's anything you need, call us. But you'd better hurry.

Great computers may last a long time but great deals don't.



Last year, Dell won customer satisfaction polls in the U.S., U.K., Germany and France.

**DELL
COMPUTER
CORPORATION**

800-545-3557

TO ORDER, CALL, PLEASE REFERENCE #11D57
HOURS: 7AM-9PM CT MON-FRI 8AM-4PM CT SAT 10AM-3PM CT SUN
IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

FAX SHEET

SEND US THE FAX AND WE'LL SEND YOU THE FIGURES.

Fill this out, fax it to us and we'll send back a price quote, spec sheet and any other information you may need on our line of i486 systems.

PROCESSOR

- i486SX, 20 MHz
- i486SX, 25 MHz
- i486, 33 MHz
- i486, 50 MHz

MEMORY

- 4 MB
- 8 MB
- 16 MB

Super VGA Color, 14"

1024 x 768, 28mm dot pitch

UltraScan 14C, 14", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz

UltraScan 15C, 15", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz

GPD-16C, 16", 1280 x 1024, .31mm dot pitch

GPD-19C, 19", 1280 x 1024, .31mm dot pitch

ARCHITECTURE

- EISA
- ISA

HARD DRIVES

- 50 MB
- 80 MB
- 100 MB
- 200 MB
- 320 MB
- 650 MB
- Other

OPERATING SYSTEMS

- MS-DOS 3.3
- MS-DOS 4.01
- MS-DOS 5.0
- MS-OS/2 1.21
- Dell UNIX® System V

CHASSIS

- Small Footprint
- Mid-Size
- Floor-Standing

MONITORS

- VGA Color, 14", 640 x 480, .39mm dot pitch
- VGA Color Plus, 14", 640 x 480, .31mm dot pitch

OTHER (i.e.: tape drive, network card, mouse or modem)

DISKETTE DRIVES

- 3.5"
- 5.25"

Name _____

Title _____

Company _____
(If Applicable)

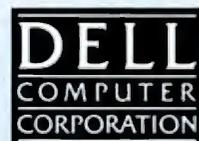
Address _____

City _____ State _____ Zip _____

Fax Number _____

Please have a Dell representative call me at

(_____) _____



800-727-8320

FOR MORE INFORMATION, PLEASE FAX US.
#11D57

PRODUCT OUTLOOK



Edited by RUSSELL GLITMAN

Toshiba T4400SX

First 25-MHz 486SX Laptop Offers Power on the Road



The new Toshiba T4400SX, available with an LCD display (left) or gas plasma display (right), features a 25-MHz 486SX processor and a rugged carbon-fiber reinforced plastic case.

If you need power on the road, you'll appreciate the Toshiba T4400SX. The T4400SX, the first notebook built around Intel's new 25-MHz 486SX chip, boasts an array of slick features sure to please portable-power fanatics. This is one of the first systems of any kind built around the 25-MHz 486SX, which is simply a regular 25-MHz 486DX with the math coprocessor disabled. If you don't run software that benefits from floating-point math (mostly spreadsheets, CAD, and page design packages), you'll get 25-MHz 486DX performance.

With a CPU this hot, it's amazing that this 7½-pound unit is battery powered. Toshiba estimates a battery life of 3 hours under normal

use. The unit's size puts it squarely in the notebook category: 11.7 by 8.3 by 2.2 inches. It comes standard with 2MB of RAM, a 60MB hard disk, and a 32-level gray-scale VGA LCD screen. You can add up to a total of 10MB of RAM by plugging in one of Toshiba's neat credit card-style upgrades, and you can also choose an 80MB hard disk option. The case is made of carbon-fiber reinforced plastic, which should help the T4400SX stand up to the more prosaic rigors of the road.

More exciting is the low-power gas plasma VGA option. Toshiba says the T4400SX is the smallest laptop available in the United States that uses this alternative to LCD.

An auto-resume feature

saves your work when the computer is turned off or the battery runs down.

The system costs \$5299 with a 60MB hard drive and an LCD screen; add \$300 for an 80MB hard drive and \$300 for the gas plasma screen.

—Robert Lauriston

IN BRIEF

Toshiba T4400SX

The T4400SX puts the power of a 486SX desktop into a notebook package.

Toshiba America Information Systems
P.O. Box 19724
Irvine, CA 92713-9724
800/457-7777,
714/583-3000

Reader service no. 664

INSIDE PRODUCT OUTLOOK

114 Fahrenheit 1280

Low-cost super-VGA card draws *Windows* screens 25 times faster.

118 **DR DOS 6.0** Digital Research upgrade tops MS-DOS at task switching, disk performance, and RAM access.

122 **FotoMan** A digital camera stores pictures on your PC.

124 **AST Advantage Line** Four plug-and-play PCs with high performance and low prices.

126 **ExpressWriter 201** A lightweight portable printer gives you laserlike output on the road.

128 **TravelMate 3000 WinSX** Texas Instruments' notebook is designed to run *Windows* smoothly on batteries.

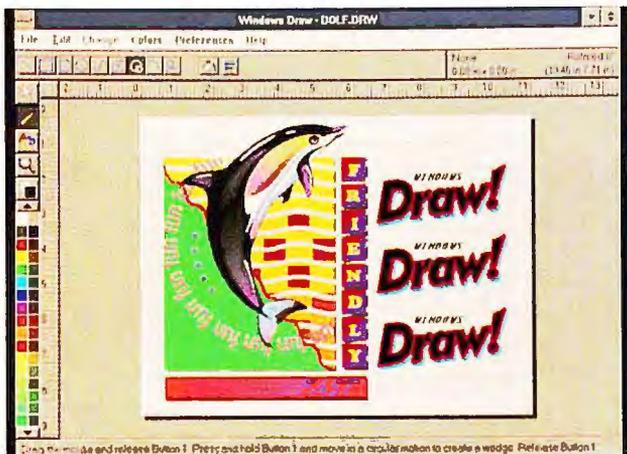
129 **IBM LaserPrinter 4029 Series** Versatile lasers from IBM spin-off combine a wide range of upgrade options, no-nonsense pricing.

130 **BusinessStation 486ASX, PowerPro Array** ALR's EISA 486SX workstation and twin-processor file server are high-tech under the hood.

131 **ReadStation** Stand-alone scanner reads documents onto a floppy with the push of a button.

Micrografx Windows Draw

Drawing Ahead of the Competition with Simplicity and Price



A simple interface and ease of use make Windows Draw an ideal package for the nonprofessional artist.

If you'd wanted to be an artist, you'd have grown a goatee and gone to art school. But when you need that artistic touch—say, a customized logo or a simple graphic for a slide presentation—an expensive and complicated illustration package can be overwhelming. That's where Micrografx's *Windows Draw* enters the picture.

At \$149.95, *Windows Draw* costs less than one-third the price of *Corel Draw* or *Micrografx Designer* and sports a much simpler interface. Instead of selecting from a single complex toolbox, you click on one of three icons—for drawing, text, or editing. The essential tools for each of these modes are displayed across the top of the drawing area. More advanced features are available via dropdown menus.

When you select a tool, a "hint line" along the bottom of the screen tells you what the tool is and how to use it. A handy status box in the upper right corner tells you which mode you're in, the cursor's position, and the size of the page you've selected.

Windows Draw comes with all the essentials for creating

lines, boxes, and circles, plus tools for creating Bézier curves and blending objects. However, professional illustrators will still need *Designer* or *Corel Draw* for sophisticated

Fahrenheit 1280

Orchid Sets Windows on Fire

Drawing new screens in *Windows* can be as much fun as watching molasses pour. One way to accelerate *Windows* is to get the Fahrenheit 1280 from Orchid, a low-cost super-VGA board that Orchid claims can draw *Windows* screens up to 25 times faster than standard super-VGA cards do.

The secret of the Fahrenheit's speed is built-in hardware that interprets and executes *Windows* operations such as moving blocks of pixels that occur when you move text or graphics. The Fahrenheit should also speed up line drawings, which are commonly used in CAD packages.

However, the Fahrenheit creates no speed gain with DOS applications; a few DOS programs, mostly games, ac-

features such as multiple layers, dimensioning, or the ability to create color separations.

If you'd rather modify an existing image, you can choose from *Windows Draw*'s 2600 pieces of clip art in its native DRW format. You can search the clip-art library by name, or preview images before placing them on the page.

Draw lets you add text directly to an image, bend it along a curve, or manipulate individual characters to create custom headlines and logos. You get 13 Bitstream Speedo scalable fonts, and you can use additional Adobe Type 1 fonts via *Adobe Type Manager*. Handy *Excel 3.0*-like buttons let you quickly select fonts and assign attributes such as bold and italic.

Draw supports all major

file formats, including EPS, CGM, and Macintosh PICT. You can even display, crop, and print 24-bit PCX and TIFF images, but *Draw* offers no way to trace them.

Windows Draw requires a tidy 1.5MB of disk space, plus an additional 5.5MB for clip art. While *Draw* will run on a 286, Micrografx recommends a 386 with at least 2MB of RAM. —Daniel Tynan

IN BRIEF

Micrografx Windows Draw

WINDOWS A passel of drawing features in an easy-to-use \$150 package.

Micrografx, Inc.
1303 Arapaho
Richardson, TX 75081
800/733-3729,
214/234-1769
Reader service no. 678

aren't compromised; you just won't get the quicker, eye-saving refresh rates or higher resolutions until you upgrade.

The Fahrenheit 1280 is backed by a four-year warranty and toll-free tech support and retails for \$449 (70 Hz with 512K of RAM and 16 colors) and \$499 (72 Hz with 1MB of RAM and 256 colors).

—TJ Byers

IN BRIEF

Fahrenheit 1280

This video card speeds up *Windows* screen operations by as much as 25 times while providing flicker-free super-VGA viewing.

Orchid Technology
45365 Northport Loop W
Fremont, CA 94538
800/767-2443,
510/490-9312 (fax)
Reader service no. 670



Trim-Trak® Margin Remover: Zip off perforated margins quickly, easily. Trim up to 18 sheets at once. Made in U.S.A. Lifetime Warranty. #TR-2 Retail ... \$9.95



Safe Spot®: Single outlet AC surge protection for electronic equipment. Ideal for travel. UL 1449 TVSS Listed, CSA approved. Full One Year Warranty. #SP-4 Retail ... \$6.95



Keyboard Calculator: Calculate without interrupting your computer program. Solar power, 8 character LCD. Full One Year Warranty. #KC-1 Retail ... \$9.95



Computer Cleaning Kits: Clean Screen anti-static wipes. #CK-3 Retail ... \$9.95. Clean Mouse with 2 scrubbing balls fits any mouse. #MC-1 Retail ... \$14.95. Clean Drive for 3 1/2" or 5 1/4" disk drives. #CK-4 (5 1/4") Retail ... \$9.95. #CK-5 (3 1/2") Retail ... \$9.95



Universal Security Kit: Protect system against theft and unwanted borrowing. Easy to install. Made in U.S.A. Lifetime Warranty. #SL-1 Retail ... \$19.95



Safe-Fax®: Single outlet AC and phone line surge protection for FAX/telephone/modem/etc. UL 1449 TVSS Listed, CSA approved. Full One Year Warranty. #SF-1 Retail ... \$29.95



Trim-Right®: Paper cutter provides clean edges. Separate computer paper perf easily. Eliminate printout tearing, squaring device. Lifetime Warranty. #TR-1 Retail ... \$14.95

Worksavers From Curtis

Save Time, Energy, and Money

Your work day is difficult enough. You shouldn't have to cope with uncooperative perf paper. Or surges in electrical power lines. Or skips, glitches and errors caused by dirt and grime.

These low-cost worksavers from Curtis speed you through your day, helping you avoid costly equipment repairs, data losses, and delays. So you can spend less time coping with life and more time enjoying it.

Curtis products are available worldwide.
For more information call (603) 532-4123 Ext. 40.

Manufacturing Company, Inc.

CURTIS

Way You Work

A New Way to Organize Your Tasks

Proteo's *Way You Work* combines features you might expect in a PIM, a groupware application, a DOS shell, a macro generator, a document manager, and a network E-mail utility.

Way You Work starts with a built-in object-oriented data base that organizes information of all kinds, including customer contacts, appointments, and phone numbers (with a built-in auto-dialer). Then *Way You Work* allows you to integrate applications such as *1-2-3* and *WordPerfect* and their documents seamlessly into its environment. Click on a document, and *Way You Work* takes care of finding the appropriate application, runs it, and loads the file.

As in Hewlett-Packard's *NewWave* and the Macintosh Finder, *Way You Work* users can tag documents with long, explicit names rather than cryptic DOS names. But *Way You Work's* filing system has

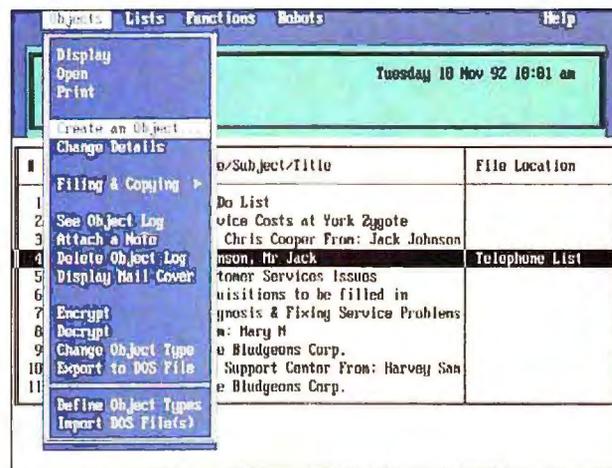
more powerful features, too.

The system benefits from scripts called "software robots" that track down files associated with unfinished tasks, place them on your desktop, and discard wastebasket items more than a certain number of days old.

Way You Work's file organizing and automatic docu-

ment processing capabilities work under *Windows* as well as DOS. While *Way You Work* runs as a full-screen DOS app or in a text window, it launches *Windows* applications and organizes the documents they use, providing an ergonomic replacement for *Windows' Program Manager* and *File Manager*, which can still run beside it.

Way You Work comes in three parts. The Personal Office package includes the basic



Way You Work is a DOS shell that includes an object-oriented data base designed to help managers keep track of contacts and applications.

IN BRIEF

Way You Work

This file manager promises to keep track of documents and applications, as well as phone numbers and contacts.

Proteo Technology Corp.

210 Carnegie Centre #101
Princeton, NJ
08540-6233
800/668-6716,
416/479-2000

Reader service no. 680

data base, PIM, E-mail, and document processing functions. The Workgroup Module lets you automatically manage document flow throughout an organization, share calendars and documents across a LAN, and back up work to a network server. Finally, the Toolkit Module allows you to customize the environment and link users to mainframe applications. With *Way You Work*, you have the tool to manage your desktop. —Brett Glass

JetWay

Work-Group Printing Without a LAN

If all you want to do is connect a printer to a group of PCs, you don't need a network, thanks to ASP Computer Products' *JetWay*.

The memo pad-size *JetWay* printer-sharing device works with any standard parallel printer/PC combination. It's available in four- and eight-user configurations. Company officials claim it provides simultaneous access to a printer at up to 115 kbps.

The *JetWay* builds on ASP's *ServerJet* product, an internal sharing device that connects a variety of HP La-

serJet printers. Installation is relatively simple. You can mount the unit on a wall or attach it to the side of your printer to save space. ASP supplies modular RJ-11 telephone-type cables and RJ-11 converters that come in 9-pin and 25-pin models.

To hook the *JetWay* to each PC, attach a converter to a PC's parallel port. Plug one end of the RJ-11 wire into the converter, and the other into the *JetWay* unit. Then connect the printer's parallel port cable to the *JetWay*.

ASP officials claim the Jet-

Way's default software will have you and your DOS work group up and printing in moments. But you can tailor the *JetWay*, too. It comes with software that lets you customize it to your printing environment so Macs and UNIX minicomputers can share the same printer with your PC. And each port can be configured separately.

The *JetWay* comes with 2000 feet of RJ-11 cable, but at that distance you can expect transmission speeds of 9600 baud. If the PC is within 200 feet of the printer, you get the speedy 115,200-baud rate.

Depending on your workgroup size and printing tasks, the *JetWay's* 256K buffer may

be a little less than you need. No problem: ASP offers upgrades in 1MB increments up to 4MB. The four-port *JetWay* retails for \$345, the eight-port model for \$545.

—Russell Glitman

IN BRIEF

JetWay

A quick way to make a speedy connection between your PCs and a loser printer.

ASP Computer Products, Inc.

160 San Gabriel Dr.
Sunnyvale, CA 94086
800/445-6190,
408/746-2803 (fax)

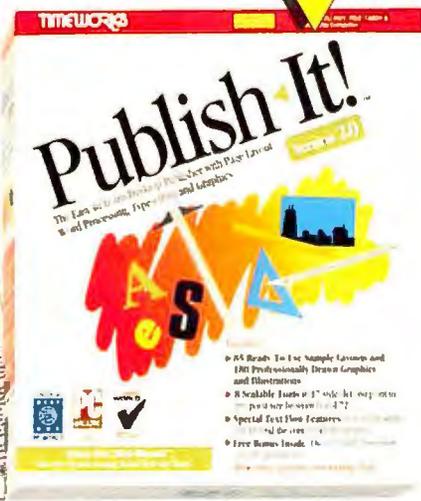
Reader service no. 681

Publish It!™ Explodes the Myth

Myth: You Have to Spend a Lot to get a Lot in a Desktop Publisher.

Reality: Publish It!™ has All the Power at One-Third the Price!

Whoever said you get what you pay for never used Publish It!. Because with Publish It! you get a lot more.



Suggested Retail Price \$249.95

For those of you without an art degree, you need an affordable desktop publisher that's easy to use, a snap to learn and combines all the tools needed to create dynamic documents. In other words, you need Publish It!

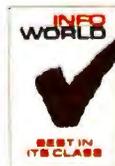
Publish It! Version 2.0
The Affordable Desktop Publisher That Packs A Powerful Punch

With Publish It! everything is included:

- ▶ Easy Page Layout
- ▶ A Built-in Word Processor
- ▶ A Built-in Graphic Toolbox
- ▶ 85 Sample Layouts
- ▶ 180 Graphics & Illustrations
- ▶ A Quick-Start Mini-Manual
- ▶ **NEW** 8 Scalable Fonts in 17 Type Styles
- ▶ **NEW** Special Text Flow Features - *Wrap text around the contour of any graphic*
- ▶ **NEW** Extended and Expanded Memory Support

FREE BONUS

Over 30 High-Resolution Clip-Art Illustrations Included Free in Publish It!



Visit your favorite Dealer and find out why more people are making the switch to Publish It!.

TIMEWORKS

Publish It! is a trademark of TimeWorks, Inc. © 1987, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043, 3044, 3045, 3046, 3047, 3048, 3049, 3050, 3051, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3061, 3062, 3063, 3064, 3065, 3066, 3067, 3068, 3069, 3070, 3071, 3072, 3073, 3074, 3075, 3076, 3077, 3078, 3079, 3080, 3081, 3082, 3083, 3084, 3085, 3086, 3087, 3088, 3089, 3090, 3091, 3092, 3093, 3094, 3095, 3096, 3097, 3098, 3099, 3100, 3101, 3102, 3103, 3104, 3105, 3106, 3107, 3108, 3109, 3110, 3111, 3112, 3113, 3114, 3115, 3116, 3117, 3118, 3119, 3120, 3121, 3122, 3123, 3124, 3125, 3126, 3127, 3128, 3129, 3130, 3131, 3132, 3133, 3134, 3135, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3143, 3144, 3145, 3146, 3147, 3148, 3149, 3150, 3151, 3152, 3153, 3154, 3155, 3156, 3157, 3158, 3159, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3167, 3168, 3169, 3170, 3171, 3172, 3173, 3174, 3175, 3176, 3177, 3178, 3179, 3180, 3181, 3182, 3183, 3184, 3185, 3186, 3187, 3188, 3189, 3190, 3191, 3192, 3193, 3194, 3195, 3196, 3197, 3198, 3199, 3200, 3201, 3202, 3203, 3204, 3205, 3206, 3207, 3208, 3209, 3210, 3211, 3212, 3213, 3214, 3215, 3216, 3217, 3218, 3219, 3220, 3221, 3222, 3223, 3224, 3225, 3226, 3227, 3228, 3229, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3265, 3266, 3267, 3268, 3269, 3270, 3271, 3272, 3273, 3274, 3275, 3276, 3277, 3278, 3279, 3280, 3281, 3282, 3283, 3284, 3285, 3286, 3287, 3288, 3289, 3290, 3291, 3292, 3293, 3294, 3295, 3296, 3297, 3298, 3299, 3300, 3301, 3302, 3303, 3304, 3305, 3306, 3307, 3308, 3309, 3310, 3311, 3312, 3313, 3314, 3315, 3316, 3317, 3318, 3319, 3320, 3321, 3322, 3323, 3324, 3325, 3326, 3327, 3328, 3329, 3330, 3331, 3332, 3333, 3334, 3335, 3336, 3337, 3338, 3339, 3340, 3341, 3342, 3343, 3344, 3345, 3346, 3347, 3348, 3349, 3350, 3351, 3352, 3353, 3354, 3355, 3356, 3357, 3358, 3359, 3360, 3361, 3362, 3363, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3371, 3372, 3373, 3374, 3375, 3376, 3377, 3378, 3379, 3380, 3381, 3382, 3383, 3384, 3385, 3386, 3387, 3388, 3389, 3390, 3391, 3392, 3393, 3394, 3395, 3396, 3397, 3398, 3399, 3400, 3401, 3402, 3403, 3404, 3405, 3406, 3407, 3408, 3409, 3410, 3411, 3412, 3413, 3414, 3415, 3416, 3417, 3418, 3419, 3420, 3421, 3422, 3423, 3424, 3425, 3426, 3427, 3428, 3429, 3430, 3431, 3432, 3433, 3434, 3435, 3436, 3437, 3438, 3439, 3440, 3441, 3442, 3443, 3444, 3445, 3446, 3447, 3448, 3449, 3450, 3451, 3452, 3453, 3454, 3455, 3456, 3457, 3458, 3459, 3460, 3461, 3462, 3463, 3464, 3465, 3466, 3467, 3468, 3469, 3470, 3471, 3472, 3473, 3474, 3475, 3476, 3477, 3478, 3479, 3480, 3481, 3482, 3483, 3484, 3485, 3486, 3487, 3488, 3489, 3490, 3491, 3492, 3493, 3494, 3495, 3496, 3497, 3498, 3499, 3500, 3501, 3502, 3503, 3504, 3505, 3506, 3507, 3508, 3509, 3510, 3511, 3512, 3513, 3514, 3515, 3516, 3517, 3518, 3519, 3520, 3521, 3522, 3523, 3524, 3525, 3526, 3527, 3528, 3529, 3530, 3531, 3532, 3533, 3534, 3535, 3536, 3537, 3538, 3539, 3540, 3541, 3542, 3543, 3544, 3545, 3546, 3547, 3548, 3549, 3550, 3551, 3552, 3553, 3554, 3555, 3556, 3557, 3558, 3559, 3560, 3561, 3562, 3563, 3564, 3565, 3566, 3567, 3568, 3569, 3570, 3571, 3572, 3573, 3574, 3575, 3576, 3577, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3624, 3625, 3626, 3627, 3628, 3629, 3630, 3631, 3632, 3633, 3634, 3635, 3636, 3637, 3638, 3639, 3640, 3641, 3642, 3643, 3644, 3645, 3646, 3647, 3648, 3649, 3650, 3651, 3652, 3653, 3654, 3655, 3656, 3657, 3658, 3659, 3660, 3661, 3662, 3663, 3664, 3665, 3666, 3667, 3668, 3669, 3670, 3671, 3672, 3673, 3674, 3675, 3676, 3677, 3678, 3679, 3680, 3681, 3682, 3683, 3684, 3685, 3686, 3687, 3688, 3689, 3690, 3691, 3692, 3693, 3694, 3695, 3696, 3697, 3698, 3699, 3700, 3701, 3702, 3703, 3704, 3705, 3706, 3707, 3708, 3709, 3710, 3711, 3712, 3713, 3714, 3715, 3716, 3717, 3718, 3719, 3720, 3721, 3722, 3723, 3724, 3725, 3726, 3727, 3728, 3729, 3730, 3731, 3732, 3733, 3734, 3735, 3736, 3737, 3738, 3739, 3740, 3741, 3742, 3743, 3744, 3745, 3746, 3747, 3748, 3749, 3750, 3751, 3752, 3753, 3754, 3755, 3756, 3757, 3758, 3759, 3760, 3761, 3762, 3763, 3764, 3765, 3766, 3767, 3768, 3769, 3770, 3771, 3772, 3773, 3774, 3775, 3776, 3777, 3778, 3779, 3780, 3781, 3782, 3783, 3784, 3785, 3786, 3787, 3788, 3789, 3790, 3791, 3792, 3793, 3794, 3795, 3796, 3797, 3798, 3799, 3800, 3801, 3802, 3803, 3804, 3805, 3806, 3807, 3808, 3809, 3810, 3811, 3812, 3813, 3814, 3815, 3816, 3817, 3818, 3819, 3820, 3821, 3822, 3823, 3824, 3825, 3826, 3827, 3828, 3829, 3830, 3831, 3832, 3833, 3834, 3835, 3836, 3837, 3838, 3839, 3840, 3841, 3842, 3843, 3844, 3845, 3846, 3847, 3848, 3849, 3850, 3851, 3852, 3853, 3854, 3855, 3856, 3857, 3858, 3859, 3860, 3861, 3862, 3863,

DR DOS 6.0

Staying a Few Steps Ahead of MS-DOS

Digital Research is again trying to set the standard for DOS with version 6.0 of DR DOS, but this time the tiny Monterey, California, firm has two big allies in its efforts—IBM and Novell. Version 6.0 tops Microsoft's version 5.0 of MS-DOS with better disk performance, faster task switching, access to more RAM, and improved security, while providing full *Windows* support.

IBM's schism with Microsoft and DRI's acquisition by Novell—which has a comarketing agreement with IBM—could position DR DOS as the client operating system of choice on networks and in Big Blue shops.

DR DOS 6.0's 386 memory manager, EMM386, works better than ever with *Windows*, running it not only in 386-enhanced mode but also in standard mode. In informal testing, we ran several demanding *Windows* applications at the same time and during the process uncovered no *Windows* incompatibilities.

Version 6.0 lists for \$99 and comes chock-full of features that are either unavailable in MS-DOS 5.0 or are more extensive than Microsoft's offering. Among them:

- **DiskMax:** disk optimization software that has a built-in file defragmenter, an optional compression feature that will almost double the amount of available space on your hard disk, and a cache that DRI claims is faster than the one in MS-DOS 5.0. DiskMax also boasts an enhanced undelete function that lets you recover erased files even after extensive disk use. And new password security features let you lock your keyboard and protect files, subdirectories, and entire disk partitions from prying eyes.

- **TaskMax:** a task switcher that handles 20 programs at once. Like MS-DOS 5.0, TaskMax doesn't require a graphical shell. Unlike MS-DOS 5.0, which only swaps to disk, it also keeps multiple applications in RAM.

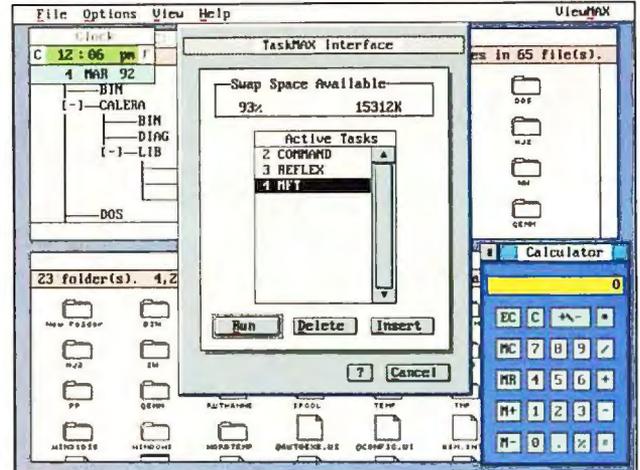
- **MemoryMax:** a memory manager, improved from

IN BRIEF

DR DOS 6.0

The latest version of Digital Research's DOS-compatible operating system offers many new features and utilities.

Digital Research, Inc.
70 Garden Ct.
Box DRI
Monterey, CA 93942
800/274-4374,
408/649-3896
Reader service no. 669



DR DOS 6.0 features a task switcher, TaskMax, that can shuttle between 20 programs and keeps applications in RAM for speedy access.

earlier versions, that gives you up to 628K of RAM. Unlike MS-DOS 5.0, MemoryMax lets you load TSRs in high memory on most 286 systems.

- **FileLink:** a PC-to-PC serial file transfer program lets you move data between desktop and portable.

Other nice touches abound. For instance, a special command in CONFIG.SYS lets

you change your system's configuration interactively at boot time. DR DOS 6.0 also comes with a text editor, a graphical shell, and on-line documentation and help.

Unlike the retail MS-DOS 5.0, DR DOS 6.0 isn't an upgrade; it's a complete copy of the operating system that can be installed on any machine.

—Brett Glass

External Ethernet Adapter, External Token Ring Adapter, Pocket Ethernet Adapter II

Xircom's Three Musketeers Adapt to Any Network

Xircom's parallel port network adapters offer a simple alternative to the floppy disk shuffle when you move data from laptop to LAN.

The External Ethernet and External Token Ring adapters, aimed for installation on your desktop, are quite similar. The adapter itself is a small box, about 6 inches square and 2 inches high, with a 20-inch cable that leads to your laptop's parallel port. The Ethernet model can hook to standard thin cable, 10Base-T twisted pair, or AUI (for thicknet external transceivers); the Token Ring has connectors for 9-pin Type 1 or RJ-45 Type 3 media. In both cases, the adapter automatically senses

which cable is connected and adjusts itself accordingly.

For those who need to make network connections while on the road, the Pocket Ethernet Adapter II provides a lighter, cheaper, and faster solution than its predecessor did. The 3-ounce gadget measures just 4 inches long and isn't much bigger around than a standard parallel plug. Three different models are available to match the three popular cable types.

All the adapters include diagnostic readout lights and preconfigured drivers for all popular network operating systems.

The External Ethernet Adapter costs \$595, the External Token Ring Adapter \$945,

and the Pocket Ethernet II \$495 for thin coax or AUI or \$545 for 10Base-T.

—Robert Lauriston

IN BRIEF

External Ethernet Adapter, External Token Ring Adapter, Pocket Ethernet Adapter II

Xircom's adapters move data between laptop and network.

Xircom, Inc.
26025 Mureau Rd.
Calabasas, CA 91302
800/874-7875,
818/878-7600
Reader service no. 675



Introducing the first notebook computer designed to make Windows™ a breeze.

Just turn it on and go. It's that simple. The new TI TravelMate™ 3000 WinSX™ package is engineered to meet the challenges of running Windows on a notebook computer. That's why it comes with MS-Windows® 3.0 and MS-DOS® 5.0 already installed on the 60MB hard drive. So within seconds, you're into Windows and ready to load your application software.

But the TM3000 WinSX offers so much

more. Like clicking in and out of applications with a specially designed pointing device. An extra-large, easy-to-see cursor that keeps your place as you move from screen to screen.

And Battery Pro™. Designed to extend battery life when working in Windows, it suspends functions you're not using while keeping calendars and other background programs current. So you can pick up

where you left off.

Best of all, these Windows features, and more yet, come in the industry's smallest, thinnest and lightest 386SX™ 20 MHz notebook computer.

Finding out more is a breeze, too. For the name of a dealer near you, call 1-800-527-3500.

 **TEXAS
INSTRUMENTS**

MS-Windows and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. TravelMate, WinSX and Battery Pro are trademarks of Texas Instruments Incorporated. 386SX is a trademark of the Intel Corporation.

© 1991 TI

71853

Circle 263 on reader service card

QMS-PS 815MR, QMS-PS 825MR

You Have a Choice With 600-dpi Multiresolution Solution

If industry-standard, 300-dot-per-inch, laser-quality output isn't quite sharp enough for the graphics and text you're working with these days, you might consider upgrading to one of the 600-dpi lasers hitting the market. If you need both 300- and 600-dpi resolution, QMS thinks it has the answer with its new 815MR and 825MR laser printers.

The MR stands for *multi-resolution*. Both printers use the 8-page-per-minute Canon SX/TX engine, but don't expect 8-ppm performance when printing at 600 dpi. (In fact, QMS says it takes 25 to 30 percent longer to print at 600 dpi than it does at 300 dpi.) QMS PostScript printers allow you to switch between 300 and 600 dpi by using the printer's control panel or via software commands. QMS also sells "non-MR" versions of the 815 and 825 that offer 300-dpi resolution only.

Certainly not everyone needs to switch between 300 and 600 dpi, but switchable resolutions can come in handy if you're using the same printer both to proof output and to produce near-typeset-quality graphics and text. The speed comes from 300 dpi; 600 dpi provides the muscle and eliminates the jaggies.

The only difference between the 815 MR and 825 MR is that the latter costs \$1000 more and comes with a second 200-sheet letter-size input tray. As a result, the 825MR is also slightly taller than the 815MR (roughly 12 inches tall instead of 9). Both machines have an 18-by-25-inch footprint. Legal, large-capacity letter, A4, and envelope input trays are available for both printers.

Priced at \$5995 and \$6995, respectively, the 815MR and



Featuring PostScript output and an 8-ppm Canon engine, the QMS 815MR and 825MR printers let you switch between 300- and 600-dpi resolution.

825MR come with a 20-MHz 68020 processor and 6MB of RAM. You can add an additional 6MB of RAM for \$995 (the extra RAM can speed 600-dpi printing). The printers feature QMS's emulation sensing, automatically selects PostScript or Hewlett-Packard's PCL 4 printer lan-

guage. However, there's no PCL 5 support. If you desire HP-GL 7475 plotter emulation, you'll have to buy a \$295 add-in card that plugs into one of the printer's two card slots.

The printers' three interfaces—serial, parallel, and LocalTalk—can all be active at the same time. This means

you won't have to change your interface selection by flipping a switch on the printer or by issuing a software command. Both the 815MR and 825MR come with 45 Adobe typefaces and PostScript printer drivers for Windows 3.0 and other popular software.

The standard 815 and 825 models, which print at 300 dpi only, sell for \$3995 and \$4695, respectively. —Jeff Bertolucci

IN BRIEF

QMS-PS 815MR, QMS-PS 825MR

Two PostScript printers offer user-switchable 300/600-dpi resolution.

QMS, Inc.

One Magnum Pass
Mobile, AL 36618
800/523-2696,
205/633-4300

Reader service no. 728

NetWare Lite

All PCs Serve in Peer-to-Peer NetWare

After years of insisting that even the smallest LAN needs a central server, Novell has finally come out with a peer-to-peer network operating system that lets any station on a LAN share its files with any other.

With NetWare Lite's peer-to-peer sharing, you can store shared files on whatever computer makes the most sense—probably the one that uses them most often. You can also share files on the fly or transfer them from one PC to another.

Like regular NetWare, Lite's memory requirements are small—just 50K per workstation, or 25K if you don't share your workstation's resources with the network. Novell promises full compatibility with the thousands of Net-

Ware-compatible applications already in use. Of course, if you've got a sensitive shared data base that demands maximum security and optimum performance, you want to put it on a dedicated file server. No problem. NetWare Lite can coexist with NetWare 2.x or 3.x servers, so you can have file server security and peer-to-peer convenience on the same network.

To make NetWare Lite even more appealing, Novell is bundling it with DR DOS 6.0 (see "Staying a Few Steps Ahead of MS-DOS," also in *Product Outlook*). This is an attractive one-pass setup for new workstations—\$99 gets you an OS and an NOS. All you have to add is a network board.

NetWare Lite supports a score of popular network

boards from Novell, IBM, Western Digital, SMC, 3Com, and Artisoft.

Cost is \$99 per workstation, and you can have as many as 25 workstations on a Lite LAN. Phone support—via a 900 number—costs \$20 per incident. NetWare Lite comes on a single floppy and installs in just minutes, according to a representative from Novell.

—Robert Lauriston

IN BRIEF

NetWare Lite

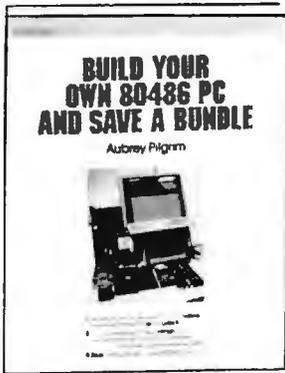
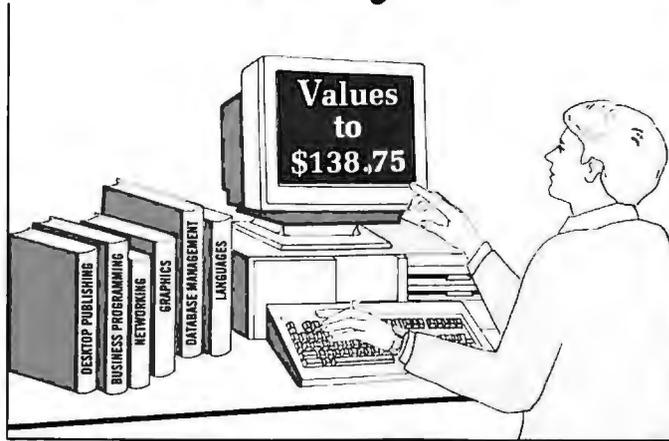
Any PC can be a server with Novell's peer-to-peer NetWare Lite.

Novell Inc.

Novell Product
Information
122 East 1700 South
Provo, UT 84606-6194
800/638-9273,
800/526-5463

Reader service no. 676

SELECT 5 BOOKS for only \$4⁹⁵



3628 \$26.95



3828 \$29.95
Counts as 2



4132 \$29.95
Counts as 2



3049P \$27.95
Counts as 2



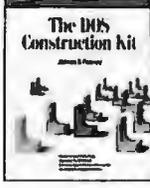
3679P \$22.95



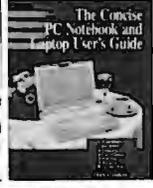
15063P \$19.95



3111P \$17.95



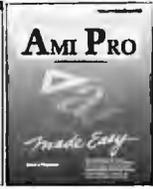
3563P \$22.95



3921P \$22.95
Counts as 2



3782P \$22.95



881019-1P \$19.95



3738 \$26.95



9258P \$29.95
Counts as 2



3057P \$15.95



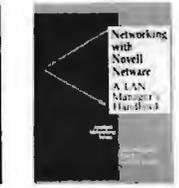
9309P \$28.95
Counts as 2



3279 \$36.95
Counts as 2



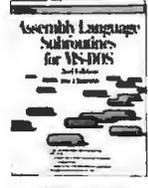
3382P \$29.95
Counts as 2



3283P \$19.95



3875 \$36.95
Counts as 2



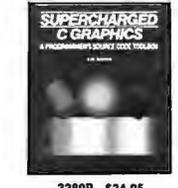
3649P \$24.95



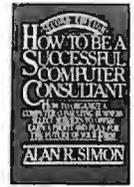
3411P \$24.95



3989P \$18.95



3289P \$24.95
Counts as 2



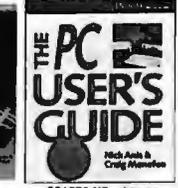
9339 \$29.95



3617P \$29.95
Counts as 2



15038P \$28.95
Counts as 2



881670-XP \$29.95
Counts as 2



881746-3P \$24.95



3799P \$24.95



15064P \$22.95



30048P \$15.95



3744 \$34.95
Counts as 2

The Computer Book Club™ with the BYTE Book Club™

Membership Benefits

The Computer Book Club and the BYTE Book Club have joined forces to bring you the largest selection of business and personal computing titles available today.

- **Big Savings** In addition to this introductory offer, you keep saving substantially with members' prices of up to 50% off the publishers' prices.
- **Bonus Books** Starting immediately, you will be eligible for our Bonus Book Plan, with savings of up to 80% off publishers' prices.
- **Club News Bulletins** 15 times per year you will receive the Book Club News, describing all the current selections—mains, alternates, extras—plus bonus offers and special sales, with scores of titles to choose from.
- **Automatic Order.** If you want the Main Selection, do nothing and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the reply form provided. You will have at least 10 days to decide. We guarantee return postage on books received due to late mail delivery of the News. As a member, you agree to purchase at least 3 books within the next 2 years and may resign at any time thereafter.
- **Ironclad No-Risk Guarantee** If not satisfied with your books, return them within 10 days without obligation!
- **Exceptional Quality** All books are quality publishers' editions especially selected by our Editorial Board.

All books are hardcover unless number is followed by a "P" for paperback.
A shipping/handling charge and sales tax will be added to all orders. (Publishers' Prices Shown)
If card is missing, use this address to join:
©1992 THE COMPUTER BOOK CLUB, Blue Ridge Summit, PA 17294-0820



3683P \$24.95



3603P \$18.95



10035 \$49.95
Counts as 3



881744-7P \$19.95
Counts as 2



15057P \$39.95
Counts as 2



9409 \$34.95
Counts as 2

Circle 49 on reader service card

TurboTax 1991, Andrew Tobias' TaxCut 1991

Not Too Early to Plan for the Inevitable Chore



TaxCut (above) and TurboTax now include more tax forms and worksheets and offer beefed-up expert tax advice.

Happy New Year: It's the start of a new tax season. Although the clock is winding down to April 15, tax software purveyors can't ship final versions of their products until Uncle Sam puts the finishing touches on the 1991 tax code.

Knowing Congress, that may take another couple of months—time you could be using to get a head start on all that nastiness. Since the forms generally don't change much from year to year, two of the leading tax software vendors—ChipSoft and MECA Software—are offering early versions of their programs to let you get out in front of this irksome chore.

You can use ChipSoft's *TurboTax Headstart 1991* or the early release of MECA's *TaxCut 1991* for end-of-the-year tax planning and to begin entering info such as expenses and depreciation into your tax worksheets. Along about February, both companies will send free to all registered users the final versions of their products for a quick install to put the final touches on completed returns.

Both *TaxCut* and *TurboTax*

will walk you through the set-up of a personal information worksheet, taking you through different tax forms as appropriate. If you prefer, you can skip around by topic, with menus to lead you through the implications of, for example, purchasing a new home or filing taxes jointly. Both companies have beefed up the expert

FotoMan

Logitech's Digital Camera: PC Photos

With Logitech's FotoMan you can store the world on your notebook—or at least those Kodak moments.

This nifty \$799 digital camera gives new meaning to "point and shoot." Using its automatic flash, you can snap indoor and outdoor digital photos, and then store as many as 32, at 376 by 276 resolution, on its 1MB RAM chip. FotoMan compresses the images and stores them at a maximum of 256 gray levels in the format of your choice, such as BMP, PCX, EPS, or three TIFF file formats.

on-screen tax advice.

Both programs include more tax forms and worksheets, plus better coverage of topics like depreciation and amortization, partnerships, and Sub-Chapter S Corporations. It's now easier than ever to import data that you have generated all year long in personal finance managers like Intuit's *Quicken*, MECA's *TaxCut* companion program *Managing Your Money*, and even Microsoft's new *Money*.

When you're all done, the *TurboTax* Data Examiner or *TaxCut*'s Auditor reviews your return for missing entries and inconsistencies. These expert systems even suggest ways you could reduce your taxes and alert you to the red flags IRS auditors will be searching for.

ChipSoft's HeadStart Edition retails for \$79.95, while the early *TaxCut 1991* sells for \$89.95; buyers of either receive the final version free in the mail.

Filling out tax forms is daunting in any case, but tax programs make the job more palatable by letting you enter data randomly and periodically. You get the latest tax code updates, instant electronic access to IRS instructions, and expert system advice.

—Mike Hogan

IN BRIEF

TurboTax 1991, Andrew Tobias' TaxCut 1991

WINDOWS Get a jump on filling out your 1991 return with these tax preparation packages that also offer more tax help than in years gone by.

ChipSoft, Inc.
Personal Order Dept.
6330 Nancy Ridge Dr.
#103
San Diego, CA 92121
619/453-8722,
800/755-1040 (fax)
Reader service no. 726

MECA Software, Inc.
55 Walls Dr.
Fairfield, CT 06430-0912
800/288-6322
Reader service no. 727

you can't beat FotoMan. The quality may not be as good as a Polaroid, but this is just the first frame of an entirely new roll for PC technology.

—Susan Lusty

IN BRIEF

FotoMan

Logitech takes computing one step beyond by creating an inventive device: a camera for the PC.

Logitech, Inc.
6505 Kaiser Dr.
Fremont, CA 94555
800/231-7717,
415/795-8500
Reader service no. 673

To move the images onto your desktop, use *FotoTouch*, a *Windows*-based image editing package bundled with FotoMan that downloads images through your PC's serial port. The images are presented as preview thumbnails, from which you can select those you want to store on your hard drive. For hard copy, you can print them as graphic files or create negatives.

Imagine the applications: on-the-spot accident reports, inventory management, and an employee data base.

For easy on-the-fly photos,

Need more room on your hard disk?



Doesn't everybody?!!

We all know the way things are going. Bigger, more complex programs that do more and do it easier. More pictures, charts, graphics and color. More things to do with bigger files and more data. More, more, more....

Which all leads to the inevitable. We all could use more disk space.

Increase Disk Space 2-3 Times with Complete Compatibility.

Now you can get rid of the disk space crunch, without even opening your computer. Just install SuperStor, the data compression program for PC/XT/ATs, PS/2s and compatibles that runs on

DOS 3.2 to 5.0, Windows, and DR DOS.

SuperStor increases your hard disk capacity, ON-THE-FLY, up to 2-3 times! And it works on floppies, Bernoullis, and removable hard drives, too!

SuperStor is easy to install, safe, and reliable. We feature a 100% transparent, bootable C drive. And it's the *fastest compression solution available!*

Once SuperStor is on your hard disk, no further steps are needed. You'll instantly gain up to three times more disk space. For your copy of SuperStor, contact your local dealer or call AddStor at



1-800-732-3133 for the dealer nearest you.

addstor

3905 Bohannon Drive
Menlo Park, CA 94025
Fax: 415-688-0466

SuperStor and AddStor are trademarks of AddStor, Inc. PC, XT, AT, PG, DOS, and PS 2 are registered trademarks of International Business Machines Corp. DR DOS is a registered trademark of Digital Research Inc. Windows is a trademark of Microsoft Corp. Copyright © AddStor, Inc., 1991. All rights reserved.

Circle 2 on reader service card

AST Advantage Line

The Advantage of Plug-and-Play PCs

AST Research's Advantage product line is a suite of powerful, low-priced plug-and-play PCs that are so simple to use, they'll be sold in consumer electronic stores.

Targeted at small-business users and PC-proficient home workers, the Advantage line

consists of four systems: 20-MHz 386SX desktop and notebook machines and 20-MHz 486SX and 25-MHz 486 desktops.

The entire Advantage line is preconfigured. Flip the power switch, and a custom shell will appear and guide you



In addition to its no-sweat setup, the Advantage 486/25 comes with 4MB of RAM, a 120MB hard drive, and a 9600-baud fax-modem.

through the system setup. All models come with *Windows*, DOS 5.0, Microsoft's integrated business software package *Works*, and Microsoft's new accounting package *Money* installed. In addition, the 486 and 486SX machines come with *Winfax* for *Windows*, a communications software package for sending and receiving faxes.

The 486SX/20 and 486/25 both come with 4MB of RAM expandable to 16MB. Also standard are a 120MB hard drive and 1.44MB 3½-inch and 1.2MB 5¼-inch floppy drives, a 2400-baud data modem, a 9600-baud send/receive fax-modem, and a mouse.

The desktop 386SX/20 features 2MB of RAM expandable to 16MB, an 80MB hard drive, and both 1.44MB 3½-inch and 1.2MB 5¼-inch floppy drives. A 2400-baud modem and mouse are also included.

The NB-SX/20 notebook, which weighs 7.3 pounds, is a 20-MHz 386SX with 2MB of RAM expandable to 8MB, a 40MB hard drive, one 1.44MB 3½-inch internal floppy drive, a VGA display, and a 2400-

baud internal modem. AST claims a battery life of 3 hours.

Technical support for the Advantage line includes one year of free on-site service for the desktop machines, in addition to the standard free unlimited phone support and fax and BBS access to AST technicians. AST gives the notebook computer the same 24-hour turnaround repair policy that it offers with its top-of-the-line Premium series, but the first year is free.

Prices range from approximately \$1899 for the 386SX/20 to \$3395 for the notebook. —Melissa Riofrio

IN BRIEF

AST Advantage Line

The Advantage line features ready-to-run, high-performance, bundled machines with palatable prices for small businesses.

AST Research, Inc.

P.O. Box 19658
Irvine, CA 92713-9658
714/727-4141,
714/727-9355 (fax)

Reader service no. 665

QEMM-386 6.0

Addressing More Room at the Top

Even with DOS 5.0 and a hefty 4MB or more of RAM, you can still bump your head on that old 640K limit. There are just too many programs that want a piece of conventional memory. One way to maximize your memory is to use a 386 memory manager. These programs open memory addresses normally inaccessible to DOS and allocate them to RAM-resident programs and device drivers that would otherwise take memory from your precious 640K. The result, even if you're loaded with TSRs, can be 600K or more of space.

QEMM has long been the leader in this market, and thanks to a variety of new tricks, QEMM 6.0 makes more RAM available than ever before. For instance, TSRs that need more RAM when loading than when running now get what they need only when they need it. For *Windows 3.0* users, QEMM shrinks enhanced mode's conventional RAM requirements by as much as 24K. And QEMM can hide ROM code, with a net gain of 32K to 100K, depending on your computer. QEMM does more than

open up RAM. The bundled *Optimize* program, which tests your CONFIG.SYS and AUTOEXEC.BAT files to find the best place in memory for your TSRs, has been improved, so loading TSRs in high memory is easier than ever. Moreover, the program now excludes areas in memory that may cause conflicts and provides what-if tools.

Much of QEMM 6.0's new technology is being incorporated into other Quarterdeck programs. *Desqview 2.4* can load more of itself into high memory than earlier versions could, while *Desqview 386 2.4* comes with a complete copy of QEMM 6.0. Both QEMMs retail for \$99.95. *Desqview*,

Desqview 386, and *QRAM* retail for \$129.95, \$219.90, and \$79.95, respectively.

—Lincoln Spector

IN BRIEF

QEMM-386 6.0

This new version of an old memory manager gives you up to 200K extra for TSRs and device drivers and is also easier to configure.

Quarterdeck Office Systems Inc.

150 Pico Blvd.
Santa Monica, CA
90405
213/392-9851,
213/399-3802 (fax)

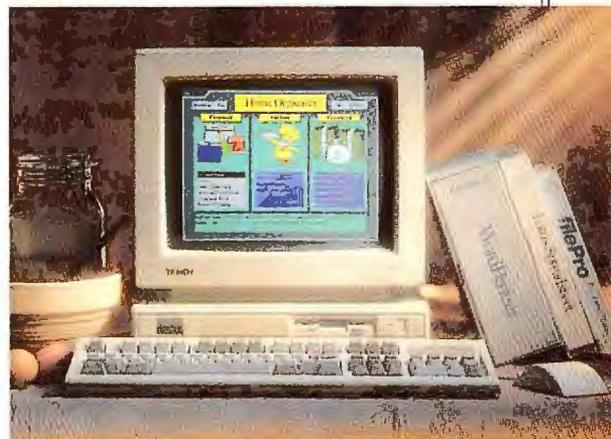
Reader service no. 679

TANDY Engineered It

Tandy created the first mass-produced, nationally marketed personal computer in 1977, and has been a leader ever since. By manufacturing products of uncompromising quality, Tandy has built a large following of satisfied customers. And through innovative design, Tandy continues to help build the future:

The systems approach to home computing

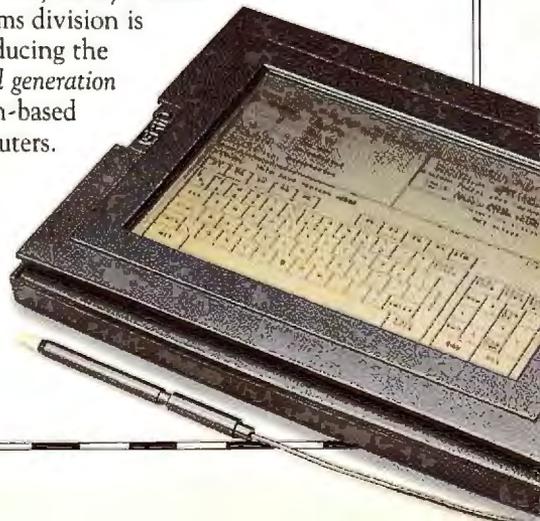
Tandy software engineers designed special applications software for our home computer; IBM didn't. It's so easy to use, your success in using any Tandy® 1000 RL is actually guaranteed.



Pioneering the notebook PC industry
Tandy's Model 100 helped define this market in 1983. Users depend on Tandy for innovative features and a rugged case that's built to last.

Writing the future

While others prepare to ship their first, Tandy's GRiD Systems division is introducing the second generation of pen-based computers.



Tandy jointly developed the Multimedia PC Standard

And now Tandy is first to present a complete line of computers with the added dimension of this exciting technology. Tandy engineers even designed an affordable upgrade that brings multimedia to existing PCs.

Radio Shack
AMERICA'S
TECHNOLOGY
STORE SM

A DIVISION OF TANDY CORPORATION
Circle 284 on reader service card

The Far Side Computer Calendar

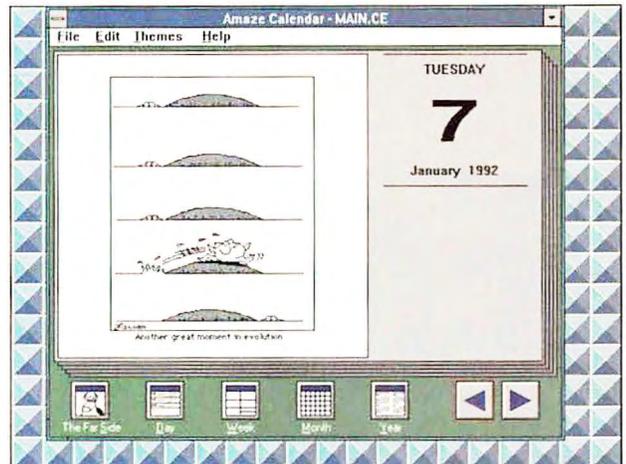
Dinosaurs, Ducks, and Buffalo Paper

Computer-based calendar programs have any number of advantages over the paper ones you hang on your refrigerator—built-in alarms and instant rescheduling are just two that spring to mind. But computer calendars don't have a sense of humor; there's no

place in them for saber-toothed tigers; perplexed, chubby kids; or clumsy monsters that go bump in the night.

Amaze, Inc. and cartoonist Gary Larson have joined forces to solve this regrettable problem, creating *The Far Side Computer Calendar*. Now you can track appointments, schedule recurring events, and set alarms (complete with Mozart and reveille) and still be able to observe dancing cows, early microscopes, and Dick Clark aging 200 years in 30 seconds. If you're lucky, a caveman tied to a large stone wheel will roll across your screen while you're deciding which of your Monday morning appointments is worth keeping.

As a practical tool, *The Far Side Computer Calendar* doesn't match up to more seri-



The Far Side Computer Calendar helps you track appointments and schedule events—and features a bizarre mix of dancing cows and other beasts.

ous programs like Campbell Services' *On-Time for Windows*. *Far Side* does nothing to warn you about overlapping appointments, for instance, and it is relatively difficult to navigate (in *On-Time*, you can get back to "today" with one mouse click; *Far Side* requires four). But then, *On-Time for Windows* won't bring you ani-

mal game shows, and that should count for something.

Included in the \$69.95 list price is one year's worth of Gary Larson cartoons; refills will be available at a yet-to-be-determined time and price. The product requires a hard disk, EGA or better graphics, and a warped sense of humor.

—Lincoln Spector

IN BRIEF

The Far Side Computer Calendar

WINDOWS "65 million years ago, when cows ruled the earth," you couldn't get a calendar like this to run on your computer.

Amaze, Inc.
11810 115th Ave. NE
Kirkland, WA 98034
206/820-7007,
206/823-0568 (fax)
Reader service no. 677

ExpressWriter 201

Dealing With Portable-Printing Power

If portable printing were simply a question of inches and ounces, Toshiba's new ExpressWriter 201 could win the lightweight championship. It weighs in at a scant 1.8 pounds and takes up only 11.9 by 3.2 by 1.7 inches without its optional nickel-cadmium battery. Even with its wallet-size AC adapter, this printer leaves plenty of room in your briefcase for, say, your Toshiba T2200SX.

Add the battery, though, and the ExpressWriter comes closer to the size and traveling weight of other portables, such as Citizen's 11.7-by-3½-by-2-inch, 2½-pound PN48. Both the ExpressWriter and the PN48 are far lighter and offer better laserlike print quality than most other portable

printers, but it's hard to give either a clear advantage. It depends on what features are important to you.

Are you planning to print overheads for a last-minute presentation on the plane or on the way from the airport? The ExpressWriter's 10-ounce nickel-cadmium battery gives you up to 2½ hours of battery-powered text printing and at least an hour with graphics—an average of about 25 pages per charge.

The ExpressWriter has a straight paper path and will print graphics on any flat stock using a thermal transfer ribbon cartridge (or on thermal paper without the ribbon). But so will Citizen's PN48, and its thermal fusion ink

technology yields 360-dpi resolution for graphics, compared to the ExpressWriter's 180 dpi. Still, the ExpressWriter can print your charts and graphics 9 inches across, while competitive portables can print across only 8 inches.

If you want letter quality throughput for printing proposals or contracts right at your customer's office, the ExpressWriter will zip out 12 characters per inch at a respectable 63 characters per second and 10 characters per inch at 53 cps in Courier and Prestige Elite fonts, or in draft mode with a 2K buffer for print spooling.

The ExpressWriter's price is competitive with those of other portable printers on the market—\$499 without its \$125 optional battery. Citizen, for instance, prices its PN48 at \$469 without battery. While

the ExpressWriter may cost a little more and have lower resolution than the competition, it prints text as well as any of the new breed of portable printers, and it's very light. All in all, the ExpressWriter is a handy device that's ideal to take on the road or even to keep as one of the components of your home desk-drawer office. —Mike Hogan

IN BRIEF

ExpressWriter 201

Another small, light portable printer with 180 dpi and a 9-inch paper path.

Toshiba America Information Systems
P.O. Box 19724
Irvine, CA 92713-9724
800/457-7777,
714/583-3000
Reader service no. 666

Open Your Eyes



General Ledger

Purchase Order

Payroll

Invoicing

Inventory

LYNX

Accounts Payable

Check Reconciliation

Accounts Receivable

New Version

ACT Series Business Accounting Software

Cougar Mountain Software's feature-rich ACT-Plus series has been given an exciting new look! The software with superior power, functionality, and integrity now offers stacked menus and Point and Shoot operation, making it a pleasure to use. With easy to use instructional features like ACT-Plus HELP! and the ACT-Plus User's Guide, learning and doing computerized accounting is as simple as opening your eyes. One touch of a key and HELP! brings up a window full of instructions pertaining to the task you are performing at the time. And you can add your own notes to any of the help windows to make the text even more personalized and useful. The new User's Guide is written in simple, common sense language for the layperson, and is packed full of tutorials, examples, and practical accounting solutions.

Sound too good to be true? Don't take our word for it, order ACT-Plus today and take 30 days to see for yourself. If for any reason you aren't completely satisfied and impressed, send it back. We will return your money less a 15% restocking fee.

Single user
version

\$199.50

Plus shipping & handling

Cougar Mountain has produced Local Area Network LAN versions for ten years. We have the most experience in the accounting software industry. Where else can you buy accounting software backed by 10 years of field tested reliability?

UNIX/XENIX versions available too.

Special Pricing available for updating existing user packages.

Call for detailed information.

*Dear Cougar Mountain Software:
Your accounting software is without question the most useful program on my computer. This package does everything I want it to do, and more. For more than two years, I tried to use a package that cost my company over \$3,000, and it was not nearly as good as Cougar Mountain. I look forward to receiving your next release, since I know it will make my job even easier.*

*Sincerely,
R.J.M. Madison, WI.*

Cougar Mountain Software
P.O. Box 6886 Boise, Idaho 83705

1-800-388-3038

People
can't say
enough
about
MS-DOS 5.

Microsoft

“...the one you
and everyone else you
know should finally
upgrade to.”

Paul Somerson
PC Computing
July 1991
MS-DOS 5 Review

Microsoft

TravelMate 3000 WinSX

Take Windows With You in a Notebook



The TravelMate 3000 WinSX features an improved BIOS to get Windows up and running faster and new software drivers to conserve battery life.

You can buy a notebook computer, and you can buy *Windows 3.0*, but you can't necessarily make them work well together. The \$3499 TravelMate 3000 WinSX, however, is a notebook well tailored to the special needs of using *Windows* on the road.

Right off the bat you'll notice a difference. Waiting for *Windows 3.0* to start can be a mind-numbing experience for notebook users. TI gets you out of limbo a little faster by tweaking the BIOS: It takes just 40 seconds to get *Windows* running.

Working with *Windows* on

a notebook is a short experience because the program's frequent screen addressing inhales battery power.

TI stops the battery drain with a set of software drivers that conserve battery power by suspending a *Windows* application, turning off backlighting, and letting the disk spin down at your command—automatically or when you drop the clamshell cover. A keystroke then auto-resumes where you left off.

As a result, TI claims you'll get 3 hours or more of useful computing—depending on how much time you spend suspended—from its nickel-cadmium battery pack. That's a 50 percent improvement over most other laptops running *Windows*, according to TI.

The WinSX has the same 20-MHz 386SX CPU as its cousin the 3000, and an identical 10-inch 640 by 480 VGA display with 32 gray scales. The 5.7-pound notebook (6.8 pounds with AC adapter) comes with *Windows 3.0* and DOS 5.0 loaded and 4MB of memory expandable to 6MB. TI has also added its largest notebook hard drive, a 60MB model, and a thumb-operated TravelPoint trackball.

—Mark Henricks

IN BRIEF

TravelMate 3000 WinSX

This notebook offers a hardware platform and software features to make *Windows 3.0* run smoothly on batteries.

Texas Instruments, Inc.

Information Technology Group
P.O. Box 202230,
ITG-9130
Austin, TX 78720-2230
800/527-3500

Reader service no. 672

IBM LaserPrinter 4029 Series

Lots of Good, Cheap Printing Options

Aggressive pricing, impressive functionality, and a broad range of upgrade options characterize the new IBM LaserPrinter 4029 series from Lexmark. The new line of four machines ranges from a 5-ppm single-user model (\$1595) to a 10-ppm LAN-compatible workhorse (\$2995).

The 4029 series is both an upgrade to IBM's 4019 laser printer line and an auspicious beginning for Lexmark. The fledgling company, formerly IBM's printer division, was spun off earlier this year and retains close ties to Big Blue.

Each of the four units—Models 5E, 6, 10, and 10L—comes standard with 1MB of RAM expandable to 9 MB, a 200-sheet paper tray, and an improved LCD operator panel. They have the same 14.2-inch-by-20.6-inch footprint. The 10L is taller and comes with an extra 500-sheet paper tray. Inside, the Models 5E and 6 are powered by the Motorola 68000 processor, while Models 10 and 10L feature the speedier 16-MHz 68020 chip. All the printers come with ultra fast parallel (150 kbps) and serial (38.4 kbps) ports.

Like Hewlett-Packard's LaserJet III series, the Lexmark 4029 printers offer an improved printing technology that provides sharper resolution and eliminates the jaggies on fonts at 300 dpi. Resolution freaks might choose the 600-dpi option (on the Model 6 and up), which requires an extra 4MB of RAM (\$799) and a user-installable PostScript board (\$898). Lexmark claims its PostScript board runs about 45 percent faster than HP's PostScript cartridge.

To get an extra performance boost, you can upgrade your Model 6 to a Model 10 by

switching to a 68020 processor board (\$700).

Each Lexmark 4029 printer comes with 10 bit-mapped fonts and 16 Adobe Type 1 outline fonts resident. Also included is built-in support for HP's LaserJet II Printer Command Language (PCL 4) and IBM's Personal Printer Data Stream (PPDS) page description language. Support for HP's newer PCL 5 language is a user-installable option (\$199).

Although the 10L has a cheap base price, you'll have to add a lot of expensive options to make it truly LAN-ready. These options include the LAN Connection adapter, additional memory, and the Hewlett Packard PCL 5 or the Adobe PostScript board. These add-ons make the printer more pricey.

For expanding offices, Lexmark has designed the 10L to work with IBM's LAN Connection, a separate unit that lets you hook printers to ethernet or token ring networks without using a dedicated print server. The connection costs \$845 for ethernet and \$945 for token ring.

Lexmark's printers offer competitive base prices and an impressive collection of mix-and-match upgrade options.

—Jeff Bertolucci

IN BRIEF

IBM LaserPrinter 4029 Series

If your laser printing needs are simple, Lexmark gives you the quality without the extra cost.

Lexmark Int'l, Inc.

740 New Circle Rd.
Lexington, KY 40511
800/426-2468

Reader service no. 667

“There’s a first time for everything, even in the PC industry: Microsoft Corp.’s MS-DOS 5 actually lives up to its advanced billing.”

David P. Chernicoff
PC Week
June 10, 1991

Microsoft

“With a Windows-like file manager, on-line help, more memory for applications, and the ability to load multiple applications, MS-DOS 5 is unquestionably the best DOS ever.”

Scott Spanbauer
PC World
July 1991

Microsoft

“...if you’re like most Windows users, you work with a mixture of Windows and DOS applications. In that case run, don’t walk, to your software dealer and buy the MS-DOS 5 upgrade kit immediately.”

Paul Bonner
PC Computing
July 1991

Microsoft

“Transition to MS-DOS 5 is proving to be as painless as promised.”

Stuart J. Johnston
InfoWorld
July 29, 1991

Microsoft

BusinessStation 486ASX, PowerPro Array

ALR's Pizza Box and Twin-Spin Server



The pizza box–size ALR BusinessStation 486SX leaves enough room for both 3½-inch and 5¼-inch drives and up to 33MB of memory.

To outfit a network with workstations and file servers, you have to know both ends of the PC technology spectrum. With its latest offerings, ALR provides the full range with a server challenge to Compaq and a 486SX workstation that gives you more for less.

In fact, the first thing that attracts you to the Busi-

nessStation 486ASX is the price—\$1995 for a 1.44MB floppy-only 20-MHz 486SX. Under the hood, though, you’ll find more than just another cheap workstation. The 486-ASX has a 32-bit EISA bus, an integrated 16-bit 800 by 600 256-color super-VGA video controller, and ALR’s integrated direct memory access interface, which supports an IDE drive controller that ALR says is three times faster than standard IDE.

Although the workstation comes with a scant 1MB of memory, it’s expandable to 33MB using standard SIMMs. Despite its pizza box design, the workstation still has room to add a 3½-inch third-height drive and a 5¼-inch half-height drive.

Two 32-bit proprietary slots hold the upgradable CPU module and an optional 64K secondary cache module (\$295). A pair of 32-bit EISA slots will accommodate standard network interface cards.

IN BRIEF

BusinessStation 486ASX, PowerPro Array

ALR brings new computer technology to both low and high ends with an EISA-based 486SX workstation and a twin-processor file server.

Advanced Logic Research, Inc.

9401 Jeronimo
Irvine, CA 92718
800/444-4257,
714/581-6770

Reader service no. 671

A fifth slot is available for high-performance proprietary ALR 8/16-bit cards that come in SCSI controller, fax-modem, scanner, and ethernet adapter flavors.

The BusinessStation 486-ASX with a 20-millisecond (ms) 80MB IDE drive is \$2995. Add another \$300 for a 14ms 200MB direct memory access IDE drive. You can upgrade to a 25-MHz 486 CPU by replacing the chip, or go to a 33-MHz or 50-MHz 486 by adding a whole new CPU module. Outfitted with a 50-MHz 486 CPU, the BusinessStation is priced at \$4995 with floppy only and \$5695 with a 20ms 80MB IDE drive.

The floor-standing PowerPro Array is a twin-processor

EISA "superserver" that is compatible with Compaq's Systempro, according to ALR. It's designed to reduce processor bottlenecks, particularly on LANs.

If you run a multiprocessor-capable network operating system such as OS/2 LAN Manager or Banyan's VINES SMP, you can implement a pair of 33-MHz or 50-MHz 486 CPUs, each supported by 512K to 1MB of read/write-back cache.

The 12-slot PowerPro comes with ALR's 32-bit disk array, which controls up to four 340MB IDE drives.

The \$22,995 PowerPro Model SMP 512/1360 is targeted as a midrange replacement. —Mark Henricks

ReadStation

Scan a Minute

If your company uses its scanner as much as its copy machine, Umax's ReadStation can make scanning a page as easy as making a copy. With Caere's *OmniPage*, optical character recognition software, and a 2MB 3½-inch floppy drive built in, this stand-alone scanner can read printed or typed documents onto a floppy in a matter of minutes and still retain your document's format.

You can access most of the scanner's features from the front control panel. For instance, with the push of a button you can preset ReadStation to save your documents in specific application formats, such as ASCII, *WordPerfect*, *Word*, *WordStar*, *1-2-3*, *dBASE*, and others. You can also select the size of the page to be scanned, modify brightness levels, and select portrait or landscape.

Once you have ReadStation configured, you can use *Omni-*

Page to maintain your document's format. Your page can have up to nine columns of text and point sizes ranging from 6 to 72—boldface, tabs, superscript, italics, and the like are not lost either. You can also capture small graphics, such as clip art, and save them as TIFF files. This all-in-one scanner could help clear a cluttered paper office, but it comes at a price—\$5495. However, if you need to create an archive or have too many files and not enough file cabinets, ReadStation can save you a lot of time transferring files from paper to screen. —Susan Lusty

IN BRIEF

ReadStation

ReadStation keeps your scans rolling by offering a one-button solution.

Umax Technologies, Inc.

2352 Walsh Ave.
Santa Clara, CA 95051
800/562-0311,
408/982-0771

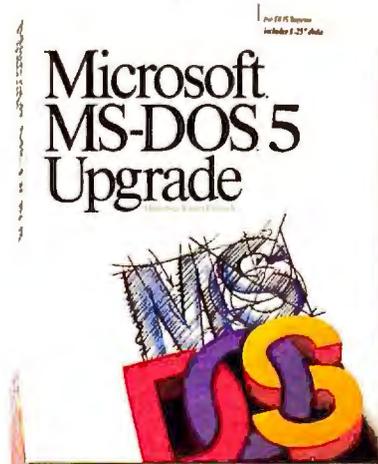
Reader service no. 674

And with FastTips, MS-DOS 5 puts yet another innovative feature at your fingertips. (206) 646-5103.

In addition to Microsoft's regular telephone support, MS-DOS 5 Upgrade users can take advantage of FastTips, a brand-new automated phone-in service. With three ways to answer the most common MS-DOS 5 Upgrade questions, 24 hours a day. You can choose to have your FastTips faxed to you, sent to you in the mail, or you can listen to FastTips over the phone.

Microsoft

It's what everyone's talking about.



No PC should be without it.

Microsoft

© 1991 Microsoft Corporation. All rights reserved. Printed in the U.S.A. Customers inside the 50 United States can call for additional information at (206) 646-5104. Customers in Canada, call (800) 563-9048. Outside the 50 United States and Canada, call (206) 936-8661. Microsoft, the Microsoft logo and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation.



PROFESSIONAL LEVEL COMPUTERS

Custom built and integrated for you.

ACCOUNT EXECUTIVES

Trained professionals who will assist you in configuring your Professional Level Computer System. Your personal contact before, during and after your purchase.

PAYMENT

Visa, MasterCard, AMEX, Company Leasing, Approved Purchase Orders, C.O.D., Individual Financing

FLOPPY DRIVES

Chinon or TEAC

MONITORS

ACT, TWE, Viewsonic, Sony, Seiko, Nanao, Mitsubishi, NEC

SOFTWARE

Configured, installed, tested. Microsoft, DOS, Windows 3.0, Wordperfect, Lotus, Quarterdeck, Adobe, Corel, Aldus, Unix, Novell, SCO

NETWORKING

Novell, Unix, Xenix. Completely configured file-servers and workstations. Software loaded, hard drives compurfed, network cards installed and tested, cabling prepared.

SUPPORT

1-800, Toll-Free Technical support for the lifetime of your system. Trained technicians capable of troubleshooting, diagnosis and integration assistance. System Engineers also available.

WARRANTY

One year, on-site warranty through Texas Instruments, with 9- to 24-hour response time (the best in the industry!), highly trained on-site technicians, one year parts and labor, air shipment of replacement parts. Extended warranties also available.

GUARANTEE

30-Day Satisfaction Guarantee. No fine print. No penalties. No restocking fee. No shipping costs.



MOTHERBOARDS

286-16, 386SX-16, 386-SX20&25&33 Cache, 486-25&33 ISA Cache, 486-25&33 EISA Cache

ACCESSORIES

Mouse, Trackballs, FAX Cards, Modems, Keyboards

DIGITIZERS, PLOTTERS, SCANNERS

Summasketch, Kurta, Calcomp, Roland, HP, Houston Instruments, Mitsubishi

VIDEO CARDS

Diamond Speedstar (TSENG 4000), STB, Orchid, Artist, Vermont, Video 7, ATI, Cardinal

PRINTERS

Dot Matrix, Laser, Inkjet, Panasonic, Texas Instruments, Canon, NEC, QMS, Star

MEMORY

70ns or 80ns SIMM, SIP, DRAM 1MB - 64MB

HARD DRIVES

Seagate, Maxtor, Conner, Micropolis

CONTROLLERS

Western Digital, Ultrastor, Adaptec, DPT, Always, IDE, ESDI, SCSI



Professional Level Computers

THE POSSIBILITIES ARE ENDLESS



Automated Computer Technology Corp.

PROFESSIONAL LEVEL PERFORMANCE

Automated Computer Technology Corporation • 10849 Kinghurst, Houston, TX 77099 • (713) 568-1778

ACT offers this complete integration at competitive prices. Who else can combine this level of performance, customization, service and support? No one. Call (800) 521-9237 for more information.

SUPERIOR SERVICE AND SUPPORT

Custom Performance Integrations...



ACT 386SX™-20 CACHE SYSTEM

- Intel 386SX-20MHz CPU
- 32K Cache Memory
- 2MB RAM (exp. to 16MB)
- 1.2MB & 1.44MB Floppy Drives
- 89MB IDE Hard Drive (15ms)
- 2 Serial Ports/1 Parallel Port
- AMI Bios
- Enhanced 101 or 102 Keyboard
- ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/512K
- Choice of Tower or Desktop Case
- Microsoft DOS 5.0
- Free Delivery
- Wide Variety of Custom Options



\$1,895



ACT 386™-33 CACHE SYSTEM

- Intel 80386-33MHz CPU
- 64K Cache Memory
- 4MB 80ns RAM (exp. to 32MB)
- 1.2MB & 1.44MB Floppy Drives
- 210MB IDE Hard Drive (15ms)
- 2 Serial Ports/1 Parallel Port
- AMI Bios
- Enhanced 101 or 102 Keyboard
- ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/1MB
- Choice of Tower or Desktop Case
- Microsoft DOS 5.0
- Microsoft Windows 3.0
- Microsoft Serial Mouse
- Free Delivery
- Wide Variety of Custom Options

*ACT's 33MHz mini-tower is a class act all the way around. The ACT 386-33FC is a well-made machine with easy drive access, good performance, and impressive attention to construction detail. This computer is easy to recommend.
 December 25, 1990

\$2,795



ACT 486™-33 CACHE SYSTEM

- Intel 80486-33MHz CPU
- Cache: 128K (ISA) 256K (EISA)
- 4MB System RAM (exp. to 32MB)
- 1.2MB & 1.44MB Floppy Drives
- 210MB IDE Hard Drive (15ms)
- 2 Serial Ports/1 Parallel Port
- 8 ISA Slots or 8 EISA Slots
- Enhanced 101 or 102 Keyboard
- ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/1MB
- Choice of Tower or Desktop Case
- Microsoft DOS 5.0
- Microsoft Windows 3.0
- Microsoft Serial Mouse
- Free Delivery
- Wide Variety of Custom Options

\$3,295

ISA 128K Cache

\$4,195

EISA 256K Cache
Up to 64 MB



ACT BUSINESS CENTER™

Portable Office in a Briefcase

All your major office tools in one compact, durable case:

- **Computer:** Intel based 80386SX-20 Notebook Computer, 40MB Hard Drive, Back-lit VGA, 3.5" HD Floppy Drive, 4MB RAM
- **Telephone:** Powerful Motorola 3 watt Cellular phone
- **Facsimile:** Internal 9600 baud Send Receive Fax
- **Modem:** Internal 2400 baud modem capabilities
- **Printer:** Optional near laser quality Citizen printer
- **Software:** Microsoft DOS, Windows and Comm Software

\$6,595

Business Center

\$6,995

Business Center
with Printer



Automated Computer Technology Corporation

10849 Kinghurst, Houston, Texas 77099
Telephone (713) 568-1778 • FAX (713) 568-1779

ACT Now Toll-Free

1-800-521-9237



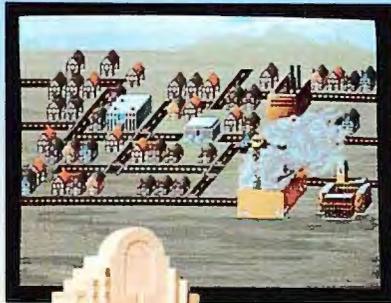
Lease Terms, Qualified P.O.'s Accepted.
Dealer and VAR inquiries welcomed.
International Inquiries Invited.

© 1991 Automated Computer Technology Corporation. All rights reserved. Other product names and trademarks used for comparison may be the property of other companies. Prices and specifications are subject to change without notice. A.C.T. cannot be held responsible for errors in photography or typography. The equipment above is FCC Class A or Class B approved. NOVELL, UNIX, XENIX, OS/2 and TI are all trademarks of their respective corporations. Texas Instruments on-site service is available in most U.S. and Canada locations. The numbers 386 and 486 are trademarks of Intel Corporation. MANLOVE 4402

Circle 30 on reader service card

Build An Empire To Stand The Test Of Time

...With Sid Meier's CIVILIZATION™



Look for an F-117A Stealth Fighter Demo in specially marked packages of TDK Micro Floppy Disks.



Rout Ramses... Outwit Alexander... Knockout Napoleon...

History is littered with the bones of great men who thought their achievements would live forever. Now you can succeed where they failed as MicroProse brings you Sid Meier's Civilization. Guide a culture from its earliest stages, through agricultural and industrial revolutions, all the way to your own Space Age. Survive and dominate by outmaneuvering mankind's most legendary leaders. Carve your name indelibly in the pages of history. With Sid Meier's Civilization, you really can build a brave new world.

MICRO PROSE™
ENTERTAINMENT • SOFTWARE

For IBM-PC/Tandy/Compatibles. For the latest information on release dates and availabilities call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. ©1991 MicroProse Software, Inc., 180 Lakefront Drive, Hunt Valley, MD 21030.

Circle 167 on reader service card

After I Bombed with dBASE, I Almost Gave Up Automating Our Invoices...

Simpler Than dBASE & Paradox — More Powerful Than Q&A!

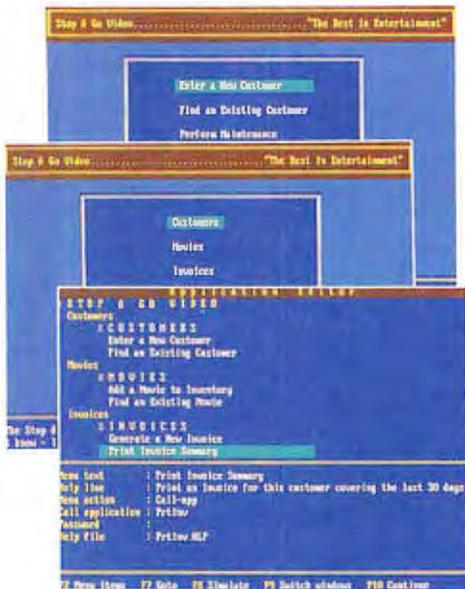
At our Monday morning staff meeting, I announced I was going to automate our invoicing system later that afternoon. Skepticism ran high. "Paul, you promised me an application like that two years ago," said Marge. "You couldn't do it and neither could that dBASE programmer you hired. It'll never happen."

On the other side of the room, Tim, a new employee whispered to Richard, "I didn't know the boss was a programmer too." "He's not," said Richard. "Couldn't write code to save his life. But he keeps trying because he thinks it's vital to the business."

I had already tried three times before to program a database: first with dBASE (much too complicated). Then I tried Q&A (not powerful enough). Then I bought Paradox (just like dBASE). All were either too complicated or not powerful enough.

This time I was confident. Why? Because I just bought Alpha FOUR, the powerful database for non-programmers like me. I spent 45 minutes over the weekend with Alpha FOUR's audio cassette tour. So I knew how easy application designs with Alpha FOUR would be, even the first time. I knew within hours, I'd be able to build a fully relational customer tracking and billing system, complete with custom menus, beautiful screens, extensive help messages and automatic error-correction for trouble-free data entry. And that's exactly what I did. You should have seen Marge's face when the first, perfectly formatted invoice came off the printer!

I Developed My Program in Minutes.



First, I needed a system of menus and sub-menus. Was I ever surprised to see how easy that was! With Alpha FOUR's "Application Editor" I wrote an outline of my menus and sub-menus. (Look at the screen.) Alpha FOUR automatically created my multi-level menu system right from there. Changing my menus was just as easy. I inserted and moved a few around until I got it just right — nice and simple for my new employees.

I Made My Data Entry Bulletproof.

I've got a high employee turnover rate, so I needed something simple that a new hire could run right from the screen. I wanted my system absolutely safe and secure, so no "accidents" or mistakes could damage the data I've worked so hard to gather. That's when I really started to appreciate the well-

thought-out way Alpha FOUR works. The "validation" capabilities ensure data gets entered correctly. I set it up so Social Security numbers must be 9 digits long (otherwise a custom error message is displayed).

When I enter a new customer, Alpha FOUR automatically skips over unneeded fields (determined by my validation rules). And best of all — I use "lookup" fields whenever I can. So when I get to the "Customer Type" field, a window pops up with my choices. All I do is highlight and hit ENTER. No chance of an error!

I'll Never Enter Data Twice Again.



I always ran out of power with other simple-to-use databases; they weren't relational, meaning I couldn't link up separate files that share a common field. But with Alpha FOUR I easily created different databases for customers, invoices and inventory, and linked them all together just by drawing the links between the databases on the screen. (Look at my screen.) Now, we never have to enter the same information twice. I can display and edit information from up to 10 databases on one screen all at the same time. Before, when I changed a customer's address, I had to do it in 3 different places. Never again. And my database files are so much smaller now — because the actual data is only stored in one database.

Forms and Reports Look Great!

Alpha FOUR's Report Writer was even more impressive. I "painted" reports and invoices on-screen. They looked exactly like I wanted them to — much better than our old paper forms. This "What You See Is What You Get" approach to report writing gives me the flexibility I need to create meaningful and detailed reports that really get my point across.

Totally dBASE Compatible.

I was delighted to hear Alpha FOUR is totally compatible with dBASE .dbf files. Our mailing list went right into the new application without even having to be converted! And when my Alpha FOUR application grows, it'll import those Lotus 1-2-3 files used over in accounting. In fact, Alpha FOUR can import and export Lotus 1-2-3, Symphony, VisiCalc, PFS, MultiMate, WordPerfect and other packages.

And Now I Get Fancy...

First I breezed through the tutorial just to get a fully operational application, but now I have the time to dress it up and make it fancy. First I'll change my menus to 3D boxes for the menu selections, and change some of the colors here and there. Alpha FOUR makes it all so easy. Then I'll customize some of the

SPECIAL PRICING
\$549 VALUE
JUST \$99.00!

data entry screens so they look just like the paper forms the employees are used to working with. I know — I'll call up Alpha's free Bulletin Board Service and get some tips from other Alpha FOUR users.

Alpha FOUR is loaded with all the power I need:

- 128 Fields Per Record
- 256 Characters Per Field
- 4,000 Characters Per Record (besides Memo Fields)
- Unlimited Records Per Database
- Field Types: Character, Numeric, Date, Logical, and Memo
- Variable Length Memo Fields, up to 5,000 Characters
- More than 50 Data Manipulation Functions
- Up to 10 Databases Per "Set"
- Unlimited Number of "Lookup" Databases

With menu-driven ease, I create applications with Alpha FOUR that before I never thought possible. I don't need to be a programmer — I only need to know what I want to create. Alpha FOUR takes care of the rest. Now that I'm an experienced Alpha FOUR user (after just 2 months), I look for things to organize and put on the computer. I don't need a programmer. I do it myself.

Alpha FOUR Version 1.1

BAE3455-5 Alpha FOUR V1.1 5¼" \$99.00
BAE3455-3 Alpha FOUR V1.1 3½" \$99.00
Regular Tiger price \$319. Hard disk, 360kb, MS-DOS 2.0 or above, 512kb RAM. Includes over 40,000 Zip Codes with corresponding cities and states — completely cross-referenced for easy fill-in.

*Qualifying packages include programming databases (dBASE II, III and IV, Paradox, Clipper, Foxbase Fax Pro, Revelation, etc.), flat-file databases (Q&A, PFS:Professional File, Rapid File, etc.), integrated packages (Microsoft Works, PFS:First Choice, Lotus Works, etc.), and mailing list managers (FastPak Mail, etc.) or spreadsheets with databases (Lotus 1-2-3, Quattro Pro). Retail price \$549. This is a competitive upgrade.

SAVE \$450 With This Ad! NOW JUST \$99!

If you already have any database software, integrated package* or mail list manager, or if you are currently using your spreadsheet to manage data, you can upgrade to Alpha Four for just \$99.

Risk-free, 60-day money-back guarantee. Limit one per customer. Offer good through January 31, 1992. Sorry shipping is not included on this offer.

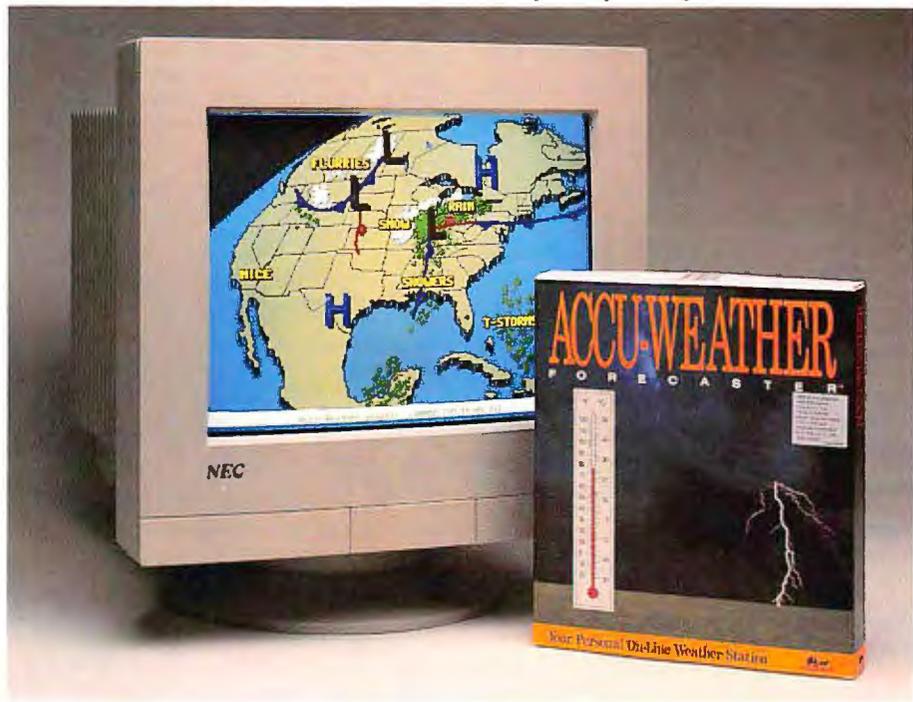


Your Own Personal Weather Center...

AccuWeather Brings You Weather Updates and Forecasts Via Modem!

You can't change the weather, but you can get timely forecasts and radar screens to see exactly what it's doing with new AccuWeather.

With AccuWeather, your PC becomes a personal meteorological information service, providing data for the nation and the world. Using your modem, you'll access the same information that radio and television stations use to prepare their broadcasts. The screens you'll see are used by weather professionals who depend on precise, up-to-the-minute information



that only AccuWeather can give. And now you can have a direct line to this same information.

AccuWeather features colorful, detailed screens like the ones on this page. The color-enhanced maps display current precipitation, temperatures, moving fronts, cloud cover, lightning, complete hurricane tracking sequences, jet stream movement, freezing levels, even soil temperatures and surf conditions. AccuWeather is fast and easy to use, employing simple menu commands.

Plan Business Trips and Vacations.

Need to know if this Saturday is a good day for a picnic? How about the business trip to the west coast? Or will next week be cold enough to go skating? AccuWeather provides detailed forecasts in advance and, unlike your local TV or radio station, you'll have time to research many different aspects of the coming weather, not just a general overview.

As Much Detail As You Want!

What's the weather like in Paris, Tokyo, Rome, Sydney, or Moscow? A menu selection displays complete information in seconds. Need highway reports, marine or aviation conditions? AccuWeather provides fast, accurate forecasts including freezing levels and off-shore data. AccuWeather also includes agricultural outlooks and extensive climate statistics for any region.

Print Maps and Screens.

AccuWeather allows you to easily print the maps and radar shots that are displayed on your PC screen. In the event of a hurricane in your area, printing AccuWeather's hurricane tracking maps can produce a complete history of the storm's movement.



ACCUWEATHER

BAE3003 AccuWeather Dual \$49.95
IBM PC, XT, AT. Requires modem.

Stunning Fonts For Your Printed Page.

High Quality Scalable Fonts

Don't just print plain text — fashion creative works of art that bond themselves to the reader. Impress upon the printed page aesthetic, stunning communications that magnetically draw readers to them. This is what professional "Desktop Publishing" is all about. This is what Publisher's Powerpak can do for your word processor.

You absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or LaserJet-compatible printer, Publisher's Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?
Publisher's Powerpak uses advanced scalable-font technology. When you need a font, you pick a size, and the needed letters are created instantly. The letters are scaled "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which includes every size you'll want.

I used to use old-technology fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Publisher's Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 4 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use only 1 1/2 megabytes on my hard disk. If I wanted this selection with my bit-mapped fonts, I'd have to buy a 200 megabyte hard disk!

Quality Fonts

Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.



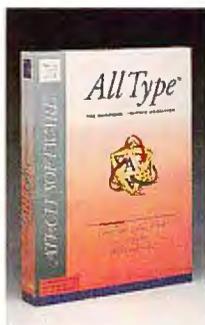
Super Font Pack, Volume 1 FREE — with every Publisher's Powerpak! A \$150.00 value — FREE! 84 typefaces in normal, bold, italic, bold italic, thin, condensed, wide, expanded, and hollow.

Add-on Font Packs

Publisher's Powerpak includes 30 typefaces for an outstanding font-value. (Other font-makers charge \$100 to \$200 per typeface!) But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Plus foreign languages from Greek to Hebrew to Korean. When you're ready to add to your library, Atech font packs are filled with beautiful assortments of typefaces — two per pack for only \$29.95 per package.

NEW! Convert and Use Any Font

If you have fonts, you'll love this new technological breakthrough. Now you can convert any font to any other font format! I changed all my Adobe PostScript fonts to Publisher's Powerpak fonts. When TrueType fonts arrive with Windows 3.1, I'll convert all those fonts too. Imagine — all your numerous



types of fonts, all in one place under one font manager. With Atech's AllType, you can convert to and from all these font formats: Adobe PostScript Type 1, Adobe PostScript Type 3, Atech Fast Fonts, Microsoft TrueType, Agfa Intellifont, GeoWorks Ensemble, DTC Nimbus Q, CoreIDRAW! and from Bitstream, Fontware.

It's so simple to install and use, and you can rename fonts in the process. Don't be fooled — this is high-quality stuff. AllType even converts "hinting" information, which changes spacing and other characteristics for certain font sizes. (Very important for small fonts.) You can create variations like bold, compressed, expanded, hollow and thousands of other variations all from your original typefaces.



PUBLISHER'S POWERPAK

BAE4095-3 Powerpak for WordPerfect 3 1/2" .. \$69.95
BAE4095-5 Powerpak for WordPerfect 5 1/4" .. \$69.95
BAE5330 Powerpak for Windows Dual \$69.95
BAE4094 AllType Dual \$79.00
Requires hard disk.

Convert FormTool Forms Into Graphic Forms.

Create Brilliant, Fully-Graphical Forms on Your PC.

Now, you can put this powerful, easy-to-use program to work for you for just \$99.00!

FT/Pro is the fully graphical environment that remains true to the concept of fast, efficient forms design. Easy to use as the Macintosh, with a graceful Windows-like graphical interface, FT/Pro is at home on any 286 (or 386) based machine. It's from the development team that pioneered the F3 Forms Automation System. With over 5 years of research and development, F3's Pro Designer is currently the standard for hundreds of Fortune 500 corporations as well as many of the leading forms manufacturers.

The F3 Forms Automation System will change the way corporations manage their information, combining paper forms and electronic forms for maximum efficiency. Now, a piece of this technology is available for you to create the highest quality forms, with easy-to-access creative functions.

We've taken the superb drawing capabilities found in our advanced F3 Forms Automation System and adapted them for desktop use. Engineered specifically for forms design, FT/Pro goes far beyond the capabilities of traditional "desktop publishing" forms packages. It relies on volumes of built-in knowledge about forms standards and specialized design techniques combined with unparalleled drawing power.

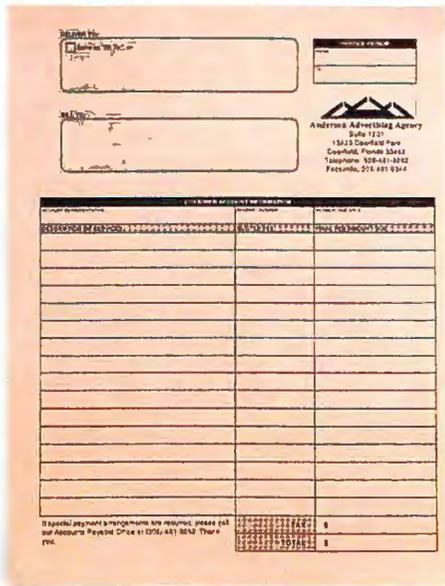
And it's all very easy to use.

The Highest Possible Quality Laser Forms.

New FT/Pro allows you more creative tools to enhance your forms and print them with more style and professionalism than any other forms package.

Easily Add Logos, Graphic Images!

This form contains a logo and specific typeface, point size and leading. It's high-quality forms design



made surprisingly simple, with more flexibility and creative options than with any other system. Your forms can be printed on your desktop laser or created as camera-ready art for "quick print" forms.

The grid in the background of this screen acts as a reference as you move through the form. FT/Pro is not desktop publishing. It is a system of forms-oriented drawing tools backed by built-in knowledge of proper forms design techniques.

Change Sizes, Colors, Typeface.

With one menu selection you can zoom in to any specific area on the form with the unique "zoom se-

lector." Fast and easy, this method of detailing produces brilliant results with minimal effort.

Change ink and paper colors with a click and zoom in for an even closer look. FT/Pro does everything you've always wished FormTool or any other forms product could do. And more.

Instantly Converts FormTool Forms.

FT/Pro allows you to protect the investment you've made in FormTool because it automatically imports and converts your text-based FormTool forms to full graphics forms in just seconds! Converted forms can be enhanced as you view FT/Pro's true WYSIWYG display including fonts, colors, graduated screens, tints, logos and special effects.

Your FT/Pro forms can contain an unlimited number of fields per page, and up to 32 pages in a single form — including front and back. Dress up your invoices, purchase orders, checks and other forms that are presented outside of your office. Your FT/Pro forms will work as hard as your existing forms, but will bring a new level of quality and authority to all of your forms. Of course, FT/Pro allows you to easily create new forms from scratch.



FT/Pro

- BAE1023-3 FT/Pro 3 1/4" \$99.00
 - BAE1023-5 FT/Pro 5 1/4" \$99.00
- Supports 286 and 386-based IBM or compatible computers. Requires 640K RAM; supports EGA and VGA displays. Complete mouse support (although mouse is optional). PostScript, Hewlett-Packard LaserJet laser printers (1.5 megabytes printer memory required).

World's Highest Quality, 256-Gray Scale Hand Scanner!

Logitech brings you the ultimate in scanned-image clarity and detail...

We've gotten used to the limitations of scanned images. We're not surprised when a scanner produces an image that's not bad — but not great, either. We sort of expect low-quality. Which is why the ScanMan 256 from Logitech blew the lid off of our lab the first time we slid its ergonomic case over any kind of photo!

This incredible new instrument is utterly amazing, capable of professional-quality scans for photos, detailed line art, monochromatic images and more. It delivers 256 levels of gray — not just 64, or 16 — but 256 individual levels for ultra high quality. They're bright, crisp, clean, highly detailed and require no touch up whatsoever.

Superior image construction and unmatched

clarity makes editing and manipulating your scans simple and precise. The secret is the innovative new red scanning beam. It produces 7 times more light (the critical factor in capturing minute detail and sharp contrast) than other scanning light colors.

And the ScanMan 256 is built like no other scanner we've seen. It's heavier, making straight-line scanning easy. It's balanced, so you can move at a consistent speed for the best possible reproduction. And only the ScanMan 256's Image Memory Manager swaps image data between your RAM and hard disk, so you can quickly work with even the most memory-intensive images.

The Scan Itself...

With most scanners, the act of moving across the image is less than scientific. Move too slow, you get muddiness, move too fast and you lose detail. If you don't scan in a perfectly straight line, the lovely young lady in your photo scans like something out of a Picasso painting. The ScanMan 256 eliminates the guesswork. The ScanMan 256 features a scanning speed indicator. Turn it on and it's green and ready to go, begin scanning a little too quickly the light turns yellow, then red if you're moving too fast to capture the image properly.

Scanning For Desktop Publishing

Using the ScanMan 256, you not only get great scanned images, you can do all kinds of very creative things with them, like create magazine-quality halftones, lighten or darken your images, adjust the contrast, reverse them, resize them, make line art out of photos and more.

The ScanMan 256 includes FotoTouch™ an easy-to-use image editing software system that allows quick retouching, speedy zooms, great special effects and a host of image-manipulation features. FotoTouch is one of the most sophisticated packages we've seen, and a must even as a standalone pack-

age, but it's included FREE when you buy the amazing ScanMan 256.

Clean OCR Scans...

Here's where the advanced technology of the ScanMan 256 shows what else it can do. If you use OCR (optical character recognition) software to scan text, you know the "clean-up" factor you're faced with. The ScanMan 256 outperformed all other contenders in our OCR testing using a page of 11 point, Century Schoolbook type with 12 points of lead. It produced usable text with fewer errors, scanning faster than any other hand or full-page scanner.

The ScanMan 256 is a complete system, compatible with all leading desktop publishers and fully guaranteed by Logitech.

Also Available:

The Cordless Mouse!

The MouseMan is a cordless, three-button, radio-controlled mouse! No cables, no line-of-sight positioning! The radio receiver can be placed anywhere — even under your desk — and still allows you to work with precise movement. It's fully Microsoft compatible and includes Mouse-2-3, designed for maximum Lotus 1-2-3 productivity. It is the most advanced pointing device on earth, with a slew of built-in Mouseware utilities.



Order: 1-800-888-4437 Int'l Orders: 305-443-8212 Fax: 305-444-5010 **FREE SHIPPING**

Circle 259 on reader service card

The Fastest, Easiest Way To Learn Windows 3.0!

The Most Advanced Windows 3.0 Teaching Method Available!

As with any new task, "visualizing" teaches you far more than just reading about it. And although Windows was built on the concept of ease of use through its interface, some aspects of Windows may be new and perhaps a little intimidating for first-time users.

WIND•EASE is the innovative software tutorial that allows you to forego the lengthy manuals and get right to work. Real drop-down menus and application menus provide dramatic insights into the power and beauty of Windows 3.0.

Sophisticated in presentation, it facilitates in-depth understanding by matching Windows' commands, visual displays, and dialog boxes to clear, concise explanations.

Perfect For Beginners and Intermediate Users.

WIND•EASE gives you a thorough understanding of Windows 3.0. If you're new to the environment, you'll quickly grasp the rudiments and progress quickly through its many advanced features. If you're a current Windows 3.0 user, you'll find loads of information on features you may never have used before. It's also fun to use WIND•EASE. With WIND•EASE, learning Windows is enjoyable and so will be using it.

More In-Depth Than Even The User's Guide.

As you quickly learn Windows you'll discover WIND•EASE actually takes you beyond the user's guide. Here, you'll learn how to install and use other applications, how to quickly and easily set up networks, printer and fonts, how to create time-saving macros, how to customize PIFs, and use MS-DOS Ex-

ecutive. There's dozens of tips and techniques for using Windows 3.0 to its fullest.

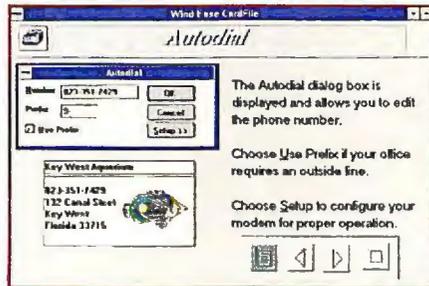
WIND•EASE is a rich graphical program with 18 distinct program-segments, designed to isolate and teach you window concepts.

The unique and easy installer allows you to choose the segments you wish to install.

- Basics (for beginners)
- Program Manager
- File Manager
- Print Manager
- Write
- Terminal
- Paintbrush
- Clipboard
- Control Panel
- Setup
- PIF Editor
- MS-DOS Executive
- Notepad
- Calendar
- Calculator
- Recorder
- Clock
- Cardfile

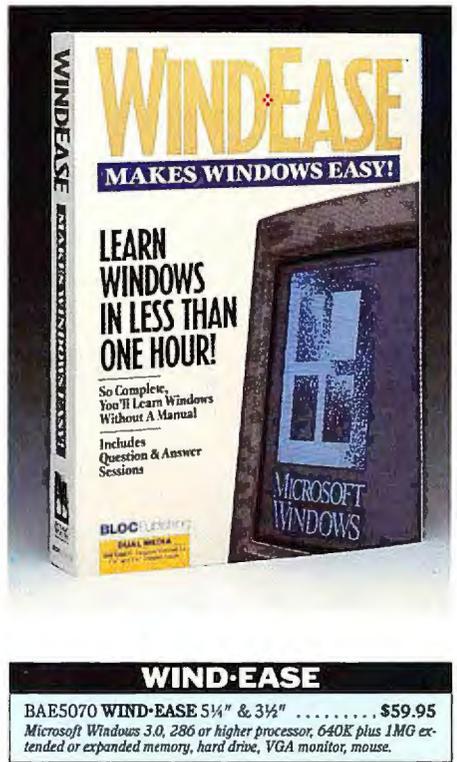
The program is structured for ease of use and thoroughness. Consequently, it is ideally suited for corporate training programs, at home/office users, and even first time Windows users. And, because WIND•EASE runs under Windows, it's always there if you need instantaneous assistance!

WIND•EASE includes a question and answer



Quick & Easy. Put names and addresses in the Card File. Then Dial your telephone directly from Windows. WIND•EASE shows you how.

exercise at the end of each segment, designed to reinforce, clarify and offer additional insights into the material presented.



WIND•EASE
BAE5070 WIND•EASE 5 1/4" & 3 1/2" \$59.95
Microsoft Windows 3.0, 286 or higher processor, 640K plus 1MG extended or expanded memory, hard drive, VGA monitor, mouse.

Learn to Type with the Finest Typing Program in the World!

So fast and easy — you'll be touch typing with speed and accuracy in just a few short lessons! Mavis Beacon Teaches Typing! is the premiere touch-typing self-help program that uses carefully planned lessons and drills — perfect for beginners, or typists who want to improve their speed and accuracy.

NEW! Version 2.0.

Mavis Beacon Teaches Typing! has been the world's leading computer typing instruction program for several years. With new graphics support, a 10-Key Teaching Mode, improved lessons and numerous other new features, the world's premiere typing instruction program just got better. And, Mavis Beacon is now available in a new Microsoft Windows version.

In addition to supporting CGA, Hercules and text modes, Mavis V2.0 now features EGA/VGA 16-color, 320x200 graphics plus Custom Color Palette. And the new 10-Key Teaching Mode will help users master the numeric keypad.

Type Faster and More Accurately.

Four different "learning centers" provide an entertaining, informative experience. The new Frustration Sensor helps Mavis Beacon to pace beginning typists, avoiding early discouragement.

First, Mavis Beacon Teaches Typing! outlines the lesson plan and eval-

uates your typing for speed, accuracy or particular problems. From there, each lesson is custom designed to work on these problems. If your speed is poor, Mavis Beacon will prescribe drills for increasing speed. If accuracy is your weakness, Mavis will help you work on the problem keystrokes.

Ideal for Classrooms...

A new Teaching Mode & Classroom Network Feature makes it easier to teach and to link students together. Plus, Mavis Beacon Teaches Typing! allows teachers to track students' progress, administer uniform tests and perform trend analysis.

NOW AVAILABLE FOR WINDOWS!

SAVE \$10⁰⁰



Mavis Beacon Teaches Typing!

BAE4705D Mavis Beacon PC 5 1/4" & 3 1/2" \$39.95
BAE4705W Mavis Beacon Windows \$49.95
IBM PC, XT, AT, PS/2, compatibles with 256K.

Over 1,000 Windows Icons.

Have some Windows kind of fun with custom icons and cursors. Now anyone can change Windows icons any way they like. And not only icons, but the cursor too. Select a professionally designed icon or cursor from a huge library, or custom create your own.

For the action-minded, turn any icon into an animated mini-movie! Fill your Windows screen with animated icons while you continue to work. It's something you have to experience to believe. And if that doesn't satisfy your craving, you can even animate your cursor. That's right! Turn your cursor into a whirling tornado or a break-dancing Gumby!

The World's Easiest — ICON DO-IT.

Icon Do-It adds a new menu selection to your Windows Program Manager. You can't miss it — it's the one with the rabbit. Click it to open the world's fastest and easiest way to change icons and cursors. Two clicks later and you've replaced your dull, gray icon with a lively, colorful icon.

ICONTAMER PROFESSIONAL.

Not only do you get a collection of over 1000 icons, you also get the ability to make these icons into tiny animated sequences that play over and over on your desktop. Bring in any icon from any program and create animated sequences for them. IconTamer Pro is the only system that doesn't restrict you to use only single-icons, cur-

sors or icon library files. So any icon can come to life.

PC Magazine says that "IconTamer is a complete icon management program allowing you to re-name, edit, delete, capture icons from the desktop, and convert .BMP files into icons. This program is a must for icon fanatics..."



The Icon Editor lets you take any Windows icon and change it — or paint a new one.

Also from Moon Valley, CASINO PAK I.

Turn Windows into Caesars Palace with Las Vegas style gambling! Blackjack, Poker and Keno add up to hours and hours of pure entertainment.

FREE WIND•EASE When You Buy IconTamer Pro!

MOON VALLEY

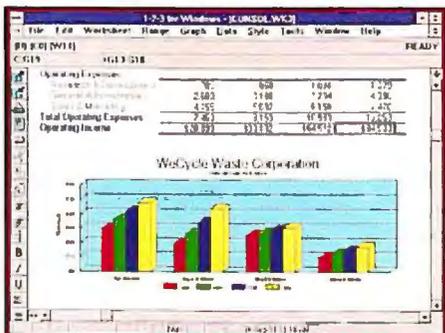
BAE3884-5 IconTamer Pro 5 1/4" \$69.95
BAE3884-3 IconTamer Pro 3 1/2" \$69.95
BAE3885-5 Icon Do-It 5 1/4" ... \$29.95
BAE3885-3 Icon Do-It 3 1/2" ... \$29.95
BAE3890-5 Casino Pak I 5 1/4" ... \$39.95
BAE3890-3 Casino Pak I 3 1/2" ... \$39.95

Lotus 1-2-3 for Windows! The Upgrade is Here! Just \$99!

It's here.

TigerSoftware is proud to be one of the first in the world to roll-out the product that will change the face of the software market once again. Our relationship with Lotus Development Corporation allows us to offer this incredible breakthrough product to our customers for just \$99. That's not a typo! Buy Lotus 1-2-3 for Windows for just \$99. And, of course, it's the full upgrade package.

One of the most important titles in the industry, Lotus 1-2-3, now brings the magic and power of the spreadsheet to the Windows platform. The ultimate graphical spreadsheet. Lotus 1-2-3 has been the top-selling business software system in the industry for hundreds of weeks in a row. It virtually changed the software scene and now, with the introduction of the Windows version, it opens a new world of possibilities to make your spreadsheets not only easier to create, but more interesting to look at, as well.



Add a chart to your spreadsheet in just 2 clicks! Click again and change from 3D Bar or Pie, or select from numerous chart types. And Drawing tools let you call attention to special areas and customize your work.

Lotus 1-2-3 for Windows contains the genius of SmartIcons. These icons, like those featured in Ami Pro, exploit the visual nature of the graphical user interface like no other concept in computing. Just click on one and save dozens of keystrokes. Cut, paste, save, print, format and more with just one move. Like macros, SmartIcons can save hours of manual input as you prepare your spreadsheets.

1-2-3 for Windows allows you to create printed spreadsheets that blast off the page with a host of incredible tools. Fully PostScript compatible, 1-2-3 for Windows gives you complete control of text, data, graphs, styles, colors and more.

1-2-3 RELEASE 2.3 FOR DOS

This is the latest release of the traditional 1-2-3 spreadsheet product that captured the imaginations of millions of users. Lotus 1-2-3 Release 2.3 is the fast, powerful and graphical spreadsheet for DOS. It's faster, easier, more powerful. It runs just as beautifully on an older XT with as little as 512K of memory as it does on the newest 486 machine. Which means that you can have all the hot new Lotus features without running out to upgrade your system.

1-2-3 RELEASE 3.1 PLUS

Lotus 1-2-3 Release 3.1 Plus includes a fully interactive WYSIWYG environment combined with advanced Impress technology to produce a new graphical way of using the familiar (and proven) 1-2-3. There's complete mouse support for quick and easy selection of menu commands, range selection, row heights and column widths. The live, on-screen formatting gives you the ability to enhance your spreadsheet with an array of great built-in tools like Bitstream fonts, shading, colors and much more. No other spreadsheet product delivers the on-screen flexibility of 1-2-3 Release 3.1 Plus.

FREELANCE GRAPHICS 4.0 FOR DOS

When you're ready to put together the presentation of your career, complete with slides, overheads and handouts that bring the house down, seek the help of the hottest business graphics program available for DOS — Freelance Graphics. Now in its fourth release, Freelance Graphics has won every major industry honor, from the major publications like PC Week, PC World, and Publish!. Freelance Graphics offers all of the fundamental graphic capabilities and adds a magnificent array of tools and unique "Smart Features" that represent the best way to assemble a "knock their socks off" presentation.

FREELANCE GRAPHICS FOR WINDOWS

For Windows users, the power and beauty of Freelance Graphics explodes with an incredible assortment of graphics tools based on the DOS version, but taken to a new level of visual excitement.

LOTUS UPGRADES

BAE5195 Lotus 1-2-3 Windows	\$495.00
BAE5197 Lotus 1-2-3 Windows Upgrade	\$99.00
BAE5179 Lotus 1-2-3 Release 2.3	\$365.00
BAE5093 Lotus 1-2-3 Release 2.3 Upgrade	\$99.00
BAE5178 Lotus 1-2-3 Release 3.1 Plus	\$425.00
BAE5192 Lotus 1-2-3 Release 3.1 Plus Upgrade	\$99.00
BAE5177 Lotus Magellan	\$95.00
BAE5181 Lotus Magellan Upgrade	\$79.00
BAE5176 Lotus Agenda 2.0	\$315.00
BAE5085 Lotus Agenda 2.0 Upgrade	\$99.00
BAE5175 Freelance DOS	\$355.00
BAE5196 Freelance DOS Upgrade	\$99.00
BAE5174 Freelance 4.0 Windows	\$355.00
BAE5198 Freelance 4.0 Windows Upgrade	\$99.00

Restrictions apply. Call Tiger for details.

The Ami Pro Upgrade: \$99⁹⁵!

The Number-One Rated Windows Word Processor. Easier, Faster, More Creative.

Ami Pro has created a world of possibilities for the printed page. It is a pure Windows product, not a "ported" DOS counterpart. It features the visual power and easy-to-use nature of Windows 3.0 to produce top-notch results. Indeed, it established a new standard in word processing for the graphical user interface.

Now, version 2.0 breaks new ground with a rich visual environment along with an amazing array of easy-to-use tools at your fingertips. You'll write and format sophisticated documents you may have never attempted before because Ami Pro 2.0 is designed to work like you do, associating pictures and symbols — with concepts. Your ideas take shape faster and expressing them becomes easier.



That's the key: Ami Pro 2.0 is extremely easy to use. So easy to use in fact, that you can create crisp, professional-looking letters, reports, proposals and presentations the very first time you use it — even if you've never used a word processor before!

An Ideal Writing Environment. Fast, Smart — and Visual.

Ami Pro 2.0 features fast outlining, easy revision marking, mathematical equations and even freehand drawing. You'll put together charts and tables with simple point-and-shoot action. You'll see your work with true WYSIWYG display.

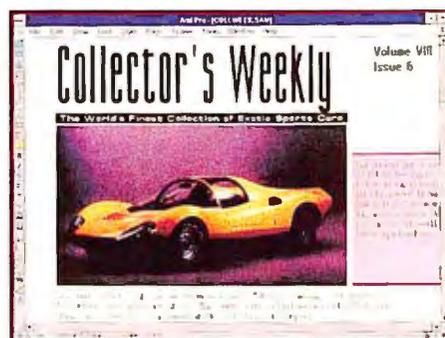
You'll enjoy the built-in portfolio of style sheets and graphics-manipulation tools. Simply choose from pull-down menus to generate a table of contents, flow text around graphics, change fonts, colors and more. You'll select typefaces and move elements on the page easier than you ever thought possible.

Ami Pro 2.0 gives you the best spell checker in the business, a thesaurus with 1.4 million selections, a full macro language, interactive ruler, status bar, color palette and more. More than Word For Windows. More than WordPerfect.

Power Under the Hood!

Although Ami Pro 2.0 is a breeze to use (and use to its fullest), it possesses enormous power under its sleek interface. You'll seamlessly import and export files from WordPerfect, Microsoft Word, MultiMate, DCA, DisplayWrite, WordStar and others. Ami Pro 2.0 contains over 120 one-click customizable SmartIcons (matching those found in Lotus 1-2-3 for Windows) which make moving through Ami Pro 2.0 fun.

Ami Pro 2.0 features a unique dialog box that shows you What-You-See-Before-You-Get-It right on the screen. Open and edit multiple documents at one time, see them in four editable view levels — all WYSIWYG and instantly "hot-link" to other Windows applications.



The ultimate word processor — complete with easy-to-use desktop publishing tools for stunning newsletters, reports and more. Perfect for everything from a short memo to a comprehensive book.

Why Run Windows 3.0 If You Don't Make Use of Its Power!

Whether you're an executive who types only occasionally, or a heavy user who demands a long list of specialized features, you'll achieve impressive results with Windows 3.0 and Ami Pro 2.0.

EXCLUSIVE TIGER PACK

AMI PRO PLUS WINDOWS 3.0 AND THE LOGITECH MOUSE ALL 3 JUST \$169⁹⁵!

AMI PRO 2.0

BAE5291D Ami Pro Upgrade	\$99.95
BAE5090 Ami Pro	\$302.95
BAE5095 Tiger Pack: Ami Pro Competitive Upg., Logitech Mouse & Microsoft Windows 3.0	\$169.95
BAE5097 Ami Pro & Logitech Cordless Mouse	\$199.00

Requires Windows 3.0 & 640K. Sorry, free shipping is not included on this special offer.

Restrictions apply. Call Tiger for details.

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

Fax: 305-444-5010

FREE SHIPPING

Circle 259 on reader service card

The Marstek Line of Precision Scanning Instruments

Black & white, grayscale, color, hand scanners, full-page scanners — there's a Marstek scanner to fit every purpose. Choose the one that's right for you from this exciting lineup of quality scanners.

256-GRAYSCALE HAND SCANNER

The Marstek M-800G/256-grayscale handscanner's unmatched technology delivers the crispest, cleanest images from any original. This is a professional scanning and imaging package, unlike anything else available today, allowing you to capture anything on your screen by simply passing the scanner over it! And its OCR (optical character recognition) software allows you to scan text from anywhere. Just pass the scanner over it and use it in any application — without re-keying.

Perfect for desktop publishing applications, as well as the new breed of Windows word processors, the Marstek M-800G is extremely flexible, featuring advanced "yellow/green" scanning lights to capture the finest details — even from originals the size of a postage stamp! And the M-800G's special Inverse Scanning capability creates many special effects.

Imagine an instrument that you can quickly pass over a graphic image, logo, design, drawing, chart, photograph — and instantly capture it to your computer screen — in ultra sharp 800 dots per inch resolution! That's what you can do with the 800 handscanner. 800 dpi means crisper, cleaner, more highly detailed images for use in desktop published documents, reports, newsletters, and brochures.

And with a host of special effects and 12 halftone patterns built right in, controlling the look of the image is simple! The images you scan will reproduce as if they were originals, and they can be stored in TIF, PIX, PCX, CUT, IMG and MSP formats.

SUPER COLOR SCANNER

The new M-6000CG Super Color scanner absorbs an astonishing 262,144 different colors from any

printed page or photo! Scan in your photo albums, wedding picture, or graduation photo and display it onscreen with lifelike realism. Produce high-impact documents and presentations with the power of graphic images. The possibilities are limitless.



NEW! FULL-PAGE COLOR SCANNER!

The latest addition to the Marstek line of professional scanners is a full-page, flatbed color scanner. This top-of-the-line, wonder-machine scans in an astounding 16 million colors (24-bit) with a copier-like, flatbed top. Perfect for scanning from a book — you don't need to tear out the page. Delivering a crisp 300 or 600 dpi, this scanner is a must for true-color, full-page applications. This color scanner comes bundled with Picture Publisher, the best Windows application for perfect scans and absolute image control.

BONUS!

FREE with the Marstek Full-Page Color Scanner: Picture Publisher

Here's the toolbox of highly advanced, simple-to-

use software products for Windows that allows you complete control over your scanned images — including painting, gray scale, image processing, OCR (Optical Character Recognition) and RTV (Raster To Vector) conversions.

AND Perceive Personal — Powerful OCR Software...

Perceive Personal now brings advanced, full page OCR (Optical Character Recognition) to PC/AT compatible hand scanners. It combines the power of true "omnifont" (any font, any size) OCR with the convenience of full-page text recognition in the powerful Microsoft® Windows environment.



MARSTEK

BAE6130 M-800 Halftone scanner w/Perceive OCR and PC Paintbrush Plus	\$279.00
BAE6180 M-800WP Halftone scanner w/Image-In and Perceive (Windows)	\$399.00
BAE6205 M-800GW 256 grayscale w/Image-In (Windows)	\$349.00
BAE6200 M-800GW + 256 grayscale w/Image-In and Perceive (Windows)	\$399.00
BAE6210 M-8000G+ 256 grayscale w/Rainbow Paint (DOS)	\$349.00
BAE6170 Mac 800 Scanner for Macintosh w/Enhance	\$399.00
BAE6215 M-6000CG Color Scanner w/Perceive OCR and Picture Publisher (Specify Windows or DOS)	\$599.00
BAE6225 Full-Page 300 dpi Flatbed Scanner w/Picture Publisher and Perceive	\$1295.00
BAE6230 Full-Page 600 dpi Flatbed Scanner w/Picture Publisher and Perceive (Windows)	\$1695.00

Prepare Your Own Will — Now!

Binding Legal Documents To Protect Your Family, Business and Property.

By simply typing answers to questions on your screen, Personal Law Firm actually "writes" binding legal documents customized to your specific situation and ready to sign. From wills to maintenance agreements; work for hire agreements to warranty documents; promissory notes and commercial leases to demand letters, Personal Law Firm gets it in writing fast.

With over 500 pages of concise, informative documentation and reference, Personal Law Firm is the most comprehensive legal package available today. Just select the type of document from the Main Menu. There's plenty of background material on each document you prepare, along with explanations of the applicable laws that govern them.

The Importance Of A Will.

It's a nightmare you hope never happens. An untimely accident or illness leaves your family without a breadwinner — and without a will. In such cases, the state immediately moves in to divide your estate as it sees fit, with no regard for your wishes. Your survivors will face a long, uphill battle to reclaim what a will would have granted them instantly upon your death.

Yet, 3 out of 4 people every year die without one.

Perhaps you feel that in the event of an illness or accident that leaves you completely dependent on life support, it should not be prolonged. You can create a Living Will to state in writing your wishes under specific circumstances.

Personal Law Firm covers virtually any everyday personal or business legal situation. For example, a restaurant owner from Chicago recently wrote us to relate this situation: A customer raved about his family recipe "Sauce Katrina" served at his restaurant, and asked for the recipe. Several months later, the

restaurant's chef ran across "Sauce Katrina" bottled and for sale at the local epicurian shop with a label bearing the exact ingredients and the customer's name. A demand letter went out the next day from the restaurant owner to the customer asking sales of the sauce be stopped. The customer agreed. With no legal fees and no further misunderstanding.

Or what happens in a situation where your pool man accidentally damages your pump and refuses to pay for the repairs? A written Maintenance Agreement clearly handles such occurrences.

If It Isn't In Writing...

...It simply isn't binding. And it's never easy to predict where you'll run into a legal situation that can get out of control. To protect yourself against these unforeseen problems, you must get all agreements you enter into *in writing*. Personal Law Firm is the fastest, most inexpensive way to provide that protection.

Personal Law Firm Includes:

Last Will and Testament	Release of Lien
Living Will	Promissory Note
Residential Lease	Trade Secret Protection
Power of Attorney	License of Intellectual Property
Living Together Agreements	Assignment of Intellectual Property
Prenuptial Agreements	Bill of Sale
Postnuptial Agreements	Warranty Agreement
Marital Settlement Agreements	Software Escrow Agreement
Child Guardianship Consent Form	Letter of Offer to Purchase
Commercial Real Estate Lease	Demand Letter
Work for Hire Agreement	Rejection of Goods Letter
Maintenance Agreement	Termination of Contract
Personal Guarantee	Notice of Contract Breach
	Notice of Contract Assgn.

Personal Law Firm

BAE1050 Law Firm 5¼" & 3¼" \$99.95
IBM PC, XT, AT, PS/2 and compatibles with 256K, one floppy, a hard disk and DOS 2.1 or greater. It requires an 80-character display (color or monochrome) and will support virtually any printer.



NEW! Daily Number Buster 2.0!

The Most Advanced Daily 3-And-4-Number Software Available!

From the makers of the smash hit The Complete Lottery Tracker and Wheeler comes the winningest DAILY number program available today. The Daily Number Buster will increase your chances of winning 3 and 4 digit daily number games and all daily deal games (California's "Decco" and Ohio's "Cards" and others). It's fast, fun and completely menu driven, so it's ready to go right out of the box.

This new version has been completely redesigned, with dozens of new screens and features to help you play these games with the odds on your side! You can store hundreds of Pick 3 and Pick 4 numbers and dates, and The Daily Number Buster allows you to print detailed reports and charts of game statistics, recorded numbers and position hits. These reports become the basis of future picks and daily strategies. And Daily Number Buster makes it easy to determine HOT, DUE and AVERAGE winning numbers!

Each 3 and 4 number game includes all straight and combination bets and unlimited number of BOXING bets. You also get a complete explanation of odds and a handy Odds Chart for instant reference. Start winning more of those lucrative daily games with the most comprehensive, easy to use software product of its kind — the all-new Daily Number Buster!

Lottery Tracker & Wheeler Version 4.0

The Complete Lottery Tracker & Wheeler has already been proven to increase your odds of winning by hundreds of times. It's an advantage that most states may not want you to have! And this all-new version includes dozens of innovative wheeling systems

(some never before seen), streamlined new screens, more data analysis and a free database of your state's past winning numbers. The Complete Lottery Tracker and Wheeler's sleek, newly re-designed interface makes it easier to maximize payoff possibilities on any state or international lottery game — choosing from up to 80 numbers!

The Complete Lottery Tracker & Wheeler gives you the ability to track and play as many lotto games as you want, it provides the tools to produce charts, stats, reports and your own customized programs for the world's most popular number wheeling systems. Create trend charts, analyze past winning numbers, produce accurate statistics on frequency, recency, bell curves, percentages and "hot" or "due" winning numbers.

Designed by the Pros.

Lottery professionals and enthusiasts agree that The Complete Lottery Tracker & Wheeler is the one system powerful enough for the serious player. They play many state lotteries on a consistent basis, carefully tracking the results and formulating winning strategies.

FREE BONUS Audio Cassette! 'Lottery Winning Strategies' Learn What The Big Winners Know!

We're also very proud to introduce the all-new "Lottery Winning Strategies" audio cassette, containing new information, new strategies, new tips and techniques. It's FREE when you buy The Complete Lottery Tracker & Wheeler.

NEW!
FOR DAILY
3- AND 4-DIGIT
GAMES



FREE BONUS!

Coupon for a Free "Winning Combinations" Database Inside Daily Number Buster and Complete Lottery Tracker & Wheeler

A history of winning numbers in your state! All US & Canada (Lottario) past winning numbers available.

LOTTERY SYSTEMS

BAE3615 Daily Number Buster 5¼" & 3¼" . . . \$49.95
BAE3610 Lottery Tracker & Wheeler . . . \$49.95
IBM PC, XT, AT, PS/2 and compatibles. Requires 256K.

How Do You Fill In Pre-Printed Forms?

Eliminate One Of The Office's Most Time-Consuming, Tedious Tasks.

Are you still filling in insurance forms, legal and tax forms, government forms, invoices, medical and Federal Express forms by hand? Or struggling through the trial-and-error nightmare of using a typewriter? The fact is, filling in pre-printed forms is a classic example of inefficiency, with a high margin for error. The PC can be a great assistant in filling in forms, and FormFiller 3.0 is the premier forms fill-in software for even the most complex multi-page, multi-part, and double-sided forms.

FormFiller 3.0 actually synchronizes your computer printer (a critical first step), to locate blanks and place information on the form with pinpoint-precise accuracy, and it works with virtually any dot-matrix, daisywheel or laser printer. This powerful software streamlines data entry with a host of on-screen guides and error-checking features. These features not only speed the process, but virtually eliminate errors as well — errors that can be very costly. Along with FormFiller 3.0's extensive data validation features there's plenty of fully context-sensitive help available for any function.

Unmatched Math and Financial Functions.

The system doesn't stop there. It contains a complete set of financial and mathematical functions that you can easily assign to particular blanks to perform a specific calculation whenever value is entered. Or you can automatically perform a series of calculations on a series of numbers. For example, you could quickly instruct FormFiller 3.0 to calculate the extended prices of all items listed on an invoice, total them, deduct a discount, figure and deduct taxes and calculate the final total. There are over 40 math func-

tions in all, including amortization, interest, present and future values, depreciation, percentages — dozens of others!

This all means that a form that may have taken fifteen or twenty minutes to fully complete (possibly containing errors), now may require as little as one minute to fully complete, including a check for errors and omissions. The form appearing on this page was filled in using FormFiller's advanced fill-in, Look-up feature and math capabilities in under one minute. Businesses of all sizes can use the ease and power of FormFiller 3.0 to make extremely light work of a difficult, awkward chore.

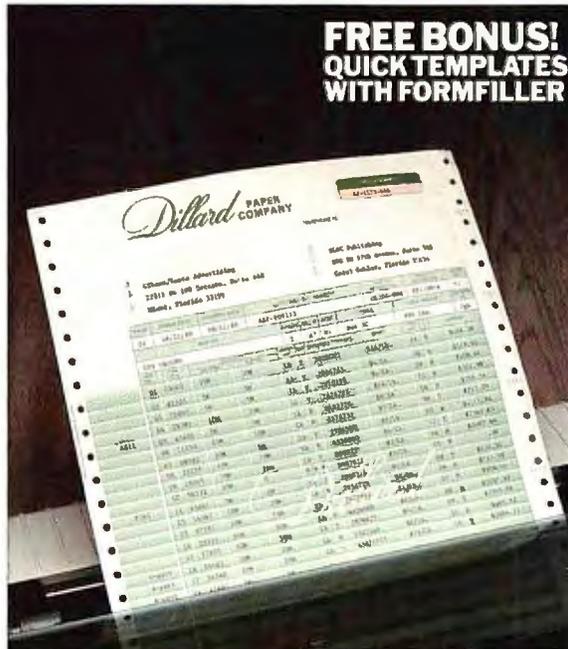
Slash Fill-in Time of Pre-Printed Forms.

FormFiller 3.0 can, in fact, slash the fill-in time required for any form by as much as 80 percent. By creating a "master template" of the form, FormFiller 3.0 can match any spacing, even if the spacing changes throughout the form or is inconsistent from line to line.

Data entry is as easy as tabbing from blank to blank, with so much of the tedious work removed from the process that filling in forms isn't the messy, time-consuming project it once was.

FormFiller 3.0 actually contains two distinct programs. Designer, which actually allows you to create templates to your exact requirements, and Filler, which can be used by data entry personnel to display the form, fill it in and print it.

FREE BONUS! QUICK TEMPLATES WITH FORMFILLER



It Took Just 2 Minutes To Fill-in This Form.

FORMFILLER 3.0

BAE1200 FormFiller 3.0 5¼" & 3¼" . . . \$129.95
IBM PC, XT, AT, PS/2 or compatibles with 512K, DOS 2.0 or greater and one floppy drive and a hard disk. Supports virtually all printers. Includes "The FormFiller Sampler" — sample templates, user guide and help cards.

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

Fax: 305-444-5010

FREE SHIPPING

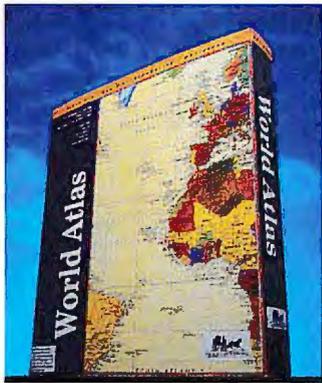
Circle 259 on reader service card

Three Indispensable Reference Titles!

WORLD ATLAS

This innovative program brings the entire globe to your computer screen, combining a complete atlas, almanac and world fact book into one exciting, informative package.

You'll have instant access to over 200 fully-detailed, VGA maps, ocean maps and useful international information on 270 topics in 11 categories. Explore the geography, people, government, and economy of any nation on Earth, including such details as climates, health, population, language, labor force, military strength, inflation, industry, highways and waterways, and more.



Indispensable Reference Tool.

World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. It's an indispensable guide that brings together all types of important information that would take months to research and assemble.

New version 2.0 includes conversion tables for currency, weights and measures; city to city mileage indicators; and local time and date information (World Atlas is the only program that adjusts for daylight savings time!)

You can easily print customized reports mixing maps, graphs and text — even export maps to desktop publishing programs for use in your newsletters, reports and other publications.

Create Over 4,000 Statistical Maps.

Users can select from 10 categories containing approximately 300 data topics to create statistical maps at the world level or for any region. Data can be displayed using a Shaded Map (for comparative data) or Bar Map (for total amounts). There's also volumes of comparative data on every country in the world in five subject areas: geography, people, government, economy, trade, and communications.

NEW! U.S. ATLAS

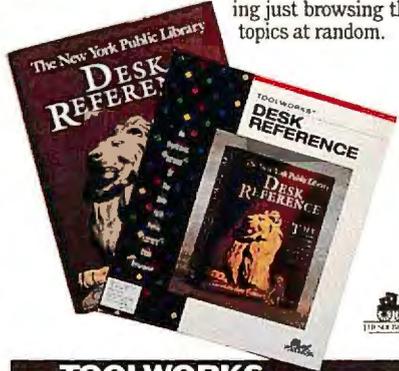
U.S. Atlas brings the entire North American continent to your computer screen! Simply click on a state or city to explore such information as: population, average temperatures/precipitation, local time, area codes and zip codes. Everything you need to know will be displayed in easy to read windows. Even print reports with maps and text.



Maps like the one you see here are highly detailed and contain information on travel, climate, geography and population. Both World Atlas and USA Atlas give you a wealth of information.

DESK REFERENCE

The electronic edition of the New York Public Library Desk Reference contains thousands of entries on everything from finances, philosophy, animals, sports, academy awards, major corporations, abbreviations, music and etiquette to religion, calorie consumption, nutrition, state names, cooking, symbols and signs, copyrights, consumer bureaus, bartending, poison control hotlines, card games and computer terms. But there's so much more! Industry, literature, the metric system, television, space travel, hard-to-find addresses and phone numbers, first aid and more — 26 major categories in all. It's interesting just browsing through topics at random.



TOOLWORKS

BAE3225 World Atlas 5 1/4" OR 3 1/2"	\$59.95
BAE3230 Atlas Pack (World & U.S.) 5 1/4" OR 3 1/2" ..	\$79.95
BAE3220 U.S. Atlas Dual	\$49.95
BAE3240 Desk Reference Dual	\$49.95
BAE5520 World for Windows 5 1/4" OR 3 1/2" ..	\$69.95
BAE5510 USA for Windows 5 1/4"	\$69.95
BAE5530 Desk Reference Windows Dual ...	\$49.95

Atlas: IBM PC or compatibles with 640K. Hard disk; EGA or VGA graphics card color monitor; Microsoft mouse or compatible. Desk Reference: IBM PC or compatibles with 640K. DOS 3.1 or higher, hard drive required.

"My Mailing List Is A Goldmine!"

Manage Your Mail Lists — Simply!

Smart people are finding magic in their mailboxes. They've discovered the incredible opportunities in direct mail advertising. We've heard from people nationwide who have started a small mail order business in their spare bedroom — and within a year it becomes a lucrative, full-fledged company. From all the success stories we've seen, three recurring requirements: a good product or idea; a thorough understanding of the market for your product; and a computer to handle your lists.

The power of the PC allows you to manage your customer list for maximum efficiency. Using FastPak Mail, you can save money by reducing the amount of postage needed. Experts predict a sharp increase in mail order over the next several years. Specialized interest, convenience and price will attract millions of buyers to buy direct, often in favor of going to the mall or other retail outlets.

FastPak Mail Version 5 is the perfect mail order software. Designed by mail order professionals and containing features found in high-end systems, FastPak Mail 5 links directly to your database to easily import names onto labels and letters. The connection is smooth as silk, and only FastPak Mail 5 features built-in support for 1, 2, 3, 4 or 5 across labels. It's fast and easy, yet it contains powerful functions to store names and addresses, print lists, labels, mail-merged letters, envelopes and more — right out of the box.

But FastPak Mail Version 5 is also an ideal product for keeping track of clients, contacts, club members and other lists that you use often. And new FastPak Mail Version 5 supports and prints postal barcodes — automatically! Barcodes improve deliverability and speeds you mail through the postal centers. There's built-in Carrier route sorting that

can effectively reduce the cost of mailing a 29-cent letter to just 13.1 cents!

Many businesses and professionals are publishing their own newsletters, to stay in front of their current customers while soliciting new ones. It's one of the most effective "new-business" techniques you can use. A quarterly newsletter, mailed to qualified prospects, captures mindshare. Your newsletter can be followed up with news updates, new product announcements, press releases and more.

Then there's our friend from Stowe, Vermont. We call him "The Syrup Man." He bought a copy of FastPak Mail two years ago to help handle a mail campaign for his "Pampered Maple 100% Pure Syrup." He wrote the most incredible newsletter I've ever seen and mailed it to his list of visitors he had accumulated over the years. His newsletter told the history of the trees that he meticulously drained each season. He discussed his family's process of converting the rich, sweet sap into luscious maple syrup for the breakfast table. He called one day and said he'd sold at least one jar to 90% of the people he mailed newsletters. "My mailing list is a goldmine and FastPak Mail helps me take it to the bank," he told me.

Sorting, Printing and Preparation.

FastPak Mail 5 simplifies bulk mail by streamlining the entire process. It is the only product that can sort to virtually any specification, and all sorting is done to achieve the least possible cost.

Laser Printing Capabilities.

Now everything you mail can be crisp and authoritative, taking full advantage of laser technology's broad range of fonts, sizes and formats. FastPak Mail 5 is able to support internal printer fonts as well as downloaded fonts — even print sideways.

Professional Looking Envelopes.

Produce attractive envelopes that are sure to be opened! FastPak Mail 5 contains built-in envelope

printing support for many printers.

Save money on bulk mailings with built-in features like 5 or 3 digit zip code sorting and automatic duplication checking. Organizing lists is easy. FastPak Mail 5 can sort lists by any criteria.

Works With All Leading Word Processors.

Import and export documents easily to and from leading word processors like WordPerfect, Wordstar, Microsoft Word, Multimate or spreadsheet programs like Lotus 1-2-3, Symphony and Excel — as well as database programs like dBASE via ASCII files.

Speedy Mail Merge.

FastPak Mail 5 will allow you to easily merge names and addresses into the body of any letter. You can quickly produce custom mailings to selected lists — even merge information into the body of your letter. And if you have existing lists stored in other applications, they can be quickly and accurately converted for use in FastPak Mail 5.

Prints Postal Barcodes.

FastPak Mail 5 supports and prints postal barcodes automatically. Barcoding greatly increases deliverability and can save you money.



FASTPAK MAIL 5

BAE1170 FastPak Mail 5 5 1/4" & 3 1/2"	\$79.95
--	---------

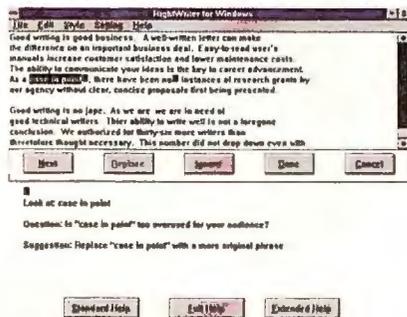
Requires 512K and hard disk.

The Best Way to Improve Your Writing.

**NEW WINDOWS VERSION
JUST RELEASED!**

New RightWriter for Windows brings the most highly respected style and grammar checker to the graphical user environment. Now, your Ami Pro, Microsoft Word for Windows, WordPerfect for Windows and Words Write documents can be clean and error-free—in seconds!

RightWriter for Windows uses an even better rule base to check for errors in grammar, style, word usage and punctuation than the award-winning DOS version. It's fast, easy and makes your writing more powerful than ever before.



RightWriter for Windows is a powerful expert system that applies more than 6,000 rules of good writing to your documents. With just a few clicks of your mouse, RightWriter checks your word processing documents for thousands of potential writing errors — in grammar, style, word usage, punctuation, and more!

RightWriter also rates your documents for readability and strength. These summary indexes help

you target your writing to specific audiences. The result is powerful, effective writing.

RightWriter for Windows is so easy to use. The new interactive checking mode proofreads your documents just like a spell checker, offering real-time suggestions to improve your writing.

The Premier Grammar Checker.

RightWriter for Windows flags errors in your writing from a rule base of more than 6,500 rules — including rules of grammar, style, word usage, punctuation, sentence structure, subject-verb agreement and more. RightWriter for Windows can edit your documents interactively or insert its comments into a copy of your document. Either way, RightWriter displays your document with flagged errors and explanations. These explanations are your guide to better writing. The result: clear, crisp documents that deliver your ideas with maximum impact.

To use RightWriter, simply launch the product from within your favorite Windows word processor. RightWriter then interactively edits your document inserting comments and suggestions where errors occur. To correct errors, simply use RightWriter's interactive editor.

Runs Directly From Within Windows Word Processors.

RightWriter for Windows comes with launch macros so you can invoke the program directly from within popular Windows word processors. These include Ami Pro, Microsoft Word for Windows, and WordPerfect for Windows. In addition to Windows word processors, RightWriter for Windows supports a variety of DOS word processors.

BONUS

**Strunk and White's
The Elements of Style
FREE With RightWriter For Windows**



Free Que Book with RightWriter Windows, DOS or Macintosh. A \$29.95 value.

Titles include *Using WordPerfect*, *Using Ami Pro*, *Using Windows* and more. Free book offer ends January 31, 1992.

RIGHTWRITER 4.0

BAE3368 RightWriter Windows Dual	.....	\$69.95
BAE3360 RightWriter PC Dual Media	.....	\$59.95
BAE3365 XENIX/UNIX	.....	\$199.00
BAE3366 Mac Version	.....	\$59.95
BAE3367 Network 5 Pack	.....	\$199.00

With This Mouse, You May Never Touch Your Keyboard Again.

It's a new generation of super-mice. So advanced, they're a revolutionary advancement in mouse technology. So high-quality, the competition pales in comparison. ProHance offers 3 incredible models to fit every need. With the keys you use most right on your mouse, you'll fly through tasks with blistering speed and efficiency.

Put your most-used keys literally at your fingertips, plus all 10 Function keys. I used to go back and forth between keyboard and mouse all the time. Now I do 90% of my work right from my fast, easy mouse. PgUp, PgDn, Home, End, Insert, Delete, Backspace, Enter and Escape are all right where I need them most. I work faster and I'm more relaxed with my smartly-designed ProMouse.

PowerMouse. It's Magic.

PowerMouse has all the features of ProMouse, plus the power of amazing macros assigned to buttons on your mouse. PowerMouse uses the same key for the same function — no matter what program you're in. Press the Copy button, whether you're in Windows, WordPerfect, 1-2-3 or a slew of others, and PowerMouse performs the copy. When you learn PowerMouse, you learn 20 programs at once!

1-2-3 users say PowerMouse is mandatory for serious spreadsheet use. I formatted an entire brochure with only my mouse.

If you have limited space, there's



PowerTrack, the trackball version of PowerMouse. Laptop users — PowerTrack is a godsend. I take my laptop to class and use PowerTrack like a calculator. With its full numeric keypad, it's ideal. Then I take it to the office and use it there too!

ProMouse, PowerMouse and PowerTrack are the most exciting things ever to happen to mice. From the silky smooth movements to the space-age technology, these unique devices let you work faster, easier, smarter. And those special command keys let you work having less to remember.

PROHANCE

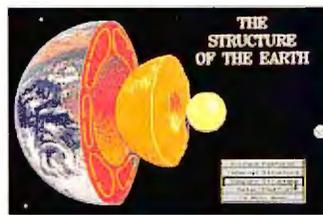
BAE4085 ProMouse	.....	\$69.95
BAE4087 PowerMouse/100	.....	\$129.95
BAE4086 PowerTrack	.....	\$129.95

The "Space-Atlas"

Orbits is a brilliantly interactive space simulator and comprehensive space atlas that brings the universe to your PC! Spectacular 3-D graphics demonstrate the operation of our solar system. Animated sequences show you the effects of gravity on various planets, the movement of the Sun and moon. Compare the planets' characteristics, structure, chemical makeup and more. Simulations of eclipses, nuclear processes of the Sun and the life of comets. View actual satellite photographs from NASA and the Jet Propulsion Laboratory, watch a spectacular presentation on the birth and death of the Sun. See the interior structures of the Sun and moon, create reports and comparisons on anything, and play a few rounds of Orbit-Trek, the built-in brain teaser. A great educational tool, Orbits is also an entertaining way to spend some time with your PC. It brings the stars, the planets and beyond — into focus.

Just wandering through this program is a joy. Orbits is packed with so many intriguing, colorful screens and great information that it's hard to stop. It has been meticulously researched, the graphics professionally prepared. More than an astronomy program, Orbits takes you to the wonders of the universe — and gives it an interesting spin! A great program for students — even smaller children.

Software Marketing Corp.



ORBITS

BAE4103-5 Orbits 5 1/4"	.....	\$59.95
BAE4103-3 Orbits 3 1/2"	.....	\$59.95

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

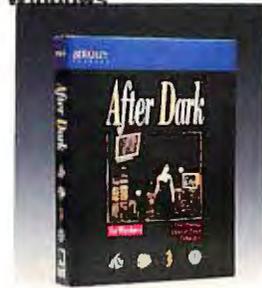
Fax: 305-444-5010

FREE SHIPPING

Circle 259 on reader service card

TIGER REQUEST LINE

After Dark for Windows

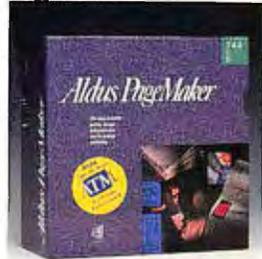


Save your screen from fatal burn-in with Windows' hottest screensaver. 30 stunning animations, sound effects, password protection and more. Easy and fun!
BAE Y1485 \$29.00

Norton Anti-Virus

Shut out deadly, spreading viruses with vital, full-time protection. Already infected? This is the remedy you need now! Trust the leader in PC know-how — Norton.
BAE Y3355 \$89.00

PageMaker 4.0



From a simple flyer to an entire book, the all new PageMaker 4.0 for Windows is state-of-the-art desktop publishing. New graphic tools, spell checker, effects and much more.
BAE Y1394 \$499.00

PC Tools 7.1



Recover lost data, back up hard disks, manage files, defragment hard disks (and double the speed). All this and more. If you own a PC, you must have PC Tools.
BAE Y1674 \$115.00

CorelDRAW! 2.0

Drawing and graphics on a professional level. Spectacular screens, superior prints, 150 fonts and 3500 clip-art images. We use it at Tiger. What else is there to say?
BAE Y1784 \$389.00

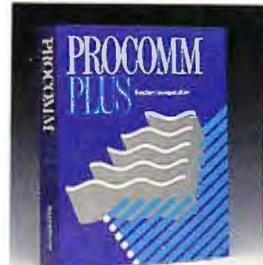
ACT! 2.01

Track contacts, customers and prospects — then watch your productivity soar. Full history, plans, schedules and more. Plus easily customizes to fit your business.
BAE Y1745 \$235.00

MS DOS 5.0

Update to the new DOS 5.0 for more memory, faster performance and much more. The best DOS ever! Trust your computer to the standard in the industry — Microsoft DOS.
BAE Y2905 \$89.00

Procomm Plus 2.0



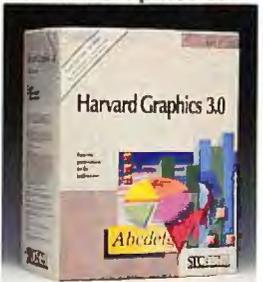
World's best-selling communication software. Includes the latest file transfer protocols, powerful script language, Bulletin Board operation, and lots of new features.
BAE Y1984 \$69.00

MS Project for Windows



Manage projects easily and get the job done right! Complete, detailed tracking, multiple views, full reporting, and much more.
BAE Y2824 \$449.00

Harvard Graphics 3.0



New Version 3.0! Business presentations with eye-grabbing visual impact. Novices and experts alike can quickly fashion vivid charts and stirring illustrations for every purpose.
BAE Y3254 \$425.00

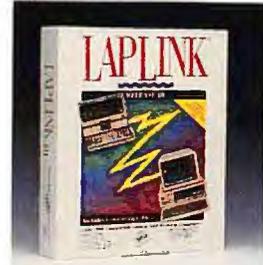
Norton Utilities 6.0

Protect and fine tune your computer with the PC authority. Recover from disk fatalities, defragment disks for more speed, look inside without touching a screw, plus much more.
BAE Y3344 \$119.00

Norton Backup for DOS and Windows

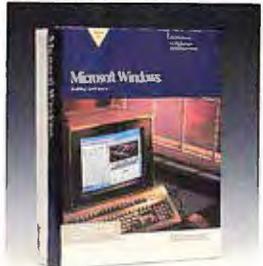
When it's time to back up, you need someone you can depend on. Trust the long-term leader in PCs — Norton technology. Super-fast, fully automatic, and easy to use.
BAE Y3354 \$89.00

LapLink III



Transfer files, directories, even entire hard disks between any two computers. Incredibly quick and simple. Custom cable makes it faster than any other product.
BAE Y3524 \$99.00

MS Windows 3.0



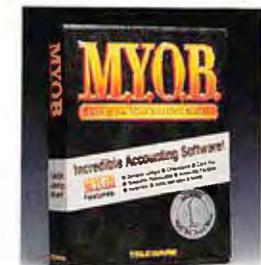
The industry predicts Windows will take over the PC world. Today's major software won't run without it. You need Windows first. Step up to the wonderful world of Windows today!
BAE Y2814 \$99.00

Zoom 9624 Fax/Modem



Slip this modern miracle into any PC and watch it turn into a super-fast 9600-baud fax machine plus a high-quality 2400-baud modem. Includes Procomm and 7-year warranty.
BAE Y4915 \$129.00

M.Y.O.B. for Windows



The easiest, most direct Mac accounting software comes to Windows! Winner of MacWorld's "World Class Award." Features G/L, A/R, A/P, Inventory and Check Reconciliation.
BAE Y6001 \$139.00

HiJaak 2.0



Capture and convert anything you see on the screen. Convert both bitmapped and vector based graphics quickly, easily, and most important — accurately.
BAE Y6003 \$99.00

Hardcard II XL50

50 megabytes of hard disk on a card! Slip it in and enjoy lightning-fast speed with acres of storage space. On-board IDE Controller has one cable for easy connection to your computer.
BAE Y6007 \$399.00

Hardcard II XL105

Same as the XL50, but with more than twice the room! 105 megabytes of hard disk storage with ultra-fast 9ms access time. That's 8 times faster than the first AT!
BAE Y6005 \$599.00

Norton Desktop for Windows



Enhance Windows with the Norton Desktop. Copy, move, view and delete with click and drag

ease. Includes Backup, UnErase, SuperFind Text, screen savers and more.
BAE Y6009 \$105.00

Ami Pro 2.0 Upgrade



The ultimate word processor for Windows. Desktop publishing power combined with word processing speed and ease-of-use. A perfect mate for Lotus 1-2-3 and Freelance Graphics.
BAE Y5291 \$99.00

MS Publisher for Windows

The fastest and easiest Windows' desktop publisher. Perfect for newsletters, flyers and promo. Clip art, powerful text and drawing tools, spell checker, and more.
BAE Y6017 \$139.00

MS Money for Windows

Track expenses, assets, credit cards and loans — any personal or business money transaction. Superb reports. Windows easy, Microsoft powerful. Imports and exports Quicken files.
BAE Y6013 \$49.00

MS Works for Windows

Every reason to own a computer in one package! Word processor (120,000-word spell checker and 190,000-word thesaurus), spreadsheet, database, drawing and charting. It's all here!
BAE Y6015 \$139.00

Adobe Type Set Packages

PostScript fonts from the #1 quality-leader in fonts — Adobe. Pre-selected and packaged to fit special purposes. For PCs and Macs. Includes free — Adobe Type Manager! Letters, Memos & Faxes, Invitations & Awards, Overheads & Slides, Spreadsheets & Graphics.
BAE Y6360 \$99.00

MS PowerPoint for Windows

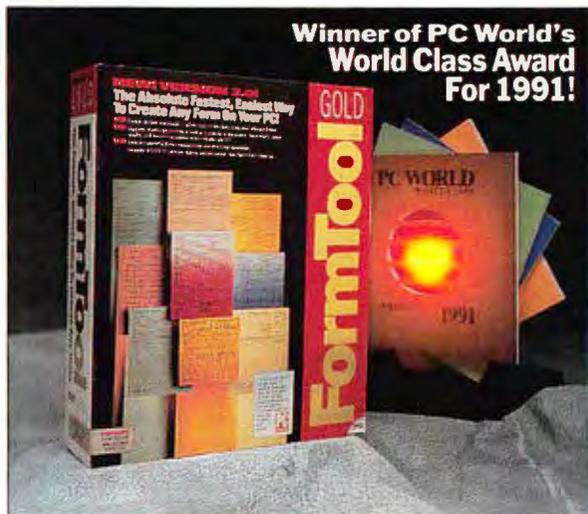
Powerful presentations, stirring slide shows, splendid overheads. Get your point across with the leading Windows' presentation package. A vital, easy-to-use tool for business.
BAE Y2834 \$329.00

Call to Order!
Over 11,000 items
in stock in our
warehouse.

The Best-Selling Forms Software in the World!

Just Sit Down and Create a Great Form...

It's easy to see why FormTool is the best-selling forms package in the world. It's the fastest, easiest way to create, edit, manage and print custom, professional forms for immediate information gathering.



The ability to quickly gather data and put it to work is critical to corporate information flow. FormTool's "Intelligent Line Drawing" and its hardware compatibility make it an indispensable tool for businesses of any size. That's why FormTool has found a

home in well over half of the Fortune 500 list, along with thousands of educational institutions, government agencies, hospitals and financial organizations around the world. They've discovered FormTool's productive power.

Unlike its competitors, FormTool doesn't require additional memory, a graphics card, color display, mouse or scanner. It runs beautifully on anything from an XT to a 486. FormTool now supports hundreds of dot-matrix, letter-quality, daisywheel, thermal as well as Hewlett-Packard printers, and new support for PostScript lasers.

Draw Forms Fast.

FormTool streamlines the PC's ability to draw forms. Lines of any weight, boxes of any size, grids of any complexity and more can be quickly drawn with just a few keystrokes. If a grid isn't quite right, one keystroke re-draws it to meet your exact specifications, then displays it on the screen with our WYSIWYG display. Zoom in to see a close-up of your form, then zoom out for the full page view. Quickly make any revisions, preview it again — then print it.

This preview capability combines the advantages of a graphics-based, on-screen display with text-based, lightning-fast processing times, making FormTool even

easier to use.

Instant Revisions.

FormTool's ability to make instant revisions to your forms gives you the flexibility to create exactly the proper form to meet the requirements of your

work flow. Ideal for users of any experience level.

Enter Text in Seconds.

To handle text, FormTool contains a forms-oriented word processor that allows you to move quickly through the form inserting captions, instructions, word-wrapped text and special symbols, and characters. FormTool will enter your text into position automatically.

An All New Forms Manager.

And FormTool Gold contains an all new Forms Manager that makes organizing, retrieving and archiving forms faster and more efficient.

Includes a built-in backup and restore, the ability to instantly view forms from a list on your screen and a new set of features that allow you to "move," "copy," or "delete" forms from the Forms Manager. FormTool's Forms Manager also includes hard disk directory support, allowing you to store forms anywhere — or you can assemble form sets in just seconds using the sleek new menu system.

BONUS!

FREE QUICK TEMPLATES
When you buy FormTool Gold!

Quick Template is the perfect replacement for your lost plastic templates. Pop up a list of every special key form from within FormTool Gold.

A \$49.95 value!



FormTool Gold

BAE1020 FormTool 3.0 5¼" & 3½" \$79.00
IBM PC, XT, AT, PS/2 or compatibles with 265K. Floppy or hard disk, supports all color or monochrome monitors with or without graphics cards and virtually all dot-matrix printers, daisywheel and laser printer.

Make Your PC Run up to 600% Faster!

Trapped deep within the architecture of your computer lies an enormous untapped potential for speed. Unfortunately, this vast resource has been neglected because no one could devise a way to unleash it. Until now. FAST! is the brilliant caching system that actually increases the speed of your computer by up to 600%! Simple to install, a snap to use, this software solution can make an XT with expanded memory outrun a full-blown 386! In tests, we loaded a 386 with FAST! and we almost blew the doors off the lab! (Keep reading for complete details on the head-to-head lab speed tests.)

How Can It Be Possible?

You're probably wondering exactly how this technology works. How can software have such a shattering impact on my computer? Although the authors are keeping the secret to themselves, they have shared information about where the slowdowns are within your system, where the speed is trapped and what has to be done to harness it.

They do tell us specifically, that the biggest system slowdown for your system is waiting for disk reads. When you use an application, you use it in "chunks" of various sizes, depending on the functions you are performing. Sure, you load it all at once, but it's used in bits and pieces. Your system must read back and forth, searching for these chunks of programs as they are needed by the application. Switch to another function, and the system must scramble again to find the required chunks.

A Perfectly Logical Solution...

One of the keys to the FAST! design is the addition of "intuitive logic" to the technique of caching, so your system actually anticipates what your CPU will be seeking and reads the information directly from the hard disk (or floppy) into a special buffer created within your RAM. This information is, in reality, re-

trieved before the system asks it!

As a result, your CPU spends no time waiting for disk reads, so processing can be done as fast as the system is capable — faster than you've ever seen it! The more disk-intensive the application is, the more dramatic the increase in speed can be achieved using FAST! Database, spreadsheet and complex CAD systems, word processing, data transfer and more will achieve maximum response with FAST!

FAST! is also good for your system. By reducing the chaotic searches for data on your hard disk, it actually extends its life, reducing the damaging effects of constant wear. It's good for your software applications because they'll run leaner and faster, so you'll be more productive.

On a standard data transfer performance test, FAST! is 18 times faster than a standard AT — and 5 times faster than the leading competitor. In fact, an IBM XT with FAST! is faster than a Compaq DeskPro 386!

Don't Buy More Equipment!

You could spend thousands trying to achieve the speed required for truly efficient computing. Items like high-speed drives, turbo boards — even complete system upgrades try to overcome your system's inherent slowdown — waiting for disk reads.

What FAST! Can Do for a 386...

FAST! will deliver spectacular results on your IBM PC, XT, AT and PS/2, but imagine how much faster the "new generation" of ultra high-speed processing technology like the Compaq 386 or Intel's 386

Above Board will run using FAST! — they instantly leap into a new computing class!

FAST! Under Windows 3.0!

Charles Berman, author of The Windows 3.0 Comparison, wrote "One solution (to the speed problem) is to replace Windows' disk cache, the SMARTDRVSYS, with another cache. One such program, FAST!, has made my recent Windows life a lot easier. FAST! makes everything appear faster."

On a standard Drive Evaluation Comparison test, FAST! increased performance over 1700% — and 550% over Windows' caching software!

Run your word processor, database, spreadsheet — faster than you thought. Your PC was designed to run "fast," but DOS and your hard disk combine to slow your computer down — often, to a crawl. Don't buy hardware — just install FAST!

New Version 4.0!

SAVE \$20!



FAST!

BAE3460-5 FAST! 5¼" \$79.95
BAE3460-3 FAST! 3½" \$79.95
FAST! will run on the IBM PC, XT, AT, PS/2 and compatibles with 128K RAM and DOS 2.1 or greater. Supports fixed disk systems, and supports conventional, expanded or extended memory.

TIGERSOFTWARE

To Order: **1-800-888-4437**

Int'l Orders: 305-443-8212

Fax: 305-444-5010

FREE SHIPPING

Circle 259 on reader service card

An Underground Revolution In Digital Color Displays.

The NEC Multisync 2A.

One of the world's most popular monitors, capable of uncompromised VGA display as well as SuperVGA — it's two monitors in one! The color is magnificent, thanks to the 2A's analog input signal which allows an unlimited palette of colors. The resolution is crisp (800 dots by 600 lines), and it's a great way to move from VGA to SuperVGA (as our technicians say "If you ain't seen SuperVGA, you ain't seen color!").

The NEC Multisync 3FGx.

The designers and engineers went crazy on this one, packing unparalleled features and performance into this amazing new monitor. Like the new NEC FullScan capabilities, allowing you to see up to 36% more active screen display — without any distortion. Its 15" screen is flat — perfectly flat — and provides the highest refresh rate among its so-called competitors. That means crisper images, brighter colors, richer tones and more contrast.

But the MultiSync 3FGx isn't just another pretty face — it's got a great body, too. The NEC ErgoDesign specialists have trimmed the MultiSync 3FGx with a variety of enhancements in comfort and safety. The antistatic screen eliminates dust attraction and static shock. The up-front user controls are solid, and easier to reach and use, the tilt/swivel base offers unlimited adjustment for more comfortable viewing. And (the revolution continues...) the 3FGx features NEC's Reduced Magnetic Field technology which meets stringent Swedish MPRII standards for lower FLF and VLF emissions.

The NEC Multisync 4FG.

The 4FG revolutionizes monitors in one very important area: color accuracy. This new standard in video excellence is based on the concept of multiple-frequency engineering. And only NEC can do it. The award-winning 4FG is a 15" flat-screen, digitally controlled monitor that features AccuColor. This rev-



olution allows you to adjust colors to your preferences, or to match your printer's capabilities — even match Pantone and Trumatch colors! Like the 3FGx, the 4FG provides crisp images — 36% larger! The Invar Shadow Mask (it's very technical) provides displays that are 20% brighter.

Another innovation: The MultiSync 4FG monitor's microprocessor-based memory and digital controls provide automatic sizing and centering of screen images for preset and custom graphics modes. Perfect for Windows and desktop publishing.

The Boss — The NEC Multisync 5D.

The MultiSync 5D has a long list of specifications, capabilities and features. It has a slew of technical innovations that set it apart from any other color display in the world. But to see what it's really all about, just look at it. An explosion of color! Blistering speed! Crisp reproduction with NO blurring and NO distort-

tion. The 5D is the culmination of every NEC breakthrough — except bigger! A massive 20" screen, compatible with everything from VGA to incredible 1280 by 1024 graphics, DOS and Macintosh. Perfect for Windows, high-end graphics, CAD/CAM and sophisticated desktop publishing applications. The etch screen technology delivers maximum contrast, minimum glare and the Dynamic Beam Focus allows for the sharpest corners you've ever seen in a display—edge to edge.

A Word About Glare Protection...

Let's face it. Your office isn't a Hollywood soundstage. It doesn't have a lighting director who designs the optimum lighting for your work area. So you invest in a high-quality color monitor and then struggle with the invisible color killer: glare.

The NEC MultiSync Monitor Lens has been designed to eliminate glare with the most technologically advanced glare protection device ever produced. The MultiSync Monitor Lens reduces glare (by up to 80%) and increases contrast — without loss of focus or clarity! No other glare protection can match it. The MultiSync Monitor Lens utilizes OCLI High-Efficiency Anti-Reflection coating. It's the same anti-glare technology used by NASA on the windows of all manned spacecraft, and by the US Navy on submarine periscopes.

BUY A MULTISYNC 5D — GET A FREE MARSTEK COLOR SCANNER!

NEC MONITORS

BAE8512 NEC MultiSync 2A 14"	\$395.00
BAE8513 NEC MultiSync 3FGx 15"	\$660.00
BAE8514 NEC MultiSync 4FG 15"	\$780.00
BAE8515 NEC MultiSync 5D 20"	\$2695.00

Sorry free shipping is not included, and no returns on these items.

From Guttenberg To The Postscript Laser.

NEC has built two new laser printers that stand triumphantly in the long line of technical advances since Guttenberg. PostScript and NEC quality starts with the Silentwriter Series Model 90 Laser printer, complete with 35 scalable fonts, 6 pages per minute, NEC's advanced PostScript controller technology and LaserJet III emulation. It's a powerhouse with a tiny pricetag. The NEC Silentwriter Model 90 would astound the earliest printers and publishers. It produces crisp, rich type and images, 300 by 300 dpi for legal/letter paper, transparencies, labels and envelopes. The single-snap cartridge is perfect for over 6,000 pages. Its 2 Mb of RAM can handle graphics-intensive tasks. And with NEC, you'll be sure that the Model 90 is compatible. They've exhaustively engineered the most flexible printing technology ever.

Silentwriter Model 90



The built-in RISC processor delivers high-quality throughput up to six times faster than conventional PostScript printers, and up to three times faster than anyone's previous high performance designs.

There are no limitations here. The Model 90 allows you to use a vast range of typestyles and sizes, along with a myriad of graphic possibilities. You can print graphics with clean, black reproduction; type

will look great, even at great speeds. The resident typefaces include Helvetica, Times, ITC Avant Garde, New Century Schoolbook, ITC Bockman, Palatino and Zapf Chancery.

NEC Colormate PS.

I've saved the most spectacular for last. The NEC Colormate PS. It's color PostScript at its best. You will never be satisfied with anything less after you print your first full-color page. Your competitor's presentation will pale by comparison next to your color work. Fast, timely color sheets and promotional materials can be produced in just a few minutes with a Colormate PS. Rich, vibrant color, approved by Pantone.

The Colormate PS's extensive support for PostScript technology assures you that it will print perfectly with popular presentation packages such as Harvard Graphics, Quattro Pro, Lotus Freelance, Microsoft PowerPoint, Adobe Illustrator, Micrografx Designer. Choose from 17 resident, scalable fonts and a whopping 4Mb of memory. It's a thrill to pull up one of your old black and white screens, colorize it, and print it in color on your new Colormate PS. That thrill will come quickly — the Colormate PS is lightning fast. It sports the powerful Motorola 68020 processor, the best in the business. The Colormate PS also includes a standard Centronics parallel, AppleTalk and RS232C/422 interfaces for simple connection to any system. A built-in SCSI interface allows hookup of a hard disk drive for font caching and fast access to permanently stored fonts and forms overlays.



Incredible New Lasers!
Color And B&W Postscript

The high tech color cartridges can be replaced in seconds!

NEC PRINTERS

BAE8520 NEC Silentwriter Model 90 ...	\$1695.00
BAE8525 NEC Colormate PS w/Free Marstek Color Hand Scanner ..	\$4999.95

Sorry, free shipping is not included, and no returns on these items.

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

Fax: 305-444-5010

FREE SHIPPING

Circle 259 on reader service card

THE ALL-NEW CD GALLERY!

The Complete, Interactive CD-ROM Package!

This one box is your ticket to the incredible world of CD-ROM. Everything you need to get started is inside — including seven of the hottest CD-ROM software titles in the industry. Your Koss SA/30 amplified stereo speakers pump out the sound as you explore full-interactive, multimedia computing. This is a complete package, perfect for home and business.

Hundreds of thousands of diskettes' worth of information, fun and productivity are packed onto just 7 speedy CD-ROMs! They include the amazing, full-length encyclopedia, complete with enhanced sound. There's a comprehensive world atlas, presented in full-color, the incredible Battle Chess, a Time Table of History, The TIME Almanac on CD, Great Cities of The World and Mammals, from the pages of National Geographic. Without a doubt, it's the perfect introduction to CD-ROM, with everything included, nothing else to buy.

I personally found Great Cities of The World fascinating; it's packed with information on hotels in Paris, entertainment in New York, bull fights in Madrid and shopping in London.

The New Grolier Electronic Encyclopedia covers hundreds of topics in great detail. Many entries contain enhanced sound and vibrant color. It is the premier CD-ROM encyclopedia. 33,000 articles, 1,500 color graphics make learning exciting.

Switch to National Geographic's Mammals and see animated sequences and full-color photos of everything from an aardvark to a zebra. A magnificent CD-ROM title that allows you to see and hear animals in their natural habitat.

Need some hard facts about the economy? Sports? Politics? Open the TIME Almanac and get the an-

swers from one of the most respected sources — TIME Magazine.

Or, slip in the Time Table of History: Science and Innovations. More than 6,000 interrelated entries show the chronology of historical, scientific and technological events from the beginning of time to the present day.

From there, explore the earth's geography with The Toolworks World Atlas. This package contains the most extensive collection of full-color maps you'll find anywhere. There's also plenty of data about each country and region: rainfall, population, industry and more.

For a little fun, try Battle Chess. It's chess as you've only imagined it — an entire medieval world is at war!

Amplified, Stereo Speakers!

With the free stereo headphones and a pair of Koss SA/30 amplified stereo speakers, you'll actually hear the sounds of the world when you slip in a CD — whether on CD Gallery software titles or conventional audio CDs.



Order Today!
Limited Time Offer.

Offer expires January 31, 1992

Sorry, free shipping not included.

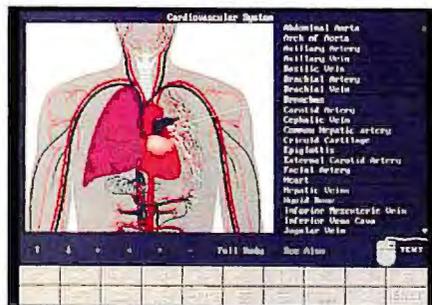
NEC CD GALLERY

BAE8372 CD Gallery w/CDR-72 \$599.00
FREE Clip Art 3-D with CDR-72 Gallery Pack!
BAE8336 CD Gallery w/CDR-36 \$599.00
Specify AT/AT, PS/2, or NEC Prospeed or parallel SCSI interface kit.

A Guided Tour of the Human Body.

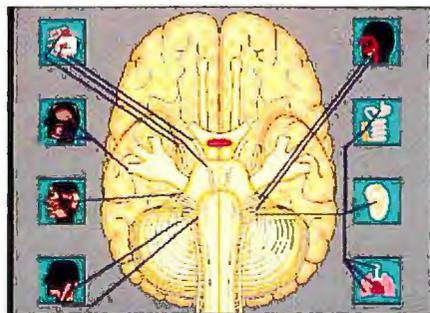
The human body. A perfect machine. It grows and develops, protects and heals itself and is designed to last for decades. Now the wonder of the body is combined with the power of the PC to produce a fascinating journey into its structure and functions. You'll see detailed, full-color graphics of the entire human body and a comprehensive database of facts, descriptions and explanations. Do you know the exact function of the hypothalamus? How about the kidneys? How do bruises heal? How does the brain work, and where is your duodenum? Experience a world of knowledge and beauty that provides profound insight into life itself. It's called BODYWORKS, and it could be the most interesting software program you'll ever own — perfect for students, artists and hobbyists.

ment, far beyond the capabilities of even the most sophisticated camera. Move to the nervous system, and see how the signals sent to the brain can detect even the slightest touch to the skin. Learn about how your nervous system allows the brain to instruct the body to perform complex movements — like walking! Then select the digestive system — the body's systematic breaking down of food. Its incredible ability to process and extract nutrients. From the mouth to the intestines, BODYWORKS shows you in great detail how your body nourishes itself, how it accumulates fatty tissue (and how it uses fat).



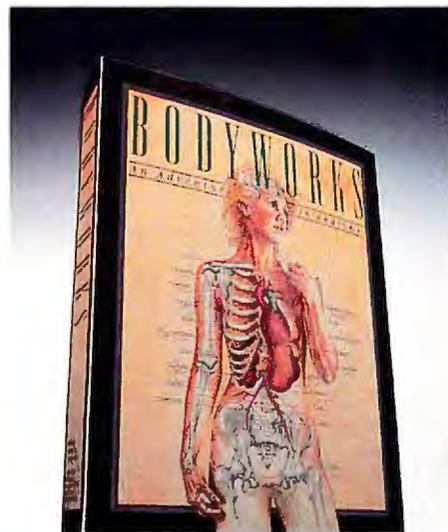
Explore the cardiovascular system...

You begin by exploring the major body systems: select the skeletal system and view the bones and how they work, the joints, mechanics of the ball and socket. Select the muscular system and see the tremendously resilient human muscle, capable of developing enormous strength. Discover how the delicate muscles in the eye allow instant focusing and move-



...Or discover the workings of the brain.

There are complete sections on lymphatic, endocrine and cardiovascular systems. Explore the most amazing four-square-inches of tissue man has ever seen — the human heart. How it feeds the body with a constant supply of necessary chemicals to sustain life. You'll learn how the human heart can be damaged, and exactly what happens when someone suffers a heart attack. When your child asks "Where do babies come from?" you can simply select the section on the human reproductive system for a clinical



explanation of the process.

You'll see all of the organs and tissues of the body, each described in exhaustive detail. Colorful graphic screens also provide information on sports injuries, first-aid advice on illness, insect and animal bites, along with other topics. This program is simple to use — just click or select any organ or system for instant retrieval of BODYWORKS' thousands of facts. A must for the home computer.

Software Marketing Corp.

BODYWORKS

BAE4101-5 BODYWORKS 5 1/4" \$79.95
BAE4101-3 BODYWORKS 3 1/2" \$79.95

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

Fax: 305-444-5010

FREE  SHIPPING

Circle 259 on reader service card

The Intelligent Road Atlas For Your PC!

Planning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, prettiest or most convenient route — with hundreds of up-to-date, color maps right on your computer screen.

Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AUTOMAP where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive. It's fast, fun and informative.

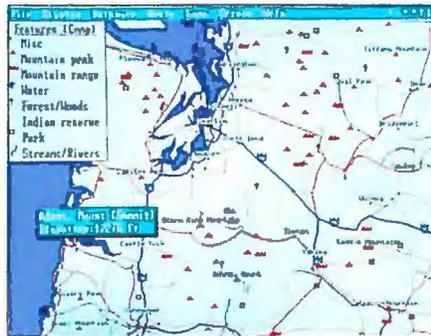


Select your starting point, end destination, and areas to visit and let AUTOMAP create a detailed map of your next trip!

AUTOMAP's powerful intelligence takes over from there. Instantly, it searches its massive database of over 300,000 miles of roads and highways for the best route to meet your requirements. It even gives you a list of alternative routes if you decide you'd like to wander a bit.

AUTOMAP also gives you a list of "places" from over 50,000 in its database. It's like having a travel guide pointing out the very best there is to see and do. If you're a business traveller, you won't have to

worry about being unfamiliar with new territories. Just a quick session with AUTOMAP and you'll not only know exactly where you're going, you'll be on the very best road to get there.



AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

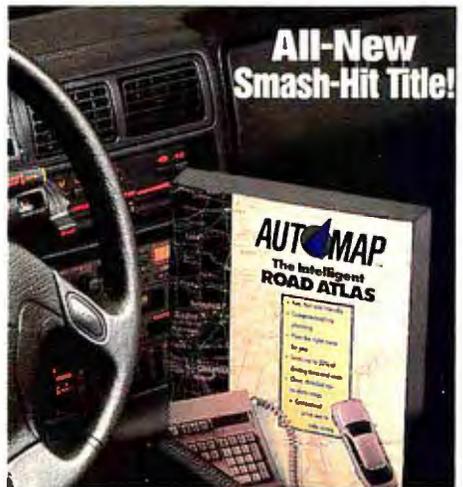
AUTOMAP allows you to view your entire journey as a full color map and gives you all the details on mileage. Zoom out to see the entire region, or zoom in to see every detail.

AUTOMAP's driving instructions list all the roads you'll be traveling, exactly how far to go, exactly where to turn and even the signs to look for! These maps and directions can be viewed on your screen and printed out to refer to as you need them.

Pressed for time? Need a hotel? AUTOMAP provides you with travel times, mileage, and information on hotels and attractions. It also provides information on many cities and precise directions (including landmarks) for the most scenic drives in and out of each of them. What a great vacation planner!

Government Highway Data.

AUTOMAP uses data with the renowned accu-



racy of government sources. It has been designed to remain accurate with constant updates of new maps and details as they become available. AUTOMAP has proven itself with the most demanding businesspeople and vacationers. It's helpful and convenient, but more importantly, AUTOMAP will save time, money and frustration. In fact, surveys show that AUTOMAP can easily save up to 20% in driving time and related costs.

GET FREE U.S. ATLAS WITH THE PURCHASE OF AUTOMAP.

AUTOMAP

BAE4098-5 AUTOMAP 5 1/2"	\$79.95
BAE4098-3 AUTOMAP 3 1/2"	\$79.95

Hercules, CGA, EGA, VGA, 512K RAM, hard disk, mouse recommended.

Don't Take Chances! Order Memory Direct From Tiger.

Add Memory To PCs, Macs, Printers — Enjoy Faster Computing, Load Bigger Files, Print Full Page Graphics.

If you use a computer, you know the benefit of more memory. A few more megabytes of memory can speed up everything you do many times over. Without memory you attempt to run a program or load a file only to see "Not Enough Memory". With memory you not only load it, you see it snap and pop onscreen with lightning speed.



It used to be you had to haul your computer to a shop to add more memory. But computer users have become more knowledgeable today. Why should you be without your system for a few days while it's in the shop? Why should you waste your time to deliver it and pick it up?

Top-Quality Memory.

We wanted the best memory available to offer our Tiger customers. And we're proud to present the highest quality, most reliable memory available. Offered directly from the manufacturer, 50/50 Micro Electronics, you get top quality for practically wholesale prices. 50/50 Micro Electronics has been supplying the industrial market, and now they've decided to branch out directly. And we're glad they did. 50/50 Micro Electronics even backs up all their products with a Lifetime Guarantee.

Can You Do It?

Think adding memory is over your head? It's not so hard really. Your computer manual will tell you what kind of memory chips you need. And it will even show you a picture of where to plug them in. And if you don't have a manual, just call Tiger's friendly sales staff. They'll figure it all out and get you going.

PCs and Macs.

For PCs and all compatibles, we offer three sizes of SIMMs, which stands for Single Inline Memory Module.

A SIMM is a small board with memory chips on it. You simply plug the board inside your computer. Each SIMM comes in either 256KB, 1MB, or 4MB size, to fit the right size your computer needs.

And these chips are fast! Most others sell 100ns (nano-second) chips. But our 256KB SIMM has 80ns chips, and the 1MB and 4MB SIMMs have 70ns chips. That's fast! You'll get quicker calculations and eye-popping graphics.

For the Apple Macintosh, SIMMs come in two sizes: 1MB and 4MB. With more megabytes of fast 80ns memory, your Mac will load more desktop accessories, run bigger applications, and make them come alive with blistering speed.

Laser Printers.

Ever tried to print a full page of graphics on your stock laser printer? If so, all you ended up with is a half-drawn image. The same scenario happens with word processors when you use too many fonts and graphics. Stock laser printers just don't have enough memory to complete a full page.

But the solution is simple. A memory card you

slip into the side upgrades your printer for full-page graphics and all the fonts you could ever want. There are two sizes: 2MB and 4MB of memory. Which one you want depends on what you print, whether the printer is shared by others, etc. Call Tiger's knowledgeable staff for help with your decision and with all your other computing needs.



MICRO ELECTRONICS, INC.



MEMORY

BAE 6420 256x9 80 ns SIMM for PC	\$24.95
BAE 6421 1x9 70 ns SIMM for PC	\$78.95
BAE 6422 4x9 70 ns SIMM for PC	\$329.95
BAE 6423 1x8 80 ns SIMM for MAC	\$69.95
BAE 6424 4x8 80 ns SIMM for MAC	\$269.95
BAE 6425 Hewlett Packard IIP, III, IIID 2 MB	\$195.00
BAE 6426 Hewlett Packard IIP, III, IIID 4 MB	\$329.00

TIGERSOFTWARE

To Order: 1-800-888-4437

Int'l Orders: 305-443-8212

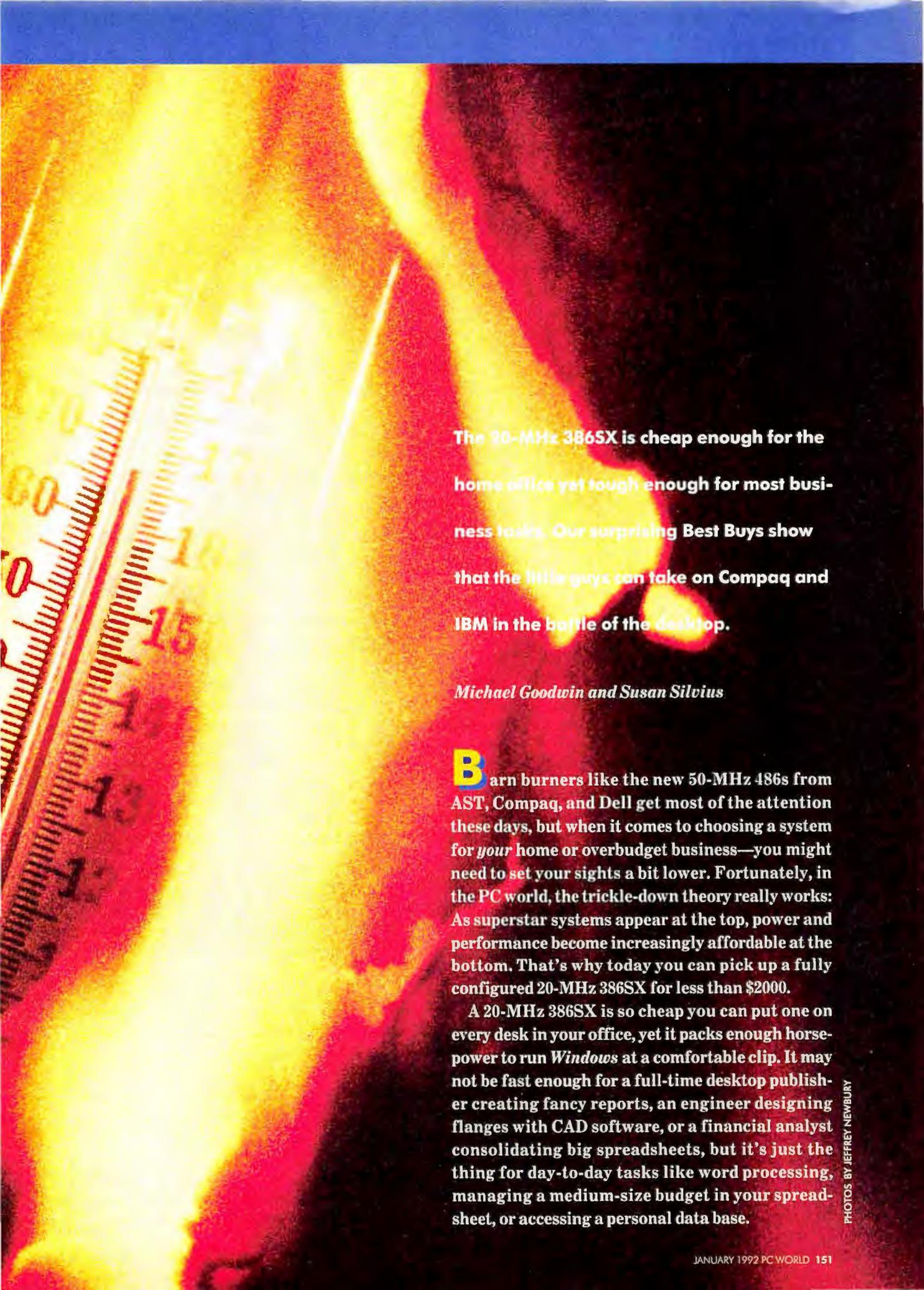
Fax: 305-444-5010

FREE  SHIPPING

Circle 259 on reader service card

20-MHz SXs: CLONES TURN UP THE HEAT





The 20-MHz 386SX is cheap enough for the home office yet tough enough for most business tasks. Our surprising Best Buys show that the little guys can take on Compaq and IBM in the battle of the desktop.

Michael Goodwin and Susan Silvius

Barn burners like the new 50-MHz 486s from AST, Compaq, and Dell get most of the attention these days, but when it comes to choosing a system for *your* home or overbudget business—you might need to set your sights a bit lower. Fortunately, in the PC world, the trickle-down theory really works: As superstar systems appear at the top, power and performance become increasingly affordable at the bottom. That's why today you can pick up a fully configured 20-MHz 386SX for less than \$2000.

A 20-MHz 386SX is so cheap you can put one on every desk in your office, yet it packs enough horsepower to run *Windows* at a comfortable clip. It may not be fast enough for a full-time desktop publisher creating fancy reports, an engineer designing flanges with CAD software, or a financial analyst consolidating big spreadsheets, but it's just the thing for day-to-day tasks like word processing, managing a medium-size budget in your spreadsheet, or accessing a personal data base.

Down here in the 20-MHz trenches, you won't get the best deals buying from the big-time vendors you see on TV. A number of relatively small, low-profile manufacturers have evolved, matured, and in the process scouted out a winning formula. Not only do they offer the rock-bottom prices you'd expect from a clone company, but they also give you fast performance, sound design and construction, and in many cases, surprisingly strong service and technical support.

Of course, not every clone is a winner, and several high-profile companies boast fine machines too. To find the very best 20-MHz SXs, we cast our net wide and tested 25 systems. Our Best Buys come from three clone companies: Eltech, Gateway 2000, and Micro Express. Aside from providing fast, low-cost personal computers, these upstarts deliver solid reliability and top-notch service and support that surpasses the likes of Compaq and IBM. With class acts like these, the term "clone" ceases to be a put-down.

Under the Bargain Basement

When calculating the overall value of these systems, we take into account a variety of buying issues ranging from support policies to expandability (in the photos accompanying each review, you'll see each system's overall value star rating displayed on its screen). All else being equal, however, most 20-MHz SX purchasing decisions come down to a basic price/performance comparison (see "Price/Performance: The Winning Combination" for a scatter plot showing which systems offer the best balance between the two).

Cost is the big news here: Street prices have dropped 18 percent since our June 1991 review ("People's Choice: 20-MHz 386SXs"). As we go to press, the basic buy-in for a full-featured 386SX/20 system hovers around \$1800, including 4MB of RAM, a 105MB hard disk, and a color super-VGA display. Naturally, you can spend more if you load up with accessories or

Buying Smart: Sniffing Out SX Bargains

Even though you're saving a bundle on your new 386SX/20, you needn't settle for less than full functionality. You should insist on a system that runs all your software quickly and reliably and comes with plenty of slots and drive bays. A generous service-and-support package is another essential.



PERFORMANCE

Performance testing produces a series of numbers, only some of which will have relevance to you. If you plan to buy a different hard disk from the ones tested here, your best indicators of inherent speed are the processor-intensive 1-2-3 benchmarks, which we weight higher when calculating our performance ratings. Most of the fastest systems here, such as the overall speed champ, AST's Premium II, offer a memory cache. But unlike with a 25-MHz or 33-MHz 386, where a cache almost always means top performance, caching is not a definitive indication of speed on a 20-MHz SX—for example, the cache-

less HP Vectra 386/20N is one of the fastest systems in the roundup, even in the 1-2-3 tests, where a cache would do the most good.



PRICE

Bargains have never been so numerous. We base our cost comparisons on street price. So you can compare the figures intelligently, we price every system in the same standard configuration: 4MB to 5MB RAM, 100MB to 200MB hard disk, floppy drive, mouse, VGA, color VGA monitor, and DOS (a few exceptions are noted in the text). If you can get along with 2MB of RAM and a 60MB hard disk, you can calculate a rough price by deducting \$300 from the street price. For every machine except those sold directly, we call PC dealers in major cities across the country and get multiple price quotes. Results for each system are then averaged. The low-ball boss in this roundup is Fast Micro's \$1738 FastData 386/SX-20c.

buy from a bigger-name vendor, but you can also drop below \$1500 if you order 2MB of RAM and a 60MB disk.

As for performance, our benchmarks can help you decide, but there's nothing like a hands-on test flight with your favorite program to see if a system is right for you. If you currently use a 286, or a 16-MHz 386SX or DX, you'll see the improvement in a flash using the same applications. A 386SX will also deliver the benefits of full-blown Windows enhanced-mode multitasking, but don't expect to switch between programs quickly. If that's what you're after, a 25- or 33-MHz 386DX would be a better choice.

Judging by this roundup, the clone is alive and well: Good deals are springing up all over the map. Of course, you may not get that warm fuzzy feeling you'd get from a Compaq or IBM—even in hard times, these giants aren't going to disappear overnight. But if you choose carefully, there's no reason not to buy a low-priced winner.

Michael Goodwin is an associate editor and Susan Silvius the assistant technical editor for PC World.

For more information about all products in this article, circle reader service no. 904.



SERVICE AND SUPPORT

With many of these machines destined for small offices that have no MIS staff, good service and support is critical. All these systems offer at least 12 months of warranty—but choose carefully if you want free (or low-cost) on-site service. The alternative is shipping the system back to the factory or dealer. Companies take two basic approaches to phone support: Some offer direct support, others expect their dealers to provide it. We evaluate central support by calling each number three times and scoring answers for accuracy and responsiveness, with extra credit for long hours, fax lines, and BBS's. We rate dealer support by tallying the requirements vendors impose on dealers for training, inventory, and dedicated support staff; we give extra credit when vendors operate their own stores. Top service-and-support honors in this roundup go to Blackship.



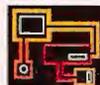
DESIGN AND CONSTRUCTION

When you use a system every day, design flaws can slow you down. You should have a tilt-and-swivel monitor, a reset button for when <Ctrl>-<Alt>-<Delete> doesn't work, and a compact footprint to save desk space. You'll also want switchless setup for easy configuration and an easy-open case. Most important, you deserve a machine that works reliably with all popular hardware and software: We run these systems through tough compatibility tests. AST's Premium II took the top design spot.



FAST-RAM CAPACITY

Windows demands large amounts of RAM—and you'll need fast RAM (memory installed on the motherboard or on a special 32-bit memory board) to get top performance. While 8MB may sound like plenty of headroom now, if you want to plan for the future, look for a system that lets you install at least 16MB of fast RAM.



EXPANDABILITY

You always need more drive bays and slots than you think. If you're going to use your PC as a stand-alone unit, we recommend four bays—enough to hold two floppy drives (ideally a 3½-inch and a 5¼-inch unit), one hard drive, and a tape backup. And with every year bringing more expansion board additions (tape backup and CD ROM controllers, internal modems and fax boards, scanners, sound boards, bus mice), look for at least four free slots. If you'll be networking your PC (and sharing the server's big disk), you can probably get away with three bays and three free slots. One more thing: While a CPU upgrade path is uncommon in this price range and platform, three of these systems (ALR, AST, and NCR) do let you upgrade your CPU, which means your new system can remain useful over time. Blackship, Eltech, Fast Micro, Swan, and Zeos tie for top expandability.

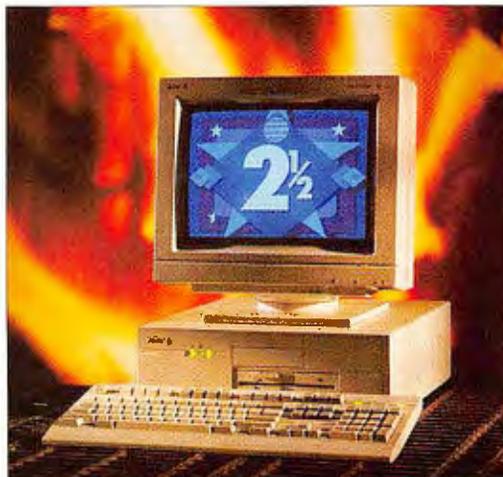
Acer 1120SX

PROS: 24-month warranty, switchless setup

CONS: Expensive, no requirement for trained, dedicated support staff

At first glance Acer's 1120SX looks like a winner: From its roomy, well-designed case to its front-mounted power button, this speedy SX appears well worth the rather steep \$2622 price. Another nice touch is switchless setup: If you add memory or install a new peripheral, you won't go groping for DIP switches.

Performance was respectable overall, but the lack of a memory cache caused it to score poorly on the processing-intensive 1-2-3 test. More disturbing, Acer earned only a fair service and support rating. The company offers no direct support line so you'll have to go through your dealer, and Acer does not require its dealers to maintain a trained, dedicated support staff. So if you buy this well-made model, make sure your dealer can back you up with support. (Acer released a new CPU-upgradable 386SX at press time. See the preview in this issue.)



The Acer 1120SX is well constructed, but a high price and dealer-only support work against it.

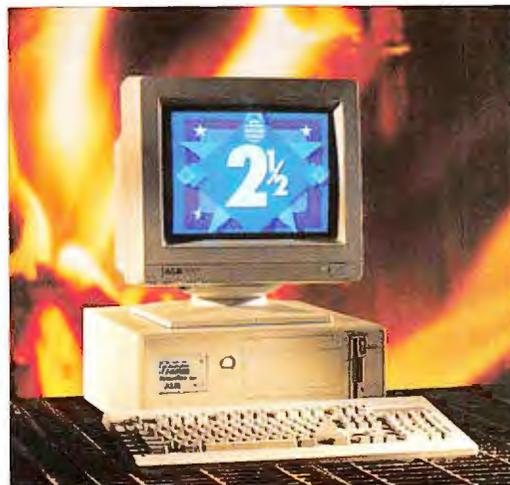
ALR PowerFlex 20SX

PROS: Upgradable CPU, solid service and support

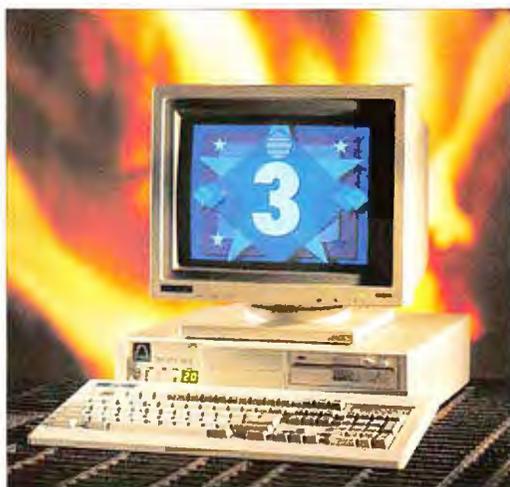
CONS: 5MB RAM ceiling, limited to 80MB hard drive, slow 1-2-3 performance

ALR's \$2353 PowerFlex 20SX is one of only three systems in this roundup that let you upgrade your CPU. You can plug in a 486SX/20 module (\$895) or a 486DX/25 (\$1695). But memory access in the upgraded ALR is still 16 bit, so performance—not terribly impressive with this system—may not improve as much as you hope. In other ways, this system is ill prepared for the future. If you want a disk larger than 80MB, you'll have to buy it from a third party and install it yourself. Worse, the system's 5MB fast-RAM ceiling ties for lowest in the roundup, so you may not be able to run future applications at top speed.

Technical support is very good, and the documentation is excellent. With its robust case and CPU upgrade path, this system is worth considering—but with its slow scores on processor-intensive tests and 5MB fast-RAM limit, you're better off shopping around.



Think you might move up to a 486? You'll love the PowerFlex's CPU upgrade path but not the low 5MB fast-RAM limit.



For \$2751 you could buy a 486SX instead, but the Arche Triumph makes sense as a fast Windows workstation.

Arche Triumph 386SX-20

PROS: Very fast Windows performance, nice keyboard, strong support package

CONS: Expensive

The Arche Triumph 386SX-20 is a solid machine that boasts strong performance—and for a steep \$2751, it better. The Triumph did particularly well on the *Windows* benchmarks, where it ranked within seconds of top place. You get *Windows* as part of the package, and a high-quality keyboard and adjustable monitor stand make this a comfortable workstation with good ergonomics.

You get a reassuring 24-month warranty, and Arche's service and support policies are among the best. The quality of support was less inspiring, however—some advice was too vague to be useful. Thanks to the unit's high-quality construction, however, you may never need service or support. The keyboard was particularly outstanding. The Triumph 386SX-20 may not be cheap, but it's still a good value, especially for *Windows* users.

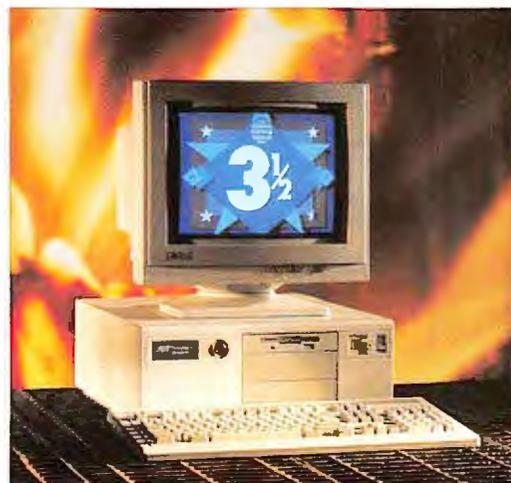
AST Premium II 386SX/20

PROS: Fastest system tested, best CPU upgrade option, huge fast-RAM capacity

CONS: Pricey

If you want to work fast today and even faster tomorrow, you'll love the AST Premium II 386SX/20. It delivered the best overall performance scores in the roundup and provides a top-flight upgrade path. Unlike the other upgradable systems reviewed, the Premium II's upgrade board carries up to 16MB of fast, on-board, 32-bit RAM, so your system memory will be every bit as fast as the speedier CPU you're installing. You can move up to a 33-MHz 386 (\$1545), a 20-MHz 486SX (\$1595), or a 33-MHz 486DX (\$2595). However, considering that the unit costs \$2532 to start with, these upgrades are not cheap. You can buy AST's Premium II 486SX/20 for \$3841—around \$300 less.

The easy-open case provides lots of room to grow, and you'll find front-mounted controls. On-site service is standard; tech support works on weekends, but with speed like this, chances are you won't.



You can't find a faster 386SX than the AST, and when you're ready to really rock and roll, you can turn it into a 486.

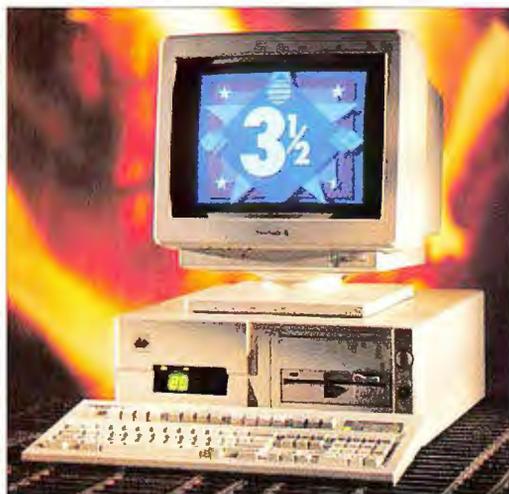
Blackship BLK 386SX/20

PROS: Low price, excellent performance, fine service and support

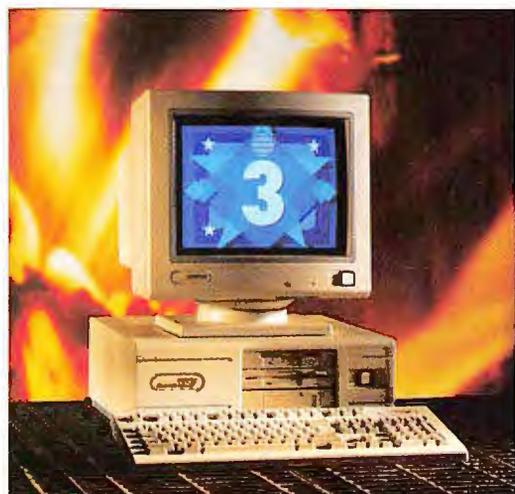
CONS: 8MB fast-RAM limit, flimsy keyboard

Blackship's BLK 386SX/20 is a mail-order steal. For only \$1860, you get speed, shipshape construction, and plenty of slots and bays. You say you want more? Add on-site service, 48-hour turnaround on repairs, and a toll-free tech support line that answered quickly and accurately every time we called. In fact, Blackship's box comes within a hair of a Best Buy—only its low 8MB fast-RAM ceiling and a flimsy keyboard hold it back. (Of course, it's worth remembering that you can buy an excellent third-party keyboard for around \$100.)

This system's complement of six slots and five drive bays is roomy to begin with, but if you want more, say to set up the system as a fax or modem gateway for your network, Blackship will sell you the BLK 386SX/20 in a tower case. Whether you're considering the desktop or tower model, this low-priced speedster is a winner.



The Blackship BLK 386SX/20 typifies the clone nouveau: impressive workmanship, top speed, dependable support.



Compaq is still Compaq, and the Deskpro is still a fast, well-designed machine. But the \$3296 price gives pause.

Compaq Deskpro 386s/20

PROS: Fast, easy-open case, switchless setup

CONS: Expensive, no on-site service

Compaq is famous for building brawny boxes, and the Deskpro 386s/20 is no exception. Despite its small footprint, there's enough room inside this rugged unit for four drive bays. And the Deskpro delivers on Compaq's other point of pride: top performance. This system offers impressive scores, especially on *1-2-3*, *WordPerfect*, and *Windows*. The Deskpro is clearly a good value, even at \$3296, but we wonder how long Compaq can continue to charge such high prices when many bargain basement-clone vendors offer better service and support. The answer, apparently, is "not long at all"—at press time Compaq announced it would make significant price cuts on all its systems.

Compaq's recent decision to provide central, toll-free telephone support is good news, but there's still no on-site service or turnaround policy. But if you can afford it, the Deskpro 386s/20 is a good deal.

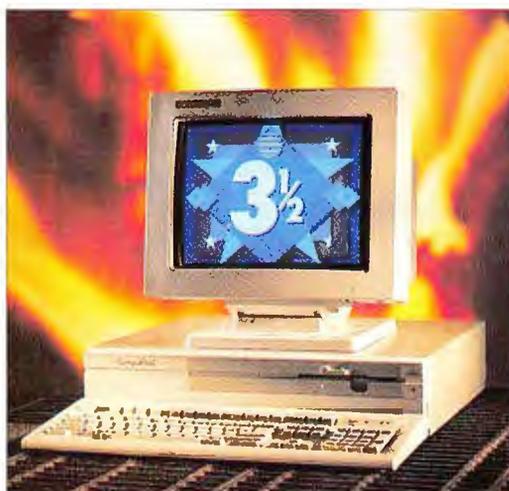
CompuAdd 320sc

PROS: Fast, DOS and Windows preinstalled

CONS: Fairly high price

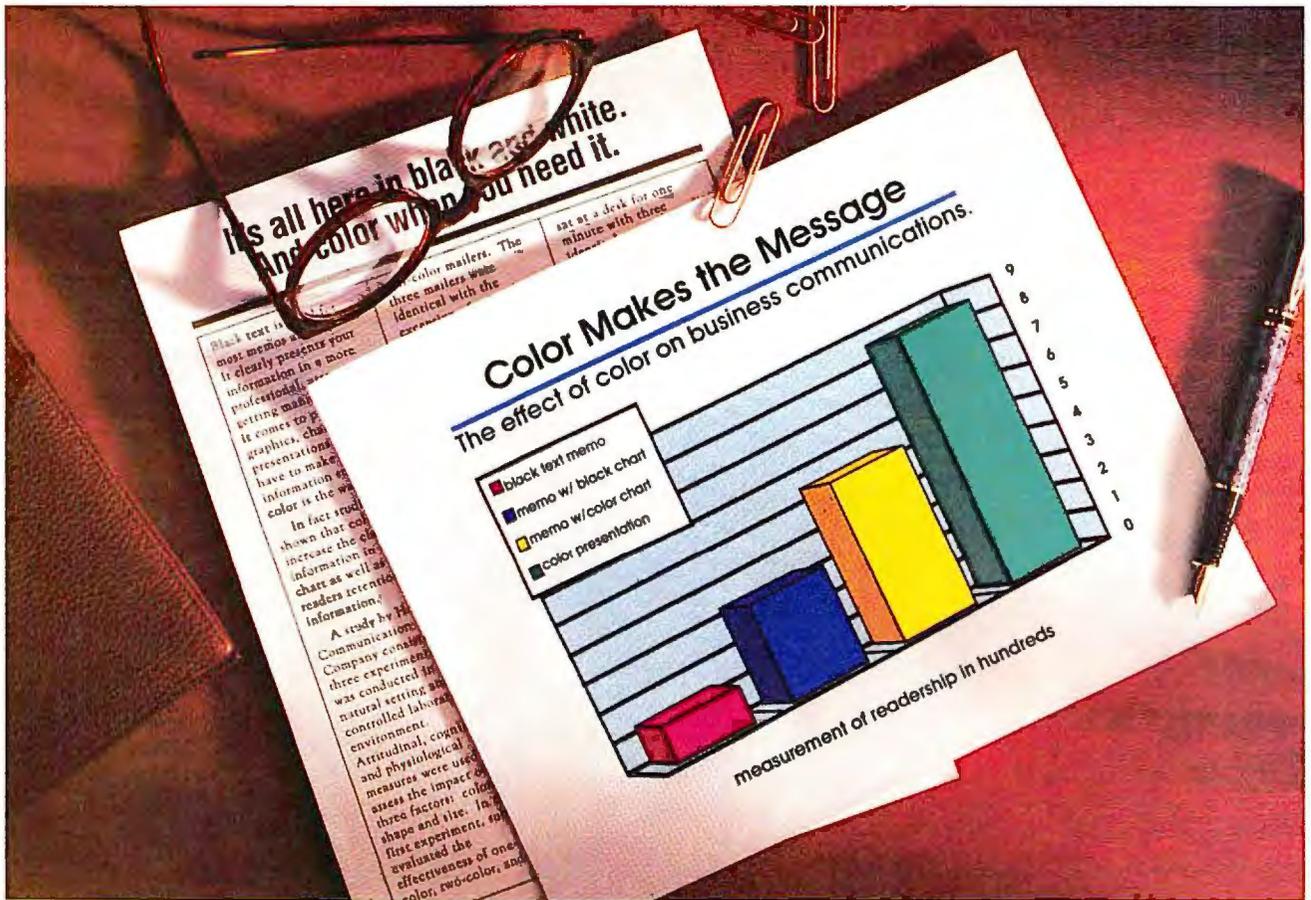
CompuAdd's 320sc is a good poker player with an almost great hand. This former Best Buy holds three of a kind with sizzling performance, ample expandability, and a generous service-and-support policy. And it has a strong card in the hole: The 320sc arrives ready to go with DOS and *Windows* preinstalled—a major benefit if there's no computer expert at your beck and call. But its relatively high \$2475 price eliminates this mail-order speedster from the Best Buy circle this time around.

CompuAdd seems determined to make sure you get your service and support from the fastest source: You can work through your local dealer, fax, BBS, or via a toll-free 11-hour-a-day central support line staffed by courteous technicians. Even if the 320sc doesn't take top honors, this solid plug-and-play system could be a big winner.



Friendly support, fast performance, and preinstalled software make CompuAdd's 320sc a top value.

What's the business world coming to?



Now all users, Macintosh and PC, can get their hands on some color without giving up great black and white. Hewlett-Packard makes it all possible with the DeskWriter C printer for Macintosh and now the HP DeskJet 500C for DOS and Windows applications. Impressive black and white. And thousands of colors. For only \$1,095*.

The best features of HP's DeskJet 500

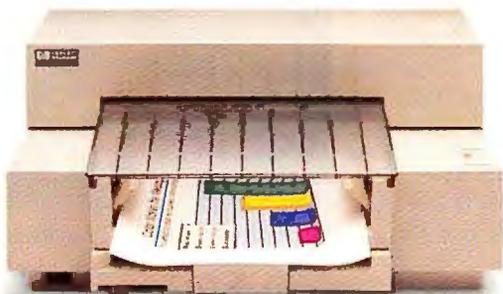
black and white printer haven't changed. You'll still get the crisp, clean, laser-sharp output. The 300 dot-per-inch resolution. And you'll still have all the built-in, scalable fonts and graphic capabilities that can make such a difference in your documents and presentations.

Take all that, add a nearly endless choice of attention-getting colors, and your users have one very valuable

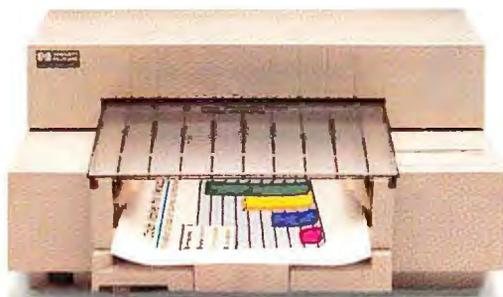
partner. One that's a pleasure to work with. You just plug, play, and print. On plain paper or transparency.

With the DeskJet 500C and DeskWriter C, Hewlett-Packard introduces a colorful new generation to its family of inkjet printers. A family that stands for affordable quality. Quality that's backed by a three-year warranty.

Affordable color.
The HP DeskWriter C printer
for the Mac.



And the
HP DeskJet 500C for PCs.



Only \$1,095 each.

So when others ask you what's new, tell them to get ready for a splash of color. For more interesting graphs and charts. For impressive cover pages and for compelling overhead presentations. All for \$1,095.

If you'd like to see some sample output from the DeskJet 500C or DeskWriter C, call 1-800-752-0900, Ext. 2757.† Or visit your nearest authorized HP dealer and sign up

for a chance to win a Caribbean cruise for two.** Color has finally arrived.

HP Peripherals
When it's important to you.



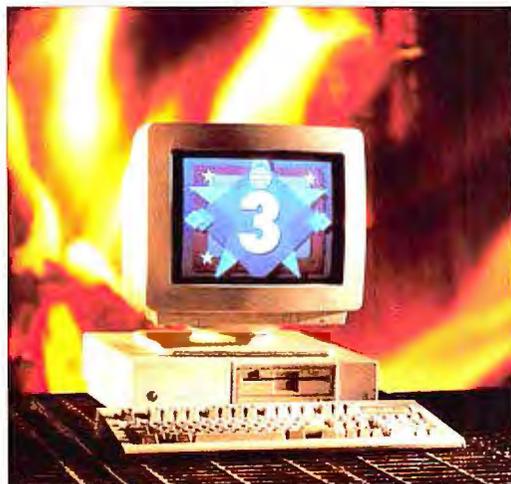
Dell System 320SX

PROS: Small footprint, outstanding service and support

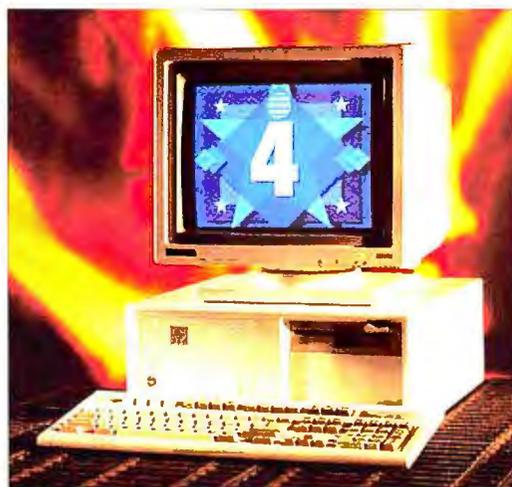
CONS: Fairly expensive, limited fast-RAM and board capacities

Dell is known for high-quality systems and first-rate service and support, and the 320SX is no exception. But with more and more equally reliable 386SXs selling for a song, Dell's \$2547 price is less impressive than it used to be. In addition, you're limited to 8MB of fast RAM, and the compact footprint case has room for only three expansion boards and three drives—plenty if you're planning to use your new SX as a network workstation, but limiting if you're going solo.

A front-mounted on/off switch and a responsive keyboard make life easier, and the switchless setup and pictorial documentation will get you up and running ASAP. The main draw: Free on-site service, helpful, toll-free tech support (even on weekends), and 24 daily hours of auto-fax support. The moral of the story: If a \$2547 sticker doesn't raise your blood pressure, you can't go wrong.



This little Dell went to market with a somewhat rotund \$2547 price, but the 320SX has a rugged design and solid support.



Eltech's bargain-priced 2200 is the quintessential Windows machine, giving you speed and preinstalled software.

Eltech Model 2200

PROS: Very fast, inexpensive, lots of slots and bays, Windows and DOS preinstalled

CONS: Soft keyboard touch



Eltech must be doing something right—not only did this low-profile company walk away with an October 1991 Best Buy for 25-MHz 386s, now it's grabbing an award for the SX category, too. For only \$1899, the Model 2200 gives you dazzling performance—this racer finished first in our *Windows* speed test, second on *1-2-3*, and took fourth overall—leaving Compaq, Dell, and IBM (among others) in the dust.

Home users will be pleased to discover that the 2200 comes with DOS and *Windows* preinstalled—and an interactive tutorial gets you up to speed fast. If problems arise, informed, toll-free technical support is available by phone or fax. Well, okay, there *is* one fault: The keyboard feels a bit flimsy. But even so, you'll look long and hard before you find a deal as good as Eltech's Model 2200.

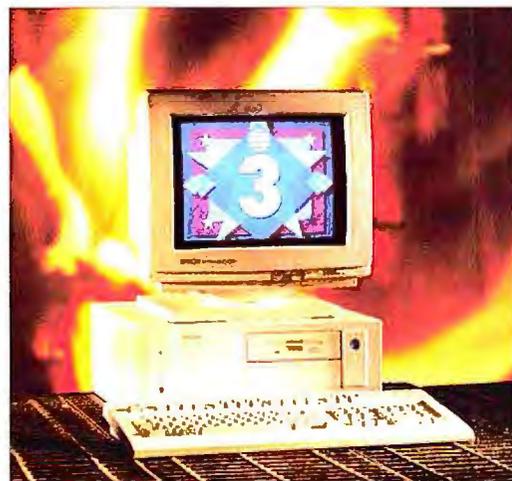
Epson Equity 386SX/20 Plus

PROS: Fast, easy-open case, switchless setup

CONS: Expensive

If *1-2-3* and *WordPerfect* are the kinds of applications that fill your workday, Epson's Equity 386SX/20 Plus will get you home sooner. Fast scores on these old reliables boosted the Epson to a four-star performance score. You'll also like the clean, uncluttered chassis, a keyboard that's a pleasure, and a pop-off top that makes installing add-on cards and drives a breeze. But for \$2934, you better hope you can write this off with the IRS.

The Equity 386SX/20 Plus comes with a dynamite service-and-support package that will make home buyers and owners of small businesses breathe easier. The package includes on-site service, 10 hours of daily toll-free tech support, and a BBS. The Equity's price may not be as equitable as you'd like, but this solid workhorse should give you years of satisfactory service.



A speed demon at basic DOS applications, the friendly Equity eases the hassle of adding cards and drives.

EXECUTIVE SUMMARY

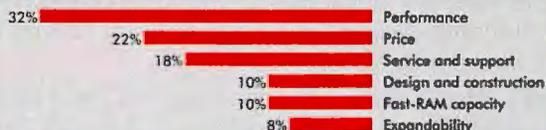
Clone Fever Strikes the 386SX

Up-and-coming Eltech, Gateway, and Micro Express offer the best 20-MHz 386SX deals.



If you're shopping for a 20-MHz 386SX, cost counts, so you'll likely be checking out the affordable systems found in mail-order ads and on superstore shelves. But these days clones have more to offer than low prices. Top performance, superb service and support, and ample room to grow mark our Best Buy 386SX desktops from Eltech, Gateway, and Micro Express.

Key Buying Issues: Percentage of Importance



	Reader service no.	Performance	Price	Service and support	Design and construction	Fast-RAM capacity	Expandability	Overall value
Acer 1120SX	687	☆☆☆½	☆☆	☆☆	☆☆☆	☆☆	☆☆☆½	★★½
ALR PowerFlex 20SX	689	☆☆½	☆☆½	☆☆☆½	☆☆☆	☆☆	☆☆☆½	★★½
Arche Triumph 386SX-20	690	☆☆☆☆	☆☆	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	★★★
AST Premium II 386SX/20	691	☆☆☆☆	☆☆	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	★★★½
Blackship BLK 386SX/20	692	☆☆☆☆	☆☆☆☆	☆☆☆☆	☆☆☆	☆☆	☆☆☆☆	★★★½
Compaq Deskpro 386s/20	693	☆☆☆☆	½	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆☆	★★★
CompuAdd 320sc	694	☆☆☆☆	☆☆	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆½	★★★½
Dell System 320SX	695	☆☆☆½	☆☆	☆☆☆☆	☆☆☆½	☆☆	☆☆☆☆	★★★
Eltech Model 2200	696	★★★★	★★★★	★★★½	★★½	★★★★	★★★★	★★★★
Epson Equity 386SX/20 Plus	697	☆☆☆☆	½	☆☆☆½	☆☆☆½	☆☆☆	☆☆☆½	★★★
Fast Micro FastData 386/SX-20c	698	☆☆☆	☆☆☆☆	☆☆☆½	☆☆	☆☆☆☆	☆☆☆☆	★★★½
Gateway 386SX/20c	699	★★★★	★★★★	★★★½	★★★	★★★★	★★★½	★★★★
HP Vectra 386/20N	700	☆☆☆☆	½	☆☆	☆☆☆½	☆☆☆☆	☆☆	★★½
Hyundai Super-386Stc	701	☆☆☆½	☆☆☆	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆½	★★★½
IBM PS/2 Model 57 SX-049	702	☆☆½	½	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆½	★★½
Leading Edge D3/SX-20c	703	☆☆☆½	☆☆☆☆	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆½	★★★½
Micro Express ME 386SX/SL/20	704	★★★★	★★★★	★★★½	★★★	★★★★	★★★½	★★★★
Mitac MPC 2386E	688	☆☆☆	☆☆	☆☆☆☆	☆☆☆½	☆☆	☆☆☆½	★★★
NCR PC386sx/20	705	☆☆☆½	½	☆☆☆	☆☆☆	☆☆	☆☆☆½	★★½
Northgate SlimLine 386	706	☆☆☆☆	½	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆☆	★★★
Swan 386SX/20	707	☆☆☆½	☆☆½	☆☆☆½	☆☆½	☆☆	☆☆☆☆	★★★
Tangent 320S	708	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆☆☆	★★★½
Tri-Star 386SX 20	709	☆☆	☆☆☆☆	☆☆☆½	☆☆	☆☆	☆☆☆☆	★★½
Twinhead Superset 590/20	710	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆	☆☆	☆☆☆½	★★★
Zeos 386SX/20	711	☆☆☆☆	☆☆½	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆☆	★★★½

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Fast Micro FastData 386/SX-20c

PROS: Extremely low price, lots of slots and bays

CONS: Desqview compatibility problems, slow Windows and Paradox performance

Fast Micro's \$1738 entry is the cheapest system in our roundup and one of the most expandable. It turned in solid performance scores on all our tests except *Paradox*, where it placed dead last, and *Windows*, where it placed second to last. Other problems: You'll need to set motherboard switches during setup, and if you decide to install a math coprocessor, you'll find the socket virtually impossible to reach. Also, we had problems trying to run *Desqview*: The cursor kept disappearing, and we couldn't select some menu choices.

The FastData boasts six expansion slots and five drive bays—one of the highest counts in the roundup. Technical support is toll-free by phone or fax, and on-site service is available. If your budget is crunching you, the FastData 386/SX-20c could be the answer—especially if you want to load your system with boards and drives.



With the lowest price in the roundup, Fast Micro's FastData offers surprisingly good expandability and support.



Is Gateway the new Dell? On top of superb price/performance, this Best Buy delivers great service and support.

Gateway 386SX/20c

PROS: Inexpensive, cheap RAM, programmable keyboard

CONS: Only three full-length slots



Sometime in the last year, this South Dakota mail-order company finally came of age. Gateway's speedy 386SX/20c has a low \$1895 price, and you'll pay only \$50 per megabyte for RAM upgrades (many vendors charge \$100). This Best Buy also comes with *Windows* and DOS 5.0 preinstalled, plus a programmable keyboard with 24 function keys.

Service and support are very good. Toll-free technical support is available 18 hours a day and on weekends. You can reach technical support by BBS and fax, as well—and our questions were answered accurately every time we called. Performance is excellent on the processor-intensive *1-2-3* and *WordPerfect* tests, but it's not one of the speedier systems when running *Windows*. Still, the Gateway 386SX/20c is a value-packed system at a lovable price.

HP Vectra 386/20N

PROS: Very fast, small footprint

CONS: Very expensive, limited board and drive capacity, tech support \$117 annually

The antithesis of the modern clone vendor, Hewlett-Packard already has its customers, and it aims to keep them loyal. High performance is your prime payoff with HP's Vectra 386/20N: It placed second overall in our speed tests. Moreover, a compact, easy-open case and a crisp keyboard make using this PC a pleasure. The trade-off is in low expansion capacity: You get only two drive bays and three expansion slots, one of the poorest counts in this roundup. The Vectra also sports an astronomical price: \$3704 (with an undersized 94MB hard disk). For this kind of money you can buy a 486SX or even a 25-MHz 486.

And the high costs don't stop after purchase. Tech support will cost you \$117 a year. Once you pay the price, however, support is first-rate. Between its high price, limited expandability, and pay-as-you-go support, the HP Vectra 386/20N is overshadowed by the competition.



No 386SX should be this expensive, even with the HP Vectra's blazing performance and durable construction.

Hyundai Super-386Stc

PROS: Fast 1-2-3 scores, inexpensive

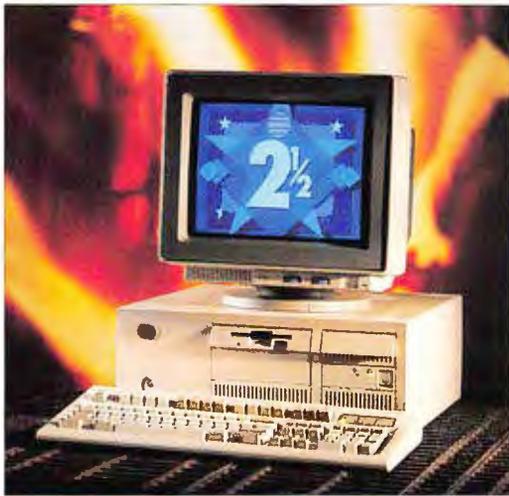
CONS: Slow hard disk

A painless \$2085 puts you in the driver's seat of Hyundai's Super-386Stc. This system did especially well on the processor-intensive 1-2-3 and *WordPerfect* tests, but placed near the bottom on the *dBASE* and *Paradox* benchmarks, suggesting a slow hard disk. Except for its keyboard, which could use better springs and cushions, the system's ergonomics are nicely conceived: Power and reset buttons are front-mounted for convenience, and its compact case will find space on even the most crowded work surface.

Hyundai includes a generous 18-month warranty, but support could be a problem; it's available only through Hyundai dealers (computer dealers, not car dealers!), and there's no guaranteed turnaround time. If you can get your dealer to pop in a higher performance drive than the standard model, this Super system is worth a serious look.



Hyundai's desktop is well suited to CPU-intensive tasks like 1-2-3, and its 18-month warranty aims to please.



IBM's 386SX is distinguished by exemplary design and an innovative 2.88MB floppy drive, but it's slow and expensive.

IBM PS/2 Model 57 SX-049

PROS: 2.88MB floppy, Micro Channel, SCSI port, easy-open case

CONS: Expensive, slow

At \$3934 the 57 SX-049 is more than *twice* the price of any of our Best Buys, yet it finished next to last overall in our speed tests. However, IBM's late entry into the SX market will keep the PS/2 faithful happy with an easy-open case and Micro Channel architecture that permits painless installation of peripherals.

The Model 57 SX-049 boasts a humongous capacity for expansion. Each system has room for five MCA cards and four drives and has a SCSI port that lets you connect an external 1.2GB drive. In addition, IBM's high-capacity 2.88MB 3½-inch floppy drive is so capacious, you may not need a tape backup. It also reads and writes to 720K and 1.44MB disks. The 57 SX-049 is well suited to storing and accessing large amounts of data, but with its high price and slow performance, it's far from a power user's dream.

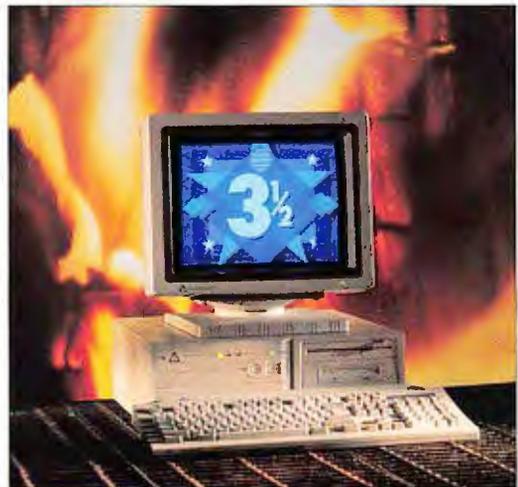
Leading Edge D3/SX-20c

PROS: Inexpensive, great ergonomics, Windows included

CONS: Tech support via 900 number only

Leading Edge is known for its bargain-level prices, and the compact D3/SX-20c continues that grand tradition. This well-built system gives you solid performance for only \$1913. Moreover, the D3's ergonomics are first-rate: Monitor and case have front-mounted controls—Leading Edge even places the keyboard and mouse ports up front so you'll have plenty of room to stretch out.

Technical support is available 11 hours a day by telephone, fax, or BBS. We found the staff pleasant and thorough, but unfortunately you have to call via a 900 number. Not only does this mean you could run up quite a support bill, but it could pose a problem if your office phone system does not permit such calls. Still, with its comfortable design, compact case, low price, and *Windows* included, the Leading Edge D3/SX-20c is a very good value at a great price.



If you don't mind a tech support 900 number, you'll be happy with Leading Edge's low price and thoughtful design.

FEATURES EVALUATION

386 Service With a Smile

The cream of the clone vendors are besting old reliables in the all-important service-and-support category. Best Buys from Eltech, Gateway, and Micro Express also give you plenty of room to add options.

- Yes
- No
- n/a = not applicable

	Acer 11205X 205X	ALB PowerFlex 386SX-20	Arche Triumph 386SX/20	AST Premium II 386SX/20	Blackship BLK 386SX/20	Compaq Desktop 320ec	Computad 3205X	Dell System 3205X	Eltech Model 2200	Epox Equix 386SX/20 Plus
Standard features										
Street price ²	\$2622	\$2353 ³	\$2751	\$2532 ⁴	\$1860	\$3296	\$2475	\$2547	\$1899	\$2934
External memory cache (K)	0	0 ⁶	0	16	32	32	32	0	32	32
Bus	ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA
Windows included	●	○	●	○	○	○	●	●	●	○
Expandability										
Free 32-bit slots	0	0	0	0 ⁷	0	0	0	0	0	0
Free 16-bit slots	4	4	4 ³	4	5	4	4 ⁸	3	6	3
Free 8-bit slots	0	1	1 ⁸	1	1	0	1 ⁵	0	0	1
Externally accessible/internal drive bays ¹⁰	2/1	3/1	4/0	3/2	3/2	3/1	2/2	2/1	5/0	2/1
Largest hard disk option	338MB	80MB	650MB	210MB	1.4GB	320MB	200MB	320MB	400MB	200MB
Upgradable CPU	○	●	○	●	○	○	○	○	●	○
Fast-RAM capacity (MB)										
Accepts standard SIMMs	8	5	16	80	8	16	32	8	16	14
Design and construction										
Switchless setup	●	●	●	●	○	●	○	●	○	●
Setup utility in ROM	●	●	●	●	●	○	●	●	●	○
Compact footprint	●	●	●	●	○	●	○	●	●	●
Tilt-and-swivel monitor	●	●	●	●	●	●	●	●	●	●
Front-panel on/off switch	●	●	○	●	●	●	○	●	○	●
Parallel/serial/mouse ports	1/2/1	1/1/0	1/2/0	1/2/1	1/2/0	1/1/1	1/2/0	1/2/1	1/2/0	1/1/1
Service and support										
Warranty (months)	24	12	24	12	12	12	12	12	12	12
On-site service available	●	●	●	●	●	○	●	●	●	○
Turnaround policy	5 days	none	none	7-10 days	48 hours	none	48 hours	24 hours	48 hours	48 hours
Free unlimited support	○	●	●	●	●	●	●	●	●	●
Vendor support										
Central support/toll-free	○/○	●/○	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●
Daily support (hours)	0	10	9	11	9	12	11	14	8.5	10
Weekend support	○	○	○	●	○	○	○	●	○	○
Electronic BBS/fax	○/○	●/●	●/○	●/●	○/●	○/○	●/●	●/●	●/●	●/○
Vendor-to-dealer support										
Dedicated support staff required	○	○	○	○	n/a	●	●	n/a	○	●
Support staff training required	○	○	●	○	n/a	●	●	n/a	○	●
Dedicated support line for dealers	●	●	●	●	n/a	●	●	n/a	○	●
Inventory and parts requirement	●	○	●	○	n/a	●	●	n/a	●	○

BEST BUY

¹ Best Buy in February 1991.

² Standard configuration includes 4MB to 5MB RAM, 100MB to

200MB hard drive, one floppy drive, VGA and color VGA monitor, mouse, at least one parallel and one serial port, and DOS.

³ With 80MB drive.

⁴ With 210MB drive.

Gateway 386SX/20c FastData 386/5X-20c	HP Vectra 386/20N	Hyundai Super-38651c	IBM PS/2 Model 57 5X-049	Leading Edge D3/5X-20c	Micro Express ME 386SX/51/20	Milac MPC 2386E	MCR PC386x/20	Northgate Slimline 386	Swan 386SX/20	Tangent 320S	Tri-Star 386SX-20	Twinhead Superset 390/20	Zees 386SX/20	
\$1738	\$1895	\$3704 ⁵	\$2085	\$3934	\$1913	\$1764 ⁴	\$2492	\$4025	\$2899	\$2295	\$2090	\$1849	\$2025	\$2295
32	32	0	16	0	32	32	0	0	64	0	32	64	0	0
ISA	ISA	ISA	ISA	MCA	ISA	ISA	ISA	MCA	ISA	ISA	ISA	ISA	ISA	ISA
○	●	○	○	○	●	●	○	○	●	○	●	●	○	●
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	5 ⁹	3	3	5	4	2	4	4	3	5	5	3	4	6
2	0	0	1	0	0	2 ⁹	1	0	2	1	0	3	0	1
5/0	2/1	2/0	3/0	4/0	3/1	2/1	3/1	2/1	2/1	3/1	4/0	3/2	3/1	4/3
660MB	500MB	120MB	300MB	160MB	210MB	1.2GB	200MB	200MB	210MB	400MB	340MB	1.2GB	200MB	1.1GB
○	●	○	○	○	○	●	○	●	○	○	○	○	○	○
32	16	16	16	16	16	32	8	8	16	8	32	8	5	16
●	●	○	●	○	●	●	●	○	●	●	●	●	●	●
○	●	○	○	●	○	●	○	●	○	○	○	○	○	●
●	●	●	●	○	●	●	●	○	●	●	●	●	●	●
○	●	●	●	○	●	●	●	●	○	○	○	●	●	○
●	●	●	●	●	●	●	●	●	●	○	○	●	●	●
1/2/0	1/2/1	1/2/1	1/2/0	1/1/1	1/2/1	1/2/0	1/2/0	1/1/1	1/2/0	1/2/0	1/2/0	1/2/0	1/2/0	1/2/0
12	12	12	18	12	20	15	12	12	12	24	12	15	12	12
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
48 hours	none	72 hours	none	48 hours	72 hours	48 hours	72 hours	72 hours	7 days	none	48 hours	none	48 hours	48 hours
●	●	○	●	○	○	●	●	○	●	●	●	●	●	●
●/●	●/●	●/●	○/○	○/○	●/○	●/●	●/●	○/○	●/●	●/●	●/●	●/●	●/●	●/●
7.5	18	12	0	0	11	8.5	10	0	24	12	9	14	10	24
●	●	○	○	○	○	●	○	○	●	●	○	●	○	●
○/●	●/●	●/○	○/○	○/○	●/●	●/●	●/●	○/○	○/○	●/●	●/●	●/●	●/●	●/●
n/a	n/a	○	●	●	○	n/a	○	●	n/a	n/a	n/a	n/a	○	n/a
n/a	n/a	○	●	●	○	n/a	○	●	n/a	n/a	n/a	n/a	○	n/a
n/a	n/a	○	●	●	○	n/a	○	●	n/a	n/a	n/a	n/a	○	n/a
n/a	n/a	○	●	●	○	n/a	○	○	n/a	n/a	n/a	n/a	○	n/a
BEST	BUY					BEST								

³With 94MB drive.
⁴Upgradable to 32K.

⁷Includes three proprietary 32-bit upgrade slots that can function as standard 16-bit slots.

⁸One is half-length.
⁹Two are half-length.

¹⁰Half-height or third-height bays. At least one externally accessible bay is 5 1/4 inch, except for the HP Vectra 386/20N.

The new OL830 had to be smarter than the LaserJet III to earn the Okidata OK!



Smart.

- **Smart price: \$1999⁰⁰***
- Gives you the best font scaling and graphic output from over 5000 different software applications.
- Offers 17 scalable plus 26 bitmapped fonts, standard.
- 2 megabytes of memory for full-page graphics.
- Optional second paper tray for second sheets, alternate letterhead.
- 5-year printhead warranty. (Plus 1 year parts/labor on entire printer.)



Not So Smart.

- **Not-so-smart price: \$2395⁰⁰***
- Only supports font scaling and graphics from a few hundred software applications without expensive brain surgery.
- The best it can manage without costly add-ons is 8 scalable and 14 bitmapped fonts.
- 1 meg is all you get, standard. Can't even remember one full page of graphics.
- No place to add a second tray. You're stuck with only one kind of paper at a time.
- Standard 1-year warranty. Not so smart.

If you think buying the smartest 8 page-per-minute business printer is a smart business move, we think you'll agree Okidata's new OL830 is a stroke of pure genius.

It Takes Brains To Make A Smart Printer.



November 26, 1991
Okidata OL830

Okidata's newest printer takes just about every important feature of the LaserJet III and adds an IQ boost all its own. The OL830 offers more typefaces and fonts for better-looking documents, and more standard memory for full-page graphics. An optional second paper tray fits underneath to switch between letterhead and second sheet, or plain paper and envelopes, without reloading. And the OL830's 5-year printhead warranty is the longest in the industry. All for a suggested retail price that's hundreds of dollars less than the LaserJet III. No wonder PC Magazine just gave the Okidata OL830 their Editors' Choice award, naming it the best inexpensive printer of its type available.

So Smart, It Already Knows Your Software.

To give our smart printer even more smarts, we include Printer Control Panel™ autoswitching software from LaserTools®—a \$149 value. By switching automatically between *both* major printer emulations (Adobe's® PostScript® and HP® LaserJet), the

OL830 will deliver superb output and dazzling graphics with WordPerfect®, Lotus® 1-2-3®, Harvard Graphics®, or just about any software package, present or future, DOS or Windows.™ Since it's also fully Novell® network-certified, users on a LAN can send output from different applications at any time without printer headaches.

Our Smartest Feature: The Okidata OK!

Most important, the OL830 comes with the Okidata OK!—our personal pledge that your new Okidata printer will provide not just adequate performance, but exceptional performance—not merely good value, but outstanding value.

For additional information, or the name of an Okidata dealer in your area, please call us at 1 (800) OKI-DATA.



We don't just design it to work. We design it to work wonders.™

*Manufacturer's suggested retail price. Dealer prices may vary. HP and LaserJet are Reg. T.M.'s of Hewlett-Packard Inc. PC Magazine is a Reg. T.M. and the PC Magazine Editors' Choice logo is a T.M. of Ziff-Javis Publishing. Adobe and PostScript are Reg. T.M.'s of Adobe Systems Inc. Printer Control Panel is a T.M. and LaserTools is a Reg. T.M. of LaserTools Corp. WordPerfect is a Reg. T.M. of WordPerfect Corp. Lotus and 1-2-3 are Reg. T.M.'s of Lotus Development Corp. Harvard Graphics is a Reg. T.M. of Software Publishing Corp. Windows is a T.M. of Microsoft Corp. Novell is a Reg. T.M. of Novell, Inc. Okidata is a Reg. T.M. and Okidata OK! is a T.M. of OKI Electric Industry Co., LTD.

™We don't just design it to work. We design it to work wonders.™ is a T.M. of OKI America Inc.

Micro Express ME 386SX/SL/20

PROS: Great price, very fast, small footprint, Windows included

CONS: Only two 16-bit slots



At a mere \$1764, the Micro Express ME 386SX/SL/20 misses the lowest price in the roundup by only \$26—and you even get a copy of *Windows*. You won't sacrifice performance, either: This Best Buy finished very close to the top on almost every benchmark. The result is the best price/performance ratio in the roundup (see "Price/Performance: The Winning Combination"). A few nit-picks: Two of the four slots can handle only half-length 8-bit cards. And if you like to place the keyboard in front of the case, you'll find that position blocks access to the bottom drive bay.

Micro Express provides a superb service-and-support bundle, including a 15-month warranty. If you're looking for a fast, inexpensive system with all the right stuff (and who isn't), you'll find that the Micro Express ME 386SX/SL/20 is an outstanding value.



Super price/performance, a compact case, and a free copy of Windows make the Micro Express a Best Buy.



The well-made 2386E puts everything up front, including the power switch, reset button, and keyboard port.

Mitac MPC 2386E

PROS: Super service and support, plenty of room for drives and bays, very good design

CONS: Fairly expensive, flimsy keyboard

With a relatively high \$2492 price and relatively slow performance, Mitac's MPC 2386E starts out with two strikes against it. But from then on it scores easily. The compact case is so well designed it provides room for five expansion cards and four drive bays. Other nice touches include a front-mounted power switch, reset button, and keyboard port. And the documentation is thorough and well organized.

Mitac's service and support is exemplary. You get a 12-month warranty plus on-site service. The toll-free technical support line is on duty 10 hours every weekday, and our questions were consistently answered with impressive accuracy. So even if the Mitac MPC 2386E won't dazzle you with its price or speed, its solid design, super support, and strong performance make it a good choice—especially if you expect to be adding a lot of drives and boards.

NCR PC386sx/20

PROS: SCSI port, CPU upgrade

CONS: Expensive, tech support costs extra

The NCR PC386sx/20 is one of two Micro Channel machines in this roundup—and it offers real competition to IBM's PS/2. While the NCR's \$4025 price is \$91 higher than the IBM's, it outperformed the IBM on every speed test and offers a SCSI port, too. On the other hand, it has one less slot than the IBM (four instead of five) and one less bay (three instead of four), and it lacks the IBM's 2.88MB floppy drive. A \$1900 486SX/20 CPU upgrade is available, but there's no way to achieve 32-bit memory access, so the upgrade still won't be quite as fast as a true 486SX machine right off the shelf.

NCR provides service and support via dealers—and you'll pay extra for it, too. However, NCR does require dealers to have a trained, dedicated support staff. The NCR is a speedy alternative to the IBM, but unless you *must* have the Micro Channel, you can find better choices.



The NCR is faster than its IBM Micro Channel rival, but it's still too costly for most SX buyers.

Northgate SlimLine 386

PROS: Very fast, 24-hour technical support, Windows included

CONS: Expensive, only three 16-bit slots

Even in today's lugubrious economy, there are some buyers who could not care less what the price tag says: Just give them speed, speed, and more speed. In other words, just give them the Northgate SlimLine 386. This system is one of the fastest we tested—especially at *Windows*—and its price includes a copy of *Windows*. If you're looking for a bargain, however, the SlimLine 386 is not the PC for you: At \$2899, it costs over \$1100 more than our Best Buy Micro Express. The low-profile case holds three drive bays and five expansion slots—but only three of those slots can handle a 16-bit card.

Service and support are excellent. On-site service is available, and you can reach a technician toll-free 24 hours a day, seven days a week. If you are willing to pay extra for top-notch speed and support, the Northgate will deliver everything you need from a desktop.



The SlimLine comes with a copy of Windows and runs it at a dazzling clip. It's expensive, but it's one of the best.



Load up the wagon! Swan's 386SX/20's roomy interior can handle all your expansion needs.

Swan 386SX/20

PROS: Lots of slots and bays, very good service and support

CONS: No switchless setup

Actually, the \$2295 386SX/20 is more of a workhorse than a swan: You can load it up with drives and peripherals thanks to its generous complement of six slots and four bays, and it will still trot through its work load with respectable scores on *Paradox* and *Windows*. However, if you want to keep your memory options open for a future of RAM-hungry applications, you may run up against the Swan's 8MB fast-RAM ceiling. And setting up the system isn't very fast, unless you're a master at flipping switches on the motherboard.

Swan gives you a 24-month warranty, and the capable workaholics at Swan's toll-free tech support center toil 12 hours a day, even on weekends. You can also reach Swan by fax and BBS. The 386SX/20 is not the cheapest choice in the roundup, but if you need room to grow, the Swan makes good horse sense.

Tangent 320S

PROS: Fast Windows and dBASE performance, excellent support, Windows included

CONS: No switchless setup

The Tangent 320S actually *looks* like a clone, with a stripped-down case that's the PC equivalent of a plain brown wrapper. Its only external extravagance is a reset button. But even if this system isn't loaded with personality, at a reasonable \$2090 (with *Windows* included), who cares? It runs at a respectable clip (especially with *dBASE* and *Windows*), and there's plenty of room to add drives and expansion cards. Documentation could use some improvement, though: The index occasionally refers you to nonexistent page numbers.

Tangent Computer has strong service-and-support policies, including a 48-hour turnaround, toll-free technical support, and on-site service. If you're a *Windows* or *dBASE* user, you'll find the Tangent 320S a solid value, with good performance and plenty of room to expand. After all, good looks aren't everything.



It may not look flashy, but you can't tell a PC by its cover: Tangent's 320S turns in solid performance scores.

Tri-Star 386SX 20

PROS: Low price, Windows included

CONS: Very slow, compatibility problem

Selling for a low \$1849, the Tri-Star 386SX 20 reminds us of the clones of yesteryear: amazingly cheap but a bit glitchy and oh, so slow. This PC finished a distant last in every speed test. Other irritants include a relatively low fast-RAM limit (8MB) and a setup scheme that requires switch setting. Also, when we tried to install an internal modem, we had problems disabling COM1 and ended up having to disable the built-in game port as well.

The Tri-Star offers a few nice touches, however, including front-mounted power and reset buttons and a 15-month warranty. Free on-site service is part of the package, and technical support is available toll-free 14 hours a day. Unfortunately, not all our questions were answered accurately. With faster, more dependable systems selling for even less, the Tri-Star 386SX 20 is not a great bargain.



The \$1849 price is tempting, but last-place performance and a hardware incompatibility give us the strength to resist.



The Superset's generous service and support and reasonable price are appealing, but the low 5MB RAM ceiling isn't.

Twinhead Superset 590/20

PROS: Good price, strong service and support

CONS: 5MB fast-RAM limit

You can take a Superset 590/20 home for only \$2025, and although the compact unit will leave you plenty of elbowroom, you'll still have room for four drives and four expansion boards. Unfortunately, the low 5MB fast-RAM limit won't cut it for *Windows* power users.

If you're worried about entrusting your hardware purchase to a clone vendor, Twinhead's service-and-support package will help you breathe easier. Free on-site service is included, and 48-hour repair turnaround is guaranteed. The toll-free tech support runs 10 hours a day, and we found the tech staff's answers accurate and helpful. This speedy, low-priced machine is worth a look for users who don't expect to move beyond basic applications over the next three to five years that you plan to stare into the Superset 590/20. But if you see a lot of RAM-hungry *Windows* multitasking ahead, you'll want to keep looking.

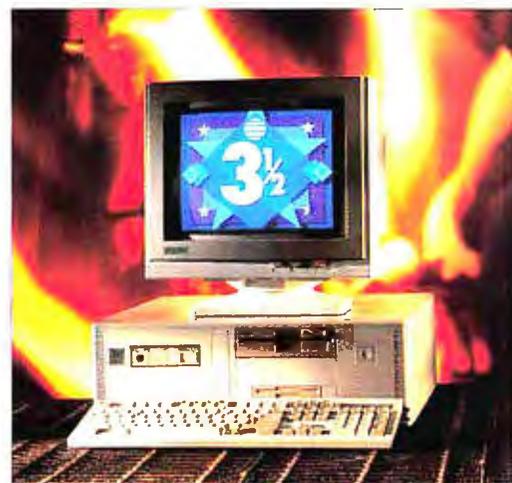
Zeos 386SX/20

PROS: Excellent *Windows* performance, huge capacity for drives and boards

CONS: Keyboard lacks positive feedback

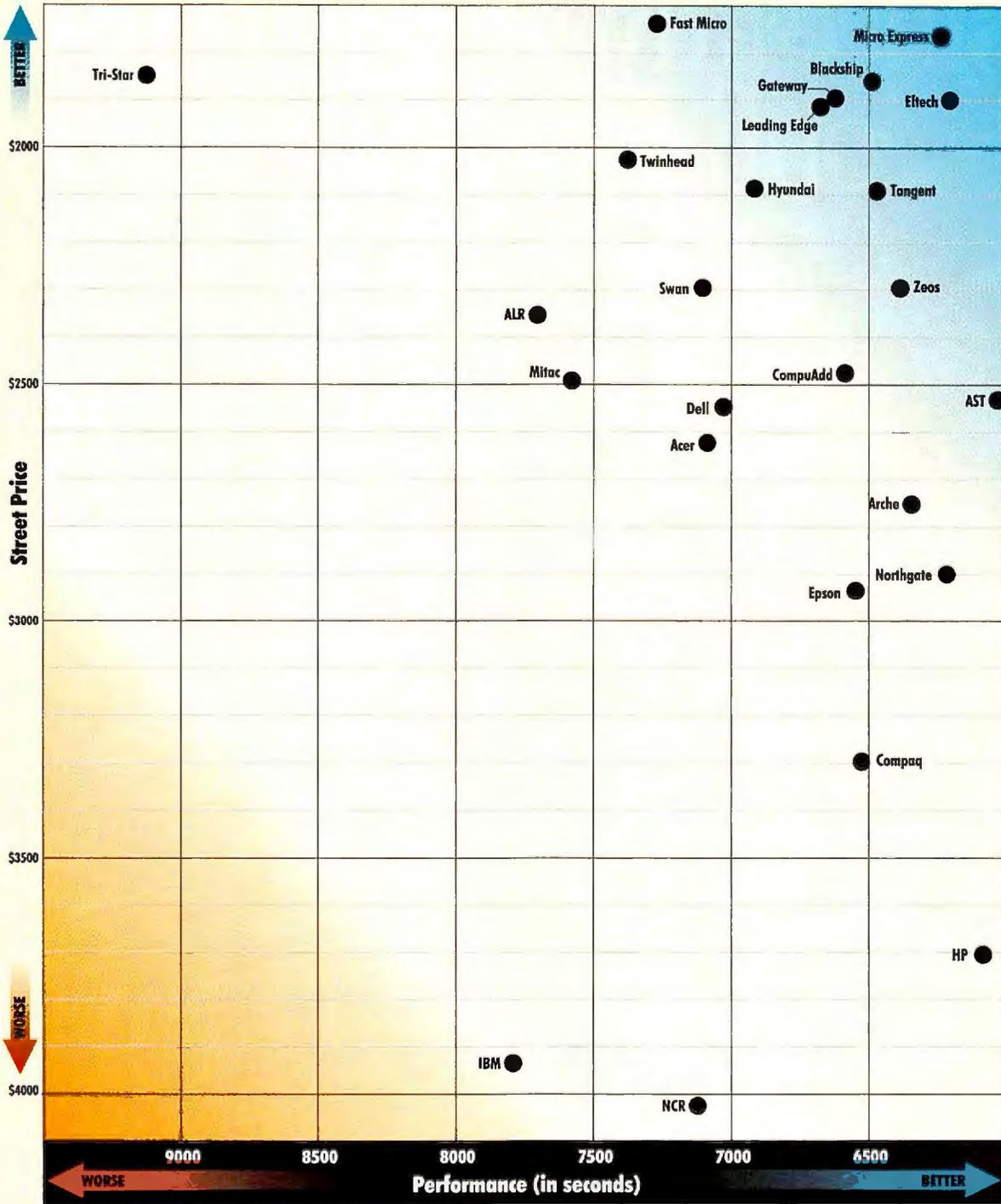
If you're looking for a fast *Windows* workstation, and it seems that just about everybody is these days, check out the \$2295 Zeos 386SX/20. Its performance on *Windows* was particularly strong: It finished exactly one second out of first place. Most SX systems are compact in size and modest in reach, but not the overachieving Zeos—its enormous chassis provides a serverlike expansion capacity and room for seven drives and seven expansion boards. This is the best count in the roundup. And if you need to fill those bays with high-capacity storage, Zeos offers a 1.1GB SCSI drive that can fit the bill.

Zeos includes a strong service-and-support package, with on-site service and 24-hour tech support even on weekends. If you crave top speed and lots of expansion room and don't require the lowest price, Zeos's 386SX/20 is a terrific value. ☛



Zeos delivers fleet performance along with a humongous capacity for slots and bays.

Price/Performance: The Winning Combination



The key criteria in evaluating a 20-MHz 386SX are price and performance. In the chart above, systems with the best price/performance ratios, such as our Best Buy from Micro Express, appear in the upper right corner. The price rating is based on the street price of the models in our standard configuration. The performance numbers are based on the total number of seconds the systems scored in PC World Test Report benchmarks, modified by the weighting used to arrive at the Executive Summary performance rating: 1-2-3 40 percent, WordPerfect and Windows each 20 percent, Paradox and dBASE each 10 percent.

It's been 59 years
since anyone's felt this
confident in front
of a crowd.



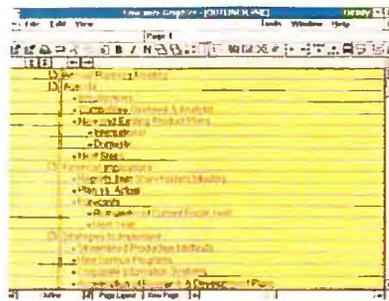
In the 1932 World Series, with the Cubs riding him unmercifully, Babe Ruth calmly pointed to the centerfield bleachers as if to predict the flight of the ball. On the next pitch, he hit it where no ball had been hit before.

Now your next presentation can be a big hit.

Now you can be more confident your next presentation will be as big a hit as Babe's. Because the new Freelance Graphics™ for Windows™ does most of the work for you.

The fun begins with QuickStart, an animated on-line tutorial that coaches you—step-by-step—through the process of creating a stunning presentation.

Freelance Graphics also features



Use this view to outline your points. As you type, SmartMasters create presentation pages for you automatically.

your success from start to finish.

our Windows products. And it features SmartIcons™, the unique “one-click” short-cuts for automating frequent tasks.

So, let Freelance Graphics, your presentation partner, guarantee



1. Select the look. And let SmartMasters do the design work for you. Of course, you can still customize the look any way you choose.



2. Fill in the blanks at the prompts. Add your message or place your graphs where indicated on the screen.



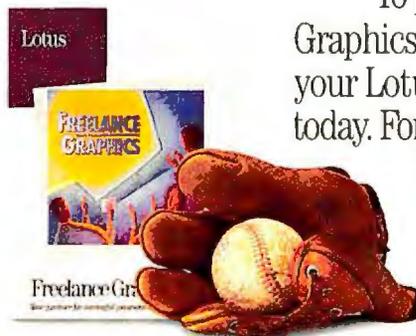
3. See the big picture in Page Sorter. Add, delete, rearrange or combine pages from other presentations and you're ready to go.

SmartMasters™ that automatically manage the design of your presentation.

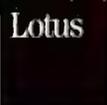
Smart Charting automatically composes data charts to fit the available space. And the Symbol Gallery offers you over 500 full-color clip art images. Of course, Freelance Graphics is fully integrated with all

And your next pitch could be your most memorable.

To purchase Freelance Graphics for Windows, contact your Lotus Authorized Reseller today. For a free auto demo or to upgrade, please call 1-800-872-3387, ext. 6344.*



Freelance Graphics for Windows



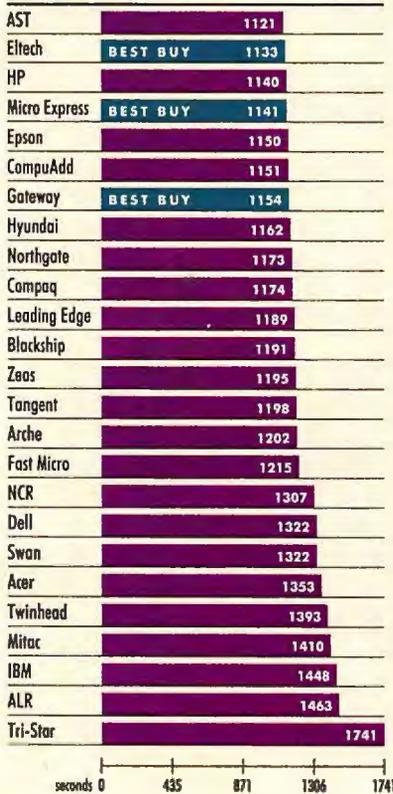
*In Canada, please call 1-800-668-1509. © 1991 Lotus Development Corporation. All rights reserved. Lotus is a registered trademark and Freelance Graphics, SmartIcons and SmartMasters are trademarks of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation.
© 1992 The Family of Babe Ruth and the Babe Ruth Baseball League, Inc., by Curtis Management Group, Indpls, IN

PC WORLD TEST REPORT

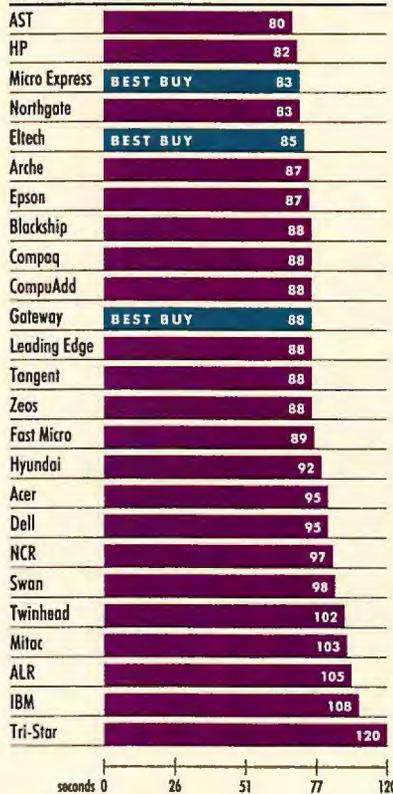
Cache the Wave: Faster 386SX Systems

Like most of the faster 20-MHz systems here, the top-ranked AST Premium II offers a built-in memory cache.

1-2-3



WordPerfect



Windows 3.0



WHERE TO BUY

Acer 1120SX

Acer America Corp.
2641 Orchard Pkwy.
San Jose, CA 95134
800/733-2237,
408/922-0176 (fax)
LIST PRICE: 2MB RAM,
1.44MB or 1.2MB floppy,
800 by 600 VGA,
one parallel, two serial
ports, mouse port, key-
board \$1495; same
except 4MB RAM,
120MB hard disk,
1024 by 768 VGA and
noninterlaced display
\$3014
ACCESSORIES: 2MB

RAM \$220; 200MB IDE
hard disk \$1195
Reader service no. 687

ALR PowerFlex 20SX

Advanced Logic
Research, Inc.
9401 Jeronimo
Irvine, CA 92718
800/444-4257,
714/581-9240 (fax)
LIST PRICE: Model 40
with 1MB RAM, 1.44MB
floppy, one parallel,
one serial port, key-
board \$1195; Model
80 same except 80MB
hard disk, 5MB RAM,
800 by 600 VGA and

color display \$3242
ACCESSORIES: 4MB
RAM \$449; 14-inch
super-VGA color dis-
play \$699
Reader service no. 689

Arche Triumph 386SX-20

Arche Technologies,
Inc.
48502 Kato Rd.
Fremont, CA 94538
800/437-1688,
510/683-8100
LIST PRICE: 2MB RAM,
1.2MB floppy, super
VGA, one parallel, two

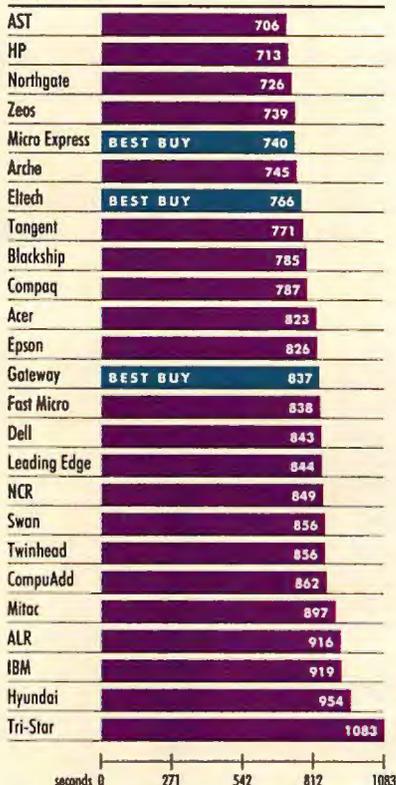
serial ports, DOS
\$1830; same except
4MB RAM, 120MB hard
disk, 1024 by 768 VGA
and color display
\$3254
ACCESSORIES: 2MB
RAM \$200; 200MB IDE
hard drive \$999
Reader service no. 690

AST Premium II 386SX/20

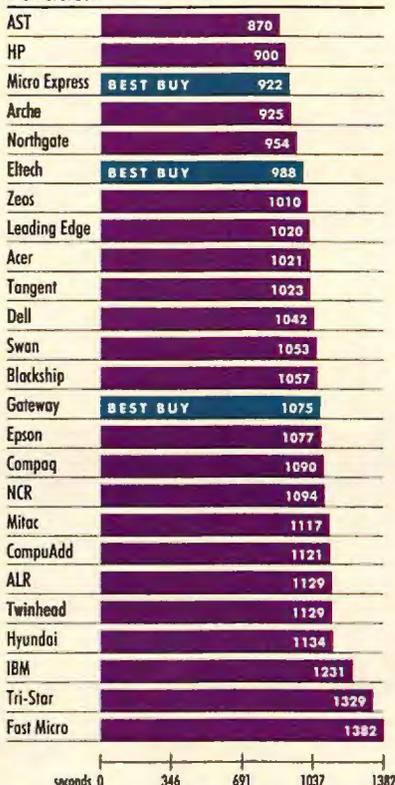
AST Research, Inc.
16215 Alton Pkwy.
P.O. Box 19658
Irvine, CA 92713-9658
800/876-4278,

714/727-4141
LIST PRICE: 2MB RAM,
1.44MB floppy, super
VGA, one parallel, two
serial ports, mouse
port, keyboard \$1595;
same except 4MB RAM,
210MB hard disk,
super-VGA and color
display, one parallel,
two serial ports, mouse
port, mouse, DOS 5.0
\$3585
ACCESSORIES: 1MB
RAM \$100
Reader service no. 691

dBASE IV



Paradox



Methodology

We tested all the computers with 4MB RAM except the ALR PowerFlex 20SX and Twinhead Superset 590/20, which had 5MB RAM. The systems' hard disk size ranged from 80MB to 210MB. We used the vendor's version of DOS 5.0 or Microsoft DOS 5.0.

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We make various changes and run recals on each. Finally, we use the MAPS add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

WordPerfect

We reformat three WordPerfect 5.1 documents that vary in size from 5K to 55K. The files are text with some boldface and underlining. One document includes a TIFF image.

Windows 3.0

Timing begins and ends at the DOS prompt. We launch Windows along with a macro that loads Microsoft Excel with a financial worksheet and initiates a recal. Then the macro loads Lotus's Ami Pro along with a 50K document that contains a 500K TIFF image. Finally, the macro launches Micrografx Designer, opens a drawing, displays it on screen, and exits to DOS.

dBASE IV

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

Paradox

Starting with an orders table, we compare each record with an available stock table. The application finds the current price for the items and inserts the resulting record into an invoice table.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Blackship BLK 386SX/20

Blackship Computer Systems, Inc.
2031 O'Toole Ave.
San Jose, CA 95131
800/531-7447,
408/432-1443 (fax)
LIST PRICE: 2MB RAM, 32K cache, 1.2MB and 1.44MB floppies, 40MB hard disk, one parallel, two serial ports, keyboard, baby case, VGA and 14-inch color VGA display \$1595; same except 4MB RAM, 130MB hard disk, super-VGA and color

display \$1995
ACCESSORIES: tower case \$100; 1MB RAM \$55; 1.2GB SCSI hard drive and controller \$2425

Reader service no. 692

Compaq Deskpro 386s/20

Compaq Computer Corp.
P.O. Box 692000
Houston, TX 77269-2000
800/231-0900,
713/374-1740 (fax)
LIST PRICE: 2MB RAM, 1.44MB floppy, 60MB

hard drive, one parallel, one serial port, mouse port, keyboard, VGA \$2599; same except 4MB RAM, 120MB hard disk, color VGA display \$4116
ACCESSORIES: 2MB RAM \$319, 4MB \$629; 210MB hard drive \$1089

Reader service no. 693

CompuAdd 320sc

CompuAdd Corp.
12303 Technology Blvd.
Austin, TX 78727
800/627-1967,

512/335-6236 (fax)
LIST PRICE: 2MB RAM, 1.2MB floppy, 40MB hard disk, parallel, serial, game port, keyboard, super-VGA and color display, DOS 5.0 \$1995; same except 4MB RAM, 120MB hard disk, 1024 by 768 VGA and color display, mouse \$2490
ACCESSORIES: 2MB RAM \$170; 1.44MB floppy \$75

Reader service no. 694

Dell System 320SX

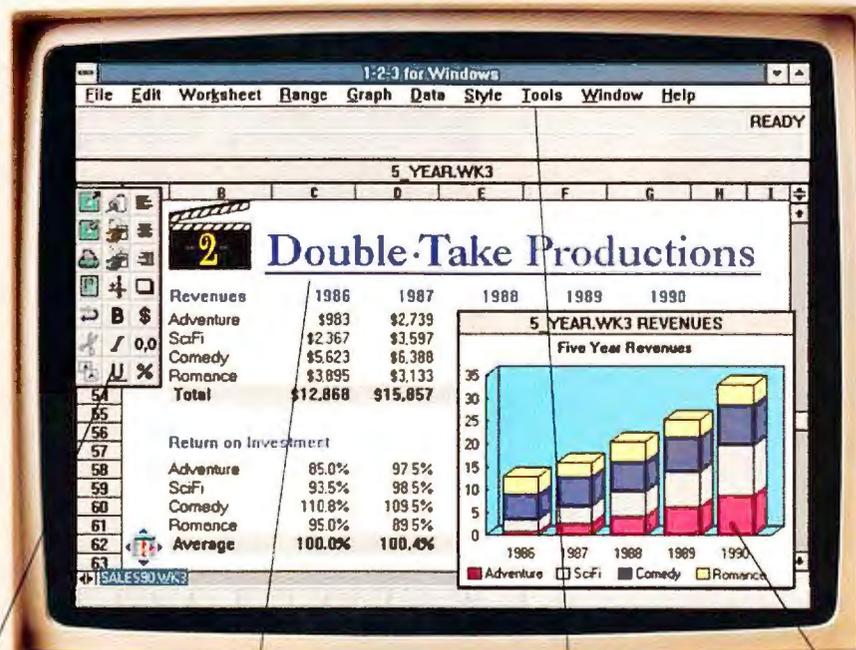
Dell Computer
9505 Arboretum Blvd.
Austin, TX 78759-7299
800/289-3355,
512/338-8700 (fax)
LIST PRICE: 2MB RAM, 40MB hard disk, 1.2MB or 1.44MB floppy, VGA and color display, keyboard, one parallel, two serial ports, mouse port \$1699; same except 4MB RAM, 1.2MB and 1.44MB floppies, 100MB hard disk, 800 by 600 VGA and color display

Pure Windows.

Introducing
 Lotus 1-2-3 for Windows.
 It's everything a Windows spreadsheet
 was meant to be.

After listening carefully to what our customers were looking for in a Windows™ spreadsheet, we developed Lotus® 1-2-3® for Windows with three goals in mind.

First, make it a full-fledged Windows application. Second, introduce innovations that

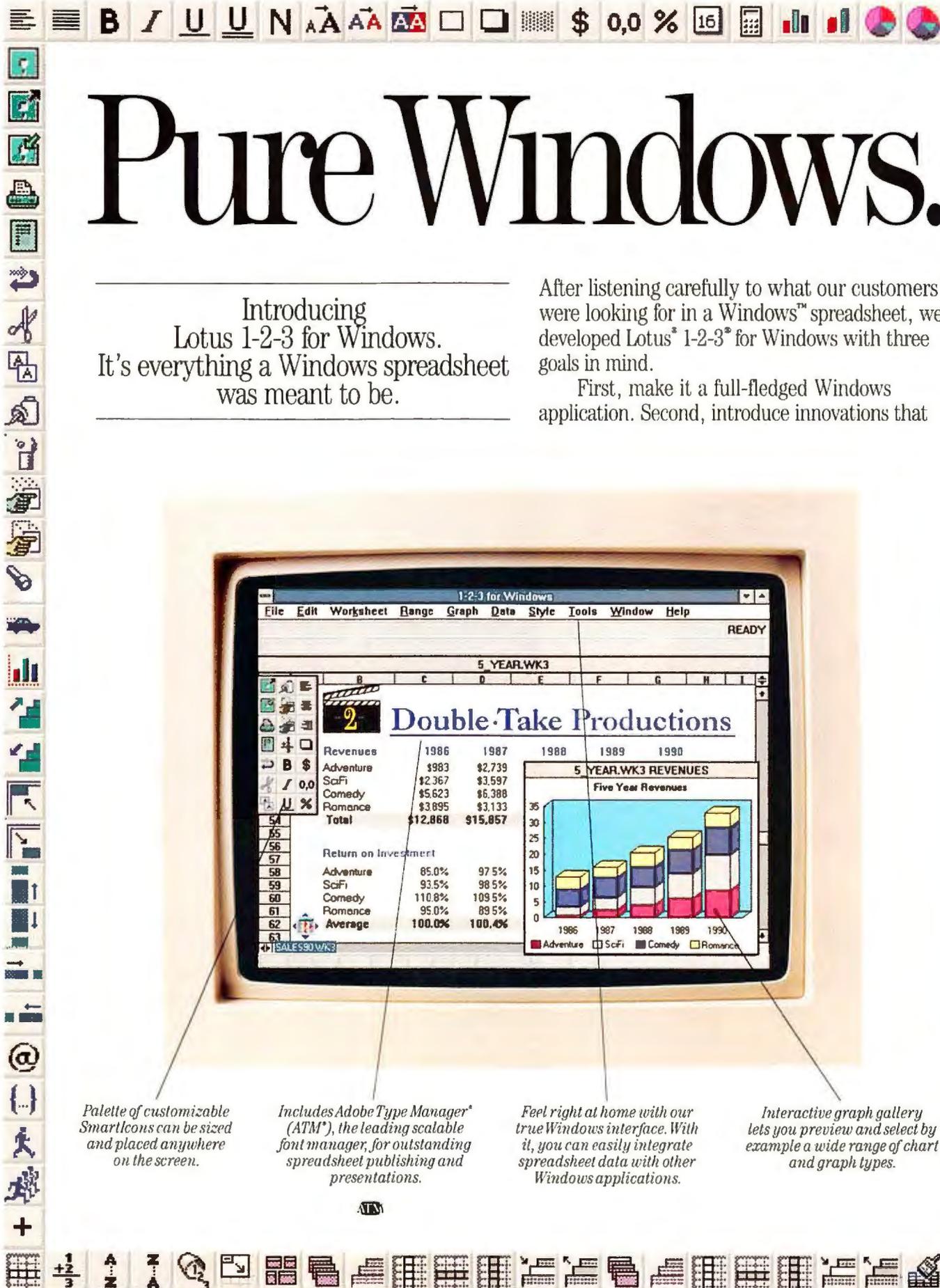


Palette of customizable SmartIcons can be sized and placed anywhere on the screen.

Includes Adobe Type Manager® (ATM®), the leading scalable font manager, for outstanding spreadsheet publishing and presentations.

Feel right at home with our true Windows interface. With it, you can easily integrate spreadsheet data with other Windows applications.

Interactive graph gallery lets you preview and select by example a wide range of chart and graph types.



Pure 1-2-3.

deliver a balance of power and simplicity. And third, make it fully compatible with the earlier versions of 1-2-3 that millions of users are familiar with.

Well, we've done all this and more. Which is no doubt why 1-2-3 for Windows was awarded Byte Magazine's *Best New Windows Application* at Comdex/Spring '91.

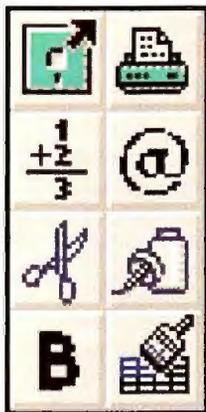
One of the first things you'll notice about 1-2-3

for Windows is its SmartIcons™—simple, one-click shortcuts to performing common spreadsheet tasks. For example, sum a row of numbers, make text bold, create a graph, save or print a file, even run a macro—all in a single step.

Unlike the Toolbar™ in Microsoft® Excel, 1-2-3 for Windows actually lets you create your own

icons for the tasks that are unique to you.

And yes, 1-2-3 for Windows takes full advantage of the Windows environment, with pull-down menus, dialogue boxes, sizable windows, full DDE support and everything else you'd expect to find in Windows.



Customizable SmartIcons give you push-button access to basic and advanced spreadsheet functionality. Over 50 standard icons come with the program, or create new icons to suit your needs. For example, sum a column or a row, or change text to bold—all in a simple step.

What's more, with its interactive graph gallery, you can select by example a wide range of graph types, including true 3D. Altogether, over 200 different graph style combinations.

Finally, to make the move to Windows a simple one, we've included 1-2-3 Classic® commands in the program. At the push of the slash key, the 1-2-3 menu appears on the screen. So not only are all your existing files, styles, and macros compatible with 1-2-3 for Windows, but the familiar keystrokes are too.

So see why Lotus 1-2-3 for Windows is more than a great Windows spreadsheet.

It's everything you've been looking for in one.

And now upgrade your current version of 1-2-3 to 1-2-3 for Windows and get both 1-2-3 and Ami Pro™ 2.0, our award-winning word processor, for just \$199* (a \$645 value).

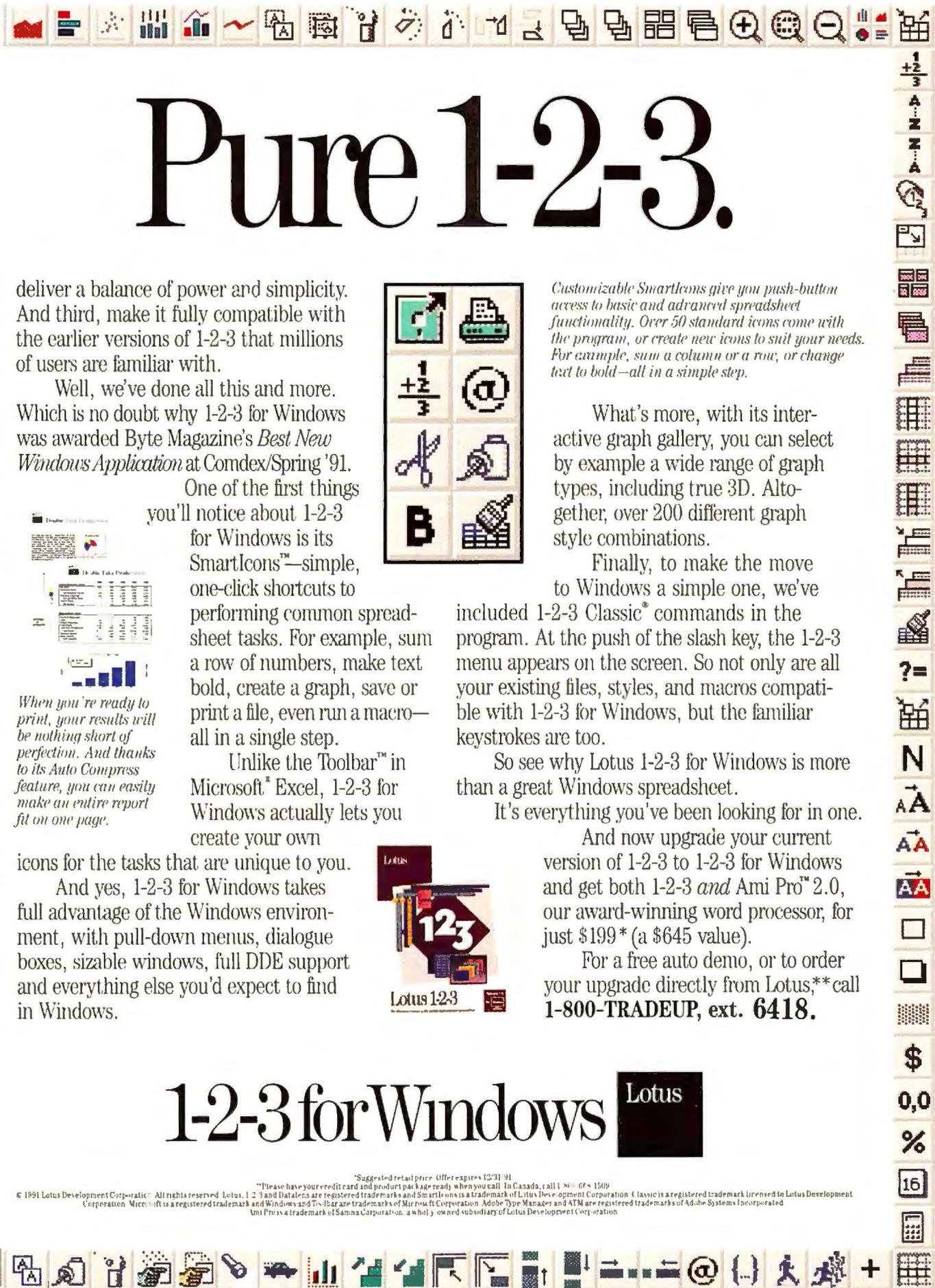
For a free auto demo, or to order your upgrade directly from Lotus,** call 1-800-TRADEUP, ext. 6418.



1-2-3 for Windows

Lotus

*Suggested retail price. Offer expires 12/31/91.
 **Please have your credit card and product package ready when you call. In Canada, call 1-800-645-1509.
 © 1991 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3 and DataLens are registered trademarks and SmartIcons is a trademark of Lotus Development Corporation. Classic is a registered trademark licensed to Lotus Development Corporation. Microsoft is a registered trademark and Windows and Toolbar are trademarks of Microsoft Corporation. Adobe Type Manager and ATM are registered trademarks of Adobe Systems Incorporated. Ami Pro is a trademark of Samna Corporation, a wholly owned subsidiary of Lotus Development Corporation.



WHERE TO BUY

\$2789
ACCESSORIES: 2MB RAM \$199; 320MB hard disk \$1399; 1024 by 768 color monitor \$599
Reader service no. 695

Eltech Model 2200
 Eltech
 47266 Benicia St.
 Fremont, CA 94538
 800/358-8330,
 510/438-0990
LIST PRICE: 2MB RAM, 1.2MB and 1.44MB floppies, 40MB hard disk, one parallel, two serial ports, VGA and color display, keyboard, DOS 5.0, Windows 3.0, mouse \$1599; same except 4MB RAM, 32K RAM cache, 120MB hard disk \$1999
ACCESSORIES: 2MB RAM \$120; 400MB IDE hard disk \$1200
Reader service no. 696

Epson Equity 386SX/20 Plus
 Epson America
 20770 Madrona Ave.
 Torrance, CA 90503
 800/289-3776,
 213/782-0770
LIST PRICE: 2MB RAM, 1.2MB or 1.44MB floppy, one parallel, one serial port, mouse port, keyboard, VGA \$1999; same except 4MB RAM, 1.44MB floppy, 100MB hard disk \$3088
ACCESSORIES: 2MB RAM \$289; 200MB IDE hard disk \$1415; Extended VGA display \$635
Reader service no. 697

Fast Micro FastData 386/SX-20c
 Fast Micro
 3655 E. La Salle St.
 Phoenix, AZ 85040
 800/441-3278,
 602/437-2300 (fax)
LIST PRICE: 2MB RAM, 1.2MB and 1.44MB

floppies, 80MB hard disk, one parallel, two serial ports, game port, keyboard, super-VGA and color display \$1449; same except 4MB RAM, 100MB hard disk, 32K RAM cache, 1024 by 768 VGA and color display, mouse \$1719
ACCESSORIES: 4MB RAM \$240; 660MB ESDI hard drive and controller \$1600
Reader service no. 698

Gateway 386SX/20c
 Gateway 2000
 610 Gateway Dr.
 North Sioux City, SD 57049
 800/523-2000,
 605/232-2023 (fax)
LIST PRICE: 2MB RAM, 1.2MB floppy, 80MB hard drive, 32K RAM cache, one parallel, two serial ports, mouse port, mouse, programmable 124-key keyboard, DOS 5.0, Windows 3.0, 14-inch 1024 by 768 VGA and color display \$1745; same except 4MB RAM, 1.44MB and 1.2MB floppies, mouse \$1895
ACCESSORIES: 2MB RAM \$100; 200MB IDE hard drive \$350
Reader service no. 699

HP Vectra 386/20N
 Hewlett-Packard
 19310 Pruneridge Ave.
 Cupertino, CA 95014
 800/752-0900,
 408/865-6860 (fax)
LIST PRICE: 2MB RAM, 1.44MB floppy, 52MB hard drive, one parallel, two serial ports, mouse port, keyboard, super-VGA \$2699; same except 4MB RAM, 1.2MB and 1.44MB floppies, 120MB hard drive, 1024 by 768 VGA and noninterlaced color display, mouse

\$4216
ACCESSORIES: 2MB RAM \$440; Ergonomic Super VGA monitor \$899
Reader service no. 700

Hyundai Super-386STc
 Hyundai Electronics America
 166 Baypointe Pkwy.
 San Jose, CA 95134
 800/727-6972,
 408/473-9200
LIST PRICE: 2MB RAM, 1.2MB floppy, 40MB IDE hard disk, one parallel, two serial ports, keyboard \$2625; same except 4MB RAM, 1.2MB and 1.44MB floppies, 100MB hard disk, VGA and color display, mouse \$3355
ACCESSORIES: 2MB RAM \$230; 200MB IDE hard drive \$1500
Reader service no. 701

IBM PS/2 Model 57 SX-049
 IBM
 Old Orchard Rd.
 Armonk, NY 10504
 800/426-9292
LIST PRICE: Model 57 SX-045 with 4MB RAM, 2.88MB floppy, 80MB SCSI hard disk with external controller, one parallel, one serial port, mouse port, keyboard, 1024 by 768 VGA \$3625; Model 57 SX-049 same except 160MB SCSI hard disk, 1024 by 768 VGA and color display, mouse \$5255
ACCESSORIES: 4MB RAM \$495, 8MB \$1135; 2.88MB floppy \$325; 80MB SCSI hard disk \$1060
Reader service no. 702

Leading Edge D3/SX-20c
 Leading Edge Products, Inc.
 117 Flanders Rd.
 Westborough, MA 01581
 800/874-3340,
 508/836-4800
LIST PRICE: 2MB RAM, 1.2MB floppy, one parallel, one serial port, mouse port, keyboard, 1024 by 768 VGA, Windows 3.0, Microsoft Works for Windows, mouse \$1459; same except 4MB RAM, 1.2MB and 1.44MB floppies, 130MB hard disk, 1024 by 768 VGA and color display \$2779
ACCESSORIES: 2MB RAM \$299; 210MB IDE hard disk \$1299
Reader service no. 703

Micro Express ME 386SX/SL/20
 Micro Express
 1801 Carnegie Ave.
 Santa Ana, CA 92705
 800/989-9900,
 714/852-1400 (fax)
LIST PRICE: 4MB RAM, 1.2MB floppy, 32K cache, keyboard, one parallel, two serial ports \$599; same except 1.2MB or 1.44MB floppy, 120MB hard disk, 1024 by 768 VGA and color display \$1849
ACCESSORIES: 2MB RAM \$200; 1024 by 768 VGA and color display \$440; 1.2GB SCSI hard disk and controller \$2600; keyboard with built-in trackball \$65
Reader service no. 704

Mitac MPC 2386E
 American Mitac Corp.
 410 E. Plumeria Dr.
 San Jose, CA 95134
 800/648-2287,
 408/432-8519 (fax)
LIST PRICE: 1MB RAM, 1.44MB or 1.2MB floppy, 800 by 600 VGA, one parallel, two serial ports, keyboard, DOS 4.01 \$1495; same except 4MB RAM, 200MB hard disk, 800 by 600 VGA and color display, mouse, DOS 4.01 \$2370
ACCESSORIES: 1MB RAM \$80
Reader service no. 688

NCR PC386sx/20
 NCR Corp.
 1700 S. Patterson Blvd.
 Dayton, OH 45479
 513/445-5000,
 513/445-2008 (fax)
LIST PRICE: 2MB RAM, 1.44MB floppy, 44MB SCSI hard disk with external controller, parallel, serial, mouse port, keyboard, 1024 by 768 VGA and color display \$3790; same except 4MB RAM, 200MB SCSI hard disk with external controller \$5750
ACCESSORIES: 8MB RAM \$1080; 100MB SCSI hard disk \$800
Reader service no. 705

Northgate SlimLine 386
 Northgate Computer
 7075 Flying Cloud Dr.
 Eden Prairie, MN 55344
 800/548-1993,
 612/943-8338 (fax)
LIST PRICE: 1MB RAM, 1.2MB or 1.44MB floppy, 52MB hard disk, one parallel, two serial ports, keyboard, 1024 by 768 VGA and color display, DOS 5.0 \$1999; same except 4MB RAM, 210MB hard disk, Windows 3.0,



How to get a lot of software without buying a lot of software.

Lotus® Symphony® gives you a spreadsheet, word processor, graphics, database, communications, and great presentation-quality output. So you can let your numbers work with your pictures, work with your words, work with your database and make it all work with communications.

It's the one software that can do it all, in one high performance, integrated program. The one software that lets people in

different jobs, in different locations, share files and exchange information seamlessly! And for many companies, it's all the software they need.

So why buy a lot of software, when you can buy Symphony, an InfoWorld Product of the Year, and get all the software you need in one neat package.

And now, for a limited time, purchase

Symphony 2.2 and get an add-in of your choice free—What If Solver™, Macro Editor Debugger™ or Forms-To-Go!™

To get this special offer, just visit your Lotus Authorized Reseller and look for more information and a special promotional coupon on the outside of your package.

Lotus Symphony



Symphony Release 2.2

Lotus

WHERE TO BUY

mouse \$2899
ACCESSORIES: 2MB RAM \$240
Reader service no. 706

Swan 386SX/20
Swan Technologies
3075 Research Dr.
State College, PA 16801
800/468-9044, 814/237-4450 (fax)
LIST PRICE: 2MB RAM, 1.2MB and 1.44MB floppies, 50MB hard disk, one parallel, two serial ports, keyboard, 1024 by 768 VGA with 1MB RAM and color display, mouse, Windows, DOS \$1995; same except 4MB RAM, 100MB hard disk \$2195
ACCESSORIES: 2MB RAM \$190; 200MB IDE hard disk \$500
Reader service no. 707

Tangent 320S
Tangent Computer, Inc.
197 Airport Blvd.
Burlingame, CA 94010
800/223-6677, 415/342-9380 (fax)
LIST PRICE: 1MB RAM, 1.2MB or 1.44MB floppy, 52MB hard disk, one parallel, two serial ports, game port, keyboard, 1024 by 768 VGA, DOS 5.0 \$1250; same except 4MB RAM, 120MB hard disk, 1024 by 768 VGA and color display, mouse, \$2064
ACCESSORIES: 2MB RAM \$160; 340MB IDE hard disk and controller \$750; tower case \$150; 1024 by 768 color VGA display \$395
Reader service no. 708

Tri-Star 386SX 20
Tri-Star Computer Corp.
120 S. Weber Dr.
Chandler, AZ 85226
800/678-2799, 602/961-3401
LIST PRICE: 2MB RAM, 1.2MB and 1.44MB floppies, 80MB hard disk, one parallel, two serial ports, game port, keyboard, 1024 by 768 VGA and noninterlaced color display \$1595; same except 4MB RAM, 130MB hard disk, Windows 3.0, mouse \$2024
ACCESSORIES: 2MB RAM \$110; RAM expansion card \$195
Reader service no. 709

Twinhead Superset 590/20
Twinhead Corp.
1537 Centre Pointe Dr.
Milpitas, CA 95035
800/545-8946, 408/945-1080 (fax)
LIST PRICE: 1MB RAM, 1.2MB or 1.44MB floppy, one parallel, two serial ports, 1024 by 768 VGA \$1199; same except 4MB RAM, 100MB hard disk, 1024 by 768 VGA and color display, mouse \$2668
ACCESSORIES: mouse \$50; 200MB IDE hard disk \$900; noninterlaced color VGA display \$429
Reader service no. 710

Zeos 386SX/20
Zeos Int'l, Ltd.
530 5th Ave. NW
St. Paul, MN 55112
800/423-5891, 612/633-1325 (fax)
LIST PRICE: 1MB RAM, 1.2MB or 1.44MB floppy, 42MB hard disk, one parallel, two serial ports, game port, keyboard, VGA and monochrome display, DOS 5.0 \$1395; same except 4MB RAM, 130MB hard drive, 1024 by 768 VGA with 1MB RAM and color display, Windows 3.0, Ami Pro, 1-2-3 for Windows and mouse \$2295
ACCESSORIES: 2MB RAM \$165; 1.1GB internal SCSI hard drive and controller \$2995
Reader service no. 711

PUNCH IN!

Turn your PC into a timeclock and save hundreds of dollars!



If tracking employee and project hours is important to your business, don't settle for a timeclock... get Timeclock I.

Timeclock I not only logs your employees' in and out times, it tabulates their hours automatically at the end of each time period. And, unlike manual methods, it never makes any mistakes!

Works over your LAN.

It's so easy for employees to use. They just type PUNCH and their 6-digit ID code. Help is on-line. And if they're networked, they can "punch" right from their own stations!

Captures every billable hour!

Tracking time by project? Enter a project name or code with any "punch," and Timeclock I can log employee hours by project. No other recordkeeping needed!

Delivers E-mail messages!

Send announcements of up to 250 characters over the Bulletin Board, or enter messages of up to 80 characters for individuals. They'll read them whenever they "punch."

Try Timeclock I. It's so smart, so versatile, all other time logs can punch out for good!



Order Now! 1-800-423-3556
Offer expires 5/31/92

ONLY \$79⁹⁵

Credit card orders only, please.
All major credit cards accepted.
Includes 5.25" & 3.5" disks.
Order #Y92520.



For a FREE catalog of over 150 hard-to-find software products, just complete the reader response card.

Selective software

The software you always wanted but could never find
3004 Mission St., Santa Cruz, Ca. 95060

Turn your PC into a "smart" timeclock that does its own math! Report hours by employee or by project.

**Why Is Northgate® Going Public
With Confidential Information?**

To Illustrate The Northgate



Take a behind-the-scenes look at Northgate quality.

It's no secret that Northgate makes some of today's finest computer systems. A room full of awards from major industry publications is proof of that. But the tour you're about to take will show you how Northgate achieved its worldwide reputation for quality.

The reason we're "going public" with this information is simple. People who already own a Northgate system know from experience that we make no compromises on quality. Now we want the rest of the world to know about the qualities that made Northgate a leading direct marketer of high-quality systems.

Complete line of systems.

- Latest technology. The Northgate systems you buy today won't become obsolete tomorrow.

- Complete product line. From lightweight notebooks to giant network file servers, Northgate makes a complete range of computers to handle every business application. Our newest products include low-priced 386SX™, 386 and 486™ systems.
- Award-winning performance. Our most recent triumphs include *InfoWorld* and *BYTE* magazines' "Desktop Computer of the Year" awards. Seven *PC Magazine* Editors' Choice awards, eight *Computer Shopper* Best Buy and three other *InfoWorld* recognitions are added proof of Northgate quality.
- Customized, ready-to-run systems. Northgate custom configures every system to meet your specific requirements. We'll even rack mount or hard case your systems.
- Finest components. We test and use components from only the best manufacturers to ensure peak performance and reliability.

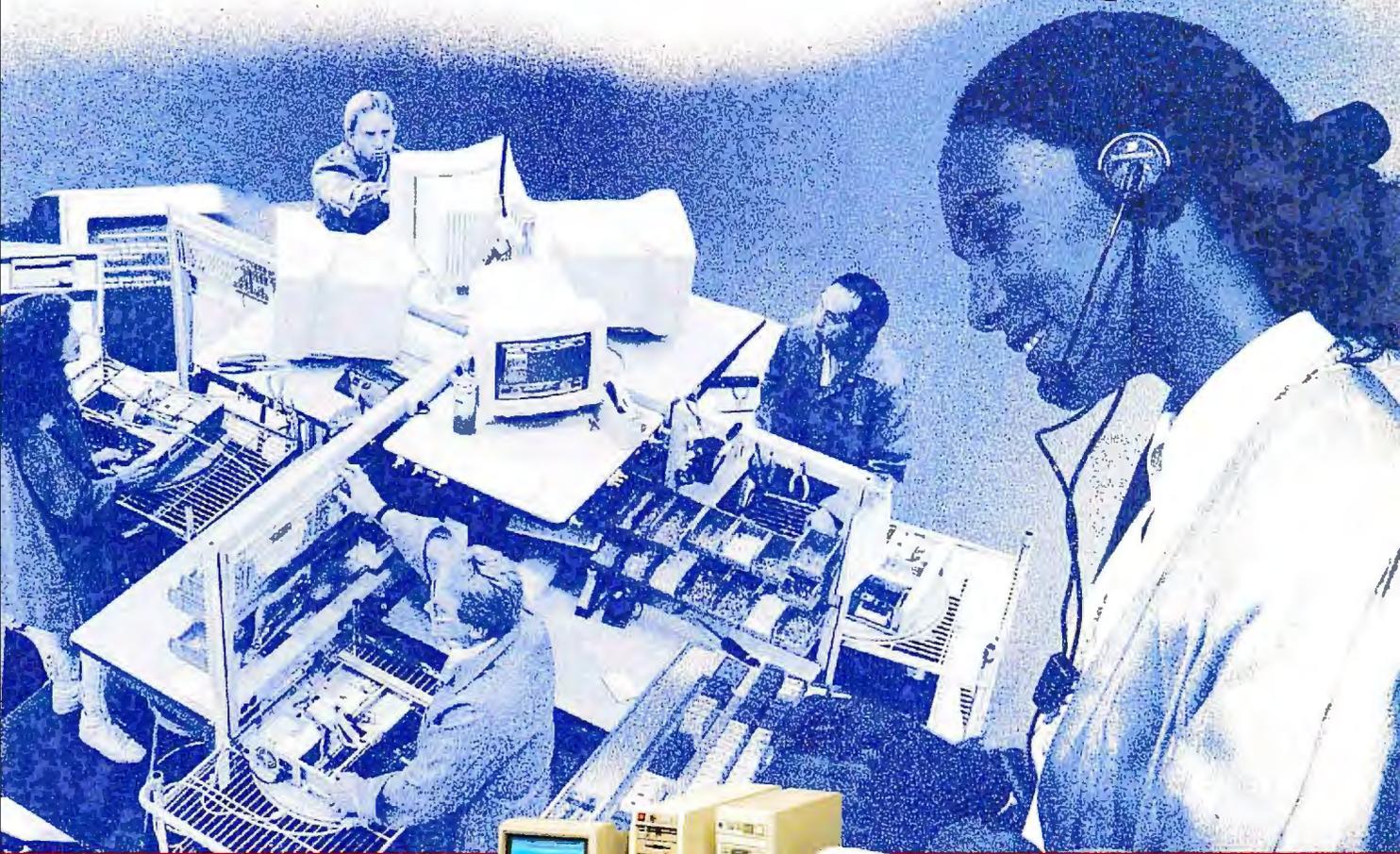
- Flawless software compatibility. Our systems are fully compatible with MS-DOS®, OS/2®, Novell® and other operating systems.
- Product testing and burn-in ensures your system will work perfectly from day one.
- All systems are FCC Class B Certified for home and office use.

Network solutions.

- Northgate LAN specialists are uniquely qualified to configure and install high quality products that provide a solid foundation for networking.
- Novell Certified Gold Dealer. We certify and test all products to work perfectly with Novell as well as OS/2, SCO/UNIX® and Banyan® Vines. And our staff of Certified NetWare® Engineers will help keep your LAN operating at peak efficiency.



Commitment To Quality.



Customer service and support ensures your complete satisfaction.

24-hour toll-free technical support 365 days a year, for as long as you own your system.

Free year of on-site service provided by NCR®. Your complete satisfaction is our commitment. If necessary, we'll even send a skilled technician to your home or office.

Free overnight shipment of replacement parts to minimize computer downtime.

90-day money-back guarantee safeguards your purchase decision.

Full parts and labor warranties — 1 year on systems, 5 years on keyboards.

Customized service and support plans for corporate customers. Whatever you need in the way of service, Northgate delivers. We offer a variety of customized service options including disaster recovery planning.



Affordable quality is yours with Northgate.

- Low Factory-Direct Prices.
- GSA/Government and VAR discounts.
- Leasing plans with low monthly installments and flexible terms up to five years.
- 100% financing with Northgate's Big 'N' Card. We can usually set up your account the same day you call.
- Other convenient payment options include MasterCard, VISA, American Express and Discover cards, wire transfers, personal and corporate checks, Corporate Purchase Orders and C.O.D.

Our promise: no compromises.

As you're about to see, our reputation for quality is built on a solid foundation of superior design, engineering, manufacturing, and service.

Turn the page to begin your tour of Northgate.

CALL TOLL-FREE 800-345-0188



"Smart Tools For Business™"

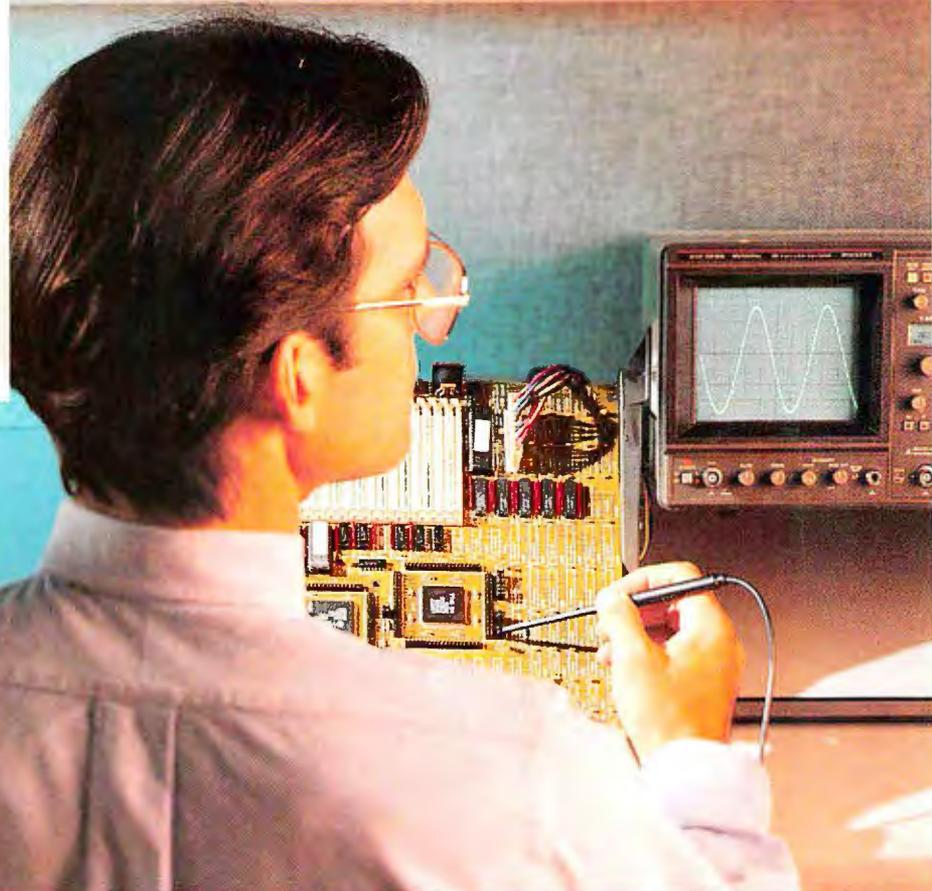
7075 Flying Cloud Drive, Eden Prairie, MN 55344

Circle 191 on reader service card

Quality Through Engineering

Manufacturing high-performance, quality systems takes more than just a top-notch Research and Development team. It requires a strategic alliance with the industry's premier component vendors. To meet our rigid standards, Northgate engineers work in tandem with our suppliers to design a full range of components. Then, they test hundreds of configurations to find the optimum combination of performance and reliability.

Throughout the entire vendor relationship, Northgate uses sophisticated failure analysis techniques (including microphotography) and statistical process control methods to ensure our suppliers consistently produce high quality componentry.



New Northgate 386 and 486™ Systems



Northgate 386SX™/16 or 20

- Intel® 80386SX 16 or 20 MHz Processor
- 1MB RAM (Expands to 16MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- Five-Bay Case, Three 5.25" and Two 3.5" Bays
- Six 16-Bit Expansion Card Slots
- Choice of 1 2MB 5.25" or 1 44MB 3.5" Floppy Drive
- Exclusive *OmniKey*® Keyboard
- VGA 800 x 600 Card and Color Monitor
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$1599⁰⁰/\$1699⁰⁰



Northgate 386DX/25 or 33

- Intel 80386DX 25 or 33 MHz Processor
- 2MB RAM (Expands to 32MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache
- Choice of 1 2MB 5.25" or 1 44MB 3.5" Floppy Drive
- Six 16-Bit and Two 8-Bit Expansion Card Slots
- Five-Bay Case, Three 5.25" and Two 3.5" Bays
- Exclusive *OmniKey* Keyboard
- VGA 800 x 600 Card and Color Monitor
- Microsoft® Windows™ 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$2099⁰⁰/\$2199⁰⁰



Northgate 386DX/40

- AMD 386DX 40 MHz Processor
- 4MB RAM (Expands to 32MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache
- Choice of 1 2MB 5.25" or 1 44MB 3.5" Floppy Drive
- Six 16-Bit and Two 8-Bit Expansion Card Slots
- Five-Bay Case, Three 5.25" and Two 3.5" Bays
- Exclusive *OmniKey* Keyboard
- VGA 800 x 600 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$2399⁰⁰

Quality Through Compatibility

Once our components meet our highest expectations, a different set of engineers takes the helm. System configurations are set up on our own LAN test bed and undergo a grueling month-long battery of tests. We check hundreds of business software packages to ensure our systems run applications under MS-DOS®, OS/2®, Novell®, SCO/UNIX®, Banyan® and other operating systems.

Through this process, Northgate has earned an industry-wide reputation for flawless compatibility. Be assured that when you purchase Northgate systems, you're getting compatibility you can rely on.

CALL TOLL-FREE 800-345-0188



Northgate SlimLine™ Scalable Processing (SP) Upgradable Systems



Northgate SlimLine SP™ 386/25 or 33

- Intel 80386DX/25 or 33 MHz Processor on Power Module
- Fast, Affordable Upgrades — Simply Replace Power Module
- 4MB RAM (Expands to 32MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Continuous Edge Graphics Chip
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$2799⁰⁰/\$3099⁰⁰



Northgate SlimLine SP 486SX/20

- Intel 80486SX/20 MHz Processor on Power Module
- Fast, Affordable Upgrades — Simply Replace Power Module
- 4MB RAM (Expands to 32MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Continuous Edge Graphics Chip
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$3149⁰⁰



Northgate SlimLine SP 486DX/33

- Intel 80486DX/33 MHz Processor on Power Module
- 4MB RAM (Expands to 32MB)
- 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Continuous Edge Graphics Chip
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$3329⁰⁰

Quality Through Manufacturing

Northgate has studied manufacturing methods and has selected a process that gives the greatest quality and productivity.

Our technicians are skilled in all phases of manufacturing. Working in teams of four, they bring the elements of quality together with craftsmanship that knows no equal. A detailed system of checks and balances ensures strict adherence to our rigid quality control standards. When all is complete, comprehensive burn-in and final testing begin.



Northgate Elegance™ Scalable Processing (SP) Upgradable Systems



Northgate Elegance SP™ 386/25 or 33

- Intel 80386DX/25 or 33 MHz Processor on Power Module
- Fast, Affordable Upgrades—Simply Replace Power Module
- 4MB RAM (Expands to 32MB)
- 106MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Desktop Case
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$3299⁰⁰/ \$3399⁰⁰



Northgate Elegance SP 486SX/20

- Intel 80486SX/20 MHz Processor on Power Module
- Fast, Affordable Upgrades—Simply Replace Power Module
- 4MB RAM (Expands to 32MB)
- 106MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Desktop Case
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$3699⁰⁰



Northgate Elegance SP 486DX/33

- Intel 80486DX/33 MHz Processor on Power Module
- 4MB RAM (Expands to 64MB)
- 106MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- Vertical Power Case
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$3999⁰⁰

Quality Through Service

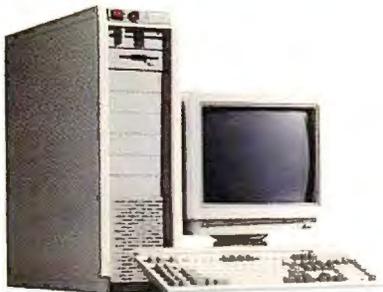
Northgate backs every system with an award-winning package of service and support. Including a 30-Day Money-Back Guarantee, full parts and labor warranties (one year on systems, five years on keyboards) and free overnight shipment of replacement parts.

You also get toll-free technical support 24 hours a day, seven days a week. We track every detail concerning your system, including configuration, **NCR** previous questions and correspondence. This gives our staff immediate access to your system's history the moment you call. Should you require on-site help, we'll dispatch a trained NCR® technician to your door. This service is free for one year.

CALL TOLL-FREE 800-345-0188



Northgate "Specialty" Systems



Northgate Elegance 486/25 or 33 EISA

- Intel 80486DX/25 or 33 MHz Processor
- 4MB RAM (Expands to 32MB)
- 200MB IDE Hard Drive with 15 ms Seek Time
- 128K Cache
- EISA Bus
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Vertical Power Case
- Exclusive *OmniKey* Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- FCC Class B Certified

\$4599⁰⁰/\$5599⁰⁰



Northgate SlimLite™ 386SX/20

- Intel 80386SX/20 MHz Processor
- 1MB RAM (Expands to 5MB)
- 40MB Hard Drive
- 1.44MB 3.5" Floppy Drive
- 84-Key Keyboard Emulating 101
- 8.5" LCD Screen Supports 32 Shades of Gray; VGA 640 x 480
- 11.7" x 8.25" x 1.9"; 6.1 Lbs.
- AC Adapter
- *Stacker™* Software (Provides up to 80MB of Storage)
- *Magic Cursor™* for Windows or No-Squint II™ for DOS
- MS-DOS 4.01 or 5
- FCC Class B Certified

\$2399⁰⁰



Northgate OmniArray™

- RAID-3 Parallel Drive Array with 1.1GB to 4GB Data Storage
- Four Data Drives with 512K Total Cache; One Redundant Drive with 128K Cache
- Fast SCSI Engineering Delivers 10MB/Second Performance
- ISA/EISA SCSI Adapter for NetWare® File Servers
- Novell Certified for NetWare 3.86 3.11
- Failed Drive Supports Keeps Unit Operational with Single Drive Failure, Rebuilds Data on Replacement Drive
- SCSI Cable and Terminator
- Vertical Power Case

Call For Pricing

Quality Custom Configurations



Northgate custom configures every system to meet your most demanding needs. We offer a comprehensive range of top quality components, giving us the capability of tailoring a system over 3,000,000 ways. To find out which is best for you, call one of our Systems Consultants toll free.

Hard Drives

Options include IDE hard drives with capacities of 52MB, 100MB, 200MB or 340MB. Also available are ESDI and SCSI hard drives with capacities as high as 1.2GB. Call for other drive size options.

Memory Expansion

Northgate systems have a variety of memory expansion capabilities. Our Systems Consultants can help you decide how much memory you need for both current and future applications.

Monitors

Northgate offers 12" VGA monochrome, 14" monochrome (amber), 14" VGA monochrome, 14" VGA color, 16" VGA color and 19" VGA color monitors. Resolutions include 640 x 480, 800 x 600, 1024 x 768, and 1280 x 1024. NEC 15", 17" and 21" flat-screen, low-radiation monitors also available.

Math Coprocessors

Speed up processor-intensive business applications with an Intel or Weitek® math coprocessor. A Northgate Systems Consultant can help you select the right one for your system.

Tape Backups

To protect your valuable data, Northgate offers an array of high-speed tape backup devices. Choose internal or external designs in the following capacities: 40/120MB, 80/30+MB, 80MB, 150MB, 300MB and 1.3GB.

Communications

Northgate has the right equipment to link your system to other computers or fax machines. Products include internal and external MNP-5 modems in 2400 and 9600 baud speeds. Also available is Northgate FaxIt for Windows, a revolutionary fax card designed to work from within your Microsoft Windows applications.

Printers

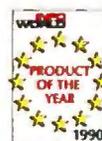
The best thing to have beside your computer is a printer from Northgate. Printer options include low-cost 9-pin and 24-pin dot matrix printers as well as laser printers and PostScript-compatible laser printers for the very best print quality.

Floppy Drives

Floppy drive options include 5.25" models in 360K and 1.2MB designs and 3.5" models with capacities of 720K and 1.44MB.

CD-ROM & Other Hardware

We can also configure your Northgate system with many other hardware options, including CD-ROM drives, high end video cards, and I/O cards. Call and ask a Northgate Systems Consultant for the latest options and prices.



**CALL TOLL-FREE
24 HOURS EVERY DAY 800-345-0188**

Major corporations, volume purchasers and government agencies call National Business Accounts: **800-345-0031**
Fax your order! 800-323-7182
Notice to the Hearing Impaired: Northgate has TDD capability. Dial 800-535-0602.



"Smart Tools For Business"™
7075 Flying Cloud Drive, Eden Prairie, Minnesota 55344

Northgate OmniKey Keyboards — Quality Designs No System Should Be Without!



OmniKey/101NI

- 12 F-Keys On Top
- Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- Rate Select From 3-120 CPS
- Period/Comma Lock Key Locks out < > Even When Shifted
- Interchangeable CTRL, ALT, CAPS LOCK Keys
- Unmatched IBM® Compatibility
- FCC Class B Certified

\$89⁰⁰



OmniKey/102

- 12 F-Keys On Left
- Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- Rate Select From 3-120 CPS
- Period/Comma Lock Key Locks out < > Even When Shifted
- Interchangeable CTRL, ALT, CAPS LOCK Keys
- Unmatched IBM Compatibility
- FCC Class B Certified

\$89⁰⁰



OmniKey/ULTRA

- 12 F-Keys On Left And Top
- Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- Rate Select From 3-120 CPS
- Period/Comma Lock Key Locks out < > Even When Shifted
- Interchangeable CTRL, ALT, CAPS LOCK Keys
- Unmatched IBM Compatibility
- FCC Class B Certified

\$129⁰⁰

© Copyright Northgate Computer Systems, Inc. 1991. All rights reserved. Northgate, OmniKey, Elegance, OmniArray, SlimLine, SlimLite and the Northgate 'N' logo are trademarks or registered trademarks of Northgate Computer Systems. 803805X, 804865X, 80486 and the Intel Inside logo are trademarks of Intel. IBM is a registered trademark of International Business Machines Corp. MS-DOS, Microsoft, Windows and OS/2 are trademarks or registered trademarks of Microsoft Corporation. All other products and brand names are trademarks and registered trademarks of their respective companies. Prices and specifications subject to change without notice. Northgate reserves the right to substitute components of equal or greater quality or performance. All items subject to availability. We support the ethical use of software. To report software copyright violations, call the Software Publishers Association's Anti-Piracy Hotline at 1-800-388-7188.

CODE N1401

Circle 191 on reader service card

No-Sweat Desktop Publishing

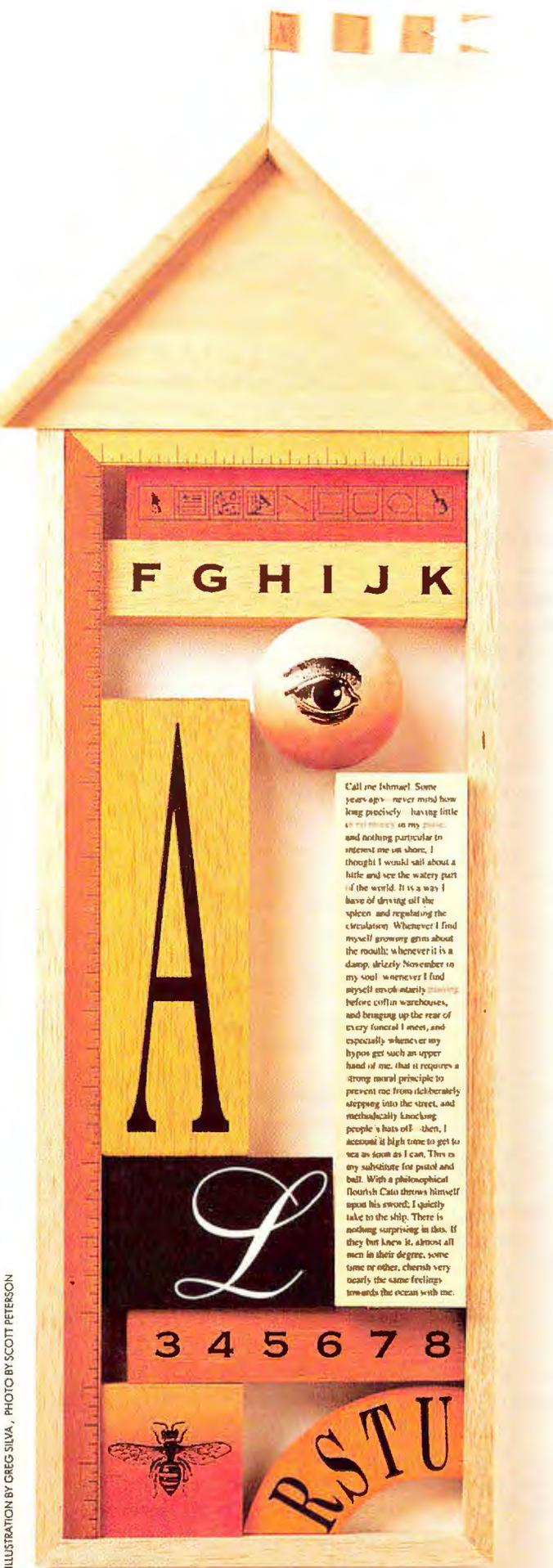
If you want your documents to stand out, but you're short on time, one of these five low-cost desktop publishing programs may be just what you need.

Deke McClelland

Every report, newsletter, and flier that leaves your desk is ultimately headed for a common destination: the trash can. But there's no reason it has to arrive there prematurely. An eye-catching layout with the right fonts and graphics can delay your document's journey long enough to do you some good.

If page design isn't part of your job description but you sometimes need to seize the attention of your colleagues and clients with a flashy newsletter, brochure, or fax, a no-frills desktop publishing program may be just what you need. With one of the five affordable packages reviewed here, you can assemble text and graphics from other applications into professional-looking documents.

With list prices ranging from \$130 to \$250, these programs are practically impulse buys—substantially cheaper than leading desktop publishing applications and full-featured word processors. They also need considerably less horsepower. *Ventura Publisher* and *PageMaker* each require 3MB of RAM or more, huge chunks of disk space, and a 386 system or better to perform reliably. None of the programs reviewed here—



even the two *Windows* packages—require more than 1MB of RAM or 3.2MB of disk space.

Small Is Beautiful

One of these publishing packages is a real standout. Thanks to a streamlined interface, exceptional templates and utilities, and the best font handling of the bunch, *Microsoft Publisher* measures up as the year's Best Buy.

Not that we'd recommend *Micro-*

soft Publisher, or any of the other programs here, to a professional designer. For example, none of these programs number figures automatically or generate tables as *Ventura Publisher* can. Nor can they handle text and graphics with *PageMaker's* precision. But if publishing that perfect four-page mailer is only a small part of your job, you're probably better off without the complexities of a full-blown page composition package.

At the other end of the power spectrum, you could lay out pages with a good word processor. There are compromises here, especially if your word processor is text-based. You can lay out multiple columns, drop in graphics, and even insert boxed text with programs such as *WordPerfect* and *Microsoft Word*, but you can't do it easily. If you're usually happy with your text-based word processor, an inexpensive desktop publishing program can make

Buying Smart: Critical Criteria for the Bargain Publisher

A good desktop publisher helps you set guidelines for consistent-looking pages, then makes it easy for you to break the rules and give each page a unique appearance. You should be able to take words and pictures from any other program and alter them to your heart's content. What should you look for? Here's a quick guide.



EASE OF USE

In theory, all desktop publishing should be easy—after all, you're doing little more than moving blocks around an electronic mock-up of your page—but it often isn't. Excessively slow screen rewrites, limitations on mouse movement, menus within menus within menus, and separate utilities for jobs that should be part of the main program all conspire to make some packages more work than they should be.

On the other hand, a well-designed desktop publisher can be a joy to use. Templates (which offer guidelines for common types of documents), readily available on-screen buttons for common tasks, and tool palettes that float—move from one part of the screen to another—all remind you that graphic user interfaces exist to make your life easier.



PAGE DESIGN AND LAYOUT

Styles and style sheets help you apply the same formatting to the same type of paragraph. For instance, by assigning each headline the same style, you can quickly give them all the same font, spacing, and other attributes. Master pages contain elements like page numbers, logos, and rules that repeat from one page to the next. Automatic headers and footers, while not as versatile as master pages, are often easier to use and do part of the same work.

If you're creating a newsletter or other multipage document, you'll want your text to flow from one frame to another as easily as it would between columns in a word processor. When your text fills all the frames, it should automatically create new frames and, if necessary, new pages. If you can link frames manually, your text can flow from one to another regardless of their positions on the page. But what happens once the text has flowed? If the frames don't remain linked, you'll have to do some clumsy cutting and pasting every time you edit your text or resize a frame.

Snap-to guides are nonprinting lines that help position text and other

elements exactly. The most important are column guides, which subdivide a page to create evenly spaced text frames. Ruler guides pop out from the horizontal and vertical rulers to help align headlines and graphics.

Look also for auto-scrolling, which scrolls the screen when you move your cursor off it, so you can extend elements beyond the boundaries of the window. And to get the big (and little) picture, you'll want at least six view magnifications, including an overview of a two-page spread. A pasteboard is a helpful holding area that lets you park elements for later use.



FONT HANDLING

What's desktop publishing without a variety of fonts to spice up your documents? First of all, you'll need scalable fonts—typefaces that you can shrink or expand to a wide range of sizes without distorting—to make text just the size you want. If you like the fonts you already own, in the PostScript printer, a font cartridge, or a soft font collection, you'll want a program that supports them.

Fonts are measured vertically in points, with 72 points to an inch. You'll want the ability to make your

page layout easier without forcing you to change your work habits.

Of course, *Windows* word processors like *Ami Pro* and *Word for Windows* also let you point and click on a screen that looks like the printed page. But even the best of them can't match the layout power of a low-end desktop publisher. For instance, most desktop publishing programs let you place text into rectangular objects called *frames*, which you can resize and move at will.

Most *Windows* word processors now support frames, but few let you flow text easily from one frame to another or use snap-to grids to align text and graphics precisely. Even fewer let you do more with your fonts than resize them. On the other hand, most of these publishing packages let you twist, turn, and otherwise distort your letters, giving you the control you need when you create fliers and advertising copy.

Control, after all, is the name of the

game here—control over text, graphics, and the overall page. And the more easily you can control your documents, the longer it will be before they land in the dumpster.

Deke McClelland is the author of Drawing on the PC (Business One Irwin, Homewood, Illinois, 1990).

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

fonts very big and very small, and you'll want to be able to scale your font by a fraction of a point. For more sophisticated copy fitting, you'll need tracking and kerning capabilities, which adjust space between letters, and adjustable interword spacing.

For documents that make your readers sit up and take notice, look for a program that lets you condense and expand type by scaling a character's width, rotate text 360 degrees in 1-degree increments, skew text to slant letters forward or backward, and print text on a curve. Automatic pop and drop caps that extend above or below a line make it easy to draw the eye to the start of a story.



GRAPHICS HANDLING

You probably won't need the Mona Lisa in your annual report, but you'll want to create simple drawings or import and edit graphics. All five programs provide tools for drawing straight lines, rectangles, and ovals, and most let you create perfect squares and circles. If you need more variety—say, the occasional triangle—you'll want polygon and freehand curve tools.

Look for a program that lets you customize a line's thickness, or

weight, as well as your line and fill patterns. If you plan to label illustrations, add automatic arrowheads to your shopping list. Gradients, which blend the interior of a shape from one fill pattern to another, lend an air of sophistication.

If drawing tools are important, you'll also need to be able to edit points in an object by moving them and changing the curvature of the segments between points. The ability to select multiple objects lets you move, as well as apply these weights and fills to, several items at a time, while grouping objects binds them together for future manipulation.

Your graphics will probably come from another program. All the packages can read graphic files in a variety of popular formats, and they all come with good-sized collections of clip art. But programs that let you edit imported images have a decided advantage, as do those that handle gray-scale or color images.



EDITING TOOLS

If you want to write and edit text, use a word processor. All the programs reviewed here accept files from WordPerfect, Microsoft Word, and WordStar. But editing tools still come

in handy for last-minute changes. Tabs and leader dots (used to put a line of periods between a chapter title and a page number, for example) are essential if you plan to create tables. Paragraph spacing and indenting tools come in handy, as do various page-numbering options. All the packages offer discretionary hyphens, but also look for automatic hyphenation.



PRICE

At \$130 to \$250 retail, each of these programs qualifies as a bargain; and on the street you can find them about \$50 to \$100 cheaper than that. In comparison, both PageMaker and Ventura Publisher list for \$795 and sell for about \$500 on the street.



TECHNICAL SUPPORT

Even with an easy-to-use desktop publisher, you may need a helping hand. To test technical support, we called each vendor three times, asked questions of varying technical complexity, and noted the timeliness and accuracy of their answers. We also factored in their support policies, such as hours, toll-free lines, and BBS and fax support.

Avagio 2.0

PROS: Strong drawing and graphics tools
CONS: Slow screen refresh, no PostScript support, unresponsive tech support

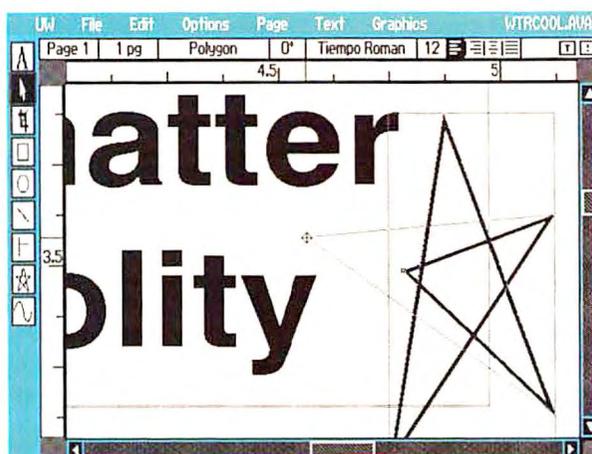
If you want to adorn your documents with a healthy dose of graphics, *Avagio* is worth considering—no other program reviewed here matches its ability to create, integrate, and enhance images. But *Avagio* rewrites your screen slowly and often, making editing difficult, and its font support is the weakest in the roundup.

Avagio is the only program we looked at that lets you edit a graphic's object points, so you can reshape a drawing without redoing it from scratch. You can also group objects in order to manipulate them as a single entity. For example, when drawing a logo, you may want to design the text separately from the image, but you'll want to move the ensemble together. *Avagio* is equally adept at coloring and

shading graphics—you can mix the fill pattern of one object with the pattern of the object directly behind it to achieve a nice blending effect.

But handling text will try your patience. If you change so much as a single character using *Avagio's* editing tools, the entire story reformats on screen, one line at a time, and very slowly—even if your change doesn't affect any line but the one you made it on. If a page has more than a few lines of text in it, this flaw makes text editing downright painful.

What's more, Unison World has the worst technical support in the roundup; getting help can be a major challenge.



Avagio is the only program reviewed here that lets you edit an object by moving its points to new locations.

Of three test calls we made, one was returned after 5 hours, another was returned two days later, and the third was never returned.

Avagio is a possibility if you're making advertising fliers that are long on graphics and short on text. Otherwise, keep looking.

Express Publisher 2.03

PROS: Fancy font work, auto-scroll
CONS: Difficult interface, no guides

The good news is, by the time you read this review, Power Up Software should be shipping a hot new *Windows* version of *Express Publisher* that looks like a

real contender. The bad news is, DOS users aren't so blessed—the DOS version of *Express Publisher* makes it far too difficult to design a page. Even where the program boasts a rich feature set—special font effects, for example—there's always some roadblock lurking about that keeps you from getting your work done quickly.

Laying out a page in *Express Publisher* is a real challenge. First, instead of the movable guidelines that other programs use to help align elements, *Express* offers stationary grids that aren't guaranteed to be exactly where you want them. Second, you can't easily format a paragraph in a unique way; you must either sepa-

rate it into its own frame, or give it a different style. Finally, you can't view a full page and work on it at the same time; you must magnify part of your screen to make adjustments—even if what you're adjusting is a large frame that takes up most of the page.

Express Publisher does have its moments—when you move the mouse cursor off the screen, the image scrolls with it automatically. And when it comes to twisting and turning normal text into something more exotic, *Express Publisher* is the best of the bunch. You can rotate and skew text in 1-degree increments and print text on a curve. Still, even when you're using the capable tools, the interface gets in your way—you have to create your great-looking text effect outside your document, save the effect as a separate file, and then import it.

Windows users may want to check out the upcoming version of *Express Publisher*, but if you prefer DOS you'd do better to look elsewhere.



Express Publisher crops gray-scale PCX images as it imports them, giving you only half a picture if you want.

Better Windows

Solve memory problems

QEMM 386 makes the most of every last 'K'. DESQview uses that memory to run multiple programs.

Multitask

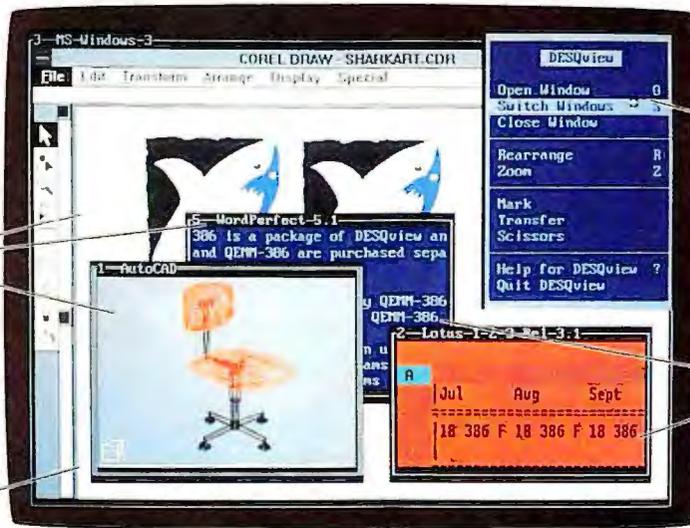
Run multiple programs side-by-side in windows. 'Background' programs can continue to run.

See text and graphics side-by-side

Reference information in your graphics program while writing your report.

Run Windows programs

DESQview even lets you run Microsoft Windows.



Easy menu access to programs and DOS services

Access programs or DOS in a window with just a few keystrokes or mouse clicks. It's that simple.

See multiple files

If your programs allow it, DESQview lets you run the same program in two or more windows. Great for comparing files

Cut and paste data

Transfer data between programs with a few keystrokes.

Handle large programs

Run standard DOS programs side-by-side with DOS-extended programs like 1-2-3 Release 3.

DESQview. The Multitasking, Windowing Environment.

Once the power user's secret, DESQview has been discovered by computer knowledgeable people everywhere. Over 1,000,000 people have bought DESQview.

Multitasking; windowing, using keyboard or mouse commands, it's all easy with DESQview.

DESQview 386 2.3 lets you use your favorite DOS and DOS-extended programs in windows side-by-side on 386SX, 80386 and i486 PCs. As you can see above, you can even run Microsoft Windows



within DESQview.

DESQview 2.3 gives 8088, 8086 and 286 PCs with additional memory most of the same capabilities with surprisingly little performance trade-off.

Whatever programs you use—DOS, extended DOS or Windows—and whatever hardware you have, whether 8088 or i486 or something in between, DESQview is still the best way to get the most out of the hardware and software you own today.

DESQview. When you look into it, it's the obvious choice.

Quarterdeck

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405 (213) 392-9851 Fax (213) 399-3802

Now Graphics.



you modify on-screen have a crisp, sharper look and feel. A professional touch.

Just think of what the addition of picture perfect graphics can mean for your business or profession.

Use the *Typist Plus Graphics* to capture photos that you can incorporate into your most critical business presentations or reports. Scan company logos and place directly onto your stationary, invoices or slide presentations. You can add graphics to all of your Macintosh desktop published documents, including training manuals, newsletters –

even invitations to company events.

The word is out about the *Typist Plus Graphics*. Now you get the full picture – words and graphics – in one intuitive and easy-to-use hand scanner.

To learn more about the *Typist Plus Graphics* and how it can be of assistance to you, contact one of Caere's authorized dealers. Caere, the Complete Recognition Company.



For more information:

Call: 1-800-535-SCAN

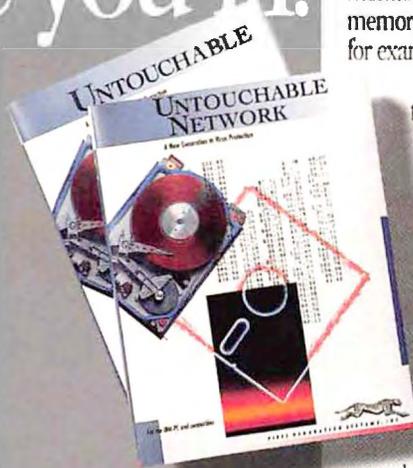
**Write: Caere Corporation
100 Cooper Court
Los Gatos, CA 95030**

CAERE®

Caere and the Caere logo are registered trademarks of Caere Corporation. Graphics Editor and LaserGray are trademarks of Caere Corporation. All other ®registermarks and ™trademarks are of their respective companies. ©1990 Caere Corporation. All rights reserved.

Circle 21 on reader service card

Paying again and again for virus protection is enough to make you ill.



Frankly, paying anything at all is pretty nauseating.

But that's nothing compared to the feeling you get in your stomach when a drive full of data goes down the drain.

So you pay.

Then you pay again. For upgrades. Or quarterly "updates."

But even that doesn't buy you much peace of mind. Because each new day brings an average of six new viruses into the world.

Which means all anti-virus programs are inherently obsolete.

Except one.

Introducing Untouchable™. The only software in the world that gives you 100% protection.

Today.

And tomorrow.

Like other anti-virus software, Untouchable is equipped with a TSR monitor for patrolling your system memory, plus a scanner/remover for examining the files on your disk.

Between them, these first two lines of defense can

Only Untouchable Network gives you centralized virus protection.

Now you can install, monitor and control without having to leave your seat.

recognize and obliterate hundreds of the little buggers — enough to protect you from 95% of the potential carnage.

If you find that statistic reassuring, then you probably like the odds in Russian Roulette.

If you don't, you'll want to

know that Untouchable is equipped with a unique *third* line of defense, which has been mathematically proven to be, well, untouchable.

Instead of looking for viruses, this third line of defense looks for *changes in your executable and system files.*

If the change is but a single byte, Untouchable will spot it and, using our patent-pending recovery technique, reconstruct the file to its original state.

The process is known as Generic Differential Detection, and certain other programs claim to perform it, too.

But only Untouchable calculates file signatures using not one, but two proprietary algorithms that can't be reverse-engineered.

Only Untouchable guarantees 100% safe recovery of infected files. (Unlike other programs that proudly generate corrupted files, Untouchable knows when the jig is up and doesn't attempt recovery.)

Only Untouchable can provide centralized network virus protection. In fact, Untouchable Network has enough virus alerts and reporting mechanisms to settle the stomach of even the most nervous Netware® administrator.

And only Untouchable is backed by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

If you're worried about viruses — and you should be — don't reach for the Maalox®. Reach for the phone. Dial 1-800-388-0362.

You'll feel better right away.



FIFTH GENERATION SYSTEMS, INC

Circle 71 on reader service card

FEATURES EVALUATION

Ingredients for a Great-Looking Page

Best Buy Microsoft Publisher has the top tools for page layout and text handling—both for editing text and printing it in great-looking fonts. In graphics, however, Avagio leads.

- Yes
- No
- ◐ Deficient

Standard features	Avagio 2.0	Express Publisher 2.0	Microsoft Publisher 1.0 (W)	PagePlus 1.1 (W)	Publish-It 2.0	Publish-It 2.0
Price	\$149.95	\$129.95	\$199	\$149	\$249.95	
RAM required	1MB	640K	1MB	1MB	640K	
Minimum hard disk space (MB)	2.9	3	3	3.2	1	

Page design and layout

Style sheets	●	●	◐ ²	◐ ²	●	●
Master pages	●	○	●	◐ ³	●	●
Automatic header/footer	○	●	●	○	●	●
Automatic frame and page generation	●	◐ ⁴	●	○	◐ ⁴	○
Manual frame linking/frames remain linked	●	●	●	○	●	●
Snap-to column guides	●	○	●	●	●	●
Snap-to ruler guides	●	○	●	●	○	○
Pasteboard	○	○	●	●	○	○
Auto-scroll	○	●	●	○	○	○
Number of view sizes	6	4	7	200	6	
Facing pages view	◐ ⁵	●	●	●	●	●

Font handling

Typefaces included	30	8	31	71	17	
Font size range (points)	4-500	6-144	0.5-500	4-250	3-250	
Scalable fonts	●	●	●	●	◐ ⁶	
Supports resident printer fonts	○	●	●	○	●	
Supports PostScript output	○	●	●	●	●	
Supports Fontware or Facelift	○	◐ ⁷	●	○	◐ ⁷	
Fractional point sizes	○	○	●	●	○	
Tracking	○	○	●	●	●	
Manual kerning	●	○	◐ ⁸	●	●	
Condense and expand type on the fly	●	●	●	●	◐ ⁶	
Rotate text block	●	●	◐ ⁹	●	○	
Skew text block	○	●	◐ ⁹	○	○	
Print text on a curve	●	●	●	○	○	
Automatic pop/drop caps	○	○	●	○	○	

BEST BUY

Graphics handling

Circles/squares	●	○	●	●	●	
Polygons/freehand curves	●	◐ ¹⁰	●	○	●	
Line weights	●	◐ ¹¹	●	●	◐ ¹¹	
Line patterns	●	○	◐ ¹¹	●	◐ ¹¹	
Arrowheads	●	○	●	○	●	
Fill patterns	●	◐ ¹¹	◐ ¹¹	●	◐ ¹¹	
Gradients	●	○	●	○	○	
Edit object points	●	○	●	○	○	
Select multiple objects	●	◐ ¹²	◐ ¹²	●	○	
Group/ungroup objects	●	○	●	○	○	
Edit imported image	○	●	●	○	●	
Print gray-scale and color images	●	○	●	●	○	

Editing tools

Spelling checker	○	○	●	○	○	
Global search and replace	●	●	●	○	●	
Paragraph spacing/indents	●	◐ ¹³	●	○	◐ ¹⁴	
Tabs	●	◐ ¹⁵	●	○	●	
Dot leaders	●	○	●	○	●	
Arabic page numbers	●	●	●	○	●	
Roman page numbers	○	●	●	○	●	
Alphabetical page numeration	○	●	●	○	●	
Automatic hyphenation	●	●	●	○	●	

Service and support

Daily support (hours)	9	9	12	6	8	
Unlimited free support	●	●	●	○	●	
Toll-free number	●	○	●	○	◐ ⁷	
Weekend support	○	○	●	○	○	
BBS support	●	○	●	●	●	
Fax support	●	●	●	●	●	
Additional services at extra cost	●	○	●	●	●	

BEST BUY

W Windows product.

¹ Publish-It 1.13 won a Best Buy in August 1990.

² Must copy and paste styles between blocks.

³ Affects only new pages.

⁴ Must create sample frames first.

⁵ Can't edit in facing pages mode.

⁶ Must do in separate utility.

⁷ Extra-cost option.

⁸ No kerning preview.

⁹ Can't be applied in single-degree increments.

¹⁰ Can create only regular polygons in special effect area.

¹¹ Can't customize.

¹² Can't apply attributes to multiple selected objects.

¹³ Can't apply to individual paragraphs.

¹⁴ Before-paragraph spacing only.

¹⁵ No right or center tabs.

THE MOST POWER



FULL 486SX. GOING.

Behold the new Toshiba T4400SX notebook—the first 486SX computer to offer all the power and performance of a desktop computer while freeing you from the tyranny of the nearest electrical outlet.

For starters, the T4400SX offers a 25 MHz 486SX microprocessor with 8K internal cache, upgradable to a full 486DX. Plus an 80 MB hard drive and standard 2 MB RAM, expandable to 10 MB.

The T4400SX is the only notebook computer that offers a high-speed Gas Plasma screen, which means no mouse blur. And its 100:1 contrast ratio delivers seven times the contrast of a typical LCD display.

Or if you prefer, you can choose our 9.5" diagonal LCD display, the most state-of-the-art LCD available, with uncompromising clarity from the black and white ultra thin screen.

Both offer a 640x 480 VGA high-resolution display as well as the graphic versatility of 16 gray scales for the gas plasma screen and 64 gray scales for the LCD screen.

For familiarity and ease of use, the T4400SX has a full-function keyboard with standard size keys and key spacing.

The Nickel Cadmium battery provides more than three hours of computing power. Our AutoResume feature allows you to shut down and start up precisely where you left off.

And for added expandability and connectivity, there are built-in parallel, serial, video, keypad/board, mouse and bus expansion ports. There's even



If you choose the 9.5" diagonal LCD display, you get the versatility of 64 gray scales as well as high-resolution 640x 480 VGA on the black and white ultra thin screen.

a dedicated modem slot for an optional internal cellular-ready, 9600 bps fax or standard modem.

All that in an ultra-strong 11.7" W x 8.3" D x 2.2" H carbon fiber-reinforced case weighing only 7.25 lbs that fits into half a briefcase.

If you'd like to know more about the T4400SX notebook computer, or any

On those occasions when you're actually at your desk, you can plug your T4400SX into our optional Desk-Station IV with all standard desktop hardware connections and expandability.



of our full line of Toshiba portables, call us at 1-800-457-7777.

We'll send you information that can lead to only one conclusion about desktop computers:

Going. Going. Gone.

In Touch with Tomorrow
TOSHIBA

Microsoft Publisher 1.0

PROS: Great learning aids, movable rulers, fancy font work, spelling checker

CONS: No style sheets



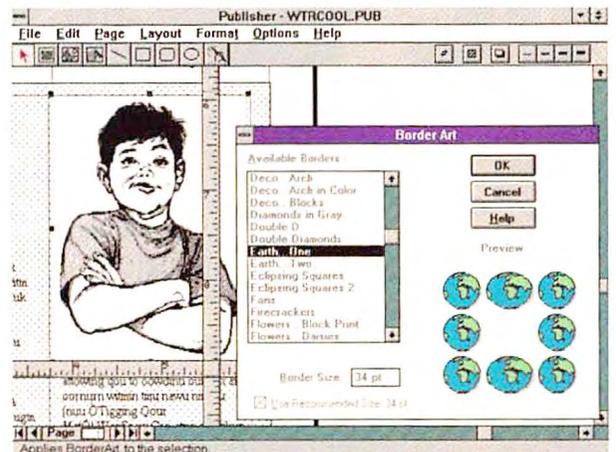
WINDOWS Microsoft needs another *PC World* Best Buy like Arnold Schwarzenegger needs

another hit movie—but it's got one. *Microsoft Publisher* combines great page design, text handling, and graphics tools with an intuitive interface no other program can touch. Unless you look at *Windows* as something to avoid, or you plan to create long documents like books or catalogs, there's no reason to look at another program.

MS Publisher coaches the new user as no other program does. The first time you launch it you're greeted with a grand tour of desktop publishing. A large selection of well-designed and

well-documented templates lets you get up and running quickly, learning as you go. If templates are too much work, *MS Publisher* can ask a few questions and then design a document from the answers.

Once you've got desktop publishing under your belt, *MS Publisher* is still a big help. The rulers on the top and left sides of the frame are movable, and you can easily surround a selected text block or graphic with border art. Adept at fancy font work, *MS Publisher* lets you turn the first letters in a story into large and distinctive pop or drop caps. The lack of style sheets is the one major oversight, but it won't



Movable rulers and custom border art help make Best Buy Microsoft Publisher the most versatile desktop publisher on the block.

be an obstacle with small projects.

Windows users will have to choose carefully between *MS Publisher* and a rash of superb desktop publishing-flavored *Windows* word processors. But if you want easy publishing without all the wordy extras, *Microsoft Publisher* is your Best Buy.

PagePlus 1.1

PROS: Easy to use, auto-save, floating palettes

CONS: Changes in one text frame don't affect others, weak editing tools

WINDOWS *PagePlus* is a nice little *Windows* publisher that's designed for nice little jobs. But it's definitely underpowered. Still, if you're creating ads, fliers, and other documents that re-

quire small amounts of text—and if an easy learn is a must for you—*PagePlus* is a pretty good value.

PagePlus is blessed with a remarkably deft interface. A floating custom editing palette allows you to click on icons to incrementally adjust the typeface, size, kerning, and other attributes. And as with *Express Publisher*, you can roll your mouse off the screen

and the image will scroll with it.

When it's time to handle text, however, *PagePlus* shows its limitations. The program lacks search-and-replace and tabs, and it has virtually no tools for formatting paragraphs. Worse, if a story uses multiple text frames, none of them know the oth-

ers exist. Suppose you have a story contained in two frames, one for each of two columns on the page. If you shorten the first text frame to make room for a graphic, the text at the bottom of that frame won't reappear at the top of the next frame as it should. You'll have to use cut-and-paste commands to get the whole story back again.

But for all its faults, *PagePlus* is always ready to surprise you with another useful innovation. For instance, you can insert new pages anywhere in your document, and when some of your text doesn't quite fit, *PagePlus* lets you adjust point size to within one-tenth of a point. Additional niceties include easy object cloning, an object alignment command, and an auto-save feature.

You wouldn't want to lay out a newsletter with *PagePlus*, but it's a safe bet for fliers and ads. Still, for only \$50 more, you can get easy operation, clever design tricks, and frame linking with *Microsoft Publisher*.



With its floating palettes, on-line help bar, and surprising color support, PagePlus is a pleasant working environment.

EXECUTIVE SUMMARY

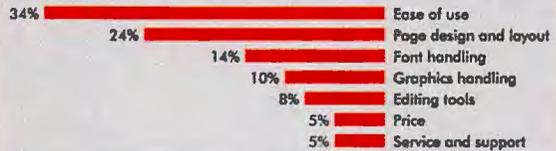
Microsoft Publisher: For Looking Your Best

The best of the affordable desktop publishing packages make layout chores a joy.



Laying out pages, controlling fonts, and manipulating graphics—preferably without headaches—is what desktop publishing is all about. **Microsoft Publisher** wins its Best Buy by virtue of its learning aids, unsurpassed font and editing capabilities, and movable rulers. But you'll need Windows to use it. If you prefer to stay out of Windows, consider runner-up **Publish-It**, an easy-to-use program with the best style sheets in the bunch.

Key Buying Issues: Percentage of Importance



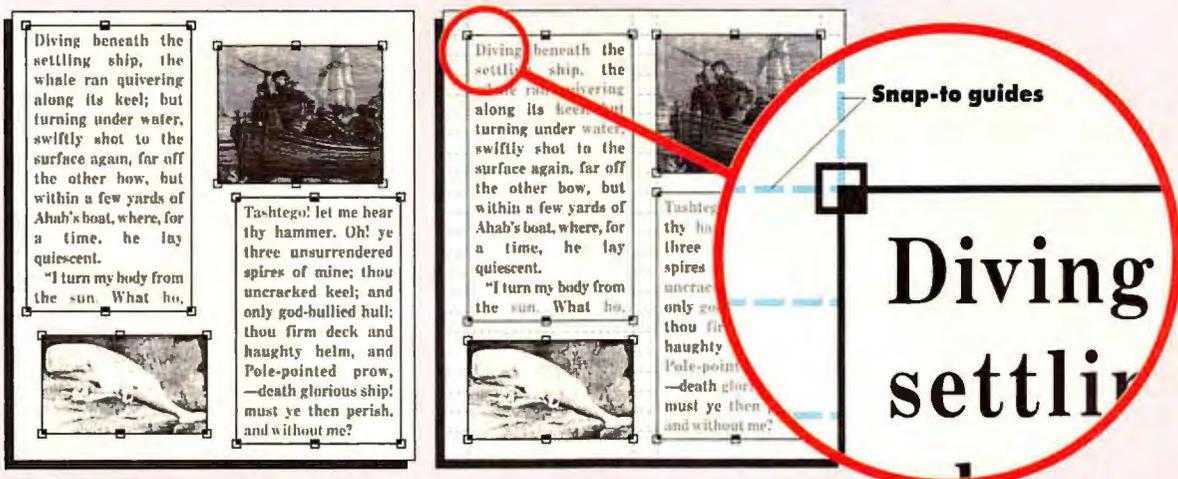
- Excellent ★★★★★
- Good ★★★★
- Fair ★★★
- Poor ★

	Reader service no.	Ease of use	Page design and layout	Font handling	Graphics handling	Editing tools	Price	Service and support	Overall value
Avaglo 2.0	609	☆	☆☆☆	☆☆	☆☆☆☆	☆☆½	☆☆☆☆	☆☆	★★
Express Publisher 2.03	610	☆☆½	☆☆	☆☆½	☆☆½	☆☆½	☆☆☆☆	☆☆☆	★★
Microsoft Publisher 1.0	611	★★★★	★★★★½	★★★★	★★★★½	★★★★	★★★★½	★★★★	★★★★★
PagePlus 1.1	612	☆☆☆	☆☆	☆☆☆	☆☆☆½	☆☆	☆☆☆☆	☆☆☆	★★½
Publish-It 2.0	613	☆☆☆½	☆☆½	☆☆☆	☆☆☆	☆☆½	☆☆½	☆☆☆½	★★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Snap-To Column Guides

Snap-to column guides help you align graphics and text, giving you an ordered page. You can move one of these vertical or horizontal, nonprinting lines anywhere on your page. Then, when you move an object near the line, the object will immediately "snap" into alignment with the guide.



Publish-It 2.0

PROS: Superb style sheets, very easy to use
CONS: Limited master pages, clumsy text tools

This former Best Buy still has two major advantages over current winner *Microsoft Publisher*: terrific style sheets and low hardware requirements. *Publish-It* is a good choice if you're creating long documents and want to avoid *Windows*.

Publish-It's style sheets are on a par with *Ventura Publisher's*. You can edit a style by simply double-clicking on the name in the Styles palette, and you can assign any style to a function key for fast tagging.

Publish-It has a lot going for it. It's easy to learn and comes with a collection of sample designs and a booklet that together serve as a useful introduction to desktop publishing. *Publish-It* is the only program here—aside from *Express Publisher*—that allows you to edit an imported bit map. True,

the editor provides no tools—you can only click pixels on and off, and gray-scale and color images are not supported—but it's still handy when a piece of clip art isn't exactly what you need.

In other areas *Publish-It* ought to try a little harder. Mousing around is more difficult than it should be; if you want to move several elements as a group, forget it—you'll have to drag them one at a time. Changes you make in a master page affect only new pages, not existing ones made from that master. You can't scale a font from inside *Publish-It*; instead, you have to use a utility that comes with the package, an



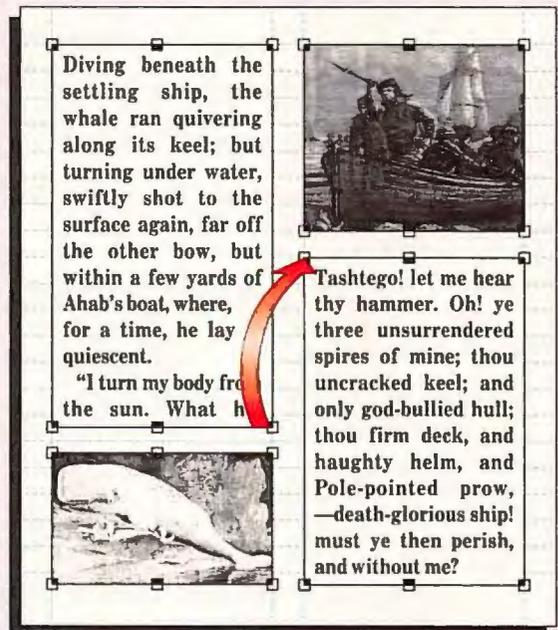
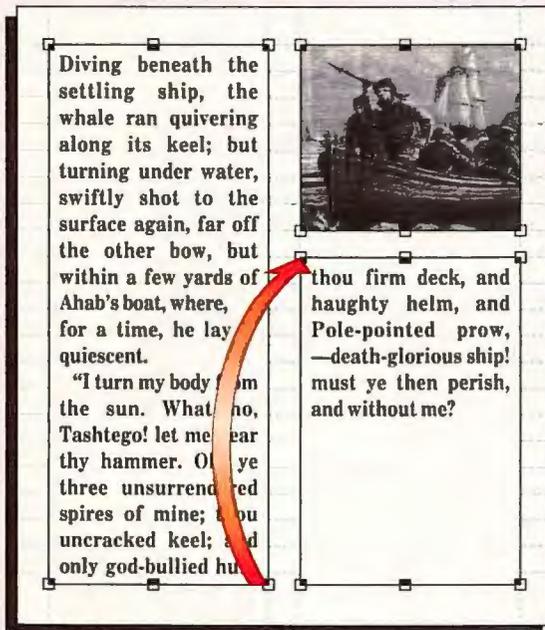
The best of the DOS-based low-end publishers, *Publish-It* offers a good balance of page layout, graphics, and text tools.

extra step that discourages experimentation. What's more, there's no provision for rotating, skewing, curving, or otherwise distorting your fonts.

Despite a few flaws, *Publish-It* is still the best non-*Windows* program in the group, especially if you need style sheets for longer documents. ☺

Linking and Changing Frames

If frames are linked together, text should flow from one to the other regardless of the frames' physical locations. If they stay linked, the text in the second frame will adjust itself when the first frame is resized.

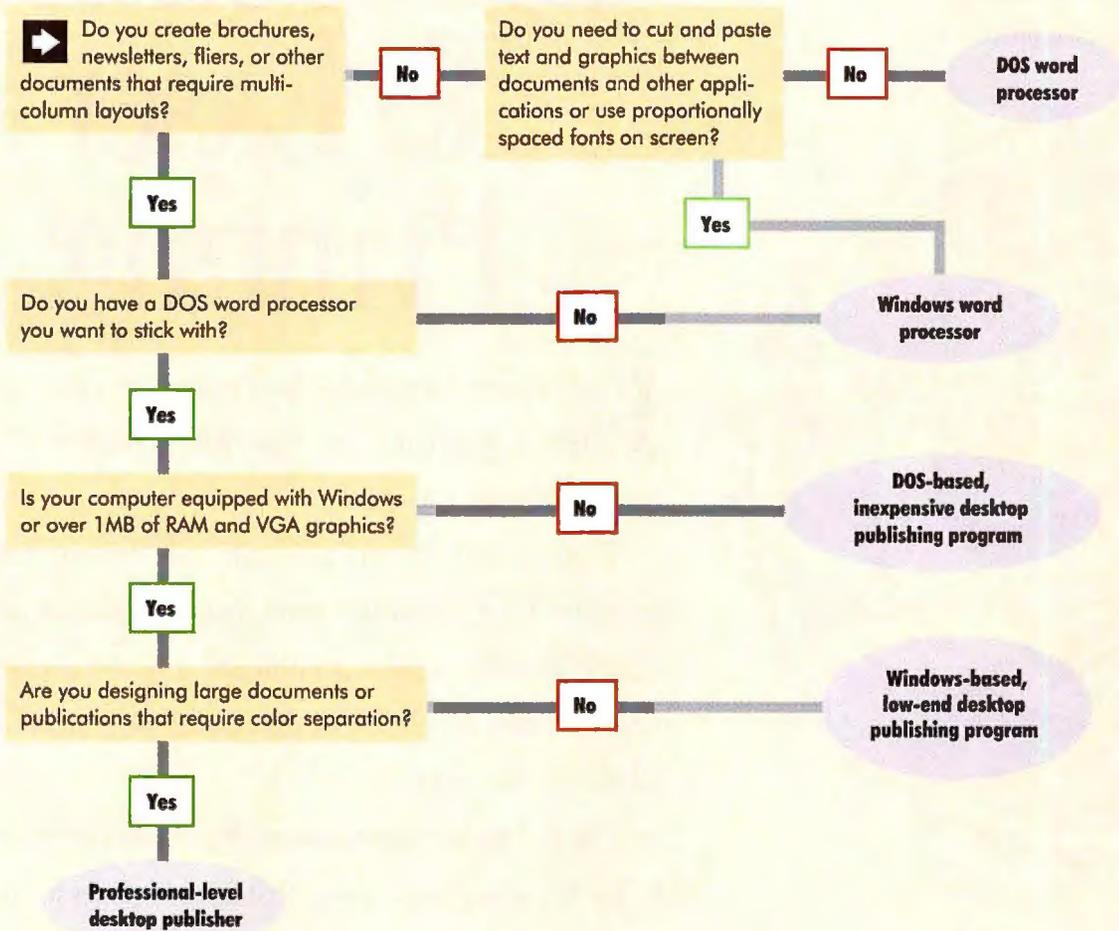


KNOW YOUR OPTIONS

Choosing the Right Page Design Software

Before you select one of these low-end desktop publishing packages, make sure you're shopping in the right department. Depending on your layout job, either a professional desktop publishing program or a high-end word processor may be the best tool.

Ask yourself what type of documents you'll be creating, what kind of software your computer can run reliably, and how much time you're willing to spend on learning.



WHERE TO BUY

Avagio 2.0

Unison World Software
1321 Harbor Bay Pkwy.
Alameda, CA 94501
800/444-7553
LIST PRICE: \$149.95
Reader service no. 609

Express Publisher 2.03

Power Up Software
2929 Campus Dr.
San Mateo, CA 94403
415/345-5900
LIST PRICE: \$129.95
Reader service no. 610

Microsoft Publisher 1.0

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
800/426-9400
LIST PRICE: \$199
Reader service no. 611

PagePlus 1.1

Serif, Inc.
P.O. Box 803
Nashua, NH 03061
603/889-8650
LIST PRICE: \$149
Reader service no. 612

Publish-It 2.0

Timeworks, Inc.
625 Academy Dr.
Northbrook, IL 60062
800/323-7744
LIST PRICE: \$249.95
Reader service no. 613

It's Built To Last. The ActionLaser II will stand up to year after year of heavy action. Its two-year warranty is the longest of any printer in its class. On top of that, you can call our 800 number for free technical support.



Introducing The Perfect Introduction To Laser Printing.

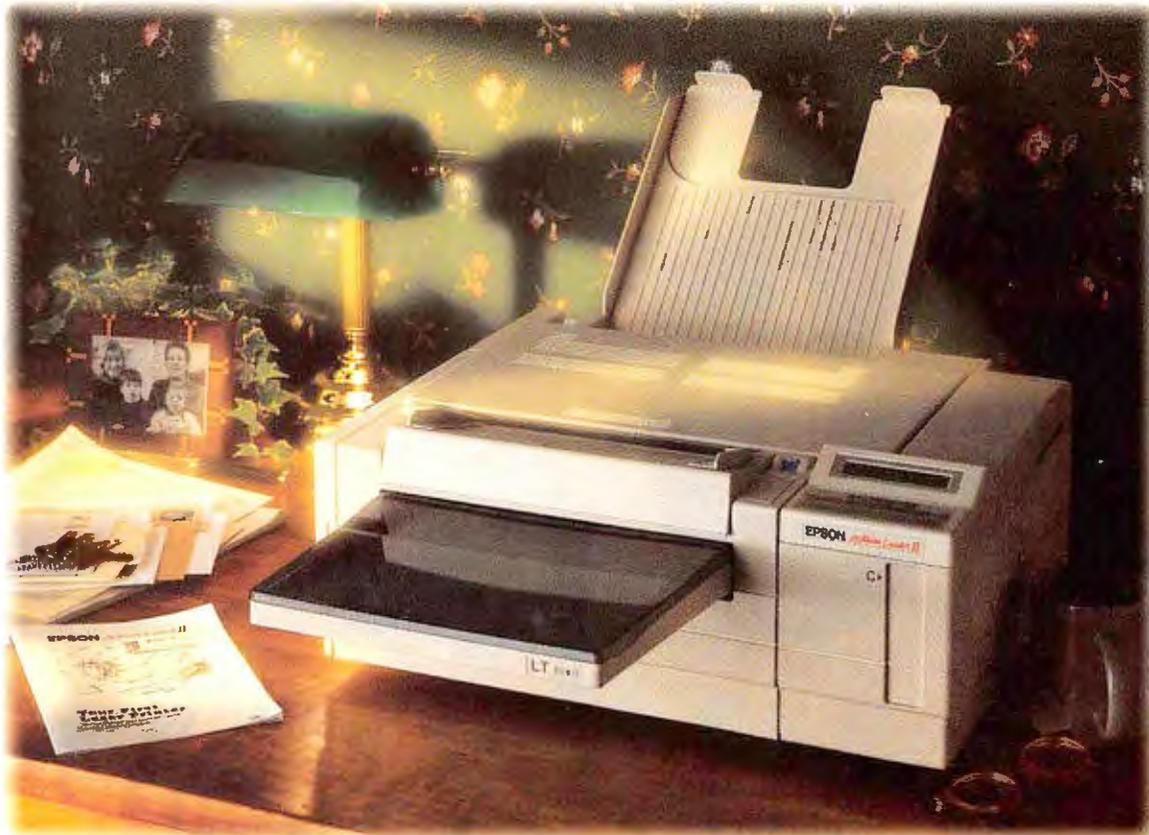
If you're ready for your first laser printer, but don't quite know where to begin, the new Epson® ActionLaser® II is a very comfortable place to start.

It offers all the practical features you'll need to stand out on paper. Like impeccable print quality. A control panel that makes operation a snap. And the security of a generous two-year warranty. All at a price that makes laser printing more affordable than ever.

Oh, there's one more reason why it makes perfect sense to make the ActionLaser II your first laser. It comes from the first name in printers. Epson.

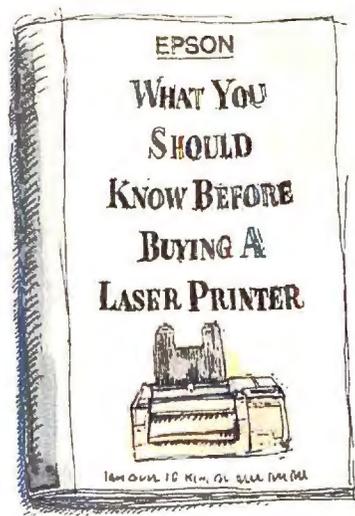
It's Easy To Use. Even if you've never used a laser printer before, you'll be up and printing in no time. The user manual—written especially for first time users—is clear, concise and helpful. And to make things even easier, this laser works with all leading computers and software.





It's Very Affordable. The ActionLaser II is a lot more laser for a lot less. More speed. More paper handling capabilities. More room to grow. More of the things you need to be productive—now and well into the future.

It's Our Free Booklet. Epson wrote the book on computer printing. Now we've written the book on buying your first laser. Read it and you'll be laser sharp in minutes. For a free copy, and the name of the Epson dealer nearest you, call **800-289-3776, ext. 1000.**



EPSON



Desktops



Dot Matrix



Notebooks



Lasers



Servers

50



Tips for DOS & Windows

**EXTRA-STRENGTH TIPS—GUARANTEED
TO GIVE YOU POWERFUL RELIEF**

All those great minds laboring to improve your life with DOS and *Windows*. Why don't they think about *you*? There's always something that keeps you from doing exactly what you want, whether it's from the command line or the File Manager. What a headache!

That's why, for the second year in a row, we're bringing you fast relief with a black bag full of secret tips culled from the best sources. Some of

these tricks are undocumented, others lie hidden in the manual and are easy to overlook. Whether you prefer to avoid the nuts and bolts or you love to get your hands dirty, you'll find something here to make computing easier.

We collected these tips from our editors, the technical support staff at Microsoft, leading book authors and consultants, and savvy *PC World* readers. They're guaranteed to make you more productive, no matter which environment you use.

1

QUICKEST WAY TO MAX A WINDOW

Everyone uses the Maximize and Restore buttons (one of which is at the far right end of every *Windows* title bar) to enlarge an application to full screen or restore it to a window. It doesn't say so in the *Windows* manual, but you can get the same effect by double-clicking anywhere within the title bar itself. It's a bigger target, and you'll run less risk of hitting the Minimize button by mistake.

—Brian Livingston

2

COPY SCREENS TO THE CLIPBOARD

Want to copy what's on your screen to the Clipboard? Easy: Press <Print Screen>. To copy only the active window to the Clipboard, press <Alt>-<Print Screen>.

—Microsoft Technical Support

3

EDIT SYSTEM FILES FAST

If you need to change your WIN.INI, CONFIG.SYS, or AUTOEXEC.BAT files, try a

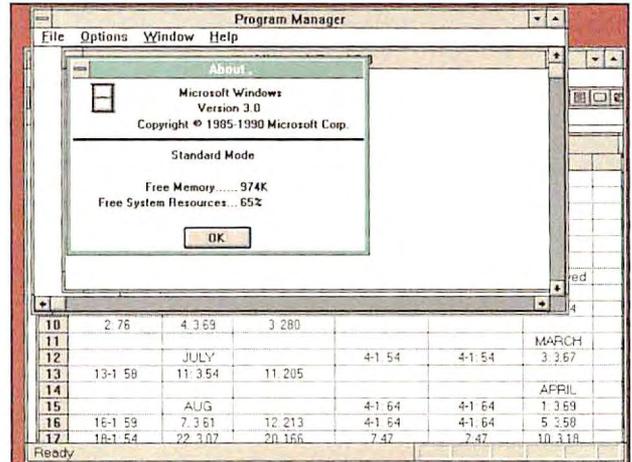
terrific time-saver called SysEdit. Go to the Program Manager, select *File Run*, type SYSEDIT, and press <Enter>. A simple text editor surrounding four overlapping windows that respectively contain SYSTEM.INI, WIN.INI, CONFIG.SYS, and AUTOEXEC.BAT will pop up. You can jump quickly from window to window, inspect the files, and make changes. When you're done, just close SysEdit and answer the prompts to save your changes.

—Jesse Berst

4

COPY TEXT FROM WINDOWS TO DOS

If you still run a cherished DOS application under *Windows*, you'll like this tip. First, highlight the text in any *Windows* application and copy it to the Clipboard (usually with <Ctrl>-<Insert> or *Edit Copy* from the application's menu). Now switch to your DOS application. Press <Alt>-<Space> to put the DOS app in a window and display its menu, and select *Edit Paste*. Finally, if you want your DOS application to run full screen again, press <Alt>-<Enter>. —Karl Koessel



Tip 7: You can keep tabs on the amount of memory and system resources you have left by clicking on About Program Manager in the Program Manager's Help menu.

5

USING THE TASK LIST

The Task List provides an easy way to move between applications and a quick readout of what's loaded. To display it, press <Ctrl>-<Esc> or double-click anywhere on the desktop. —M. T. S.

6

QUICK PROGRAM SWITCHING

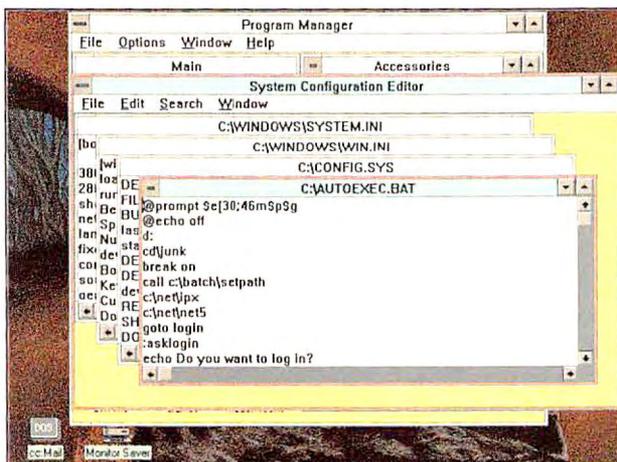
<Alt>-<Tab> toggles between the two most recently used programs, but it can also cycle through every active program on your desktop. Just hold down <Alt> and press <Tab> repeatedly. If you start from a full-screen DOS program, you'll see a menu bar with an application title (such as 'Word') at the top of a blank screen. If you start from a windowed application, you'll see the highlighted move from window title bar to icon name. When the desired program's title bar or icon is highlighted, release the <Alt> key, and the program will pop into view.

—K. K.

7

WATCH THOSE SYSTEM RESOURCES

Ever discover that you can't open any more windows, even though you're sure you've got memory to spare? *Windows* provides a way to see if you're pushing the limit. Open the Program Manager's Help menu and select *About program manager*. Along with the usual copyright information, you'll see the current mode (real, standard, or enhanced), the amount of free memory, and the percentage of free system resources. This last indicator, the most important, shows the percentage of unused space in a small but vital segment of memory where *Windows* does its housekeeping. When 'Free System Resources' falls below 15 percent, you can't open another window no matter how much RAM you have. If you're a power user who runs up against this limit, try reducing the number of program groups in the Program Manager and avoid keeping multiple documents open in applications. A little of your housekeeping will help *Windows* do its own more effectively. —B. L.



Tip 3: Run SYSEDIT.EXE from Windows' SYSTEM subdirectory to view and edit important system files. You can also display the four editing windows in files.

8

MENU OPENERS

Windows with a keyboard? Sometimes it's faster. Instead of opening menus or choosing options by using the mouse, press and release <Alt> and type the underlined letter of the menu followed by the underlined letter of the option. —M. T. S.

9

NO MORE WINDOWS INSIDE WINDOWS

Windows doesn't remind you that you're still under *Windows* when you've shelled out to DOS, so it's possible to forget and type WIN rather than EXIT to return to *Windows*—which runs *Windows* inside of *Windows*. Talk about a memory drain! To prevent this, create a batch file that reminds you to type EXIT at the DOS prompt to get back to *Windows*' Program Manager: Open the Notepad and type the line **PROMPT Type EXIT to return to Windows.S _SPSG** followed by the line **C:\COMMAND.COM**.

Save the file as **DOS.BAT** in the \WINDOWS directory. Then return to the Program Manager; open the Main program group, highlight the DOS Prompt icon, and select *File Properties*. In the dialog box that appears, delete **COMMAND.COM** from the

Command Line field, and enter **C:\WINDOWS\DOS.BAT** in its place. —M. T. S.

10

RUN APPLICATIONS MINIMIZED

If you need to start up an application but don't want it to become the active window right away, you can keep it minimized (as an icon) until you need it. Hold down <Shift> while double-clicking on the application's Program Manager icon, and a duplicate icon will appear on the desktop—minimized and ready for action. —M. T. S.

11

USE WINDOWS TO SPEED DOS

Want to give your DOS programs an extra boost? Load *Windows*, open the Control Panel, double-click the Keyboard icon, and set the 'Key Repeat Rate' to 'Fast'. Exit *Windows*, load your DOS program, and watch the cursor fly. You can scroll, delete, and perform other cursor operations at warp speed. The secret? When you crank up *Windows*' keyboard rate, the information is often passed on to DOS when you exit. This trick doesn't work with every system or application, but it beats buying a cursor speed-up program. —Robert Luhn

12

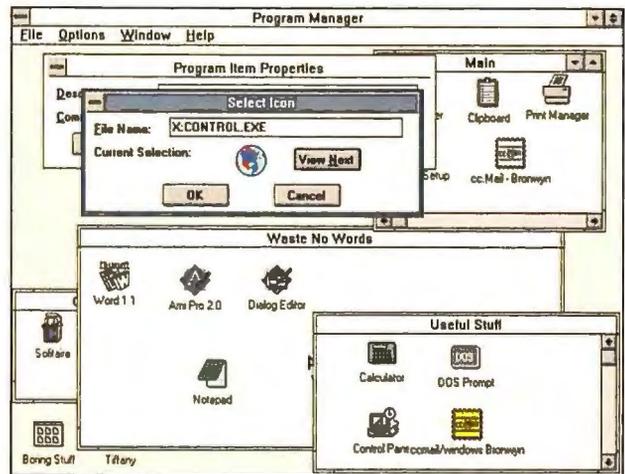
FINDING WINDOWS' HIDDEN ICONS

When you add non-*Windows* applications to a Program Manager group, you're offered a choice of eight generic icons. But other icons are also available if you know where to find them.

Highlight the application icon you want to change,

choose *File Properties*, and select *Change icon*. In the resulting Select Icon window, replace the default 'PROGRAM.EXE' in the File Name field with any of the following: **CONTROL.EXE**, **SETUP.EXE**, **WINFILE.EXE**, **SWAPFILE.EXE**, or **SYS-EDIT.EXE**. Then click *View next* to flip through the icons hidden in that file. You can also find an icon built into the EXE file of each *Windows* accessory (CALENDAR-

you can print out all TXT files (such as 3270.TXT or WININI.TXT help files) for future reference and then delete them. You can delete all your BAK files, and if you don't have any data files open, all your TMP files (use the File Manager's File Search command to find them). If you don't care about changing the background of *Windows*' desktop, find the Wallpaper file names under the Control



Tip 12: Need icons for non-*Windows* applications? You can find just the right icon by using the Program Manager's File Properties Change Icon command and supplying the name of an icon file.

.EXE, CALC.EXE, CARD-FILE.EXE, NOTEPAD, PBRUSH.EXE, and so on). When you find the icon you want, click *OK*.

You can add third-party icons in the same fashion. Check the public file area of CompuServe's *Windows* forum for homemade icons (mostly drawn with *Icon-Draw*, a shareware program also found there), or commercial collections, such as *Icon-Pak 1* available from Software Workshop in Orem, Utah. —Richard Mann

13

FREE UP DISK SPACE

If disk space is tight, delete or archive unnecessary or seldom-used files. For example,

Panel's Desktop dialog box and delete them. If space is still at a premium, delete applications and help files you never use, such as **CALENDAR.EXE** and **CALENDAR.HLP**. This way, you can reclaim up to one megabyte of disk space. —R. L.

14

AUTO-LOAD APPS WITH DATA FILES

Did you know you can have *Windows* applications and their data files automatically loaded when you start *Windows*? Here's how. Open the Notepad and load WIN.INI



from your \WINDOWS directory. At the 'run=' line, enter the drive, path, and name (including extension) of the data file you wish to load. (You can list more than one program or data file, but be sure to put only one space between them.) For example, to start up *Excel* with a worksheet called ANNUAL from the \REPORTS directory, type C:\REPORTS\ANNUAL.XLS.

Save WIN.INI and exit. Next time you fire up *Windows*, the application or file you're after will be up and running. Note that with *Excel* and other *Windows* applications, you don't need to include the program file name (in this case, EXCEL.EXE)—the data file's extension cues *Windows* to start the associated program. This file extension association works with all *Windows* Main programs and Accessories, plus a number of Microsoft applications. Check the [Extensions] section of WIN.INI for a complete list. —Scott Dunn

15

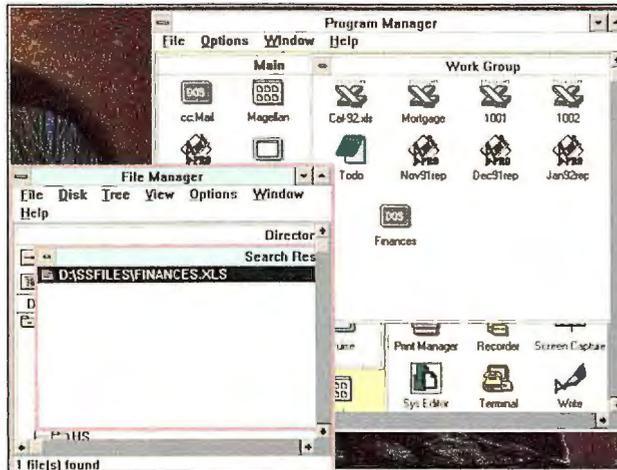
SKIP WINDOWS' START-UP SCREEN

Sick of *Windows*' start-up screen? Next time you load *Windows*, do it with WIN : (note the space before the colon), and you'll be on the desktop that much quicker. If you use a batch file to start *Windows*, or if you add parameters, tack a space and a colon to the end of the 'WIN' command line. —B. L.

16

DAGGING FILES WITH THE FILE MANAGER

When you drag files between directory windows in the File Manager, *Windows* will either copy or move the files, depending on whether or not



Tip 17: You can gain quick access to the programs and data files you use most often by creating a custom work group.

you hold down <Alt> or <Ctrl> and on whether the destination is on the same or a different drive. If you find this confusing, you're not alone—but watching the screen carefully can help you remember which key performs which action.

When you select a file and drag it to its destination, don't release the left mouse button. Instead, while holding down the button, press and release <Ctrl> and then <Alt>. Watch the file's icon in its source window. If you release the button while the icon is missing, you'll move the file to its new directory. If you release the file while the icon is visible, you'll copy the file and preserve the original.

The file transfer won't occur until you release the mouse button, so you can press and release <Alt> and <Ctrl> in turn until you're sure which command you want *Windows* to carry out. If you decide not to copy or move a file, just drag the mouse pointer to a spot that isn't inside a directory window, and then release the button. —Tom Swan

17

QUICK CUSTOM OBJECTS

If you like a custom environment, this may be the best *Windows* tip ever. First, open the Program Manager, choose *File New Program group OK* to create a new program group, enter a description of **Work Group** (or something more imaginative), and select *OK*. Next, determine which files are your workhorses: For example, EXPENSES.XLS from your *Excel* directory, a Notepad file called TODO.TXT from your \WINDOWS directory, and WEEKLY.DOC from your *Word for Windows* directory.

Now open the File Manager and size and position it so you see as much of the tree as possible while keeping Work Group open and visible. Open the appropriate directories to locate your vital files, and then drag those files into Work Group. They instantly turn into icons with their file names underneath. Double-click on any of these Work Group icons, and the file loads itself into its application, just as if you were in the File Manager. (If you wish, you can also move or copy the icons of frequently used programs into Work Group for

easy access.)

You must size and position Work Group the way you want it, and save your settings when you leave *Windows*. The next time you boot up, you'll have a customized work environment that just won't quit.

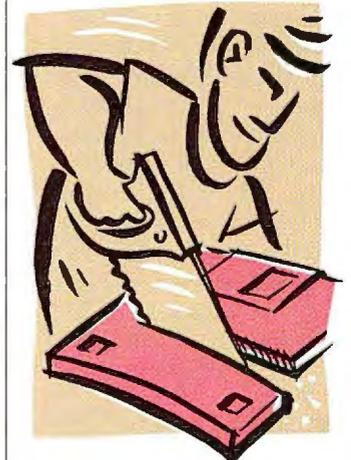
—Eric Knorr

18

TRIM DOWN WIN.INI

You may already know how to delete an application icon in *Windows*—just highlight the icon and press <Delete>. But even if you delete its program files, there's information about it lurking in WIN.INI, which slows down *Windows*' start-up.

To get rid of this excess information, fire up the Notepad and load WIN.INI. Before you do anything else, save a backup copy using a different name. Then scroll through the file looking for the name of the program you



deleted, which will be surrounded by brackets. Highlight the name and everything below it up to the next entry in brackets. Press <Delete>, save the file as WIN.INI, and you're done. —George Campbell

19

KEEP FILE MANAGER WINDOWS UNDER CONTROL

One of the annoying things about the File Manager is that a new window appears at every turn. Double-click on a directory in the tree, you get a window. Double-click on a directory name in that window, you get another window. Double-click on another directory name, and you get yet another window. Soon there are enough overlapping windows to drive anyone crazy. To keep your sanity, hold down **<Ctrl>-<Shift>** when you select a directory, and the resulting directory window will *replace* the previous one. You can't replace the initial directory tree with a directory window, but you'll still keep directory windows from piling up. —M. T. S.

20

ASK WINDOWS ABOUT YOUR PRINTER

When you set up *Windows* for a specific printer, or if you just want to know more about the one you're using, *Windows*' Help may offer generous advice. Open the Main program group, double-click on *Control Panel*, and double-click *Printers*. If you want to know about a printer that isn't already installed, you must choose *Add printer*; highlight the printer's name in the list, click *Install*, and actually copy the printer driver from disk. Highlight the name of an installed printer, select *Configure*, and choose *Setup* from the resulting *Printers - Configure* dialog box, which summons the final dialog box bearing the name of the printer you're configuring. Click on the Help button, and you'll get a wealth of in-

formation. For the LaserJet, for example, Help offers screen after screen of specific instructions regarding font cartridges, graphics resolution, printer memory, downloading soft fonts, and more. —M. T. S.

21

SWITCH MODES FAST

Want to switch between real and enhanced mode? If you need to use programs that aren't *Windows 3.0* compliant, check out this easy method.

First, create a new program group in the Program Manager and name it **Real Mode Windows**. Then, in the File Manager, bring up the \WINDOWS directory, find WIN.COM, and drag it into the Real Mode Windows group. Climb around the directory tree and drag other programs you want to run in real mode into the Real Mode Windows group.

Start *Windows* in enhanced mode as usual. When you need to switch to real mode, just double-click on the WIN.COM icon in the Real Mode Windows group. This loads a copy of *Windows* and runs it in real mode, and it keeps your real-mode applications ready for action. You can easily toggle between real and enhanced mode by pressing **<Ctrl>-<Esc>**. —Michael A. Anishchenkov

22

RECORD WITH KEYSTROKES

When you use the macro recorder in the Accessories group, be careful to record your commands using keystrokes instead of the mouse. Because the recorder saves mouse actions relative to the screen instead of to the active window, commands recorded with the mouse won't always work. —M. T. S.

23

SEARCHING WITH THE FILE MANAGER

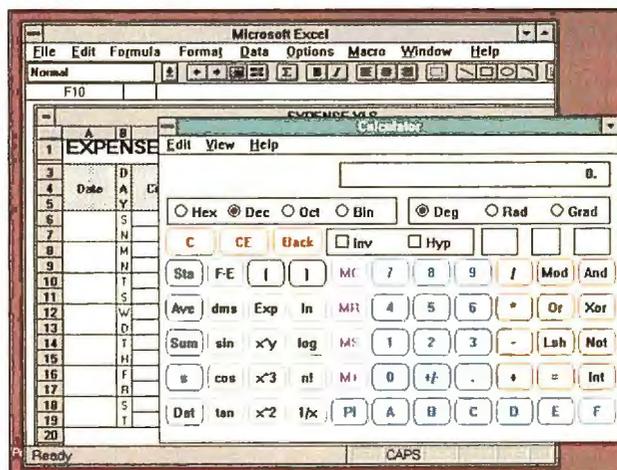
Can't find your file? Few people know that the File Manager has a great search utility. To use it, just select *File Search* and type in the name (with extension) of the file you're looking for. The Search command accepts wild cards, so you can search

twice the size, with a wide range of statistical and trigonometric functions. —B. L.

25

DISPLAY ONLY THE FILES YOU NEED

Want to trim down the File Manager's file name listings? That's a simple task to do with this handy tip. From the View menu, select *Include*. A



Tip 24: The Calculator in Windows does a lot more than add and subtract. Its View Scientific option gives you a host of statistical and trigonometric functions.

for, say, all the files that start with 'Jan' by entering **JAN*** in the Search For text box. You can search just the current directory or the entire disk. The files appear in a Search Results window. —M. T. S.

24

A BETTER CALCULATOR

The *Windows* Calculator can be useful in a pinch, but it's pretty toylike. Or is it? Many people never bother to pop down the Calculator's View menu, which gives you a choice of Standard or Scientific modes. Click on the latter; and you get a calculator

dialog box will appear on the screen with Directories, Programs, Documents, and Other Files already selected. Clear the check boxes for any of these items, and the associated files won't appear next time you open a file window. Turn off Programs, for example, and none of the BAT, COM, and EXE files will appear. For further filtering of files, you can enter a specific extension in the dialog box's name field, such as ***.PCX**. Check *Set System default* to make your preferences apply universally. If you want to filter files by these parameters the next time that you run the File Manager, just check *Save settings* when you exit. —M. T. S.

```
Volume in drive C is HARD DRIVE
Volume Serial Number is 16D1-7333
Directory of C:\DOS

.<DIR> 07-19-90 5:26
..<DIR> 07-19-90 5:26
42B1  CPI 6484 04-09-91 5:06
4200  CPI 728 04-09-91 5:06
5Z02  CPI 395 04-09-91 5:06
ADAPT  COM 8558 09-01-88 12:06
ANSI  SVS 9829 04-09-91 5:06
APPEND  EXE 10774 04-09-91 5:06
APPNOTES  TXT 9781 04-09-91 5:06
ASSIGN  COM 6399 04-09-91 5:06
ATTRIB  EXE 15796 04-09-91 5:06
AUTOEXEC  HRM 457 01-24-90 11:26
AUTOEXEC  BAT 663 12-26-90 10:36
AUTOEXEC  ANS 23 01-18-90 9:57
AUTOEXEC  BR2 932 08-07-89 2:38
AUTOEXEC  NIL 39 01-23-90 1:43
AUTOEXEC  WNS 663 12-26-90 10:36
BACKUP  EXE 36092 04-09-91 5:06
BASIC  COM 3532 10-03-88 12:06
Press any key to continue . . .
```

Tip 26: Run a simple SET command, and your directory listing is always alphabetical.

26

ALPHABETIZE DIRECTORY LISTINGS

DOS 5.0

Searching through your DOS 5.0 icon directory listings file by file can be one big headache. Save aspirin by alphabetizing your files! Insert the line **SET DIRCMD=/O:N /P** into your AUTOEXEC.BAT file. The 'P' gives you the extra perk of pausing your listing after each screenful. —*Kay Nelson*

27

XCOPY TO THE RESCUE

If you have a system at home that has all the applications you use at the office, you usually bring your work home on a floppy. With this kind of "sneakernet," you want to transport only the files you've changed—and that can be a real challenge. It's easier to have XCOPY find them for you with a simple command. For example, **XCOPY C:\.* A:/S /D:12/1/91** copies to drive A: all files from all subdirectories that have been updated on or later than December 1. —*Steve Bass*

28

REPLAY COMMANDS WITH DOSKEY

DOS 5.0

DOS 5.0's DOSKEY utility makes it easy to track and recall every command you issue. Start it by entering **DOSKEY** at the DOS prompt. Once it's loaded, you can press **<Up>** to recall (and edit, if you want) your last DOS command. Press **<Up>** again to bring up the command before that, and so forth. Or you can press **<F7>** to list all the commands you've entered since you loaded DOSKEY. The commands are numbered, so you can press **<F9>** and enter the number of the command you want, or type in the first few characters of the command you want and press **<F8>** until it appears. —*K. N.*

```
5: color white bright blue
6: dir/w
7: a:
8: dir/w
9: cd..
10: c:
11: cd..
12: cd pinelpop
13: dir/w
14: copy screen04.pcx a:
15: copy screen05.pcx a:
16: vpic screen04.pcx
17: vpic c:\pinelpop
18: copy screen05.pcx a:
19: dir/w
20: a:
21: dir/w
22: del screen05.pcx
23: del screen04.pcx
24: copy c:\pinelpop\screen05.pcx
-- More --
25: dir/w
26: c:
27: vpic
C:\PINELPOP>Line number: 24
```

Tip 28: The DOS 5.0 DOSKEY utility keeps track of every DOS command you use.

29

ARE WE AT THE COMMAND LINE YET?

DOS 5.0

Like *Windows*, DOS 5.0's Shell lets you shell out to the command line without exiting the environment. Once you're

there, it looks just like DOS, so it's easy to forget and load the Shell again within the Shell. Here's an easy way to remind you where you are.

First, highlight *Command Prompt* in the Main section of the Shell. Next, select *File Properties*, which brings up the Program Item Properties dialog box. In the Commands field, type **SET PROMPT=(SHELL) %PROMPT%; COMMAND**. The next time you shell out to DOS, the prompt will appear as **'(SHELL) C:\DOS>'**. —*M. T. S.*

30

BATCH FILES ON THE FLY

Want to create a batch file without a word processor or even EDIT? The COPY CON command will do the trick for you. Type **COPY CON filename.BAT**, press **<Enter>**, and enter the batch file commands that you want (remember you can't edit a line once you've pressed **<Enter>**). When you're through typing, press **<Ctrl>-Z <Enter>** to end the file. DOS will save the file with the name you've given it and display a message that the file was copied. Of course, COPY CON doesn't just generate BAT files; it can also create any file of ASCII text. —*Cary Jensen and Loy Anderson*

31

JUMP IN THAT NEW DIRECTORY

Ever create a directory and forget to switch to it before you start copying files? It can be a real pain cleaning up a mess of, say, 1-2-3 for *Windows* worksheet files that you've accidentally dumped in with your *WordPerfect* documents. To prevent this kind of

disaster, I created ND.BAT, consisting of the two lines **MD %1 and CD %1**.

To use ND.BAT, type **ND**, a space, and the new directory name, then press **<Enter>**. You'll find yourself in the new directory you've just created, ready to **COPY A:.*.***. —*S. B.*

32

QUICK FORMAT OF USED DISKS

DOS 5.0

DOS 5.0 gives you a very fast way to format used disks. Enter **FORMAT A: /Q /U** at the DOS prompt, and you'll format the disk in drive A: in just a few seconds. —*K. N.*

33

FORMAT LOW-DENSITY FLOPPIES

Sometimes you run out of high-density floppies or need to format a floppy for a machine with drives that read only the lower, double-density formats. If you still use DOS 3.3 or 3.31, you probably never remember the commands for formatting a 360K or 720K floppy. Use these one-line batch files to keep things straight: **F360.BAT**, which contains the line **'FORMAT A: /4'**; and **F720.BAT**, which contains the forgettable sequence **'FORMAT B: /N:9 /T:80'**. Lucky DOS 4.0 and 5.0 users simply use **FORMAT A: /360** or **FORMAT B: /720**. —*Robert J. Lauriston*

34

INCREMENTAL BACKUPS WITH DOS

If you think it's silly to back up everything on your disk every time you feel conscientious, try using DOS's **BACKUP** utility to archive only new or recently revised files. A handy **DAILY.BAT** batch file containing the command **BACKUP C:\ A:\ /S /M /A /F** will

do the trick. The `/S` backs up files from all subdirectories, `/M` restricts the backup to only modified files (that is, files that are new or have been changed since the last backup), `/A` appends the incremental backup to a previous backup set, and `/F` (in DOS 3.3 or later) automatically formats blank disks should you run out of formatted ones. Don't worry; you'll be prompted to confirm whether you really want to format. —*R. L.*

35

IN WITH THE NEW, OUT WITH THE OLD MACROS

DOS 5.0

DOS 5.0's DOSKEY macros can save you time, but as with any macros, you need to keep them updated. Say you keep all your DOSKEY macros in a DOS batch file called `C:\KEYDEFS.BAT`. The single-line DOSKEY command `DOSKEY EDKEY=C:\DOS\EDIT C:\KEYDEFS.BAT&C:\KEYDEFS` creates a macro called EDKEY, which loads KEYDEFS.BAT into DOS 5.0's editor, and when you finish editing, reloads all the macros so they're ready for action.

—*Rick Sands*

36

MORE FOR ASCII TYPES

One way to display the contents of any file containing ASCII text is to enter the `TYPE` command followed by the file name. Problem is, the top of any file longer than 24 lines scrolls off the screen. To flip through your file screen by screen (and display an elegant "—More—" screen bottom), use the less than (`<`) redirection symbol to feed your text file to the command `MORE`. For example, to display a file named `LETTER.TXT` one screen at a time,

enter the command `MORE <LETTER.TXT` at the DOS prompt. —*C. J. and L. A.*

37

HELP FOR BATCH FILE FANATICS

Here's a tip for batch file jockeys. When debugging a batch file, you probably put `REM` at the beginning of suspect lines to try to isolate problems—it's a whole lot better than deleting the line and reentering it later. `REM`, which stands for *remark*, identifies the line as commentary, so DOS ignores it.

The problem is that `REM` doesn't keep DOS from reading the line. When DOS sees the redirection symbols `<`, `>`, and `|`, it executes the redirection. To avoid this, put double quotes before your first redirection symbol and after the last redirection symbol (as in `REM Disregard "<, >, and |" symbols`). DOS will now ignore the symbols, and you can get on with finding out what's really wrong. —*K. N.*

38

GET RID OF SPACES IN FILE NAMES

If you have trouble copying, renaming, or deleting a file, take a look at the file name.

```

Bill
Works: PG&E
He makes the buying decisions for his department. PG&E is
planning to make the switch to Windows. Bill can put you in
contact with the people making that decision.

Bob
Works: Rockwell Int'l
Title: Administrator
Upgraded from Windows 2.0. Runs on Compaq 386/286. He makes
the hardware and software buying decisions for his company.

John
Works: GDS Associates
Upgraded from Windows 2.0. He primarily uses two Windows
applications—Charisma and Designer. He is his company's PC
specialist and works on
a Compaq 386/386.

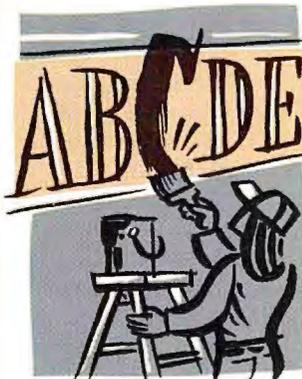
Loreese
Works: TopLine Computer Service
Works on a HP QS16

-- More --

```

Tip 36: Using the DOS command `MORE` lets you display ASCII text one screen at a time.

Some programs let you save file names with spaces in them, but DOS can't read spaces in file names. To make a file submit to ordinary DOS operations, simply go into the offending application and rename the file. If you can't identify the application, use the DOS command `REN` to



rename the file, substituting a question mark for the embedded space. —*S. B.*

39

CREATE A FILE OF DIRECTORY LISTINGS

Some people like to create ASCII files of directory listings so they can print them out for reference, perform quick searches, and various other functions. To create an ASCII file of your current directory, type `DIR>filename`

`.TXT` at the prompt. This trick creates a simple ASCII file, which you can load into any text editor or word processor, or you can send the file to the printer by using the DOS command `PRINT`. —*C. J. and L. A.*

40

PRODIGAL FILES

DOS 5.0

Everyone knows the panic of accidentally deleting a critical file. With DOS 5.0, you can bring 'em back alive if you first tell the operating system to track deletions. In your `AUTOEXEC.BAT` file, insert the line `MIRROR C:/TA/TC`. This tracks all files in drives A: and C:; if you have a drive B: or D:, add `/TB` or `/TD` to the command. Do this, and you can use DOS 5.0's `UNDELETE` command to resurrect any subsequently deleted file. There are two exceptions: You can't `UNDELETE` a file if you've saved another one over it with the same file name. And once you've removed a directory or formatted the disk containing the file, you're stuck. —*K. N.*

41

BLOCK THAT MACRO

DOS 5.0

DOSKEY macros take precedence over DOS commands that share the same name. For example, if you've created a macro called `FORMAT`, when you enter `FORMAT` at the DOS prompt, your macro—not the DOS command—runs. However, this doesn't mean you can't run such a DOS command. To temporarily override the macro, simply type a space before entering the command. —*R. S.*

42

SHELL SHORTCUTS

DOS 5.0

If you use DOS 5.0's Task Swapper and frequently find yourself switching to a particular program, you can assign that program a shortcut key. You no longer have to cycle through all your running programs using <Alt>-<Tab> or go back to the Shell and choose the program from the Active Task List.



Highlight the program name to which you want to assign a shortcut key, select *File Properties*, and move to the Application Shortcut Key line. You can choose only <Ctrl>- , <Alt>- , and <Shift>-key combinations. To avoid using a combination that the Shell uses, press <F1> for help and cursor through the Shell's hot-key list. Then press <Esc><Esc> <Alt>>FP<Tab><Tab><Tab> to leave help and reenter the Application Shortcut Key line. Finally, press the key combination you want to use, and select *OK*. —M. T. S.

43

FIND FILES FAST

You know you put that file somewhere, but you can't remember which directory. If you use DOS 3.3 or a later version, you can use the DOS command ATTRIB to find files fast. Simply type ATTRIB

C:\filename /S (be sure to include the space after the file name). You'll get a listing of every file on disk that matches the name. —Brett Glass

44

A BATCH FILE FOR BATCH FILES

DOS 5.0

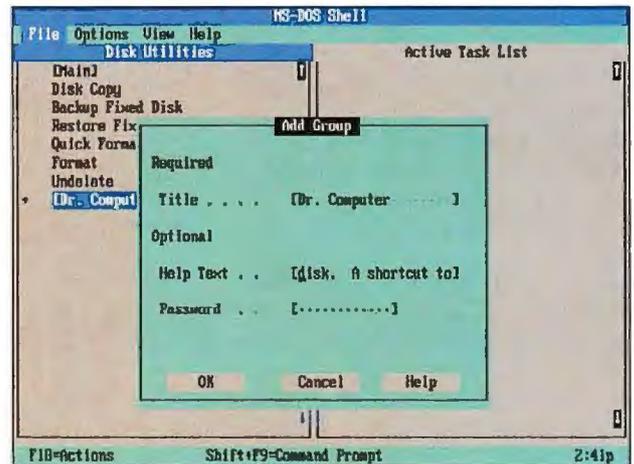
You can use a simple batch file to quickly create or edit DOS 5.0 batch files if you first make a directory called C:\BATCH, list that directory in your AUTOEXEC.BAT file's PATH command, and keep your batch files there (AUTOEXEC.BAT, of course, must be kept in the root directory of your start-up drive). Then open the Editor; type in the line C:\DOS\EDIT C:\BATCH\%1.BAT, and save the file in the C:\BATCH directory as BATCH.BAT. To use BATCH.BAT, enter BATCH filename at the DOS prompt.

If you use the DOS Shell, you can create a new program item instead of BATCH.BAT. Highlight the Main program list's title bar and select *File New Program item OK*. Type *Batch File Editor* and press <Tab>. Type C:\DOS\EDIT C:\BATCH\%1.BAT and press <Tab>. Type C:\BATCH and press <Enter>. Type *Batch File Editor* and press <Tab>. Type *Enter the name of the batch file you want to edit. Do not include the .BAT extension.* and press <Tab>. Type *Batch file name:* and press <Enter>. The Batch File Editor program item will appear in the program list, ready for you to select whenever you need to edit a batch file. —K. K.

45

KEEP YOUR PATH LEAN AND MEAN

If your PATH statement makes DOS search several drives and hundreds of file



Tip 46: When you add a new program group to the DOS 5.0 shell, you can create your own help screens for it.

names, your PC may slow down considerably when you issue a command. Although your PATH can be 127 characters long, it's best to keep it to three or four subdirectories containing frequently used programs, including the subdirectory that holds your batch files, for example, PATH=C:\DOS;C:\BATCH;C:\WINDOWS;C:\WP51.

Because the PATH command contains your batch subdirectory, you can still quickly load programs whose directories aren't included. For example, instead of listing *Quattro Pro's* directory, create this batch file, name it Q.BAT, and put it in C:\BATCH: CD C:\QPRO Q.

From any subdirectory, you can now type Q to start up *Quattro* and rocket to the C:\QPRO subdirectory.

—K. N.

46

MAKE CUSTOM HELP SCREENS FOR THE SHELL

DOS 5.0

When you're creating a program group for the DOS 5.0 Shell, you can add your own helpful tips that tell you and others about the group.

To start, select *View Program list* if the Main group is not on screen. Press *Tab* until Main's title bar is highlighted. Then select *File New Program group OK*. In the Add Group dialog box that appears, you can enter as many as 255 characters, including spaces, of help text. If you ever need to force a line break, type ^M (a caret and an m, not <Ctrl>-M). Then, whenever the user selects that particular program group and presses <F1>, your Help message will be displayed.

To create specialized Help advice for new program items, you must use a different dialog box. First, highlight a program item, and select *File Properties*. Then click on the Advanced button in the Program Item Properties dialog box, and type up to 255 characters of help text. —K. N.

47

CUSTOMIZE YOUR KEYBOARD

If you've added DEVICE=C:\DOS\ANSI.SYS to your CONFIG.SYS file, you can re-define your function keys any way you wish. For example, if you want to start DOS 5.0's Shell by pressing <F12>

instead of typing **DOSSHELL**, put this line in **AUTOEXEC.BAT**: **PROMPT SE[0;134;"DOSSHELL";13p**

The code '\$E[' signals to **ANSI.SYS** that you're sending it a command. The '0' means you're reassigning a non-ASCII key; the second number identifies the function key or key combination that you're reassigning. (See **TABLE 1** for a complete listing.) You must remember to enclose the command that you want executed in quotation marks. The code '13' stands for <Enter>, and the lowercase *p* tells **ANSI.SYS** that the preceding codes constitute a key reassignment.

To reset a function key or key combination to its original definition, enter **PROMPT**

<F9>, <Alt>-<F7>, and <Alt>-<F10> (for DOS-KEY) unless you want to replace a key's current assignment. —*K. N.*

48

CREATE A CUSTOM START-UP DIALOG BOX

DOS 5.0

In DOS 5.0, when you run **QBasic** or the **Editor**, a dialog box prompts you for the name of the file you want to edit. You can create similar start-up dialog boxes for other applications that let you load files at start-up (*WordPerfect*, for example). These boxes are especially useful if you need to set up workstations for inexperienced users.

Highlight the program

106 characters, such as 'Enter the name of the **WordPerfect** document you wish to load.' For the **Prompt Message**, which will appear next to the field where you enter the file name, enter up to 18 characters (such as 'Document name'). Press <Enter>. Now whenever anyone selects that program item, your custom dialog box appears asking for a file name. —*K. N.*

49

QUICKLY EDIT CONFIG.SYS AND AUTOEXEC.BAT

DOS 5.0

Here's how to create two program items for DOS 5.0's **Shell** that let you quickly edit your **AUTOEXEC.BAT** and **CONFIG.SYS** files. To create the first program item, move to the **Main** group and select *File New Program item OK*. For the **Program Title**, enter **AUTOEXEC.BAT**. For **Commands**, enter **C:\DOS\EDIT C:\AUTOEXEC.BAT**. Select *OK*. To create the second program item, repeat the steps, entering **CONFIG.SYS** for its **Program Title** and **C:\DOS\EDIT C:\CONFIG.SYS** for its **Commands**.

You will no longer have to carefully type **C:\AUTOEXEC.BAT** or **C:\CONFIG.SYS** into the **Editor's** dialog box to edit these files. Instead, just click and fly! —*M. T. S.*

50

BATCH FILES THAT CALL MULTIPLE APPS

When I boot up in the morning, my **AUTOEXEC.BAT** file starts **E-mail** automatically. Nothing special there—except that when I exit **E-mail**, **Windows** then loads automatically. What's the trick? DOS's **CALL** command. Simply follow **CALL** with the path and start-up command of the program you want to execute. On subsequent lines, you can **CALL** other programs (and batch files) or load a final application in the conventional way. On my network, **CALL F:\EMAIL\MAIL C:\WIN3\WIN** brings up my **E-mail** password prompt. I enter the password, grumble through my messages, exit, and **Windows** is up and running before I can regret a hasty **E-mail** reply. —*E. K.*

TABLE 1

ANSI.SYS Function Key Codes

Key	Code	Key	Code	Key	Code	Key	Code
F1	59	Shift-F1	84	Ctrl-F1	94	Alt-F1	104
F2	60	Shift-F2	85	Ctrl-F2	95	Alt-F2	105
F3	61	Shift-F3	86	Ctrl-F3	96	Alt-F3	106
F4	62	Shift-F4	87	Ctrl-F4	97	Alt-F4	107
F5	63	Shift-F5	88	Ctrl-F5	98	Alt-F5	108
F6	64	Shift-F6	89	Ctrl-F6	99	Alt-F6	109
F7	65	Shift-F7	90	Ctrl-F7	100	Alt-F7	110
F8	66	Shift-F8	91	Ctrl-F8	101	Alt-F8	111
F9	67	Shift-F9	92	Ctrl-F9	102	Alt-F9	112
F10	68	Shift-F10	93	Ctrl-F10	103	Alt-F10	113
F11	133	Shift-F11	135	Ctrl-F11	137	Alt-F11	139
F12	134	Shift-F12	136	Ctrl-F12	138	Alt-F12	140

SE[0;keycode;0;keycodep.

You may want to avoid using the function keys and key combinations <F1> through <F7> (for DOS); <F1> through <F3>, <F5>, <F7> through <F10>, <Shift>-<F5>, <Shift>-<F8>, <Shift>-<F9>, <Ctrl>-<F5>, and <Alt>-<F4> (for **DOSSHELL**); and <F1> through

item in the **Shell** and select *File Properties*. In the **Commands** field, add a space followed by these two characters: %1. Press <Tab> and enter a start-up directory (such as 'C:\REPORTS'). Press <Enter>, and the **Shell** will display a **Program Item Properties** dialog box for you to fill out. For **Program Title**, type what you want to appear at the top of the start-up dialog box. For **Program Information**, you can enter up to

CONTRIBUTORS

Loy Anderson and Cary Jensen are coauthors of Harvard Graphics: The Complete Reference (Osborne/McGraw-Hill, Berkeley, California, 1990). • *Michael A. Anishchenkov is a PC World reader from Downsview, Ontario, Canada.* • *Jesse Berst is president and Scott Dunn managing editor of CompuThink, Incorporated.* • *Brian Livingston is the author of Windows 3 Secrets (IDG Books, San Mateo, California, 1991).* • *CPA Richard Mann is a freelance writer in Roy, Utah.* • *Kay Nelson is author*

of Voodoo DOS (Ventana Press, Chapel Hill, North Carolina, available in 1992). • *Rick Sands is a PC World reader from Portland, Oregon.* • *Tom Swan is a freelance writer and developer in Lititz, Pennsylvania.* • *Steve Bass, George Campbell, Brett Glass, Robert J. Lauriston, and Robert Luhn are contributing editors for PC World.* • *Eric Knorr is editor and Karl Koessel technical editor for PC World.* ☉

Those of you curious about WordPerfect[®] for Windows can now stop using your imagination.



WordPerfect[®] for Windows is here.



Merge

WordPerfect[®] for Windows is shipping, and its numbers are pretty impressive.

Nearly a million diskettes packed in boxes. Thirty-five semitrucks on the road. And over three hundred thousand dollars in postage just to get our advance orders to you.



Copy

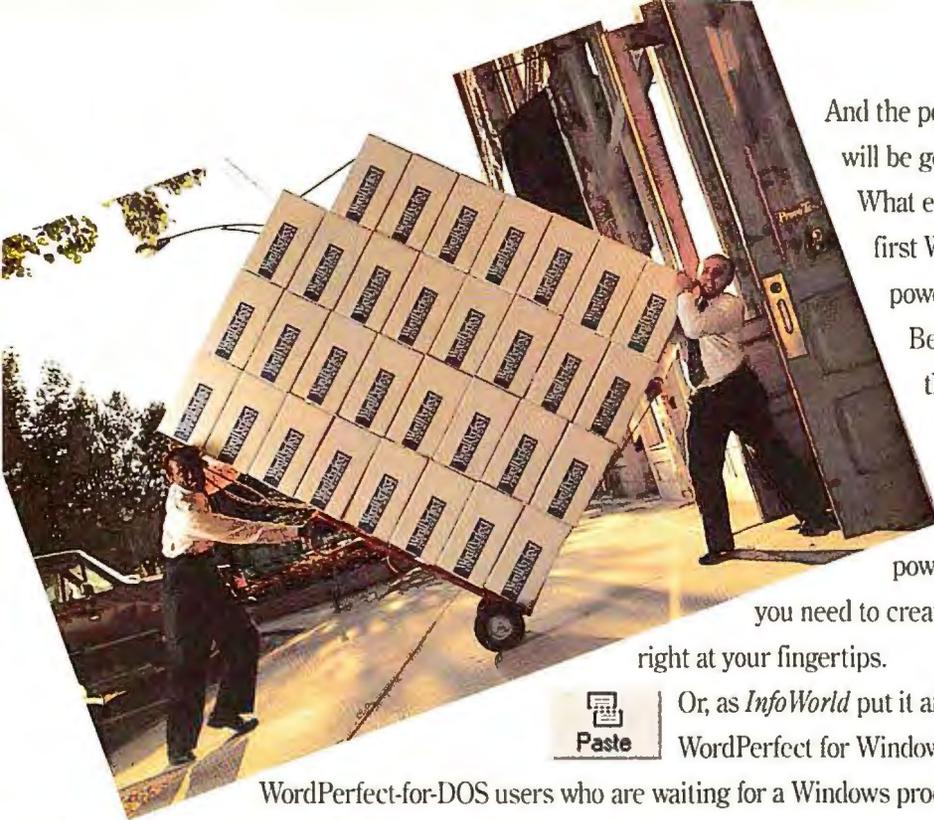
In fact, the only number we still don't have is how many copies of WordPerfect for Windows will sell in the first 30 days. But it looks like that number will be impressive as well. Advance orders for WordPerfect for Windows are already about 200,000, and we'll have another 400,000 ready to ship within the first month.



Styles

It also looks like the 7,000 people who entered our contest to predict first month's orders of WordPerfect for Windows knew what they were talking about. Even though the average of all the estimates, 640,955, still seems high, it's starting to look more realistic.





And the person whose estimate comes closest will be getting the \$25,000 prize.

What everyone else will be getting is the first Windows word processor with all the power of WordPerfect behind it.

Because for the first time, you can have the unparalleled word processing prowess of WordPerfect 5.1[®] and the graphical user interface of the Windows environment, all in one powerful package that puts everything

you need to create great-looking documents right at your fingertips.



Or, as *InfoWorld* put it after previewing a Beta version, WordPerfect for Windows is "a knock-out for both established

WordPerfect-for-DOS users who are waiting for a Windows product and for current Windows users who want a no-compromise Windows word processor."



Merge

So now, individual word processing users can work the way they want, in either Windows or DOS,

and still have all the advantages of an organization-wide standard. In fact, any WordPerfect 5.1 for DOS documents can be retrieved directly into WordPerfect for Windows—and vice versa—with no conversion necessary.

And if you like both environments, WordPerfect still works for you.

Because if you buy WordPerfect—DOS, Windows or OS/2 (when available)—we'll allow you to be licensed to run any or all of them on the same machine.



Save

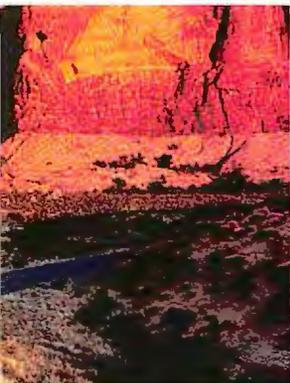
Now getting WordPerfect for Windows is as easy as using it.

If you're using any version of WordPerfect for DOS, you can trade over to



WordPerfect for Windows for just \$99 (\$120 in Canada). We'll also make it easy to trade up from Microsoft Word for Windows. Any Microsoft Word for Windows user can get WordPerfect for Windows for just \$150 (\$179 in Canada) between now and December 31.

So stop using your imagination. See WordPerfect for Windows at your favorite dealer now. Or, call (800) 526-5059 for more information. Because the real thing may be even better than you think.



WordPerfect

CORPORATION
(800) 526-5059

WordPerfect is a registered trademark of WordPerfect Corporation within the United States and other countries. All other brands and product names are trademarks or registered trademarks of their respective companies.
© 1991 WordPerfect Corporation.



See our new number?

1990 and 1991 World Class Awards
for Best Mail-Order Company



☐ 3 1/2" format available from us. Specify when ordering.

☐ package includes both 5 1/4" and 3 1/2" disks.

☒ 3 1/2" format available from manufacturer by request. Call us for details.

CP—copy-protected; NCP—not copy-protected.

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We carry only the latest versions of products. Version numbers in our ads are current at press time.

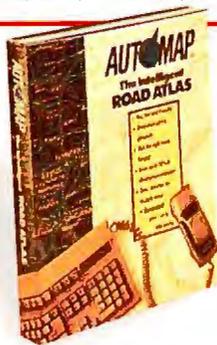
Products listed here in red are Microsoft Windows Applications

- | | | |
|---------------------------------------|---|---|
| AddStor ... NCP | | |
| 4090 | ☐ SuperStor 1.3 | \$83. |
| Adobe Systems ... NCP | | |
| 7547 | ☒ Adobe Type Manager 1.1 for Windows | 69 |
| 9623 | ☒ Adobe TypeAlign 1.0 for Windows | 69. |
| | ☒ Adobe TypeSets for Business | ea 95 |
| 9874 | ☒ Adobe TypeAlign 1.0 w/ATM | 125 |
| 7928 | ☒ Adobe Plus Pack 1.0. | 129 |
| 8367 | ☒ ATM & Plus Pack Bundle | 169 |
| 7392 | ☒ Adobe PostScript Cartridge (with choice of FREE Type Cartridge 1 or Type Cartridge 2) | 299. (Entire Adobe Type Library, from 1 to 240 is available. Call for more information) |
| Aldus ... NCP | | |
| 8000 | ☐ Persuasion 2.0 for Windows | 359 |
| 1332 | ☐ PageMaker 4.0 | 549. |
| 4195 | ☐ Photostyler 1.0 | 549 |
| Application Techniques ... NCP | | |
| 1214 | ☒ Pizazz Plus 2.0 | 69. |
| 9621 | ☒ Picture Eze 1.0 for Windows | 99 |
| Artisoft ... NCP | | |
| 2455 | Lantastic EtherNet Starter Kit (includes software, 2 EtherNet cards, cable) | 495. |
| 2452 | EtherNet Adapter Card | 209. |
| Atech Software ... NCP | | |
| 9436 | ☐ Publisher's Powerpak 1.2 for Windows | 49 |
| 9435 | ☐ Publisher's Powerpak 2.1 for WordPerfect & Microsoft Word | 49. |



AddStor ... NCP
4090 ☒ SuperStor 1.3—Increase your disk space 2-3 times and compress data on floppies and external media. Easy installation and use, with no artificial DOS commands. Completely data safe and transparent. \$83.

- | | | |
|--------------------------------------|--|---------|
| Attitash Software ... NCP | | |
| 8846 | ☒ WideAngle 2.0 | \$79. |
| Automap ... NCP | | |
| 2729 | ☐ Automap 1.0 | 52. |
| Avery Dennison ... NCP | | |
| 6006 | ☒ Label Pro 1.0 (Laser) | 49. |
| 7336 | ☒ Label Pro 1.0 for Dot Matrix | 49. |
| 1600 | Avery 1st Impression | 229. |
| Banner Blue Software ... NCP | | |
| 3322 | ☒ Family Tree Maker 2.0 | 45. |
| 3324 | ☒ Org Plus Advanced 6.0 | 65. |
| Berkeley Systems ... NCP | | |
| 9885 | ☒ After Dark 1.0A for Windows | 29. |
| Bitstream ... NCP | | |
| 7568 | ☒ FaceLift 1.2 for Windows 2.x/3.0 | 59 |
| 8040 | ☒ FaceLift 1.5 for WordPerfect 5.0/5.1 | 59. |
| 7569 | ☒ Companion Value Pack 1.0 | 125. |
| 8883 | ☒ Type City Cartridge with Deli | 259. |
| | ☒ Typeface Packages | ea. 89. |
| Borland International ... NCP | | |
| 6242 | ☒ Quattro Pro 3.0 | 339. |
| 9695 | ☐ Borland's C++ 2.0 | 339. |
| 1514 | ☒ Paradox 3.5 | 529. |
| 9635 | ☒ Object Vision 1.0 | call |
| Broderbund ... NCP | | |
| 1434 | ☒ New Print Shop | 39. |
| ButtonWare ... NCP | | |
| 6419 | ☒ PC-File 6.0 | 89. |



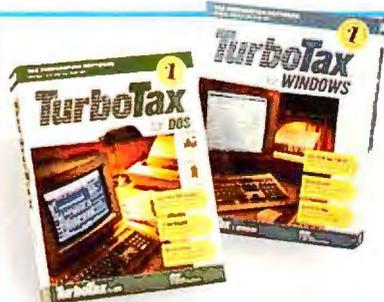
Automap ... NCP
2729 ☐ Automap 1.0—An intelligent PC road atlas! Provides hundreds of color maps showing over 359,000 miles of U.S. highways & roads. Print driving instructions & view information on 51,921 cities & points of interest \$52.

- | | | |
|--|---|-------------------------------|
| Caere ... NCP | | |
| 8933 | ☒ Omnipage Professional 1.0 | 669 |
| Central Point ... NCP | | |
| 5039 | ☐ PC Tools 7.1 | 115. |
| 8114 | ☒ Backup 7.0 (DOS and Windows) | 84. |
| 9751 | ☒ AntiVirus 1.0 | 84. |
| Chipsoft ... NCP | | |
| 1663 | ☒ Turbo Tax Personal 1040 for DOS 9.0 | 49. |
| 3517 | ☒ Turbo Tax Personal 1040 for Windows 2.0 | 59. |
| State Tax Packages | | |
| | DOS ver. ea. 38. | Windows ver. ea. 49 |
| | ☒ ShortForm (for 1040 & E-Z filers) | |
| 3788 | DOS ver. 25. | 3782 Windows vers. 33 |
| Chronologic Corporation ... NCP | | |
| 8849 | ☒ Instant Recall 1.2 | 64. |
| CompuServe ... NCP | | |
| 7546 | ☒ DOS Membership Kit 1.3 | 29. |
| Concentric Data Systems ... NCP | | |
| 6575 | ☒ R & R Relational Report Writer 4.0 | 159. |
| Corel Systems ... NCP | | |
| 5506 | ☐ CorelDRAW! 2.0 | 379 |
| 2618 | CorelDRAW! 2.0 CD-ROM | 449. |
| DAC Easy ... NCP | | |
| 1748 | ☒ Accounting 4.2 | 99. |
| 1751 | ☒ Bonus Pack 4.2 | 135. |
| Data Storm ... NCP | | |
| 4798 | ☒ PROCOMM PLUS 2.01 | 69. |
| Delrina Technology ... NCP | | |
| 2446 | ☒ WinFaxPro 2.0 | 75. |
| 7351 | ☒ PerFORMPRO 1.0 | 179 |



Attitash Software ... NCP
8846 ☒ WideAngle 2.0—Eliminates overlapping windows by spreading programs into one of nine screen-sized workspaces. Simplifies access to DOS applications. XRAY View 'sees through' windows clutter. \$79.

- | | | |
|---|----------------------------------|------|
| Digital Research ... NCP | | |
| 8288 | ☒ DR DOS 6.0 | 69. |
| Fifth Generation Systems ... NCP | | |
| 7725 | ☒ Direct Access 5.1 | 69 |
| 3950 | ☒ Fastback Plus 3.0 | 125. |
| 7795 | ☒ Disklock 1.0 | 129. |
| Fox Software ... NCP | | |
| 6188 | ☒ FoxPro 2.0 | 489. |
| Funk Software ... NCP | | |
| 9488 | ☒ Sideways 3.3 & P.D. Queue 1.0 | 85. |
| Geoworks ... NCP | | |
| 8789 | ☒ Ensemble 1.2 | 129 |
| Gibson Research ... NCP | | |
| 9832 | ☒ SpinRite II 2.0 | 64. |
| Great American Software ... NCP | | |
| 3978 | ☐ One-Write Plus Accounting 1.0 | 105. |
| | (with free MECA TaxCut) | |
| 4880 | ☐ One Write Plus Acct. Works 1.0 | 189. |
| hDC Computer Corporation ... NCP | | |
| 8974 | ☒ Icon Designer 1.0 | 35. |
| Helix Software ... NCP | | |
| 9627 | ☒ Netroom 2.0 (single user) | 65. |
| Hilgraeve ... NCP | | |
| 8204 | ☒ HyperACCESS/5.2.0 (DOS) | 59. |
| IBM ... NCP | | |
| 2666 | ☐ DOS 5.0 Upgrade | 59. |
| Individual Software ... NCP | | |
| 1328 | ☒ Professor Windows 1.0 | 27 |
| 6222 | ☒ Resume Maker 1.3 | 29. |
| Inset Systems ... NCP | | |
| 7298 | ☒ Hijaak 2.1 | 99. |
| 7300 | ☒ Inset Plus Hijaak | 125. |



Chipsoft ... NCP
☒ Turbo Tax Personal 1040 for 1991 (Final edition)—Everything you need; features over 80 forms, schedules & worksheets plus a tax planning module. Prints IRS-approved returns.
1663 DOS . . . \$49. 3517 Windows . . . \$59.

Use it please.



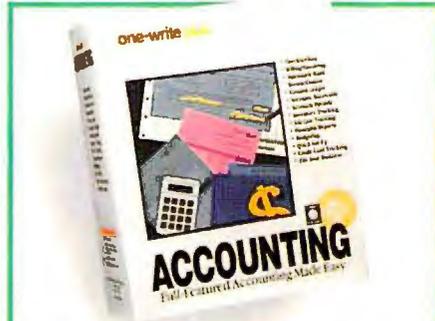
Inset Systems ... NCP
 7298 **Hijaak 2.1**—Capture screens & convert graphics files with Hijaak release 2.1. New features include 5K pop-up window, many new raster & vector formats and support for more than 25 Group 3 fax devices. . . . \$99.

- Insight Development ... NCP**
 8320 PrinTools 1.0 85
- Intuit ... NCP**
 2426 Quicken 5.0 45
 5596 Quicken for Windows 45
 2474 Quicken with QuickPay 75
- LaserTools ... NCP**
 6882 PrintCache 2.4 99
 2656 Printer Control Panel 2.2 99
- Lotus ... NCP**
 5417 1-2-3 3.1 Plus 429
 5653 1-2-3 2.3 349
 1852 1-2-3 2.3 Upgrade 95
 2755 1-2-3 for Windows 1.0 399
 5799 Ami Pro 2.0 299
 1847 Ami Pro Competitive Upgrade 119
 1621 Freelance Graphics 4.0 for DOS 349
 3523 Freelance for Windows 1.0 429
 2750 @cc:mail DOS Platform Pack 125
 2748 @cc:mail Windows Platform Pack 325
 2749 @cc:mail 25 user Pack 379
- MacroMind ... NCP**
 3484 Action! 1.0 (3 1/2" only) 349
- M-USA Business Systems ... NCP**
 3408 Pacioli 2000 (Accounting software) 35.



Corel Systems ... NCP
 5506 **CorelDRAW! 2.0**—“CorelDRAW 2.0 is worth every penny. Special effects can even turn inexperienced artists into master draftsmen,” Luisa Simone of *PC Magazine*. . . \$379.
 2618 **CorelDRAW! 2.0 CD-ROM** 449.

- MECA ... NCP**
 2798 Managing Your Money 8.0 \$139.
 4603 Andrew Tobias' Tax Cut 1991 49
- Microcom ... NCP**
 4408 Micro Courier 1.0 59.
 7649 Virex-PC 2.0 79.
 6234 CarbonCopy Plus 6.0 119.
- Microlytics ... NCP**
 9636 Strunk & White Elements of Style 1.0 35.
 7931 Random House Encyclopedia 1.0 68
- Microsoft ... NCP**
 3336 Money 1.0 for Windows 49
 2894 QuickBasic 4.5 69.
 7010 Windows 3.0 99
 7388 Project 1.0 for Windows 459
 2904 Works 2.0 99.
 2735 Works 1.0 for Windows 139
 3337 Publisher 1.0 for Windows 139
 2901 Word 5.5 209.
 7387 PowerPoint 2.0 for Windows 319
 6195 Word 2.0 for Windows 329
 2856 Excel 3.0 for Windows 329
 8137 Office 1.6 for Windows 499
 1620 DOS 5.0 Upgrade 65.
 1624 Visual Basic 1.0 139.
- Multisoft ... NCP**
 4925 PC-Kwik Power Pak 2.1 75.

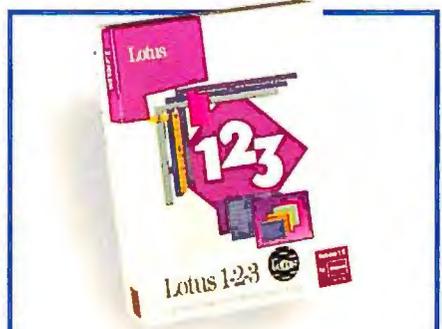


Great American Software ... NCP
 3978 **One-Write Plus Accounting 1.0**—New! Includes General Ledger with Checks & Receipts, Accounts Receivable with Invoicing, & Accounts Payable. Now also includes a free copy of MECA's TaxCut (limited time) . \$105.

- Nolo Press ... NCP**
 5122 For The Record 2.0 35.
 2982 WillMaker 4.0 39.
- Norton-Lambert ... NCP**
 2753 CloseUp for Windows & DOS Dual Pack 129.
- Novell ... NCP**
 4000 Netware Lite 1.0 69.
- Okna ... NCP**
 9696 Desktop Set 3.0 for Windows 85
- PC Globe ... NCP**
 5902 PC Globe 4.0 45
 5900 PC USA 2.0 35.
- Personics ... NCP**
 9288 Laptop Ultravision 2.1 (3 1/2" only) 49.
 4384 Ultravision 2.0 79.

1-800/800-0003

MMC PC Connection 920W
 6 Mill Street
 Marlow, NH 03456
SALES 603/446-7721 FAX 603/446-7791



Lotus ... NCP
 2755 **1-2-3 for Windows**—Includes all the latest 1-2-3 enhancements (3D worksheets, goal-seeking, etc.) as well as SmartIcons, DDE, and a complete Windows graphical environment. Compatible with all 1-2-3 versions . . . \$399.

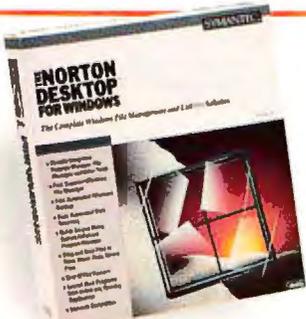
- Polaris Software ... NCP**
 4395 PackRat 4.0 255.
- PowerUp! ... NCP**
 7860 Calendar Creator Plus 4.0 52.
 7857 Labels Unlimited 3.0 59.
 7858 Express Publisher 2.0 99.
- Qualitas ... NCP**
 7539 386MAX 6.0 65.
 7967 BlueMAX 6.0 for PS/2 (3 1/2" only) 85.
- Quarterdeck ... NCP**
 3221 Expanded Memory Mgr. 386 6.0 65.
 4586 DESQView 386 2.4 145.
- QUE Software ... NCP**
 4155 RightWriter 4.0 54.
- Reality Technologies ... NCP**
 7891 WealthStarter 2.0 w/Charles J. Givens 39.
 6572 WealthBuilder 1.1 99.
- Reference Software ... NCP**
 4396 Grammatik IV 2.0 59.
 7483 Grammatik for Windows 2.0 59.
- Roystore ... NCP**
 2473 Instant ORG Charting! 1.0 125
 8162 ABC Flowcharter 1.1 189
- Sitka ... NCP**
 6675 TOPS Network Bundle 3.0 159.
 3720 Flashcard 2.1 (AppleTalk network card) 155.
- Softlogic Solutions ... NCP**
 3542 Software Carousel 5.0 55.
- Software Publishing ... NCP**
 3496 Professional Write 2.2 169.
 9638 Professional Write Plus 1.0 169
 4389 Harvard Draw 1.0 419.
 3482 Harvard Graphics 3.0 419.
 4403 Harvard Graphics 1.0 for Windows 399
 6600 Superbase 4 for Windows 1.3 529
- Software Toolworks ... NCP**
 9859 Word for Word 4.2 for Windows 47
 3290 Desk Reference Library 45.
- Software Ventures ... NCP**
 6889 MicroPhone II 2.0 99.
- Spinnaker ... NCP**
 1415 PFS: WindowWorks 1.0 129.
- Stac Electronics ... NCP**
 1409 Stacker 2.0 89.
- Symantec ... NCP**
 6397 The Norton Backup 1.2 (Windows/DOS) 89
 3146 The Norton Utilities 6.0 119.
 3425 Q&A 4.0 269.
 7999 Norton Anti-Virus 1.5 89.
 2359 The Norton Desktop 1.0 for Windows 99
 8378 PC Anywhere IV 4.03 125.

And we won't ask



Broderbund ... NCP
4411 *SimEarth for Windows from Maxis*—New!
 Take charge of a planet from its birth by controlling its geosphere, atmosphere, biosphere, and civilizations. Unleash natural forces and build your own paradise. . . . \$45.

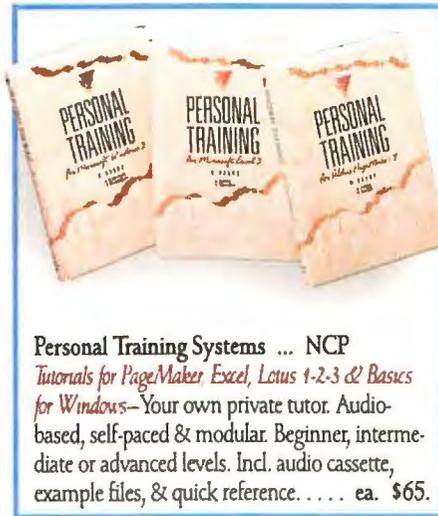
Systems Compatibility ... NCP	
9046	<input type="checkbox"/> Complete Writer's Toolkit 1.1 (DOS) . . . 85.
3949	<input type="checkbox"/> Complete Writer's Toolkit 1.0 for Windows 85
6564	<input type="checkbox"/> Software Bridge 5.0 79
Teleware ... NCP	
9847	<input checked="" type="checkbox"/> M.Y.O.B. for Windows 139
TIMESLIPS ... NCP	
2987	<input type="checkbox"/> Timeslips III 4.0 195.
1270	<input type="checkbox"/> TimeSheet Pro 2.0 135.
Timeworks ... NCP	
6253	<input checked="" type="checkbox"/> Publish-It! 2.0 159.
Tool Technology ... NCP	
3863	WinTools for Windows 1.0 (3½" only) 125
Touchstone Software ... NCP	
7420	<input checked="" type="checkbox"/> Check It 3.0 89.
Traveling Software ... NCP	
5179	<input checked="" type="checkbox"/> LapLink III 3.0. 95.
Ventura ... NCP	
7796	<input checked="" type="checkbox"/> Publisher V 4.0 for Windows 569
WordPerfect Corporation ... NCP	
7781	<input checked="" type="checkbox"/> LetterPerfect 1.0 129.
4214	<input checked="" type="checkbox"/> WordPerfect Office PC 89.
3804	<input type="checkbox"/> WordPerfect 5.1 265.
3494	<input type="checkbox"/> WordPerfect 5.1 for Windows 279
3806	<input type="checkbox"/> WordPerfect 5.1 Additional User 199
WordStar International ... NCP	
1482	<input checked="" type="checkbox"/> Correct Grammar 1.0 for Windows 65
6791	<input type="checkbox"/> WordStar Professional 6.0. 199.
XTREE ... NCP	
6161	<input checked="" type="checkbox"/> XTree Gold 2.5 95.
Z-Soft ... NCP	
1626	<input checked="" type="checkbox"/> Publisher's Paintbrush for Windows 299



Symantec ... NCP
2359 *The Norton Desktop 1.0 for Windows*—Complete Windows file management and utilities solution. Includes an enhanced file manager, the fastest and most automated Windows backup, and data recovery tools. . \$99.

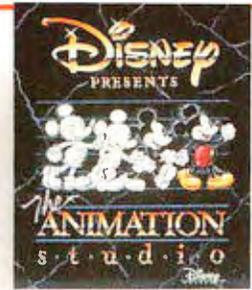
RECREATIONAL/EDUCATIONAL

Abracadata ... NCP	
3629	<input checked="" type="checkbox"/> Design Your Own Home-Architecture 3.0 \$63
3631	<input checked="" type="checkbox"/> Design Your Own Home-Interiors 1.0 63
Broderbund ... CP	
8068	<input checked="" type="checkbox"/> Where in World is Carmen Deluxe. 52.
1836	<input checked="" type="checkbox"/> Where in America's Past is Carmen Sandiego 39.
5851	<input checked="" type="checkbox"/> SimCity 33.
4411	<input checked="" type="checkbox"/> SimEarth for Windows from Maxis 45
Davidson & Assoc. ... NCP	
3947	<input checked="" type="checkbox"/> Math Blaster Plus 29.
4183	<input checked="" type="checkbox"/> KidWorks 29.
EARTHQUEST ... NCP	
3926	<input checked="" type="checkbox"/> EARTHQUEST 35.
Electronic Arts ... NCP	
4534	<input checked="" type="checkbox"/> Mavis Beacon Teaches Typing 2.0 (CP) 35.
3031	<input checked="" type="checkbox"/> Mavis Beacon for Windows 45
3023	<input checked="" type="checkbox"/> ChessMaster 3000 35.
1334	<input type="checkbox"/> Chuck Yeager Air Combat Trainer. 42.
3050	<input type="checkbox"/> World Atlas for Windows 57
Harvard Associates ... NCP	
2324	<input checked="" type="checkbox"/> PC Logo 3.0 59.
HyperGlot Software ... NCP (French, German, Italian, Spanish available.)	
	<input type="checkbox"/> Word Torture for Windows ea 34.
	<input type="checkbox"/> Word Torture 3.0 ea 29.



Personal Training Systems ... NCP
Tutorials for PageMaker, Excel, Lotus 1-2-3 & Basics for Windows—Your own private tutor. Audio-based, self-paced & modular. Beginner, intermediate or advanced levels. Incl. audio cassette, example files, & quick reference. ea. \$65.

Knowledge Adventure ... NCP	
3861	<input type="checkbox"/> Knowledge Adventure 1.0 65.
Microsoft ... NCP	
7881	<input type="checkbox"/> Entertainment Pack for Windows 1.0 29
2858	<input type="checkbox"/> Flight Simulator 4.0 39.
8270	<input type="checkbox"/> Aircraft and Scenery Designer 1.0 29.
Penton Overseas ... NCP	
	<input checked="" type="checkbox"/> Vocabulary Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese). ea. 35.
Personal Training Systems ... NCP	
	Training tutorials - beg to adv. for Windows Excel, PageMaker, & Lotus 1 2 3 (3½") ea 65
Sierra ... CP	
2767	<input type="checkbox"/> Leisure Suit Larry V (VGA) 39.
9466	<input type="checkbox"/> Space Quest IV (VGA) 39.
3113	<input type="checkbox"/> Police Quest III (VGA). 39.
Software Toolworks ... NCP	
3294	<input checked="" type="checkbox"/> Game Pak (5 games in one) 32.
Spectrum Holobyte ... NCP	
3047	<input checked="" type="checkbox"/> Wordtris 27
3457	<input type="checkbox"/> Falcon 3.0 49.
Stone & Associates ... NCP	
3435	<input type="checkbox"/> Letters, Numbers, Words 22.
3439	<input checked="" type="checkbox"/> 2nd Math 4.2 27.
Toyogo ... NCP	
2701	<input checked="" type="checkbox"/> Go Master 5.0 for Windows 39
2703	<input checked="" type="checkbox"/> Nemesis Deluxe Toolkit 5.0. 75.
2704	<input checked="" type="checkbox"/> Nemesis Deluxe Toolkit 5.0 for Windows 75



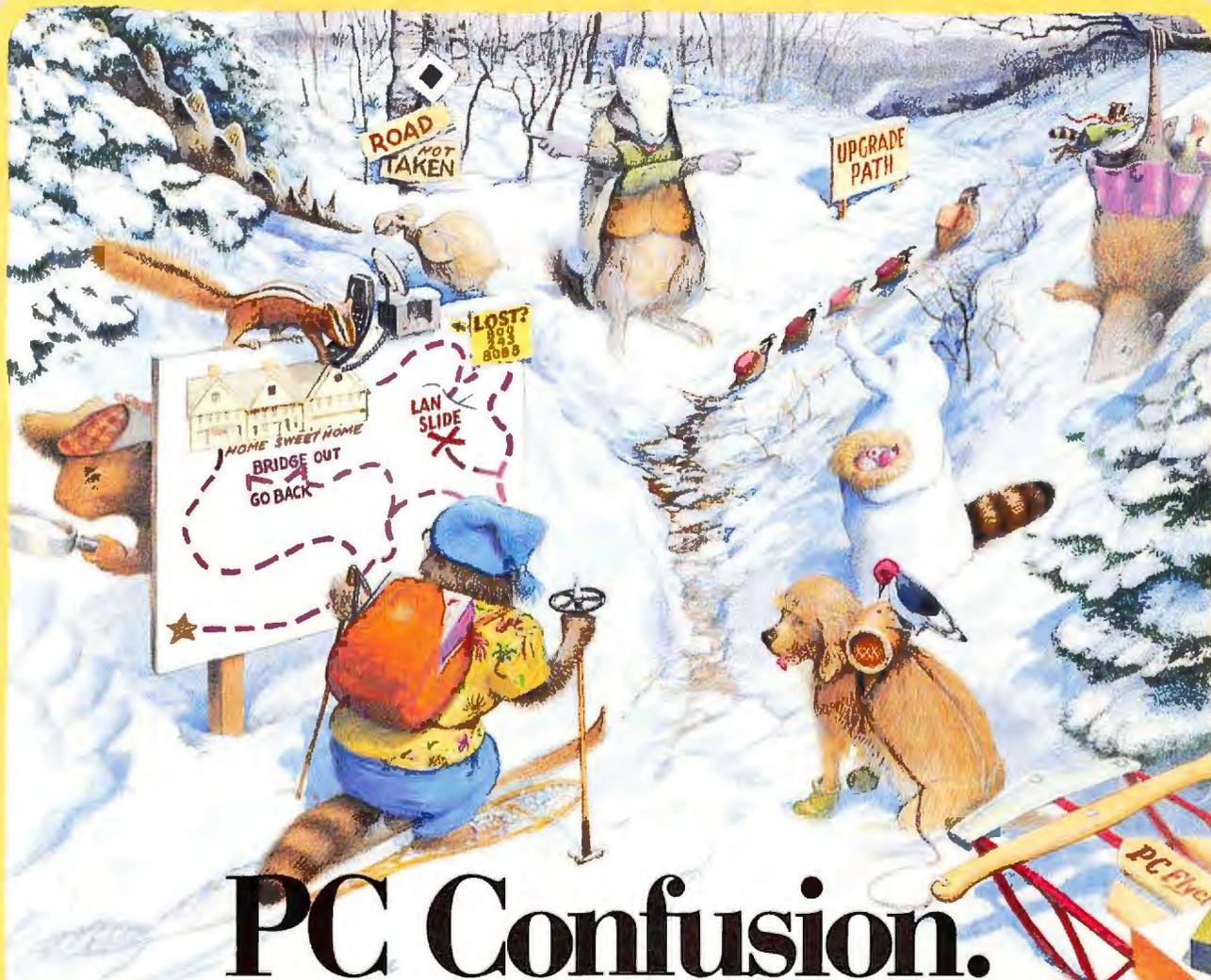
Walt Disney Computer Software ... NCP
4398 *The Animation Studio*—Full-featured animation & paint program utilizing state-of-the-art techniques characteristic of Disney. Comes complete with four disks full of Disney animation, music, & sound effects. \$79.

True BASIC, Inc. ... NCP	
	<input checked="" type="checkbox"/> Kemeny/Kurtz Math Series ea. 45.
Walt Disney Computer Software ... CP	
2629	<input checked="" type="checkbox"/> Mickey's 123's 35.
2624	<input checked="" type="checkbox"/> Mickey's ABC's 35.
4398	<input checked="" type="checkbox"/> The Animation Studio 79.

HARDWARE

Warranties listed next to manufacturer.

American Power ... 2 years	
7108	Smart UPS 400 339.
7105	Smart UPS 600 469.
3858	Back-UPS 400 185.
3823	Back-UPS 600 299.
ATI Technologies ... 2 years	
9821	VGA Basic-16 (640 x 480, 16 colors). 69
2706	VGA Wonder XL (w/1 MB) 239.
9985	VGA Integra (1024 x 768, 16 colors) 95.
2382	Graphics Vantage VGA (w/1 MB) 359.
9822	Graphics Ultra (w/1 MB) 559
2012	Graphics Ultra w/VGA (w/1 MB) 619.
1825	2400etci/ Modem (w/9600 SendFax) 139.
9620	9600et/c Modem 379.
3080	Stereo*FX 149.
3076	VGA Stereo*FX (w/512K, upgrd. to 1 MB) 329.
Boca Research ... 5 years	
7001	BOCARAM/AT PLUS (OK) 119.
7150	BOCARAM/AT PLUS (2 MB) 219.
7139	(4 MB) 329. 7138 (8 MB) 539.
6998	I/O Board for AT 55.
6999	I/O Board for Microchannel (S/S/P) 109.
8380	BasicVGA (256K, 640 x 480) 63.
8381	SuperVGA (1 MB, 1024 x 768) 145.
3859	2400 Internal Modem. 85.
3860	2400 External Modem 109.
Bravo Communications ... 2 years	
7400	2 Position Laser Compatible Switch Box 109.
Brown-Wagh ... 1 year	
8578	Creative Labs Sound Blaster 115.
2336	Creative Labs Sound Blaster Pro 189.
Caere ... 1 year	
8158	Typist Plus Graphics 389.
Canon ... 1 year We are an authorized Canon Service Center.	
7894	BJ-10ex Printer (4.6 lb.) 339.
7897	BubbleJet Ink Cartridge (BJ-10ex) 23.
7896	BJ-10ex Sheet Feeder 75.
Cardinal ... 1 year	
2720	MB2450 Internal 2400 Baud Modem 59.
2719	MB2296SR Internal Send/Receive Fax. 109.
2721	VGA732 True Color Ultra VGA Card 175.
4124	VGA742 True Color Ultra VGA Card 199.
CH Products ... 1 year	
7801	FlightStick w/Falcon 49.
CoStar ... 1 year	
1418	AddressWriter Envelope Printer 499



PC Confusion.

**Don't know which way to turn?
(Or, the node not taken.)**

We tend to take the road less travelled up here in the lovely, dark, and deep woods of Marlow, NH (pop. 568). We've introduced services like toll-free technical support, recycled packing materials, and One Minute Mail Order™ long before anyone else in PC mail order. And to our customers, that has made all the difference. Because they know we have many promises to keep and will, in fact, go miles before we sleep to clear up any confusion about any program or peripheral you buy from us.

You see, when we first started in 1982, the hardest decision anyone

had to make was whether to get an extra serial or parallel port. But over the years technology has taken some bewildering twists and turns, with upgrade paths diverging all over hither and yon. And then some. So before you venture too far into unfamiliar territory, give us a call and we'll get you back on the straight and narrow.

Make a real impression.

Eliminate the confusion around your home or office with PC Connection rubber stamps including the universally recognized "Paws Up!" and "Paws Down!" symbols. We'll send them absolutely free, complete with stamp pad and ink, to anyone who places an order of \$750 or more between now and March 31.

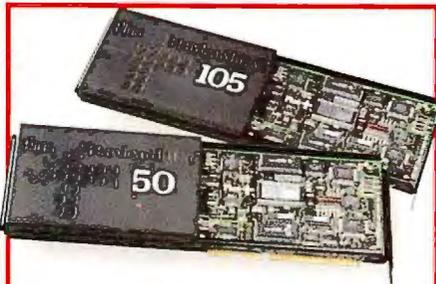


Prove you're a real yes-man. Or no-woman. Or vice versa...With a PC Connection Rubber Stamp Kit. One per customer.

PC CONNECTION®

800/800-0003

Practical Peripherals ... 5 years		
3103	2400 Baud Internal Modem	\$85.
3102	2400 Baud External Modem	179.
8993	2400 Baud Internal Modem (V.42 bis)	169.
8994	2400 Baud External Modem (V.42 bis)	199.
4542	2400 Baud Internal Modem for PS/2	229.
8132	PM2400 Pocket Modem	109.
2266	PM9600 Internal Modem	399.
7934	PM9600SA Modem	469.
2264	PM2400FX96 (modem/fax board)	145.
Targus ... lifetime		
1305	Universal Notebook (for ntbk. computers)	69.
TheComplete PC ... 2 years		
8082	Half Page Scanner/400 w/ReadRight	289.
5828	TheComplete Communicator	319.
4316	TheComplete Fax Portable Plus	319.
Toshiba ... 1 year		
3360	T2000SX Notebook (40 MB)	3399.
3361	T2000SX Notebook (60 MB)	3649.
1779	T3100SX Laptop (80 MB)	3199.
1773	T3200SX Laptop (120 MB)	3499.
Tripp Lite ... 2 years		
6199	Isobar 4-6 (4 outlets, Gold Seal Warranty)	49.
6200	Isobar 6-6 (6 outlets, Gold Seal Warranty)	59.
6201	Isobar 8-12 (8 outlets, Gold Seal Warranty)	69.
6018	LC1200 (1200W line conditioner)	159.
Video 7 ... 7 years		
9768	VRAM II VGA 1 MB	329.
Zoom Telephonics ... 7 years		
1307	Int. 2400 Baud w/9600 Baud Fax Modem	109.
1178	Ext. 2400 Baud w/9600 Baud Fax Modem	119.
1181	2400 Baud V.42bis Modem (2 year)	129.
1167	2400 Baud Internal Modem	65.
1166	2400 Baud External Modem	75.
3075	9600 V.32 Turbo Internal Modem (2 yr.)	399.
4400	24/96 Internal Fax Modem w/Winfax Pro	155.
4401	24/96 External Fax Modem w/Winfax Pro	159.



Quantum ... 2 years

Plus Hardcard II XL—Add a super-fast 50 MB or 105 MB hard drive to any 286/386 system. Anyone can install in just minutes. *New low price!*
 8304 Plus Hardcard II XL 50. \$299.
 8287 Plus Hardcard II XL 105. 449.

DRIVES

Conner Peripherals ... 1 year		
8875	CP3044 40 MB IDE HD (25 ms)	219.
2339	CP30104 120 MB IDE HD (19 ms)	399.
1337	CP3204 200 MB IDE HD (16 ms)	599.
IOMEGA ... 1 year		
We are an authorized Iomega Service Center.		
2224	Bernoulli II Transportable 90 MB.	799.
2616	Internal 90 MB Bernoulli.	799.
2500	PC2B Controller	199.
2530	90 MB Cartridge	149.
2467	90 MB Cartridge Tripak	439.
Mountain Network Solutions ... 2 years		
2917	40-60 MB Internal Tape Drive	259.
5190	DC2000 Pre-formatted Cartridges	ea. 35.
6153	DC2120 Tape Cartridge (5 pack)	149.
Pacific Rlm ... 1 year		
1304	1.2 MB External (for any parallel port)	239.
6602	1.44 MB External (for PC/XT/AT)	239.

Quantum ... 2 years		
8304	Plus Hardcard II XL 50 MB (9 ms)	\$299
8287	Plus Hardcard II XL 105 MB (9 ms)	449.
4060	105 MB Drive Kit for MC PS/2's (13 ms)	789
Seagate ... 1 year		
4554	40 MB Internal HD ST251-1 (28 ms)	249.
1321	ST157A 40 MB IDE Hard Drive	229.
1320	ST1144A 130 MB IDE Hard Drive	459.
TEAC ... 1 year		
4670	1.44 MB Drive for PC/XT (3 1/2")	69.
4326	1.44 MB Drive for AT (3 1/2", w/Basetech)	89.
4951	720k Drive for PC/XT (3 1/2")	69.
6951	1.2 MB Drive for AT (5 1/4")	75.

MEMORY

6556	256k DRAM (100 ns, set of 9)	call
5510	1 MB x 9 SIMMs (80 nanosecond)	call
2497	4 MB x 9 SIMMs (80 nanosecond)	call
5746	1 MB Chips (80 ns, set of 9)	call
7813	256K x 4 Chips	call



Zoom Telephonics/Delrina Technology

Zoom 24/96 Fax Modem/Delrina Winfax Pro Bundle—Get this great 9600 bps send/receive fax with 2400 baud modem along with Delrina's Winfax Pro at a special price. Offer good thru 1/31/92. 4400 Int. Bundle \$155. 4401 Ext. Bundle \$159.



Canon ... 1 year

7894 BJ-10ex Printer—New enhanced version of the popular 4.6 lb. printer provides laser-like print quality (up to 360 dpi) on plain bond paper, envelopes or transparencies. Available in white or gray \$339.

DISKS/MEDIA

Maxell ... lifetime		
2790	5 1/4" MD2-D 1.2 MB Diskettes (Qty. 10)	13.
2792	3 1/2" DS/DD 720k Diskettes (Qty. 10)	11.
2793	3 1/2" DS/HD 1.44MB Diskettes (Qty. 10)	19.
Sony ... lifetime		
3291	5 1/4" DS/DD 360k Disks (Qty. 10)	7.
3297	3 1/2" DS/DD 720k Diskettes (Qty. 10)	9.
3298	3 1/2" DS/HD 1.44 MB Diskettes (Qty. 10)	16.

6148	3 1/2" DS/DD (3 Pack)	\$25.
6375	3 1/2" DS/HD (3 Pack)	45
8185	QD2040 Tape Cartridge	15.
1895	QD2120 Tape Cartridge	22.
6715	QD6150 Tape Cartridge	23.
3M ... lifetime		
3943	DC 2000 Tape Cartridge	18.
3944	DC 600 Tape Cartridge	29.
5679	DC 6150 Tape Cartridge	29.

OUR POLICY

- We accept VISA and MASTERCARD only.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail
- International orders U.S. \$250 minimum. Manufacturer support and upgrade eligibility may be limited outside the U.S.A.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- COD max. \$1000. Cash, cashier's check, or money order.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order, call us Monday through Friday 8:00 a.m. to 1:00 a.m., or Saturday 9:00 a.m. to 5:30 p.m. Eastern Time. You can call our business offices at 603/446-3383 Monday through Friday 9:00 a.m. to 5:30 p.m.



IOMEGA ... 1 year

2224 Bernoulli II Transportable 90 MB—Rugged and built to last, this drive will absorb 1000 g's of shock and provide 90 MB of portable storage. Awards from Byte and InfoWorld. Requires adapter card. \$799.

SHIPPING

- Note:** Accounts on net terms pay actual shipping
- Continental US:**
- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
 - For all other items, add \$3 per order to cover UPS Shipping. For such items, we automatically use Airborne Express at no extra charge if you are more than 2 days from us by UPS ground.
- Hawaii:**
- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add \$3 per order.
- Alaska and outside Continental US:**
- Call 603/446-7721 for information.

which mag you read.



Polaris Software ... NCP
4395 **PackRat 4.0**—Increase productivity by easily managing your business and personal information. Handle your phone book, calendar, to-do's, projects, free-form notes and much more! **\$255.**

Curtis ... lifetime			
1708 Ruby-Plus SPF-2+	65.		
7358 Command Center SPF-4	89.		
Glass Filter Plus (specify size)	ea. 65.		
Cyrix Corporation ... 5 years			
MATH COPROCESSORS			
9875 FasMath 83D87-25	185.		
9876 FasMath 83D87-33	195.		
9877 FasMath 83S87-16 (SX compatible)	115.		
Datadesk ... 3 years			
9901 Switchboard (modular keyboard)	159.		
Epson ... 2 years			
We are an authorized Epson Service Center.			
1906 FX-850 (80 col., 264 cps, 9 pin)	319.		
1904 FX-1050 (136 col., 264 cps, 9 pin)	449.		
2358 LQ-570 (80 col., 252 cps)	289.		
2361 LQ-870 (80 col., 330 cps)	489.		
2357 LQ-1170 (136 col., 330 cps)	669.		
5184 LX-810 (80 col., 180 cps, 9 pin)	185.		
Everex ... 1 year			
1683 Tempo LX Notebook (5 MB, 60 MB HD)	2549.		
Hauppauge Computer ... 1 year			
9870 25 MHz 386N Motherboard for AT	899.		
9034 33 MHz 386N Motherboard for AT	979.		
Hayes ... 2 years			
7391 ULTRA 96 Modem	669.		
3522 OPTIMA 96 Modem	479.		
9884 Pocket Edition 2400	125.		
Hewlett-Packard ... 1 year			
9957 LaserJet IIP Plus	899.		
9993 LaserJet IIIP (with toner)	1149.		
6754 LaserJet III (with toner)	1679.		
Hitachi ... 2 years			
9492 14MVX/LMF 14" SVGA Monitor (1024 x 768) (with low radiation screen)	489.		
Intel ... 5 years			
3864 14.4EX Modem	549.		
6421 2400B MNP Internal Modem	189.		
6420 2400EX MNP Modem	225.		
7880 9600EX Modem	469.		
2346 Inboard 386/PC with 1 MB	495.		
5336 Above Board Plus 8 2 MB	449.		
5342 Above Board Plus 8 I/O 2 MB	479.		
7782 SatisFAXtion (fax board)	389.		
9378 SatisFAXtion for Microchannel	449.		
9903 Matched Memory 4 MB (PS/2)	239.		
Matched Memory (for LaserJet IIP, III, IIIP IID)			
1810 1 MB	79.	1787 2 MB	149.
1637 Snap-In 386 (for PS/2 50/60)	389.		
3358 Power Pak (Snap-In 386 & Above Board Microchannel 4 MB)	925.		

	MATH COPROCESSORS	
7385	80287XL (16 MHz 80286 CPU's)	\$89.
4750	80387SX (16 MHz 80386SX CPU's)	129.
6830	80387SX-20 (20 MHz 80386SX CPU's)	145.
5409	80387-33 (80386DX CPU's)	219.
	Kensington Microware ... 1 year	
2582	Master Piece Plus	99.
7899	Expert Mouse serial . 119. 7900 bus	129.
3311	MasterStand	59.
	Key tronic ... 3 years	
4518	101 Plus Keyboard	99.
	Kraft ... 5 years	
5801	Game Card (2 ports)	27.
5813	Game Card w/Thunderstick	49.
5800	3 button Thunder Joystick	29.
	Logitech ... limited lifetime	
6029	Trackman serial . . . 69. 6028 bus	72.
2343	Trackman Portable	105.
7975	ScanMan 256	289.
3295	MouseMan (combo) 75. 9766 (cordless) 89.	
	Megahertz ... 5 years	
1193	T324D 2400 Modem (for Toshiba Laptops)	129.
1196	T224 2400 Modem (for Toshiba Laptops)	129.
1187	T324FM 96/24 Fax Modem (Toshiba Laptops)	299.
	Micron Technology ... 2 years	
7595	2 MB Expansion for HP LaserJet IIP or III	119.
7012	Memory Upgrade PS/2 70 - 2 MB	139.



Hayes ... 2 years
3522 OPTIMA 96—Get Hayes performance and reliability at a terrific price! Supports V.32 9600 bps operation with V.42bis data compression for speeds up to 38,400 bps **\$479.**

	NEC ... 2 years	
9441	CDR36 Portable CD-ROM Drive	399
4252	Multisync 3FGX Monitor (14")	679
4249	Multisync 4FG Monitor (15")	779.
	Orchid Technology ... 4 years	
7863	ProDesigner VGA IIS (with 1 MB, includes RAMDAC chip)	249
4071	1280i with 1 MB	365.
	Pacific Data Products ... lifetime	
6779	25 Cartridges in One! (for LJ II, IIP, III)	269.
2255	Fontbank (0.75 MB)	225.
3491	Fontbank (1.5 MB)	299.
8975	Complete Font Library (for LJIII)	275.
	Memory upgrade for LaserJet IIP/III:	
7055	2 MB	145.
	7759 4 MB	259
	Memory upgrade for LaserJet III/IID:	
6838	2 MB	249.
	6836 4 MB	369
8090	Pacific Connect with 1.25 MB	349.
7158	Pacific Page PE 4.1 (for LJ IIP/III)	379.
6834	Pacific Page (for LJ II) w/2 MB Mem. Brd.	379.
9833	Pacific Page XL (w/accelerator board)	799.
	PC Placement & Cooling ... 1 year	
	REPLACEMENT POWER SUPPLIES	
3203	Turbo Cool 200	149.
7915	Turbo Cool 300 (2 yr. warranty)	165.

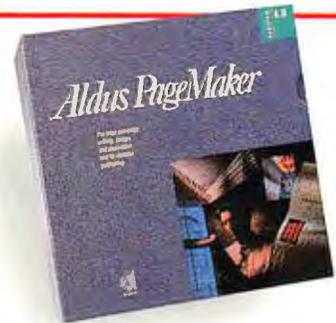


Practical Peripherals ... 5 years
2264 PM2400FX96 Fax Modem—2400 bps internal modem with true 9600 bps send/receive capabilities. A Hayes compatible 1/2 card, it also allows you to receive faxes in the background, & includes QuickLink II. . . **\$145.**

	Microsoft ... lifetime	
7597	Microsoft Mouse (bus or serial)	89.
2897	Mouse with Paintbrush (bus or serial)	105.
2898	Mouse with Windows 3.0 (bus or serial)	149.
1956	Mouse with Works (bus or serial)	155.
1896	Ballpoint Mouse (serial only)	119.
	MicroSpeed ... 1 year	
2763	MicroTRAC (serial & PS/2 interface)	59.
	PC-TRAC Trackball	
6007	serial	75.
	6C08 bus	89.
7271	Inport	79.
	6330 PS/2	79.
	Mouse Systems ... lifetime	
5997	Trackball (1 yr. wrnty.) serial. . . 65. bus	69
3213	PC Trackball II (serial)	69.
7878	PC Mouse III (serial)	89.
	(bus)	95.

1-800/800-0003

MMC **PC Connection** 920W
 6 Mill Street
 Marlow, NH 03456
SALES 603/446-7721 FAX 603/446-7791



Aldus ... NCP
1332 **PageMaker 4.0**—Provides new support for long documents, sophisticated text-handling and professional typographic controls. Includes Adobe Type Manager. Free upgrade from version 3.02 if bought after Jan. 1, 1991 **\$549.**



SETH JABEN

*You don't need
a PostScript
printer to get
great-looking fonts.*

*Use this
guide to 101
font cartridges and
software packages
to create
documents dressed
to impress.*

C A T H E R I N E S M I T H

Fonts are like clothes—you can't go to work without them. And just as you wouldn't wear the same outfit to the office, the company picnic, and the formal awards dinner, you wouldn't want to use the same font for every print job.

Fonts that are acceptable for drafting a report may look amateurish when used in a presentation, may be wholly incompatible with spreadsheets, and can become illegible when transmitted by fax. Most of us need at least three sets of fonts: one for reports and correspondence, another for presentations or desktop published documents, and a third for squeezing big spreadsheets onto 8½-by-11-inch pages.

Where can you find the fonts you need? You can start with your printer. All printers come with built-in (or *resident*) fonts. (In this case, *font* refers to a typeface in a specific size, style, and weight, such as 10-point Helvetica Bold Italic.) Any application that supports, say, the LaserJet Series II enables you to select any of the fonts residing in that printer. Trouble is, most printers offer only a handful of fonts, not enough to produce the variety of documents required by a typical business.

The leading exceptions are printers that feature PostScript, Adobe's sophisticated page description language. PostScript printers are supported by the majority of applications, and most come with at least 35 typefaces that you can scale to any size. If you can afford \$2000 or more for a PostScript printer, buy one and simplify your font choices. (For a review of nine low-cost PostScript printers, see "PostScript Lasers," December 1991.) If \$2000 is too steep, the only way to get the fonts your printer lacks is to purchase them separately. They come in three basic varieties.

► *Bit-mapped soft fonts* come on disk and have fixed point sizes. To print a report in, say, 10-point Goudy Old Style, you need to install that font on your hard disk for the application you're using. The application then sends (*downloads*) the font to the printer when you print your document. Bit-mapped fonts hog disk space and take time to download, but you can buy them for almost any application and they work with almost any printer.

► *Scalable soft fonts* are created by software programs called *font generators*. Instead of having fixed point sizes, scalable fonts come in *outlines* that you can stretch to virtually any size. For example, using a Goudy Old Style outline, you can generate fonts in 9 points, 99 points, or 999 points. Font generators work with most printers, but only *Windows* and a handful of DOS programs can benefit from them.

► *Font cartridges* plug into your printer. (In this guide, we've listed the industry standard, cartridges for the HP LaserJet.) Most cartridges contain bit-mapped fonts, though some contain scalable outlines and come with their

own built-in font generators. Some applications come with special drivers that "talk" to individual cartridges, letting you use all the fonts therein.

All three font products can provide the typefaces you need. Your choice depends on the number and types of fonts you want, your budget, and compatibility with your application and printer.

Software-based fonts offer the widest range of font options and the broadest printer support, from dot matrices and ink jets to lasers.

Bit-Mapped Soft Fonts Bit-mapped soft fonts have been largely supplanted by cartridges and scalable-font generators. If neither of these works with your printer or application, bit-mapped soft fonts are your last hope.

Most bit-mapped font packages support top-selling DOS applications like *WordPerfect*, *Harvard Graphics*, and *1-2-3*. You're sure to find others that work with applications the font generators ignore. All are compatible with the LaserJet II and III, but support for other printers is spotty.

Bit-mapped typefaces come in discrete sizes and require plenty of disk space, so you usually get only a handful in each package. Most vendors offer a library of typefaces, but none let you add faces from other manufacturers.

Since creating a document without screen fonts is like getting dressed in the dark, look for font packs that come with *Windows* or *Ventura* screen fonts. These must be installed separately, but they enable you to see your pages before you print them.

Scalable Soft Fonts Scalable font outlines are like elastic waistbands—they stretch to fit your needs. Each font outline lets you create thousands of individual fonts, giving you

the most bang for your buck. For the widest choice of fonts and the broadest printer support, go with a scalable-font package.

If you use an offbeat application, though, you may be out of luck. Most scalable-font generators work with *Windows* and the major word processors but few other DOS applica-

If you own a dot matrix or ink jet printer and need PostScript output, emulators are your only solution.

tions. You may need to find a bit-mapped package.

Most of the scalable-font packages listed here come with their own font generation software. You select the typeface and size, and the program creates the fonts. Other packages let you download scalable font outlines to the LaserJet III, which has a built-in font generator that works much the same way.

Since these fonts are scalable, font style is a bigger issue than font size. Fortunately, you have plenty of font options to choose from—literally thousands of additional typefaces from a variety of vendors. Moreover, the top scalable packages also provide screen fonts that are generally superior to those of their bit-mapped cousins.

Windows aficionados should note that version 3.1 will ship with its own on-the-fly font manager and 13 scalable TrueType outlines. These may be all the fonts many users will

need. Several third-party vendors have announced their support for TrueType add-on fonts, but none were shipping at press time.

PostScript emulators are scalable-font packages cut from a different cloth. In addition to fonts, they enable you to produce complex PostScript graphics on almost any printer. If you own a dot matrix or ink jet model and need PostScript output, emulators are your only solution.

However, because the PostScript files are processed inside your computer, not the printer, you'll need a lot of horsepower. In addition to at least 1.5MB of printer RAM, a 386 with 4MB of RAM and a math coprocessor are usually recommended. But even then, don't expect performance to match that of a laser printer with built-in PostScript.

Most packages offer inexpensive starter kits with 13 scalable outlines or the full set of 35. Font for font, these emulators are cheaper than most scalable-font packages—provided you already own the necessary hardware.

Font Cartridges The great appeal of font cartridges is their simplicity. Just stick one into the slot in your laser, install the proper driver for your software program, and you're ready. Cartridges are generally faster than soft fonts and make it easier to standardize your work group on one set of fonts. But they're also less flexible: You'll get fewer add-on font options, and ink jet and dot matrix printers accept only proprietary cartridges.

Bit-Mapped Cartridges Like their soft font siblings, bit-mapped cartridges offer a limited number of typefaces in fixed sizes. But when it's time to add fonts, your options are few. Bitstream's Type City and Elite's 25 Plus/Charisma let

About Face

It's not how many fonts you have but which you use that determines how effective your document is. Here are some suggestions for matching the fonts you have to the documents you need to produce.

Times Roman

MEMORANDUM

TO: Timesync Inc. Employees
 FROM: Personnel Department
 DATE: January 12, 1992
 SUBJECT: Rip Crash - New Research

I am very pleased to advise you that Rip Crash is an experienced professional with a variety of experience at a variety of companies. Most recently Rip was Deputy Director of Research and Planning at Bookman, Bodoni & Clarendon, where he worked on advertising campaigns for high-tech and business-to-business clients.

Goudy

MEMORANDUM

TO: Timesync Inc. Employees
 FROM: Personnel Department
 DATE: January 12, 1992
 SUBJECT: Rip Crash - New Research

I am very pleased to advise you that Rip Crash is an experienced professional with a variety of experience at a variety of companies. Most recently Rip was Deputy Director of Research and Planning at Bookman, Bodoni & Clarendon, where he worked on advertising campaigns for high-tech and business-to-business clients.

Reports, memos, and correspondence look best in an easy-to-read classic typeface, such as Times Roman or Goudy. The most effective reports use a minimum of type styles, though italics and boldface work well to highlight key points.



Presentations demand simplicity, and a thick, modern, sans serif face like Futura Extra Black fills the bill. An easy-to-read serif face, such as Century, is a good choice for secondary type, but don't use more than two typefaces.

10 point Lucida Sans
Lucida Sans Bold

10 point Rockwell
Rockwell Bold

10 point Charter
Charter Black

10 point Lucida Sans
Lucida Sans Bold

10 point Rockwell
Rockwell Bold

10 point Charter
Charter Black

Faxes present their own special dilemma: Type tends either to break up or to spread out when faxed. A medium-weight typeface such as Adobe's Lucida Sans, Rockwell, or Bitstream's Charter, in an appropriate size—10 point is okay, but 12 or 14 point is better—stays readable even after the fax machine has done its worst.

News Letter

Timesync Buys Everything

CONTENTS

- ▶ **Southern Regional Gets Top Spot**
Doug Kough and his Phoenix-based sales team continue to shine..... *Scott Goodrod*
- ▶ **Graphics Comes to Timesync**
Newly formed in-house graphics department provides presentation package..... *Jeff Gault*
- ▶ **Managers to Meet in Style**
Heads of all twelve divisions will hook up in November for annual conference..... *Scott Wall*
- ▶ **Plans Date Set**
Committee chooses the second Saturday in August at the Palace Park..... *Denise Jacobson*

ONE THAT GOT AWAY

Yes, it's true. We almost had Disney. Just minutes after Timesync's stunning announcement (see story above), CEO Magistrate released additional information: the House that Mickey Built was almost part of Timesync's monster acquisition. Talks are continuing, but prospects for bringing Disney into the fold look bleak for the time being.

Continued on page 2

Newsletter typefaces are typically based on content: Idiosyncratic faces may make sense for informal, in-house efforts, whereas professional business publications require a more dignified face. Because a newsletter's first mission is to capture the reader's attention, designers often mix type, using different faces for headlines, sidebars, and other elements.

FONT SOFTWARE

Manufacturer	Product	Price	Standard fonts	Font sizes (points)	Number of add-on typefaces	Supports third-party add-on fonts	PRINTER SUPPORT		
							IBM/Epson 24-pin dot matrix	HP Desk-Jet	HP LaserJet II/ HP LaserJet III
BIT-MAPPED SOFT FONTS ¹									
Data Transforms	Fontrix	\$155	12	3-37	300	N	Y	Y	Y/Y
	Printrix	\$165	23	3-37	300	N	Y	Y	Y/Y
Elfring Soft Fonts	Spread Sheet Font Set	\$75	1	4-16	0	N	N	Y	Y/Y
	LaserJet Starter Package	\$75	6	6-30	0	N	N	N	Y/Y
	Standard Text Fonts	\$150	21	6-30	0	N	N	Y	Y/Y
	Tax Font	\$65	3	6-14	0	N	N	N	Y/Y
Good Software	25 in 1 SoftCartridge	\$130	100	6-18	15	N	N	N	Y/Y
K-Talk Communications	Greek Soft Fonts	\$149	7	5-24	1	N	N	N	Y/Y
	Math Soft Fonts	\$149	7	5-24	1	N	N	N	Y/Y
Metro Software	SuperFonts 25/1	\$179	14	6-18	0	N	Y ²	Y ²	Y/Y
Weaver Graphics	LJ Fonts	\$30	1	6-72	200	N	N	Y ²	Y/Y
SCALABLE SOFT FONTS									
Adobe Systems	Adobe Type Library for the PC	\$49-\$370	4	4-999	1200	Y	Y ⁴	Y ⁴	Y/Y
	Adobe Type Manager	\$99	13	4-999	1200	Y	Y	Y	Y/Y
	Adobe Type Sets	\$99-\$198	8-10	4-999	1200	Y	Y ⁴	Y ⁴	Y/Y
Agfa	Intellifont-for-Windows 3.0	free	8	4-999	200 ⁶	Y	Y	Y	Y/Y
	Type Director 2.0	\$99	8	4-999	200	Y	Y	Y	Y/Y
Atech Software	FastFonts (with Publisher's PowerPak)	\$100	18	4-1000	234	Y	Y	Y	Y/Y
Bitstream	Facelift for Windows	\$99	13	4-500	24	N	Y	Y	Y/Y
	Facelift 1.5 for WordPerfect	\$99	16	4-500	200	N	Y	Y	Y/Y
Casady & Greene	Fluent Laser Fonts Library	\$190	79	4-999	n/a	n/a	Y ⁶	Y ⁶	Y ⁶ /Y ⁶
Digi-Fonts	Digi-Fonts Typestyles	\$80	8	4-720	405	N	N	N	Y/Y
	Digi-Fonts Typeface Library	\$600	264	4-720	405	N	N	N	Y/Y
Elfring Soft Fonts	KeyCaps Font Set ⁷	\$75	4	8-18	0	N	N	Y	Y/Y
	Font Paks 1, 2, 3, 4, and 5 ⁷	\$65 ⁸	4	8-30	0	N	N	Y	Y/Y
The Font Company	The Font Company Type Library	\$50-\$170	1-4	4-999	1600	N	Y ⁴	Y	Y/Y
Glyph Systems	Typographer 2.0	\$99	4	4-400	1700	N	Y	Y	Y/Y
Hewlett-Packard	HP Brilliant Presentations 1	\$159	3	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	HP Compelling Publications I	\$159	3	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	HP Compelling Publications II	\$159	3	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	HP Decorative Words 1	\$159	9	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	HP Distinctive Documents 1	\$159	3	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	HP WordPerfect Scalable Typefaces	\$249	10	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
	Premier Collection with Type Director 2.0	\$195	6	4-999	⁹	Y	Y	Y	Y ¹⁰ /Y
LaserTools	Fonts-on-the-Fly	\$149	19	4-200	0	Y	Y	Y	Y/Y
MicroLogic	MoreFonts	\$150	24	4-999	74	Y	Y	Y	Y/Y
Power Up	Express Fonts	\$80	2	6-144	0	Y	Y	Y	Y/Y
	TextAppeal	\$130	13	6-144	0	Y	Y	Y	Y/Y
SoftCraft	Font Solution Pack	\$495	11	4-240	200	Y	Y ²	N	Y/Y
SWFTE	Glyphix Laser Fonts for WordPerfect	\$100	11	4-120	45	N	N	Y	Y/Y
Zenographics	SuperPrint 2.0	\$195	35	4-999	⁹	Y	Y	Y	Y/Y
ZSoft	SoftType 1.1	\$199	63	4-72	1000 ⁶	Y	Y	Y	Y/Y
POSTSCRIPT EMULATORS									
Custom Applications	Freedom of Press	\$495	35	4-999	1000 ⁶	Y	Y	Y	Y/Y
	Freedom of Press Professional	\$1495	35	4-999	1000 ⁶	Y	Y	Y	Y/Y
	Freedom of Press for Windows 3.0	\$495	35	4-999	1000 ⁶	Y	Y	Y	Y/Y
LaserGo	GoScript	\$149	13	4-999	100	Y	Y	Y	Y/Y
	GoScript Plus	\$299	35	4-999	100	Y	Y	Y	Y/Y
	GoScript Select	\$99	13	4-999	100	Y	N	Y	Y/Y
PMWare	UltraScript PC 3.0	\$195	25	4-999	1000 ⁶	Y	Y	Y	Y/Y
	UltraScript PC Plus 3.0	\$449	47	4-999	1000 ⁶	Y	Y	Y	Y/Y

¹ Point size varies with printer resolution.
² Requires extra-cost utility.

³ Only for specific characters.
⁴ Requires Adobe Type Manager for Windows.
⁵ Screen fonts generated by using Adobe Type Foundry.

⁶ Via Adobe Type Manager (included in package).
⁷ Available in bit-mapped, PostScript, PCL 5 Scalable, and TrueType formats.

APPLICATION SUPPORT

SCREEN FONTS

Windows 3.0	Ventura (GEM/DOS)	Word-Perfect (DOS)	Word (DOS)	1-2-3 (DOS)	Harvard Graphics (DOS)	Windows	Ventura (GEM/DOS)	Reader service number
N	N	Y	Y	Y	N	N	N	620
N	N	Y	Y	Y	N	N	N	620
Y	Y	Y	Y	Y	Y	Y	Y	621
Y	Y	Y	Y	Y	Y	Y	Y	621
Y	Y	Y	Y	Y	Y	Y	Y	621
Y	Y	Y	Y	Y	Y	Y	Y	621
Y	Y	Y	Y	Y	Y	N	N	622
Y	N	Y	N	N	N	Y	N	623
Y	N	Y	N	N	N	Y	N	623
N	Y	Y	Y	Y	Y	N	Y	624
Y	Y	Y	Y	Y	N	Y ³	Y ³	625
Y	Y	Y	Y	N	N	Y ⁵	Y ⁵	626
Y	N	N	N	N	N	Y	N	626
Y	Y	Y	Y	N	N	Y ⁵	Y ⁵	626
Y	Y	Y	Y	Y	Y	Y	Y	627
Y	Y	Y	Y	Y	Y	Y	Y	627
Y	N	Y	Y	N	N	Y	N	628
Y	N	N	N	N	N	Y	N	629
N	N	Y	N	N	N	N	N	629
Y ⁶	N	N	N	N	N	Y ⁶	N	630
Y ²	Y ²	Y ²	Y ²	N	N	Y ²	Y ²	631
Y ²	Y ²	Y ²	Y ²	N	N	Y ²	Y ²	631
Y	Y	Y	Y	Y	Y	Y	Y	632
Y	Y	Y	Y	Y	Y	Y	Y	632
Y ⁴	Y	N	Y	N	N	Y ⁴	N	633
Y	Y	Y	Y	N	N	Y	Y	634
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
Y	Y	Y	Y	Y	Y	Y ¹⁰	Y ¹⁰	635
N	N	Y	N	N	N	N	N	636
Y	Y	Y	Y	N	N	Y	Y	637
Y	N	N	N	N	N	N	N	638
Y	N	Y	Y	N	Y	Y	N	638
Y	Y	Y	Y	Y	N	Y	Y	640
N	N	Y	Y	N	N	N	N	641
Y	N	N	N	N	N	Y	N	642
Y	Y	N	N	N	N	Y	Y	643
Y	Y	Y	Y	Y	Y	Y	Y	644
Y	Y	Y	Y	Y	Y	Y	Y	644
Y	Y	Y	Y	Y	Y	Y	Y	644
Y	Y	Y	Y	N	Y	N	N	645
Y	Y	Y	Y	N	Y	N	N	645
Y	Y	Y	Y	N	Y	N	N	645
Y	Y	Y	Y	Y	Y	N	N	646
Y	Y	Y	Y	Y	Y	N	N	646

⁸ Font packs available separately.

⁹ Vendor unable to estimate total number.

¹⁰ Requires Agfa Type Director or Intelligent-for-Windows.

For more information about all products in this table, circle reader service no. 902.

you plug credit card-size font cards into the cartridge itself for mix-and-match customization. With the rest, you have to buy another cartridge if you want more fonts.

Bit-mapped cartridges can work with the LaserJet II or III. All the cartridges listed here support *Windows*, *Microsoft Word*, and *WordPerfect*, but support for other applications varies. If the cartridge doesn't support the HP standard, you may have to install special drivers to make it work with your application.

Finally, to avoid a lot of trial and error at print time, look for cartridges for which there are matching screen fonts.

Scalable Cartridges Scalable cartridges offer the same advantages as scalable soft fonts. However, many work only with the LaserJet III, and your add-on options are limited. Only Pacific Data's Font-Bank is fully customizable. Download your favorite scalable or bit-mapped soft fonts into the cartridge to combine the speed and convenience of cartridges with the flexibility of soft fonts.

LaserJet Series II owners can also feed their scalable-font needs via a PostScript cartridge. These cartridges work with either species of LaserJet, and they're generally cheaper than other cartridges on a per-font basis. However, they require at least 1.5MB of printer RAM, and that can slow your laser to a crawl.

Choosing Well Selecting the best font options doesn't have to be confusing. If you need the widest possible font assortment, your best bet is scalable-font software. But when you're sharing a laser, a cartridge is a simpler and faster option.

LASERJET FONT CARTRIDGES

Manufacturer	Product	Price	Standard fonts	Font sizes (points)	Accepts add-on fonts	Supports HP LaserJet II/ LaserJet III	APPLICATION SUPPORT		
							Ventura (GEM/ DOS)	1-2-3 (DOS)	Harvard Graphics (DOS)
BIT-MAPPED CARTRIDGES									
Architext	ArcArtist	\$250	19	6-36	N	Y/Y	N	N	Y
	ArcMail	\$175	6	1.94-20	N	Y/Y	N	N	Y
	BarCode Set	\$225	9	9.5-12	N	Y/Y	N	N	Y
	Fixed Pitch Set	\$175	8	8	N	Y/Y	N	N	Y
	ProTax	\$250	8	6-14	N	Y/Y	N	N	Y
	TagIt	\$365	5	18-204	N	Y/Y	N	N	Y
	WildCard	\$365	246	3.6-18	N	Y/Y	N	N	Y
Bitstream	Type City	\$379	35	8-60	Y	Y/Y	N	N	Y
Computer Peripherals	Action Set	\$175	21	3-18	N	Y/Y	Y	Y	Y
	SuperSet +	\$349	23	3-18	N	Y/Y	Y	Y	N
Elite	25 Plus/Charisma	\$399	150	4-30	Y	Y/Y	Y	Y	Y
Hewlett-Packard	HP Forms, Etc.	\$195	9	6-24	N	Y/Y	N	Y	Y
	HP Global Text	\$195	6	8-14	N	Y/Y	N	Y	Y
	HP International Collection	\$325	14	3.6-14	N	Y/Y	N	Y	Y
	HP Microsoft	\$195	30	8-14	N	Y/Y	N	Y	Y
	HP Persuasive Presentations	\$195	17	14-24	N	Y/Y	N	Y	Y
	HP Polished Worksheets	\$195	8	3.6-12	N	Y/Y	N	Y	Y
	HP Pretty Faces	\$195	9	14-54	N	Y/Y	N	Y	Y
	HP ProCollection	\$300	65	3.6-12	N	Y/Y	N	Y	Y
	HP Tax1	\$195	7	6-14	N	Y/Y	N	Y	Y
IQ Engineering	HP Text Equations	\$195	8	7-10	N	Y/Y	N	Y	Y
	HP WordPerfect	\$195	18	6-24	N	Y/Y	N	Y	Y
	Super Cartridge 1 Int'l Edition	\$399	19	4-16	N	Y/Y	N	Y	N
	Super Cartridge 2	\$399	17	4-30	N	Y/Y	Y	Y	N
Lotus Selects	Super Cartridge	\$399	14	4-14	N	Y/Y	N	Y	Y
Pacific Data Products	25 in One	\$399	12	3.6-18	N	Y/Y	Y	Y	Y
	Headlines in a Cartridge	\$299	2	14-48	N	Y/N	Y	Y	Y
PCPI	Collection	\$199	24	6-24	N	Y/Y	Y	N	N
	Forms Plus	\$149	20	6-24	N	Y/Y	Y	N	N
	Heritage	\$299	30	6-24	N	Y/Y	Y	N	N
	ImageFont All-in-One	\$299	20	6-24	N	Y/Y	Y	N	N
	Perfect	\$149	28	6-24	N	Y/Y	Y	N	N
	Presentation	\$149	24	14-24	N	Y/Y	Y	N	N
	Publication	\$299	30	6-24	N	Y/Y	Y	N	N
	Starter	\$99	14	3.6-11	N	Y/Y	Y	N	N
	Technical	\$149	12	7-10	N	Y/Y	Y	N	N
	Ventura Publisher	\$299	24	6-24	N	Y/Y	Y	N	N
	Word	\$149	12	8-14	N	Y/Y	Y	N	N
Worksheets	\$149	10	3.6-16	N	Y/Y	N	Y	N	
SCALABLE CARTRIDGES									
Hewlett-Packard	HP Brilliant Presentations 1 and Compelling Publications II	\$349	8	4-999	N	N/Y	N	Y	Y
	HP Distinctive Documents 1 CPI	\$349	7	4-999	N	N/Y	N	Y	Y
	HP PCL 5 Cartridge	\$299	6	4-999	N	Y/N	Y	Y	Y
	HP WordPerfect Scalable Typefaces	\$349	10	4-999	N	N/Y	N	Y	Y
IQ Engineering	Super Cartridge 3/Professional Edition	\$399	40	4-999	N	N/Y	Y	Y	N
Pacific Data Products	Complete Font Library Cartridge	\$399	51	25-999	N	N/Y	Y	Y	N
	FontBank Cartridge ¹	\$299	2	2	Y	Y/Y	Y	³	³
POSTSCRIPT									
Adobe Systems	PostScript Cartridge for LaserJet II	\$495	35	4-999	N	Y/Y	Y	N	N
Computer Peripherals	JetPage III	\$349	47	4-999	N	Y/Y	Y	Y	Y
Elite	PowerScript IV	\$599	47	4-999	Y	Y/Y	Y	Y	Y
Pacific Data Products	PacificPage PE	\$499	35	2-999	N	Y/Y	Y	Y	Y
PCPI	ImageScript for Series II	\$299	47	4-999	N	Y/N	Y	N	Y
	ImageScript for HP IID, IIP, IIIP, III	\$299	47	4-999	N	Y/Y	Y	N	N

¹ Customizable font cartridge; may contain scalable fonts or bit maps.
² Varies.
³ Not supported at press time.

⁴ Requires Adobe Type Foundry utility.
⁵ Uses standard PostScript printer driver.

SCREEN FONTS

Win-dows	Ventura (GEM/ DOS)	Uses HP driver(s)	Reader service number
Y	N	Y	647
Y	N	Y	647
Y	N	Y	647
Y	N	Y	647
Y	N	Y	647
Y	N	Y	647
Y	N	Y	647
Y	N	Y	648
Y	Y	Y	649
Y	Y	Y	649
Y	N	N	650
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
Y	Y	Y	651
N	N	Y	652
N	N	Y	652
N	N	N	653
N	N	N	654
N	N	N	654
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
N	N	N	655
Y	Y	Y	656
Y	Y	Y	656
Y	Y	Y	656
Y	Y	Y	656
Y	Y	Y	657
Y	N	N	658
Y	Y	N	658
Y ⁴	Y ⁴	S	659
N	N	S	660
Y	N	S	661
Y	Y	S	662
Y	Y	S	663
N	N	S	663

Scalable-font packages are a cost-effective option for lasers, and they're your best option for outfitting ink jet and dot matrix printers. If your applications aren't supported by a scalable-

font generator, bit-mapped soft fonts are a reasonable choice.

Some final caveats: Before you buy, be aware that similar typefaces often come with different labels. For example, Swiss and San Marcos are Helvetica knockoffs. Always examine print samples to

gauge quality and make sure you're not buying fonts you already own. And remember that owning a lot of fonts doesn't mean you have to use them all in one document. ☉

Catherine Smith is a freelance writer in San Diego.

WHERE TO BUY

Adobe Systems, Inc.
1585 Charleston Rd.
P.O. Box 7900
Mountain View, CA
94039-7900
800/235-0078

Agfa Corp.
90 Industrial Way
Wilmington, MA 01887
800/424-8973,
508/658-5600

Architext Inc.
121 Interpark Blvd. #208
San Antonio, TX 78216-1808
512/490-2240,
512/490-2242 (fax)

Atech Software
5964 La Place Ct. #125
Carlsbad, CA 92008
800/786-3668,
619/438-6898 (fax)

Bitstream Inc.
215 First St.
Cambridge, MA 02142
800/522-3668,
617/497-6222

Casady & Greene, Inc.
22734 Portola Dr.
Salina, CA 93908
800/359-4920,
408/484-9228

Computer Peripherals, Inc.
667 Rancho Conejo Blvd.
Newbury Park, CA 91320
800/854-7600,
805/499-5751

Custom Applications, Inc.
900 Technology Park Dr.
Billerica, MA 01821

800/873-4367,
508/667-8821 (fax)

Data Transforms
616 Washington St.
Denver, CO 80203
303/832-1501

Digi-Fonts, Inc.
528 Commons Dr.
Golden, CO 80401
800/242-5665,
303/526-9502 (fax)

Elfring Soft Fonts
P.O. Box 61
Wasco, IL 60183
708/377-3520,
708/377-6402 (fax)

Elite Business Applications, Inc.
P.O. Box 300
Millersville, MD 21108
800/942-0018,
301/987-7200

The Font Company, Inc.
7850 E. Evans #111
Scottsdale, AZ 85260
800/442-3668,
602/998-9711

Glyph Systems, Inc.
P.O. Box 134
Andover, MA 01810
508/470-1317

Good Software Corp.
13601 Preston Rd.
#500W
Dallas, TX 75240
800/854-5700,
214/239-4643 (fax)

Hewlett-Packard Co.
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900,
208/344-4809 (fax)

IQ Engineering
685 N. Pastoria Ave.
Sunnyvale, CA 94086
800/765-3668,
408/733-1161

K-Talk Communications, Inc.
30 W. First Ave. #100
Columbus, OH 43201
614/294-3535,
614/294-3704

LaserGo, Inc.
9369 Carroll Park Dr.,
Ste. A
San Diego, CA 92121
619/450-4600,
619/450-9334 (fax)

LaserTools Corp.
1250 45th St. #100
Emeryville, CA 94608
800/767-8004,
510/420-1150 (fax)

Lotus Selects
P.O. Box 9172
Cambridge, MA 02139
800/635-6887

Metro Software, Inc.
1870 W. Prince Rd.
Tucson, AZ 85705
800/621-1137,
602/292-1563 (fax)

MicroLogic Software Inc.
1351 Ocean Ave.
Emeryville, CA 94608
800/888-9078,
510/652-5464

Pacific Data Products
9125 Rehco Rd.
San Diego, CA 92121
619/552-0880,
619/552-0889 (fax)

Personal Computer Products, Inc. (PCPI)
10865 Rancho Bernardo Rd.
San Diego, CA 92127
800/225-4098,
800/262-0522 California,
619/487-5809 (fax)

PMWare, Inc.
346 State Pl.
Escondido, CA 92029
800/845-4843,
619/738-6633

Power Up Software Corp.
2929 Campus Dr. #400
San Mateo, CA 94403
800/851-2917,
415/345-0551

SoftCraft, Inc.
16 N. Carroll St. #500
Madison, WI 53703
800/351-0500,
608/257-6733 (fax)

SWFTE Int'l, Ltd.
P.O. Box 219
Rocklind, DE 19732
800/237-9383,
302/234-1740

Weaver Graphics
5165 S. Highway A1A
Melbourne Beach, FL
32951
407/728-4000,
407/728-5978 (fax)

Zenographics
4 Executive Cir.
Irvine, CA 92714
714/851-6352,
714/851-1314 (fax)

ZSoft Corp.
450 Franklin Rd. #100
Marietta, GA 30067
404/428-0008,
404/427-1150 (fax)

MANAGER'S GUIDE

Alan Kaplan

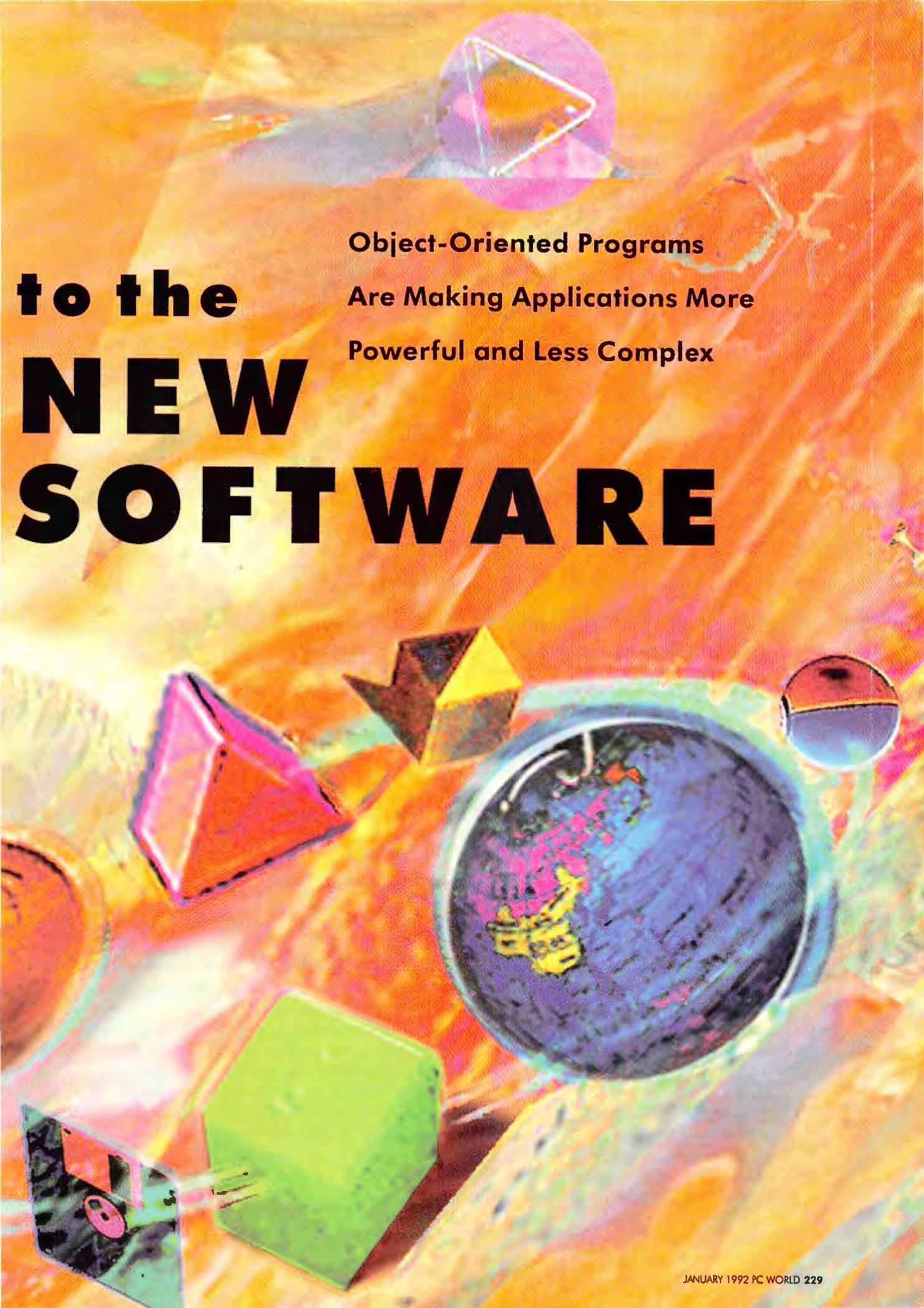
The gap between what PC managers want to do and can do is closing, thanks to an approach called "object-oriented programming." OOP has arrived not a moment too soon for nonprogramming managers who depend on many programs working together—say, for creating reports from multiple, often remote, data bases. Such tasks may involve a half-dozen or more programs for communications, data base access, spreadsheet consolidation, presentation graphics, word processing, and desktop publishing. Getting all these programs to work reliably is difficult; getting them to work seamlessly can be impossible.

The problem is complexity. Today's meat-and-potatoes applications now run over 200,000 lines of code. Given the average programmer's daily output of 10 to 15 lines, new versions of programs designed to take advantage of the latest hardware and environments can fall years behind schedule. Complexity is the reason 35 million business PC users give software bad marks for lateness and unreliability. Complexity also happens to be just what OOP addresses.

What's OOP?

Nonprogramming managers don't need to understand *how* OOP does what it does. "But," says Joe Byrd, manager of Borland International's Visions Video operation, "unless users appreciate *what* OOP does, they'll not see what it can do for

LANCE JACKSON

The background is a vibrant, abstract composition of various geometric shapes and colors. At the top, there's a purple circle containing a white triangle. Below it, a large, bold, black text reads "to the NEW SOFTWARE". To the right of this text, there are three lines of smaller black text: "Object-Oriented Programs", "Are Making Applications More", and "Powerful and Less Complex". The background is filled with various shapes: a large blue circle with a yellow and pink pattern inside, a green square, a pink pyramid, a yellow pyramid, a blue pyramid, and a small red and blue circle. The overall color palette is warm, with oranges, yellows, and reds, interspersed with cooler colors like blues, greens, and purples.

to the NEW SOFTWARE

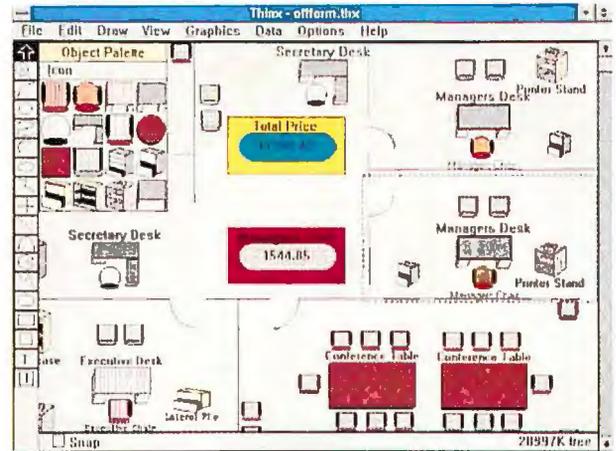
Object-Oriented Programs
Are Making Applications More
Powerful and Less Complex

them, what they should expect from OOP-developed programs." Those expectations, says Byrd, include programs that are more robust, easier to maintain, able to incorporate new features more easily, and less expensive.

OOP is based on modular structure, top-down organization, and abstraction. The programmer defines "objects," which can be anything acted upon: screens, data tables, graphic elements. Objects are given attributes (like color and size) and behaviors (permitted actions like "display"). Thus objects are defined by what they *do* as well as by what they are, as in human language: a chair (object) is an article of furniture ("class" or "structure") that supports ("behavior") a sitting person. Objects can be abstracted into broader classes (chairs into furniture), or subclasses ("thrones" or "beach chairs"). Each class can be ascribed different attributes (thrones are *larger* than beach chairs) and behaviors (beach chairs *fold*).

The approach is intuitive and simple, but the implementation is new because, unlike human languages, programming languages—the languages used by program developers—did not naturally support object structures. Because data was separated from the way it was used, one needed intimate knowledge of how data was represented as words, pictures, or sounds. Otherwise one might try to display sound data as image, or treat music as text. And because data could not be abstracted, each use of that data required citing all of it. One could not, for example, refer to a chair except by describing its materials, size, design, and so on.

OOP development languages—the best known are Smalltalk, Actor, Simula, and C++—capitalize on the abstraction and manipulative features we take for granted in human



Object-Oriented Applications like Bell-Atlantic's *Thinx* visual data manager let users create objects that combine graphic and alphanumeric data. In this space-planning application, prices are assigned to various articles of furniture, and total cost is calculated as each article of furniture is selected for positioning.

language that let us think conceptually, without the burden of implementation details. The remarkable power of those features has been wildly welcomed by developers. A recent article in *Computer Language*, a developer magazine, calls OOP "the hottest thing since jalapeño peppers."

Payoffs to Users

Developers must write programs before users can benefit from them, of course, and no individual company has championed the OOP cause within the DOS and *Windows* develop-

PHILIPPE KAHN'S OBJECT EXAMPLE: DBASE

How confident is Borland International's Philippe Kahn about object-oriented programming? "I bet the company on OOP three years ago," he says, when "it was a big gamble because it was unproven." How does he feel today? "I'm happy to report that my instincts were right—OOP has propelled Borland into a leadership position in software development."

No one who's watched Borland's rapid growth disputes that. Now Kahn's going after the last doubting Thomases by showing that OOP isn't just for new programs; it can be retro-fitted. "Everybody should switch to OOP," he says.

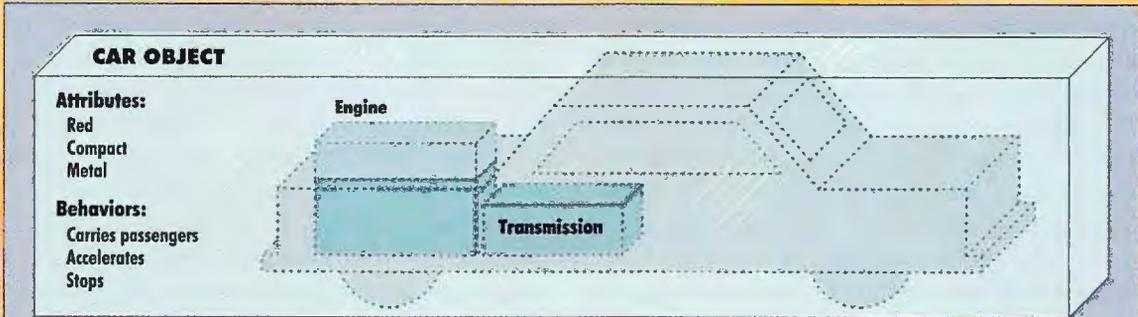
Borland's recent acquisition of Ashton-Tate, whose updates to its flagship *dBASE* have run more than a year late, gives Borland a superb test case. Says Kahn: "The industry knows that *dBASE* has been lacking in true tech-

nology innovation for some time. Borland is going to change this. The *XBASE* compiler that we have written is all Borland code—you'll see some significant improvements when this product is released. The best thing is that [Borland's] *Paradox* and *dBASE* will be able to share information via Borland's Object Layer technology, which provides access to a variety of file formats."

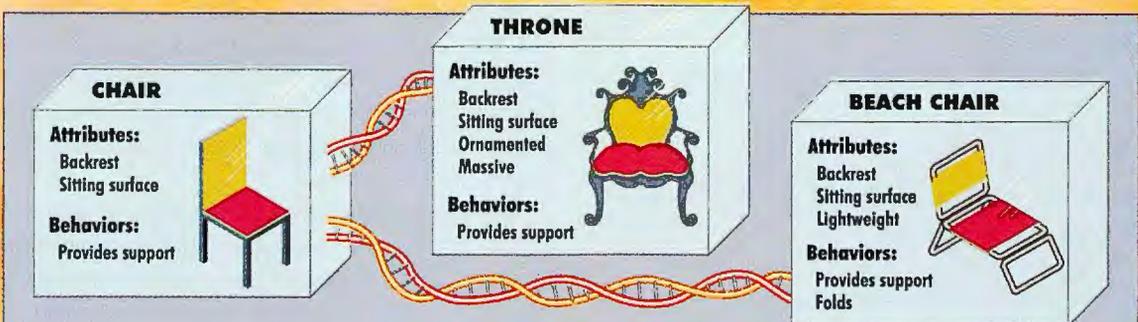
Whatever Borland's long-term plans for *dBASE*, users will check out its next version with great interest. "What Borland does with *dBASE* could be the best argument yet for OOP," says consultant John Murphy, president of Metro Computing in Gibbsboro, New Jersey. "A much-improved *Windows* version of *dBASE* would be an 'object example' of the worth of Borland's OOP development tools for older programs."

SPEAKING OF OBJECTS

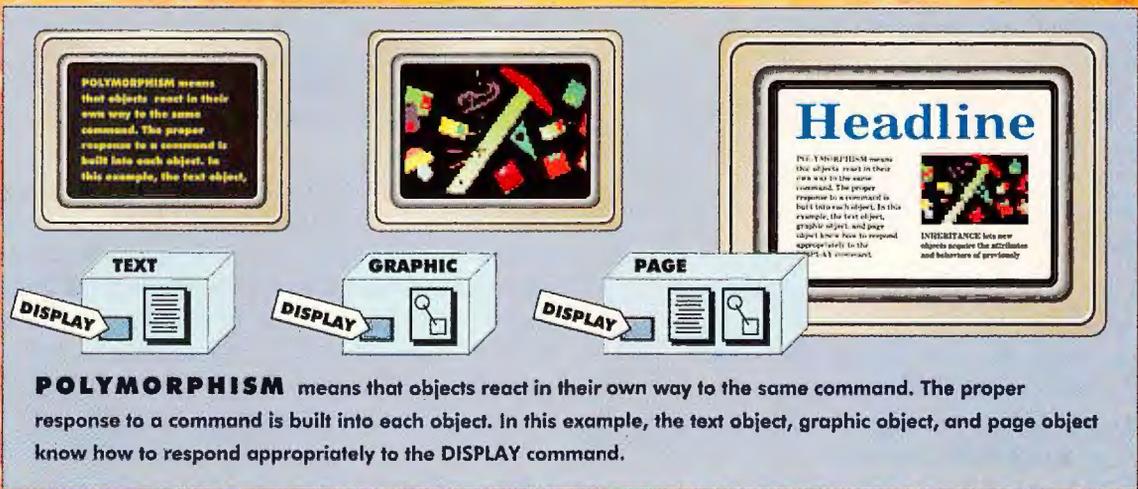
Three object-oriented mechanisms in application software make programs more robust for users, and reduce development costs.



ENCAPSULATION, also called "data hiding," protects an object by restricting access to its inner workings, making sources of change easier to identify. Here anyone can drive the car, change tires, or open windows, but only mechanics can make changes to the engine and transmission.



INHERITANCE lets new objects acquire the attributes and behaviors of previously created objects. Since new objects don't have to be built from scratch, they're easier to create, and they act consistently. Thrones and beach chairs inherit chair attributes "backrest" and "sitting surface"; thrones add the attributes "massive" and "ornamented"; beach chairs add the behavior "folds."



ment community more vigorously than has Borland International. The company estimates that more than 400,000 copies of its Borland C++, Turbo C++, and object-oriented Turbo Pascal account for at least 80 percent of the market for personal computer OOP development languages.

In July, a Borland task force visited seven U.S. and seven foreign cities to deliver Borland's OOP productivity message and distribute a 21-minute elementary video, "The World of Objects," hosted by Borland chairman and CEO Philippe Kahn. That tape, directed at software managers, was the first in a series of tapes that now includes tutorials for programmers already versed in the popular C language. C programmers represent the key market for C++ and the reason C++ is the most popular PC OOP language.

Unfortunately for users looking for immediate improvements in all their favorite applications, the learning curve from C to C++ is steep. Borland estimates that while competent C programmers need only a month to learn the rudiments of C++, they need three to six months of practice before they'll be productive. Getting management's assent for that kind of investment in education is the point of Borland's "The World of Objects" tape.

Payoff from the conversion comes quickly, however. Main-

tenance accounts for up to 80 percent of the total manufacturing cost of procedural (non-OOP) software. OOP can cut those costs by more than 75 percent, a reduction that can translate to savings of more than 50 percent in the price that is paid by the final purchaser.

Users can expect additional savings in the cost software manufacturers pay to develop their programs. This results from the availability of such modular OOP tools as Data Techniques' *ImageMan Windows* library, which lets developers add display/print capabilities to their *Windows* applications without having to learn, and generate code for, the myriad of industry-supported graphics formats. Zylab's David Chwalisz estimates that adding *ImageMan's* graphics modules to *ZyIndex*, Zylab's text/image retrieval program, reduced the time spent by 80 percent, not to mention "the pain of researching those formats." Chwalisz summarizes the OOP advantage: "Now I just 'open image' and pull in the object; I don't need to know its intimate details." Other well-known programs supported by *ImageMan* are the DOS shell *Xtree* and the *DataEase* data base program.

Not needing to know the details is, of course, the source of OOP's strength. Says David Intersimone, in charge of Borland's developer relations, "It's like using a telephone without having to know how it works." For users, Chwalisz's "open image" means grabbing and dragging an on-screen object without menu commands.

The telephone analogy holds for another promised user benefit: hardware independence. Objects are acted upon by messages, and the message sender only needs to know that the object will respond. Unisys' CTOS operating system is message-based, and David Mullins, product manager for operating systems at Unisys' Distributed Systems Division, sees OOP as "tremendously enhancing our ability to write programs across 80x86, RISC, Motorola, and other platforms." Mullins is currently overseeing a change to OOP. "It represents a complete mental shift in how one goes about developing programs, but we've found that those who cross over the learning curve are very productive."

OLE: New Functionality for Users

Users can expect new levels of functionality as leading software companies expand their products' OO (object-oriented) capabilities. Like Unisys, Lotus Development used OO methods before languages supported OO structures. A mainframe version of C++ that Lotus acquired five years ago produced *IMPROV*, a next-generation spreadsheet for the NeXT computer. Today all but one of Lotus's development projects are being written in the C++ language.

For David P. Reed, vice president and chief scientist at Lotus Development, "Object architectures get large systems to 'work together,'" which at Lotus has three meanings: coordinating programming projects, application interaction, and

AN OOP CHECKLIST FOR USERS

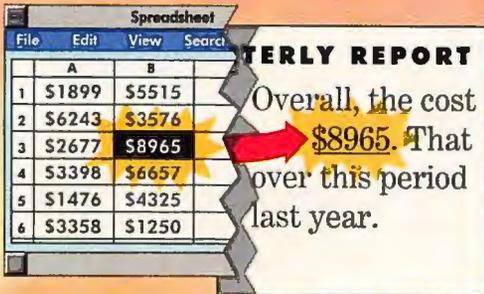
Getting answers to these questions before purchasing that next big application will increase your chance of being as pleased with your software tomorrow as you are today.

1) In what language is the application written? While object-oriented programs need not be written in object-oriented programming languages, use of an OOP language indicates the manufacturer/developer is aware of OOP benefits.

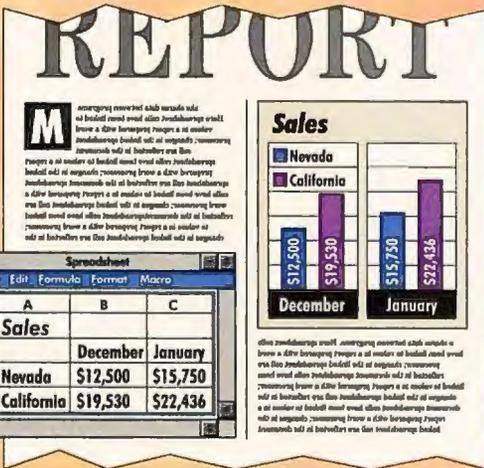
2) Does the manufacturer specifically reference OOP capabilities and support OOP standards such as those of the Object Management Group? Positive answers to this and the following questions indicates compatibility with other programs.

3) Is the program optimized for a graphic environment like Windows? Does it support Dynamic Data Exchange? Object Linking and Embedding? The Windows clipboard? The Windows help facility? The more "Yes" answers, the more likely you'll be satisfied with the program's multitasking capabilities now and later.

OBJECT LINKING AND EMBEDDING



LINKING connects data from one program to another. Here a value in a report prepared with a word processor is linked to a cell in a spreadsheet; changes in the spreadsheet cell are reflected in the document.



EMBEDDING lets one program call upon the resources of another. Here a word processor without graphing capabilities can call on a spreadsheet program as if the spreadsheet were as integral to the word processor as, say, a spelling checker.

user-sharable programs. OO's bottom line, says Reed, "is that it delivers substantial user value."

Lotus contributed to Microsoft's OLE (Object Linking and Embedding) specification, a powerful pair of OO tools that let users relate data across programs and call in programs as extended functions to other programs. An example of linking would be changing a spreadsheet cell and having the change reflected in a document. Embedding would allow the word processing program to call up the spreadsheet program as easily and transparently as a built-in spelling checker.

Microsoft's "technical evangelist" (it says so on his busi-

ness card) Viktor Grabner expects OLE to reverse the trend toward nominally single-application programs that try to cover all the bases—like word processors with modules for outlining, graphics, and font management. By allowing users to integrate their favorite programs, OLE lets them buy only what they need. And because the parts will interact better and work more consistently, multitasked applications will be enormously simplified. Grabner points out that while OOP development programs benefit users, "OLE is a true user *feature*."

To demonstrate how OLE increases functionality, Grabner offers a multimedia example: inserting voice notes under a speech icon. With a speech editor, microphone, and inexpensive voice card, users "need only invoke their file manager from within their document, do a 'File insert,' and read in their message." Double-clicking on the document's icon would read out the message. Extending the concept, any generated information—pictures, music, equations—could underlie text. Says Grabner: "OLE lets users build their own applications easily and naturally."

Getting It Together

Object-oriented languages like C++ fulfill the promise of object-oriented programs. Because graphic environments are by necessity object oriented, they work well only with applications designed for them. The process is transparent to users, but not automatic: Users must seek out programs that make it happen, understand what OOP can do and insist that it be done, and keep the heat on software companies.

Excellent OOP programs have been written without OOP languages; conversely, simply because a program was written in C++ for *Windows* doesn't ensure its quality. Data Techniques software engineer Tim Kannapel warns that there are bound to be some ringers, particularly from companies "that say their products are OO products when they're not." But companies that understand OO techniques and program in OOP languages "are dedicated to providing good code, and users can expect their programs to be more robust and overall better performers."

Today, better performance means performance that extends beyond the scope of any single program; that lets users think less about the how of their programs and more about the what of their jobs. Because managers manage resources, managers especially should demand interoperation as well as operation. Kannapel suggests that PC users considering new software give as much weight to environment as to functional features, because functions become less important "if they don't work well with other programs."

Making programs work well is what 800,000 U.S. programmers do; making them work well together is what 50 million PC users want. Thanks to OOP, "working together"—the PC user's Holy Grail—is in sight. ☺

Alan Kaplan is a contributing editor for PC World.



The AST Bravo 486/25 and Dell System 320LT were the most aggressively priced desktop and portable PCs in the October survey by International Data Corporation.

BARGAINS OF THE MONTH

Best-Sellers

Leading PCs sold through traditional computer channels

- 1 IBM PS/2 Model 55 SX
- 2 IBM PS/2 Model 70 (20-MHz)
- 3 Compaq LTE 386s/20
- 4 Compaq Deskpro 386/20e
- 5 NEC PowerMate SX, SX/20
- 6 IBM PS/2 Model 30-286
- 7 Compaq Deskpro 386n
- 8 IBM PS/2 Model 35 SX
- 9 Compaq Deskpro 386s
- 10 Compaq Deskpro 386s/20

IBM's Model 55 still leads sales through the dealer channel and is joined by another SX PS/2, the Model 35, according to Storeboard/Computer Intelligence's October survey.

Over the Counter

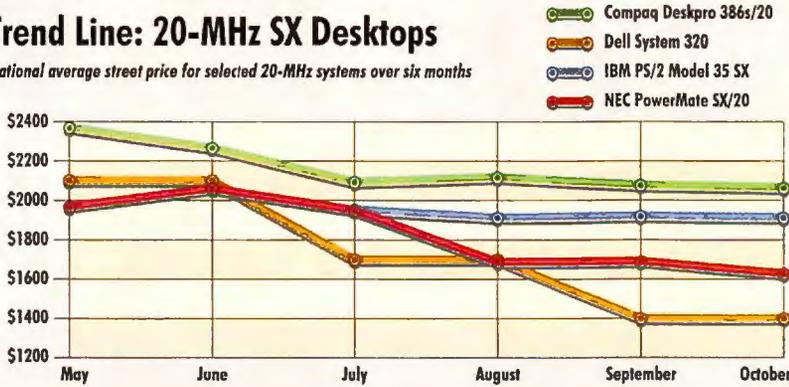
What you pay at retail stores for popular PCs

	Configuration				National					
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	Lite	Average	Boston	Chicago	Dallas Ft. Worth	
80386SX-based desktop PCs										
AST Bravo 386SX/20	20	2	40	VGA	\$1695	\$1306	\$1296	\$1325	\$1287	
Compaq Deskpro 386s	16	2	40	VGA	\$2299	\$1822	\$1835	\$1839	\$1874	
Compaq Deskpro 386s/20	20	2	60	VGA	\$2599	\$2061	\$2076	\$2081	\$2119	
Dell System 320 SX	20	2	40	VGA	\$1400	\$1400	\$1400	\$1400	\$1400	
IBM PS/2 Model 35 SX-043	20	2	40	VGA	\$2525	\$1911	\$1920	\$1945	\$1894	
IBM PS/2 Model 55-041	16	4	40	VGA	\$2745	\$2042	\$2009	\$2001	\$2059	
NEC PowerMate SX/20	20	2	42	none	\$2199	\$1623	\$1729	\$1642	\$1556	
80386DX-based desktop PCs										
AST Premium II 386/33	33	4	210	VGA	\$3795	\$2899	\$2801	\$2964	\$2897	
Compaq Deskpro 386/33L	33	4	120	VGA	\$6199	\$4920	\$4943	\$4954	\$4990	
Dell System 333P	33	4	100	VGA	\$2400	\$2400	\$2400	\$2400	\$2400	
Epson Equity 386/25 Plus	25	2	100	VGA	\$3199	\$2410	\$2339	\$2451	\$2303	
Gateway 2000 33-MHz 386VGA	33	4	200	VGA	\$2120	\$2120	\$2120	\$2120	\$2120	
IBM PS/2 Model 70-A16	25	4	160	VGA	\$6445	\$4914	\$4873	\$4765	\$4834	
Tandy 4033 LX	33	2	105	VGA	\$4398	\$4398	\$4398	\$4398	\$4398	
80486SX-based desktop PCs										
ALR BusinessVEISA	20	5	120	none	\$4295	\$3321	\$3358	\$3565	\$3307	
AST Premium II 486SX/20	20	4	80	VGA	\$3495	\$2682	\$2659	\$2731	\$2617	
IBM PS/2 Model 90XP-OG5	20	4	80	XGA	\$8345	\$6280	\$6209	\$6252	\$6259	
80486DX-based desktop PCs										
AST Bravo 486/25	25	2	80	VGA	\$3495	\$2661	\$2624	\$2731	\$2629	
Compaq Deskpro 486/33L	33	4	120	VGA	\$8999	\$7114	\$7186	\$7200	\$7244	
IBM PS/2 Model 95 XP	33	4	320	XGA	\$16,445	\$12,362	\$12,446	\$12,387	\$12,334	
NEC PowerMate 486/25E	25	4	140	none	\$7399	\$5523	\$5771	\$5840	\$5235	
Portables/laptops										
AST Premium Exec 386SX/20	20	2	40	VGA-LCD	\$3395	\$2611	\$2667	\$2652	\$2605	
Compaq LTE/286	12	640K	20	CGA-LCD	\$1949	\$1552	\$1560	\$1556	\$1569	
Compaq LTE 386s/20	20	2	30	VGA-LCD	\$4799	\$3731	\$3772	\$3650	\$3679	
Dell System 320LT	20	2	40	VGA-LCD	\$1999	\$1999	\$1999	\$1999	\$1999	
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	\$5245	\$3853	\$3316	\$3983	\$4000	
NEC UltraLite 286F	12	1	20	CGA-LCD	\$2199	\$1651	\$1647	\$1711	\$1556	
TI TravelMate 2000	12	1	20	VGA-LCD	\$2369	\$1622	\$1771	\$1818	\$1717	
Toshiba T1200XE	12	1	20	CGA-LCD	\$1999	\$1585	\$1678	\$1606	\$1599	
Toshiba T2000SX	16	1	40	VGA-LCD	\$3749	\$2927	\$3235	\$3012	\$2999	

From an IDC survey of more than 180 computer dealers in eight metropolitan areas. Figures based on at least four price quotes for each machine. Prices are based on manufacturer's standard configuration without monitor.

Trend Line: 20-MHz SX Desktops

National average street price for selected 20-MHz systems over six months



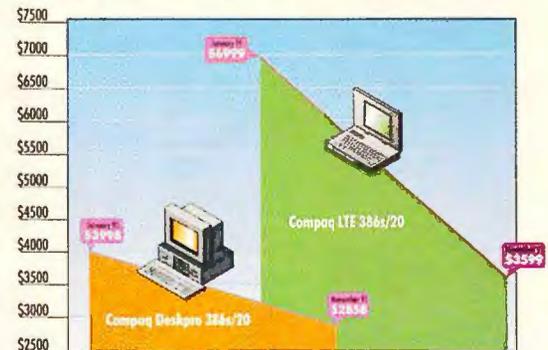
Selling for little more than their older 16-MHz brethren, 20-MHz 386SX-based systems are the entry-level business platform of choice. It's not surprising that the costs of these machines have fallen substantially in recent months. And aggressive pricing like Dell's is bound to force other vendors to cut further. A crop of cheap 25-MHz 386DX systems will also help slim down pricing on these machines.

PC Futures: Pricing Pressures Undimmed

AST's Bravo 486/25 is the desktop Bargain of the Month,¹ while Dell's System 320LT repeats as portable Bargain of the Month. IBM's PS/2 Model 55 SX still dominates sales through dealers. Notably, half the PS/2s on the best-seller list include a Micro Channel bus, and half include an AT bus. Many PC suppliers would rather forget 1991—flat U.S. sales accelerated dog-eat-dog price competition. Vendors that are geared for low-price production, such as AST, are prospering, while high-ticket suppliers such as Compaq and IBM are suffering. In fact, this fall when Compaq's chief executive told his board he planned to continue the company's high-priced product strategy, he was summarily fired. Costs of related hardware are also sinking. IBM recently slashed add-on memory pricing in half, for example. Notebook PCs are selling very strongly, and with high manufacturing volume, their markup over comparable desktop systems is diminishing.

Notebooks: A Shrinking Premium

List pricing on comparable Compaq notebook and desktop with 60MB drives*



With notebooks shipping in high volumes, prices are dropping, and costs are getting closer to equivalent desktop machines'. Compaq's LTE 386s/20, which far outsells the Deskpro 386s/20, currently lists for 26 percent more. A year ago, it carried a 75 percent higher premium.

¹ Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.
* Includes monochrome VGA monitor for desktops.

Metropolitan	Los Angeles	Miami/Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
	\$1365	\$1326	\$1259	\$1266	\$1314
	\$1892	\$1812	\$1793	\$1804	\$1770
	\$2135	\$2047	\$2027	\$2056	\$2001
	\$1400	\$1400	\$1400	\$1400	\$1400
	\$1999	\$1959	\$1831	\$1782	\$1923
	\$2048	\$2141	\$1990	\$1922	\$2092
	\$1706	\$1594	\$1534	\$1528	\$1617

	\$2869	\$2970	\$2824	\$2922	\$2941
	\$5085	\$4885	\$4835	\$5023	\$4773
	\$2400	\$2400	\$2400	\$2400	\$2400
	\$2399	\$2436	\$2473	\$2318	\$2431
	\$2120	\$2120	\$2120	\$2120	\$2120
	\$5022	\$5027	\$4998	\$4661	\$5075
	\$4398	\$4398	\$4398	\$4398	\$4398

	\$3329	\$3222	\$3061	\$3359	\$3186
	\$2773	\$2735	\$2600	\$2604	\$2709
	\$6490	\$6470	\$6050	\$5858	\$6404

	\$2697	\$2735	\$2567	\$2643	\$2691
	\$7346	\$7093	\$7019	\$7020	\$6929
	\$12,476	\$12,827	\$11,923	\$11,345	\$12,624
	\$5706	\$5535	\$5205	\$5142	\$5503

	\$2641	\$2657	\$2540	\$2609	\$2557
	\$1615	\$1505	\$1611	\$1543	\$1501
	\$3799	\$3781	\$3727	\$3690	\$3695
	\$1999	\$1999	\$1999	\$1999	\$1999
	\$4095	\$4091	\$3842	\$3666	\$3898
	\$1706	\$1752	\$1625	\$1551	\$1661
	\$1726	\$1847	\$1195	\$1454	\$1594
	\$1592	\$1589	\$1502	\$1598	\$1582
	\$2814	\$2868	\$2800	\$2894	\$2968

When you buy a new Windows™ system package from ZEOS® you really get a bundle.

Lotus 1-2-3[®] for Windows
Lotus Ami Pro 2.0
Microsoft Windows 3.0
Microsoft DOS
Microsoft Mouse

ZEOS.

There's no reason to buy anything else.

800-423-5891

This offer is good for a limited time only. A ZEOS Windows system is any new ZEOS computer system packaged with Windows, 2MB DRAM or more and a mouse. Lotus, 1-2-3 and Ami Pro are trademarks of Lotus Development Corporation. Microsoft and Windows of Microsoft Corporation. All prices and specifications are subject to change without notice, call for current information. ZEOS is a publicly traded company NASDAQ/NMS Symbol: ZEOS © ZEOS International, Ltd., 530 5th Avenue NW, St. Paul, MN 55112.

Circle 323 on reader service card

SERVICE AND RELIABILITY

IBM, COMPAQ[®] OR ZEOS[®]



#1 In Customers
who would
buy again.

#1 In Technical
Support.

#1 In Repair
Services.

In PC Magazine's
Service and
Reliability issue,
three top manu-
facturers of
386SX systems
were rated by
their customers.
One was the
clear winner.

**ZEOS. The #1
Choice for you!
Call anytime Toll
Free for Details.
800-423-5891**

**NOW
INCLUDING:
Windows,
Lotus 1-2-3
for Windows
& Ami Pro 2.0**

New ZEOS

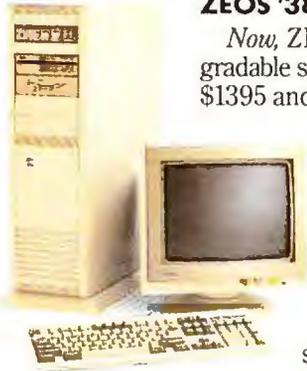


Upgradables!

ZEOS. AMERICA'S #1 LINE OF UPGRADABLE SYSTEMS.

ZEOS '386 & '486 UPGRADABLES!

Now, ZEOS gives you complete high performance upgradable systems with our amazing '386-25s starting at only \$1395 and our '486-33s starting at only \$1795! And that's not all.



For Vertical Systems add only \$150.

Every ZEOS Windows® system, such as those featured at the right, comes complete with Lotus 1-2-3* for Windows and Lotus' new word processor for Windows, *Ami Pro 2.0!* These are the full blown, fully documented editions of the very latest Lotus business software. And they are included with your new ZEOS Windows systems at no additional charge!

You get the very latest innovations in hardware, the hot new ZEOS upgradable systems plus the very latest in high powered software, Lotus 1-2-3 for Windows and *Ami Pro 2.0.* And you get them both at one low package price!

MORE FEATURES FROM ZEOS!

When you purchase your ZEOS upgradable systems you have the ability to change processors any time you wish. Starting right with the 386-25 and moving up through the fastest '486 chips available! Pick your power now and in the future!

We take care of your future in other ways as well. Like providing you with 300 watt power supplies as standard. And 8 expansion slots and our unique seven bay desktop case, still smaller than many five bay cases. Plus two whisper quiet cooling fans for even more reliability. And, every ZEOS system is UL* listed for your safety. High performance, upgradable systems complete with Lotus 1-2-3 for Windows and *Ami Pro 2.0.* What more could there be? From ZEOS, lots more!

386-25 \$2495

386-33 \$2595

486SX-20 \$2695

486-33 \$2895

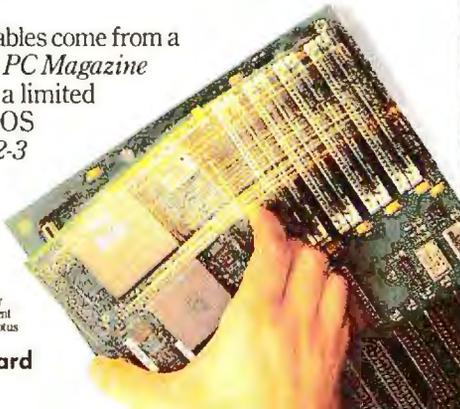
24 HOUR TOLL FREE SUPPORT.

Like 24 Hour Support! At ZEOS, we believe support should be more than a part time proposition. That's why we're here to help you Toll Free 24 Hours a Day, 365 days a year! You're also going to appreciate your other ZEOS advantages as well.

Because not only do you receive ZEOS 'round-the-clock Support, you're also getting our 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and our Express Parts Replacement policy. You're going to be very satisfied. We don't just say it. We guarantee it!

YOU SIMPLY CAN'T GO WRONG!

Your new high performance ZEOS upgradables come from a family of systems which have received *Eight PC Magazine Editor's Choice Awards.* And don't forget, for a limited time only, when you purchase any new ZEOS Windows system you'll also receive Lotus 1-2-3 for Windows plus *Ami Pro 2.0.* So why not give us a call right now, 800-423-5891!



ZEOS PRESENTS UPGRADABLES FEATURING 4MB MEMORY, 130MB DRIVE AND MORE!

128K Cache Available!

- The Processor and Speed of your choice plus future upgradability!
- 4 full Megabytes of Ultra High Speed 53ns DRAM.
- Our fast 130MB IDE hard drive with built in cache.
- Both Teac® floppies, the 1.2MB and 1.44MB!
- Your Diamond VGA Plus card with 1MB DRAM.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel Base.
- Shadow RAM and EMS support.
- ZEOS/RS 101 key Space-Saver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots, 80387 math co-processor support for '386 systems.
- ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply for your future expansion!
- Lotus 1-2-3 for Windows, plus *Ami Pro 2.0*, plus Microsoft Windows and DOS 5.0, plus a genuine Microsoft mouse!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

PACKAGES

Options Galore: Including additional memory, an incredible selection of hard drives and virtually any other add-on you could want. Ask about other special money saving packages as well.

ORDER NOW TOLL FREE 800-423-5891

FAX Orders: 612-633-1325
Hearing Impaired (TDD)
Orders: 800-228-3389
Outside US and Canada:
612-633-6131
MasterCard, VISA, Discover,
Am Exp, Z-CARD and COD.
Open 24 Hours a Day,
365 Days a Year!

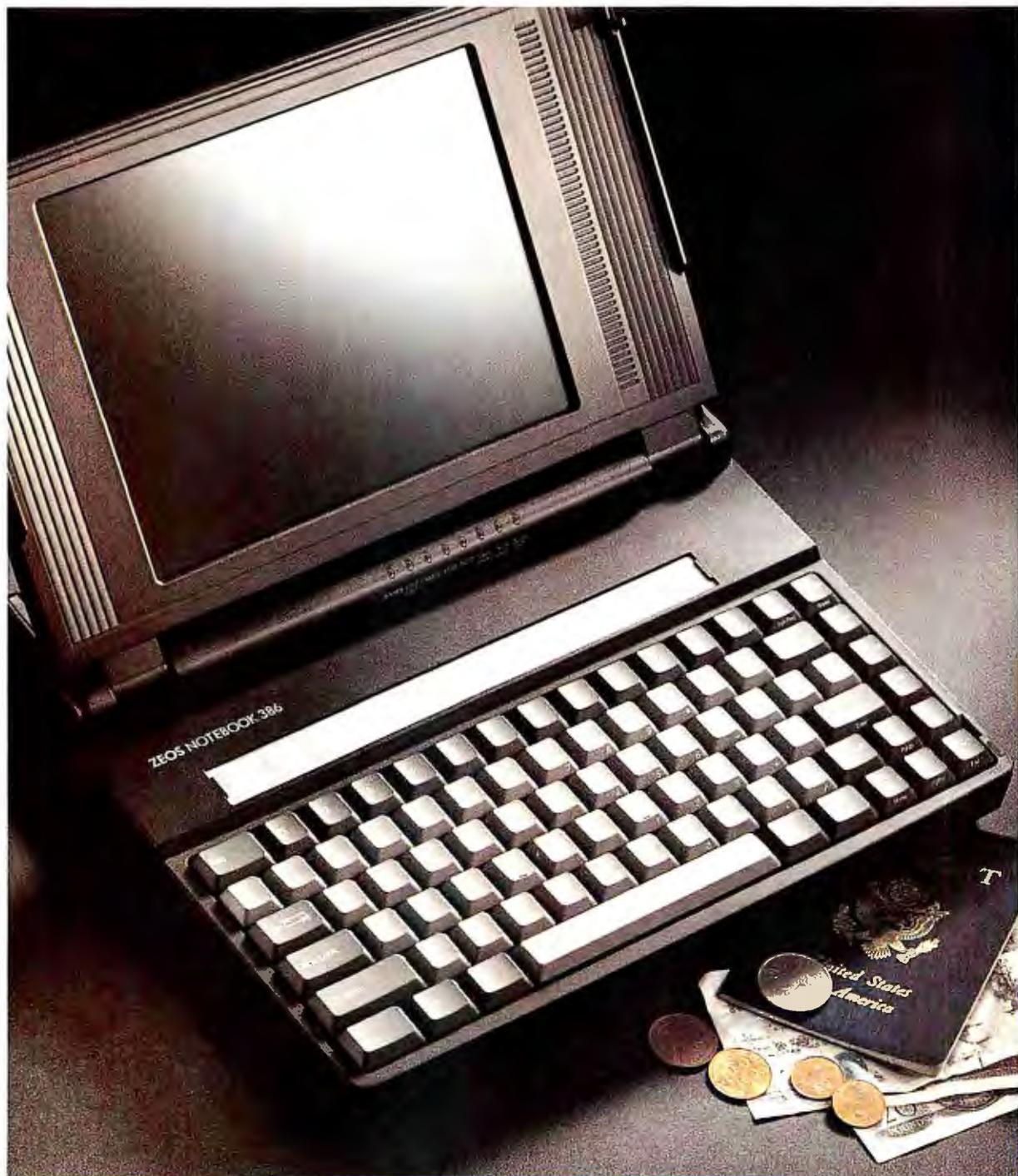


Purchase orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing programs available. All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty details. The following are trademarks of their respective corporations: ZEOS and Z Card of ZEOS International Ltd. © ZEOS International Ltd, 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company. NASDAQ symbol: ZEOS. Lotus is a registered trademark of Lotus Development Corporation. Am Pro is a trademark of Samna Corporation, a wholly-owned subsidiary of Lotus Development Corporation.

Circle 323 on reader service card

The ZEOS[®] '386

Now 20 MHz Only \$1995



SX Notebook.

6 MHz Only \$1795!

"THE HOTTEST DEAL ON THE NOTEBOOK MARKET"—PC MAGAZINE



"King of the Hill... Sensational... The best price-performer... Astonishing value... The number one contender..." The praise goes on and on. Winner of PC Magazine's Editor's Choice Award and PC World's Best Buy Award, the experts love the ZEOS Notebook. And you'll love it too. Because as PC Magazine said, the ZEOS Notebook is simply "the hottest deal on the notebook market."

INCREDIBLE DESKTOP FEATURES IN A NOTEBOOK.

Pick your power. Choose our '386SX-16MHz version or go for the incredible new ZEOS '386SX-20MHz version. Combine that with our high speed hard disk, built in 1.44MB floppy drive, VGA and more—you've got the greatest notebook going at any price!

Look closely at the details. Like our crisp 10" VGA display. The ultimate in sparkling clarity featuring advanced fluorescent backlighting for vivid VGA graphics. And then the drives.

Two drives are better than one! First, you're getting our whisper quiet high speed, high capacity hard disk. Then we've built in an industry standard 1.44 Megabyte, 3.5 inch floppy as well. And we don't stop there.

DETAILS MAKE THE DIFFERENCE!

For instance, the battery system of your new notebook is the most advanced on the market. You can quick charge, or trickle charge, any time your system is plugged in. Or, you can use the optional charging stand if you wish.

Either way, you're sure to appreciate our light weight snap-in, snap-out battery packs. They're so light and easy to use, you can easily take an extra one with you on those really

long trips. Plus, you can get even more life out of a single charge by using our programmable power management system. Hour upon hour of Notebook computing power!

CONNECTIVITY TOO!

Your new ZEOS notebook is a great connectivity tool! Using our optional built-in 2400 baud MNP* Class 5 modem, connectivity buffs will find themselves logging on at every turn.



And speaking of connectivity, we've kept the I/O easy to use too. Because unlike many of the others, your new ZEOS notebook has the same industry standard port connectors you'll find on your larger desktop system. Serial and Parallel ports; even an external VGA connector. Completely compatible!

ZEOS 24 HOUR A DAY SUPPORT.

Don't forget your new ZEOS notebook is backed

by the best Technical and Sales support in the industry, 24 Hours a Day. We're always here to help, *any time* of the day or night. And we don't stop there either.

Your new notebook is also backed by our 30 Day Absolute Satisfaction Money Back Guarantee and One Full Year Limited Warranty. You're going to be very satisfied. We don't just say it. *We guarantee it.*

ORDER YOUR OWN ZEOS NOTEBOOK NOW!

You can order your own ZEOS Notebook *right now*. Simply pick up the phone and give us a call now at 800-423-5891. Larger hard drives, carrying cases and more are also available! At last, a full featured notebook that lets you compute anywhere. You're going to love it!

ORDER NOW TOLL FREE:

800-423-5891

NOW. YOUR COMPLETE '386SX-16 NOTEBOOK! VGA, 20MB HARD DRIVE, 1.44MB FLOPPY AND MORE. LIGHT AND LOADED! INCREDIBLE.

ONLY \$1795!
20MHz ONLY \$1995!

- '386SX-16 or '386SX-20.
- 1MB DRAM, expandable to 3 or 5MB.
- 20MB High Speed HDD.
- Built in High Density 3.5" 1.44MB floppy drive.
- High resolution VGA display. Fluorescent backlit 640x480, 32 gray scales. Bright and clear!
- Removable quick charge NiCad battery. Two hour plus battery life typical, more using Programmable Power Management!
- Quick charge or trickle charge using included AC power adapter.
- Extra battery packs and external charging stand available.
- 82 key keyboard. True 101 key emulation.
- Industry standard Serial and Parallel Ports.
- VGA port for external VGA color display. Great for demos!
- Total system weight 7 lbs. with battery.
- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty.
- 24 Hour a Day Toll Free Technical Support, 365 Days a Year.

ORDER NOW TOLL FREE
800-423-5891
FAX Orders: 612-633-1325
Minnesota: 612-633-4591
Hearing Impaired (TDD)
Orders: 800-228-5389
Outside US and Canada:
612-633-6131
MasterCard, VISA, Discover,
Am Exp, Z-Card and COD.
Open 24 Hours a Day,
365 Days a Year!



Purchase Orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing Programs are available. All prices and specifications are subject to change without notice. Please call to confirm pricing, specifications and warranty details. The following are trademarks of their respective companies: ZEOS (ZEOS International, Ltd.), MNP (Microcom Systems, Inc.); © 1991, ZEOS International, Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS).

Circle 323 on reader service card



Good Deals in Small Packages

Small size plus big performance equals a successful formula for notebook PCs.

Christine Whyte

The reliability, processing speed, and compact size of 386-based notebook PCs have won customers' hearts. Users are also pleased with their computer's weight and warranty; a majority would buy another computer from the same vendor. These insights and more were gained from *PC World's* random phone survey of 318 people who own notebooks made by seven major companies.

In our September 1991 issue we looked at respondents' satisfaction with 286- and 386-based models. With the quality and number of these notebook PCs increasing rapidly, we decided to take a second, more comprehensive look at the current crop of 386-based models.

We asked owners to rate their satisfaction in 14 areas such as keyboard functionality and technical support. As a group, our survey respondents were satisfied in all these areas, to varying degrees. The five factors mentioned above—reliability, processing speed, size, weight, and warranty—received the highest ratings; screen readability, battery life, and pricing ranked lowest.

When we asked our respondents about overall satisfaction with their computer, each vendor's customers chose close to a 4, or "satisfied," rating on a 5-point scale. The Zeos and AST ratings were the highest.

Eighty-six percent or more of the Compaq, AST, Everex, and Zeos customers would buy another notebook PC from the same vendor. The other companies also fared well with this indication of customer satisfaction: Between 74 and 78 percent of the Texas Instruments, Toshiba, and IBM customers would also loyally return to their current vendor for another notebook purchase.

The respondents also reported reasons for wanting to buy—or not to buy—another notebook PC from the same vendor. Among the 84 percent who would buy from the vendor again, the reasons cited most often were product reliability, overall company service, and computer size and processing speed. Price was at the bottom of the list. The 13 percent who would turn to another company for their next notebook purchase were most

critical of their current vendor's service and technical support and the computer's reliability and price. ☹

Christine Whyte is a freelance editor in San Francisco.

ZEOS AND AST RANK HIGHEST

*Overall satisfaction with product
1=low 5=high*



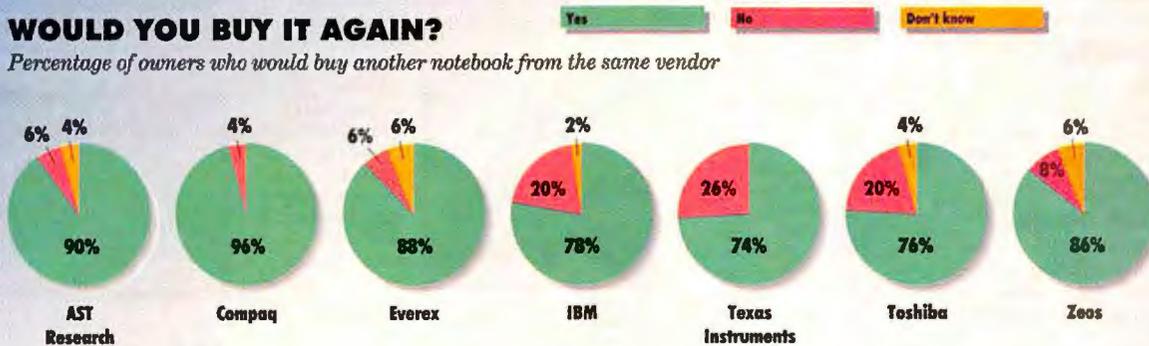
RELIABILITY, PROCESSING SPEED EARN HIGH OVERALL RATINGS

Satisfaction with key features
1=low 5=high

	Overall	AST Premium Exec 386SX	Compaq LTE 386	Everex Tempo LX	IBM PS/2 Model L40 SX	TI TravelMate 3000	Toshiba T2000SX	Zeos Notebook 386
Reliability	4.22	4.27	4.53	4.12	4.25	3.93	4.28	4.15
Processing speed	4.15	4.36	4.54	4.03	3.98	3.77	4.18	4.22
Computer size	4.08	4.24	4.26	4.06	3.74	4.31	3.84	4.14
Computer weight	3.91	4.12	4.04	3.79	3.70	4.34	3.64	3.76
Breadth of warranty	3.86	3.95	3.90	4.00	3.83	3.50	3.76	4.07
Keyboard functionality	3.85	4.02	3.60	3.88	4.02	3.86	3.88	3.70
Screen size	3.84	3.80	3.74	3.97	3.80	4.06	3.66	3.88
Service	3.84	4.00	3.95	3.86	4.05	3.55	3.69	3.80
Length of warranty	3.83	3.94	3.73	4.03	3.80	3.48	3.75	4.09
Technical support	3.82	3.89	3.69	4.00	3.93	3.46	3.58	4.16
Battery recharging cycle	3.76	3.70	4.06	3.94	3.46	3.45	3.85	3.88
Screen readability	3.71	4.04	3.80	3.82	3.38	3.89	3.52	3.50
Battery life	3.64	3.70	4.06	3.52	3.36	3.33	3.79	3.73
Price	3.56	3.86	3.18	4.00	2.94	3.35	3.38	4.19

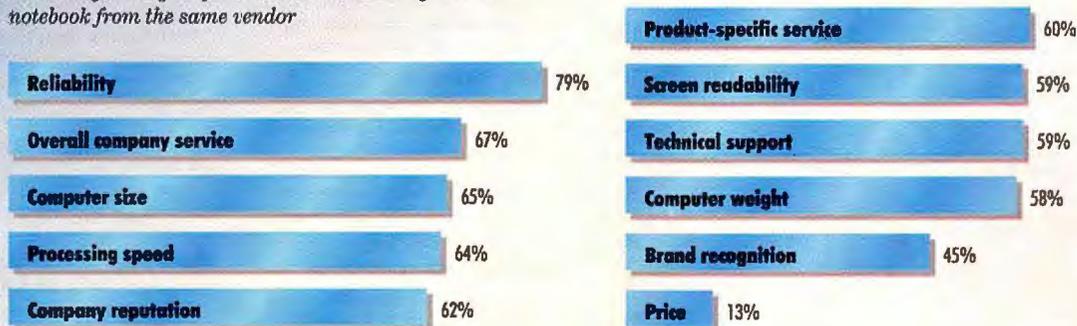
WOULD YOU BUY IT AGAIN?

Percentage of owners who would buy another notebook from the same vendor



REASONS TO BUY AGAIN

Reasons given by respondents who would buy another notebook from the same vendor

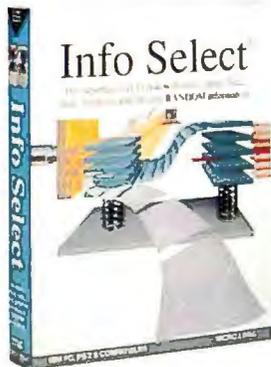


Source: Data is based on an October 1991 random phone survey of 318 owners of one of the following seven notebooks: AST Premium Exec 386SX (50 owners); Compaq LTE 386 (50); Everex Tempo LX (33); IBM PS/2 Model L40 SX (50); TI TravelMate 3000 (35); Toshiba T2000SX (50); Zeos Notebook 386 (50). This data represents the opinions of the survey respondents. Percentages were rounded.

How this \$149 software will:

- 1) Improve the way you work and think,
- 2) Instantly find the info you need, and
- 3) Help you make brilliant decisions ...

Surprisingly, there is a whole new world of uses for your computer! You can use your computer to deal with all the countless bits of "random" information scattered across your desk: plans, notes, lists, actions, contacts, ideas,



and much more. INFO SELECT™ will not only give you instant access to this important information ... it will help you make better decisions and see important new relationships. Try INFO SELECT risk-free and discover a whole new dimension of computing.

Photographic memory

INFO SELECT is like having a 'photographic memory' that gives you perfect superfast recall of up to 64,000 items of information.

Telephone notes

When Harry calls you on the phone, you'll display the six windows on Harry before he finishes his first sentence! No more embarrassing pauses or scrambling for information.



INFO SELECT is easy to use - yet powerful.

Instead of one window or ten, imagine up to 64,000! The uses are endless.

INFO SELECT also includes the world's first "3-D" word processor. You'll be amazed at how it works.

Instead of one window or

Are you forgetful?

Were you born with a memory situated squarely on the tip of your tongue? Do you forget things like which day you placed an order or important numbers? If you are forgetful you especially need INFO SELECT - the software that remembers almost everything for you.

Thinking tool

Have you ever worked on a complex project and felt lost? With INFO SELECT you'll group, scan, and cross search through all your notes so fast you'll see the big picture in seconds.

Will I be better off doing this now or that later? Keeping priorities straight can make or break your career or your business. INFO SELECT lets you keep on top of what's hot.

Should you use an east or west coast supplier? To make decisions you need facts. Now you can view the facts any way you like ... as fast as you can think. You'll make the best decisions ever -- and fewer expensive mistakes.



Phone notes



Client info



Decisions



Management

The #1 PIM

What's all the fuss about PIMs (Personal Information Managers)?

Simple - you probably have more RANDOM information than any other type and you need a PIM to properly handle this kind of information. The right PIM will save you time and make everything you do go smoothly.

Why is Info Select the #1 PIM? Because Info Select is based on ideas you can identify with - like stacks of paper. And it's free-form too. You

won't waste days or weeks learning complex structures. Instead you'll be up and running in minutes. Info Select also does more and costs less than other PIMs.



Owners of our TORNADO software (symbolized by the famous "blue tornado") can trade up to the second-generation Info Select under our special offer. There are over 200 improvements.

Feature packed

INFO SELECT is memory resident (if you choose), so you can quickly jump in from other programs. Info Select windows can hold: notes, plans, lists, facts, letters, contacts, and much more. You can search for a window or a group of windows related by a word or phrase. There are five ways to see overviews; hypertext, a fast sort, and line drawing. Save time with the dialer, date tickler; and searching by text or date ranges.

Info Select allows you to: add columns of numbers; store data in EMS; use template or free-form windows; import and export files, screens, and databases; move, join, and duplicate windows and much more.

LAN option

The new LAN version allows integrated E-mail, sharing company rolodexes and distributing company policies. You can share any kind of information. It's your first step into the exciting new world of groupware! Ask about the five node LAN starter pack.

Easy power

Info Select is easy to use yet offers the power you need with infobases up to 10 megabytes; text searches up to 700kb/sec; up to 32,000 characters per window; and up to 64,000 windows per infobase. Even better, Info Select can swap down to as little as 7K memory!

TORNADO owners

INFO SELECT is based on the pioneering TORNADO™ software PC World called "Excellent, Excellent, Excellent, Excellent" and PC Magazine awarded Editor's Choice - twice. Call about our special trade-up offer.

Endless uses

Info Select can do much more than manage all your RANDOM information. Use it to manage business correspondence, sales leads, orders, and client notes. Track facts, plan projects, or interrelate all your ideas. You can catalogue parts, documents, and inventory items. Match buyers and sellers or doctors and patients. Setup an information desk. Edit E-mail. Store notes on magazine articles, software operation techniques, or just names and addresses. Whether you are a lawyer tracking court cases or a zoologist collecting feeding habits you'll find countless uses for Info Select.



Info Select keeps your information in intelligent automatically positioned windows.

Risk-Free Guarantee

Info Select is so effective you will be amazed. That's why we offer our money-back guarantee. Try it for 30 days. If you are not fully satisfied, accept our full prompt refund. Could any offer be more fair?

All for just **\$149.95!** **New: Ver 2.0!**

INFO SELECT has a special price of just \$149.95. You can even try it risk-free with a 30-day money back guarantee. But hurry - this is a limited time offer.

Doesn't it make sense to get the software package that can open up a whole new world of important uses for your computer? Order today. Call toll-free:

(800)342-5930

... and get ready for a new dimension of computing.

MicroLogic

POB 70, Dept. 412
Hackensack, NJ 07602
(800) 342-5930 (201) 342-6518
Fax: (201) 342-0370

Makers of: Tornado, Info Select, Key Watch & Micro Charts



"Rarely do I recommend a product as wholeheartedly" David Harvey, Comp. Shopper



"Beats the pants off just about everything else." Jeffrey Parker, PCM



"As easy as remembering your own name." Patrick Marshall, Info World



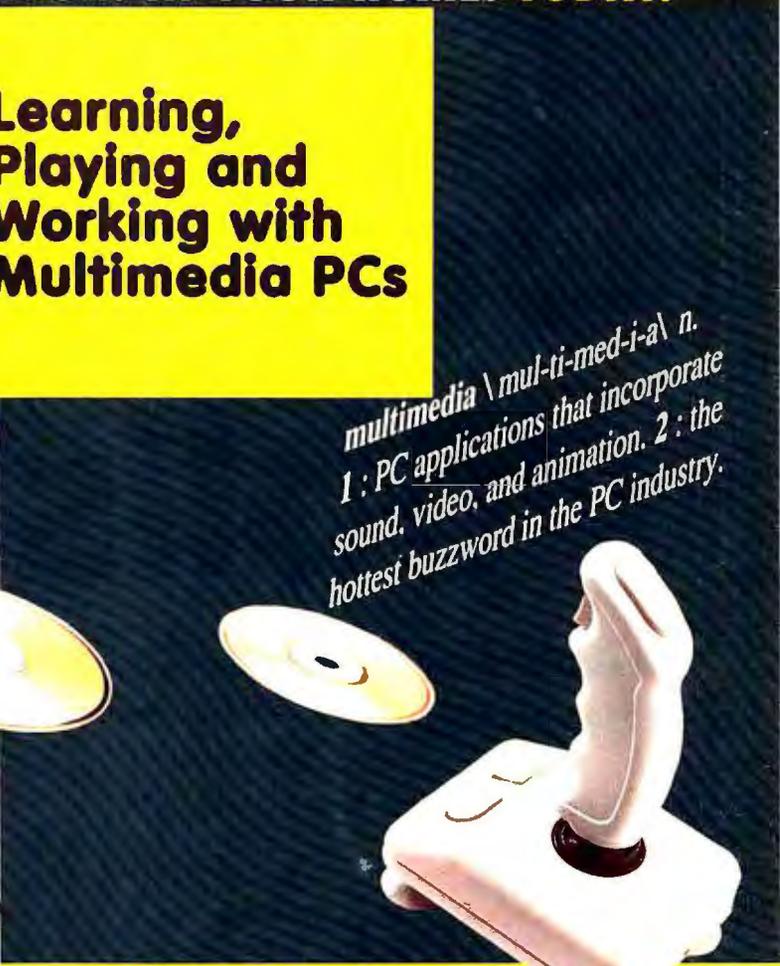
Editor's Choice "First rate" PC Magazine

MULTIMEDIA. POWERFUL. SEXY. FUN. IN YOUR HOME. TODAY.

MPC WORLD

**Learning,
Playing and
Working with
Multimedia PCs**

*multimedia \mul-ti-med-i-a\ n.
1 : PC applications that incorporate
sound, video, and animation. 2 : the
hottest buzzword in the PC industry.*



GET THE FIRST LOOK at what the multimedia PC experience can mean in your life. Imagine the excitement of an encyclopedia that talks to you, PC games that rival the quality of the video arcade, being able to listen to— and even compose!— music on your home PC with CD player sound. Want to layer a soundtrack and titles on your favorite home video? It's no problem with today's surprisingly affordable systems and software. Affordable and powerful— today's multimedia PCs do double duty when you decide to bring work home. They're powerful enough to handle the business applications you use at the office, as well as the entertainment and education applications you'll enjoy at home.

You'll want to get in on this new technology soon, if you haven't started already. Let our editors tell you who's making what, how it works, how much it costs, and where to buy it. Their first person accounts of the magical journey into multimedia will capture your imagination and get you started on your own adventure. Whether you (or your kids) are seeking entertainment or lifetime education, you'll find the full story in MPC.



Desktop Publishing

Our road testers are seasoned desktop publishers with strong opinions about page layout powerhouses Ventura Publisher and PageMaker.

Alice LaPlante

PageMaker's forte is color design, while *Ventura Publisher* is more proficient at black-and-white business documents. But with each release, these programs grow more alike: *PageMaker 4.0* added long document features, and *Ventura Publisher Windows Edition 4.0*, due to ship at the end of 1991, will add professional color capabilities. Nevertheless, this month's road testers—two *Ventura* experts who use both the *GEM 3.0* and *Windows 3.0* versions and two *PageMaker 4.0* veterans—wouldn't dream of switching from their respective programs. Read on to learn why these desktop publishing gurus are so loyal.

PAGEMAKER

Sheila Brown has used *PageMaker* for more than two years to typeset books, newsletters, and magazines for a small independent publishing house.

PageMaker is so flexible, I've never wanted to switch. We do a lot of ad production, and *PageMaker* makes it easy to grab a text block and place it

anywhere on the page or move a line a little to the right or left. Doing the same thing in *Ventura* is too complicated.

I also like the style palette's flexibility. For example, you can change the leading on two or three lines of text without affecting other text that has the same style tag.

I wish *PageMaker* allowed me to tie text to other elements on a page. When we put a text block or a caption in a box and then move that text, the box won't move with it.

PageMaker was pretty easy to learn. I took a three-day class, then worked closely with another person who could answer my questions. And the manual is so clear that I've only had to call Aldus once or twice for help.

Christine Leatz uses *PageMaker* to produce a newsletter, brochures, and technical documentation that are distributed throughout her company.

PageMaker is our de facto standard, on both the PC and the Mac. Switching back and forth between versions is easy, because Aldus has kept the user inter-

face on each version virtually identical, and exchanging files is no problem.

The latest version of *PageMaker* handles longer documents better because of its indexing feature, and with its built-in story editor, you can edit articles in *PageMaker* without going back to your word processor. This version also manages color better—especially spot color.

The *PageMaker* menus are intuitive and consistent across features, so it's easy for a new user to catch on. Aldus's support is the best of any software vendor I've worked with: You know you won't get stuck on hold for a long time, and the support people know what they are talking about. But because the documentation is so good, we usually don't have to call at all.

VENTURA PUBLISHER

Dennis Lucey has been using the *GEM* version of *Ventura Publisher* for four years to produce software manuals, but his company will soon be switching to the *Windows* version.



JERRY SCHRAEDER

MICHAEL ABRAMSON

ANN STATES

DAN DOYLE

DENNIS LUCEY

Position: Technical writer
 Company: Dun & Bradstreet
 Software, Framingham,
 Massachusetts
 Hardware: 20-MHz 386, 6MB
 RAM, 120MB hard drive

CHRISTINE LEATZ

Position: Office technology
 manager
 Company: FMC Corporation,
 Chicago
 Hardware: 20-MHz 386, 4MB
 RAM, 40MB hard drive

SHEILA BROWN

Position: Desktop publishing
 operator
 Company: Publishing Concepts,
 Atlanta
 Hardware: 25-MHz 386, 4MB
 RAM, 120MB hard drive

ELIZABETH WOOD

Position: President
 Company: Egeland, Wood & Zuber,
 Scotia, New York
 Hardware: Various systems; 386
 and 486 PCs, 2MB to 16MB RAM,
 40MB to 320MB hard drives

Ventura comes close to *PageMaker* as a good newsletter tool, but for multi-chapter publications I can't see why anyone should use anything except *Ventura*. The program's cross-referencing feature is wonderful: It automatically changes all references every time you move a section of your document.

However, *Ventura* does have some room for improvement. It would be nice to eliminate the need for a separate word processing package, and the *Word for Windows* file conversion is a little awkward right now. [Editor's note: *Ventura Publisher Windows Edition 4.0 will accept Word for Windows files directly.*]

Ventura's GEM version has a definite speed advantage over the *Windows* version. When we migrate files between the two versions, about 99 percent of the time they go through without a hitch.

When you call *Ventura Software* for technical support you sometimes have to wait a long time before you get through. This program is not one you can learn overnight: Still, no other PC package compares to *Ventura* in terms of power and flexibility.

Elizabeth Wood runs an advertising and design agency that also provides desktop publishing training and consulting.

Early on, we chose the PC instead of the Mac because *Ventura* has more sophisticated typography than *PageMaker* does. We now use *PageMaker* to design some items but use *Ventura* to produce them—from simple one-page

data sheets to complex advertisements.

Ventura has many add-on programs, such as *Ventura Software's Ventura Database Publisher*; which help us enormously. And the new 24-bit color capabilities announced for *Ventura* will put it way in front of *PageMaker*. ☼

Alice LaPlante is a freelance writer in Palo Alto, California.

REPORT CARD

	PageMaker 4.0		Ventura Publisher 3.0	
	Sheila Brown	Christine Leatz	Dennis Lucey	Elizabeth Wood
Ease of use	B+	A	B	A
Page design and layout	A	A	A	A
Text handling	A	A	A	A
Graphics handling	B	A	A	B
Support and service	B+	A+	B	*
Overall	A-	A	A-	A

*User did not use feature.

ORDER NOW!

1991

PC WORLD ANNUAL INDEX

Need fast answers from back issues of *PC World*? Can't find that review of the hottest 386 notebooks? With *PC World's* 1991 index of articles you'll have all the reviews, products, features, and how-to's at your fingertips in one easy-to-use reference. A hard copy of the index is available, as are 5 1/4-inch and 3 1/2-inch disks, which feature a Hypertext interface to locate entries quickly.

To order, fill out and mail the coupon at right. Enclose personal checks only; do not send cash. Or fax your order to *PC World*, Attn: Scott Danish, at (415) 882-0936. MasterCard and Visa accepted.

1991 ANNUAL INDEX
 PC World
 P.O. Box 77436
 San Francisco, CA 94107-0436

Please send the 1991 PC World Annual Index to:

Name _____

Company _____

Street _____

City _____ State _____ ZIP _____

_____ printed copies @ \$2.97 each \$ _____

_____ 5 1/4-inch disks or

_____ 3 1/2-inch disks @ \$3.22 each \$ _____

Save by ordering a set (hard copy and 5 1/4-inch or 3 1/2-inch disk)

_____ set(s) @ \$5.00 per set \$ _____

Check one: _____ 5 1/4-inch disk _____ 3 1/2-inch

Total \$ _____

Please bill my _____ Visa _____ MasterCard

Card # _____

Expiration Date _____

Waber's Power Protection Promise . . . We promise to repair or replace the purchaser's connected equipment should it be damaged by a transient surge/spike.



That says it all. No specs, no "technitalk". Power protection is our business...we've been doing it for over 30 years. And we back our products with the best "NO-HASSLE" warranties in the business.

All of our Surge Sentry and EPC model products are covered by the Power Protection Promise. All Surge Sentry and EPC units have a high energy-absorbing, patented design that gives your equipment the greatest possible protection. Tested to the stringent

UL 1449 Standard, these models carry UL's best rating of 330 volts. Our DSD model has even been named *PC Magazine* Editor's Choice.

Available at many dealers and superstores throughout the US. For a FREE copy of "A User's Guide to Electricity," please write us at our Mt. Laurel, NJ, address or complete the Reader's Service Card.

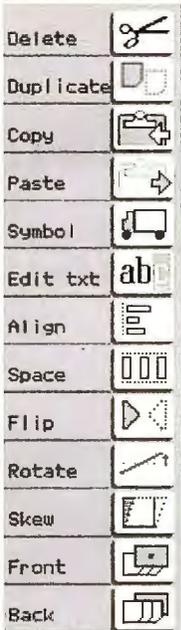


SL WABER, INC.
 A Subsidiary of SL Industries, Inc.

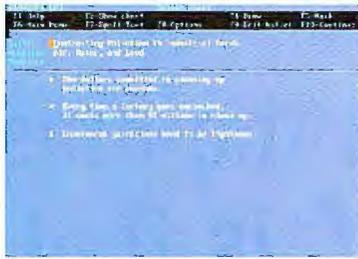


SL Waber ... Providing quality products and the most advanced protection for over 30 years. First and still the best.

520 Fellowship Road
 Mount Laurel, NJ 08054
 NJ (609) 866-8888
 Fax (609) 866-1945



Drawing tools. 39 in all.



Do what you've always done before...



...style it like you've never seen before.



Twist it. Turn it.



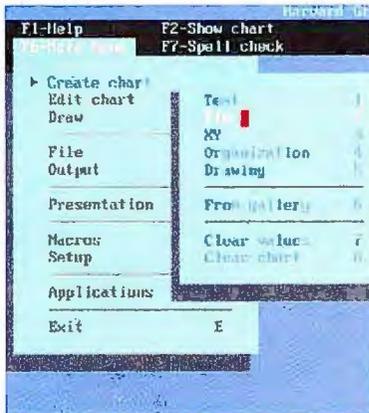
From titles to footnotes. From colors to logos. Our global options keep it consistent.



Pull-down menus: A new feature to get at the features. Easier than ever.



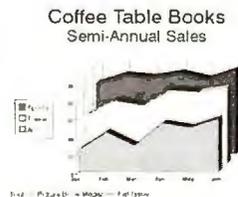
Choose from 32 color palettes. Then shade. Mix. Blend.



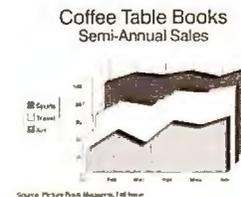
Look familiar? It should. It's Harvard Graphics.



You enter the data, we'll make it look good. It's what you've known us for all along.



What you see is what you get.



Yes, we have WYSIWYG.



How do 16 million colors sound?

Overwhelming evidence that Harvard Graphics[™] 3.0 is more than just another upgrade.

Our new DOS upgrade is loaded with features. Call 1-800-336-8360, Operator 760, for your own demo disk. And view the evidence yourself.



Perhaps the most amazing PC is that it can



At NEC, we put as much emphasis on affordability as we do on upgradability. Add a Pinwriter® P3200 and a MultiSync 3FGx to your Image Series PC and you can do high-level computing without paying a high price.

Anyone who thinks you can't do anything with a quarter these days obviously hasn't seen NEC's new PowerMate® Image™ Series SX/16i and SX/20vi PC's. With their tool-less design, all it takes to open them is the quick turn of a quarter. Then you can customize your computer yourself as your needs change. For instance, you can increase your system or video memory by just plugging in chips. And storage devices easily snap into place, too. We've even made it easier to upgrade your system in the future. Simply send us your old Image motherboard and we'll credit



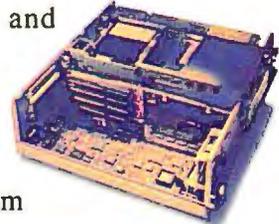
C&C

Computers and Communications

zing thing about our \$1,199* be upgraded with a quarter.

its value towards a new one.** And we don't just give you a faster CPU, either. We can give you more memory, cache and video, as well. But that's not all.

There's also space for additional drives.



So you have room

for new technologies

like CD-ROM. And

like the rest of

our Image Series

PC's, the

SX/16i and

SX/20vi

come with

plugs and

jacks that

make them

multimedia

ready. There's

ImageSync™ tech-

nology for flicker-free

graphics when used with our

new MultiSync® FG™ monitors.

FLASH ROM for upgrading or enhanc-

ing your BIOS via diskette. And pre-loaded

MS-DOS® 5.0, Windows® and PFS: Window Works™ For more

information, call 1-800-NEC-INFO, or NEC FastFacts at 1-800-366-0476, #IMAGE (46243). After all, a computer isn't worth a dime unless you can upgrade it with a quarter.

Because  is the way you want to go.

NEC

*NEC is a registered trademark and the Intel Inside logo is a trademark of Intel Corp. © 1991 NEC Technologies, Inc. **Manufacturer's suggested retail price for the PowerLite 51/16 MSPP for SX20 is \$1,349.00. ***See your dealer for complete details.

Circle 188 on reader service card

Introducing The First Mobile Disks.



Our new 40 to 120MB portable hard drives are on the move.

Now, wherever you go, take advantage of these great Mobile Disk features.

Snap on a hard drive in three minutes. You don't need tools. You don't have to open the computer. Simply plug Mobile Disk into any portable or PC parallel printer port and plug your printer into Mobile Disk. The software configures itself, and you're ready to go.

Small and sturdy. Mobile Disk is so durable and light, you can carry it all day and hardly notice it's there.

Carry all your data with you. You'll

always have the right files, programs, and fonts at the right time. Take your files home, to your portable, or down the hall. Why carry files on floppies, when you can take your whole work environment with you?

Grows with you. Add 40, 80, or 120 megabytes of data storage as you need it. Connect up to four drives for maximum storage. It's quick and easy.

Easy backup. Copy critical files to Mobile Disk, or back up an internal hard drive without learning new software. Protect your data from fire or damage. Lock it up, safely.



\$399

Special Introductory Offer!

For a limited time, you can order Mobile Disk 40 for just \$399. Call today to order, or for more information:

1-800-821-2151

SYSGEN

Sysgen, Inc. 556 Gibraltar Drive, Milpitas, CA 95035
Sysgen is a registered trademark, and Mobile Disk is a trademark of Sysgen, Inc.
\$399 price includes drive, cable, power supply, and documentation. All Sysgen products are covered by a 12 month warranty.

Circle 262 on reader service card



SPREADSHEETS (A..Z)

Practical tips for building better worksheets

Richard Scoville

At first, everything looked okay. I mean, all you did was add a few numbers in your *1-2-3* worksheet with @SUM(), right? But suddenly you notice your sum has changed all by itself: It seems to be larger than it was a moment ago. Then you notice that every time you enter something into another cell, the rene-gade sum gets bigger! Finally, you realize that pressing <F9>, the key that recalculates your worksheet formulas, causes the sum to increase. What's going on here?

The answer is, by mistake you built a formula containing a circular reference. In this month's column, we'll explore these strange creatures, see where they come from, find out how to get rid of them, and learn how to put them to work. The examples shown here in **SCREEN 1** were done in *1-2-3/W*, but you'll find it's possible to complete the calculations with any popular spreadsheet program.

Circular Errors

The first example shown in **SCREEN 1** illustrates the most common error involving circular formula references. To follow along in *1-2-3* or *Quattro Pro*, set

the global numeric format to display zero decimals, then enter the values shown in C1..C3. Put the cell pointer on C4, type @SUM(), move the cell pointer to C1, press <Period>, paint the range C1..C4, and press <Enter>. You'll see the presumably correct answer appear in C4. Notice that you've included the cell that contains the formula inside the range summed by that formula. In *1-2-3*, when you press <F9> to recalculate, the sum increases to 60: It's added its own current value to the result.

Quattro Pro, *1-2-3*, and *Excel* let you know when you've created a circular formula. *1-2-3* and *Quattro* display a 'CIRC' flag in the status line at the bottom of the screen. If you don't know which formula is causing the circular reference, the program tells you where to look: In *1-2-3* release 2.x or 3.x, select

/Worksheet Status; in *Quattro*, select *Options Recalculation* and look for 'Circular Cell'. In *1-2-3/W* select *Help About 123*. Fixing the problem is simple. Just put the cell pointer on the formula, press <F2> to edit it, change 'C4' to C3, and press <Enter>.

Excel will normally screen out these routine circular reference errors. If you try to build the analogous formula with *Excel*—that is, =SUM(C1..C4)—you will receive an error message that reads, 'Cannot Resolve Circular Reference'; then when you click OK, a zero will appear as the answer. If you want *Excel* to perform circular calculations, you first have to enable them: Select *Options Calculation*, choose *Iteration*, and click OK. The sum in C4 quickly rolls up to 3000 as the formula recalculates 100 times.

	A	B	C	D	E	F	G
1	Number		10				
2	Number		10				
3	Number		10				
4	Sum		30		@SUM(C1..C4)		
5							
6	Gross Profit		100,000				
7	Expenses		90,000				
8	Profit Share		500		+C9*C10		
9	Net Profit		10,000		+C6-C7-C8		
10	Profit Share % of Net		5.00%				
11							
12	Gross Profit		100,000				
13	Expenses		90,000				
14	Profit Share						
15	Net Profit		9,524		+C12-C13-C14		
16	Profit Share % of Net		5.00%		+C14/C15		
17							
18							

SCREEN 1: Circular formulas use their own output as input. They can be the result of errors, like the self-magnifying sum in C4 that includes its own cell inside its range. They can also be used intentionally: In C8..C9, a circular formula calculates profit share as a percentage of net profit, where net profit is figured after the profit share is subtracted.

Spreadsheet Toolbox

Teach Your Spreadsheet to Think for Itself

Normally you use your spreadsheet formulas to calculate results based on known values. If, as with budget calculations, you know what result you want, you can find data values to produce those results with the aid of the Solvers supplied with 1-2-3 release 3.1+, 1-2-3/W, Excel, or Quattro Pro. But what do you do when you don't know which formulas to use? You might try *Braincel*, a pioneering artificial intelligence add-in for Excel from Promised Land Technologies.

For instance, you're asked to rate the credit worthiness of loan applicants. Such ratings are traditionally the result of intuitive judgments based on the customer's income, expenses, years on the job, number of dependents, and so on. No formulas can quantify such judgments. You create an Excel worksheet loaded with data from a number of past clients, along with a

rating assigned by an expert loan officer. Define a few range names telling it where the data and results are, then "train" *Braincel* for a few minutes to several hours. At the end of the training period, *Braincel* can make respectable judgments about new clients consistent with the ones the human expert would have made.

Based on cutting-edge research in neural networks, *Braincel* is a fascinating, almost eerily powerful program that deserves a look by any manager saddled with too many decisions to make (or, for that matter, eager to place the winning bet on the Superbowl). Who knows, maybe you too can delegate your brain to *Braincel*.

Braincel \$249.00; Promised Land Technologies, Inc., 900 Chapel St. #300, New Haven, CT 06510; 800/243-7335
Reader service no. 601

Circular Logic

Given these bizarre results, why don't spreadsheets simply refuse to accept circular formulas? The answer is, of course, that the solutions to some problems require circular calculations. For instance, suppose your small company sets aside 5 percent of net profit for its profit-sharing plan, where the amount earmarked for bonuses is subtracted before the net profit is calculated. Look once again at **SCREEN 1**. Enter the labels shown in B6..B10 and the values in C6, C7, and C10. Then, in C9, enter the formula to calculate the net profit: **+C6, C7, and C8**. In C8, enter the formula to calculate the profit share: **+C9*C10**. The circular reference ensures that the calculation of net profit is a function of profit

share, while the profit share depends on the net profit.

In 1-2-3 and in *Quattro*, the formulas initially assume the values shown in the figure. In order to get the true answer, press **<F9>** until the values stabilize at \$476 and \$9524. In *Excel*, the formulas immediately recalculate until the values change by less than .001, provided of course that you have first enabled circular calculations.

Circular Solutions

If you use 1-2-3/W, 1-2-3 release 3.1+, *Quattro Pro*, or *Excel*, your spreadsheet provides a feature specifically for problems like this without resorting to circular formulas. The trick is to change the problem's logic slightly, then use the

Backsolver to vary the profit share until it reaches 5 percent.

First enter the labels shown in B12..B16 and the values shown in C12 and C13. In C15 enter **+C12-C13-C14**, the formula for the net profit. In C16 enter a formula that calculates the profit share percentage for a given profit share amount: **+C14/C15**. In 1-2-3/W, select *Tools Backsolver* in the dialog box, specify **C16** as the Make cell, **.05** as the Equal to value, and **C14** as the By changing cell. Then click on *Solve*.

In *Quattro*, select *Tools Solve for*. Next specify **C16** as the Formula Cell, **.05** as the Target Value, and **B9** as the Variable Cell. Select *Parameters* and specify **.001** as the Accuracy. Then select *Go*. In *Excel*, start by entering an initial guess, say 500, into C14. Then select *Formula Goal seek*; in the dialog box, specify **C16** as the Set cell, **.05** as the To value, and **C14** as the By changing cell, and then click *OK*.

A moment's reflection reveals that circular formulas such as these actually represent a set of simultaneous equations with two unknowns, namely Profit Share and Net Profit:

1. SHARE + PROFIT = 10000
2. SHARE/PROFIT = .05

The problem is simple enough for *Backsolver*; but it could also be handled easily with the Solver in 1-2-3/W, 1-2-3 release 3.1+, or *Excel*, and a little less easily with *Quattro's* Optimization Command, which is more difficult to use.

So when you find yourself thinking in circles, take a few minutes to analyze the problem, and you may soon be running circles around the competition!

Questionable Spreadsheets Department

Q. When I assumed my current position, I inherited a 1-2-3 macro from my predecessor that sorts and prints a table of maintenance records. Because the table changes its size each time that I run the macro, it includes two statements to redefine a range name (TABLE) that covers the data to be sorted and printed:

Now your soft fonts will be ready and waiting for you...

A yawn... A long, heavy sigh. Once again you're ready to print but your soft fonts aren't. Because somewhere in the realm between your computer and LaserJet® printer they're slowly downloading. So you wait.

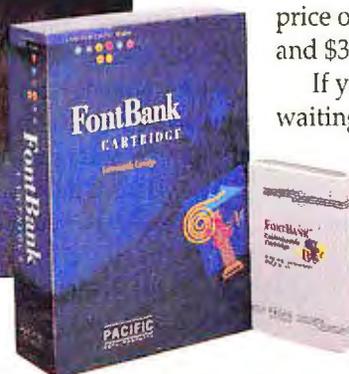
...instead of the other way around.

At Pacific Data Products we know that to get soft fonts that are easy to use and don't require downloading you need a special type of printer cartridge. That's why we've created the **FontBank Cartridge™** for the HP LaserJet Series II and III family of printers.

The **FontBank Cartridge** contains a new kind of memory where you can store your favorite soft fonts and printer macros. Unlike your printer's memory, it retains information even when the printer is turned off. So once you've downloaded, you'll never need to download again. And you'll know exactly which fonts and macros are residing at your printer. No more guessing. No more surprises. You can even add or delete fonts as often as you wish.

The **FontBank Cartridge** comes with printer drivers for Word® 5 and 5.5, WordPerfect® 5.1, and Windows® 2.X and 3.0. And it's compatible with bitmapped soft fonts that adhere 100% to HP® standards including those from Bitstream®, Agfa®, and Hewlett-Packard, as well as HP PCL printer macros for logos, letterheads, and forms. With the LaserJet III, IIID, or IIIP printer, PCL5 scalable fonts can also be used. The **FontBank Cartridge** requires no extra printer memory and has a list price of only \$299 for the 3/4 MB version and \$399 for the 1.5 MB version.

If you'd like your soft fonts ready and waiting for you, contact your dealer or Pacific Data Products at (619) 597-4629, FAX (619) 552-0889.



FontBank Cartridge is a trademark of Pacific Data Products, Inc. HP and LaserJet are registered trademarks of Hewlett-Packard Co. All other company and product names are trademarks or registered trademarks of the company or manufacturer respectively. Pacific Data Products, 9125 Rebeco Road, San Diego, CA 92121. EUROPEAN OFFICES: Geneva Tel (41) 22 41 26 50, Fax (41) 22 41 06 82, France Tel (33) 1 39 23 20 00, Fax (33) 1 39 63 31 20, U.K. Tel (44) 442 23 14 14, Fax (44) 442 23 65 40. © 1991 Pacific Data Products, Inc.

PACIFIC
DATA PRODUCTS

	A	B	C	D	E
1	W	X	Y	Z	
2	A	123	234	345	
3	B	234	345	456	
4	C	345	456		
5	D	876	765	654	
6	E	543		321	
7					
8	\R {goto}TABLE~				
9	/rndTABLE~/rncTABLE~{u}{end}{r}.{end}{d}~				
10					
11	\S /rncTABLE~{esc}.{u}{end}{r}.{end}{d}~				
12					
13	\T {goto}HEADINGS~{d}				
14	/rncTABLE~{bs}.{u}{end}{r}.{end}{d}~				

FIGURE 1: Here are three approaches to writing 1-2-3 macros that redefine a variable-sized named range. To build it, start by entering all labels and values. Next, use /Range Name Create to define the range names TABLE and HEADINGS to A1..D1 and A2..D6, respectively. Then select /Range Name Labels Right to name the macros, and specify A8..A13.

{goto}TABLE~
/rndTABLE~/rncTABLE~{end}{d}{end}{r}~

Why does the macro delete the range name and then re-create it? What's the best way to do this job?

Edgar Chen
Plano, Texas

A. Redefining a range name is one of the most basic tasks that macros must perform. The proper technique for accomplishing it depends on the condition of the range when you redefine it.

FIGURE 1 shows a variation of your macro, along with two alternatives. The range name TABLE covers A2..D6; a second range name, HEADINGS, covers A1..D1. Notice that cells D4 and C6 are empty.

The first macro, \R, is similar to the one you submitted. It prevents the error that can arise in 1-2-3 release 2.x and Quattro when two names refer to the same range; in that case, redefining one range automatically redefines the other. The only way to unlink them is to delete one of the range names and re-create it. (This technique is unnecessary in 1-2-3 release 3.x, which does not link ranges in this way.)

B8: (\R): {goto}TABLE~ positions the cell pointer on TABLE. That statement assumes TABLE is intact when the macro runs. (A range typically becomes undefined when you delete one of its edge rows or columns.)

B9: /rndTABLE~/rncTABLE~{esc}.{u}{end}{r}.{end}{d}~ deletes the range name TABLE to unlink it from another range name if necessary. Then it re-creates the range name beginning on the current cell.

{Esc}. reanchors the cell pointer on the current cell. This ensures that the following pointing technique will work correctly.

The {u}{end}{r} statement highlights the range along the labels on row 1; .{end}{d}~ switches the movable corner of the range to the upper left and moves it down the labels in column A. Unlike Chen's macro, this technique works properly even when TABLE includes blank cells like D4 and C6.

Use the next macro when you're sure that TABLE is intact and, in release 2.x, when there's no chance of a linked name:

B11: (\S): /rncTABLE~{esc}.{u}{end}{r}.{end}{d}~ {Esc} shrinks the range back to its original upper-left

corner cell, so you need not go to the range before you redefine it.

The final variation is appropriate if TABLE may have been damaged since the last time you ran the macro:

B13: (\T): {goto}HEADINGS~{d} If TABLE is undefined, {goto} isn't able to move there. This statement moves the cell pointer to where TABLE is supposed to begin by going to an adjacent range (HEADINGS) and then moving into position.

B14: /rncTABLE~{bs}.{u}{end}{r}.{end}{d}~ When TABLE is not damaged, {bs} shrinks the cell pointer to the cell where the command began; when it is damaged, {bs} does nothing.

Just select the proper technique to make your print, sort, and other macros work reliably every time.

Send your spreadsheet questions to Richard Scoville, CompuServe 72341, 2727; MCI Mail 357-4517; 415/442-1891 (fax); or mail them to Spreadsheets (A..Z), PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ●

Richard Scoville is a contributing editor for PC World.

POWER TIP NO. 234

Print Corel Draw 2.0's Keyboard Templates and Tricks

If you installed Corel Draw 2.0's sample files, you'll find that TEMPLATE.CDR contains keyboard templates for standard and extended keyboards, plus a table showing the keyboard shortcuts. Use the Open command to load the file from the \SAMPLES subdirectory, then print it.

Mary Ginder
Baltimore, Maryland

CD-ROM



Multimedia CIA World Tour

MPC Title! With info straight from the CIA -- Plus Maps from Hammond, Inc. and flags & National Anthem segments New Version! \$99

Monarch Notes on CD-ROM

Over 200 Notes on One CD-ROM Disc
The Entire Collection (many out of print) Only \$99
The definitive multimedia source for understanding the world's greatest literature. PC & Mac

Greatest Books Ever Written

The Ultimate Electronic Book PC & Mac \$295

Countries of The World

Full text of over 100 Study Books, Maps, National Anthems, Flags & more! PC & Mac \$495

U.S. History on CD-ROM

WINNER 1991 OPA BEST EDUCATIONAL PRODUCT
Text & Images PC/Mac \$550 rebate-final cost \$349

Pioneer CD-ROM 6 Pak

6 PC/MAC DISCS BUNDLED FOR ONLY \$395!
• U.S. History • Countries of the World • Shakespeare • Kinetics • Maps • Software Reference
Six Pack & Minichanger (Save over \$1000) \$1489

**SONY Laser Library
Enhanced BUNDLES!** CALL
With Monarch Notes!

High Performance SONY CD-ROM Drive Kits

Fast, MPC compatible drive kits in-stock

SONY CDU-535 kit (internal)	CALL
SONY CDU-541 kit (internal) MPC ready	CALL
SONY CDU-7201 kit (desktop)	CALL
SONY CDU-7211 kit (desktop) MPC ready	CALL
SONY Disc Caddies (5 or more)	\$10 each

Also: Pioneer Minichanger, CDT, NEC, Hitachi, WORM & Erasable drives, in-stock - Call

Multimedia CD-ROM Titles

Microsoft Bookshelf best selling CD-ROM disc	Best Price
Mixed Up Mother Goose "fun" educational disc	\$59
Beethoven's Multimedia MPC classic disc	\$79
Grolier's Encyclopedia 21 vol. - text, VGA pictures	Call
Mammals - Nat. Geographic/IBM pictures & text	Call
Compton's Multi-Media Encyclopedia	795

Libraries / Science / Business

Between Heaven & Hell II even stranger	\$99
Magazine Rack 100's of current magazines	78
Voyage to the Planets astounding Voyager trip	119
Coates Art Review colorful, classic art	129
TIME Magazine Compact Almanac 5,000 articles	Call
Family Doctor home medical guide	98
Variety Video Directory Home video reference	189
Zip++ Every US address	195
McGraw-Hill Ref. Set 100,000 terms; 7,300 articles	495
Speed Dial entire U.S. Yellow Pages on one disc	Sale
Oxford Textbook of Medicine general reference	595
PC-Sig Library new edition, newest version	Call
Oxford English Dictionary over 250,000 headwords!	889
Phonedisc USA Telephone Directory - East or West	989

*** MORE! Over 300 different titles available ***
LOWEST PRICES! Free tech support
Bureau On-Line CD-ROM Library, FREE access to
12 different CD-ROM Discs. CALL!!!
GSA # G500K91 AG55280
HOURS M-F 8:30am - 6:30pm EST



**Bureau of
Electronic Publishing, Inc.** Same Day Shipping
Dept. B, 141 New Road, Parsippany, NJ 07054

FAX # 201-808-2676

CALL: **800-828-4766** ORDERS

201-808-2700 INFORMATION

Circle 88 on reader service card

The Verdict Is In...



CLARION PROFESSIONAL DEVELOPER™

Simply the Best.

"We've always liked Clarion's powerful, straightforward language..."
PC Magazine - Technical Excellence Awards

"When it comes to the bottom line, Clarion gets our vote."
InfoWorld

"Buyers lauded its power and gave it the gold - by a wide margin..."
PC Week - Winner of Corporate DBMS
Satisfaction Poll, 1989/1990



CLARION SOFTWARE™

150 East Sample Road • Pompano Beach, FL
(305) 785-4555 • (800) 354-5444



Circle 36 on reader service card

FREE DISK!

PowerBase *. * Volume IV

INCLUDES
FREE
BONUS
GAME!

**ALL NEW! The Latest and Greatest
Utilities from Star-Dot-Star-FREE-
When You Subscribe to PC WORLD.**

◆ Stay on top of 1991's favorite how-to utilities from our popular Star-Dot-Star column. Here are the tips and tricks that will save time and trouble—all pulled together on one menu-driven disk!

◆ You'll have fun, too! Take a break and try your luck with our all-new bonus game—PC WORLD poker—and bring all the excitement of the casino to your PC!

◆ This disk will not be available in stores, but you can reserve your copy today when you subscribe to PC WORLD. And subscribing couldn't be easier—simply call in or fax your order today and you'll receive 12 issues of PC WORLD for the introductory rate of \$19.97 PLUS PowerBase *. * Volume IV with bonus game!

**Phone orders: (800) 825-7595
Fax orders: (415) 882-0936**

Please allow 6-8 weeks for delivery of your first issue. Disk will be shipped immediately upon its release, no later than December 31, 1991. Annual Newsstand Rate \$47.40. Basic Rate \$29.90. The PowerBase *. * diskette is offered solely by PC WORLD Magazine. It should not be confused with "power-base" which is relational database software offered by Compuware Corporation.

PC WORLD

New Windows
Version Now Available.



MICROSOFT PROJECT FOR WINDOWS.
IN AN INDEPENDENT STUDY,* IT TOOK 50% LONGER TO
COMPLETE A PROJECT THAN CA-SUPERPROJECT.



CA-SUPERPROJECT.
WITH MORE EFFICIENT SCHEDULING ALGORITHMS, IT HELPS
YOU BRING PROJECTS IN ON TIME AND ON BUDGET.

Identical Project. Different Project Manager. Can You Spot The Difference?

Efficiency. Accuracy. Dependability.

Required skills for any project manager. But not as common as you'd think. In a recent independent study of the five leading project managers—all scheduling the same project—the completion dates varied by as much as five months.

CA-SuperProject® finished first in 214 working days. Microsoft® Project finished last in 323 working days.

That's why serious project managers trust CA-SuperProject. It offers more efficient scheduling algorithms, better manage-

CA-SuperProject



ment of resources and gives you completion dates you can bet your career on. It's also incredibly easy to use. You can create projects in minutes.

And with a few clicks of the mouse, you'll have presentation quality Gantt, PERT, Cost/Resource and Work Breakdown charts.

So call 1-800-645-3003 today to find out the location of your nearest dealer. Because

once you've worked with the most-efficient project manager, the difference will be obvious.



COMPUTER ASSOCIATES
Software superior by design.

© 1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787. All trade names referenced are the trademarks or registered trademarks of their respective companies.
* March 1991 study published by ISoft Decision, Inc., including CA-SuperProject 2.0, Microsoft Project For Windows, Symantec's Timeline 4.0, ABT Project Workbench and Scitor's Project Scheduler-5.

Circle 39 on reader service card



WORD PROCESSING CLINIC

Tips for getting the most out of your word processor

George Campbell

Q. The company I work for uses *WordPerfect 5.1*, but I use *Word 5.0* at home. I'm used to *Word's* <Alt>-key shortcuts, such as <Alt>-B for boldface. Is there a way to add these keystrokes to *WordPerfect*?

Linda Masterson
Sacramento, California

A. It takes a little doing, but you can alter *WordPerfect's* keyboard almost any way you like.

To start, press <Shift>-<F1>K to bring up the keyboard selection screen. You'll see a list of alternate keyboards if any are installed. Appendix H in the *WordPerfect 5.1* manual explains each of them. To create your own keyboard, press C, then type a name for your personal keyboard and press <Enter>. Press M to see a keyboard map.

Move the cursor to the keystroke you want to change. Next, if you're creating a shortcut for a *WordPerfect* function key command, press K, then press the desired command's key. For example, to assign boldface to <Alt>-B, move the cursor to B in the <Alt> section of the keyboard map, then press K<F6>.

To map something more than a basic

WordPerfect command, create a keyboard macro. To do this, move the cursor to the desired key, and press M. You'll see a macro editing screen. Press <Delete> to clear the contents of the screen, then type the *WordPerfect* keystrokes that make up the macro. To assign italics to <Alt>-I, for example, locate the cursor on the I on the Alt map, and then press M<Delete><Ctrl>-<F8>A<F7>.

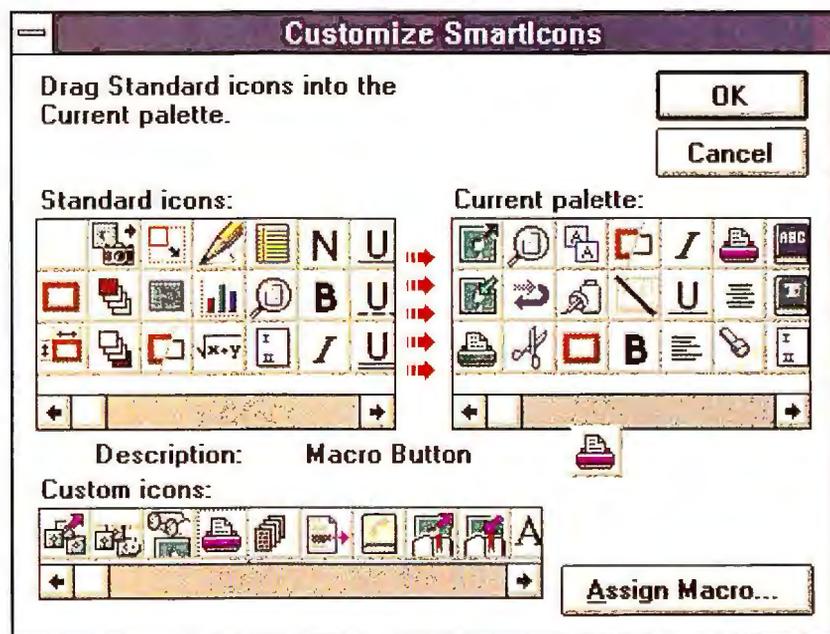
When you're finished, press <F7> twice to make this keyboard layout the default. To make changes later, simply repeat the process.

Q. I just installed *Word for Windows* but am still using *Word 5.0* as well. I'd like to use the same keys for selecting text in *Windows* that I use in the DOS version. Is that possible?

Katherine Bagwell
Duluth, Minnesota

A. There's an easy way to assign the old, familiar text selection keys in *WinWord*. For a single document, start *Word for Windows* and select *File New*. Scroll through the template selection box to the PCWORD entry and select OK. From then on, while editing the document, most *Word 5.0* function keys work in the same way as they did, including text selection commands.

To avoid selecting the PCWORD template file each time you want to use those old keystrokes, you can make it the default. To do this, exit *WinWord* and either select the DOS prompt icon or exit *Windows*. Change to your *WinWord* directory with the CD command. Before going any further, however, make a backup copy of *WinWord's* NORMAL.DOT template. Type COPY NORMAL.DOT *.BAQ, then press <Enter>. Now, give the command COPY PCWORD.DOT NORMAL. and press <Enter>. From that point on, when



Ami Pro 2.0 lets you assign any macro to a SmartIcon for instant access from your SmartIcon display. This dialog box lets you customize the display with a few simple steps.

you start *WinWord*, it will automatically load the template containing your old *Word* for DOS function key commands.

Q. *I often create multicolumn documents in WordPerfect 5.1, but it's difficult to move the cursor to the top of a particular column. Is there a shortcut?*

*Kare Grams
Costa Mesa, California*

A. That's a good question. *WordPerfect's* <Ctrl>-<Home> cursor key combinations take too many keystrokes. There are two easy solutions. If you have a mouse, move the mouse cursor to a new location and click the left button. Or, you can use the <F2> command (Search) to move from column to column.

To use the search method, first mark your columns. When you start a new column, type a distinctive character at the top of each column. For example, use one asterisk at the top of column one, two for column two, and so on.

Once the marks are in place, you can search for them. Say you're in column one but want to move to the top of column three. Just press <F2>, type three asterisks, then press <F2> again. To move backward in the document, substitute <Shift>-<F2> for the first <F2>.

The same method can mark locations anywhere in a document, making it easy to jump around. When it's time to print, you'll want to remove the marks. Press <Home> <Home> <Up> <Alt>-<F2> N, type the character you've used for marking, press <Alt>-<F2> twice, and all marks will disappear.

Q. *I've created a macro for envelope printing in Ami Pro 2.0. I'd like to add the macro to Ami Pro's SmartIcon display. Can you tell me how?*

*Kevin Phillips
Baltimore, Maryland*

A. First, select *Tools SmartIcons*. In the dialog box, select *Customize*. In the

next dialog box, select *Assign Macro*. Select *Next Icon* to page through the available icons. When the icon you want appears in the Selected Icon box, select your macro. Now, select *Save* and *OK*.

Back in the *SmartIcon* dialog box, drag the button you chose into the *Current Palette* section and drop it. Select *OK* twice, and you're done. Now, whenever the *SmartIcon* display appears, you can simply select the new button to print your envelope.

Send your word processing questions to George Campbell, CompuServe 71571,222; MCI Mail GCAMPBELL; 415/442-1891 (fax); or mail them to Word Processing Clinic, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ●

George Campbell is a contributing editor for PC World.



Give Us Your Toughest Peripheral Sharing Problem

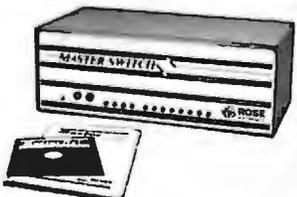
...or your simplest! Master Switch, the intelligent data switch from Rose Electronics, can handle it. The Master Switch series is so versatile and sophisticated, peripheral sharing becomes easy.

Anyone who appreciates ease-of-operation and technologically-advanced capabilities knows the Master Switch is the right choice...for sharing printers, plotters, modems, and any device with a serial or parallel port. Here's why:

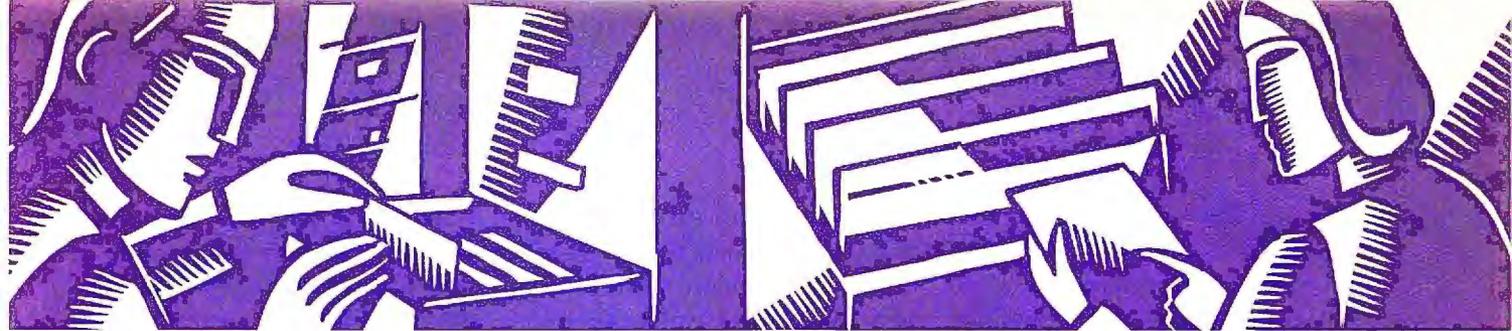
- Any combination of serial or parallel ports
- Easy selection of peripherals
- User-expandable memory up to 4 megabytes
- Simultaneous access to all devices
- Rated 'fastest switch' by PC Magazine
- Advanced features include job queue, port contention, data collection, job control menu, initialization strings, pop-up menus, and many more
- Complete technical support; one-year warranty

The Low-Cost LAN Alternative
With our MasterNet software, the Master Switch provides many convenient LAN functions, such as E-mail, file transfer, and directory access.

Designed and manufactured in the USA. Field-proven in thousands of applications. The Master Switch answers any peripheral sharing challenge. Choose the intelligent data switch that handles your most complex needs, yet is easy to set up and operate... choose Master Switch.



ROSE ELECTRONICS
(800) 333-9343
FAX (713) 933-0044 • (713) 933-7673
P.O. Box 742571 • Houston, Texas 77274
Call for complete information and our catalog of Switching and Sharing Solutions. Dealer inquiries welcome.



DATA BASICS

Tips and techniques for managing your data

Steve Cummings

Q. *Our distribution company sells primarily to resellers, but we occasionally make bulk sales to buying clubs and individuals who must pay sales tax. How can we set up our invoicing system in dBASE IV to add sales tax automatically, but only to the appropriate invoices?*

Geraldine Gerald
Lodi, California

A. Thanks to dBASE's IIF() (immediate if) function, your invoices can tell whether sales tax is necessary. First, to separate taxable customers from nontaxable ones, add a logical field called Taxable to your CUSTOMER file. Since your typical customer is a reseller, type **REPLACE ALL Taxable WITH .F.** at the dot prompt to identify all your existing customers as nontaxable, then go through the file and change the Taxable field to true for those who must pay tax. To prepare for future entries, add the Taxable field to your customer data entry form, and use the *Fields Edit options Default value* command to make false the default entry.

When you design your invoice in the report generator, use the *Fields Add*

field Calculate command to create a Subtotal field that adds the extended prices (quantity times unit price) of all the items on the invoice. With the same command, set up a Sales_Tax field just below Subtotal; if your state's sales tax is 7.25 percent, enter the field's expression as something like **IIF(Customer>Taxable, Subtotal*.0725,0).**

What does this expression do? If the customer's Taxable field is set to true—i.e., if the customer is not a reseller—the expression calculates the sales tax due. If the field is set to false, the expression places a 0 in the Sales_Tax field. Of course, you'll need a third calculated field, Total, to add Subtotal and Sales_Tax together.

The same general approach works well for businesses that sell both taxable and nontaxable items. In that case, though, you'd place a Taxable logical field in the inventory file and calculate

the sales tax item by item, based on each item's extended price.

Q. *Our direct marketing firm is preparing to use Paradox to record product orders. Although we'll be getting a monthly report set up by our consultant, I'd like to monitor the success of our advertising more often. Is there a quick way I can graph total sales of each product, broken down by advertising method (newspaper, radio, TV, and so forth)?*

William Wong
Salem, Massachusetts

A. I'll assume you've already set up a line-item table with columns (fields) for the product, the quantity ordered, and the advertising method that brought in the business. You could summarize data from this table into a fancy report, but Paradox's cross-tabulation feature is

Viewing Crosstab table: Record 1 of 4

Product	Quantity	Advertising Method	
1	Crosscut saw	1	DMail
2	Ripsaw	2	DMail
3	Ballpeen hammer	4	Newsp
4	Ballpeen hammer	1	Radio
5	Crosscut saw	3	TU
6	Crosscut saw	2	Newsp
7	Crosscut saw	1	Radio
8	Brace and bit	3	TU
9	Crosscut saw	1	TU
10	Ripsaw	5	TU
11	Brace and bit	4	DMail
12	Ballpeen hammer	1	Radio
13	Ballpeen hammer	3	TU

CROSSTAB	Product	DMail	Newsp	Radio	TU
1	Ballpeen hammer	511	998	669	461
2	Brace and bit	1314	282	812	15
3	Crosscut saw	998	43	113	556
4	Ripsaw	352	622	132	1326

SCREEN 1: A cross-tab report, like this one taken from a three-field Paradox table, can show you the relationship between the types of products sold and the advertising method used.

the easiest way to get just the information you need.

Cross-tabulation groups the values in a given column—in this case, the Quantity column—into categories determined by two other columns—here, those for the product and the advertising method. Most often, as in your situation, cross-tabulation simply adds all the values in each of these categories, giving you a category-by-category summary of the entire table. However, you can also use *Paradox's* CrossTab command to find the highest or lowest value in each category, or simply to count the number of records that fall into that group.

Used correctly, cross-tabulations use three—and only three—data columns. The *Paradox* cross-tabulator may, depending on column order, give you unwanted results on tables with more than three columns, automatically creating more categories in the breakdown than you'd intended.

To avoid this, use the *Ask* command to create an answer table with only three fields: Product, Quantity, and Advertising method (see the table at the top of **SCREEN 1**). As in the example table, the Advertising method column must be to the right of the Product column—it doesn't have to be immediately to the right, but it must be to the right. If your table isn't structured this way, press **<Ctrl>-R** to rotate the column order until it is.

Once the answer table is on screen, press **<F10>** to activate the main menu, then select *Image Graph CrossTab SUM*. *Paradox* will prompt you to identify in turn the three columns to be used in creating the cross-tabulation table: the column that will become the row labels, the one for column labels, and the one containing the values that will be summed. Select *Product*, *Advertising method*, and *Quantity*, respectively, by moving the cursor to each field and pressing **<Enter>**.

As soon as you press **<Enter>** on Quantity, *Paradox* will generate a cross-tab table much like the one at the bottom of **SCREEN 1**. You'll be able to see at a glance how many orders of each product were generated by each type of advertising.

Numbers, by themselves, are always the best way to examine data. To turn this information into a graph, press **<Ctrl>-<F7>**.

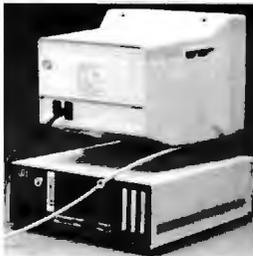
Send your questions to Data Basics, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail 179-3813; 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ●

Steve Cummings is the author of Understanding Quicken (Sybex, Alameda, California, 1990) and a contributing editor for PC World.

COMPUTER SECURITY PRODUCTS

COMPLETE LINE OF PROVEN AND EASY TO INSTALL
COMPUTER SECURITY PRODUCTS FOR COMPUTERS.

PREVENT COMPUTER THEFT!



ACCESS SECURITY



Kablit™ Security System

This system allows you to secure all your computer components: CPU, monitor, keyboard, printer. **Internal component security:** Kablit fasteners secure the rear panel of CPU protecting internal boards and hard drives. Fasteners available for all applications. Prices \$34.95 to \$49.95 depending on system.

Disk Drive Lock™

Prevent anyone from copying your data. Protect your data from harmful viruses. Prevent unauthorized use of your drive. Installs easily and quickly. Models available for 3 1/2" and 5 1/4" drives. List price \$24.95.

Order your free catalog of these and many other security products. Purchase orders accepted. Quantity pricing available. Shipping not included. MC/VISA accepted. Dealer inquiries invited.

Secure-It, Inc.
18 Maple Court
East Longmeadow, MA 01028

1-800-451-7592

Circle 31 on reader service card

PC WORLD

TAKING CARE OF BUSINESS THE PC WORLD SUBSCRIBER HOTLINE

Do you have a subscription problem that needs attention? Are you moving? Have an address change? Do you need to check your expiration date? For the fastest service simply call our toll-free subscriber hotline: 1-800-234-3498 between the hours of 6:00 AM to Midnight (M-F) Mountain Time and 7:00 AM to 5:00 PM Saturday.

Or if you prefer, write us at:

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322

PC WORLD

Introducing the first 486SX laptop computer that comes in 256 colors.



NEC is a world leader in virtually every category of imaging technology: from the brilliant displays on our laptops, to our MultiSync® monitors, color thermal printers, CD-ROM readers and more.

The new ProSpeed® 486SX/C laptop is a breakthrough made possible only by NEC's mastery of active matrix color display technology: the first 486SX laptop computer with a TFT screen capable of displaying 256 colors at 640 x 480 resolution.

The result: some of the most brilliant, photographic-quality images you've ever seen on any computer screen, laptop or otherwise. It also puts on an equally spectacular display of power, thanks to an Intel® 486SX™ microprocessor running at 20MHz, a 120 or 200MB hard drive, and the first 32-bit EISA bus to be found on any laptop. Add to that its full-size keyboard, and a full complement of ports, and you have the perfect solution for any application requiring massive amounts of power—from software demonstrations to sales presentations, complex graphs and diagrams to CAD-CAM, and beyond.

ProSpeed is a registered trademark of NEC Home Electronics, Ltd. and MultiSync is a registered trademark of NEC Technologies, Inc. Intel is a registered trademark and 486SX is a trademark of Intel Corp. © 1991 NEC Technologies, Inc.



Because  is the way you want to go.

NEC

C&C
Computers and Communications

For more information, call 1-800-NEC-INFO.

Circle 182 on reader service card

**1 Out Of 3 CIOs
Lose Their Jobs.***



- Were they unable to communicate their strategies?
- Did they make uninformed technology decisions?
- Were they overwhelmed by the issues?

Makes You Wonder About The Advice They Were Getting.

As a subsidiary of International Data Group, the world's leading supplier of information on information technology, Technology Investment Strategies Corporation is uniquely positioned to provide a comprehensive set of research and consulting services dealing with the most critical information technology issues of the day.

Experienced and well connected within the information systems community, TISC is responsive to the individual needs of the clients we serve. What they expect from us is a perspective they can turn into action, and that is precisely what we deliver.

Take the time to get to know us. We'd like to send you our videotape, *Transitioning to the Open Enterprise*.

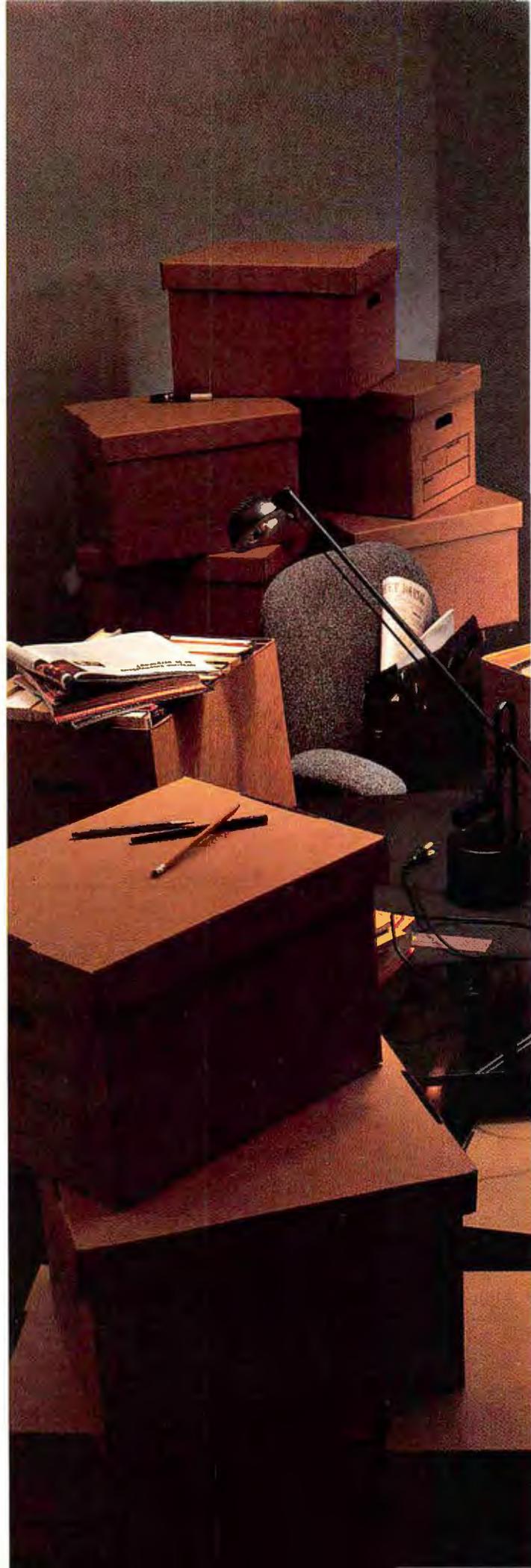
For your free copy, phone 1-800-726-TISC.

*Source: *Computerworld* article, February 1991



**Technology Investment
Strategies Corporation**
AN IDG COMPANY

Circle 276 on reader service card





PUBLISHING & PRESENTATIONS

Expert advice for creating high-impact documents and presentations

Richard Jantz

Good design is just as important in business documents as it is in newsletters and product brochures. Businesspeople typically limit themselves to commonly used formats, especially when documents include income statements, balance sheets, or other financial materials. Yet with just a few basic enhancements, you can improve a financial report's appearance—and, in turn, strengthen your business's image.

This month, we've selected an annual financial report produced by the Gulf Coast Waste Disposal Authority, a Houston, Texas, environmental service

organization. Our challenge was to make this document less intimidating and more readable while maintaining its professional tone. We used *Ventura Publisher* (the same program the Authority used), but you can get the same results with other packages.

Like many financial reports, this 150-page document consists primarily of tabular charts and text; few graphics or photos enliven the gray pages. The margins are too narrow and the justified body copy is too wide for easy reading. The proper line width for text depends upon the type's design and

Before

GULF COAST WASTE DISPOSAL AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

December 31, 1989

The Risk Reserve Fund - Casualty Insurance is being funded to a level of \$200,000 in two annual increments of \$100,000, beginning in 1989. The fund provides first dollar coverage of claims up to the casualty insurance policy's deductible amounts of \$10,000 for general liability, \$1,000 for automobile liability and \$10,000 for public official liability. The annual payments into the fund are allocated to the operating funds on the same basis as the actual liability insurance premiums. There have been minor claims under general liability.

28. Compensated Absences Fund

In order to provide funding for the Authority's liability to its employees for accrued vacation and leave, the Compensated Absences Fund was established during 1987. This internal service fund assumed the total vested liability to all GCWDA employees as of June 30 and recorded a receivable from the individual funds (see note 9). The liability to employees was removed from the enterprise funds and the General Long-Term Debt Account Group.

On each pay period, the vested amount accrued by each employee is paid from the appropriate fund in the Compensated Absences Fund. Except for the Washburn Tunnel Facility, when the employee takes vacation or leave, the total vested portion is drawn from the Compensated Absences Fund. Because Washburn Tunnel is paying the unfunded past service liability as it is paid to the employee, only the funded portion of the vacation or leave paid to the Washburn Tunnel employee is drawn from the Compensated Absences Fund.

29. Restatements

The financial statements of the General Fund, combined special revenue funds, combined enterprise funds and combined internal service funds for the year ended December 31, 1988 have been restated to correct an error for the omission of accrued personnel costs as of the beginning and end of the year. In special revenue funds, which are operated on a cost reimbursement basis, this restatement also corrected an error in the accrual of revenue receivable from participants. The effects of these restatements on the All Funds and Account Groups - Combined Balance Sheet were to increase total assets and other debits by \$156,622, total liabilities by \$306,976 and decrease total fund equity by \$150,354, as shown below.

	Increase (Decrease)		
	Total Assets	Total Liabilities	Fund Equity
All Funds			
General Fund	\$ --	\$ 64,130	\$ (64,130)
Special Revenue Funds			
Washburn Tunnel Facility	56,802	56,802	--
40 Acrc. Facility	22,565	22,565	--
American Facility	33,204	33,204	--
Blackhawk Facility	--	7,916	--
Municipal Operations	--	25,815	(25,815)
Casspell Bayou Solid Waste			
Landfill	8,278	8,278	--
Galveston Solid Waste Transfer Station	--	8,476	(8,476)
Enterprise Funds			
Bayport Area System Revenue Fund	--	43,132	(43,132)
Equipment Services	--	3,386	(3,386)
Paving Services	--	4,047	(4,047)
Vasco Bayou Terminal	--	1,528	(1,528)
Internal Service Funds			
Compensated Absences Fund	27,767	27,767	--
Total	\$ 156,622	\$ 306,976	\$ (150,354)

38

After

A two-column format (each column 19 picas wide with 2 picas between them) replaces the single-column (45-pica) format and adds space for the outside margin (1¼ inches compared with ½ inch). Narrower columns make the 10-point Times Roman body copy easier to read.

To highlight the section heading, we used a different typeface and type size (15-point Helvetica Bold instead of 10-point Times Roman Bold); we also eliminated the unnecessary rule below it.

Boldface type accentuates the table headings. We separated major table headings from section heads by using a different typeface set in caps (Helvetica Bold instead of Times Roman Bold) and by increasing the indents of the section heads and section line items.



point size, but the general rule is, the smaller the type, the shorter the line. A good maximum line width is twice the type's point size measured in picas. For example, 10-point type should be set no wider than 20 picas.

To improve this document, we widened the outside margins, changed from single-column format to two columns, and used more rules and contrasting type within the tabular charts. The two-column format allows for the wider margin and provides a shorter, easier-to-read line. It also permits more layout options for dressing up the mate-

rial. For example, it's easier to fit lists and smaller tables into a narrower column. Finally, we redesigned the table, using different type styles for the major section heads and adding horizontal rules to distinguish each major section.

Redesigning a lengthy financial report takes time, but it probably doesn't require any tools you don't already have. And the results pay off.

Send your publishing and presentations questions as well as business document and presentation make-over candidates to Richard Jantz, MCI

Mail R.JANTZ; 415/442-1891 (fax); or mail them to Publishing & Presentations, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☉

Contributing editor Richard Jantz is the author of *Ventura Publisher 4.0: Beyond the Basics* (John Wiley & Sons, New York, 1991). Larry Westdal, a graphic designer with Westdal Design Associates in Berkeley, California, also contributed to this article.

GULF COAST WASTE DISPOSAL AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

December 31, 1989

The Risk Reserve Fund - Casualty Insurance is being funded to a level of \$200,000 in two annual increments of \$100,000, beginning in 1989. The fund provides first dollar coverage of claims up to the casualty insurance policy's deductible amounts of \$10,000 for general liability, \$1,000 for automobile liability, and \$10,000 for public official liability. The annual payments into the fund are allocated to the operating funds on the same basis as the actual liability insurance premiums. There have been minor claims under general liability.

28. COMPENSATED ABSENCES FUND

In order to provide funding for the Authority's liability to its employees for accrued vacation and leave, the Compensated Absences Fund was established during 1987. This internal service fund assumed the total vested liability for all GCWDA employees as of June 30 and recorded a receivable from the individual funds (see note 9). The liability to employees was removed from the enterprise funds and the General Long-Term Debt Account Group.

On each pay period, the vested amount accrued by each employee is paid from the appropriate fund to the Compensated Absences Fund. Except for the

Washburn Tunnel Facility, when the employee takes vacation or leave, the total vested portion is drawn from the Compensated Absences Fund. Because Washburn Tunnel is paying the unfunded past service liability as it is paid to the employee, only the funded portion of the vacation or leave paid to the Washburn Tunnel employee is drawn from the Compensated Absences Fund.

29. RESTATEMENTS

The financial statements of the General Fund, combined special revenue funds, combined enterprise funds, and combined internal service funds for the year ended December 31, 1988 have been restated to correct an error for the cessation of accrued personnel costs as of the beginning and end of the year. In special revenue funds which are operated on a cost reimbursement basis, this restatement also corrected an error in the accrual of revenue receivable from participants. The effects of these restatements on the All Funds and Account Groups - Combined Balance Sheet were to increase total assets and other debits by \$156,622, total liabilities by \$306,976, and decrease total fund equity by \$150,354, as shown below.

ALL FUNDS	INCREASE (DECREASE)		
	Total Assets	Total Liabilities	Fund Equity
General Fund	\$ —	\$ 64,150	\$ (64,150)
Special Revenue Funds			
Washburn Tunnel Facility	56,802	56,802	—
40 Acres Facility	22,565	22,565	—
American Facility	33,294	33,294	—
Blackhawk Facility	7,916	7,916	—
Municipal Operations	—	25,835	(25,835)
Campbell Bayou Solid Waste Landfill	8,278	8,278	—
Chatham Solid Waste Transfer Station	—	8,476	(8,476)
Enterprise Funds			
Bayport Area System Revenue Fund	—	43,132	(43,132)
Equipment Services	—	3,188	(3,188)
Billing Services	—	4,847	(4,847)
Waco Bayou Terminal	—	1,528	(1,528)
Internal Service Funds			
Compensated Absences Fund	27,767	27,767	—
TOTALS	\$ 156,622	\$ 306,976	\$ (150,354)

In the original document, the company name lacks distinction. To set it off, we stretched its letterspacing so it spanned the page and replaced one double rule with a thicker, 1-pica rule.

To separate the subheads from the text in the new two-column format, we set them in all caps using a different typeface (10-point Helvetica Bold instead of 10-point Times Roman Bold).

To guide the eye in reading the table charts, horizontal rules divide the major sections.



**IF A
NOTEBOOK**

**WAS A
NOTEBOOK**

\$4,199

\$2,995

*Performance Enhancements: Within the first megabyte of memory, 384 KB of memory is reserved for use by the system to enhance performance. Can be optionally disabled. All prices
◇ Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. i386 and the Intel Inside Logo are trademarks of Intel Corporation. Other trade-
and trade names other than its own. Shipping, handling and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee

If the one on the right immediately caught your eye, we don't blame you. After all, who wouldn't jump at a great bargain?

But if it's just the price that surprises you, listen to this: the NX20 from Dell is the *most* notebook you can get anywhere for \$1,899.

Weighing in at just 6.8 pounds, the NX20 is packed with features normally found on more expensive machines. Like a 3.5" floppy drive and a big 8.5" VGA black and white display.



THE NX20 FROM DELL 20 MHz i386SX SYSTEM. SYSTEM INCLUDES 40 MB HARD DRIVE, VGA BLACK AND WHITE DISPLAY, AND 2 MB RAM.

**WAS A
NOTEBOOK,**

**WHICH ONE
WOULD YOU CHOOSE?**

On the road, this little powerhouse packs all the punch that an i386™ SX system running at 20 MHz can deliver. And to complement that power, there's 2 MB of RAM expandable to 6 MB and a choice of 40 or 60 MB hard drives.

So why choose between quality and economy when you can get *both* by choosing the NX20 from Dell? Call us today.

Because decisions this simple don't come by everyday.

TO ORDER, CALL PLEASE REFERENCE #11D59.

800-873-1190

HOURS: 7AM-9PM CT M-F 8AM-4PM CT SAT 10AM-3PM CT SUN

IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

**DELL
COMPUTER
CORPORATION**

and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. **Payment based on 36-month, open-end lease. marks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and limited warranty, please write to Dell USA Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. ©1991 Dell Computer Corporation. All rights reserved.

Circle 75 on reader service card



Watch it! Dollars are disappearing from your company—four cents at a time. The latest postal increase will make your company *measurably poorer*—unless you do something.



Hundreds, even thousands of dollars are disappearing from your company—four cents at a time. The latest postal increase will make your company *measurably poorer*—unless you do something.

Your best move? Get ArcList and from Group 1 Software to take advantage of postal discounts for ZIP+4® and Carrier Route even postal barcoding. You can also rid databases of costly duplicates, perform standardization, send personalized letters, and more. Installation is easy on your IBM-compatible PC (with 640K and hard



AccuMail of postal coding—your address

What's 4¢ to a big company like yours?

disk)—there's even a LAN version available.

If you're feeling pinched by the latest postal increase, call Group 1 Software for the dealer nearest you.



1-800-368-5806

GROUP 1
GROUP 1 SOFTWARE

6404 Ivy Lane, Suite 500, Dept. P-PW12
Greenbelt, Maryland 20770-1400

ZIP+4® CODING • POSTNET® BARCODING • PRESORTING • DUPLICATE ELIMINATION

ZIP+4® and POSTNET® are registered trademarks of the U.S. Postal Service. All others are registered trademarks of Group 1 Software, Inc. ©1990 Group 1 Software, Inc.

Circle 122 on reader service card

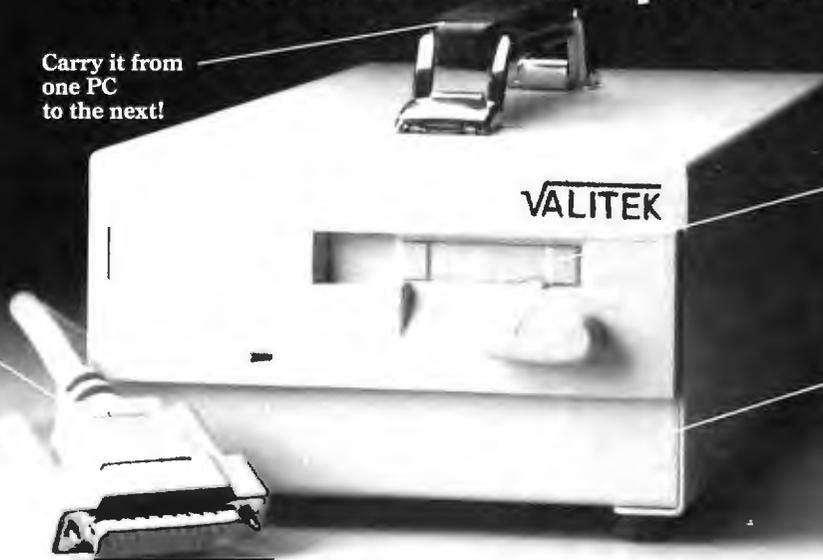
Portable backup for every PC No controller card required!

Carry it from one PC to the next!

Uses 60 or 160 MB data cassettes or 250 MB cartridges.

Connects in seconds to parallel or serial port.

Backs up your hard disk files at up to 4.5 MB/minute.



Oct. 15, 1990
PST-160

One unit supports many PCs or compatibles. No jumpers or switch settings to change, no DMA channels to select, no installation programs to run.

Available in 60, 160, and 250-MB models. Call today, 1 (800) VALITEK (825-4835). Or call (413) 549-2700, or FAX (413) 549-2900.

VALITEK

Circle 307 on reader service card



COMMUNICATIONS Q & A

On-line resources for business and professional users

Judy Heim

Q. *Is there any Windows communications package that automates the downloading of files and messages from CompuServe (CIS)?* —Jeffrey Seligman, Thousand Oaks, California

A. Unfortunately there isn't, but TAPCIS's manufacturer, the Support Group, is readying a Windows version for release soon—and CompuServe plans a spring release of its front end, *CompuServe Information Manager*, for Windows. Meanwhile, you can always run TAPCIS under Windows in a DOS window. Just use the PIF file found in the TAPCIS Support Forum on CIS (enter **GO TAPCIS**). Look in the Scripts & Tools library, and scan for TAPCIS.PIF.

Q. *Is there an on-line source that lists 10-K and 10-Q reports of publicly held companies the day they're filed with the SEC?* —John Seeger, Lafayette, Louisiana

A. Yes, the Federal Filings news wire on Dow Jones News/Retrieval makes SEC filings available on line, including company reports. The data base costs \$2.85 per minute for 2400-baud access

during the day and \$1.80 per minute at night. There is an additional charge of 60 cents and 18 cents respectively for each 1000 characters displayed. A Dow Jones subscription costs \$29.95 plus an \$18 annual fee.

Q. *When I know I'm going to be working at home, I leave the host mode of Procomm Plus loaded and running at work so I can dial in to my office PC and run software remotely. I'd like to use the same technique to debug some data base software my firm has developed for a client. Unfortunately, the data base needs so much RAM that I can't load it while Procomm is running. Are there any "remote control" programs that will let me access more of the remote PC's memory?* —Eric Silver, Missoula, Montana

A. Roger Schlafly of Soquel, California, has devised a way to set up the popular \$39 shareware communications program *Telix* so you can log on to the PC that's running it, "shell out" to DOS, remove *Telix* from memory, then access all the PC's memory—except for whatever DOS is using. As far as I know, *Telix* is the only package that can do this neat trick.

Create a batch file by typing the following into your text editor. Save it in ASCII format as *HOST.BAT*, and copy it into the subdirectory containing *Telix*.

```
:TELIX
C:
CD \TELIX
TELIX O SHOST
IF ERRORLEVEL 120 GOTO DOS
GOTO DOS
:HELL
CTTY COM1
COMMAND
```

**CTTY CON
GOTO TELIX
:DOS**

REM Ending host mode.

Change line 3 of the script (CD \TELIX) to refer to the directory containing your copy of *Telix*. Change line 8 to **CTTY COM2** if you use COM2 instead of COM1.

Now use your editor to load *Telix*'s host script, *HOST.SLT*. Find the line that begins "Type EXIT" (it's around line 555), and just beneath it type the line **EXITTODOS(120,0)**. Save the file. Compile it with *Telix*'s compiler by typing **CS HOST** and pressing <Enter> at the DOS prompt.

To run *Telix* in its new host mode, simply type **HOST** from the DOS command line. Now when you log on from your home PC, you can escape to DOS and access all the remote PC's memory. You won't, however, be able to run programs that write directly to screen, such as *Microsoft Word*. For that you need a special-purpose remote program like *Close-Up*. *Telix* is available from Exis, Inc., P.O. Box 130, West Hill, Ontario M1E 4R4 Canada; 416/289-4641, 416/289-4645 (fax).

Send your communications questions to Judy Heim, CompuServe 71570, 3712; GENIE JUDY.HEIM; MCI Mail 312-7737; Internet 3127737@MCI-MAIL.COM; 415/442-1891 (fax); or mail them to Communications Q&A, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☹

Judy Heim is a contributing editor for PC World.

What a racket!



3,000 bucks for a CAD program?
Are you kidding?

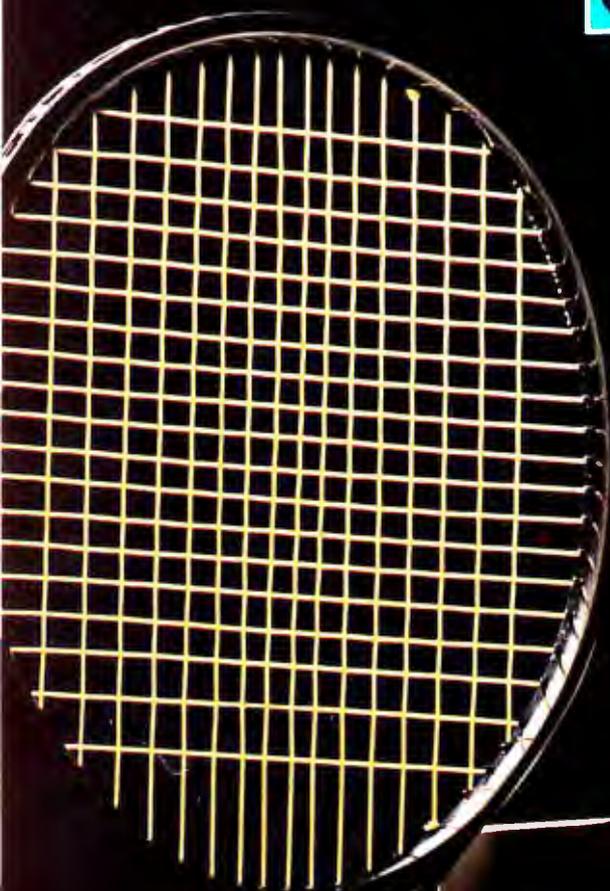
DesignCAD 2D is only \$349, and it has more and better features than the other CAD programs that cost \$3,000!

And, if you're ready for a three dimensional CAD program, there is the state-of-the-art DesignCAD 3D . . . for only \$499!

DesignCAD is the software used in the design of Andre Agassi's tennis rackets, the Patriot missile, and scores of other high tech, low tech, and no tech products.

So what's all the racket about? It's because we believe that it's silly to spend more on a CAD system than you would on a word processor. Agree? Well, the ball's in your court.

*Your product designed with DesignCAD?
Let us know, and maybe we'll put it in one of our ads.*



For a free demo disk
and 16 page color brochure,
contact:



American

Small Business Computers, Inc.
One American Way • Pryor, Oklahoma 74361
(918) 825-4844 • FAX (918) 825-6359

European Headquarters:
102 Rue La Fontaine • 75016 Paris, France
Phone 331 4520 6540 • FAX 331 4520 6539

Circle 306 on reader service card

Also Available for Macintosh

Other offices in:
Amsterdam • Barcelona • Brussels • Bucharest • Istanbul • London
Mexico City • Paris • Prague • Sao Paulo • Tokyo • Warsaw



USER GROUP TIPS

Helpful hints from members of the nation's user groups



COPY Gets ASCII Files Together

Combine groups of ASCII files, such as E-mail notes, into single archive files, and you'll have a less cluttered disk. And one large file takes up less disk space than lots of little ones. To combine files, type **COPY** and a space followed by your list of files, separating each file name with a plus sign (+). Finish the command with a space followed by a name for the archive file. Suppose you have three different memos about December purchases, MEMO.1, MEMO.2, and MEMO.3, and you'd like to save them together as PURCHASE.DEC. Check your directory to make sure you won't overwrite an existing file. Then enter **COPY MEMO.1 + MEMO.2 + MEMO.3 PURCHASE.DEC** at the DOS prompt. Make sure you include an archive name. If you don't, DOS uses the first file name, and if you delete the component files, you

delete your archive file as well. To view your archive, enter **TYPE PURCHASE.DEC | MORE**, and you'll see the text from all three files contained in one file. If you have more than one screen full of text, press <Enter> to scroll. Now you can delete the individual files you combined to create the archive file.

*Cary Jensen and Loy Anderson
Houston Area League (HAL) PC*

Free Batch Screen Blanker

I find it distracting to have the display turn itself off when I'm proofing work or debugging a problem. So I wrote this batch file that lets me choose my time to blank the screen and named it CL.BAT:

```
LS
PAUSE > NUL
EXIT
```

At the DOS prompt, enter **CL** to blank the screen and leave just the blinking cursor. Tap a key to get back to the DOS prompt or return to your application if you've shelled out to DOS. Store this file with your other batch files in a directory listed in the PATH statement in your AUTOEXEC.BAT file.

*Bill Weil
San Francisco PC Users Group*

Print Readable Envelopes With the LaserJet III

When printing envelopes on an HP LaserJet III, you may have to reset the toner density dial to get crisp, dark type. To do so, raise the cover as if you were changing the toner cartridge. The dial is to your left in the top front corner: Note its setting, and then turn it to 1 for maximum density. After printing the envelopes restore the dial to its original setting to avoid wasting toner.

*Christine Rivera
NYPC*

A WordPerfect Macro Alternative

It's tedious to type a phrase repeatedly while preparing a document, but who wants to create a macro that may never be used again? Instead, block the expression along with its trailing space and press <Ctrl>-<Page Up> to bring up the Variable prompt. Enter a number from 0 to 9, and the next time you need to repeat the phrase, hold down <Alt> and press the number you chose. These variables hold up to 128 characters. And when you exit they disappear, so you don't have to worry about a glut of useless macro files on your disk.

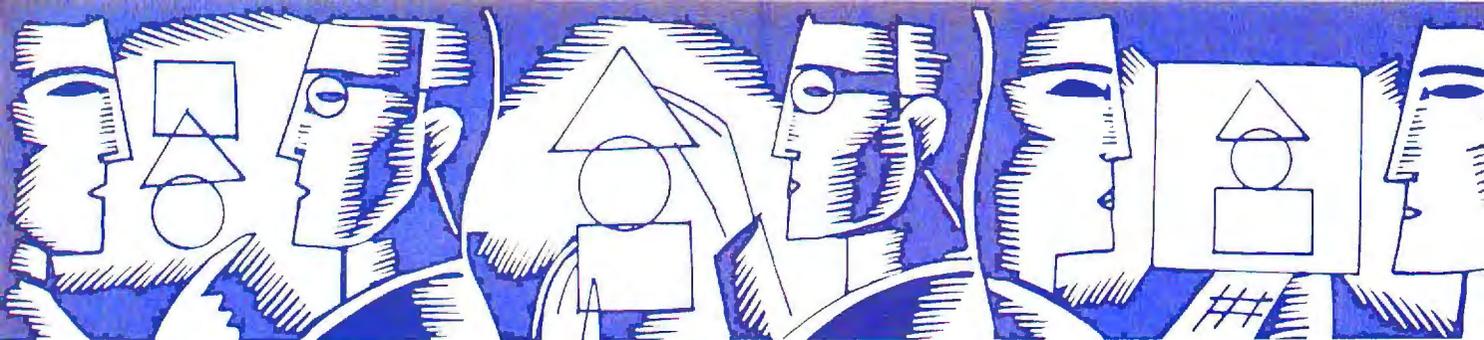
*Thomas M. Taulli
Pasadena IBM Users Group*

The Absolute Range for Great 1-2-3 3.1 Output

When changing the attributes on text you're printing with 1-2-3 3.1, you usually have to highlight the range once before every change. So if you want a header in a 24-point bold, italic, outlined, shaded font in a shadowed box, you have to highlight the same range six times! To avoid this nuisance, press <F4>, and enter the range you want to change. Then you won't have to reselect the range to make multiple changes for the same text. To cancel the range selection, press <Esc> in Ready mode.

*Carroll J. Seitz
NESTU of New Jersey*

User group members—please submit your tips to User Group Tips, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your phone number and the name of your group. We pay \$50 and throw in a PC World T-shirt for each tip we use. ☉



STAR-DOT-STAR *.*

A global exchange of personal
computer discoveries

Edited by Brett Glass

Run Your Printer Backward

As do many printers, my HP DeskJet 500 stacks printed pages right side up. Thus, when it finishes printing a 30-page draft in *WordPerfect 5.1*, for instance, the last page is on top, and the entire stack has to be re-sorted to place the pages in the correct order.

I realized that if I could print the document backward, starting with the last page and ending with the first, the resulting output would be in the right order. I therefore wrote a *WordPerfect* macro, REVPRINT for REVERSE PRINT [see FIGURE 1] to do just that. REVPRINT goes to the bottom of the document, prints that page, and then

```
{DISPLAY OFF}
{Home}{Home}{Down}
{WHILE}{SYSTEM}page<1
{Print}P{Page Up}
{END WHILE}
{Print}P
```

FIGURE 1: This *WordPerfect* macro prints a document's pages backward. They wind up in the correct order in the bin of a printer that stacks its output face up.

alternates between paging up and printing the current page until it reaches page 1. REVPRINT doesn't need to know in advance how many pages the document contains.

REVPRINT uses macro-specific commands, so you can't create it by simply recording keystrokes; you must use the macro editor. To get to this editor, press <Home>, then <Ctrl>-<F10>. At the 'Define macro' prompt, type REVPRINT and press <Enter>; at the 'Description' prompt, type Prints backward and press <Enter> again. You're now ready to create the macro.

The first command, {DISPLAY OFF}, is already there. Press <Right> and <Enter> to get past it. To enter {HOME}, {DOWN}, and {PAGE UP} into the macro, press <Ctrl>-<V> followed by the appropriate command key. To enter the {WHILE}, {END WHILE}, and {SYSTEM} commands, press <Ctrl>-<PageUp>, select the command on the resulting pop-up list, and press <Enter>. Insert {PRINT} by pressing <Shift>-<F7>. Type the remainder of the text as it appears. Press <F7> to exit the macro editor. To run the macro, press <Alt>-<F7>, type REVPRINT, and press <Enter>.

Jerry L. Stern
Baltimore, Maryland

Making the Grade in Your Spreadsheet

I'm a college teacher, and use *Quattro Pro* to do my record keeping. Because I prefer to enter and read grades as letters (for example, B+) but need a numerical equivalent to compute averages, I wanted a formula to convert a letter grade to its corresponding number. The task was complicated by the fact that D and F are consecutive

grades but are separated by a letter alphabetically.

When I build a spreadsheet to hold class records, I put the alphabetic grades from each assignment or exam in one column. In another column, I type the formula $(69 - @CODE(address) + @ABS(69 - @CODE(address)))/2 + @IF(@MID(address,1,1) = "+", .3, (@IF(@MID(address,1,1) = "-", -.3, 0))$, where *address* is the cell address containing the letter grade. The result of this formula is the grade converted to a number. I then average the converted grades and show grade point averages next to the block of letter grades.

Lewis D. Blake III
Durham, North Carolina

Editor's note: Mr. Blake happens to be a Quattro user, but you don't need Quattro to use this technique. Reflex, 1-2-3, and many other programs have identical @ABS, @CODE, and @MID functions and can use this formula with few or no changes.

But be warned: The macro is case sensitive—the letter grades must be entered as capital letters. Also, this formula will give you an absurd result for characters outside the A-to-F range and will return an error if the cell to be converted is empty.

BASIC Key Code Decoder

Programs often need to know what key the user just pressed. If the key in question happens to be a letter, number, or punctuation symbol, your BASIC programs should have no trouble recognizing it from its ASCII code. But function and cursor-control keys don't have ASCII codes; your program must recognize them by their scan codes.

To find out quickly how to recognize

```
10 SCREEN 0: CLS : COLOR 15, 0: X = 22: LOCATE , , 0: KEY OFF
```

```
20 LOCATE 1, 1: PRINT "
30 LOCATE 2, 1: PRINT "
40 LOCATE 3, 1: PRINT "
50 FOR Y = 4 TO 22
60 LOCATE Y, 1: PRINT "
70 NEXT Y
80 LOCATE 23, 1: PRINT "
90 AS = INKEY$: IF AS = "" THEN GOTO 90
100 LOCATE X, 9: PRINT "
110 IF X = 22 THEN X = 4 ELSE X = X + 1
120 LOCATE X, 4: PRINT "
130 LOCATE X, 20: PRINT "
140 IF LEN(AS)>1 THEN GOTO 170
150 REM Print ASCII CODE if available
160 LOCATE X, 20: PRINT STR$(ASC(AS)): GOTO 190
170 REM Print scan code if available
180 LOCATE X, 4: PRINT STR$(ASC(RIGHT$(AS, 1)))
190 LOCATE X, 9: PRINT "<----->"
200 GOTO 90
```

LISTING 1: Run this program in QuickBASIC or QBASIC to get the scan codes or ASCII codes for the keys on your keyboard—important information when writing other programs.

any key, I wrote KEY.BAS [see LISTING 1]. To use it, run KEY.BAS from QuickBASIC or the DOS 5.0 QBASIC, and press the key you want to detect. If the key can be detected only by its scan code, that's what you'll see on the left, otherwise, you will see its ASCII code on the right.

Yaniv Kunda
Ramat-Hasharon, Israel

Editor's note: I've enhanced Mr. Kunda's program to add an arrow next to the code for the most recent key typed and to make the screen display easier to understand. To exit the program at any time, press <Ctrl>-<Break>.

This tip works because of the QuickBASIC INKEY\$ function's idiosyncrasies. INKEY\$ returns an empty string if no key has been pressed, a string with a single character if an ordinary key was pressed, or a string with two characters if a special key (such as a function key) was pressed. If an ordinary key was pressed, the string contains its ASCII code. In the case of a special key, the first character

of the string is always a NUL (ASCII code 0), and the second contains the scan code of the key.

One way to interpret the results of the INKEY\$ function in your own program is shown in LISTING 2. It uses an ON...GOTO statement to look repeatedly for keyboard input and determine what kind of key, if any, was pressed.

When the user presses a character key, the program jumps to the ORDINARY label; when the user presses a function or cursor-control key, the program goes to SPECIAL. The code in LISTING 2 shows what might follow an ORDINARY label where the user is allowed to press A, B, or C to choose a menu item, as well as a SPECIAL label where he or she can press <F1> through <F10>.

"Weally in Windows" Correction

In the December *Star-Dot-Star*, Listing 4 was incorrectly printed. The listing was for a debug script which, when run, creates a program that checks whether or not you are running in Windows. The correct script is here in LISTING 3.



Accounts Receivable

Meet Clyde the Collector. Persistent. Arrogant. Unlikably Friendly. Trained in old fashioned 'cash management techniques.'

Now meet BusinessVision II® The small business accounting system designed to do things your way. Reliably. Effectively. Powerfully. Real-time automatic posting and updating. Up-to-the-minute sales analysis and financial reporting. Fully-integrated accounting functions presented in a graphically dynamic way. Timely and accurate cash flow without losing friends. And at \$225*, without investing a fortune.

For a Free Demo Disk call 1-800-433-3384 Ext. 12 (Mon. - Fri. 9am-5pm PST). Or look for our distinctive triangular package at selected computer dealers. Tell 'em Clyde sent you.

BusinessVision II®

Bringing Small Business
the Power and Strength
of the Triangle™



BusinessVision II is loaded with uncomplicated yet powerful features: Accounts Receivable, Accounts Payable, General Ledger, Inventory Control, Order Entry & Billing, Point-of-Sale/Billing/Cash Drawer Control, Sales Analysis, Payroll, Export, Automatic Posting, Financial Reporting, Mailing Lists/Labels, Interactive Tutorial/User Handbook. Adapts to your format and business technology. *\$225 suggested retail - dealer price may vary. Requires IBM PC/100% compatible, 420K RAM with MS DOS Version 3.1 or higher. In Canada call (416) 629-3233. ©1992 BusinessVision Management Systems Inc. All Rights Reserved.

Circle 25 on reader service card

```

POLL:
AS = INKEYS
ON (LEN(AS) + 1) GOTO POLL, ORDINARY, SPECIAL
ORDINARY:
REM Convert key to a number: 1 for A, 2 for B, and 3 for C.
ORDKEY% = (ASC(UCASE$(AS)) - ASC("A") + 1)
REM If key is not A, B, or C, go back to POLL for the next key.
IF ORDKEY% < 1 OR ORDKEY% > 3 THEN GOTO POLL
REM Go to the routine for the pressed key.
ON ORDKEY% GOTO AKEY, BKEY, CKEY
SPECIAL:
REM Get scan code out of AS. Deduct 58 to get 1 for F1, 2 for F2, etc.
FKEY% = ASC(RIGHT$(AS,1)) - 58
REM If key is not F1 through F10, go back to POLL for the next key.
IF FKEY% < 1 OR FKEY% > 10 THEN GOTO POLL
REM Go to the routine for the pressed key.
ON FKEY% GOTO F1, F2, F3, F4, F5, F6, F7, F8, F9, F10
AKEY:
PRINT "Key A was pressed.": GOTO POLL
:
CKEY:
PRINT "Key C was pressed.": GOTO POLL
F1:
PRINT "Key F1 was pressed.": GOTO POLL
:
F10:
PRINT "Key F10 was pressed.": GOTO POLL
    
```

LISTING 2: These sample BASIC routines demonstrate how your program can read "ordinary" and "special" keystrokes. Use modified versions in your own programs.

Have you come up with a macro, batch file, short program, utility, or general tip that you're proud of? Star-Dot-Star pays \$25 to \$200 for each tip used. Send your tips to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107;

CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Sorry, we cannot acknowledge submitted materials. ☹

Brett Glass is a contributing editor for PC World.

N InWinEQ1.com

```

E100 A1 2C 00 8E C0 BF 00 00 26 8A 05 3C 00 74 25 BE
E110 3D 01 8A 1C 80 FB 00 74 16 26 8A 05 3A C3 75 04
E120 47 46 EB EE 47 26 8A 05 0A C0 75 F8 47 EB D9 C6
E130 06 3C 01 01 B4 4C A0 3C 01 CD 21 00 00 77 69 6E
E140 64 69 72 3D 00
RCX
45
W
Q
    
```

LISTING 3: Run this script through DEBUG to get InWinEQ1, a Windows-testing program.

PC WORLD GIVES YOU A WINNING HAND!



Tired of flipping through user manuals?

Can't *find* the user manual?

Need lightning-quick access to key commands and features?

Need a software reference you can take anywhere?

PC WORLD'S NEW INSTANT REFERENCE CARD IS YOUR BEST BET.

This monthly pullout card gives you a full house of tips on using essential applications. One side provides basic commands that get you started; side two raises the stakes, with advanced pointers to help experienced users squeeze every bit of productivity out of their software and hardware investment.

LOOK FOR THESE INSTANT REFERENCE CARDS:

- WordPerfect
- Microsoft Word
- Windows 3.0
- Procomm Plus
- Ventura Publisher
- Paradox
- Excel
- PageMaker
- 1-2-3
- DOS
- CompuServe
- ...and more!

Look for PC Books nationwide at:
B. DALTON
BARNES & NOBLE BOOKSTORE/BOOKSTAR
CROWN SOFTWARE ETC.
WALDENSWARE WALDENBOOKS

ALASKA
 BOOK CACHE
 All locations, including Anchorage
 BAKER AND BAKER BOOKSELLERS
 Fairbanks
 BIG CITY BOOKS
 JUNEAU

NO. CALIFORNIA
 CAPITOLA BOOK CITY
 Capitola

COMPUTER LITERACY
 Cupertino
 San Jose
 Sunnyvale
 GAYLE'S BOOKS
 Davis

YALE CO-OP
 New Haven
 BOOKS UNLIMITED
 Rocky Hill
 U CONN. CO-OP
 Storrs

MARYLAND
 SIDNEY KRAMER BOOKS
 Rockville
 MARYLAND BOOK EXCHANGE
 College Park

NEW JERSEY
 McGraw Hill
 Hightstown
 VILLAGE COMP. & SOFTWARE
 Cedar Knolls
 SMITH COMPUTER CENTER
 Kendallworth

OHIO STATE UNIVERSITY
 Columbus
 Books & Co
 Dayton
 WILKIE'S SOUTH
 Dayton

TEXAS
 PRINT BOOKSTORE/INFOMART
 Dallas
 SAM HOUSTON BOOK SHOP
 Houston

BRITISH COLUMBIA
 UNIBALL COMPUTER BOOKS
 Vancouver
 GRANVILLE BOOK CO.
 Vancouver
 SILICON CONNECTIONS BOOKS
 Vancouver
 BOLEN BOOKS
 Victoria

NOVA SCOTIA
 THE BOOK CO. ENTERTAINMENT
 Halifax

ONTARIO
 COLES BOOK STORES
 (all locations)
 LICHTMAN'S STORES
 Toronto (5 locations)
 Thornhill
 THE BOOK COMPANY
 Ottawa
 ODYSSEY COMP. & BUSINESS
 Ottawa
 ALBERT BRITNELL
 Toronto
 BOOKS FOR BUSINESS
 Toronto
 WORLD'S BIGGEST BOOKSTORE
 Toronto

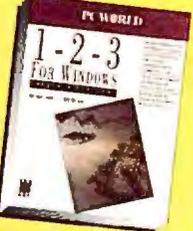
Windows 3 Secrets



National Bestseller!

InfoWorld Windows columnist reveals undocumented features & workarounds, configuration tips, & 36 top Windows programs.
 \$39.95 US/\$52.95 Canada, 831 Pages, Two 5 1/4" disks

PC World 1-2-3 for Windows Complete Handbook



Definitive reference by two 1-2-3 experts. FREE Quick Reference booklet included.
 \$29.95 US/\$36.95 Canada, 704 Pgs

PC World Paradox Power Programming Techniques



National Bestseller!

Critically acclaimed—your only Paradox bible to PAL & advanced techniques. With disk of programs.
 \$39.95 US/\$52.95 Canada, 784 Pages, 3 1/2" disk

READ ME

World WordPerfect for Windows



Definitive guide to the newest WordPerfect. FREE Quick Reference booklet included.
 \$29.95 US/\$36.95 Canada, 704 Pages

UCD BOOKSTORE
 Davis
STANFORD BOOKSTORE
 Palo Alto
 Stanford
AARDVARK BOOKS
 San Francisco
FOLEY'S BOOKS
 San Francisco
FRANCISCAN SHOPS
 San Francisco
COPPERFIELD'S BOOKS
 Santa Rosa
SO. CALIFORNIA BOOKSTORE
 Claremont
UCLA BOOKSTORE

GEORGIA
 OXFORD BOOKSTORE
 Atlanta
 DOUGLASSVILLE BOOKS
 Douglasville
 MICRO CENTER
 Marietta

HAWAII
 HONOLULU BOOK SHOPS
 Honolulu

ILLINOIS
 PAGES FOR ALL AGES
 Champaign
 57TH STREET BOOKS
 Chicago
 KRUCI'S & BENTANO'S
 Chicago
 READMORE BOOKWORLD
 Rock Island
 BOOKWORLD III
 Rockford
 BOOK CENTER/
 ILLIN UNIV
 Urbana
 LORA & WALLY GRIGG
 Woodstock
 BOOKS ON THE SQUARE
 Woodstock

IOWA
 UNIVERSITY OF IOWA
 Iowa City

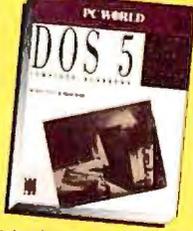
INDIANA
 HAZELDEN BOOKS
 Indianapolis
 BOOK CORNER
 Bloomington
 BOOK WORLD
 Mishawaka
 BALL STATE UNIVERSITY
 Muncie

KANSAS
 CROSSROADS
 Hutchinson
 UNIVERSITY BOOK STORE
 Manhattan

CONNECTICUT
 HUNTINGTON'S BOOKSTORE
 Hartford
 R.J. JULIA BOOKSELLERS
 Madison

MAINE
 HARBOUR BOOKS
 Yarmouth

PC World DOS 5 Complete Handbook



Master the new DOS quickly and easily. FREE with purchase: Norton Commander Special Edition disk!
 \$29.95 US/\$39.95 Canada, 696 Pages, 5 1/4" disk

NEW YORK
 BARNARD BOOK FORUM
 New York City
 CLASSIC BOOKSHOP
 NYC (all locations)
 COLISEUM BOOKS
 New York City
 MCGRAW-HILL BOOKSTORE
 New York City
 Papyrus BOOKSELLERS
 New York City
 TOWER BOOKS
 NYC (all locations)
 J & R COMPUTER WORLD
 New York City
 47TH STREET COMPUTER
 New York City
 COMPUTER CITY
 New York City
 Forest Hills
 BOOK REVUE
 Huntington

MINNESOTA
 BAYTER BOOKS
 Minneapolis
 MAYHEW K. BOOKSTORE
 Mankato
 ODELRAND BOOKS SAINT PAUL
 St. Paul

NEBRASKA
 NEBRASKA BOOKSTORE
 Lincoln
 UNIVERSITY BOOKSTORE
 Lincoln

NEW HAMPSHIRE
 DARTMOUTH BOOKSTORE
 Hanover

DOS For Dummies



The no-nonsense introduction & problem solving guide; covers through DOS 5.
 \$16.95 US/\$21.95 Canada, 224 Pgs

NEW YORK
 BARNARD BOOK FORUM
 New York City
 CLASSIC BOOKSHOP
 NYC (all locations)
 COLISEUM BOOKS
 New York City
 MCGRAW-HILL BOOKSTORE
 New York City
 Papyrus BOOKSELLERS
 New York City
 TOWER BOOKS
 NYC (all locations)
 J & R COMPUTER WORLD
 New York City
 47TH STREET COMPUTER
 New York City
 COMPUTER CITY
 New York City
 Forest Hills
 BOOK REVUE
 Huntington

OREGON
 OREGON STATE UNIV
 Corvallis
 BOOK MARI
 Eugene
 POWELL'S BOOKSTORE
 Beaverton
 POWELL'S TECHNICAL BOOKS
 Portland
 REED COLLEGE
 Portland

PENNSYLVANIA
 THE BOOK STORE
 Philadelphia
 THE BOOK CENTER
 Pittsburgh
 BUSINESS & COMPUTERS
 Willow Grove

NORTH CAROLINA
 ATTICUS BOOKS
 Greensboro
 NEWS 'N NOVELS
 Greensboro

OHIO
 WILKIE UNIVERSITY SHOPS
 Fairborn
 Wm & WESLEY
 Beachwood
 ROCKY RIVER

UNIVERSITY CO-OP
 Austin
 BOOKSTOP
 All locations, including Austin
 TAYLORS TECHNICAL BOOKS
 Dallas (all locations)
 Ft. Worth
 Plano
 J.A. MARSH TECH BOOKS
 Houston

UTAH
 BYU BOOKSTORE
 Provo

WASHINGTON
 TOWER BOOKS
 Bellevue
 Seattle
 UNIVERSITY BOOKSTORE
 Bellevue
 ELLIOTT BAY BOOK
 Seattle
 UNIVERSITY BOOK STORE
 Seattle

WISCONSIN
 CONLEY'S BOOK STORE
 Appleton
 HARRY W. SCHWARTZ
 Milwaukee

CANADA
ALBERTA
 THE BOOK COMPANY
 Calgary
 CALGARY COMPUTER BOOKS
 Calgary
 AUDREY'S BOOKS
 Edmonton
 GREENWOOD'S BOOKSHOPS
 Edmonton
 SOFTWARE HOUSE (WEST)
 Edmonton

UNIVERSITY OF TORONTO
 Toronto
 UNIVERSITY OF WATERLOO
 Waterloo
QUEBEC
 CAMELOT-INFO COMPUTER
 Montreal
 ROSSELL COMPUTER BOOKS
 Montreal
SASKATCHEWAN
 BOOK & BRIER PATCH
 Regina

Official XTree MS-DOS & Hard Disk Companion



National Bestseller!

Only official guide to all versions of XTree hard disk software! National bestseller.
 \$15.95 US/\$21.95 Canada, 292 Pgs



IDG BOOKS WORLDWIDE
 155 BOVET ROAD, SUITE 610
 SAN MATEO, CA 94402
 (415) 358-1261

Buy Me At These Locations Or Call 1-800-762-2974

Ask for IDG Books, BK=PCT2. Phone orders 9-5 PST. You can also call IDG Books at (415) 358-1261 (9-5 PST) to order direct. Circle 121 on reader service card

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

■ Accessory Boards _____	283
■ Bios Chip _____	283
■ CD ROM _____	283
■ Communications/Modems _____	283
■ Computer/Systems _____	283-284
■ Disk Drives _____	284
■ Equipment Leasing _____	284
■ Peripherals _____	284-285

MISCELLANEOUS

■ Accessories _____	285
■ Bar Coding _____	285-286
■ Business Opportunities _____	287
■ Catalogs _____	287
■ Computer Insurance _____	287
■ Data/Disk Conversion _____	287
■ Data Recovery _____	287
■ Disk Copy Service _____	287
■ Disk Duplication Software _____	288
■ Disks _____	288
■ Re-inker Systems _____	288
■ Slides _____	288
■ Supplies _____	288

SOFTWARE

■ Accounting _____	289
■ Business Applications _____	289
■ Church Applications _____	289
■ Construction _____	289
■ Data Entry _____	290
■ Development Tools _____	290
■ Educational _____	290
■ Employment _____	290
■ Entertainment/Games _____	290-291
■ Financial _____	291
■ Flow Charting _____	291
■ Genealogy _____	291
■ Graphics _____	291-292
■ Health _____	292
■ Inventory Control/Management _____	292

■ Languages _____	292
■ Mailing Programs _____	292
■ Maintenance Management _____	293
■ Manufacturing _____	293
■ Medical _____	293
■ Music _____	293
■ Networking _____	293
■ Public Domain/Shareware _____	293-294
■ Real Estate _____	294
■ Security _____	294
■ Sports _____	294
■ Statistics _____	294
■ Surveys _____	295
■ Taxes _____	295
■ Time Management _____	295
■ Training _____	295
■ Utilities _____	295

ADVERTISING SALES STAFF

Sandra Wade - *Catalog Manager*
 Duane Hampson - *Eastern Account Manager*
 Elizabeth Maffly - *Catalog Coordinating Manager*

ADVERTISING RATES & INFORMATION

The *PC World Catalog* serves as a cost-effective monthly meeting place for advertisers and volume purchasers. Our readers don't want to shop, they want to buy! And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of \$645 per issue for a total of \$1,935. You supply copy. We set type.

For further information regarding the *Catalog*, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World
 501 Second Street
 San Francisco, CA 94107

 PCW Communications, Inc.
 An IDG Communications Publication

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

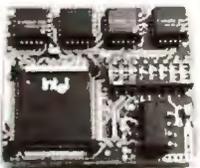
HARDWARE/ Accessory Boards

386 POWER! **286 to 386 UPGRADE!** **\$199.00**

Affordable! Slotless! The Evergreen 386 SuperChip II is a 286 replacement chip that converts your 286 IBM, Compaq, or AT compatible to a 386SX. Run all your present software and hardware plus Windows 3.0 in the enhanced 386 mode and you can utilize DOS 5.0's Loadhigh and Devicehigh programs or other memory management software. Speed up your processor (increase on an AST Premium 286 using Norton SI version 4.5 goes from 11.2 to 15.6!). Math accelerator board available for your 287 Math Coprocessor.

Evergreen Technologies

1325 N.W. Ninth Street
Corvallis, OR 97330-4555
(503) 757-0934
FAX: (503) 757-7350



1-800-733-0934

CIRCLE 599 ON READER SERVICE CARD

CD ROM NEWS

LASERdirect CD ROM NEWS

PRICE BREAKTHROUGH!

CD ROM Drive (complete kit)... \$349

Bundled with Educational Superpack:

- Illustrated Encyclopedia
 - Toolworks Reference Library
 - National Geographic's Mammals
 - Languages of the World
 - U.S. History • Atlas Pack
- \$549**

SUPER SPECIALS!

Purchase a drive alone or with the Educational Superpack and get the Library of the Future for **\$199**

Front Page News	\$ 99
Magazine Rack	\$ 79
Aircraft Encyclopedia	\$ 49
Sporting News - Baseball Guide	\$ 49
U.S. Presidents	\$ 49
Coates Art Review: Impressionism	\$ 69
Bible Disc	\$ 99
New England Journal of Medicine	\$ 299
The Family Doctor	\$ 99
Voyage to Planets (3)	Call
Library of the Future	\$ 399
CIA Fact Book	\$ 59
Public Art (clip art)	\$ 59
Zip + 4	Call
Speed Dial	\$ 349
Shakespeare	\$ 29
Sherlock Holmes	\$ 29
Birds	\$ 29
Guinness Book of Records	\$ 89
Game Pack	\$ 69
Shareware	\$ 49
Time Compact Almanac	\$ 89

ORDERS AND FREE CATALOGS DIAL
1-800-835-2737

8 Backman Road, Massena Park, NY 12959

CIRCLE 567 ON READER SERVICE CARD

Computer Systems

COMPUTERS

BEST PRICE BEST SERVICE BEST QUALITY

386SX16 286-12
40MB VGA color 40MB VGA color
\$1275 **\$995**

NAME BRANDS FOR LESS (all in parts for less)

ALR	EVEREX	MAXTOR	SEAGATE
APPLE	IBM	MICROSOFT	SONY
AST	INTEL	MITSUBISHI	TOSHIBA
CONNER	IRWIN	NEC	WANGTEK
CYRIX	LOTUS	OKIDATA	ZENITH

MICRO BASE
800-345-4479

3002 Scott Blvd Suite 201 Santa Clara CA 95054

CIRCLE 423 ON READER SERVICE CARD

386/486 at WHOLESALE!

- 386-25 **SALE**\$1120
 - 386-33 64k-cache\$1240
 - 486-33 64k-cache\$1670
 - 486-33 256k-cache\$1740
- All systems incl: 1m RAM, 42m HD, .28dp SVGA color mon w/1m card, 1.2 & 1.44m FD, 2slp, 101KB, 1 yr warranty. *Best QUALITY & SERVICE* 4 m RAM Add \$138 ** 85m HD Add \$112
- STARLIGHT COMPUTERS CO.**
2828 W. Parker Rd. #202C
Plano TX 75075
1-800-878-8198, 214-596-4785
Fax 214-596-4887



REMOTE ACCESS

Office & Home Computers
Network/Servers - Remote Booting

- Call-in & activate computer On or Off with touch tone code.
- 1-10 Selectable Rings with answer machine compatibility.
- Increase security, Save energy, Extend hardware/disk life.
- Compatible with communications & remote control software.
- Additional Multi-line Remote Control options available.
- U.L. listed / FCC Registered / Fully Guaranteed

1-800-266-1733 EXT. 140
24 Hour Ordering

Vant Systems, Inc. 5210 Lewis Rd., Bldg. 8 Agoura Hills, CA 91301

Tel: (818) 706-1733 Fax: (818) 879-2643

CIRCLE 435 ON READER SERVICE CARD

Bios Chip

ROM BIOS Upgrades

AMI & PHOENIX & MR. BIOS.
Upgrade your IBM PC, XT, AT, or compatible, 386sx & 386 also. Supports 2 user defined hard drives, expanded hard drive tables 101/102 KB, 360,720, 1.2 & 1.44 floppies, Complete set-up in ROM, All Video, Windows 3.0.
*ROM diagnostics: AMI 286&386.
Reasonable prices & full 30 day money-back Guarantee! Don't Settle For Less-Call us.
ADVANCED SOFTWARE
4 1/2 Marlboro Road Suite 2R
Derry, NH 03038
800-835-2467 603-432-1532

Communications/ Modems

Bios Chip

AN AWARD BIOS CAN RECYCLE YOUR COMPUTER!
Add These Features:
Windows 3.0 Support
3.5" 1.44Mb Floppies
User-Definable IDE HDs
Call for FREE Catalog
KOMPUTERWERK
Authorized Distributor
Orders 800 423-3400
Technical (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

CD Rom

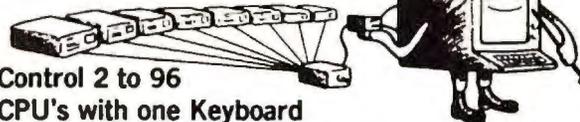
Visual Fantasies on CD!

Huge collection of the Hottest Adult Files Anywhere! Now on CD-ROM!!!
Enjoy the Best & Own the Most.

- Over 450 Megs of VGA/SVGA pics in 2,500+ GIF Files.
- Organized for easy selection & viewing!!!
- Photo-quality scenes for every fantasy.

Special intro price only \$99.95! Call (213) 943-9878, 24 hrs/7 days. MC/ VISA/AMEX. Ck/MO. \$3 s/h. Must state 21 or over.
PC CompoNet, Inc.
2060 Emery Ave., Suite 216
La Habra, CA 90631
213 943-9878

COMMANDER by cybex



Control 2 to 96 CPU's with one Keyboard and Monitor up to 250 ft. away.

- IBM PC, XT, AT, PS/2 and 100% COMPATIBLES
 - Available for MDA, CGA, EGA (TTL) and VGA (Analog) Monitors
 - Unattended Booting
- CYBEX CORPORATION**
2800 H. Bob Wallace Avenue
Huntsville, AL 35805
(205) 534-0011

CIRCLE 469 ON READER SERVICE CARD

Last year PC WORLD Catalog ads generated over 329,000 inquiries. And 27% of our readers have bought or plan to buy a product in the catalog. That's millions of dollars in buying.
Are you getting your share?

CATALOG G

Shop *The PC World Catalog* for fast solutions to your PC needs.

Computer Systems

We Custom Build PC's

- * 386SX-20Mz MB W/CPU \$190
- * 386-33Mz W/CPU \$399
- * 286-16Mz W/CPU \$82
- * Tower case w/200W PS \$75
- * Color SVGA monitor w/card \$309
- * 40 meg HD (28ms) \$169
- * 1 meg Simm (80ns) \$42
- * 2400 baud/9600send/receive Faxmodem \$90

Guaranteed pre-tested parts. Call for low prices. Do-it-yourself tutorial available.

Owl Systems Co.
7650 US HWY 287
Arlington, TX 76017
1(800) 256-8488

Equipment Leasing

100% Computer Equipment Financing

Strike your best deal with the vendor of your choice

EXAMPLE: 36 months \$5,500 price
\$197/mo true lease

Call Mt. View Leasing for your best leasing options

800-676-2521

CIRCLE 401 ON READER SERVICE CARD

Peripherals

Never buy another ribbon!



Over 150,000 sold!

MacInker™, the Automatic Ribbon Re-inker, re-inks any PC printer ribbon or typewriter (black & color) for 5 cents. Lubricating ink cools printhead, extends its life and yields better-than-new printout. Avg. re-inkings per cartridge: 60-100.

Universal MacInker (spec cartridge or spool) \$79.45. Epson or Imagewr. \$48.00. Adapters available for any multicolor cartridge, \$40.00. We have a complete range of black, color, heat transfer, special ink cartridges. Satisfaction or 30 day refund. Free key-beeper-flashlight for orders >\$100.00. Order toll free or call to get full information.

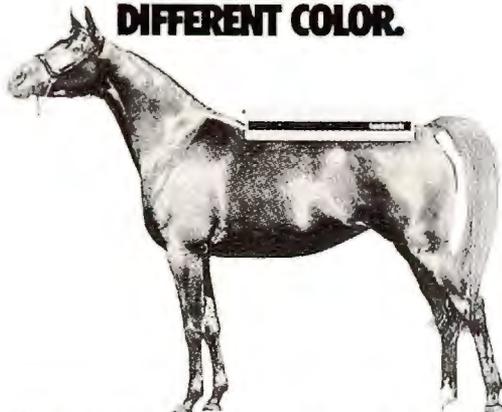
(800)547-3303 Computer Friends
14250 Science Pk Dr
Portland OR 97229
tel (503)626 2291
fax (503)643 5379

Major credit cards accepted. POs from National Accounts accepted. Shipping \$5.00. cod add \$3.30.

CIRCLE 483 ON READER SERVICE CARD

Disk Drives

BACKPACK. IT'S A DRIVE OF A DIFFERENT COLOR.



Add a diskette drive without horsing around inside your computer — just plug Backpack into your parallel port! Connect your printer to the Backpack drive. No tools. No hassles. No interface cards. Backpack works with IBM and compatibles including PCs, XTs, ATs, PS/2s, PS/1s, and laptops. It's available in 5.25"



and 3.5" and comes complete with everything you need. So don't horse around inside your computer, add an external drive the easy way—plug in a Backpack! Hard Disk models and tape backup available soon.

MicroSolutions
Computer Products

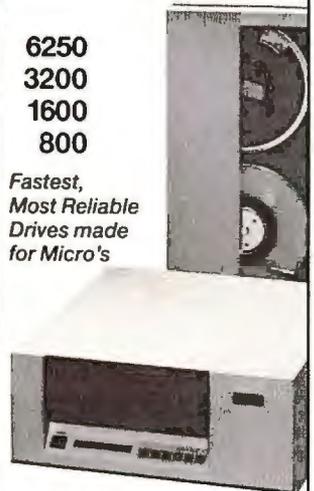
132 W. Lincoln Hwy., DeKalb, IL 60115
815-756-3411 Fax: 756-2928

CIRCLE 536 ON READER SERVICE CARD

MAINFRAME 9-TRACK for MICRO's

6250
3200
1600
800

Fastest,
Most Reliable
Drives made
for Micro's



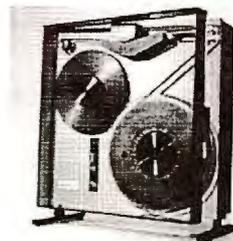
800/842-0708

**TDX
PERIPHERALS
TDX**

HAUPPAUGE, NY • 516/273-5900

CIRCLE 497 ON READER SERVICE CARD

New 9 Track Tape Software Here Now. Free Demo Disk



TapeWare is a new, exceptionally friendly user interface for most popular 9 track tape controllers. No more typing filenames, botched backups or one-at-a-time file transfers. Call for FREE Demo Disk. See for yourself. We also supply 9 track hardware and software up to 6250 BPI which includes TapeWare. Compare before you buy.

AKSystems Inc.

818/709-8100 (v) 818/407-5889 (fax)

CIRCLE 584 ON READER SERVICE CARD

9-Track Tape Subsystem



Now you can exchange data files between your IBM PC/XT/AT and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10½" streaming tape drive, tape coupler card, cables and software.

QUALSTAR

9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Peripherals



Ask About
3480 Solutions

9-Track Solutions for Today's PC Desktop

Come to Overland Data for modern PC 9-track solutions:

- Space-saving, low weight 1600 bpi subsystems with durability backed by a two year warranty.
- High capacity 6250 bpi subsystems with speed to match
- The latest software for data interchange and backup, with a friendly, intuitive interface
- OSSP, the most comprehensive customer support program in 9-track. It's the best insurance for your investment.

We bring you state-of-the-art 9-track solutions for today's PC desktop. Because for the modern PC user, nothing less will do.

OVERLAND DATA **1-800-PC9-TRAK**
San Diego, CA U.S. & CANADA

1-800-729-8725 • Bus. Phone: 1-619-571-5555 • FAX: 1-619-571-0982

CIRCLE 531 ON READER SERVICE CARD

PC WORLD subscribers are some of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.

Now that's a lot of purchase power. Call the **PC WORLD CATALOG** today!
800/435-7766 or 800/435-7760 (CA)

MISCELLANEOUS/ Accessories

FREE GLOBAL CATALOG

164 page guide to computer furniture, supplies and accessories

Dial Toll-Free
1-800-8-GLOBAL

GLOBAL
COMPUTER SUPPLIES

11 Harbor Park Dr., Dept 91 PCW
Port Washington, NY 11050

CIRCLE 508 ON READER SERVICE CARD

Mouse Pads

Custom Printing Available.

Cloth: 13 Colors

Size: 8 x 7 1/4 8 x 9 1/2 8 1/2 x 11

12 Pads 3.25 3.50 3.75

72 3.00 3.25 3.50

144 2.85 3.00 3.25

PLASTIC: Blue, Platinum, Gray, Red

& Black. Size: 8 1/2 x 11.

12 Pads 6.50 36 6.00

72 5.75 144 5.25

ASK US ABOUT OUR WRIST RESCUE!

Precision Line Inc.

14505 21st Ave. No. Ste. 206

Plymouth, MN 55447

612-475-3550, 1-800-328-0077

Anti-LOCK-UP Product!

The answer for any unattended PC in use 24 hours a day. SYSOP's - VOICE MAIL, etc. Checks CPU every 30 seconds and reboots upon no signal. Includes board, software & cables. (board does not use PC slot) TWENTY MINUTE INSTALLATION. Requires internal re-set switch \$159 VISA/MC (vol. prices avail.)
STREETWISE SYSTEMS
1600 S. Dixie Hwy.
Boca Raton, FL 33432
1/800-654-0910

Page Holder/Rear-View

If you want to get the whole picture, you need a Monitor Rear-View™ page holder. The 3 1/2 x 2 1/4 mirror fully adjusts. The telescoping handle easily removes from the stick-on mount. The BEST page holder is a Monitor Rear-View™. Introductory price \$8.95 + \$3 S&H. IL res. add 7%. Send check or M.O. to
Tom Johnson Products
P.O. Box 59373 Dept. A
Chicago, IL 60659
No phone orders.

CUSTOM KEY CAPS

IBM®,
Macintosh®,
Key Tronic®,
Cherry®, & More



- Key Imprinting to your color specs
 - Keytop Labels for most popular software
 - Templates for most popular software
 - Custom Templates to your specs
 - Custom Labels to your specs
 - Relegendable Keys—IBM®, Cherry®, Key Tronic®, Wyse®
 - Flexshield™ Keyboard Protectors
- Express Turn-around services on Custom!

Call for your FREE CATALOG!

Toll Free
800 937-1337

602 634-7515 • FAX: 602 634-4820
Holeon
CORPORATION
P.O.B. 230, Dept. PCWD
Cornville, AZ 86325

CIRCLE 518 ON READER SERVICE CARD

Bar Coding

PC WAND
BAR CODE READERS
MORE FEATURES
MORE AFFORDABLE



NEW
IMPROVED

Starting at \$279 with wand! • Transparent operation. • No software required • PC, XT, AT, Mac, PS2, others. Look into our full line of reliable, competitively priced readers, keyboard and serial wedges, portable data collectors, multi-drop readers, wands, laser scanners, mag stripe readers, and bar code printing software • OEM and reseller discounts. We provide solutions to systems! Custom application software for Data Collections available. Call for details.



INTERNATIONAL TECHNOLOGIES & SYSTEMS CORP.



655-K North Berry St., Brea, CA 92621
(714) 990-1880 • FAX (714) 990-2503
13 Welwyn Ct., Richmond, VA 23229
(804) 741-6725

CIRCLE 501 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Bar Coding

Bar Code Reader for PC, XT and AT

\$295

- Reads all popular bar codes
- Rugged aluminum housing
- No software/hardware modifications
- Stainless-steel wand
- 2-Year Warranty (one year for wand)
- MS-DOS Bar Code Print Software \$150
- Works with any program or operating system
- Withstands 6ft. Drop to Concrete



Portable Bar Code Reader for PC or Macintosh

\$645

- 36-Key Alphanumeric Key-Pad
- 32K RAM expandable to over 1 Meg
- Easily programmable screen prompts
- Complete with Hewlett-Packard wand
- Data stored in ASCII Text Format
- Communications Software and Cable Included



800-526-5920
Call Toll-Free U.S. & Canada
FAX: 415-856-3843

All TPS products carry 30-Day Money-Back Guarantee



Electronics 4047 Transport Street, Palo Alto, CA 94303 Phone: 415-856-6833

CIRCLE 522 ON READER SERVICE CARD

EZBarcode® Readers for PC, PS/2, Terminals

- Five year warranty — the best in the industry
- Free bar code printing utility included
- Installs in minutes — no drivers or software changes necessary
- Autodiscriminating — reads all standard symbologies
- In stock; fast shipping
- 30-day money back guarantee



Also available: Portable bar code readers and bar code printing software

TimeKeeping Systems, Inc.

1306-B East 55th Street • Cleveland, OH 44103
(216) 361-9995 • FAX: (216) 361-0030

ADDITIONAL FEATURES BAR CODE READERS DELIVER WAND/ LASER/ MAGNETIC CARD CONNECTIVITY

- Keyboard wedges (Internal/ External) for IBM PC XT AT PS 2 and portables
- RS232 wedges for WYSE, Link, Rimbton terminals
- Autodiscriminates between codes 3 of 9
- UPC, EAN, 12 OF 5, Codabar, Code 128
- Interface with wand's Symbol Technologies Metrologic and Photographic Sciences lasers
- Bar code and label printing software
- Full two year warranty
- 30 Day Money Back Guarantee
- Extensive VAR Dealer Discounts



CIRCLE 468 ON READER SERVICE CARD

33% of PC WORLD's subscribers purchase computer products from mail-order firms

LABELING SOFTWARE



- For Epson, Oki, IBM, and LaserJet
- Flexible design. Any Format or size.
- On-Screen Label Design, WYSIWYG
- 16 text sizes — 3" reads at 100'
- Bar codes: 2of5, 128, UPC/EAN AIAG, MIL-STD, ZIP+4, & Code 39
- Auto-incrementing. File input.
- Logos, symbols — from scanners.
- Reversals, color, soft fonts.
- Powerful, Versatile, Fast, Easy!

- Rotatable, shadable, scalable fonts from 1" to 13" on LaserJet III
- Above label printed with LabelRIGHT™ — \$279
- Other menu driven programs from \$129. SCO/UNIX — \$199

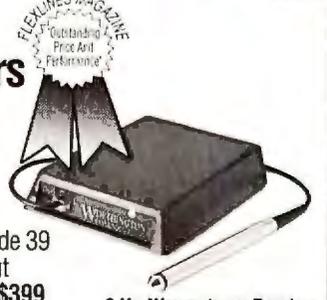
Portable Readers

- Battery operated reader
- Simple, powerful, 64 or 256K memory
- Bar code or keyed input
- Codabar, 2of5, UPC/EAN, Code 39
- Easily programmable prompts
- RS-232 or keyboard models
- Doubles as non-portable reader
- Wand or laser input
- Complete 64K units — \$799



Bar Code Readers for PC, XT, AT, PS/2, Mac and all RS-232 Terminals

- Attaches as 2nd keyboard
- No software changes needed
- 2of5, UPC/EAN, 128, MSI, Code 39
- Magstripe, laser, or wand input
- Complete with steel wand — \$399



2 Yr. Warranty on Readers
Direct from manufacturer
30 day \$ back guarantee!

WORTHINGTON

DATA SOLUTIONS 408-458-9938
417 Ingalls Street 800-345-4220
Santa Cruz, CA 95060

BAR CODE READERS AMERICAN MICROSYSTEMS

2190 A Regal Pkwy. • Eules, Texas 76040 • (817) 571-9015

FOR PC, XT, AT, PS/2 & TERMINALS:

- No software changes required
- Data appears as keyboard input
- Reads Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, CCD, LASER, MAG STRIPE

BAR CODE PRINTING SOFTWARE:

- For Epson, Oki, IBM, Dot Matrix and HP LaserJet Printers.
- Prints Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Easy To Use

(800) 648-4452 • FAX: (817) 685-6232
30 Day Money Back Guarantee
One Year Warranty

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

Business Opportunities

Own a Billing Service!

Great part time PC based business. Provide invoicing and accounts receivable services to small businesses. \$500-\$5000 income monthly. \$289 for complete set-up incl: Software, proven marketing plan, promotional materials, and ongoing support.
Bluejay Systems
2579 Clematis Street
Sarasota, FL 34239
(813) 365-3357

BUY WITH CONFIDENCE!

CATALOG

Catalogs

IBM PCjr Specials

Full line of IBM PCjr hardware accessories including: Memory expansions, Second floppy drive, Hard drives, Cables, Larger keyboards, Modems, Printer expansions, Manuals, & software. Many more items are available. Send today for the complete catalog.

Computer Reset
Dept. PW, Box 461782
Garland, TX 75046-1782
214/276-8072

Free Games - All Orders!

: Top 100 software titles for less
: Fast service, Full tech support
: 30 day money back guarantee
: Lotus 1-2-3 v2.3\$319.00
: Pagemaker v4.0\$469.00
: Wing Commander II\$45.00
: Yeager Air Combat\$38.00
: COD, M.O., Cashier check
: Call for price list/news letter
1-800-221-6721, 7am-5pm PST
ONEWAY DESIGNS
Redding, Ca 96002
May the Lord bless you!

Computer Insurance

SAFEWARE

Insures your computer. Full replacement of hardware, media & purchased software. As low as \$49 yearly. Covers theft, fire, accidental damage and more—even power surges! One phone call does it all! Call for immediate coverage or information.
1-800-848-3469

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202
Local (614) 262-0559

Data/Disk Conversion

RGA DATA CONVERSION CENTER

Tape, disks, micros, minis, mainframes, word processors, typesetting, and more...

- Database Management
- IBM 4381 on premises
- Conversions to/from all systems
- Hundreds of conversion programs
- Keying, labels & laser letters
- Carrier route & Qualifications

(212) 779-7667

Ralph Garner Associates, Inc.
99 Madison Avenue, New York, NY 10016
Professional services since 1967

CIRCLE 408 ON READER SERVICE CARD

SCANNING CONVERSION DUPLICATION

708
858-4566

Media Conversion

will scan any font or typestyle, convert any disk or tape and make duplicates any size or quantity

MEDIA CONVERSION
Chicago and Glenview Locations

CIRCLE 462 ON READER SERVICE CARD



DATA & TEXT CONVERSIONS

We convert to or from 14,000 formats CPM-DOS DEC-Display Write-Lanier Mac-NBI-WANG and 1000's more

- * 9-Track Tape (all BPI's)
- * 3.5", 5.25" and 8" Mini / Micro / Mainframe Word Processors * Data Bases

CD-ROM Publishing

Call West Coast's Largest Conversion Center
1-800-972-DATA

CIRCLE 595 ON READER SERVICE CARD

DATA CONVERSION

If you want the most complete conversion services in the industry, just call...

(800) CONVERT

Capabilities include over 3000 formats.

PIVAR COMPUTING SERVICES, Inc.®

165 Arlington Heights Rd. #W
Buffalo Grove, IL 60089
(708) 459-6010

Data Recovery

Ontrack Data Recovery

The Leader in Data Recovery Services

- 95% Success Rate
- Fast Turn Around
- Professional Clean Room
- Expertise with Novell, DOS, Macintosh, OS/2, Unix, Xenix, Bernoulli, Sun and more!

1-800-872-2599

Int'l: 612-937-5161 • FAX: 612-937-5750

CIRCLE 464 ON READER SERVICE CARD

Disk Copy Service

DUPLICATION FROM \$.59 HIGHEST QUALITY MEDIA

MSDOS duplication from \$.59(5.25") and \$.86(3.5"). Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Custom Packaging & Assembly
- Colored Media Available
- Special Rates For Demo Software & Site Licensing
- Educational Discounts Available
- 24 Hour Turn-Around
- Guaranteed Products

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 422 ON READER SERVICE CARD

Duplication Services

Providing the highest quality disk duplication through state-of-the-art equipment, quality media and attention to detail:

- All 3.5" & 5.25" Formats
- 100% Verification
- Label Print & Assembly
- NO Minimums per run
- 24 Hour Turn-Around
- Customized Services

Duplication Services Corporation
Scottsdale, Arizona
(800) 322-8392 or (602) 451-4648

CIRCLE 425 ON READER SERVICE CARD

According to subscribers studies by the other publishers, no computer magazine comes close to the managerial readership of PC WORLD. Fully 73% of PC WORLD's employed subscribers are managers; no other publication even reaches 50%.

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

Disk Duplication Software

SOFTWARE DUPLICATION

All Formats & Mediums
Complete Turnkey Service
In House Printing & Packaging

TRACE MOUNTAIN

Duplication Equipment
Diskette & Tape
Sales & Service

SPECIAL DATA

214 E. Jackson St. • Front Royal VA
703-635-1787
FAX 703-635-2992

CIRCLE 506 ON READER SERVICE CARD

Duplicate with EasyDupe

Save money and time on duplication runs of 1 to 1000 copies. EasyDupe formats/copies/100% verifies all standard formats.

- Up to 6x faster than DOS
- Read Master once to hard drive, make unlimited copies
- Two drive copy for fast throughput
- Head Cleaning Utility
- Money Back Guarantee

\$49.95 plus S+H

Advanced World Products

44106 Old Warm Springs Blvd.
Fremont, CA 94538
(510) 226-9062

Disks

DATA CARTRIDGES BASF • SONY

TAPE & SIZE	QUANTITY		
	5±	10±	25±
DC 2000 (40MB)	14.25	13.75	13.50
DC 2080 (80MB)	17.00	16.50	16.25
DC 2120 (120MB)	19.50	19.00	18.75
DC 300XLP (45MB)	18.00	17.50	17.25
DC 600A (60MB)	19.50	18.75	18.25
DC 6150 (150MB)	20.75	20.00	19.50
DC 6250 (250MB)	25.50	24.75	24.00

- 25+ PRICING on First Order
- SAME DAY Shipping
- MONEY BACK GUARANTEE

800-255-3142

Diversified Systems Group, Inc
PO Box 1114, Issaquah WA 98027

CIRCLE 414 ON READER SERVICE CARD

FORMATTED DISKETTES BASF, VERBATIM, SONY

WITH FORMAT	QTY 250 MIX & MATCH	WITHOUT FORMAT
\$ 44	5 25' DS/DD	\$ 39
\$ 66	5 25' DS/HD	\$ 56
\$ 63	3 50' DS/DD	\$ 53
\$1 09	3 50' DS/HD	\$ 99

- FREE FORMATTING on First Order
- TYVEC SLEEVES & Labels Included
- COLORED MEDIA Please Add \$ 05
- PRIVATE LABELING Available
- SAME DAY Shipping
- MONEY BACK GUARANTEE

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 448 ON READER SERVICE CARD

Re-inker Systems

Grove Re-inker System

For the hp family of DeskJet and DeskWriter printers. With our low prices it's like getting 10 DeskJet Cartridges FREE! Available in permanent Black ink and 7 colors, including the 3 Process colors, Cyan, Yellow & Magenta. Call for information!

Grove Enterprises, Inc.
Phone/FAX# 708-966-2723

Slides

SLIDES & OVERHEADS

Slides fast from \$3.00.

100 programs supported.
PC, Windows, Postscript

Elegant Graphics
750 Princeton Avenue
Steamboat Spgs, CO 80477
(303) 879-4334

CIRCLE 491 ON READER SERVICE CARD

Two Color
ads increase
response by 41%

Supplies

reconditioned **TONER** cartridges!
for laser printers
& Canon PC Copiers

BETTER THAN NEW!
• 20% MORE TONER
• DARKER PRINT
• 100% GUARANTEED

From **\$44.95**

We buy empties
call for brochure
800-426-8196

Willow Products Corp
3857 Willow Ave. Pgh, PA 15234



CIRCLE 535 ON READER SERVICE CARD

Remanufactured **TONER** \$33

For Canon, Hp, Apple
Orms Laser printers
& Canon PC Copiers

• 20% MORE TONER
• 100% Guaranteed

ALR Tech, Inc
5325 SW 77 Ct #212
Miami FL-33155

Tel: (305) 271-4953
800-484-1008/5475

Also Sharp & IBM 4019 recharged
Recharge 5 get one
recharge **Free**

CIRCLE 569 ON READER SERVICE CARD

24 Hour Turnaround

Quality Toner Cartridge Remanufacturing

- 20% More Toner/Darker Print
- 100% Guaranteed
- We Buy Empties

1-800-635-6264

Nu-Charge Graphics 3192 Atlanta Hwy Suite 365 Athens GA 30606

\$39.95

Shipping Included

CIRCLE 494 ON READER SERVICE CARD

U.S. Cartridge Service

NOT A GOVERNMENT AGENCY

TONER CARTRIDGES. REMANUFACTURED **\$29.95**

for laser printers
and PC Copiers

2 DAY DELIVERY
AVAILABLE

20% MORE TONER
100% GUARANTEED
24hr TURNAROUND
WE BUY EMPTIES!!!

SO. SAN FRANCISCO, CA 94080

1-800-553-4345

CIRCLE 466 ON READER SERVICE CARD

LASER PRINTER OWNERS

"We Buy Empty Toner

Cartridges up to **\$10 ea.**

EP, EP-S, EP-L, Canon A-15,

A-30, IBM 4019, HP3SI

"We Recycle Toner

Cartridges from **\$36 ea.**

UPS Cartridges To:

QUALITY RECHARGE Co.

3405-B Hawthorne

St. Louis, MO 63104

(314) 352-9143

CALL FOR FREE BROCHURE

CIRCLE 552 ON READER SERVICE CARD

SAVE 30-60% RIBBON & LASER CARTRIDGES

Return • Reload • Reuse

- NEW and REMANUFACTURED RIBBONS, TONERS and INK JETS for OVER 2000 PRINTERS
- FINEST QUALITY - U.S.A. MADE
- MONEYBACK GUARANTEE
- SERVING INDIVIDUALS, SMALL BUSINESSES and CORPORATIONS

Drop 'em in the mail, not the trash!

FREE CATALOG

BEST INTROLOGS

(800) 798-2345

16042 N 32nd St., #B6 • Phoenix, AZ 85032

CIRCLE 580 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

SOFTWARE/ Accounting

What do more than 1400 Government and Nonprofit Organizations Know?

When You Need Fund Accounting Software... You Need American Fundware.

American Fundware provides powerful software solutions - written specifically for the government and nonprofit sectors - that solve your fund accounting needs. Easy to Learn. Easy to Use. Easy to Produce Results.

CALL AMERICAN FUNDWARE TODAY.
1-800-551-4458 or Fax: 1-303-879-6850
P.O. Box 773028, Steamboat Springs, CO 80477

CIRCLE 502 ON READER SERVICE CARD

DATASMITH™ Payroll

SO MANY WAYS TO PAY...your choice of 12 check styles (including "Stub Only"), or use DATACHECK option to create MICR-encoded checks on laser printer. Direct Deposit available, too. Ready for the 90's with Split FICA/Medicare. Order demo today!

LPI Information Systems
10020 Fontana
Overland Park, KS 66207
913-381-9118

dBASE Business Tools

- General Ledger
 - Accounts Payable
 - Invoice & A/R
 - Sales Analysis
 - Order Entry
 - Purchasing/Invnty
 - Payroll
 - Lazr-Forms
 - Job Costing
 - Job Estimating
 - Bill of Materials
- \$99/\$198 includes Source Code M/C-AMEX-Visa-Check-COD
Datamar Systems
8586 Miramar Place
San Diego, CA 92121
800/223-9963, 619/452-0044

THE GENERAL STORE Retail Store Management

The complete software system for Retail. Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credit card authorization. Controls all types of retail stores. Multistore, size-color matrix, parts explosion and serialized items. Field proven in thousands of installations. Turnkey hardware & software systems.

**ACCOUNTS RECEIVABLE
INVENTORY CONTROL
POINT OF SALE
ACCOUNTS PAYABLE
GENERAL LEDGER
MAILING LIST
• HARDGOODS
• APPAREL**

\$995 Complete system
Dealer inquiries invited.

CRICLOW DATA SCIENCES
804-523-6600 Fax 523-4668

CIRCLE 470 ON READER SERVICE CARD

Tear into a test drive of our most popular accounting software for \$19.95. *BusinessWorks* handles everything from General Ledger, Receivables & Payables to Inventory & Payroll. Quickly. Efficiently. Painlessly.

1-800-447-5700

BusinessWorks, Winner of PC World's Best Buy and InfoWorld's Best In It's Class Awards.
Get It!



CIRCLE 451 ON READER SERVICE CARD

Pay less to ship UPS!

Automate UPS shipping, save time and money with the Parcel Shipping Program (PSP). Prints UPS labels and COD tags. Maintains customer list. Calculates UPS charges and UPS Manifests, ensures accurate billing. Supports residential & commrc. rates. UPS Approval & \$ back gtd. \$299. \$5 Demo
East Hampton Industries, Inc.
81 Newtown Lane, Drawer 5069
East Hampton, NY 11937
800-645-1188, 516-324-2224
FAX 516-324-2248

UPS Shipping Software

Use stand-alone or integrated with your accounting software as a pop-up window. No need to retype information. Computes zones & charges. Prints Manifest, COD tags, labels, etc. Also provides batch processing & customer database. Optional 100 wt, groundsaver & RPS. Single user, \$249, Network, \$449, Demo \$10.
V-Technologies
P.O. Box 4321
Waterbury, CT 06704
(203) 879-6960 Fax (203) 879-6962

BizPlanBuilder™

Organize ideas, coordinate plans - convince others to support you. Intuitive, logical business & marketing plan template on diskette for launching a new product, service, or company. 90+ pages of outlines, headlines, written texts, tables... formatted into 33 ASCII text files.

Follow tutorials, fill in the blanks, edit into a finished plan. 126-page reference includes info about getting money from banks, SBA, investors. Integrated financials in Lotus 2.01 (convert or modify) detailed Budget, Income Statement, Balance Sheet (w/ 16 ratios), Cashflow, Break-Even Analysis. Dazzle your boss, banker or investors. 37,000+ sold! v 4.0 \$129 +shipping

Leverage Your Time & PC
800/ 346-5426
415/ 941-9191
MC-Visa-AX 30-Day Guarantee

CIRCLE 564 ON READER SERVICE CARD

Do You Ship by UPS?*

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. (RPS, Airborne, Fed EX, USPS, LTLs, etc). 60 Day \$ back Gtd. UPS acceptance gtd. Full featured demo disk: \$4 s/h.
Aristo Computers, Inc.
6700 SW 105th Ave. #307-J
Beaverton, OR 97005
800/3ARISTO, 503/626-6333

Business Applications

Church Applications

Membership Software!

Finally there's an easy way to organize your church & alumni memberships!
* Customize up to 100 fields on one screen!
* Contribution system with bar code available.
* General ledger, accounts payable & budgets.
* Computer systems available.
* Great for Catholic census & envelope systems.
Authorized IBM business partner.
Call or write today.
Angel Systems, Inc.
323 N. Wisconsin Avenue
Massapequa, NY 11758
800-237-0375, 516-420-0000

Church Management

CMS Software is flexible, integrated and easy to use. Get immediate productivity with outstanding reporting capabilities and superior support. Free preview. Over 1300 users know CMS is the best long term investment. Contact us today!

800-247-8044

TSL - The Software Library
3300 Bass Lake Road #304
Brooklyn Center, MN 55429
Fax 612-566-2250

Church Partner

Written by Computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For IBM compatibles, LANs, Macintosh, XENIX. We understand computers and churches. New Release: School Partner, for church-related dayschool and child care.
Summit Systems, Inc.
Suite 121, 16 Berry Hill Rd.
Columbia, SC 29210
803-798-9749, FAX: 803-731-0349

Construction

COST ESTIMATING

Contractors, Builders, Estimators, A/E's, Do-it-yourselfers

Comprehensive, stand-alone estimating systems. Easy to use, pull-down menus, Lookup windows. All systems include built-in industry-standard cost database with unit prices. Over 4000 systems in use.

PC-Estimator. General construction estimating. Supports work assemblies. \$99

Remodel Estimator. Home improvement and remodel estimating. \$89

Electrical Estimator, Plumbing Estimator and Painting Estimator. Specialty construction estimators. Features text file for custom reporting. \$195 ea

Demo package for any of above. \$10
VISA, MC, Check, MO, COD. S&H \$6.50. CA residents add sales tax. COD add \$5.00
CPR, Inc. P.O. Box 3465, Berkeley, CA 94703
(Dealer inquiries welcome)

Call: (510) 654-8338

CIRCLE 444 ON READER SERVICE CARD

CHURCH SOFTWARE

Discover for yourself why more churches are choosing **PowerChurch Plus®**. Try out the leading membership and accounting package. Call today for your **FREE** full-working DEMO.

F1 SOFTWARE, 6300 Variel Avenue, Suite H, Woodland Hills, CA 91367
(800) 486-1800 (818) 888-1800

CIRCLE 562 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Data Entry

Replace dedicated data input systems
Front-end mainframe applications

KeyEntry III

- ▶ LAN or stand-alone environments
- ▶ ScreenPainter and MenuManager included
- ▶ Batch Control System and Reformat utility
- ▶ Spanish, German, and French versions
- ▶ Outstanding customer support
- ▶ Thousands of users worldwide
- ▶ OS 2 version

800-533-6879



SCS
SOUTHERN COMPUTER SYSTEMS, INC.
2305 251 2985 • FAX: 1205-322-4851
In U.K. SCS Europe, Ltd. 0753-36590 FAX: 0753-36785

FREE DEMO DISK
AVAILABLE TO
QUALIFIED COMPANIES!



Development Tools

ATTENTION! Visual Basic™ Users

ButtonTool creates "VISUAL" buttons and EditTool creates formatted input fields. VBase/x allows use of dBase files. BT & ET are \$49.95 + \$4 S&H ea. VBase/x is \$149.95 + \$10 S&H. All three for \$229.95 + \$15 S&H. No royalties Visa/MC/Amex/COD



OUTRIDER SYSTEMS, INC.
3701 Kirby Dr., Ste 1196
Houston, TX 77098 Dept G

1-800-845-0386 FAX: 713-523-0386

CIRCLE 420 ON READER SERVICE CARD

Employment

JOBHUNT™ Software!

"JobHunt Helps You Get a Job" - Byte. Helps Career Services increase their revenues. Gives names, addresses, phone/fax of leading employers. Displays by region or job function. Quickly mail-merges and prints personalized cover letters and labels for targeted mass-mailing of resumes. 30-day money back guarantee. Only \$39.95 + \$4.95 S&H. Free Update. Order Today!

Scope International (call 24 hours)
P.O. Box 25252, Dept. 1091
Charlotte, NC 28229-5252
1-800-THE JOBS or 1-800-843-5627
Phone & Fax: 704-535-0614

LOOPSCAN IMAGES

- * VGA/SVGA ONLY
 - * 4 Disks per SET-\$20 (+\$3.00 s/h per SET)
 - * SET #7A - Awesome
 - * SET #7B - Dazzling
 - * SET #7C - Outrageous
 - * SET #7D - Torrid
 - * SET #7E - Breathtaking
 - * SET #7F - Exquisite
 - * Orders shipped at once.
- Sample Disk- \$5 Must state age over 21.
LOOP PREMIUM GRAPHICS
P.O. Box 597186
Chicago, IL 60659

Viking Data Entry

Professional Quality Software

- Used by U.S. Census
- Advanced Validation
- Sequential/ISAM files
- MS/DOS, UNIX, XENIX, VMS, AIX
- Technical support
- Re-key verify

Viking Software Services
4808 E. 67th St., Ste. 100
Tulsa, OK 74136
918/491-6144 FAX: 918/494-2701

DATA ENTRY

Why have over 85% of the largest companies in the U.S. selected the RODE/PC Data Entry System?

The answer will be obvious when you call for information and a free demonstration today.



(415) 323-8195

DPX • 490 California Avenue
Palo Alto, CA 94306

CIRCLE 558 ON READER SERVICE CARD

**BUY WITH
CONFIDENCE!**



Educational

BS & MS in Comp Sci

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science & Master of Science in Computer Science at home. BS subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Proc., Data Struct. & Operating systems. MS includes SW Engineering, AI and other topics

American Inst. for Computer Sciences
2101-WO Magnolia Ave. So. Ste 200
Birmingham, AL 35205
800/767-2427, 205/323-6191

MATH EDITING

MathEdit lets you put

$$Z = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

into WordPerfect, Word, WordStar, & other documents **without learning any codes!**

- A display window lets you see your equation as you type it
- MathEdit is \$199

30 West First Ave. Ste. 100
Columbus, OH 43201
K-TALK
COMMUNICATIONS (614) 294-3535

CIRCLE 447 ON READER SERVICE CARD

Entertainment/ Games

VGA Software

Visualize the full potential of VGA and SVGA.

Hi-res, 256 color images.

- Vol. 1 Swimsuit (6 disks per vol.) \$13.95
- Vol. 2 Au Naturel \$13.95
- Vol. 3 Daring \$13.95
- Vol. 4 Mature Only \$13.95

Hi-res VGA animation. Just like the movies!!!

- Vol. 5 Mature VGA Movies \$13.95
- Vol. 11 Hot Italian Movies \$13.95
- Vol. 12 Long Length Movies \$13.95

Special... Order 4 volumes, select 5th free!

Choose from six 5 1/4" DD disks, three 5 1/4" HD (best deal), three 3 1/2" DD, or two 3 1/2" HD for each vol. All disks are A&I. Vol. 12 available in only HD disks.

Get more great software for less. Guaranteed. Fast service. Order today! Includes \$3 S&H. Must state age 21 or over. Send check or MO to:
no orders add \$3 US tax only
MC/VISA orders or free catalog call (309) 452-7780. **CJCware**
Dept. CW, P.O. Box 36
Normal, IL 61761

CIRCLE 496 ON READER SERVICE CARD

Sports Handicapping

Thoroughbred shareware system \$8.00. Commercial horse racing & greyhound handicapping software \$32.95, \$52.95, \$67.95, \$77.95 each. Up to 17 entries analyzed: class, speed, times, odds, track, post, stretch, & finish. Pro Football software - \$42.95. Handicap races & games in minutes. MC/VISA accepted. Free info. **SOFTWARE EXCHANGE**
PO Box 250002-PIV
W. Bloomfield, MI 48325
313/788-3342. Orders:
1-800/527-9467

HI-TECH LOTTO ANALYZER

Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and reports. Data is based on your state's winning number history, using hi-tech statistical methods. You update weekly. Min 256K. Programs manual, one state's data, \$44.95 + \$4.00 shipping and handling. Each additional state \$10.95. Credit card: 800/992-4045, ext 439. (CA) 800/777-8814 ext 439. Check/M O

THE LOTTO EDGE, ODDS UNLIMITED,
P.O. Box 1223, Addison, IL 60101

**PLAY TO WIN
LET YOUR PC DO THE WORK!**

CIRCLE 549 ON READER SERVICE CARD

BLACKJACK COMPUTER



The ultimate card-counting weapon, operated under complete concealment within the casinos. CPU "magic" shoes, I/O switches, sensors, power supplies, extensive training and support provided. Win consistently with the latest generation of the technology every casino fears the most.

Contact
(714) 582-0705

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Entertainment/ Games



SOUND GRAPHICS

THE ONLY 256 COLOR VGA GRAPHICS THAT TALK THROUGH YOUR STANDARD SPEAKER.

SG 12 - SWIMSUIT DISK
You will see the sexiest swimsuits while the girls TALK to you about their tumors and tumts.

SG 13 - SCIENCE FICTION DISK
You will see incredible space shots and alien encounters while hearing other worldly descriptions and music.

Each disk is over 1.2 MB - plus over 2.5 MB of FREE UTILITIES for printing, cataloging, converting to WINDOWS WALLPAPER, and changing the pictures.

Prices: One Selection - \$19 • Both Selections - \$35
Our Competitors Can't Sell You Pictures That TALK!

CUSTOM SOUND PICTURES
We add YOUR VOICE to YOUR PHOTO to create a CUSTOM SOUND GRAPHIC. A TRULY UNIQUE GIFT FOR BIRTHDAYS, OFFICE PARTIES, SPECIAL OCCASIONS (Full information is on our sound disks)

eXcapades - The first adult game with TRUE SOUND and 80 sizzling color VGA scenes
• Options for gender preference and game intensity • Play with 2-8 close friends • Over 5MB of pure action!
• Fulfill your carnal passions with new experiences • Find out how you and your partner can better relate.
\$79 - Special Offer: \$69 with purchase of any CC1, CC2, CC3 disk above - OURS EXCLUSIVELY!

ADD \$3 S/H + 3.5% Or FOREIGN ORDERS ADD \$2/DISK
IN PA ADD TAX + MUST STATE AGE OVER 21

VISA/MC Orders only 800-243-1515 Ext. 600 BS
24 HRS./7 DAYS • Or check/MO to: SeXy Software, 2880 Bergey Rd, Dept 600 BS, Hatfield, PA 19440

CIRCLE 523 ON READER SERVICE CARD

MS Windows or DOS



For the Businessman on the "Go"!

"Learning to play Go well is tantamount to a senior-level course in strategic thinking." United Feature Syndicate 12/12/90

"[Go Junior] Best introduction to Go yet developed." MacWorld 2/91

Toyogo, Inc.
P.O. Box 25460 W,
Honolulu, HI 96825-0460

(800) TOYOGO-9
(808) 396-4126 fax \$35 Go Junior \$69 Go Master \$139 Deluxe Toolkit + \$6.50 S&H

CIRCLE 565 ON READER SERVICE CARD

Financial

Loan-Amortization

EXEC-AMORT. Replace Desktop Financial Calculators. Avoid Inaccuracies. Quit Using Your Spreadsheet. Store Loans to Disk. Solve for PV, FV, I, PMT, N. Easy to read amortization reports, fixed & ARM's, APR's per Reg Z, Points & Fees, Balloons, irregular & skipped payments. \$149.95 US + \$5 s/h. Int'l add \$15.
ELECTROSONICS
36380 Garfield, Suite 1
Fraser, MI 48026 USA
800-858-8448, 313-791-3010 fax
Int'l phone: 313-791-0770

Financial

DEBT COLLECTIONS

Collect those old receivables. THE IN-HOUSE COLLECTOR is a powerful collection tool that can recoup those otherwise lost profits. Major features include Pull Down Menus for ease of use, Sophisticated Tickler System for dating accounts, Customizable Correspondence, and Automatic Series of Dunning Notices.
\$149.95 + \$5.00 SH. 30 Day \$ Back Gtd.
TALLAC DEVELOPMENT
13911 NE Airport Drive
Vancouver, WA 98684
(206) 254-0299

Flow Charting

Windows Flowcharter \$129

RFFlow 2.0 is a professional drawing tool for flowcharts and org charts. Requires Microsoft Windows 3.0. 100 shapes auto adjust in size. Diagonal lines and curves. Auto line routing and re-routing. Click on a shape to bring up a sub-chart. Move charts to other apps. via the Clipboard. Call for free trial disk.
RFF ELECTRONICS
1053 Banyan Court
Loveland, CO 80538
303/663-5767 FAX: 303/669-4889

Genealogy

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address labels, searches, & much more. Call for FREE information. Satisfaction guaranteed. Any PC or compatible. MC/VISA/AmEx welcome.
QUINSEPT
Box 216
Lexington, MA 02173
800/637-ROOT, 617/641-2930

My Family Record

Users say this is one of the most versatile and powerful Genealogy Programs they've seen, yet still the easiest to use! All the popular features of other programs. Plus MULTIPLE LINEAGE-LINKED DATA BASES. Includes family history writer & GEDCOM for \$175 (volume discounts avail). Full-use Demo \$10. VISA/MC.
MY FAMILY PRODUCTS
1446 Bluegrass Circle
Salt Lake City, UT 84121
1-800/658-7688, 801/292-1150

Graphics

3 Free Slides from your PC

COMPUTER SLIDE EXPRESS converts your graphic files into 4000 line full color slides, overheads or printouts. All popular programs supported. 24 hour service by modem or disk. As low as \$6.50. Call or FAX for your FREE valuable (\$27.00) coupon & FREE 48 page catalog.
Visual Horizons
180 Metro Park
Rochester, NY 14623
Phone: 716/424-5300
FAX: 716/424-5313

Computer Images



Use toll-free 800 # to sign up with credit card. Once verified use same 800 # to download files.

1-800-GO-MODEM

Or use direct dial 64 Line BBS at (503) 697-5100 8/N1

SuperVGA 1024x768x256

ASTRONOMY • HUGE ADULT AREA SCENIC • GRASP • ANIMATOR • 3D STUDIO MOVIES • SOUND • GAMES GIRLS • UTILITIES • IMAGE CONVERTERS

Event Horizons Commercial BBS. Thousands of images and movies. Must be 21 to download from adult areas. Quality Color SuperVGA/VGA/EGA 1200/2400 bps \$10/hr., 9600 bps \$40/hr., 800# \$6/hr. extra Also Professional Image Scanning from prints or slides to disk

No Modem? Order our Mail Image Library with samples \$9 Worldwide shipment. Info voice line 503-697-7700 All credit cards accepted. Same day shipment.

Event Horizons

311 Ave B, Ste. 209
Lake Oswego, OR 97034
Voice 503-697-7700, BBS 800-466-6336, or BBS 503-697-5100

CIRCLE 507 ON READER SERVICE CARD

WALLPAPER YOUR FAMILY

We'll turn your favorite photograph into WINDOWS 3.0 WALLPAPER. Send photo (Photo Returned) and we'll rush you a Vivid Bitmap-image File. Copy the file to your WINDOWS Directory and use it as WINDOWS WALLPAPER. Amaze your colleagues. (Specify: B/W or Color; disk size; EGA or VGA). \$12.95 + \$1.25 S&H. (Get a 2nd photo FREE until 3/31/92) To order: Send photo(s) with check or money order to:

PICTURE THIS
Dept PC9201
2421 West Pratt Blvd.
Chicago, IL 60645

CIRCLE 538 ON READER SERVICE CARD

CATALOG

Shop The PC World Catalog for fast solutions to your PC needs.

Graphics

Health

Languages

Mailing Programs

Output services from your files

**COLOR SLIDES
COLOR PRINTS
OVERHEADS
4x5 NEGS/TRANS
VIDEO OUTPUT
SCANNING**

**IMAGE
CENTER**

1-800/433-8829

703/343-8243 or Fax 703/343-0991

CIRCLE 530 ON READER SERVICE CARD

Design your own dazzling art
FRactal Graphics
Software for PC's
179



Explore "Chaos" science

.DXF and .PCX file compatible
FREE BROCHURE: 802-888-5275

Cedar Software Box 5140-R1, Morrisville VT 05861

CIRCLE 519 ON READER SERVICE CARD

Explore Chaos Graphics

Recent findings in the field of chaos math have yielded dazzling computer designs.

Introducing — "CHAOS GRAPHICS"

- Create original chaos designs.
- Hercules mono. to 256-color super-VGA.

- Write pictures to disk or printer.
- For IBM-PC and compatibles.

Introductory Offer \$29.95

Send check to:

Systems Development Group

P.O. Box 336

Marlboro, New Jersey 07746

(908) 536-7688

"Say It With A Disk"

Birthdays, Holidays, any occasion, don't send a card, send a disk with an exciting space shuttle program, see it blast off into orbit. Your message will fly out of the cargo bay. The message has 3 parts, each part has 4 lines with 20 characters. Needs VGA/EGA. Send check/money order for \$15. Specify disk size.

Pegasys Inc.

59 Hunting Ridge Road

Newark, DE 19702

(302) 292-0908

Be Your Healthiest !!

The **Top-Rated Nutrition-Fitness Software**. Lose weight! Control salt, fat, cholesterol! Plan fitness workouts. Fast, easy menu & diet planning. Analyze nutrients & food exchanges. Professional & personal versions. 2000-11,500 foods; 100-200 activities. From \$99. **You'll ♥ it!**
FREE Demo Disk !!

ESHA
RESEARCH
PO Box 13028-B
Salem, OR 97309
Phone: 503-585-6242
Fax: 503-585-5543

CIRCLE 573 ON READER SERVICE CARD

Place your ad in the
PC WORLD CATALOG

800/435-7766

800/435-7760 (CA)

Inventory Control/ Management

Mr. QuarterMaster

Providing the IC needs of business, govt. & institution stockrooms since 1983. Features include receipts & issues updating, report generation, issue slip, etc. Price \$140. Manual alone with demo: \$30 deductible toward later purchase. Also available: Sales reporting, PO, Estimating. Retail IC & Multi-whse IC systems.

RJL Systems

106 New Haven Avenue

Milford, CT 06460

203/878-0376

POINT OF SALE INVENTORY

Inventory Control is like putting money in the bank. Programs for Auto Parts, Tire Dealers, Wholesalers, Mail Order, Hardware Stores and other systems.
\$189 - \$489

NEED INVENTORY CONTROL?
Fast customer invoicing, Cash Drawer, Receipt Printer, Barcode Scanners, Credit Card Authorization, Key Pads, Accounts Receivables, General Ledger, Mailing List programs. We have it all!

Freeman Software - Garland, Texas
800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

Fortran Compilers

Whether you are developing new code or moving large mainframe programs to the PC, we have the Fortran Language Systems to meet your needs. Winners of PC Magazine's Editor's Choice and Technical Excellence Awards.

LAHEY COMPUTER SYSTEMS

Box 6091

Incline Village, NV 89450

800-548-4778, FAX 702-831-8123

Mailing Programs

Today's PC Mail System

Fast! Accurate! Large volume mailers use PostWare software programs to:

- Standardize/correct addresses
 - Add ZIP, ZIP + 4, Car. Rt.
 - Presort 1/2/3 Class
 - Detect duplicates
 - Generate Postnet bar codes
 - Palletize 2/3 Class
 - Qualify for postal discounts
- CASS-Certified. Reported throughputs over 100,000/hr.

Postalsoft, Inc.

4439 Mormon Coulee Rd.

La Crosse, WI 54601-8231

800/831-6245

The Mail Order Wizard

Complete management system for a catalog, inbound telemarketing, or mail order company. Order processing, inventory mgt, ad forecasting, sales/banking, list mgt, modem charge approval, EDC, UPS manifest w/scale interface. Single and Multi User Systems. Inbound/Outbound Editor's Choice.

Haven Corporation

802 Madison St., Dept W192

Evanston, IL 60202

800/782-8278, 708/869-3434

FREE Catalog!

Zip Code & Mailing Software Catalog...

- ZIP +4 & Barcodes
 - Carrier Routes
 - List Correction
 - Postal Presort
 - Duplicate Elimination
 - ZIP Selection within a Radius
 - Nearest Dealer Locator
 - Zip Code & Phone Location Databases
 - Save on Postage, Time, Money!
- Call for your FREE Catalog today!

MELISSA Data Corporation

32122 Paseo Adelanto

San Juan Capistrano, CA 92675-3600

800/443-8834 FAX: 714/661-5002

THE "Mail Order Master"

Software Program contains all the routines you need to run your Home or Office mail order business. Easy to use features include Powerful Database, Invoicing, Inventory Control, UPS Manifesting, Sales & Income Report, Sales Tax Report, Product Sales & Profit Report, Statements, Credit Card Voucher Printout, Bulk Mail Sort plus lots more. IBM compatible. Single User System. Priced at \$499.00 Hands-On Demo \$20.00

The Marshall Weiner Corp.

1700 Catalina Ave.

Seal Beach, CA 90740

800/874-4656 USA & Canada

FREE MARKETING INFORMATION

Call your PC WORLD representative for actual response numbers our advertisers have received in your Category.

See how well the CATALOG performs.



800-435-7766
800-435-7760 IN CA

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.

Penguin Computer Consultants
PO Box 20485
San Jose, CA 95160
408/997-7703, Fax: 408/927-0570

Medical

Medical Systems with ECS

PPM offers a complt. line of med. SW from simple ins. claims proc. to comprh. A/R mgt.
PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar.

THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats.
CLAIM NET - Nationwide electrnc claims clearinghse transmits to 100+ ins. carriers. SW starts at \$459. Dealer inquiries welcome.

Physicians Practice Management
350 E. New York
Indianapolis, IN 46204
800/428-3515, 317/634-8080

Music

\$19⁹⁵ Test Drive

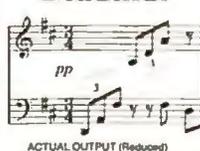


Don't buy any PC MIDI products before trying the full-line from the **industry leader**. It's a risk-free way to learn about PC music. Apply the cost if you buy software from us.

Voyetra Dept. PCD, 333 5th Ave
Prham, New York 10803
(914) 738-4500 Fax: (914) 738-6946
Orders: Free Catalog: 1-800-233-9377

CIRCLE 476 ON READER SERVICE CARD

Beautiful



L-M-P Laser Music Processor

WYSIWYG desktop music scoring on your IBM PC/AT, for the HP-LaserJet/Epson FX/IBM Proprinter printers, VGA/EGA/MCGA/Hercules/CGA/AT&T displays, MIDI transcription, full mouse support and options for PCX files & DeskJet emulation, and much more!

TEACH Services (518)358-2125
182 Donovan Rd, Bruchton, New York 12916
BBS (518) 358 3352 (SHIPPING \$5.00 US, NY + 7% TAX)

only...
\$99.95

CIRCLE 500 ON READER SERVICE CARD

SongWright V

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract, import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI or SMF entry & playback. Matrix/laser printers. \$99.95 + \$5 s/h. Free sample output.

SONGWRITING SOFTWARE
7 Loudoun Street, S.E., Ste. 5B
Leesburg, VA 22075
1-800-877-8070, 703-777-7232

Public Domain/Shareware

FREE
10 ASSORTED PACKAGES OF OUR BEST SOFTWARE FOR IBM®

1. WINDOWS®
2. RELIGION
3. DESKTOP PUBLISHING
4. CLIP ART
5. FONTS - Requires Adobe Type Manager®
6. TRICKS/JOKES
7. BUSINESS
8. HOME/HEALTH
9. EDUCATION 4-16 yrs
10. GAMES

PAY ONLY \$5.00 SHIPPING/HANDLING PER PACKAGE

• credit cards only •
EACH PACKAGE CONTAINS 15/5.25" OR 8/3.5" DISKS

SMC SOFTWARE PUBLISHERS
619.931.8111
extension 511

CIRCLE 479 ON READER SERVICE CARD

Manufacturing

Advanced SUMIT

Manufacturing-BOM,WIP,MRP, Mfg.Eng.,Labor Performance, Shop Scheduling, Inv. by Location, Lot Control, Just in Time, Cost Accounting, Quality Assurance, Preventative Maint. Material-Inv. Control, Order Entry, PO Mgmt., Sales Analysis, Accounting-AP,AR GL, Strong QBE. Customizable by you, Multi-User DBMS.

T.L. Creates, Inc.
345 N. Yosemite, Suite 200
Stockton, CA 95203
209-946-0105, 209-946-0150 fax

Networking

The \$25 Network

Try the 1st truly low cost LAN

- Connect 2 or 3 PCs, XTs, ATs, PS/2s
- Uses serial ports and null modem cable
- Runs at 115K baud, in only 15k of ram
- Runs in background, totally transparent
- Share any device, any file, any time
- \$25/network, Not Node! Version 2.3m

Skeptical? We make believers!



Information Modes
Drawer F, Denton, TX 76202
817-387-3339 Technical
1-800-628-7992 Orders

CIRCLE 407 ON READER SERVICE CARD

Public Domain/Shareware



Public (software) Library

Don't even bother with other shareware vendors - PSL has a bigger, more diverse, and more current collection than anyone else... Service is excellent too.

- Computer Currents

Call for a free newsletter:
800-2424-PSL 713-524-6394

Member - ASP

CIRCLE 503 ON READER SERVICE CARD

PC WORLD subscribers are some of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.

Now that's a lot of purchase power. Call the PC WORLD CATALOG today!
800/435-7766 or 800/435-7760 (CA)

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

Public Domain/ Shareware

 **SOFTSHOPPE, INC.**
ASP Member

- Selected Programs
- Latest Versions
- As Low as \$1.50

FREE CATALOG
IBM PD/SHAREWARE

POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378)
or 313-761-7638
Fax 313-761-7639

CIRCLE 436 ON READER SERVICE CARD

FREE IBM 5 1/4" Disk
with FREE GAMES,
UTILITIES and
CATALOG



Just to get
acquainted with
our shareware.

1-800-845-8902

L.A. Software

CIRCLE 409 ON READER SERVICE CARD

Real Estate

Property Management

Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-\$495, Deluxe PM for professional management-\$1,195, Multi-User with Novell network compatibility-\$2,395. Includes check writing, recurring expenses, G/L management reporting.
Yardi Systems, Inc.
819 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Property Management

Professional software since 1983. Menu operated - easy to learn and use. We have the system for you and your special needs.

- * Residential/Resort rentals
 - * Commercial/Office Park rentals
 - * Condominium/Time Share rentals
 - * Motels *RV Parks *Campgrounds
 - * Accounting for Condos and HOAs
- Call or write for information packet and demo diskette.
BOCAR Systems, Inc.
4837 Swift Rd., Ste. 211
Sarasota, FL 34231
813-922-7050

Property Management

Rental-Ease. State of the art software. Extremely fast and easy to learn and use. Everything is included: tenant tracking, repairs and maintenance, income and expense, check writing and recurring bills. No extra modules to buy. The ultimate in property management. \$695 complete. Free brochure, Demo \$10.

Strategic Office Systems
688 North 500 West #61
Mt. Pleasant, UT 84647
800/942-6784 or 801/462-2130

• Property Mgt Plus/92 •

New version which looks up tenants & posts rent by Tenant Name. Prints.. Bank Deposit Slips, Rent Statements, & Automatic Checks. Reports. Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use!

Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
310/372-9419 or 801/649-6149

Property Managers

Easy-to-use software:
• Rental Manager — general purpose acting for apartments, storage units, etc. Built-in gen. ledger.
• Condo Manager — for community associations. Member payments & charges. Accounting reports.
• Resort Manager — for units rented on behalf of many owners. Timeshare, reservations, statements.
Coleman Business Systems
3654 Arcadian Drive
Castro Valley, CA 94546
510/581-7125

Property Management

Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/RESIDENTIAL/CONDOMINIUM/HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call:
Realty Automation, Inc.
11365 Eastshore Drive
Hayden Lake, ID 83835
208-772-3259

Security



**FIGHT
PIRACY
&
PROTECT
YOUR
PROGRAM
\$\$\$'s!**

Since 1986, companies worldwide have been choosing Az-Tech security products. If you demand the strongest protection available, why not choose one of these "proven leaders":

- EVERLOCK Copy Protection
- EVERLOCK Software Security
- EVERKEY II "The Lock"

For IBM and Compatibles.
30 day money back guarantee.
Free info and demo disk available



Az-Tech Software, Inc.
201 East Franklin, Ste. 11
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 593 ON READER SERVICE CARD

Sports

BALLCARDS!™

Professionally developed IBM/Tandy/compatible software for all sports cards! Simple to use inventory system including FREE data with current values!

- Over 200 user definables
 - Unlimited reports
 - 3 FREE utility programs
- SPECIAL:** Purchase BALLCARDS direct and SAVE only \$39.95 + \$3.00 shipping. Call 1-800-473-3137 [Dealer inquiries welcome]
BOB-KIT Software Company
P.O. Box 13717 Dept. 1
Detroit, MI 48213
313-372-2669

Statistics

NCSS 5.x Series - \$125

Easy-to-use menus & spread sheet. Multiple regression. T-tests. ANOVA (up to 10 factors, rep. measures, covariance). Forecasting. Factor, cluster & discriminant analysis. Nonparametrics. Cross Tabulation. Graphics: histograms, box, scatter, etc. Reads ASCII/Lotus. Many new add-on modules.

NCSS
329 North 1000 East
Kaysville, UT 84037
Phone: 801-546-0445
Fax: 801-546-3907

StatPlan IV

Only \$199. Easiest to use statistics program available. Statistics include: curve fitting, crosstabs, correlation, multiple regression, stepwise regression, ANOVA, t-tests, time-series analysis, etc. Graphics with printer/plotter output. Handles up to 30,000 data points. Interfaces directly with Lotus and ASCII files. Demo \$10.
The Futures Group
80 Glastonbury Blvd.
Glastonbury, CT 06033
203/633-3501

New!

STAT PAC The Standard for Survey & Marketing Research Software.
IV
GOLD

A comprehensive PC package for questionnaire design, sampling, data management, CRT and telephone interviewing, statistical analyses and presentation quality graphics. Free brochure.

StatPac Inc.
3814 Lyndale Ave. S.
Minneapolis, MN 55409
Tel: (612) 822-8252 Fax: (612) 822-1708

CIRCLE 586 ON READER SERVICE CARD

FACT: 23%
of PC WORLD's
subscribers
purchased PC
Software from
mail-order
companies
last year.

CATALOG G

Shop The PC World Catalog for fast solutions to your PC needs.

Surveys

Time Management

Training

The Survey System

A complete, easy-to-learn package for the entry, editing, processing & presentation of questionnaire data. Produces banner format crosstabs & related tables, statistics (incl. regression) & bar charts. Also codes & reports open-ends. All reports are camera-ready. CRT interviewing options available.

Creative Research Systems
15 Lone Oak Ctr., Dept. W
Petaluma, CA 94952
707/765-1001

Give Your PC DOS Computer some **PUNCH**
GET THE **PEM ORGANIZER**™



► Program Menu **Send \$39.95**
► Calendar **Plus \$2.50 shipping and handling**
► Phone Directory

PEM Software Systems, Ltd.
P.O. Box 588
Windsor, Ct. 06095

VISA or Call **1-800-443-2402** MasterCard

CIRCLE 534 ON READER SERVICE CARD

Presents Two New Networking Videos...

Video Instruction Tools™

A User's Guide to Netware
1 VHS tape, 90 pg. workbook, Run Time 112 min. **\$695⁰⁰**

The Administrator's Guide to Netware Customization
2 VHS tapes, 140 pg. workbook, Run Time 213 min. **\$895⁰⁰**

Halverson Associates, Inc.
1313 Newburgh Road, Westland, MI 48185 • (313) 729-0325 • (313) 729-2424 FAX

FOR PRODUCT LISTING CALL 1-800-537-1641

CIRCLE 520 ON READER SERVICE CARD

Taxes

AM-TAX

The fast, easy, accurate way to prepare your 1991 tax return.

Personal-1 Version: (IBM w/320K)
Calculates Form 1040 plus 29 other common forms and schedules. All printed forms (incl 1040) approved for filing by IRS.
Only \$40

Personal-2 Version: (IBM w/320K)
Calculates Form 1040, 1040A plus 50 other forms and schedules.
Only \$65

State programs for AZ, CA, GA, IL, IN, KS, KY, MD, MO, NJ, NY, NC, OH, PA, SC, and VA. Data auto-transferred from federal tax forms. **\$30 each.**

Professional Version with client letters and billing (just \$125), Laser and Elec Filing available.

AM SOFTWARE
P.O. Box 25010
Kansas City, MO 64119
Orders (816) 426-8361
FAX (816) 741-1517

CIRCLE 492 ON READER SERVICE CARD

Forget Anything?

Personal Reminder System

"The Friendliest Reminder Program Ever"

- ADVANCED NOTIFICATION
- CALENDAR/TEXT DISPLAYS
- PAST EVENT DIARY

INTRODUCTORY OFFER: \$29.95
(908) 272-2827

IBM-PC FREE, 28-DAY TRIAL VERSION AVAILABLE! IBM-PC



AM Software, Inc.
Post Office Box 606 • Cranford, NJ 07016

CIRCLE 597 ON READER SERVICE CARD

BUY WITH CONFIDENCE!

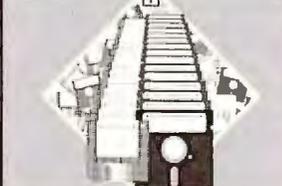


Utilities

Utilities

A Proven Solution to Diskette Management

Floppie
LIBRARIAN™



STUART-MATLOCK CORPORATION
P.O. Box 541 • Mt. Laurel, NJ 08054

Call 1-800-FLV-DISK

DOS 5 Memory Kit™

Improved memory management that gives you what DOS 5 left out: load high and convert extended to expanded on 8088 and 80286 PCs (not just 386s), get 64K+ more high DOS memory on 386s, optimize load order, create 32 megabytes expanded memory from disk, load TSRs into expanded/extended. 30-day guarantee. \$79.

Biologic
7950 Blue Gray Ct.
Manassas, VA 22110-2829
703-368-2949 (703-361-8251 fax)

REMOVE HARDWARE LOCKS

Protect your investment!

Don't wait for your lock to get lost, stolen or fail and render your program useless costing you \$\$\$\$

Our SAFEKEY'S are guaranteed to unlock the following programs:

MaxRoute	Pads2000	TangoPCB
MasterCam	Pads PCB	PCAD
MicroStation	CadKey	& others

Only \$399 plus S&H
(609) 390-2799
Fax: (609) 390-3750
IMAGINE THAT

CIRCLE 437 ON READER SERVICE CARD

Opt-Tech Sort/Merge 4.0

Extremely fast Sort/Merge program. Run as a DOS command or CALL as a subroutine. Unlimited filesizes, most languages, datatypes & filetypes supported including Btrieve & dBASE. Advanced features include record selection, record reformatting & much more! Call or write for more info. MS-DOS \$149, OS/2, Xenix, Unix \$249.

Opt-Tech Data Processing
PO Box 678
Zephyr Cove, NV 89448
702/388-3737

PC WORLD subscribers are some of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.

ADVERTISING SALES

Richard J. Marino
Associate Publisher
Sales, Marketing, & Research

Asst. to the Associate Publisher
Colette Cornish

Bernard J. Theobald, Jr.
Vice President/Group
Advertising Director

Advertising Director for
Market Development
Jeff Edman (415/243-0500)

Eastern Advertising Director
Bob Ostrow (508/820-0440)

Mid-Atlantic/Manhattan
John Grogan, Northeast Account
Manager (201/587-0090)

Midwest/Chicago
Mark Taussig, National Accounts
Manager/Direct Channel Consultant
(708/827-4477)

**New England/Ohio/Michigan/
Western Pennsylvania**
Michael Welsh-Carroll, Account
Manager (508/820-0440)

**Northern California/San
Francisco**
Ellen Levin, Account Manager
(415/243-0500)

Northwest
Greg Mason, Account Manager
(415/243-0500)

**San Diego/Southwest/Orange
County**
Renee Callahan, Account Manager
(714/250-8081)

San Jose
Susan Simmons, Account Manager
(415/243-0500)

Southeast/Atlanta
Judy Sutter, Senior Account
Manager (404/394-0758)

**Southern California/Los
Angeles**
Denise Pilnak, Account Manager
(213/312-8008)

Texas
Harvey Diamond, Senior Account
Manager (214/233-3492)

PC World Catalog

Catalog Advertising Manager
Sandie Wade
Eastern Account Manager
Duane Hampson
Catalog Coordinating Manager
Elizabeth Maffly (800/435-7760 in
California, 800/435-7766 outside
California)

PC World Action Cards

Kevin Normandeau
Telemarketing Representative
(508/820-8113)

Circulation

Vice President, Circulation
Heather Martin
Asst. to the Vice President
Anna Mercaldi

Subscription Director

David Ball
Senior Promotion Manager
Francesca Davies
Circulation Business Manager
Noël White
Promotion Manager
Ellen DiMatteo
Promotion Coordinator
Jane Kratochvil
Renewal & Billing Coordinator
David Cobb
Subscriber Service
Katherine McCarthy

Single Copy Sales Vice President
Gerald Kemmet
Single Copy Sales Director
Linda Ruth
Single Copy Sales Manager
Dinny Zimmerman

Marketing & Research

Director of Marketing
Communications
Jay McSherry
Marketing Manager
Bruce Frymire
Sales Promotion Director
Nola Armijo
Reprints Coordinator Scott Shores
Administrative Assistant
Sandy Wong

Production

Director of Manufacturing
Linda Manes
Production Manager Laura Smith
Advertising Billing & Booking
Coordinator Kevin Octavio
Advertising Traffic Coordinator
Paul O'Neil

Administration

Director of Finance Vicki Peilen
Human Resources Director
Richard Willoughby
Asst. to the Publisher
Kelly Milan
Director of Information Services
Walter J. Clegg
Corporate Business Manager
Christina Spence
Accounting/Operations Manager
Pat Murphy
Accounting/Facilities Manager
Michelle Reyes
Financial Analyst
Madeleine Buckingham
Human Resources Administrator
Thalia Ohara
Human Resources Assistant
Maria Chico

ADVERTISER INDEX A TO Z

Get more information—circle the
appropriate number on the read-
er service card.

Reader Service Number	Page Number
189 ACCEL	39
3 Acer America	23
2 Addstor	123
— America Online	261-262
45 American Power Conversion	34
306 American Small Business Computers	274
— Anthro Corp.	30
8 Arlington Computer Products	310
10 AST Research	12
73 Atitash Software	47
30 Automated Computer Technology	132-133
1 Blackship Computer Systems	318
215 Buffalo Products, Inc.	313
88 Bureau of Electronic Publishing	257
25 BusinessVision Management Systems	277
64 CAD-ONE Computer Design Systems	316
21 Caere Corp.	188-189
89 Chipsoft	315
36 Clarion Software	257
46 Colorado Memory Systems	14
— COMPAQ Computer Corp.	54-55
33 CompuServe	45

Reader Service Number	Page Number
42 Computer Associates	27
39 Computer Associates	258
49 Computer Book Club	121
200 Computer Discount Warehouse	308-309
56 Cougar Mountain Software	127
84 Crosstalk	72
— Curtis	115
94 DacEasy, Inc.	51
— Damark International	306
66 Dell Computer Corp.	C5-C8
74 Dell Computer Corp.	28-29
— Dell Computer Corp.	103-112
75 Dell Computer Corp.	270-271
61 Delrina Technology	100
— Epson	31-33, 200-201
100 Fast Micro	302-305
71 Fifth Generation	190
76 Fox Software	48-49
— Gateway 2000	17-20
122 Group 1 Software	272
79 Haventree Software Ltd.	50
114 Hewlett Packard	155A-155B
121 IDG Books	281
141 Kenosha Computer Center	320
— L A Trade	314
123 Laser Press & Graphics	312
128 Liberty Systems	8
126 Logical Connection	59
— Lotus 10-11, 166-167, 170-171, 173	
149 Lucas Management Systems	96
— MacFriends	46
156 Mainlan Inc.	88
168 MicroBiz Corp.	321
— MicroLogic	244
179 Micrografx	196-197
167 MicroProse	134
— Microsoft	C2-P1, 82, 128-131
157 MicroTac Software	26
154 Micro-Tech USA	311
162 Microtek	52
172 MIS Computer Systems	307
163 Mamenta	92-93
7 M-USA Business Systems	91
203 NEC Technologies	78-79
205 NEC Technologies	75
188 NEC Technologies	250-251
187 NEC Technologies	265
191 Northgate Computer Systems	175-182

PC World is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes more than 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA's Computerworld Argentina; ASIA's Asian Computerworld; AUSTRALIA's Australian Macworld, Australian PC World, Computerworld Australia; AUSTRIA's Computerwelt Österreich; BRAZIL's DataNews, PC Mundo; CANADA's ComputerData; CHILE's Computacion Personal, Informáticas; COLOMBIA's Computerworld Colombia; DENMARK's CAD/CAM World, Computerworld Danmark, Macworld Danmark, PC World Danmark, Unix World; FINLAND's Mikro PC, Tietoviikko; FRANCE's Distributique, Info PC, Le Monde Informatique, Télécoms International; HUNGARY's Computerworld SZT, Mikrovilág; INDIA's Computers & Communications; ISRAEL's People & Computers Weekly; ITALY's Computerworld Italia, PC World Italia; JAPAN's ComputerWorld Japan, InfoWorld, Publish; KOREA's Hi-Tech Information/Computerworld; MEXICO's Computerworld Mexico, PC Journal; THE NETHERLANDS' Amiga World, Computerworld Netherlands, PC World Benelux; NEW ZEALAND's Computerworld New Zealand, PC World New Zealand; NIGERIA's PC World Africa; NORWAY's Computerworld Norge, Macworld Norge, PC World Norge; PEOPLE'S REPUBLIC OF CHINA's China Computerworld, China Computerworld Monthly; POLAND's Computers; SPAIN's Amiga World, CIMWorld, Computerworld España, Comunicaciones World, PC World España; SWEDEN's Computer Sweden, Mac World, MikroDatarn, PC/Nyheterna, Svenska PC World; SWITZERLAND's Computerworld Schweiz; TAIWAN's Computerworld Taiwan, PC World Taiwan; UNITED KINGDOM's Graduate Computerworld, ICL Today, Lotus, Macworld, PC Business World; UNITED STATES' AmigaWorld, CIO, Computerworld, Digital NEWS, Federal Computer Week, GamePro, inCiderA+, InfoWorld, International Custom Publishing, Macworld, Network World, PCGames, PC World, Portable Computing, Publish, Run, Sun Tech Journal; USNR's Manager, Network, PC Express, PC World USSR; VENEZUELA's Computerworld Venezuela, Micro Computerworld; WEST GERMANY's Amiga Welt, Computerwoche, Information Management, Macwelt, FC Welt, PC Woche.

Reader Service Number	Page Number
197 Okidata	161A-161B
— Pacific Data Products	42, 255
220 Paradise Computer Products	319
233 Patton & Patton Software Corp.	22
198 PC Brand	4-7
— PC Connection	214-219
— PC Zone	86-87
144 Peachtree Software	77
211 Power Up! Software	36
213 Power Up! Software	37
219 Power Up! Software	38
— Quarterdeck	187
227 Reasonable Solutions	317
239 Rose Electronics	260
31 Secure-It	264
— Seiko Instruments	40-41
273 Selective Software	174
283 SL Waber	248
— Software Publishing Corp.	24-25, 56, 249
270 Software Toolworks	94
252 Starware Publishing	306
262 Sysgen, Inc.	252
284 Tandy Corp.	125
276 Technology Investment Strategies	266-267
296 Texas Instruments	9
263 Texas Instruments	119
259 Tiger Software	136-149
187 Timeworks	117
257 Toshiba	192-193
307 Valitek	272
325 Western Telematic	80
— WordPerfect Corp.	98-99, 212-213
324 Zeos International, Ltd.	61-71
323 Zeos International, Ltd.	234-235, 238-241
320 Z Soft Corp.	84

ADVERTISER INDEX BY PRODUCT CATEGORY

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
-----------------------	-------------

HARDWARE

Computers

189 ACCEL	39
3 Acer America	23
30 Automated Computer Technology	132-133
1 Blackship Computer Systems	318
— COMPAQ Computer Corp.	54-55
66 Dell Computer Corp.	C5-C8
74 Dell Computer Corp.	28-29

Reader Service Number	Page Number
— Dell Computer Corp.	103-112
100 Fast Micro	302-305
— Gateway 2000	17-20
172 MIS Computer Systems	307
188 NEC Technologies	250-251
182 NEC Technologies	265
191 Northgate Computer Systems	175-182
198 PC Brand	4-7
284 Tandy Corp.	125
263 Texas Instruments	119
324 Zeos International, Ltd.	61-71
323 Zeos International, Ltd.	234-235, 238-241
Desktop Publishing	
— Pacific Data Products	42, 255
Local Area Networks	
215 Buffalo Products, Inc.	313
126 Logical Connection	59
156 Mainlan Inc.	88
239 Rose Electronics	260
325 Western Telematic	80
Laptop/Notebook	
10 AST Research	12
30 Automated Computer Technology	132-133
— COMPAQ Computer Corp.	54-55
75 Dell Computer Corp.	270-271
163 Momena	92-93
205 NEC Technologies	78-79
263 Texas Instruments	119
257 Toshiba	192-193
323 Zeos International, Ltd.	234-235, 238-241
Printers/Plotters	
— Epson	31-33, 200-201
114 Hewlett Packard	155A-155B
123 Laser Press & Graphics	312
— MacFriends	46
162 Microtek	52
197 Okidata	161A-161B
— Seiko Instruments	40-41
296 Texas Instruments	9
Peripheral/Sharing Devices	
239 Rose Electronics	260
325 Western Telematic	80
Power/Protection	
45 American Power Conversion	34
283 SL Waber	248
Scanners/Digitizers	
21 Caere Corp.	188-189
Storage/Backup Devices	
2 Addstor	123
46 Colorado Memory Systems	14
128 Liberty Systems	8
203 NEC Technologies	75
262 Sysgen, Inc.	252
307 Valitek	272
Systems	
189 ACCEL	39

Reader Service Number	Page Number
SOFTWARE	
Accounting/Financial	
25 BusinessVision Management Systems	277
56 Cougar Mountain Software	127
94 DacEasy, Inc.	51
7 M-USA Business Systems	91
144 Peachtree Software	77
CAD/CAM	
306 American Small Business Computers	274
Communications	
84 Crosstalk	72
Database Management	
36 Clarion Software	257
42 Computer Associates	27
76 Fox Software	48-49
122 Group 1 Software	272
Desktop Publishing	
61 Delrina Technology	100
211 Power Up! Software	36
187 Timeworks	117
320 Z Soft Corp.	84
Education	
88 Bureau of Electronic Publishing	257
203 NEC Technologies	75
270 Software Toolworks	94
Electronic Mail	
— Lotus	10-11
Entertainment	
167 MicroProse	134
252 Starware Publishing	306
Graphics	
306 American Small Business Computers	274
179 Micrografx	196-197
219 Power Up! Software	38
— Software Publishing Corp.	24-25
187 Timeworks	117
320 Z Soft Corp.	84
Integrated Software	
— Lotus	173
Local Area Network	
156 Mainlan Inc.	88
Management	
168 MicroBiz Corp.	321
— MicroLogic	244
Operating Systems	
— Microsoft	128-131
Presentation Graphics	
— Lotus	166-167
— Software Publishing Corp.	249
Project Management	
39 Computer Associates	258
79 Haventree Software Ltd.	50
149 Lucas Management Systems	96
233 Patton & Patton Software Corp.	22
Scheduling Software	
213 Power Up! Software	37

Reader Service Number	Page Number
Shareware	
154 Micro-Tech USA	311
227 Reasonable Solutions	317
Spreadsheets/Templates/Forms	
— Lotus	170-171
Taxware	
89 Chipsoft	315
Utilities	
71 Fifth Generation	190
122 Group 1 Software	272
273 Selective Software	174
Windows	
73 Attitash Software	47
84 Crosstalk	72
61 Delrina Technology	100
— Lotus	170-171
179 Micrografx	196-197
— Microsoft	82
— Quarterdeck	187
— WordPerfect Corp.	98-99
Word Processing/Aids	
— Microsoft	C2-P1, 82
157 MicroTac Software	26
— Software Publishing Corp.	56
— WordPerfect Corp.	98-99, 212-213
MISCELLANEOUS	
Books/Periodicals/Subscriptions	
49 Computer Book Club	121
121 IDG Books	281
Computer Accessories	
— Anthro Corp.	30
— Curtis	115
Mail Order	
8 Arlington Computer Products	310
215 Buffalo Products, Inc.	313
64 CAD-ONE Computer Design Systems	316
200 Computer Discount Warehouse	308-309
— Damark International	306
— Gateway 2000	17-20
141 Kenosha Computer Center	320
— L A Trade	314
123 Laser Press & Graphics	312
154 Micro-Tech USA	311
172 MIS Computer Systems	307
220 Paradise Computer Products	319
— PC Connection	214-219
— PC Zone	86-87
227 Reasonable Solutions	317
259 Tiger Software	136-149
324 Zeos International, Ltd.	61-71
On-Line Services	
— America Online	261-262
33 CompuServe	45
Other	
276 Technology Investment Strategies	266-267
Security	
31 Secure-It	264

PRODUCTS FEATURED IN EDITORIAL

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
Add-On Board	
670	Fahrenheit 1280, Orchid Technology 114
716	PS/2 Model 57 Cached Processor Option, IBM 95
Artificial Intelligence	
601	Braincel, Promised Land Technologies 254
Computer System	
687	Acer 1120SX, Acer America 153
724	AcerPower 386SX, Acer America 97
689	ALR PowerFlex 20SX, ALR 154
690	Arche Triumph 386SX-20, Arche Technologies 154
665	AST Advantage NB-SX/20, 386SX/20, 486SX/20, 486/25; AST Research 124
691	AST Premium II 386SX/20, AST Research 154
692	Blackship BLK 386SX/20, Blackship Computer Systems 155
671	BusinessStation 486ASX, Advanced Logic Research 130
694	CompuAdd 320sc, CompuAdd 155
695	Dell System 320SX, Dell Computer 156
721	Dell System 325NC, Dell Computer 76
693	Deskpro 386s/20, Compaq Computer 155
696	Eltech Model 2200, Eltech 156
697	Epson Equity 386SX/20 Plus, Epson America 156
719	Epson NB-SL/25C, Epson America 74
698	FastData 386SX-20c, Fast Micro 158
699	Gateway 386SX/20c, Gateway 2000 158
700	HP Vectra 386/20N, Hewlett-Packard 158
701	Hyundai Super-386STe, Hyundai Electronics America 159
702	IBM PS/2 Model 57 SX-049, IBM 159
703	Leading Edge D3/SX-20c, Leading Edge 159
704	ME 386-SX/SL/20, Micro Express 162
688	Mitac MPC 2386E, American Mitac 162
705	NCR PC386sx/20, NCR 162
713	NEC UltraLite SL/20P, NEC Technologies 89
706	Northgate SlimLine 386SX/20, Northgate Computer 163
712	Portable 486c, Compaq Computer 83

Reader Service Number	Page Number
720	Premium Exec 386SX/25C, AST Research 76
714	Samsung PenMaster, Samsung Information Systems America 90
718	Sharp PC-6881, Sharp Electronics 73
707	Swan 386SX/20, Swan Technologies 163
708	Tangent 320S, Tangent Computer 163
664	Toshiba T4400SX, Toshiba America Information Systems 113
672	TravelMate 3000 WinSX, Texas Instruments 128
709	Tri-Star 386SX 20, Tri-Star Computer 164
715	Tusk All-Terrain SuperTablet, Tusk 90
710	Twinhead Superset 590/20, Twinhead 164
717	Valet SXL 25, Sampo America 85
711	Zeos 386SX/20, Zeos Int'l 164
Desktop Publishing	
609	Avagio 2.0, Unison World Software 186
610	Express Publisher 2.03, Power Up Software 186
611	Microsoft Publisher 1.0, Microsoft 194
612	PagePlus 1.1, Serif 194
613	Publish-It 2.0, Timeworks 198
DOS Shell	
680	Way You Work, Proteo Technology 116
File Server	
618	No-Stop Network, Nonstop Network 38
671	PowerPro Array, Advanced Logic Research 130
Font	
622	25 in 1 SoftCartridge, Good Software 224
654	25 in One, Headlines in a Cartridge; Pacific Data Products 226
650	25 Plus/Charisma, Elite Business Applications 226
649	Action Set, SuperSet +; Computer Peripherals 226
626	Adobe Type Library for the PC, Type Manager, Type Sets; Adobe Systems 224
647	ArcArtist, ArcMail, Bar Code Set, Fixed Pitch Set, Pro TArchitext 226
655	Collection, Forms Plus, Heritage, ImageFont All-in-One, PCPI 226
658	Complete Font Library Cartridge, FontBank Cartridge; Pacific Data Products 226
631	Digi-Fonts Typestyles, Typeface Library; Digi-Fonts 224
638	Express Fonts, TextAppeal; Power Up 224
629	FaceLift for Windows, FaceLift 1.5 for WordPerfect; Bitstream 224
628	FastFonts (with Publisher's PowerPak), Atech Software 224

Reader Service Number	Page Number
630	Fluent Laser Fonts Library, Casady & Greene 224
633	The Font Company Type Library, The Font Company 224
620	Fontrix, Printrix; Data Transforms 224
640	Font Solution Pak, SoftCraft 224
636	Fonts-on-the-Fly, LaserTools 224
644	Freedom of Press, Professional, for Windows 3.0; Custom Applications 224
641	Glyphix Laser Fonts for WordPerfect, SWFTE 224
645	Go Script, Plus, Select; LaserGo 224
623	Greek Soft Fonts, Math Soft Fonts; K-Talk Communications 224
656	HP Brilliant Presentations I, Compelling Publications II, Hewlett-Packard 226
635	HP Brilliant Presentations I, Compelling Publications I, Hewlett-Packard 224
651	HP Forms, Etc., Global Text, International Collection, Hewlett-Packard 226
663	ImageScript for Series II, for HP IID, IIP, IIP3, III; PCPI 226
627	Intellifont-for-Windows 3.0, Type Director 2.0; Agfa 224
660	JetPage III, Computer Peripherals 226
632	KeyCaps Font Set, Font Paks 1-5; Elfring Soft Fonts 224
625	LJ Fonts, Weaver Graphics 224
637	MoreFonts, MicroLogic Software 224
662	PacificPage PE, Pacific Data Products 226
659	PostScript Cartridge for LaserJet II, Adobe Systems 226
661	PowerScript IV, Elite Business Applications 226
643	SoftType 1.1, ZSoft 224
621	Spread Sheet Font Set, LaserJet Starter Package; Elfring Soft Fonts 224
653	Super Cartridge, Lotus Selects 226
652	Super Cartridge 1 International Edition, Super Cartridge; IQ Engineering 226
657	Super Cartridge 3/Professional Edition, IQ Engineering 226
624	SuperFonts 25/1, Metro Software 224
642	SuperPrint 2.0, Zenographics 224
648	Type City, Bitstream 226
634	Typographer 2.0, Glyph Systems 224
646	UltraScript PC 3.0, PC Plus 3.0; PMWare 224
Graphics	
678	Micrografx Windows Draw, Micrografx 114
Information Management	
686	ACT 2.1, 1stACT; Contact Software Int'l 135
LAN Application	
615	LANtastic Z, Artisoft 35

Reader Service Number	Page Number
614	The \$25 Network, Information Modes 35
LAN Peripheral	
675	External Ethernet Adapter, External Token Ring Adapter, Pocket Ethernet Adapter II; Xircom 118
Memory Management	
679	QEMM-386 6.0, Quarterdeck Office Systems 124
Miscellaneous	
673	FotoMan, Logitech 122
681	JetWay, ASP Computer Products 116
Operating System/Environment	
669	DR DOS 6.0, Digital Research 118
676	NetWare Lite, Novell 120
685	VINES 4.11, Banyan Systems 135
Power Supply	
617	Silencer 220, Silencer 270; PC Printer and Cooling 36
Printer	
722	Dataproducts Jolt PS, Dataproducts 101
666	ExpressWriter 201, Toshiba America Information Systems 126
667	IBM LaserPrinter 4029 Series, Lexmark Int'l 129
728	QMS-PS 815MR, 825MR; QMS 120
723	Seiko Personal ColorPoint PS, Seiko Instruments USA 102
Printer Accessory	
683	PCL 5 Cartridge, Hewlett-Packard 135
Scanner	
674	ReadStation, Umam Technologies 131
Scheduling Software	
677	The Far Side Computer Calendar, Amaze 126
Tax	
727	Andrew Tobias' TaxCut 1991, MECA Software 122
726	TurboTax 1991, ChipSoft 122
Utility	
619	ARCserve, Cheyenne Software 38
602	dbDial, Barn Owl Software 322
603	DialThat, Real Software 322
604	QEdit, SemWare 322
605	RightOn, Fanfare Software 322
606	Softkicker, Aristosoft 322
607	SST, Keith Ledbetter 322
608	UltraVision, Perronics 322
Word Processing	
684	DeScribe 3.0, DeScribe 135
682	Legacy 2.0, NBI 135
725	Lotus Write, Lotus Development 81



PC WORLD MAIL ORDER Shopping Guide

*Buy with
Convenience*

*Buy with
Confidence*



FastData Power PCs



\$2599 FastData 486/33

If you need the ultimate in 486 power, the FastData 486/33 delivers. A true Intel™ 486-33 processor with integrated coprocessor and 8K internal cache is complemented by a 128K external static RAM cache with burst mode support to deliver 14.7 MIPS of processing power. The system is expandable to 16 megabytes of memory on-board using 1mb SIMMS, thus protecting your investment in existing memory when you're ready to upgrade. The FastMicro team has bundled the 486/33 with four megabytes of memory, a high-speed 200mb IDE hard disk and a 1mb Super VGA adaptor and Non-Interlaced monitor at an attractive price. From networking to publishing to CAD, we have what it takes to make your computer a complete solution.

Standard Features

- ✓ 33mhz Intel 80486 processor with coprocessor.
- ✓ 8K processor & 128K external static RAM cache.
- ✓ 4 megabytes of fast RAM.
- ✓ 200 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Full size or upright (shown) chassis with keylock, speed and reset buttons.
- ✓ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution, with 1mb VGA card.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 230 watt power supply
- ✓ 8 ISA slots, 5 drive bays.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class A approved for business use only.

486/33	80mb	100mb	200mb	340mb
Monitor	\$1,929	\$1,999	\$2,249	\$2,649
Monitor VGA	\$2,029	\$2,099	\$2,349	\$2,749
VGA 1024i	\$2,229	\$2,299	\$2,549	\$2,949
VGA 1024mj	\$2,279	\$2,349	\$2,599	\$2,999



FastData 386/33 \$1799

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 80 megabyte 20 millisecond hard disk, 1024 by 768 Non-Interlaced Super VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warranty with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes high speed RAM.
- ✓ 105 mb 17ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with speed, keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 200 watt power supply.
- ✓ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution, with 1mb VGA card.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Built-in memory management.
- ✓ MS-DOS 5.0.
- ✓ Windows & Logitech Mouse add \$69.
- ✓ FCC Class B approved.

386/DX33	80mb	100mb	200mb	340mb
Monitor	\$1,379	\$1,449	\$1,699	\$2,099
Mono VGA	\$1,479	\$1,549	\$1,799	\$2,199
VGA 1024i	\$1,679	\$1,749	\$1,999	\$2,399
VGA 1024mj	\$1,729	\$1,799	\$2,049	\$2,449



FastData NoteBook

New 80mb SX/20 model!
Call for pricing & specifications.

All FastData Systems Include:

- Toll-Free Technical Assistance for Life
- 'FastSHIP' Advance Parts Replacement
- On-Site Service or System Replacement Should Unusual Problems Arise
- 30 Day Money Back Guarantee
- FastMicro Peace of Mind

FastData SX Systems



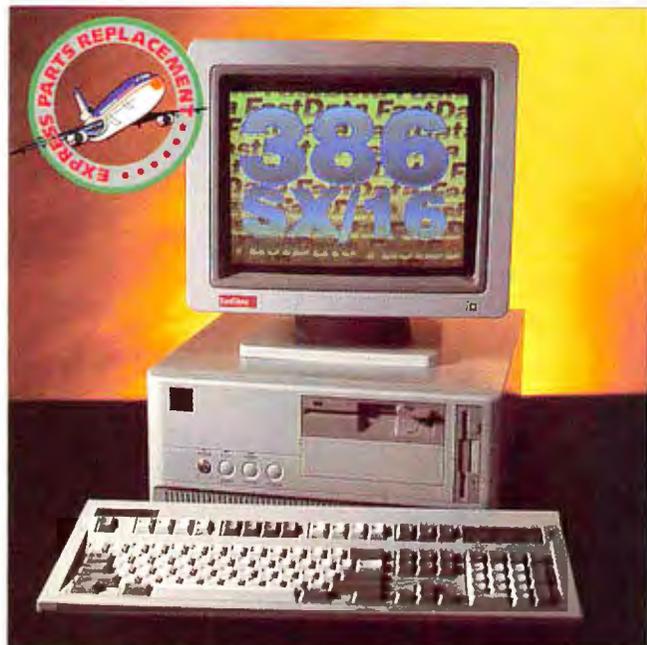
\$1399 *FastData SX/20*

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just \$200 more than our SX/16, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor. Keytronics keyboard, DOS 4.01 or 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 80 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX20	40mb	80mb	100mb	200mb
Model	\$969	\$1,099	\$1,169	\$1,419
Monó VGA	\$1,069	\$1,199	\$1,269	\$1,519
VGA Color	\$1,219	\$1,349	\$1,419	\$1,669
VGA 1024i	\$1,269	\$1,399	\$1,469	\$1,719



\$1249 *FastData 386/SX*

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of fast RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard , mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Model	\$949	\$1,079	\$1,149	\$1,399
Monó VGA	\$1,049	\$1,179	\$1,249	\$1,499
VGA Color	\$1,199	\$1,329	\$1,399	\$1,649
VGA 1024i	\$1,249	\$1,379	\$1,449	\$1,699

FASTMICRO
1-800-821-9000



FastMicro
3655 E. LaSalle St.
Phoenix, AZ 85040
(800)821-9000 (602)437-5700
(602)437-2300 FAX

© 1991 FastMicro, Inc. All trademarks acknowledged. Add 3% for shipping.

DISK DRIVES

CD-ROM	
Hitachi Ext. 680mb Kit.....	499
Sony Int. 680mb Kit.....	379
Book of Mammals / Encyclopedia.....	49/69
MS Bookshelf, Stat. Pack.....	
World Atlas & Consultant CDs.....	99
Colorado	
DJ-10 40-120mb Int. Tape.....	239
DJ-20 80-240mb Int. Tape.....	299
External Kit.....	69

Toshiba 100mb IDE Kit

\$369



Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and built-in 1:1 controller, 16 bit IDE card with dual floppy controller & cables, 5.25" brackets & rails.

Conner (see FastData IDE controllers)

CP3044 40mb IDE 28ms.....	199
CP3104 100mb IDE 25ms.....	349
CP3208 200mb IDE 25ms.....	549

DTC

6280 ESDI 16bit HD/FD Cont.....	119
6280-15T 15mbit/sec transfer rate.....	169

Micropolls (see DTC Controllers)

MC1664 345mb HH ESDI 14ms.....	999
MC1568 668mb FH ESDI 14ms.....	1399
MC1598 1gb FH ESDI 14ms.....	1999

Plus Development

HardCard IXL 50mb 9 ms 16bit.....	299
HardCard IXL 105mb 9 ms 16bit.....	469

Seagate 89mb AT Kit \$319



IDE performance, big 89 megabyte capacity, 14ms access time and 5 mbps transfer rate make this a great buy. Controller, cables and rails are included to make installation fast and easy.

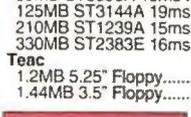
Seagate

30MB XT Kit ST238 w/ cont.....	249
40MB AT ST251-1 MFM Drive.....	229
40MB AT ST157A 28ms IDE Drive.....	179
89MB ST3096A 19ms IDE Drive.....	299
125MB ST3144A 19ms IDE Drive.....	359
210MB ST1239A 15ms IDE Drive.....	599
330MB ST2383E 16ms ESDI Drive 1199	

Teac

1.2MB 5.25" Floppy.....	65
1.44MB 3.5" Floppy.....	65

Toshiba 1.44mb Floppy \$59



Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add \$5.

Toshiba

360K 5.25" Floppy (Black).....	59
1.2MB 5.25" Floppy.....	59
1.44MB 3.5" Floppy.....	59
107mb 1034 IDE 3.5" drive.....	349

Western Digital

WD93044 40mb IDE 28ms.....	199
WDAC280 80mb IDE 20ms.....	299
WDAP4200 200mb IDE 20ms.....	599

MODEMS & FAX

ATI

2400 ETC Internal / External.....	129/159
9600E External MNP V.42bis.....	369



ATI \$369 9600ETC-E

ATI delivers speed and accuracy with the 9600 Etc-E! It includes V.42, LAP-M, and MNP error correction combined with MNP5 and V.42 bis data compression to provide total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiation with connecting with other modems.

Everex 2400B Int Modem.....69

Hayes

JT FAX 4800B Internal.....	139
Personal Modem 2400 w/Prodigy.....	119
Pocket Edition 2400 Modem.....	119

Intel

Classic 2400 Modem Int./Ext.....	139/169
Satisfaction Classic - Int/9600.....	379

Practical Peripherals

OmniLink Laser \$379

Don't settle for curled-up thermal paper or tie up your PC to receive faxes - get OmniLink Laser. It connects to your phone line and HP compatible laser and receives and prints your faxes. You can still print anytime you want and OmniLink will store up to 30 faxes while your printing. Plus, its a standard 2400/9600 modem/sendfax and software is only \$89.

2400B Int Modem Std/MNP.....125 159

PM9600SA Ext. V.32/V.42bis.....449

USRobotics

2400 Sportster Int / Ext.....	119/135
2400 Sportster MNP Int / Ext.....	159/189
9600 Sportster Int / Ext.....	399/449
Courier HST 14,400 Int. / Ext.....	539/579
Courier HST 14,400 Dual Std Ext.....	839
WorldPort 2496 Pocket Modem/Fax.....	309

ZOOM

HC2400 Internal.....	69
2400 V.42bis External Modem.....	129
9624 Send/Receive Int Fax Modem.....	109

MICE & INPUT

Key Tronic 101 Keyboard.....59

Professional Mouse.....59

Logitech

Mouseman Serial righthand.....	59
Mouseman Serial with Windows.....	109
Mouseman Bus righthand.....	65
Mouseman Cordless.....	85
ScanMan 32.....	159
ScanMan 32 with Catchword.....	199
ScanMan 256 for Windows.....	279
Trackman Serial.....	65

Microsoft Mouse \$83

Ergonomic design and 400 DPI accuracy make this the world's most popular mouse. Microsoft design and mouse utilities assure compatibility with the programs you use most.

Microsoft

Serial or Bus Mouse only.....	83
Serial or Bus with paint.....	95
Serial with Windows.....	147
Z-Nix Super Mouse II w/Windows.....	79



NETWORKING

Artisoft/Lantastic

Lantastic 2 Station Starter Kit.....	349
2 Mbps.....	469
Ethernet.....	209

Eagle

NE2000 2 Station NW Lite Kit.....	459
FastData NE2000 16 bit 10-BaseT.....	109

Novell

Network Lite.....	65
-------------------	----

FASTDATA PRODUCTS



FastData 16 Bit VGA \$59 \$69

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

FastData 16bit 1mb VGA.....89

FastData CGA Card.....35

FastData MGP Card.....29



FastData Monitors

Your best value, guaranteed! We have a full line manufactured for us by manufacturers like Hyundai and Matsushita. As with all FastData branded product, you get a full 30-day money back satisfaction guarantee. Shown is the VGA color.

VIDEO & MONITORS

ATI

Graphics Vantage 1mb.....	389
VGA Basic 16 / Integra.....	75 / 129
VGA Wonder XL 256K / 1mb.....	169 / 229
8514 Ultra 8514/VGA 1mb.....	599

Diamond

SpeedStar Plus HiColor 1mb.....	189
Sleath VRAM HiColor 1mb.....	265

Everex EGA 480 Card.....69

FastData Monitors & Cards.....see above

Hercules Graphic Card +.....Call

MAG Colorview/15.....Call

Mitsubishi

1410 EGA.....	325
Diamond Scan 1381.....	499
Diamond Scan 16L.....	919

NEC

Multisync GS 2a.....	199
Multisync 3FGX.....	599
Multisync 4FG.....	749

Orchid

ProDesigner IIs 1mb.....	219
Fahrenheit 1280s HiColor.....	319

Panasonic C1381 VGA.....369

Seiko CM1440/CM1450.....489/569

Sony 1304 Multiscan.....599

Video 7

VGA 1024i 256K / 512K.....	129 / 149
V-RAM II VGA 512K / 1mb.....	249 / 319

Zenith 1492.....599

BOARDS & CHIPS

AdLib Gold 1000/2000.....185 / 285

ATI Stereo F/X.....129

Creative Labs

Sound Blaster.....	109
Sound Blaster Pro (stereo & MIDI).....	189

Cyrix 387-DX25 / 33.....179 / 195

387-SX16 / 20.....115 / 129

Everex

RAM3000 16 bit - w/ OK (max 3mb).....	75
RAM3000 16 bit - w/ 1mb.....	125
RAM8000 16 bit - w/ OK (max 8 mb).....	169
RAM8000 16 bit - w/ 2mb.....	269

Intel 287XL.....85

387-DX25 or 33.....209

387-SX16 / 20.....129 / 139

Memory - 1mb SIMMS 80ns.....49

Memory - 1mb chips 80ns set of 9.....59

FASTDATA 2400 Baud Modem \$49

The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

FastData Monitors

14" Amber or White Monochrome.....	99
14" White VGA Monochrome.....	119
14" CGA Color .52 dot pitch.....	199
14" Super VGA 1024 x 768i .28 dp.....	299
14" Non-Int VGA 1024 x 768 .28 dp.....	369

Sound Blaster \$109

Sound Blaster does for sound what VGA does for graphics! Supported by the largest software library, Sound Blaster makes your games come to life. Also includes a music synthesizer, voice input and sound compression, and MIDI interface. SB Talker even converts text into spoken English. Includes a game port also.

PRINTERS

Canon

BJ10XE Portable.....	319
BJ300 / BJ330 Ink Jet.....	459 / 599
LBP-4 Laser.....	799

Citizen

200GX 9 Pin.....	159
GSX-130 24 Pin.....	249
GSX140+ 24 Pin.....	295
GSX145 24 Pin Wide.....	395
PN48 Std / Pro.....	299 / 329

NEC

P3200 24 Pin.....	269
P3300 24 Pin Wide.....	369
P6200 / 6300.....	469 / 629
Silentwriter 2 Model 90.....	1550

Okidata

Okilaser 400.....	669
-------------------	-----

Panasonic 1124i \$299

The Panasonic KX-P1124i is the ideal high-end 24 pin printer at a low-end price. It features up to 500 cps speed, 8 letter-quality fonts, 10 pitch selections and more. It features an EZ set operator panel and LCD display to make changing setting a breeze. It includes a two-year warranty too!

Panasonic

KXP1180 9 Pin.....	155
KXP1123 24 Pin.....	239
KXP1124i 24 Pin.....	289
KXP1624 24 Pin Wide.....	369
KXP2624 24 Pin Quiet.....	459
KXP420 Laser.....	699
KXP4450i / 4455 Lasers.....	Call
Seiko Smart Label Printer Plus.....	167

Star

NX1001.....	149
NX2410 / 2415.....	239 / 369
XB2410 / 2415.....	419 / 539

Texas Instruments

Microlaser PS17.....	1199
Microlaser PS35.....	1499

FastData 286/12

\$699

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Key Tronic keyboard. And since it's a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms IDE hard disk 1:1 interleaved.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$59)
- ✓ Standard chassis (shown)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Math coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, game port, & 2 serial ports.
- ✓ Key Tronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ MS-DOS 5.0.
- ✓ Full documentation.
- ✓ FCC Class B approved.



286/12	40mb	80mb	100mb	200mb
Mono	\$699	\$829	\$899	\$1,149
386 VGA	\$799	\$929	\$999	\$1,249
VGA Color	\$949	\$1,079	\$1,149	\$1,399
VGA 1024i	\$999	\$1,129	\$1,199	\$1,449

DATABASE & FORMS

askSam 5.0	209
Clarion Personal Developer	45
Clarion Professional Developer	449
Clipper 5.01	489
DataEase	509
dBase III+	419
dBase IV	449
dBXL Diamond	129
Formbase	299
FormTool Gold	79
Formfiller	79
Foxbase Plus	179
FoxPro 2.0	449
Paradox 3.5	449
Paradox Competitive Upgrade	165
Paradox SE	89
Per:Form Designer & Filler	65
Personal Rbase	79
Q & A 4.0	249
RapidFile	99
Rbase for DOS	447
Reflex	159

Paradox SE \$65

New Paradox SE is a special version of the award-winning database management software designed especially for small business and home use. Just enter your data and Paradox SE lets you query, graph, sort, even write reports and form letters. Easy to use and learn, you can create multi-table date-entry applications without programming.



ENTERTAINMENT

Carmen SanDiego Deluxe Edition	45
F-19 Stealth Fighter	38
King's Quest 5 (VGA Vers.)	38
Leisure Suit Larry III	35
Microsoft Flight Simulator	38
Aircraft & Scenery Designer	27
PC Globe or PC USA	35
Simcity	38
SimEarth	38
Wing Commander I / II	39 / 45

DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II	239
Bannermania	21
Express Publisher	Cal
Microsoft Publisher for Windows	129
Pagemaker 4.0	489

Microsoft \$129 Publisher

New Microsoft Publisher for Windows gives you easy-to-use page layout, text, and graphics tools to create publications quickly. It includes a built-in word processor with spell checker and import text from any major word processor. Also includes PageWizards - step by step publication creation, WordArt - text special effects, and Toolbars - access to frequently used functions are a click away. Also comes with 100+ clip art images, border art, drawing tools & more.



PFS:First Publisher	89
Printshop	33
Publisher's Paintbrush	279
Publish It!	129
Ventura Publisher Gold / Windows	499

FINANCIAL

ACCPAC BPI Value Pak	359
Bedford Integrated Acct.	119
Checkfree	19
DAC Accounting 4.2	85
DAC Bonus Pack 4.2	127
Dollars & Sense	39
Managing Your Money	109
Microsoft Money for Windows	45
Money Matters	29
One Write Plus G/L, A/P & A/R	165
Pacioli 2000	29
Peachtree Crystal Acctg. Windows	175
Peachtree Complete III	139
Peachtree with Data Query	209
Quicken	41
The Manager's Organizer	139
Timeslips III	179
Wealth Builder	89

WINDOWS SOFTWARE

3-D Charts to Go for Windows	55
ACCPAC Simply Acctg. for Windows	119
Adobe Illustrator	299
Adobe Streamline	119
Adobe Type Sets	Call
Adobe Type Align	59
Adobe Type Manager	59
Adobe Type Manager Plus Pack	115
After Dark for Windows	25
Ami Pro 2.0	279
Ami Pro 2.0 Competitive Upgrade	119
Asymetrix Toolbook	279

Windows 3.0 \$89

Get in on the Windows revolution! Windows turns your 286 or above into a powerful multitasking workstation that runs even non-Windows applications. Includes many integrated applications standard. Plus, if you buy Windows from FastMicro, we'll throw in 12 of the best Windows shareware programs free!

MicroPhone II	89
Microsoft Ent. Pack I, II, or III	27
Microsoft Mouse w/ Windows 3.0	147
Microsoft Office (Word/Excel/Powerpoint)	447
Microsoft Powerpoint for Windows	309
Microsoft Productivity Pack	39
Microsoft Windows	89
Microsoft Windows Developer's Kit	309
Microsoft Word for Windows	299
M.Y.O.B.	129
Norton Backup	85
Norton Desktop	95
ObjectVision for Windows	89
On Target	229
PackRat 3.0	239

AfterDark \$25

Save your screen with over 35 incredible displays-Aquatic Realm, Flying Toasters, Logo, Messages, Multimodule or create your own screen saving art System™ activity monitor maximizes performance while running After Dark. Also features DOS blanking and two-level password protection, and sound! It includes a programmable quick-sleep hot key and total network compatibility.

Pagemaker 4.0	489
Persuasion	319
Per:Form Pro	179
PFS:WindowWorks	119
Pro Write Plus	159
Project for Windows	429
Publisher's Powerpak	45
Publisher's Paintbrush	279
Quattro Pro for Windows	Call
RightWriter for Windows	Call
SuperBase 4	419
Turbo Pascal for Windows	119
Ventura Publisher	519
WideAngle for Windows	62
Winconnect	59
Windows Draw	145
WinFax Pro	69



Microsoft Office \$447

This special bundle includes the leading Windows applications, Excel, Word and PowerPoint all in one. Excel is the tops rated graphical spreadsheet, Word is the #1 selling Windows word processor and PowerPoint is the top presentation package. Act now and you will save half the cost if purchased separately.

BeckerTools Plus	Call
Bitstream Facelift	57
Corel Draw 2.0	349
Correct Grammar	57
Current	119
DBlast/Windows	239
DynaComm 3.0 Async	139
Excel	299
Facelift	57
Form Publisher	139
Grammatik IV for Windows	55
HDC First Apps or Windows Express	55
Instant Orgchart	119

1-2-3 & Ami Pro Double Upgrade \$139 WOW!

Lotus users! This upgrade includes the hot new 1-2-3 for Windows and the new Ami Pro 2.0. 1-2-3/W includes SmartIcons, 3-D charting, true 3-D worksheets, and database links. Use Windows pull-down menus or press slash and Classic 1-2-3 menus appear. Ami Pro 2.0 is the new version of the award-winning Windows word processor. It includes new customizable SmartIcons, 1-2-3 data exchange, outlining, style sheets, revision marking, and more.



We Ship Air at Ground Rates

GRAPHICS

Autosketch 3.0	139
Corel Draw 2.0	349
Design CADD 3-D	185
DrawPerfect	259
Freelance Graphics 4.0	299
Freelance Competitive Upgrade	89
Generic 3D Drafting	199
Generic Cadd Level 2 Starter Kit	89
Generic Cadd 5.0	279
Harvard Graphics	Call
PC Paintbrush IV Plus	109

PC Tools \$99 Deluxe 7.0

New PC Tools 7.0 is the perfect set of utilities for DOS 5. Includes new application menu system, remote operation of another PC, advanced data recovery and an enhanced Backup in DOS and Windows versions. Anti-Virus, which recognizes over 400 known viruses and even detects unknown ones is included as a free bonus.



INTEGRATED

First Choice	95
Framework XE	95
Geoworks Ensemble	115
LotusWorks	89
SmartWare II	417
Symphony 2.2	489
Works	89
Works w/ MS Serial Mouse	149

PROGRAMMING

Borland C++	299
Borland ObjectVision for Windows	89
Turbo Pascal Dos/Windows	90/119
Macro Assembler	95
Microsoft C Compiler	303
Quick Basic	60
Quick C or Quick Pascal	60
Visual Basic for Windows	125
Windows Developer's Kit	309

SPREADSHEETS

Allways	115
Excel for Windows	299
Lotus 1-2-3 version 2.3	325
Lotus 1-2-3 version 3.1+	399
Lotus Upgrades	Call

Lotus 1-2-3 2.3 \$325

The powerful spreadsheet that runs on any PC. New WYSIWYG display, mouse support, 200 graph types, drawing tools and other graphics features to make spreadsheet publishing a breeze. Release 2.3 also adds auto-compressing, auditor, file viewer, context sensitive help, print preview and more. Call us for upgrade information too!



Quattro Pro 3.0	289
Quattro Pro 3.0 Comp. Upgrade	89
Quattro Pro 3.0 SE	45
Supercalc 5.1	89

WORD PROCESSORS

Facelift for WordPerfect	57
Grammatik IV	55
LetterPerfect	119
Multimate 4.0	267
Professional Write	159
Publisher's PowerPak / WordPerfect	45

WordPerfect 5.1 \$239

WordPerfect is the #1 rated word processing software. It's got almost every feature imaginable and yet it's easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!

Rightwriter	55
Sprint	117
Word	209
Word Perfect 5.1	239
Word Perfect for Windows	249
Word Perfect Add'l Station	159
Word Perfect Office	89
WordStar Professional	187
Writer's Toolkit	85

UTILITIES

386 MAX	59
Address Book Plus	47
Calendar Creator Plus	47
Central Point Backup	75
Checkit	79
Company Ladder	45
Control Room	69

MS-DOS 5.0 \$55

The new Microsoft DOS 5.0 trees 45K or more for DOS on 286 & 386 PCs. It includes a new Shell, Undo and Unformat, new Editor and more. Also includes Qbasic, Command Line Help, new Backup and Windows enhancements. Plus, you can install it on your drive without reformatting, even on Networks. This official upgrade pack requires that you simply have an older command.com on your drive!

CoreFast	60
Carbon Copy Plus	105
Desqview 2.4	75
Desqview 386 2.4/6.0	125
Direct Access	57
Disk Manager Dos / Novell	36 / 95
Disk Optimizer	29
DR DOS 6.0	65
GoScript 3.0	89
Fastback Plus	109
Headroom	59
Hijaak 2.0	95
InfoSpotter	45
Labels Unlimited	45
Laplank Pro	89
Microsoft Learning DOS	32
MS-DOS 5.0 Upgrade	55
Norton AntiVirus	79
Norton Backup	90
Norton Commander	90
Norton Utilities 6.0	109

Stacker 2.0 \$79

PC Magazine 1991 Technical Excellence winner. Stacker doubles the capacity of your hard disk in minutes, without reformatting. It compresses files in the back-ground transparently giving you the extra room you need. For greater performance, the Stacker AT/16 with 16 bit coprocessor card (S179) is ideal.



PC Anywhere IV	109
PC Tools Deluxe 7.0	99
Personal Lawyer	34
P.D. Queue	55
PFS:Preface	47
Pop Drop Plus	53
PrintRite	19
ProComm Plus	59
Prodigy	25
QA Plus	85
QEMM 386 6.0	59
QRAM 2.0	49
SideKick 2.0	53
Sideways	55
Smartcom Exec	69
Super PC Kwik	43
Virex-PC	75
XTree Gold 2.0	89

FAST MICRO



For Pricing on Other Products or to Order, Call Toll-Free (800) 441-3278



TERMS: No Charge for Visa, MasterCard or Discover Card. All orders up to 20 pounds are shipped via Federal Express. Minimum order: \$50. Shipping & handling charge: 3% (Min. \$6). Product warranties, offers & claims are handled by the manufacturer (all FastData branded products are warranted through FastMicro). Compatibility is not guaranteed (except on FastData products). No returns on used items (except FastData branded products). All opened returns are subject to 15% restocking fee (except FastData branded products). DOA's repaired or replaced at our option. Call for return authorization (RA) before returning product. Shipping is not refundable. Sorry, no COD's. Personal/company checks delay shipping. AK, HI, & APO addresses add \$15 per box. Prices/availability subject to change. Purchase orders accepted (no surcharges) from approved corporations only. AZ orders add 6.7% tax. Mailing Address: FastMicro 4405 E. Baseline Road, Phoenix, AZ 85044 To place orders call: 800-441-3278 For customer service call: 602-431-8100 Canada/International sales call: 602-431-8200 FAX: 602-431-8300

DAMARKSM

INTERNATIONAL, INC.

The Great Deal CatalogSM

Call toll free
1-800-729-9000

PROTEK

386-SX 16MHz Computer with 40MB Hard Drive and 14" Color VGA Monitor

- 386-SX microprocessor, 16 MHz with zero wait state.
- Selectable turbo/normal 8MHz/16MHz speeds. • 40MB hard drive.
- 1MB RAM. • 5 expansion sockets.
- One 3.5" 1.44MB floppy disk drive & one 5.25" 1.2MB floppy disk drive.
- IBM compatible. • 14" VGA color monitor, res: 640x480, .41m dot pitch.
- 1 parallel and 2 serial ports.
- 16-bit VGA display adapter with 800x600 resolution.
- 80387 math co-processor slot.
- Includes DR-DOS 5.0, Spinnaker Eight-in-One. • Factory New!



Mfr. Sugg. Retail: \$3,469.00

DAMARK PRICE \$999⁹⁹

Item No. B-3593-189036 S/H \$49.00

Bondwell

286 VGA Laptop Computer with 40MB Hard Drive

- 80C286 AT computer operating at 16MHz, zero wait state. • Landmark speed of 20MHz.
- 256K video RAM on the motherboard.
- 1MB user RAM expandable to 5MB on the motherboard. • VGA video port
- IBM compatible. • 40MB hard drive.
- 3.5" 1.44MB floppy disk drive • VGA nonglare screen. • One Centronics parallel port, and one RS232C serial port. • Factory New!



Mfr. Sugg. Retail: \$1,799.00

DAMARK PRICE \$999⁹⁹

Item No. B-3593-195224 S/H \$19.50

Accessories:

	Mfr. Sugg. Retail	DAMARK PRICE
2400 Baud Modem Item No. B-3593-195238	\$150.80	\$69.99
Deluxe Carrying Case Item No. B-3593-195245	\$129.95	\$39.99
NiCad Battery Pack Item No. B-3593-195259	\$99.99	\$39.99

S/H-\$5.00 on Modem, \$4.50 on others.

OKIDATA

2400 and 9600 Baud Modems

- Fully Hayes compatible.
- Auto answering and dialing.
- 2400 transmission rate: 110, 300, 1200 or 2400 bits per second in full duplex.
- 9600 transmission rate: 110, 300, 1200 or 2400, 4800 or 9600 bits per second in full duplex. • MNP levels 2 through 5.
- Shares a line with your phone.
- Compatible with Bell System (Western Electric) 212A[®] and 103[™] modems, Hayes AT commands and registers (and 9600 baud modem is compatible with V.32 and V.42 bis.).
- Factory New!



2400 Baud Modem:

Mfr. Sugg. Retail: \$499.00

DAMARK PRICE \$99⁹⁹

Item No B-3593-194314 S/H \$7.50

9600 Baud Modem:

Mfr. Sugg. Retail: \$999.00

DAMARK PRICE \$299⁹⁹

Item No. B-3593-194321 S/H \$8.50

For fastest service call toll free **1-800-729-9000**

Name _____ Address _____

City, State Zip _____ Check/MO VISA MasterCard Discover

Card No _____ Ex. Date _____ Ph.# () _____

Signature _____ Customer Service 1-800-788-7001

Qty.	Description	Item #	S/H Ea.	Price Ea.	Total Price	Total S/H

DELIVERY TO CONTINENTAL UNITED STATES ONLY

Subtotal _____

In MN add 6.5% sales tax

Total S/H _____

Grand Total _____

DAMARK INTERNATIONAL, INC.
7101 Winnetka Ave. N., P.O. Box 29900
Minneapolis, MN 55429-0900

Copyright 1991 DAMARK International, Inc. All rights reserved

B-3593



Aerial photo of Devil's Island from #901

Space Shuttle cargobay from #902

Sidewinder in the sand from #903

Simply the highest quality 800x600x256 PCX images

1992 Swimsuit Calendars



RAD
Graphics



- Makes a great gift
- Dazzle your friends
- Use as Windows Wallpaper
- DOS & Windows viewing utilities included
- Use with your favorite word processor, publishing or graphics application
- Hard drive not required
- Windows users convert files to BMP, GIF, IMG, PCX, PIC, TIFF and WPG
- Over 5MB in every volume, comes on high density diskettes

#901 Mother Earth - vol I One volume \$29.88, two volumes \$44.88, three volumes \$59.88
Breathtaking views of our planet. Includes images of oceans, deserts, islands, & sunsets.

#902 Space Things - vol I

A must have for any computer user. Contains stunning views of Earth, galaxies, and satellites.

#903 Amazing Animals - vol I

An educational look at mysterious animals around the world. A most unique product.

#904 Lovely Ladies Calendar First calendar \$29.88, each additional calendar only \$24.88
Every month features beautiful women sporting the latest in swimwear fashions.

#905 Hot Hunks Calendar

This year add some spice to your computer. Sure to inspire you to new heights.

#900 Graphix Starter Kit

A collection of DOS and Windows utilities with Preview Images of all RAD Graphix and 1992 Swimsuit Calendars. Included with every order and every calendar.

Special Holiday Prices Limited Time Offer

800-354-5353

24 hour / 7days Order Hotline



US & Canada



Check or money order: **Starware Publishing Corp.**
Add \$3 for S/H P.O. Box 4188, Dept. 56
Add \$3 for Foreign Deerfield Beach, FL 33442
Add \$3 for 3.5" disks For more information call
FL add 6% sales tax (305) 426 - 4552

Circle 252 on reader service card



A Complete 486™ **SX** System For Under \$2,000.

MIS continues to bring you the most current technology at best prices! We are now introducing our Micronics based 486 SX well below retail.

Utilizing the new Gemini chip set from Micronics, the MIS 486 SX has fewer components resulting in better reliability and greater speed and also provides up to 32MB of memory on a baby size motherboard! WHAT A GREAT WORK STATION!! At the same time, we are announcing our new on-site maintenance program! You now have no excuse not to try one of our fantastic computers!!!!

MIS 486 SX - 20 MHz STANDARD

- 1MB 80NS RAM
- PHOENIX ROM BIOS
- TEAC 5.25" 1.2MB FLOPPY DRIVE
- TEAC 3.5" 1.44MB FLOPPY DRIVE
- 40MB AT HARD DISK DRIVE
- 2 SERIAL, 1 PARALLEL AND 1 GAME PORTS
- 512K VGA ADAPTER
- 14" VGA COLOR MONITOR
- MICROSOFT COMPATIBLE SERIAL MOUSE
- NMB 101-KEY ENHANCED KEYBOARD
- DESKTOP CASE WITH FIVE DRIVE BAYS
- 220W POWER SUPPLY
- ONE YEAR PARTS AND LABOR WARRANTY
- 30-DAY MONEY BACK GUARANTEE
- FREE TECHNICAL SUPPORT
- ON SITE SERVICE NOW INCLUDED

\$1,995

Prices, specifications and terms are subject to change without notice. 30 days money back does not include shipping charge and damaged components. CA residents add appropriate sales tax. No surcharge on credit card purchases. Personnel and company checks require 2 wks clearance. All names mentioned are registered trademarks of their respective companies.

486-33 MHz EISA STANDARD System w/ 64K Cache	\$ 2,995
486-25 MHz EISA STANDARD System w/ 64K Cache	\$ 2,695
486-33 MHz ISA STANDARD System w/ 64K Cache	\$ 2,295
486-25 MHz ISA STANDARD System w/ 64K Cache	\$ 2,195
386-33 MHz STANDARD System w/ 64K Cache	\$ 1,795
386-25 MHz STANDARD System	\$ 1,595
386SX-20 MHz STANDARD System	\$ 1,495
286-12 MHz STANDARD System	\$ 1,195
386-25/33 MHz PORTABLES	CALL
386SX-16/20 MHz NOTEBOOKS	CALL

VGA Monitor (1024x768) Upgrade	Add	\$ 195
80MB AT Hard Drive Upgrade	Add	\$ 150
120MB AT Hard Drive Upgrade	Add	\$ 250
200MB AT Hard Drive Upgrade	Add	\$ 450
RAM Upgrade	Add	\$ 60/MB
120MB Tape Backup Drive	Add	\$ 350

CALL FOR ADDITIONAL UPGRADE OPTIONS

MIS Computer Systems

P.O. Box 70897 Sunnyvale, CA 94086-0897

Order Now
1-800-733-9188



Office Hours: M-F 9:00 am-6:00 pm Pacific Time

Circle 172 on reader service card



OKIDATA
The Personal Page Printer For Smaller Budgets

OL400
LED Page Printer

Features: • 4 PPM • 300 DPI • More Standard Typefaces & Fonts Than LaserJet™ IIP • High-Capacity 200-Sheet Paper Tray Included • Slim Low-Profile Design Fits Any Desktop • HP Series II Compatible • Industry's Best Warranty: 5 Years On Printhead, 1 Year Parts/Labor On Printer

CDW® Price \$595.86

WHY PAY RETAIL?

CDW® Sells For Less

AND SERVICES YOU BETTER

MAGNAVOX Metalis/SX

• 80C386SX Microprocessor, 16/8 MHz • 1 MB RAM, Exp. to 2, or 5 MB On Main Board • 3.5" 1.44 MB • 40 MB With Access Time Of 29ms • LCD Screen: B&W With 32-Gray Scale • 640x480 Res. • System Also Includes: 2400 Baud Internal Fax/Modem, Mouse Pen, User's Manual, MS DOS 4.01, Custom Slip-Cover Carry Case, GeoWorks Ensemble, and 110V Power Cord • NiCad Rechargeable Battery • 8.5"x11"x2.1" (DxWxH); 6.8 lbs With Battery • One Year Parts And Labor Warranty



CDW® Price \$1799.80

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

NETWORKING PRODUCTS

NOVELL	
ETHERNET Interface Connector (NE1000)	\$148.44
ETHERNET For PS/2 (NE/2)	247.12
ETHERNET Board (NE2000)	157.08
ETHERNET Elite (NE3200)	694.22
3Com	
3COM 3C503 TP 10 Base T	\$257.65
3COM 3C507 Ethernet Card	281.61
3COM 3C503 Etherlink	188.24
3COM 3C5 3 MCA Ethernet	280.46
3COM Ethernet Repeater	948.31
3COM 3C501 Ethernet Board	316.09

THOMAS/CONRAD	
6242 Arcnet 8-Bit	\$85.89
6242 TP 10 Base T	99.83
6245 Arcnet 16-Bit	188.53
6245 Twisted Pair Plus Ethernet	229.07
6246 Plus 2 Board Arcnet	328.18
6151-10 8 Port Smart Hub	478.10
6151-11 16 Port Smart Hub	691.01
6245 16-Token Ring XT/AT	400.23

SMC ACCESSORIES	
1672 TP Concentrator 12 Ports	\$709.18
Active Hub 8 Port Twisted Pair	355.68

SMC INTERFACE CARDS	
3008 Coax 8-Bit Ethernet	\$169.35
3008 TP 10 Base T 8-Bit Ethernet	181.81
3016 Coax 16-Bit Ethernet	171.26
3016 TP 10 Base T 16-Bit Ethernet	206.92
PC 500FS Coax Arcnet File Server 16-Bit	278.86
PC 500WS Coax Arcnet Workstation 16-Bit	167.44
PC 500FE TP Arcnet File Server 16-Bit	304.60
PC 550WS TP Arcnet Workstation 16-Bit	183.90
SMC PC130 8-Bit Arcnet Coax	89.50
SMC PC130E 8-Bit Arcnet Coax	119.00
SMC PC170E 8-Bit Arcnet TP	124.56
Eisa 3200 Arcnet Twisted Pair	738.08
Eisa 3200 Arcnet Coax	718.18

WESTERN DIGITAL	
WD 8-Bit 10 Base T Ethernet	\$182.78
WD MCA 10/20 Base T Ethernet	214.95
WD Ethernet Plus/A PS/2 Coax	247.13
WD Elite 16-Bit Ethernet Plus Coax	167.44
WD Elite 8-Bit Ethernet Plus Coax	141.86
WD Elite Combo Ethernet TP Coax Au	197.57

XIRCOM	
Arcnet Pocket Adaptor Coax	\$237.50
Arcnet Pocket Adaptor RJ45	239.77
Ethernet Pocket Adaptor Thin Coax	355.68
Ethernet Pocket Adaptor 10 Base T	355.68
Parallel Port Multi	69.00

ARTISOFT	
ARS-190 AE1/T 10 Base T Adaptor, 8-Bit	\$139.52
ARS-170 AE2/T Ethernet ISA Adaptor, 16-Bit	199.58
E143 Ethernet Adaptor Kit	199.58
LANbase Ethernet Sta	448.31
LANbase Ethernet Starter Kit	325.50
LANbase 2Mbps Adaptor	132.19

DCA	
IRMA Trac T Convertible	\$528.40

NETWORKING SOFTWARE

NOVELL	
NOVELL Network V3 2.5 User	483.70
NOVELL Network V2 2.1 User	980.43
NOVELL Network V2 2.5B User	1949.08
NOVELL Network V2 3.150 User	3169.57
NOVELL Network V3 11 10 User	1397.46
NOVELL Network V3 11 20 User	1902.17
NOVELL Network V3 11 100 User	3804.35
NOVELL Network V3 11 250 User	7173.91
NOVELL Lite	72.45
ASHTON TATE dBase IV LAN Pak	\$628.37
BORLAND Quattro Pro Network Node	244.30
BRIGHTWORKS PS Print	243.68
CC Mail Products	CALL
DELTA TECH Direct Net Monu	1492.22
HARVARD GRAPHICS LAN Pack	CALL
LOTUS 1-2-3 2.3 Server	558.66
LOTUS 1-2-3 2.3 Network Node	282.88
LOTUS 1-2-3 3.1 Server	629.54
LOTUS 1-2-3 3.1 Network Node	428.18
MICROSOFT Word 5.5 Network Node	185.39
MICROSOFT Excel Network Nodes	249.11
NORTON LAMBERT PRODUCTS	CALL
ONTRACK Disk Manager For Novell	117.45

WordPerfect CORPORATION	
WORD PERFECT 5.1 1 Pack	1099.37
WORD PERFECT Office 5.0 User 1.0 Kit	297.31
WORD PERFECT Office 5.0 1.0 Kit	923.98
WORD PERFECT Draw Perfect Server	269.53
WORD PERFECT Draw Perfect Add Station	165.93

TAPE & FLOPPY DRIVES

IRWIN	
IRWIN SX 40-120 MB Internal	\$181.81
IRWIN SXE 40-120 MB External	295.45
IRWIN 212 120MB Internal	507.53
IRWIN 445A 40MB External	449.80
IRWIN 250 PC Internal	280.89
IRWIN A120E 120 MB High Speed External	292.19
IRWIN A250E 250 MB High Speed External	348.88

Call For Controllers, Accessory Kits and Tapes.

Mountain	
MOUNTAIN 525MB Floppy External	\$2369.42
MOUNTAIN 2.2 Gigabyte Ext. Tape Drive	4398.91
MOUNTAIN 250MB External Backup	599.22
MOUNTAIN 250MB Internal Backup	474.42
MOUNTAIN 1.3 Gigabyte External Filesafe	3519.20
MOUNTAIN 120MB Internal Tape Drive	239.89
MOUNTAIN 120MB External Tape Drive	449.80
MOUNTAIN 250MB Internal Filesafe	1129.89
MOUNTAIN 250MB External Filesafe	1479.13

COLORADO MEMORY	
COLORADO Jumbo 120	\$239.21
COLORADO Jumbo	285.90
COLORADO QFA700	724.92

Call For Accessories And Interfaces

PLOTTERS, DIGITIZERS & SCANNERS

CalComp	
12 x 12 w/16 Bit	CALL 2036 Pacesetter E
12 x 18 w/16 Bit	CALL 2024 Pacesetter D
HURTA	
12 x 12 XLP	\$288.70 12 x 17
5538.27	
Summagraphics	
Summagraphics Summa II 12 x 12	\$279.60
Summagraphics Summa II 12 x 18	542.86
PANASONIC FX RS307U 600x600 Scanner	923.91
COMPLETE PC Full Page Scanner	533.30
EPSON ES300C Color Scanner	999.89
HOUSTON INSTRUMENT	
DMP-61	\$2463.33
DMP-161	2795.42
DMP-162	\$3095.84
DMP-163	3495.40
HEWLETT PACKARD	
HP7575 DXL	\$3079.88
HP7475A	1236.26
HP7550B	2688.50
HP7570A	2529.36
HP7576A EXL	3967.25
HP SCANJET	664.45
HP SCANJET II C Color XT/AT	1449.10

CAD MONITORS & CARDS	
MITSUBISHI HX1 AT/L 19"	1708.91
MITSUBISHI HX1 631A/AT/L	\$1959.77
SIGMA Lasenox 19" W. Controller	1298.76
NEC Graphics Eng'ne 256/16	892.04
HERCULES GB1024 Graphics Station	653.40
CALCOMP 3401	CALL

FAX & ACCESSORIES

8-Bit Scanning Fax	\$28.00 / 34.95
BROWN-WAGH Sound Blaster	112.80
BROWN-WAGH Sound Blaster Professional	189.26
CH PRODUCTS PS2 Gamecard III	47.25
CH PRODUCTS XT/AT Gamecard III w/Y Cable	36.50
CH PRODUCTS Flight Stick	47.00
CH PRODUCTS Reflex Mouse	89.40
CH PRODUCTS Reflex Mouse II	91.90
COMPLETE PC Communicator	409.56
COMPLETE PC Portable Fax	307.67
Electronic 4-Way Switchbox Parallel	88.50
Electronic 4 to 2 Parallel Box	109.90
5TH GEN Logical Connection 256K/512K	288.20 / 408.59
INTELLICOM Long Link	117.70
KEYTRONICS M5151 IBM or AT&T	126.70
KEYTRONICS M5151/AT&T	83.60
PRACTICAL PERIPH 32K Inline Parallel Buffer	123.60
PRACTICAL PERIPH PALINK Parallel Extender	99.50
ROLANT Sound Card LASY5	388.63
SOTA 286/112 Accelerator	210.45
SOTA 386-16 Accerator	438.70
XT Power Supply 150 Watt	59.00
AT Power Supply 200 Watt	79.24
CompuFile 9000	\$399.50
JT-File 3000	\$27.65
SHARP FO-216	516.30
PANASONIC PD4200 Plain Paper Fax	1495.22

CD-ROM & OPTICAL DRIVES

HITACHI 1700S External	467.42
MAGNAVOX 461RS Ext. CD Bundle	419.06
NEC CDR 83 External	388.40
NEC CDR 73 External	597.22
PANASONIC LF5010 Worm External	2089.91
PANASONIC LF5014 Worm Internal	1895.48
PANASONIC LF7010 Ext. 1 Gb External	2659.81
SONY CDU-7201 External CD-ROM	484.78
SONY CDU-53111 Internal CD-ROM	354.17
SONY CDU-54101 Internal SCSI CD-ROM	418.32
SONY SMO-5501 650MB Erasable Optical	2980.42
TOSHIBA 3301 External	646.06
TOSHIBA 3301 Internal	639.32
CD-ROM Software 5 CD's Bundle	149.82

SOFTWARE

ACT Software 2.0	\$216.55
ALPHA FOUR 1.1 Base IV	299.50
ASHTON TATE dBase IV	422.54
AUTODESK AutoSketch	142.89
AUTODESK Animator	277.48
BANNERBLUE Orig Plus Advanced	62.30
BORLAND Paradox	157.95
BORLAND Sidekick V2.0	54.67
BORLAND TATE C++	64.75
BORLAND Turbo Pascal	93.60
BORLAND C++ V2.0	299.17
BORLAND Quattro V3.5	483.52
BORLAND Quattro Corp Upgrade	89.78
BORLAND Quattro Pro 1.0	299.22
BRODERBUND Print Shop	36.50
CENTRAL POINT PC Tools V.7.1	99.43
CLARION Professional Developer	445.95
COMPUTER ASSOC Super Project Expert	413.30
COMPUTER SUPPORT Arts & Letters	439.12
CUSTOM Freedom of the Press Postscript	241.44
DAC Easy Accounting 4.2	85.33
DAC Easy Bonus 4.2	129.31
DATASEASE File Management	455.10
FIFTH GENERATION Mac Util. 1990	89.80
FIFTH GENERATION Fastback 3.0	109.70
FIFTH GENERATIONS Direct Access	58.89
FORM TOOL 3.0	57.90
FOXBASE Foxpro 2.0	446.21
GIBBON Drawing 5.0 V.1	61.95
IBM	335.50
INTUIT Quicken 5.0	43.79
LAN Speed 286/386	257.10
LOTUS 1-2-3 V2.3	329.75
LOTUS 1-2-3 V3.1 Plus	356.66
LOTUS Agenda V2.0	275.75
LOTUS Double Up Upgrade	148.37
LOTUS For Windows	395.61
LOTUS Free ance Graphics	309.25
LOTUS Magellan	95.85
LOTUS Manuscript	90.79
LOTUS Symphony	473.62
LOTUS Upgrades	CALL
MICROIM Release V.1 For DOS	449.50
MICROCOM Career Copy V.6	109.37
MICROSOFT C Compiler 6.0	298.60
MICROSOFT DOS 5.0 Upgrade	59.50
MICROSOFT Flight Simulator 4.0	39.50
MICROSOFT Fortran Compiler V.6	274.44
MICROSOFT Quick Basic Compiler 4.0	64.75
MICROSOFT Upgrades	CALL
MICROSOFT Visual Basic	127.50
MICROSOFT Word 5.5	208.77
NANTUCKET Clipper V5.0	485.50
POWER UP! Calendar Creator Plus	45.60
PROCOMM P.1	63.87
QUARTERDECK Desqview 386 V.2.4	129.86
QUARTERDECK OEMM 386 Manager	58.70
QUARTERDECK OFRAM & Manifest	46.20
QUARTERDECK OFRAM & Manifest for PS/2	59.00
QUARTERDECK QDraw	72.10
QUALITAS 386 Max 5.0	64.18
REFERENCE Grammatik 4 V.2.0	55.78
SOFTLOGIC Software Carousel	53.40
SOFTWARE PUB PFS Write	154.30
SOFTWARE PUB PFS Write for the VLSI	367.88
SYMANTEC NORTON Advanced Utilities V5.0	249.65
SYMANTEC Q&A V4.0	114.36
SYMANTEC NORTON Advanced Utilities V5.0	109.90
TOBIAS Managing Your Money	114.36
TRAVELING SOFTWARE Ltd	85.58
TRAVELING SOFTWARE Desklink	97.60
WORDPERFECT 5.1 1.0 1.0 1.0	247.45
XEROX Ventura Software Verson 3.0	479.20
ZSOFT PC Paintbrush IV Plus	109.86

AT CDW® YOU GET MORE COMPUTING FOR YOUR BUCK. CALL NOW!

CDW® means Service CDW® means Savings CDW® means Business CDW® means Experience
 CDW® means Technology CDW® means Networking CDW® means Computing PCW335

FREE TECHNICAL SUPPORT FOR CDW® CUSTOMERS.

(800) 359-4CDW
 WE SELL NAME BRANDS FOR LESS!

ALWAYS WORKING TO KEEP YOUR COMPUTING ONE STEP AHEAD.



EPSON NB3s 386SX Notebook

- Powerful 80386SX, 16MHz Microprocessor with 0 Wait State
- 1 MB RAM, Expandable to 5 MB
- Supports Sophisticated Graphical User Interfaces Like Microsoft Windows™, MS-DOS™ 4.01
- Available in 20 MB/40 MB or 60 MB HD
- Removable Battery, Plus an AC Adaptor Stand
- 1 Year Limited Warranty

NB3s Base... **\$1629.85**

20 MB Module... **\$479.00**

40 MB Module... **\$559.00**

60 MB Module... **\$796.00**



WHY PAY RETAIL?

CDW® Sells For Less

AND SERVICES YOU BETTER

MAGNAVOX

MAXSTATION 386SX/16 Personal Computer

- 1 MB Standard RAM, Expandable To 8 MB • 3 Expansion Slots (16-Bit)
- 3 Drive Bays, 2-External, 1-Internal
- 101-Key Keyboard • AT-IDE Hard Disk And Floppy Controller Built-In • 3.5" Floppy Disk 1.44 MB High Density
- 5.25" Floppy Disk 1.2 MB High Density • 40 MB Hard Drive • Super VGA • 800 x 600 DPI • 256 k Video RAM
- Parallel Port/Serial Port/Video Port • Novell Workstation Approved, Windows 3.0 Certified • MS-DOS 4.01, MS-DOS Shell, GW-BASIC, LIM EMS 4.0 Drivers



CDW® Price... **\$799.98**

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

COMPUTERS

MAGNAVOX	
MAGNAVOX SX16 40MB VGA Ac. 2 Dr.	\$799.98
MAGNAVOX SX16 40MB CD-ROM	1359.30
MAGNAVOX SX20 80MB, 2 MB, VGA, 2 Dr.	1274.41
MAGNAVOX SX20 80MB, Int. CD-ROM	1595.40
MAGNAVOX 386SX 120MB, Ext. VGA, 20MB, 2 Dr.	1838.37
MAGNAVOX 286 VGA Notebook 20MB	1363.50
MAGNAVOX 386SX/16 VGA Notebook 40MB	1799.80

PACKARD BELL	
Packard Bell 286 Notebook	\$1348.50
Force SX16 44 MB VGA Interface	1029.32
Force SX 20 MHz, 105 MB, VGA, 2 Drives	1479.61
Force SX 20 MHz, 130 MB, 2 Drives	1679.29
Force SX 20 MHz, 210 MB, 2 Dr. Fax Board	1998.70
386SX/16 Notebook 40MB, 2 MB RAM	1979.22

Panasonic	
CF 270 286 16MHz 20MB VGA Notebook	1548.38
CF 270 286 16MHz 60MB VGA Notebook	1897.85
CF 370 386SX 20MHz 60 MB VGA Notebook	2649.00

ALR	
ALR 386/33 Model 101	\$1629.25
ALR Power Vista 486/33 101	4599.78
ALR PowerFlex 386SX Model 1	829.11

CALL FOR THE LATEST MODELS FROM ALR

COMPAG	
LTE 286 Mdl. 20	\$1448.60
DP386/20E Mdl 1	\$2297.46
LTE 286 Mdl. 40	1670.22
DP386/25E Mdl 1	2473.30
LTE 386 60 MB	3562.00
CP0486/25M Mdl 1	1257.47
DP386/20E Mdl 1	1709.20
CP0486/33M Mdl 1	1909.78

EPSON	
EPSON NB3s Notebook SX16 Base	\$1629.85
EPSON Equity 386/25 Plus, 4 MB, Model 1	1588.29
EPSON Equity 386/25 Plus, Model 3	1259.57
EPSON Equity 386SX16 Plus, Model 1	945.74

TEXAS INSTRUMENTS	
TEXAS INSTR. TravaMate 2000	\$969.50
TM 3000 WIN SX, 60MB	2769.00
TM 3000 SX Notebook 40 MB	2248.34
TM 3000 SX Notebook 60 MB	2559.50

HP, IBM & COMPAQ MEMORY

1MB Module CPQ - 386, 386S, 20E/25E	\$97.40
2MB Memory Board CPQ LTE 286	168.83
4MB Memory Board CPQ LTE 286	431.25
4MB Memory Card CPQ LTE 386S	616.89
2MB Memory Board CPQ SLT 386	195.00
4MB Memory Board CPQ SLT 386	399.00
8MB Memory Mod CPQ D-Pro System Pr.	695.60
4MB Module CPQ - 386, 386S, 20E/25E	253.24
4MB CPQ Exp. Bd., 386S, 20E/25E	299.95
1 MB AST Cupid Simms	66.93
1 MB Ast Cupid 5 Simms	246.25
AST Exec 386SX 4 MB Module	249.75
2MB Upgrade HP LaserJet II / III	165.32
1MB Upgrade HP LaserJet IIP / IID	89.40
2MB Upgrade HP LaserJet IIP / IID	165.32
4MB Upgrade HP LaserJet II / IID	295.00
IBM Personal System II Memory	CALL
2MB Memory Module IBM PS-2 Mod 7060Z	142.85
1MB OKI Laser 400	102.59

KINGSTON FOR TOSHIBA	
2MB 1200XE	\$148.35
4MB 3100SX	149.35
4MB 3200SX	295.67
2MB Memory Module TOSHIBA 5200	149.35
8MB Memory Module TOSHIBA 5200	599.00

WYSE TERMINALS

WYSE 50/60 Amber or Green	\$346.15/279.92
WYSE 160/30 Amber or Green	321.98/274.89
WYSE 165/15 Amber, Green or White	345.60
WYSE 150 Amber, Green or White	260.45

MATH COPROCESSORS

INTEL 387DX 16/20/25/33	\$195.25
INTEL 387SX 16/SX20	124.25/134.15
INTEL 287XL/287XLT	84.00/84.00
CYRIX FasMath SX16/SX20	119.00/129.50
CYRIX FasMath DX18/20/25	178.50
CYRIX FasMath 287 8/20 MHz	83.50
CYRIX FasMath DX33 MHz	188.50

MOST ORDERS RECEIVED BY 5:00 P.M. C.S.T. SHIP SAME DAY!

DOT MATRIX & LASER PRINTERS

EPSON	
LX810	\$154.00
LQ2550	435.00
FX1050	395.00
LQ2000	225.00
Acron Laser II EPPL	587.00
DFX 5060	1288.00
F3350	\$288.00
EPL 7500 Laser	789.00
EPL 7500 Laser P	1699.00
LQ1170	584.00
LQ570	257.00
DFX 8960	2129.00

NEC	
Screenwriter 90	\$1549.50
PC200 24-pin	467.74
PC300 24-pin	574.19
PC300 New Model	\$623.11
PC300 24-pin	267.74
PC300 24-pin	868.21

DICOMINX by KODAK

180 S1 Postscript 180 S1 Series	\$296.28 / 307.74
---------------------------------	-------------------

OKIDATA	
ML182 Turbo	\$326.66
OKILASER 400	595.86
OKILASER 600	526.96
OKILASER 800	1214.50
OKILASER 840	1594.50
ML320	314.68
ML300+	\$439.22
ML391+	596.41
ML380	218.00
ML390	399.56
ML393 + Color	999.50
ML321	438.44

Panasonic

1124	\$275.95
1123	199.47
1895	360.21
4450 Laser	1019.12
4420 Laser Printer	699.30
1624	\$338.93
1180/1654	149.99/338.96
4455 PostS Laser	2749.78
4455 PostS Laser	699.30

TEXAS INSTRUMENTS

TI Microstar PS17	\$1196.00
TI Microstar PS35	1498.00

HEWLETT PACKARD

H-P LaserJet Model IID	\$2329.22
H-P Deskjet 500H-P LaserJet IIP Plus	398.50/629.00
H-P LaserJet II	1548.00
H-P Paintjet	673.00
H-P Deskjet 500 Color	699.00
H-P LaserJet IIP	1028.00
CANON BJ10EX Bubble Jet	323.68
CITIZEN GSX 140 Plus	289.44
CPMS PSL1	629.00
PACIFIC DATA 25 in 1 Cart. LAS3	\$259.00
PACIFIC DATA Page Postscript 4 HP LAS3	349.44
PACIFIC DATA Compact 1" MB	332.58
PACIFIC DATA 1 MB for 2P II/III/IIIP	106.46
POSTSCRIPT CART 1" MB LAS2	338.00
CPJETMEMORY 1MB for HP/II/III/IIID	98.60
CPJETPAGE for HP/II/III/IIIP Postscript	208.72
CP SUPERSET for HP LaserJet	199.67

DRIVES, TAPES & CARDS

COMPAQ 1.2 MB 360KB (LTE)	209.00
CONNER 40 MB / 120 MB	199.00/368.90
CONNER RA MB 204 MB	357.65/585.88
OMEGA B901B90Tans	767.80/799.50
PLUS Hardcard II XL 105MB	437.46
PLUS Hardcard II XL 57 MB	298.10
SYSGEN 5 25" 3 5" External Floppy	209.25
PACIFIC RIM 5 25" External Floppy for Laptops	185.56
TOSHIBA 1.2 MB 360KB	179.00
TOSHIBA 1.2 MB 360KB	189.00

Seagate	
ST225 20 MB	\$180.23
ST238 30 MB	180.02
ST2383E	1178.15
102A 84 MB	305.88
ST1144A 124 MB IDE	409.29
ST1239A 211 MB IDE	609.47
SEAGATE 1007 80	\$348.37
SEAGATE ST-2511	226.05
ST4766E, 676 MB	1495.22
ST1574 44 MB 3 5	182.18
ST1574 44 MB 3 5	409.29
SEAGATE ST-2511	609.47

MICROPOLIS

1684-7 340 MB	\$1109.86
1664-7 345MB HH	985.44
1568-15 676MB ESDI	1358.65

SURGE SUPPRESSORS

CURTIS Ruby Plus	\$57.60
DATASHIELD S100	59.55
DATASHIELD S85	53.95
KENSINGTON MP	98.00

MODEMS & COMMUNICATIONS

int'l	
2400 Internal	\$137.75
2400B MNP	179.99
9600 External	443.40
2400 External	\$163.94
2400 External MNP	207.69
14.4 External	509.00

PRACTICAL PERIPHERALS

2400 V.42 Int.	\$158.81
2400 V.42BIS Ext	187.50
9600 V.32 42BIS	433.58
2400 Int.	\$79.48
2400SA	163.63
Optima 9600 V.32	434.50
Hayes Pocket Edition	112.92

HAYES

2400 External	\$323.84
ULTRA 9600 External	609.98
Optima 9600 V.32	434.50
Hayes Pocket Edition	112.92

Robotics

Couner 2400	264.61
Dual 14,400 HST	789.65
V.32 9600E	567.80
14,400 HST	557.77

MULTI-TECH

2400 for TOSHIBA 127.33	2400 for COMPAQ/LITE/S15421
CPI VIVA 2400 Internal/9600 External	79.40/429.82
CPI VIVA 2400 External Faxsend Modem	99.40
CPI VIVA 2400 External Hardware MNP	139.73

BOARD & COMM PRODUCTS

AST 5251-11+ Enhanced Local	\$485.75
DIGIBOARD PC/8 Intelligent 8 Serial	799.60
DIGIBOARD PC/16 Intelligent 16 Serial	1172.34
KINGSTON 386SX New	349.75
EVEREX 2400 Interna Modem	78.75
EVEREX 2400 External MNP w/St.	169.88
EVEREX 2400 MNP Internal	145.34
IRMA III 3270 XT/AT/PS/2	399.60
WORLD PORT Modem/Fax Ext	312.90
AST SixPack 285 OK	96.60
INTEL Above Board Plus 8 w 2 1MB	397.71
INTEL Above Board Plus 512K	279.16
INTEL Intelnet 386/PC	469.60
INTEL SatisFAXtion Fax Board	359.00
INTEL Snap in 386SX/20	359.52

BATTERY BACKUP AND UPS

AMERICAN	
AME-1200VX	\$735.95
AME-360SX	174.54
AME-450AT	212.81
AME-Smart 400	307.95
AME-520ES	\$274.36
AME-800RT	552.50
AME-600-S	434.68
AME-Smart 900	609.12

MICE

Super Mouse - W/Windows	\$79.75
LOGITECH ScanMan PC/Scanman 256	177.89/278.45
LOGITECH Trackman Serial	78.62
MICROSOFT Mouse (Bus Version)	95.50
MICROSOFT Mouse (Serial)	95.50
MICROSOFT Mouse w/Windows 3.0	144.95
MICROSOFT Ball Point Mouse	118.90
MICROSOFT Serial, No Software	79.80
LOGITECH Mouseman Serial	69.35
LOGITECH Mouseman PS/2	69.35
LOGITECH Mouseman Bus	69.35
LOGITECH Mouseman Cordless	105.54

IF YOU FIND A BETTER PRICE CALL US BEFORE YOU BUY
2840 MARIA, NORTHBROOK, IL 60062 FAX (708) 291-1737

PC Magazine says... "You may find a better deal here than anywhere else."

WHY WAIT? CALL COMPUTER DISCOUNT WAREHOUSE™ NOW!

WE SELL NAME BRAND ITEMS FOR LESS!

(800) 359-4CDW

In Illinois (708) 498-1426 FAX (708) 291-1737

CDW® EXTENDED HOURS
Sales 7:30-7:30 CST Mon-Fri.
9:00-3:30 CST Sat.
Tech Support 8:00-7:00 CST Mon-Fri.



COMPUTER DISCOUNT WAREHOUSE™
SERVICING YOUR PC NEEDS SINCE 1982...DON'T ACCEPT ANY IMITATIONS.

Apply for the CDW® Credit Card

High Volume Bids Invited

PC Magazine says "...Arlington offers worry-free mail order purchasing at reasonable rates!"

HEWLETT-PACKARD

Laserjet III w/Toner	..... \$1549
Laserjet IIP+ w/Toner	.... \$839
Laserjet IIP w/Toner	.... \$1059
1MG Upgrade	..... \$99
2MG Upgrade	..... \$129
4MG Upgrade	..... \$219
Extra Toners	..... \$79
Deskjet 500	..... \$409
Pacific Page/XL	.... \$329/\$699
Pacific CFL	..... \$259
Pacific Data 25 in 1 Font	.. \$249

PANASONIC PRINTERS

1123 240 CPS	... \$199	1695 6NLQ Fonts.	\$369
11241 300 CPS	... \$275	2624 Quiet!	..... \$379
1180 192 CPS	... \$149	4420 8 PPM	.... \$689
1624 5LQ Fonts	.. \$339	44501 11 PPM	... \$1079
1654 375 CPS	... \$539	4455 Pscript.	.... \$1729
		4420/44501 2MG Memory	... \$149

CANON

BJ-300 \$449	BJ-330 \$599
--------	-------------	--------	-------------

OKIDATA

ML320	... \$319	ML391	... \$599
ML321	... \$439	ML393	... \$919
ML380	... \$219	OLC400	... \$629
ML390	... \$439	OLC800	... \$929
		OLC820	... \$1239

CITIZEN

GSX140+	.. \$299	GSX200	.. \$159
GSX145	.. \$379	HSP500	.. \$299

EPSON PRINTERS

LX810	.... \$155	LQ200	.... \$229	LQ870	.... \$435	LQ2550	... \$849	DFX5000	.... \$1269
FX850	.... \$289	LQ570	.... \$255	LQ1070	... \$359	EPL7000	.. \$789	DFX8000	.... \$2139
FX1050	.... \$395	LQ860	.... \$549	LQ1170	... \$569	EPL7500	.. \$1909	Action Laser II	.. \$689

Accessories for Epson Printers and Lasers in Stock!

NOTEBOOKS

Arlington 386, SX20,	
60 MG, VGA	..... \$1799
AST 43V, 386, 60 MG	.. \$2699
Epson NB3S, 40 MG	... \$2199
Goldstar 620, 386SX20,	
40 MG	..... \$2149
Panasonic CF270,	
16 MHz, 20MG, VGA	... \$1559
Panasonic CF270,	
16 MHz, 60 MG, VGA	.. \$1849
Panasonic CF370H6	
386SX-20, 60MG, VGA	.. \$2649

TEXAS INST.

TM 2000/20 MG	..... \$969
TM 2000/40 MG	..... \$1199
TM 3000/40 MG	..... \$2249
TM 3000/60 MG	..... \$2569
TM 3000/WINSX	..... \$2799
LASER STD	..... \$879
LASER PS17	..... \$1199
LASER PS35	..... \$1499

SOFTWARE

Aldus Pagemaker	..... \$489
Corel Draw	..... \$369
D Base IV	..... \$469
Harvard Graphics 3.0	... \$389
Lotus 123 2.2/3.1	.. \$329/\$389
Microsoft Mouse	..... \$89
Microsoft Excel	..... \$299
Microsoft Windows 3.0	... \$79
Microsoft DOS 5.0	... \$79
Ventura Desktop Publ.	.. \$499
Word Perfect 5.1	..... \$249

COMPAQ

Model 386S w/40 MB	.. \$1899
Model 386E w/40 MB	.. \$2499
Model 386E w/100 MB	.. \$2699
LTE 286 20/40	... \$1649/\$1899
LTE 386-60MB	..... \$3299
6 Month Warranty	

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	..... \$159
AST Rampage Plus	..... \$329
Irma Board III	..... \$399
AST 5251-II Plus	..... \$499



Intel Above Board+	..... \$269
Intel Plus 8 w/2 MG	..... \$399
Intel 386 PC w/1 MG	... \$459
Intel Satisfaction	..... \$359
Intel Scanner Option	... \$299
Intel Snap-In 386	..... \$359

DRIVES & TAPES

Ext. 1.2 for PSII	..... \$159
Toshiba 3 1/2" 720K	..... \$69
Toshiba 3 1/2" 1.44	..... \$69
Colorado Jumbo 120	... \$249
Everex 40 MB Tape	... \$209
NEC CDR-73	..... \$799

SEAGATE HARD DISKS

48 MB 3 1/2 (157N-Kit)	... \$259
40 MB (157A)	..... \$169
40 MB for AT (ST251-1)	.. \$229
80 MB for AT (4096)	... \$399
80 MG 296 Kit	..... \$299
89 MG 1102A	..... \$279
106 MG 3120A	... \$369
120 MG 1144A	... \$439
211 MG 1239	..... \$569

IOMEGA

90 MB Int. w/boot card	.. \$979
90 MB Ext. w/boot card	.. \$999

PLUS

Hard Card 40 MB	..... \$549
Hard Card 50 XL	..... \$309
Hard Card 80 MB	..... \$419
Hard Card 105 MB	... \$459

CONNOR HARD DRIVES

40 MB	..... \$199
100 MB	..... \$349
200MB	..... \$589

MODEMS

Dove Fax Modem	..... \$189
Hayes Pocket 2400	..... \$119
Hayes Ultra 96	..... \$599
Intel 2400	..... \$139
Intel 2400 Ext.	..... \$159
Intel 2400 Ext. MNP	... \$209
Intel 9600 Ext.	..... \$439
Intel 9600 14.4 Ext.	... \$479
Mghtz 2400 Tosh/CPQ	.. \$129
Everex 2400	..... \$79
Everex 2400 External	... \$169
US Robotics 9600	..... \$569
US Robotics Dual Std	... \$779

CHIPS

256K/1 MG Chips, each	\$3/\$6
256K/1MB Simms	... \$15/\$49
4MB Simms	..... \$189
Compaq 386 4 MB	..... \$279
Compaq SLT 2 MB	..... \$239
Compaq LTE 2MB	..... \$159
Compaq LTE 386 4MB	... \$399
HP 2MG Upgrade	..... \$129
IBM 2-8 MG Board	..... \$349
IBM 70 & 80 2 MB	..... \$129
OKI Laser 2MB	..... \$149



Intel 8087-2	..... \$109
80287-10XL/XLT	..... \$89
80387-16/80387-SX	.. \$195/\$129
80387 SX-20	..... \$139
80387-20/25/33	..... \$195
80487 SX	..... \$449

SCAN. & DIGIT.

Epson ES300C	..... \$999
Kurta XLP	..... \$249
Logitech ScanMan	..... \$159
Panasonic FXRS 3070U	.. \$939
Summasketch 12x12	... \$309
Summasketch 12x18	... \$559

NETWORKING

Netware 2.2 5 User	..... \$499
Netware 2.2 10 User	... \$1099
Netware 2.2 50 User	... \$1999
Lanstatic 10BPS Starter	.. \$469
E143 Ethernet	..... \$209
NE1000 Ethernet	..... \$139
NE2000	..... \$159
Ethercard +/-16	... \$139/\$169
EtherLink II 3 Com	..... \$189
IBM Token Ring	..... \$599

VIDEO BOARDS

ATI VGA Wonder XL	.... \$179
ATI VGA Wonder 512	... \$199
ATI 8514 1MG	..... \$489
Boca Super VGA	..... \$129
1024 VGA 16 Bit	..... \$79
NEC Grph Engine 256	... \$849
Orchid Pro II 1MG	..... \$269
Paradise VGA 1024	... \$139
Paradise +16	..... \$129

MONITORS

MITSUBISHI

EGA	..... \$319
VGA XC1429	..... \$389
Diamond Scan	..... \$489
HL6615 16"	..... \$1029
HL6945 20"	..... \$1789

NEC

3 FGX/4 FGX	..... \$639/\$769
Multisync IIID	..... \$549
Multisync IVD	..... \$979
Multisync VD	..... \$2099

PANASONIC

1381 VGA 1024x768	..... \$329
1395 VGA 1024x768	..... \$439
1991 VGA 1280x1024	... \$1559

GOLDSTAR

Color/EGA	..... \$199/\$249
VGA 1425+/1430	... \$259/\$279
VGA 1460	..... \$299
VGA 1620+	..... \$699

**Arlington
Computer
Products, inc.**

Prices and availability subject to change without notice. *Includes CPU only, in most U.S. locations. Money-back guarantee does not include shipping charges.

HOURS C.S.T.
7:30 - 6:30 pm - Mon.-Fri.
9:00 - 1:00 pm - Saturday

1970 CARBOY
MT. PROSPECT, IL 60055

FOR ORDERS & SYSTEMS QUOTES:

800-548-5105



CUSTOMER SERVICE AND IN ILLINOIS 708-228-6333

SHIPPING 708-228-9748

TECHNICAL ASSISTANCE 708-228-1470

We Export! FAX 708-228-0516

No surcharge for MasterCard or Visa.

Circle 8 on reader service card



MICRO-TECH USA



America's largest PD/Shareware Distributor

Currently over 200,000 programs available and growing! Order our 200+ page catalog
Limited offer: 4 free disks of your choice. 100% guaranteed high quality and virus free.

A list of our catalogs include: IBM • Amega • OS2 • UNIX • GIF • Apple • Mac • Commodore for \$7.95 each. • Adult \$19.95

PRINTING

- Typesetter PC**
Great desktop publishing program. Mix graphics, test fonts. Requires 512K, 9 pin printer
- Form Master:**
Create your own business forms and legal form's. Rated best form program.
- Letter Heads Plus**
Design and print custom letterhead, envelopes and labels.

WORD PROCESSING

- PC Write 3.03**
Top rated program with spell checker. A must for the writer.
- Intext**
New word processing in 7 European languages.
- Hyper-world (4 disks)**
New hyper text word processor and free form database with appointment calendar.

GRAPHICS

- PC-Key draw**
Powerful CAD design system. (4 disks)
- Dancad 3D (2 disks)**
The best there is for 3D wireframe with all conceivable options.
- Printmaster Graphics Library #4**
New 400 great graphics.
- Printshop Graphics Library #3 and #4**
2 disks. Over 600 graphics. All new.
- Charts unlimited**
A design tool for creating any kind of chart.

WINDOWS

- Icons**
Over 250 icons to be used with Windows 3.0
- Unicom**
At last a super communications program for Windows. Supports X, Y, and Z modem protocols among others.
- Window Press**
Great form maker for Windows 3.0 or with different fonts, lines, arcs, circles, pies, bars, etc. Precision to 1/10 mm. Source code included.

WORD PERFECT 5.0/5.1

- PC - Draft III (2 disks)**
- WP - Arts/Graphics (2 disks)**
- WP - Learning System (2 disks)**
- WP - Macros (2 disks)**
- WP - Menu-mice (2 disks)**
- WP - Tools (2 disks)**

BUSINESS/ACCOUNTING

- PC Payroll**
A complete menu-driven payroll system (2 disks)
- PC Loans**
Keep track of those nasty loans
- Year Planner**
A super calendar and organizer program
- Employee Management System 4.0**
Highly accurate personality/position analysis
- PC Yellow Pages (5 disks)**
One of the most effective marketing tools I've seen. Address merge, labels, fax mail, built in database registered version comes complete with data for your own area (HD required)

DATA BASE

- Wampum**
An excellent d-base compatible package.
- PC File 5.0 (3 disks)**
Jim Button's best. PC mag editors choice (Req 3.0 DOS or up)

SPREAD SHEETS

- 123 Power Worksheets (2 disks)**
Powerful worksheets for Lotus 1-2-3.
- Lotus Templates**
Some ready-made templates. Don't spend hundreds and miss this one. It's a bargain for sure.

UTILITIES

- HD Backup**
An easy to use program for backing up your hard drive
- Quick Cache (2 disks)**
This one will speed up your computer big time.

Virus Killers

Several virus programs on one disk. Why buy them separate?

Back & Forth

New load up to 20 programs at once. You won't believe it until you see it. Order this one now! (HD required)

GAMES

PC Risk

You played it on a board. Now play it on a computer. Same as the board game, but a lot less.

3D Chess

This one is good. You can even ask the computer for help.

Striker

Fly your copter through enemy fire. Arcade quality game.

PC Rail Road

A must for model train buffs. Control your trains on increasingly complex layouts but don't worry. An automatic collision avoidance system is built in. It took a few minutes to evaluate this one and hours to turn it off!

Megapoly

You have inherited \$100,000. Your challenge is to become rich in 20 years. Very good game.

Dominate

A computer wargame. Better and more sophisticated and involved than Risk.

We have the best in games for mono, CGA, VGA, and Super VGA.

PRICE BREAK

1-9	\$2.50 ea.	10-19	\$2.00 ea.
20-49	\$1.50 ea.	50-99	\$1.00 ea.
Over 100	\$0.89 ea.		

All new selections with updates every month. Select 4 free disks with purchase of catalog. Important: For multi-disk sets, count all disks in a set.

Please specify 5.25" 3.5" (add \$1.00 each)

Name _____

Address _____

City/State/Zip _____ Ph () _____

VISA/MC # _____ Exp. Date _____

Signature _____

Disks Ordered _____ x \$ _____ = \$ _____

List Catalog _____ \$ _____

For 3.5" disks, add \$1.00 each \$ _____

Shipping and Handling \$ 4.00

Foreign Shipping, add \$6.00 \$ _____

Washington State Residents add 8.2% sales tax \$ _____

Total \$ _____

Office Hours
9:00 - 5:00 pst

Method of payment

check money order VISA/Mastercard

MICRO-TECH USA

P.O. Box 59403, Renton, WA 98058-0403

Order Hotline!
(206) 235-4345

LPG

The Desktop Publishing Experts

Order Toll Free (USA/Canada)
(800) 628-4517
International Orders
(301) 899-1118
24-HR Worldwide FAX Orders
(301) 899-1888

& GRAPHICS

The Nation's Largest Dealer of Desktop Publishing & Multimedia Products ... Hours: M-F: 8:30 - 6pm Eastern Time, FAX ORDERS ANYTIME

Software Titles

Adobe PostScript fonts	prices vary - please call
Adobe Type Manager (ATM Plus Pack)	165 / 125
Adobe Type Align	65
Altus Freehand for Windows (new product)	395
Altus Persuasion for Windows	315
Arts & Letters Graphics Echo	395
Bistromia Facilitator for WordPerfect 5.0/5.1	334
Charmis by Micrografix	330
CorelDraw / CoreDraw for CD-ROM micro clip-art	358 / 395
Harvard Graphics v3.0 (newest version)	395
Micrografix Designer	430
PageMaker 4.0 for Windows or Adobe Type Manager	485
PowerPoint for Windows by Microsoft	295
Publisher 3.0 (PostScript color separation tool)	CALL
Ventura Publisher v3.0 (DOS/GEM or Windows version)	485

Multimedia & "Print-to-Video"

Authoring Software	
ASK-ME 2000 (hypertext, sound, graphics)	1299
IBM Storyboard (v1.1)	289
Guide from QVI International	379
CD ROM Disk Players & Erasable Optical Disk Drives	
Hitchhiker CD-R 1750S ext. player & interface	499
NEC CD-R 36 player & interface (external unit)	659
NEC CD-R 73 player & interface (external unit)	659
NEC CD-R 83 player & interface (internal unit)	699
Toshiba TMM-3301-E1 external CD player unit	CALL
Panasonic LF-7010 ext. read / write / erasable/ removable 1-GB (11 billion bytes) optical disk unit w/ interface	3499
Panasonic LK-0720V 1-GB disk for LF-7010	239
Pinnacle Micro REC-130 130-MB removable w/inst.	2559
Pinnacle Micro REC-650 650-MB removable w/inst.	3599

Computer Animation & Modeling

Animator from Autodesk	1285
Greap 4.0 from Paul Mac	199
Computer Digital Sound Recording & Audio Editing	249
Sound Blaster / Sound Blaster Pro audio card	144 / 249
Jovian GLORIA (CD-quality stereo digital sound)	489
MicroKey/AudioCard (CD-quality sound)	479
ProAudio Spectrum sound board from Media Vision	279

NFSC Frame Grabbers / NFSC Digitizers

Computer Eyes for Professional Frame Grabber	1999
Computer Eyes RT (real-time frame grabber)	679
Jovian SuperVIA 16-bit color/8-bit gray real-time	435
VIDEOLINK: Framebuffer (frame capture & display)	495
Willow Publisher's Color (16-bit color real-time)	655
NFSC Encoders / Decoders / Genlock / Overlay	
Everex Vision VGA w/ Professional Frame Grabber	1529
Jovian GENIE professional scan converter (external)	1299
Jovian VIN Plus NFSC encoder (internal unit)	344
MAGNI VGA Producer VGA Video Input/Overlay	1475
Willow VGA-TV GEN/LO (Video Titrer slot)	635
Video Titrer by Entropy Eng. handling	
Video Titrer by Entropy Eng. handling	1365
Integrated Multimedia Systems from Video Associates	
MicroKey/A - audio video, VGA and more	1129
DigiView - flash capture digitizer board	859
Genlock - broadcast quality genlock/overlay	669
LinkPlus - anti-flicker filter, composite color keyer	379
New Media Graphics - Windows video for MS Windows	111
Super Video Windows Board w/ software	185
Super Video Windows Tuner Board (for TV input)	295
Super Video Windows Developer's Kit	355

Video Monitors & Controllers

IDEK	
MF-5217 17" flat screen color, 1024 x 768 non-interlaced	2195
72-Hz refresh rate, 23" monitor pkg.	CALL
MF-5221 21" flat screen color, 1280x1024, 31mm	3425
MF-5242 21" flat screen color, 1600x1200, 26mm	2999

MONITORM

VIKING 2-way pi-ni-res DTP monitor systems	
Viking 3919M 20" monitor & controller	1399
Viking 3916GS 20" 48-bit grayscale monitor & contr.	1999
Viking 32400M 24" monitor & controller	1999

NEC

Flat screen high resolution color monitors for DTP, scientific/ engineering and CAD. Workstation monitor quality 1280 x 1024 resolution and AccuColor on 4FG, 5FG and 6FG models.	
4FG flat screen 14", 1024 x 768 non-interlaced	1649
5FG flat screen 15", 70-Hz non-interlaced, AccuColor	799
5FG flat screen 17", 70-Hz non-interlaced, AccuColor	1429
6FG flat screen 21" 70-Hz non-interlaced, AccuColor	2999

radius

The Radius Full Page Pivot lets you choose either landscape or portrait viewing on your PC or Microchannel computer system by rotating the monitor. The Pivot system features 1024x768 resolution, anti-glare screen, low radiation emission, 32,768 colors, & drivers for Windows, AutoCAD, Studio 3D, & more 7-year warranty on interface.

High Performance Video Cards

ATI VGA Wonder XL 1-MB PC Mag Editor's Choice	1289
ATI Advantage 1-MB 8514 / VGA	989
Number Nine #5GX1 74 bit 1750 x 1024 w/IGA 34020	CALL
Orchid ProDesigner II's w/ HiColor 32,768 colors, 1-MB	255
Orchid Fathom II 320 graphics accelerator video board with Windows accelerator, 1-MB RAM, 17" monitor, 1024 x 768 average of 17 times faster than standard super VGA cards	CALL
On-board graphics processor, 1-MB RAM, 1280 x 1024 maximum resolution, 72-Hz refresh rate	395
Video 7 VRAM II 1-MB ultra fast VRAM video memory	399

LASER PRINTERS, UPGRADES, SCANNERS, VIDEO - OUR SPECIALTY

QMS

PS-410 w/2-MB RAM, 45 fonts, ATM, PostScript	1795
PS-410 w/3-MB RAM, 45 fonts, ATM, PostScript	1995
PS-410 w/4-MB RAM, 45 fonts, ATM, PostScript	2095
PS-410 w/5-MB RAM, 45 fonts, ATM, PostScript	2195
PS-410 w/6-MB RAM, 45 fonts, ATM, PostScript	2295

NEW HIGH RESOLUTION LASERS FROM QMS

MR => Multiple Resolution PostScript	
Switchable between 300x300 & 600x600 dpi	
PS-815 MR 600 x 600 dpi laser	4395
PS-825 MR 600 x 600 dpi laser	4995

ColorScript 100 model 10 (8 1/2" x 11")	6295
ColorScript 100 model 30i (11" x 17")	8795
ColorScript consumables	CALL

BEST OF 1990 - PC Magazine
1990 Eddy Award - MacUser

WACOM Drawing Tablets

Wacom drawing tablets are a top choice for artists. Wacom tablets respond to the pressure as well as movement of the cordless pen. The harder you press, the thicker the line becomes. Or use the pen to control color, density or whatever else the software can be set to do. Draw faster with CorelDraw, IMAGE-IN COLOR and other programs. Windows 3.0 compatible.

Scanning Software & OCR

OCR (Optical Character Recognition)	
Calera WordScan - While supplies last	6219
Calera WordScan Plus - PC Mag Editor's Choice	659
Catchword OCR for Logitech hand scanners	149
OmniPage 386 Professional by Caere (trunabled)	635
ReadRight for Windows / ReadRight v2.0-DOS	314/299
Scanner Software for Image Manipulation & Editing	
Deluxe Paint II Enhanced by Electronic Arts	109
Gray FAX by Xerox-Datapoint (DOS application)	295
IMAGE-IN COLOR (works with WACOM tablets)	695
PhotoStyler by Aldus (U-Lead)	CALL
Picture Publisher Plus by Acorn Micrografx	469
Publisher's Paintbrush for Windows by 2-Soft	285
Tempra Pro by Mathematica (DOS application on 24 bit)	345
WinRix for Windows (format image editor)	295

Color & Grayscale Scanner Systems

Logitech ScanMan 32 scans up to 400 dpi and 32 gray levels. Bundled with software	1158
Logitech Scanman 32 w/ Catchword OCR s/w bundle	229
Logitech Scanman 256 400 dpi, 256 grays, Windows 3.0	265
Logitech Scanman 256 bundled w/ Catchword OCR	429

Microtek ScanMaker 6002 600-dpi, 24-bit color, 8-bit grayscale. Bundled with PhotoStyler

Microtek ScanMaker 6002 600-dpi, 24-bit color, 8-bit grayscale. Bundled with PhotoStyler	1345
Microtek ScanMaker 6006 600-dpi, 8-bit grayscale, Bundled with PhotoStyler	1075
Microtek ScanMaker 1850 35-mm photo slide scanner. Scans color and B&W 35-mm slides and negatives.	2149
Microtek ScanMaker 1850 35 mm slide resolution	2149

Niscan GS for Windows hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus for Windows

Niscan GS for Windows hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus for Windows	229
Niscan GS with DR hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus (Windows 3.0 software) and Perceive Personal OCR software	335
Niscan Spectra color hand-held scanner, 24-bit, 16.7 million colors w/software	599

The Typist - Graphics hand-held OCR scanner. Easy and effective way to input text into your favorite word processor. Just scan the document & you're ready to go.

395

Hercules Graphics Station

The Hercules Graphics Station video card takes the wait out of Windows, CAD and other graphics-intensive applications. The secret is the on-board Texas Instruments 34010 graphics co-processor operating at 60 MHz. It frees the CPU from the drudgery of graphics processing so you won't have to wait for your screen to catch up to you. Displays true color for photo-realistic images in 16 or 24-bit modes (32,768 or 16.7 million colors). Comes with drivers for Windows 3.0, AutoCAD release 10 & 11, 3D Studio, Autodesk Animator Pro, AutoShade and more.

Graphics Station 1-MB for PC-AT ISA bus	1549
Graphics Station 3-MB for PC-AT ISA bus	1695
Graphics Station 1-MB for Microchannel bus	695
Graphics Station 4-MB for Microchannel bus	995
Graphics Station 8-MB for Microchannel bus	1295
2-MB VRAM Upgrade for 1-MB Graphics Station	199

TEXAS INSTRUMENTS microLaser

New & upgraded printer line from Texas Instruments...

New microLaser Turbo models incorporate Adobe's PostScript Level 2 PDL and a Witek 8220 RISC-based 16-MHz co-processor for high speed 'first-page-out' printing. Features 35 Adobe PostScript fonts, automatic emulation switching (between PostScript and PCL), automatic paper selection, 2.5-MB RAM (upgradable to 10.5-MB), straight-through path. Optional SCSI hard disk. The upgraded 'Plus' models are faster & can be upgraded to TURBO models. Great price/performance and outstanding print quality.

microLaser Plus Basic HP LJ emulation, 300-dpi, 9-ppm	1959
microLaser Plus PS-17 PostScript, 17 fonts, 9-ppm	1359
microLaser Plus PS-35 PostScript, 35 fonts, 9-ppm	1629
microLaser XL PS-17 PostScript, 17 fonts, 16-ppm	2459
microLaser XL PS-35 PostScript, 35 fonts, 16-ppm	2759
microLaser Turbo PS-35 PostScript, 2, 35 fonts, 9-ppm	2059
microLaser XL Turbo PS-35 PostScript, 2, 35 fonts, 16-ppm	3359

Color Printers

ColorMate model 40 / mod 80 upgrade kit	14695 / 1699
ColorScript 100 Model 10 (8 1/2" x 11") PostScript	6295
ColorScript 100 Model 30i (11" x 17") PostScript	8795
SEIKO INSTRUMENTS	
ColorPoint CH5504 A-size near-bleed-to-edge	5259
ColorPoint PSX 4 (ultra-fast, 10-MB RAM)	7199
TEKTRONIX - a better color inkjet-PostScript compatible	
ColorQuick color inkjet printer. PostScript compatible. PaintJet compatible. 216-dpi resolution, 16.7 million color capability. Paper or transparency media up to 12 x 18"	1995

LaserPix 3.0™ from XLI

2400 dpi Printer Upgrade System for HP and Canon Laser Printers

LaserPix 3.0 prints superior images from the HP LaserJet II, III™, and Canon LBP-8III laser printers. LaserPix 3.0 is a PC-AT compatible printer controller board with both Windows 3.0 PostScript and PCL drivers, with an effective resolution of 2,400 dpi with 256 levels of gray. Applications include DTP, technical documentation, scientific imaging, security, and real estate. You won't believe how great photo's, text and graphics can look coming off your printer and the speed at which they print (about 3 seconds!).

List Price: *1495 LPG Price: *CALL

TRUEPOINT

THE INTELLIGENT PRINTER CONTROLLER

TruePoint from DP-TEK turns a Canon LBP-4 or HP LaserJet Series II or III into a true 600 x 600 dpi PostScript-compatible laser!!! Halftones, line-art and type look near-photo-typeset. Simple to install. Fully compatible with all PostScript and EPS software. Adobe type 1 compatible. Comes with 35 fonts, 4-MB RAM, PostScript interpreter in hardware, cable, manuals & 1-yr warranty.

TruePoint List Price \$1695, your price	CALL
TruePoint bundled with Canon LBP-4 Plus Laser	2235
TruePoint bundled with HP LaserJet III Laser	2985

CANON - bubblejet & laser printers

BJ-10ex bubblejet printer 350 x 360 resolution	1349
BJ-300 80 column 360 x 360 resolution	459
BJ-330 11" x 17" 360 x 360 resolution	699
LBP-4 Plus 300-dpi resolution-enhanced laser	839
LBP-8 Mark III Plus resolution-enhanced laser	CALL

NEC - PC Mag Editor's Choice PS Laser Printer

SilentWriter2 Mod 90 300-dpi, 2-MB RAM PostScript	1539
SilentWriter2 Mod 90 300-dpi, 4-MB RAM, PostScript	1729

NewGen - High Resolution PostScript Printers

Turbo PS400p 400 x 400 dpi, 4-MB RAM	12275
Turbo PS630 600 x 300 dpi	CALL
Turbo PS840 800 x 400 dpi, w/ART	CALL
Turbo PS840E 800 x 400 dpi, w/ART & IET	CALL

OKIDATA - 5-yr warranty on LED printhead

OL400 300-dpi, HP PCL emulation	1635
OL300 300-dpi, PostScript & scalable HP PCL fonts	1399
OL840 PostScript, 35 fonts, 2-MB RAM	1799

Laser Printer Upgrades

Adobe PostScript Cartridge HP LJ II	329
Complete Font Library cart. for HP LJ III & IIID	258
PacificPage PE PostScript Cartridge	395
PacificPage XL accelerated PostScript cartridge	799
Type City by Bitstream for HP LaserJet	258
25 Plus/Charisma font cart. for HP LJ by Elite	245
25-in-One font cartridge	269
HP LaserJet 1-MB RAM upgrade, 5-yr warranty	95
HP LaserJet 2-MB RAM upgrade, 5-yr warranty	145
HP LaserJet 4-MB RAM upgrade, 5-yr warranty	239
QMS printer RAM upgrades, 5-yr warranty	CALL
TI microLaser 1-MB RAM upgrade, 5-yr warranty	125
EP-L Toner Cartridge for HP, QMS, Canon, etc.	75
EP-S Toner Cartridge for HP, QMS, Canon, etc.	85
High Res Toner for NewGen, LaserMaster, etc.	175
High Density Toner for NewGen, LaserMaster, etc.	175

Roland DIGITAL GROUP

SketchMate A-size plotter	1485
SketchMate A-size plotter / vinyl sign cutter	629
SketchMate B-size plotter / vinyl sign cutter (swiv)	CALL
CAMM 1/20 20" wide vinyl sign cutter	3299
CAMM 1/48 48" wide vinyl sign cutter	7999
CANIM 1/48 48" B-size flatbed plotter	1750
DX1-1100 8-pen A-B-size flatbed plotter	999
DX1-1200 8-pen A-B-size flatbed plotter	1359
DPX-2500 8-pen/pencil, 1-MB, A-C size	3395
DPX-3500 8-pen/pencil, 1-MB, A-D size	4095

ELECTRONIC PHOTOGRAPHY

Canon Professional Still Video Computer Imaging System

The Professional SV Computer Imaging System is a complete package solution for capturing and inputting high-quality still video images on an IBM-PC and compatible computers. Comes with Canon's RC-470 frame-modes camera, FV-540 frame digitizer & disk drive, software, and accessory kit. Ideal for DTP, real estate, studio & outdoor photo.

Professional SV Computer Imaging System *3999

Canon XAPSHOT

The Canon XAPSHOT (pronounced "Zapshot") is as simple to use as a 35-mm auto-focus, auto-exposure camera. Yields great image quality for use in your computer (with the use of a digitizer). Takes 50 shots per disk.

XAPSHOT Color Imaging Kit	1699
XAPSHOT camera only / XAPSHOT acc. y kit	445 / 149
XAPSHOT Lens attachments, disks, batteries	CALL



ORDERING INFORMATION

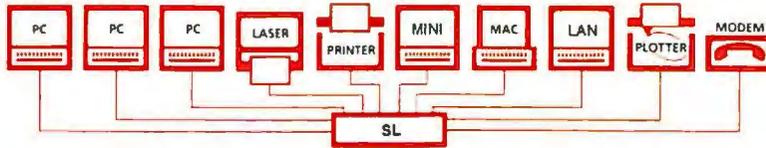
Orders (U.S.A. & Canada) (800) 628-4517
Orders (International) (301) 899-1118
FAX Orders (24-hr) (301) 899-1888
Customer Service (301) 899-1118

We Ship Worldwide



Mailing address: Laser Press & Graphics, 4888 Stamp Road, Marlow Heights, MD 20748. Make checks payable to: Laser Press & Graphics. Returns require authorization. Call for RMA. We do not guarantee compatibility. Non-defective returns subject to a 15% restocking fee. Returns must be in resalable condition. Software is not returnable if opened due to copyright laws. We reserve the right to limit quantities. Prices subject to change without notice. PCW1291

Big Business Productivity For Small Workgroups



- * Pop-up Menu & Windows Option
- * Easy to Install and Use
- * Rapid Data Transfer
- * User Upgradable Memory
- * Reliable Automatic Switching
- * No PC RAM Memory Required
- * Toll-Free Technical Support
- * 45-Day Money-Back Guarantee



Printer Sharing Solutions

Model Name	Total Ports	PCs/ Printers	Memory Available	Printer Selection	Price \$ / Buffer
SL	10 6 Ser., 4 Par.	Any Combination	256KB - 4MB	Pop-up Menu	\$495 / 256KB \$595 / 1MB
SLP	10 8 Par., 2 Ser.	Any Combination	256KB - 4MB	Pop-up Menu	\$495 / 256KB \$595 / 1MB
HXM	4 2 Ser., 2 Par.	Any Combination	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HXS	4 Serial	Any Combination	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HWP	5 Parallel	3/2 4/1	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HXP	4 Parallel	2/2 3/1	256KB - 16MB	Pop-up or Buttons	\$245 / 256KB \$345 / 1MB
HCP	2 Parallel	1/1	256KB - 16MB	One Printer	\$225 / 256KB \$325 / 1MB
AS-41	5 Parallel	4/1	None	One Printer	\$195
AS-31	4 Parallel	3/1	None	One Printer	\$175

Save Money by Sharing Office Resources:

Printers and other expensive peripherals are idle the vast majority of the time. Buffalo boxes facilitate efficient utilization of these devices, and reduce the need to purchase more of them.

Buffalo boxes further improve productivity by allowing easy user access to all shared peripherals. With a buffer, all users can simultaneously send print data and quickly release their PCs to continue working.

BUFFALO

US and Canada Toll-Free:
(800) 345-2356

Fax (503) 585-4505

Buffalo Products, Inc.

2805 19th St. SE, Salem, OR 97302-1520

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

M E M O R Y

NO SURCHARGE
FOR MC, VISA & DISCOVER

★★ CALL TOLL-FREE 800-433-3726 ★★

★ HOT BOX ★

Cyrix Math Chip:
83D87-16DX, 2-3x faster than Intel — \$99.00
Wordstar 6.0 or Wordstar 2000 — \$139.00 ea.
IBM Laser 4019, 4019E:
3.5Meg upgrd., 1038675 — \$189.00
Compaq 113132-001, 4Meg — \$199.00
Turbo 25:
gives you 150 fonts for HP Printers — \$99.00
We have memory for all laser printers.
(SEE BELOW)

Individual D-RAM Chips

MEMORY FOR IBM & APPLE

	60NS	70NS	80NS	100NS
1Meg x 1	5.25	5.00	4.75	4.40
4Meg x 1	—	—	34.00	—
1Meg x 4	—	—	26.00	—
1Meg x 4 (Zip Pack)	—	—	27.00	—
256 x 4 (Video Zip)	—	—	—	14.95
256 x 4	6.00	5.75	5.60	5.55
256 x 1	2.65	2.40	2.00	1.70
64 x 4	—	—	3.25	3.00
64 x 1	—	—	—	1.50

SIMM MODULES (Add \$50 for SIPP)

	53NS	60NS	70NS	80NS	100NS
1Meg x 9 (IBM)	CALL	51.00	48.00	45.00	41.00
4Meg x 9 (IBM)	—	199.00	169.00	159.00	—
256 x 9 (IBM)	—	23.00	21.00	18.00	17.00
512 x 36 2Meg (72 Pin)	—	—	—	129.00	—
1 x 36 4Meg (72 Pin)	—	—	—	209.00	—
2 x 36 8Meg (72 Pin)	—	—	—	479.00	—
4 x 36 16Meg (72 Pin)	—	—	—	995.00	—

INTEL Math Chips

8087	59.00	80387-16	149.00
8087-2	79.00	80387-16SX	149.00
8087-1	119.00	80387-20	219.00
80287-6	69.00	80387-20SX	159.00
80287-8	89.00	80387-25	219.00
80287-XL (30-pin lasers)	109.00	80387-33	219.00
80287-XLT (50-pin lasers)	119.00	80387-DX (NEW)	229.00

IIT ADVANCED MATH CO-PROCESSOR

• 2-3 times faster than Intel • Plug & object code compat w/Intel
• 5 Year Warranty
2C87 8MHz — 84.00 2C87-12 5MHz — 99.00
2C87-10MHz — 89.00 2C87-20MHz — 109.00

CYRIX FASMATH PROCESSOR

• Programs executed up to 3X faster • Plug & object code compat w/Intel
• PC Week • rated #1 over all math chips
5 Year Warranty
83D87 16MHz — 195.00 83D87-33MHz — 225.00
83D87 20MHz — 205.00 83S87-16SX Ver — 149.00
83D87 25MHz — 210.00 83S87-20SX Ver — 169.00
83D87 40MHz — 279.00

AST MEMORY MODULES

MODEL#	AMT. UPGRADED	AST PART#	PRICE
Premium 386/25 16 SX	1Meg	500718-001	65.00
Premium 386/33	1Meg	500718-002	69.00
Premium II	1Meg	500780-003 WPB	85.00
386SX20 486-25 25E 33	4Meg	500780-004 WPB	209.00
Premium Turbo 386/33E	8Meg	500780-001 WPB	418.00
486/25TE 486/33TE	—	—	—

ZENITH MEMORY UPGRADES

MODEL#	AMT. UPGRADED	ZENITH PART#	PRICE
Z386/33, 25, 20	1Meg	ZA3800ME	89.00
Z386/33, 25, 20	4Meg	ZA3800MK	299.00
Z248, Z286LP Z386SX	2Meg	Z-605-1 modules	149.00

BOCA AT PLUS

16 BIT MEMORY BOARD FOR 286, 386 AT
OK-8Meg Board • 4.0 Lim Compatible • New 5 Year Warranty
Conventional, Expanded and Extended Memory
Supports DOS, OS/2, LIM/EMS & EMS
Versatile Split Memory Addressing
Operates with CPU Speeds to 33 MHz
Supports Desqview, Multitask operations
OK — \$119.00 2Meg — \$199.00
4Meg — \$289.00 8Meg — \$465.00
Board made by Boca Research, AT plus
BOCA AT PLUS I/O 1 par., 1 ser., 0-4 meg 159.00
BOCA AT I/O 44 2 ser. ports, 2 par. ports 79.00

BOCA XT 8 BIT BUS

• Expanded memory for XT • Lim 4.0 compat 0-2Meg • Uses 256x1-150
0-K \$109.00 1Meg \$170.00 2Meg \$229.00

IBM PS/2 SIMM MODULES

IBM PART NO.	WORKS WITH MODEL NO.	L.A. TRADE'S COMPT. PRICE
30F5348 (512K)	30-286	38.00
30F5360 (2Meg)	30-286, 50 MTHR BD.	110.00
6450375 (1Meg)	80-041	65.00
6450379 (2Meg)	80-111, 311	139.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	249.00
6450603 (1Meg)	35SX, 40SX, 55SX, Model-70's, P-70	65.00
6450604 (2Meg)	35SX, 40SX, 50Z, 55SX, 55LS Model 70-E, 061, 121, P-70	99.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	105.00
78XB955 (128K)	25	35.00
34F2933 (4Meg)	35SX, 40SX, 55SX, 65SX	199.00
87F9977 (4Meg)	55SX, 55LS, 65SX, 40SX, 35SX, 35LS	199.00
1383679 (512K), (2Meg)	P/S1	50.00, 139.00
6450902 (2Meg)	57SX, 90, 95 P-75	119.00
6450128 (4Meg)	57SX, 90, 95, P-75	299.00
6450129 (8Meg)	35SX, 40SX	479.00
6450130 (8Meg)	57SX, 90, 95, P-75	499.00
PS/2, LX40 (2Meg, 4Meg, 8Meg)	—	149.00, 249.00, 499.00

COMPAQ MEMORY MODULES

MODEL#	AMT. UPGRADED	COMP PART#	PRICE
System Pro	2Meg Module	115144-001	139.00
DeskPro 486/25	2Meg Module	115144-001	139.00
	8Meg Module	116561-001	499.00
DeskPro 386/33	2Meg Module	115144-001	139.00
DeskPro 386/25 385/20	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	199.00
DeskPro 386/5	1Meg Exp Bd	113633-001	139.00
	4Meg Exp Bd	113634-001	279.00
	1Meg Module	113646-001	79.00
	4Meg Module	112534-001	209.00
DeskPro 386/20E	1Meg Exp Bd	113644-001	129.00
DeskPro 386/25E	4Meg Exp Bd	113645-001	279.00
	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	199.00
DeskPro 286X,	1Meg Module	116688-001	59.00
386N, 386SX20	2Meg Module	116689-001	119.00
	4Meg Module	116690-001	219.00
DeskPro 386/16	1Meg Kit	108071-001	119.00
	4Meg Kit	108072-001	269.00
	1-2Meg Exp Bd	108069-001	309.00
	4-8Meg Exp Bd	108070-001	549.00
DeskPro 286	512K Kit	113012-001	79.00

MEMORY UPGRADES FOR COMPAQ PORTABLES AND LAPTOPS

Portable 386	1Meg Kit	107651-001	169.00
	4Meg Exp Bd	107653-001	479.00
	4Meg Daught. Bd	107654-001	479.00
Portable III	2Meg Kit	107332-001	119.00
Compaq SLT/286	1Meg Module	110235-001	129.00
	4Meg Module	110237-001	499.00
Compaq SLT/386	1Meg Module	118303-001	129.00
	2Meg Module	118304-001	179.00
	4Meg Module	118305-001	419.00
Compaq Lite 286	1Meg Bd	117081-001	89.00
	2Meg Bd	117081-002	159.00
	4Meg Bd	117081-003	399.00
Compaq Lite 386S/20	1Meg Module	121125-001	149.00
Compaq Lite 386S/20	4Meg Module	121125-002	399.00

MEMORY BOARDS

IBM Compatibles, Compaq & PS/2

EXT/EXP MEMORY BOARD, BOCA 50Z

0-2Meg for PS/2 50, 50Z, 60 • 0 wait state ram • Uses 1Megx1-80NS
0-K board only \$129.00 2Meg with board \$224.00

• WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE •

All products Brand New & Guaranteed • We Buy Excess Inventory
Trademarks are registered with their respective companies



20930 South Normandie • Torrance, CA 90502

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	AMT UPGRADED	TOSHIBA PART #	L.A. TRADE'S COMPT. PRICE
T1000SE/XE/LE	1.5Meg	PC14 PA8311U	129.00
T1000SE/XE/LE	2Meg	PC14 PA8312U	169.00
T2000/T2000SX	1Meg	PC18 PA8316U	119.00
T2000/T2000SX	2Meg	PC18 PA8317U	179.00
T2000SX/T1000LE	4Meg	PC PA8314U	379.00
T2000SX/T1000LE	8Meg	PC14 PA8315U	649.00
T2000SX/E/2200SX	2Meg	PC PA2000U	169.00
T2000SX/E/2200SX	4Meg	PC PA2001U	419.00
T2000SX/E/2200SX	8Meg	PC PA2002U	719.00
T1200KE	2Meg	PC13 PA8306	119.00
T1600	2Meg	PC8 PA8302U	119.00
T3100e	2Meg	PC9 PA8340U	119.00
T3100SX	2Meg	PC15 PA8308U	119.00
T3100SX	4Meg	PC15 PA8310U	219.00
T3200	3Meg	PC6 PA7137U	219.00
T3200SX	2Meg	PC12 PA8307U	119.00
T3200SX	4Meg	PC12 PA8909	219.00
T3200SX	2Meg	PC19 PA8318U	129.00
T3200SX	4Meg	PC19 PA8319U	269.00
T5100	2Meg	PC7 PA8301U	119.00
T5200/T8500	2Meg	PC10 PA8304U	119.00
T5200/T8500	8Meg	PC10 PA8313U	499.00

BRANDNAME LAPTOP MEMORY

Leading Edge D/LT 386SX	1Meg	—	119.00
Bondwell B310, Plus	1Meg	—	119.00
NEC Prospeed 286 386SX 16	1Meg	PC21-21	139.00
NEC Prospeed 286 386SX-16	4Meg	PC21-22	499.00
NEC Prospeed 386	2Meg	PC21-21	179.00
NEC Prospeed 386	8Meg	PC21-22	799.00
NEC Prospeed 386SX-20	1Meg	PC43-21	169.00
NEC Prospeed 386SX-20	4Meg	PC43-22	499.00
Sharp PC-6220	1Meg	CE 621B	139.00
Sharp 6640	2Meg	—	179.00
T1 Travelmate 2000	1Meg	ZA-180-66	125.00
T1 Travelmate 3000	2Meg	ZA-180-66	179.00
Zeos 386SX Notebook	2Meg	PC15 00053-00	129.00
Zenith Master Sport 386SX	2Meg	500814-003, 386SX20	269.00
Zenith Super Sport	—	NBC-NBEMEM2	129.00
286, 286E	1Meg	CF-BAY65	99.00
286E, SX	2Meg	CF-BAY65	139.00
SX Alpha	2Meg	—	319.00
Everex Tempo LX	2Meg	—	—
AST Notebook Prem Exec	4Meg	—	—
Sanyo 1718 NB	2Meg	—	—
Panasonic CF170, CF270	1Meg	—	—
Epson NB3	1Meg	4Meg	—

LASER PRINTER MEMORY UPGRADES

HP 2 20 3 30 3P 2P	1Meg	2Meg	4Meg	HP III S1	1Meg	2Meg	4Meg
Panasonic 4420/4450	49.00	129.00	159.00	Panasonic 4455	49.00	219.00	279.00
Panasonic 4430	135.00	—	—	HP 90 280	—	219.00	—
Epson 6000 Action Lar	—	149.00	229.00	DMS 410	129.00	189.00	299.00
Toshiba Page Laser 6	—	149.00	229.00	Brother HL 4	129.00	189.00	299.00
Packard Bell 995000	149.00	229.00	—	—	99.00	279.00	499.00
OK 400	119.00	169.00	—	—	74.00	—	—
OK 830 840	—	—	—	—	—	—	—
GM Laser 4019 4019E	85.00	135.00	199.00	—	—	—	—
ESL Laser 4029	129.00	199.00	319.00	—	—	—	—

H.P. COMPATIBLE FONT CARTRIDGE

IBM 4019, 4019E, FONT CARTRIDGE 209 Fonts 159.00
TURBO 25 Comparable to Pacific Data's 25 CARTRIDGES
IN ONE! 99.00
TURBOSCRIPT™ 47 scalable fonts in any point size 229.00
TAX & FINANCE CARTRIDGE 129.00
PRO-65 for Epson & Toshiba Laser Printers 149.00

NO SURCHARGE FOR MASTERCARD, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 500, GOVERNMENT & INSTITUTIONS. Price & availability subject to change without notice. Add \$3.95 per line. Returned orders (in original box) will be subject to a 20% restocking fee. (Memory chips not installed in boards) We accept international orders ship prepaid via UPS. Air ARPO. FRO orders welcome. A credit card is required for product use. SORRY, NO REFUNDS AFTER 30 DAYS — EXCHANGES ONLY. We accept MC, VISA, Discover. AE prepaid orders. purchase orders will be transfer. COD cashiers check, orders, cash & money orders.
• ALL MANUFACTURE PART #S ARE FOR REFERENCE ONLY •

EVEREX

EV-3000, EV-159
0-3Meg, 4.0 Lim compatible • Uses 256x1 chips \$99.00
EV-8000, EV-178
0-8Meg, 4.0 Lim compatible • Uses 1Megx1 chips • Supports multi-tasking & DMA multi-tasking in hardware \$219.00

ORCHID RAM QUEST 16/32

0-8Meg of Backfill, Expanded or Extended Memory
Works with PS/2 Models 50, 50Z, 55SX, 60, 70, 80
Full Support for LIM/EMS 4.0 and OS/2 — 0 Wait State Ram
4 Year War. — Comes w/ser. Par Ports and Free Ser Cable
OK — \$199.00 2Meg — \$281.00
4Meg — \$363.00 8Meg — \$527.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC XT, 64K 129.00 — with 384K 1

Do You Make These Six Common Mistakes On Your Taxes?

Six common mistakes can cause you big headaches on your taxes. An oversight here, an omission there. From unnecessary tax payments to full blown IRS audits -- you can end up paying too much ... or worse.

But now, using TurboTax and your personal computer, you can avoid these simple but costly mistakes:

1 The Arithmetic Error
Today, even the simplest forms contain complex calculations. And with all the late-night scrambling, an innocent mistake could cost you plenty.

2 The Transcription Error
With all those numbers being juggled from schedule to schedule, it's no wonder the figures are so often transcribed incorrectly or entered on the wrong line.

3 The Omitted Form
Even "ordinary" returns require anywhere from six to a dozen forms to complete. It's easy to miss one ... or end up rushing all over town to find the one you need.

4 The Misinterpreted Instruction
At best, IRS instructions can be tough to understand. At worst they can be mind-boggling. What you need are clear directions in plain English.

5 The Overlooked Deduction
You'd have to be a professional tax preparer to know all the deductions you're entitled to. If you miss just one, it could cost you hundreds of dollars.

6 The Exceeded Guideline
The fastest way to trigger an IRS audit is to exceed the "normal" range on one of your deductions. You need to know what the IRS looks for on a line-by-line basis.

When you do your taxes with TurboTax, mistakes like these are virtually impossible. And filing your taxes couldn't be easier.



America's #1 Tax Software

TurboTax is America's #1 best-selling tax software -- over six million returns were filed with TurboTax last year! With TurboTax on your PC (or MacInTax on your Macintosh), you can completely and accurately prepare your income taxes in just a few hours.

Here's how easy it is!

- Gather your records and receipts.
- Enter your data into TurboTax just once.
- Print out, sign and drop in the mail.

TurboTax does the rest. Even if your records and receipts aren't in any particular order, TurboTax guides you through step-by-step

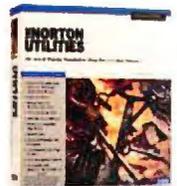
questions and shows how to enter every item. And like a good tax advisor, TurboTax helps you identify every deduction you can claim.

Then TurboTax makes all the calculations, checks for accuracy and consistency, and transfers every number to the proper lines on the proper forms. And, TurboTax prints every form you need in IRS-approved format right on your own printer -- ready to sign and mail (or file electronically, if you prefer, for a faster refund).

PC Magazine says TurboTax "makes doing your taxes almost fun." Try it for yourself. Free. We know that if you try it, you'll never go back to doing your taxes the old-fashioned way. So we'll send you TurboTax on an unconditional free trial basis: *If you don't like it, you don't pay for it!*

Free Bonus!

Plus, when you buy TurboTax, we'll send you a FREE copy of Norton Utilities as a special bonus gift. Norton Utilities (regular \$179) is America's best-selling disk repair and data recovery program. With over 40 different types of error checking, it performs the most extensive diagnosis and repair of any utility program for the PC and Macintosh. And it's yours free when you buy TurboTax or MacInTax.



Yes, I'll try TurboTax FREE!

Rush me a FREE trial copy of TurboTax ASAP (I pay just \$8.50 shipping now). I'll try it free for 30 days, and if I don't like it for any reason, I'll just send it back and owe nothing. If I do keep it, I won't be charged until after my 30-day free trial.

- Please Choose: TurboTax (IBM-compatible) \$69
 3-1/2" disks, or TurboTax for Windows \$79
 5-1/4" disks MacInTax (for Macintosh) \$79

Name _____
 Address _____
 City _____ State _____ Zip _____
 Bill My: Visa MasterCard Discover Amex
 Card # _____ Exp. Date _____
 Signature _____

FREE BONUS: Your free copy of Norton Utilities (reg \$179) will be sent upon full payment.

SPECIAL OFFER

Pay now in full and we'll send both Norton and TurboTax right away -- and we'll pay the shipping!
 Yes, charge my credit card in full now.
 Yes, check enclosed (payable to "ChipSoft")

Mail your order to: ChipSoft, Box 85709
 Or Call NOW: San Diego, CA 92186-5709

800-487-8297 ext. 713

TurboTax requires IBM PC, XT, AT, PS/1, or PS/2 or compatible, DOS 2.0 or higher, 512K RAM and hard drive. TurboTax for Windows requires Windows 3.0 or higher and hard drive. MacInTax requires Macintosh Plus, System 4.2 or higher and hard drive. California residents please add 7.25% sales tax. Offer expires 4/15/92. Not valid with any other offer. Offer also includes free HeadStart Edition for orders received through 12/31/91. © TurboTax and MacInTax are registered trademarks of ChipSoft, Inc. and ChipSoft CA, Corp.

CAD ONE

Custom Built Computers



386/486 Mini-Tower



386/486 Standard Tower



386/486 Full Tower

Computers built to your specifications at competitive prices !

WE FEATURE PRODUCTS MANUFACTURED BY:

IBM/Lexmark - Hewlett Packard - Panasonic - Star Micronics - MicroVitec - CTX - Teac
Seagate - Western Digital - Maxtor - Mitsubishi - Toshiba - QVS Cables & Accessories - AOC
Gateway - 3COM - Boca Research - Digital Vision - Bondwell - Navstar - Irwin Magnetics
BASF - Artisoft - CNET - Micro Solutions - Media Vision - Liteon - Chicony - and many more.

MOTHERBOARDS

486-50 MHz	Call
486-33 MHz 256k Cache	Call
486-25 MHz 128k Cache	Call
386-40 MHz 64k Cache	Call
386-33 MHz 256k Cache	Call
386-33 MHz 64k Cache	Call
386SX-25 MHz Cache Opt.....	249
386SX-16 Mhz	215
286-16 MHz	125

VIDEO

OAK S-VGA 1024x768 512k ...	\$89
OAK VGA 800x600 256k	69
OAK VGA 640x480 256k	59
TRIDENT S-VGA 512k	98
TRIDENT S-VGA 1MB	139

COMMUNICATIONS

Internal 2400 Baud Modem with MNP level 5 and software ...	\$129
External 2400 Baud Modem with MNP level 5 and software	165
Internal 9600 Baud Modem with V.42 BIS and MNP 5	415
External 9600 Baud Modem with V.42 BIS and MNP 5	479
CARDINAL TX/RX Fax Modem with MNP 5	149
ADTEC TX/RX Fax Modem..	135
ADTEC TX/RX Fax Modem with voice/fax auto detect	189

I/O CONTROLLERS

Super I/O (IDE HDD, FDD, 2S/1P/1G Port	\$ 29
IDE HDD/FDD.....	18
Adaptec 1522 KIT	187
Adaptec 1542 KIT Bussmaster	290
Adaptec ESDI Controller	165
MFM-AT Controller.....	76
MFM-XT Controller (8 bit)	57

MONITORS

CTX

5468A Super VGA .28DP	\$330
5468NI SVGA Non-interlaced	399
5432 VGA .29DP	299
5439 VGA .39DP	256
3436 Multiscan .28DP	430

IDENTITY

Super VGA .28DP	\$335
Super VGA .41DP	275
VGA .31DP	295
VGA .41DP	249

AOC

Super VGA .28DP	\$348
VGA .31	294
VGA Mono 14"	135

SAMTRON

Super VGA .28DP.....	\$348
Super VGA .31DP	324

MICROVITEC

17" .28DP Multi-sync	\$1895
20" Autoscan	1695

NETWORK SUPPLIES

3Com Ether Link II 3C503	Call
3Com EtherLink Plus 3C505	Call
3Com EtherLink 16 3C507	Call
ARCNet 8 port active hub	\$173
Star 8 bit ARCNet Card	62
Star 16 bit ARCNet Card	108
16 bit Ethernet Card	156
8 bit Ethernet Card	138

**WE SELL A COMPLETE
LINE OF NETWORKING
PRODUCTS & SUPPLIES
FOR PRODUCT AND
PRICING PLEASE CALL
1-800-524-1005**

DATA TRANSFER

ELECTRONIC

4 Position Par. Smart Switch	\$132
8 Position Par. Smart Switch ..	180
Parallel 2 to 1 Auto Switch	53
Parallel 2 to 2 w/Hot Key	65

MANUAL

AB Switch Box	19
ABC Switch Box	27
ABCD Switch Box	34
ABCDE Switch Box	45

PRINT BUFFERS

64k Parallel Print Buffer	145
256k Parallel Print Buffer	249

KEYBOARDS

LITEON 101 Soft Click	\$59
LITEON 101 Tactile Click	59
Chicony 101 w/Trackball	99

STORAGE DEVICES

SEAGATE

MAXTOR

WESTERN DIGITAL

(Call for product & price)

FLOPPY DRIVES

TEAC 1.2MB	\$69
TEAC 1.44MB	69

TAPE BACKUP

IRWIN Accutrak 120MB.....	210
IRWIN Accutrak 250MB	269

MISC. PRODUCTS

SOUND/MUSIC

MediaVision Thunder Board ..	\$154
ProAudio Spectrum	355

DIGITAL VISION

Computer Eyes Pro	349
-------------------------	-----

PRINTERS

IBM/LEXMARK	Call
PANASONIC	Call
STAR MICRONICS	Call

**CAD ONE offers a complete line of
cables & accessories, plotters, memory,
math co-processors, plotters, power
backups and much more. PLEASE
call for current prices and products.**

CAD ONE

COMPUTER DESIGN, Inc.

270 Communication Way # 4D
Hyannis, MA 02601

Phone (508) 778-1895

Fax (508) 778-1887



CAD ONE takes pride in its support and customer relationships. If you can not find what you are looking for, please call our toll free telephone number. Prices and availability subject to change without notice

Please call 800-524-1005

Business hours: Monday - Friday 9 A.M. to 8 P.M. Saturday 9 A.M. to 5 P.M. Eastern Standard Time

The RS Collection

**UNCONDITIONAL LIFETIME
MONEY BACK GUARANTEE!
GUARANTEED LOWEST PRICE!**

BUSINESS/HOME

- Amortization Table 3.51 (1115) - Handles all types.
- Brother's Keeper 4.5C (4 disks) (3120) - Excellent, full featured genealogy program that's easy to use. (HD)
- Diet (3 disks) (2910) - Lose weight and feel great!
- Express Check 4.04 (2 disks) (1110) - A great program to manage your checking accounts! Even prints checks!
- FormGen 4.1a/FormFill 1.5 (2 disks) (3240) - A very versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer. Includes numerous sample forms to get you started!
- Home Inventory 4.0 (3137) - Helps you keep track of everything you own. Great for insurance.
- Home & Business Legal Guide 7.0 (3 disks) (3330) - Over 150 legal forms for almost everything including contracts, wills and living trusts. (Valid in all 50 states) (HD)
- Mealmaster 6.15S (2 disks) (3160) - A complete recipe filer. Comes with over 1200 recipes to start you off. (HD)
- Names & Dates 4.1 (2 disks) (3140) - Great personal information manager! Keeps track of anything and everything. (HD)
- Painless Accounting 5.0 (3 disks) (1120) - Complete, easy to use accounting! Includes GL/AP, billing, and more (HD)
- Painless Payroll (2 disks) (1140) - Does everything from figuring state & federal taxes to writing checks and reports. (HD)
- PC-Write 3.04 (3 disks) (3820) - Easy to use word processor that is loaded with features including spell checker. (HD)
- PrintPartner (2 disks) (3260) - PrintMaster/PrintShop clone that prints banners, signs and more. Includes 200+ graphics.
- Resume Creators & Job Finders (2 disks) (3270) - Create a customized resume and find the job that is right for you.

CLIP ART (PCX)

Note: These disks contain clip art in PCX/PC Paintbrush format. They can be used with WordPerfect 5.0/5.1, PageMaker, CorelDraw, Ventura Publisher, Windows or any other programs that can read PCX files.

- Accents & Dingbats (2617)
- Alphabet Soup (2 disks) (2890)
- Birds (2 disks) (2620)
- Business (2 disks) (2630)
- Education (2 disks) (2640)
- Family (3 disks) (2650)
- Garden Veges (2 disks) (2660)
- Houses (3 disks) (2680)
- Complete Clip Art Collection (58 disks) (2990) - 1400+ images!
- Kids/Cartoons (2 disks) (2820)
- Ladies (2 disks) (2690)
- Medical (2 disks) (2560)
- Men (2 disks) (3750)
- Patriotic (2 disks) (2540)
- Sports (2 disks) (2790)
- Teddy Bears (2 disks) (2830)
- Wedding (3 disks) (2850)

EDUCATION

- Algebra Tutor (3 disks) (1820) - Learn Algebra easily! (CGA/HD)
- First Aid Tutorial 3.0 (1465) - Learn basic First Aid treatment skills for common medical emergencies.
- Lotus 2.2 Learning System (5 disks) (1480) - Learn Lotus 2.2 easily and quickly. (An RS exclusive!) (HD)
- Skyglobe 2.5/Earthwatch 1.2 (2 disks) (1880) - Look at the stars or the earth. Shows constellations, planets, stars, and more. Fascinating program with great graphics. (CGA)
- Spelling/Vocabulary Tutor (3 disks) (1870) - Improve your spelling and vocabulary!
- Typing Teacher (2 disks) (1440) - Learn to type, or improve your typing speed with this set of programs.
- Tutor DOS 1.2 (4 disks) (1450) - The ultimate DOS tutorial, everything you wanted to know about DOS and more. (HD)
- Verbal Vanquish (1848) - SAT Verbal preparation!

(CGA) Color Graphic Adapter (EGA) EGA Graphics (HD) Hard Disk

GAMES

- CGA Tetris Collection (2 disks)(1970) - Six great variations of the popular game. (CGA)
- Chess Challengers & Tutorial (2 disks)(4340) - Three very good games and a superb tutorial. (CGA)
- Kids' Games (2317) - Fun for the under 12 set.
- Super Solitaire (2 disks) (2460) - 15 great versions. (CGA)

EGA/VGA GAMES

- Note: These games require EGA or VGA graphics.
- EGA/VGA Tetris Collection (3 disks) (1920) - 8 high resolution variations including a couple of 3-dimensional ones!
 - EGA Mouse Solitaire (3 disks) (1930) - Eight fabulous Solitaire card games that use a mouse.
 - Commander Keen (1926) - One of the most spectacular games available! Superb sound, graphics!
 - Captain Comic 4 (1925) - Great sound, graphics & more!
 - Duke Nuk'em (1965) - A new game that's probably the finest arcade style game available on a PC! (HD)
 - Dark Ages (1928) - From the creators of Commander Keen!

MISCELLANEOUS

- Best DOS Utilities (4 disks) (3520) - Essential utilities for DOS. File finders, and numerous other handy utilities that will save you time. Very easy to use.
- MenuDirect Gold (2 disks) (3540) - Outstanding file/directory/program manager that does it all! (HD)
- Online Bible 5.0 (14 disks) (3170) - Complete KJV Bible. Includes Greek/Hebrew Lexicon and Cross Reference. (HD)
- Screen Savers for DOS (2 disks) (4790) - A superb collection of screen blankers for DOS!
- Vaccines and Virus Killers Ver. 84 (4 disks) (3510) - Protect your system from viruses! This set will find (and destroy!) over 200 viruses and 500+ virus strains.

WORDPERFECT 5.0/5.1

- By Design (4255) - Unleash the true potential of WordPerfect 5.1.1. Turns WordPerfect into a design studio! (HD)
- WordPerfect Art/Graphics 1 (2 disks) (3710) - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows
- WordPerfect Art/Graphics 2 (2 disks) (3770) - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- WordPerfect Art/Graphics 3 (2 disks) (3780) - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows
- WordPerfect Art/Graphics 4 (2 disks) (3790) - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- WordPerfect Art/Graphics 5 (2 disks) (3910) - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- WordPerfect 5.0/5.1 Tools (3 disks) (3750) - 17+ great utilities for WordPerfect 5.0/5.1.
- WordPerfect 5.1 Learning System (4 disks) (4230) - Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- WordPerfect 5.1 Macros (2 disks) (4220) - Over 100 helpful macros for WordPerfect 5.1.
- PC-Draft II & III (3 disks) (3760) - Create clip art & graphics for WordPerfect 5.0/5.1/Windows. (CGA) (HD)

**FREE catalog of over 300 programs
with every order or by request.**

WINDOWS

- Note: These disks require Windows 3.0 or 3.1
- ATM Fonts for Windows Vol. 1 (4 disks) (4710) - 30+ fonts for Adobe Type Manager. Will work with all Windows applications. (Requires Adobe Type Manager.)
 - ATM Fonts for Windows Vol. 2 (4 disks) (4720) - 30+ additional fonts for Adobe Type Manager.
 - ATM Fonts for Windows Vol. 3 (4 disks) (4730) - 30+ additional fonts for Adobe Type Manager.
 - ATM Fonts for Windows Vol. 4 (4 disks) (4740) - 30+ additional fonts for Adobe Type Manager.
 - Atlas for Windows (4126) - A fun and educational atlas of the United States. You can even add your own entries!
 - Chess for Windows (4639) - Play the great game of chess.
 - Information Managers for Windows (3 disks) (4120) - A collection of personal information managers, address & phone books, calendars, and reminders with alarms.
 - The Complete Icon Collection (4 disks) (4580) - Over 3200 of the best icons available!
 - Cursor/Hourglass Changers (4885) - Change the cursor and hourglass into any shape you choose!
 - Fractals & Mandelbrots for Windows (2 disks) (4680) - Fascinating visual effects and startling graphics.
 - Games for Windows 1 (4591) - Great games including Klotz (Tetris clone), Worm War (Centipede clone), Atmoids, Lunar Lander, Checkers, Backgammon and more!
 - Games for Windows 2 (4592) - Space Walls, Hextris, Mines, Tic Tac Toe, and more.
 - Games for Windows 3 (4593) - Tetris, Concentration, Taipei, Arachnid (solitaire variation), Alien Force, and more.
 - Games for Windows 4 (4594) - PacMan, Blitzr, Missile Command, Cubic (Rubik's cube), Triplets, Pipe, Tetwin, and more.
 - Grab Plus 6.0 for Windows (2 disks) (4570) - Address and print out envelopes from within any Windows application.
 - Hyperdisk 4.2 (4539) - Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
 - Icon Utilities (3 disks) (4260) - A complete set of utilities to create, modify, view and manage icons.
 - File Utilities for Windows (3 disks) (4110) - Utilities for finding, deleting, moving, copying, searching and viewing files!
 - Menu Systems for Windows (4 disks) (4880) - Makes Windows even easier to use.
 - Metz Utilities (2 disks) (4690) - The utilities that received an Editor's Choice from PC Magazine!
 - Screen Savers for Windows (4615) - Eight different screen savers for Windows.
 - Utilities for Windows (4 disks) (4510) - 50+ utilities that will help you get the most out of Windows, as well as making Windows easier to use. A must for any Windows user!
 - Windows Drawing & Paint (2 disks) (4310) - Three programs for most types of drawing including desktop publishing, CAD and object oriented drawing
 - Windows Tetris Collection (4575) - Six different Tetris variations for Windows!
 - Windows Wallpaper 1 (4 disks) (4520) - 75+ backgrounds.
 - Windows Word Processors & Editors (3 disks) (4320) - Two word processors and four text editors that are more powerful than Windows Write and Notepad.
 - Word for Windows Macros (2 disks) (4930) - The most complete collection of macros for Word for Windows!

Shareware programs require separate payment to the authors if found useful.

Order Toll Free: 800-876-3475

1.75
10 disks or more
2.25
1-9 disks

Disk size: 5 1/4" 3 1/2" (add 50¢ per disk if you require 3 1/2")

Name _____ No. Disks _____ x\$ _____ = \$ _____

Business/Company (if applicable) _____

Address _____

City/State/Zip _____

Phone _____

All checks must be payable in US funds. We cannot accept Eurocheques.

Method of Payment: Check/Money Order Visa/MasterCard COD (US Only)

Shipping \$ 4.00

U.S. Only { Federal Express, Next Day (add \$7) \$ _____

{ Federal Express, 2nd Day (add \$5) \$ _____

{ COD (add \$5) \$ _____

Canada (add \$2) \$ _____

Foreign outside U.S./Canada (add \$4) \$ _____

TOTAL ORDER: \$ _____

Card No. _____ Exp. Date _____ Signature _____



Reasonable Solutions

2101 West Main, Medford, Oregon 97501
Toll free 800-876-3475, or 503-776-5777, Fax 503-773-7803

PCW 192



Sail Blackship

For All Your PC Needs



1-800-531-SHIP



PORTABLE PUNCH

NOTEBOOK:

- INTEL 386™SX 20MHz CPU
- FCC CLASS B, UL, TUV, & CSA APPROVED
- 6.5lbs
- 8.5" x 11.7" x 2.0"
- 2MB RAM
- 3.5" 1.44MB FLOPPY
- 20(STANDARD)/40/60MB HARD DRIVE
- 640x480 VGA w/32 SHADES OF GRAY
- (1) SERIAL, (1) PARALLEL PORTS
- MS-DOS 5.0/4.01 w/GW BASIC INSTALLED
- DURABLE CARRYING CASE

LAPTOP:

- INTEL 386™SX 20MHz CPU
- FCC CLASS B, UL, TUV, & CSA APPROVED
- 14.7 LBS.
- 12.7" x 16.7" x 3.1"
- 1 MB RAM
- 40(STANDARD)/80/120MB HARD DRIVES
- 640 x 480 VGA w/16 SHADES OF GRAY
- (2) SERIAL, (1) PARALLEL PORTS
- MS-DOS 5.0/4.01 w/GW BASIC INSTALLED
- DURABLE CARRYING CASE

386SX/20 NOTEBOOK \$1695
386SX/20 LAPTOP \$1995

SX SAVVY

- INTEL 486/386™SX 16/20/25MHz CPU
- 2MB RAM
- (2) SERIAL, (1) PARALLEL PORTS
- DUAL HARD/FLOPPY DISK CONTROLLER
- 1.2MB 5.25" FLOPPY DRIVE
- 1.44MB 3.5" FLOPPY DRIVE
- 40MB IDE HARD DISK
- 16BIT COLOR VGA CARD
- 14" VGA COLOR MONITOR
- 101-KEY ENHANCED KEYBOARD
- MS-DOS 5.0/4.01

486SX/25 *NEW*
486SX/20 *NEW*
386SX/20
386SX/16

CALL
\$1995
\$1495
\$1395



GSA # GS00K91AGS5225

DESKTOPS DELIVER

486:

- INTEL 486™ 33/50MHz CPU
- 4MB RAM MEMORY
- 64K CACHE MEMORY
- (2) SERIAL, (1) PARALLEL & (1) GAME PORT
- DUAL FLOPPY/HARD DISK CONTROLLER
- 1.2MB 5.25" FLOPPY DRIVE
- 1.44MB 3.5" FLOPPY DRIVE
- 200MB IDE 15ms HARD DISK
- 16 BIT SVGA CARD w/1.0MB VRAM
- 14" 1024 x 768 SVGA MONITOR
- 101-KEY ENHANCED KEYBOARD
- MS-DOS 5.0/4.01 INSTALLED

386

- INTEL 386™ 25/33MHz CPU
- SAME CONFIGURATION AS ABOVE
- 120MB IDE HARD DISK

486/50 *NEW* CALL
486/33 EISA \$3695
486/33 \$3095
386/33 \$2245
36/25 NON-CACHE \$2095

STANDARD FEATURES

- 1 YEAR PARTS & LABOR WARRANTY
- 30 DAY MONEY-BACK GUARANTEE
- 1 YEAR GE ON-SITE SERVICE (EXCL. NOTEBOOK, LAPTOP)
- LIFETIME TOLL-FREE TECHNICAL SUPPORT HOTLINE 1-800-231-TECH
- VOLUME PURCHASE DISCOUNTS
- COMPLETE CUSTOM CONFIGURATIONS



ON-SITE SERVICE



BLACKSHIP
COMPUTER SYSTEMS, INC

2031 O'TOOLE AVENUE SAN JOSE, CA 95131
Tel. (408)432-7500 Fax (408)432-1443

Paradise

ORDER TOLL FREE: U.S. & Canada - 1 800 348-4PCP (4727)

Japan - 0031-11-1865

In Hawaii
(808) 875-1100

Australia - 0014-800-126-943

FAX - 1 (808) 875-0061

Shipping & Technical Assistance - 1 (808) 875-1108

COMPUTERS

IBM PS/2	
L40 SX	3200
PS/2 Mod 35 SX/40Mb	1450/1850
PS/2 Mod 40 SX 40/80 Mb	2195/2395
PS/2 Mod 50 Z 60 Mb	1395
PS/2 Mod 55 SX 40/80 Mb	1995/2100
PS/2 Mod 57 SX 80/160 Mb	2895/3100
PS/2 Mod 70 A81/A16	3790/3990
PS/2 Mod 80 80/160/320 3275/3625/5075	
PS/2 Mod 90/95-486	Call

COMPAQ	
LTE 386 SX 30/60	3395/3735
DPro 386 S 20 Mod 1/40 Mb	1655/2150
DPro 386 E 40/110 Mb	2750/3033
DPro 386/25 E (All Models)	Call
DPro 386/33 L 120 Mb	4999

TEXAS INSTRUMENTS	
Travelmate 2000	989
Travelmate 3000 40/60	2260/2590

AST	
Premium Exec Notebook 286 20/40	
	1925/2200
Premium Exec Notebook 386 20/40/60	
	1999/2250/2500
Premium II 386 SX/20	1275
Premium II 386/33	2199
Premium II 486 SX/20	2329
Premium II 486/33	3450

TOSHIBA	
T2000 SX 40/60 Mb	2200/2400
T2000 SXE 40/60 Mb	2675/2850
T2300 SX 40/60 Mb	3069/3300
T3200 SX 120 Mb	3550
T3200 SX Color	5695
T5200 100/200/Color	4199/4600/5924

DFI (complete systems)	
286-12 Mhz	1095
386 SX-20 Mhz	1350
386-25 Mhz	1495
386-33 Mhz	1995
486-33 Mhz	2995
1-year on-site warrants	
Call for Custom Configurations	

PANASONIC	
CF-370	Call

MONITORS & TERMINALS

MONO/COLOR	
IBM 8504/8512	199/439
Samsung RGB	200
Samsung 14" VGA Mono	129
Amber 12" 111	85

VGA/EGA MONITORS	
IBM 8506/07/08	899/629/928
IBM 8513/14/15	499/1150/699
Samsung 17" VGA	865
Mitsubishi EGA	329
Mitsubishi 1381/HL6935	485/1900
NEC 2A/3DS	460/569
NEC 4DS/5D	989/2150
NEC 3FGX/4FG	640/759
NEC 5FG/6FG	Call
Packard Bell 8529/8541/8528	
	275/290/339
Panasonic 1381/1391	369/459
Sony CPD 1304	599

Zenith 1492	595
-------------	-----

VIDEO BOARDS

ATI VGA Wonder XL 256 k	175
Hercules GB 1024/1024+2	532/699
NEC Graphics Engine	895
Orchid ProDesigner II 512/1 Mb, 186/230	
Orchid Farenheit 1280 1 Mb	336
Paradise VGA+16	122/145
Paradise VGA 1024 256/512	159/199
Herc/Mono/w Parallel Card	45
VGA 1024 256/512	109/139

PRINTERS

CANON	
BJ 10 EX	329
BJ 300/330	449/619
CITIZEN	
GSX 130/140+1/45	259/299/399
HSP 500/550	301/421
PN 48	339

EPSON	
LX 810	173
LQ 1070	365
FX 850	289
LQ 1170	589
FX 1050	389
LQ 2550	849
LQ 200	225
EPL 7000	789
LQ 570	258
EPL 7500	1887
LQ 870	445
Action Laser II	
LQ 860	549
ES300 Color Scanner	1049

HEWLETT-PACKARD (Mac & 220V avail.)	
LaserJet 3/3D	1549/2399
LaserJet 3SI	3525
LaserJet 2P+/3P	849/995
DeskJet 500/Color	399/719
ScanJet + w/IL	1069
ScanJet IIC Color Scanner	1495
PaintJet/XL	695/1640
II P/III P Lower Cassette	95

FONTS & MEMORY	
Pacific Data 25-1	259
Pacific Data 1/2/4 Mb	129/159/265
Pacific Connect Laser Share 1.2 Mb	349
Pacific Page PE/XL	349/721
Pacific Data Plotter in a Ctg	239
LaserJet Memory 1/2/4 Mb	119/149/245
Compaq 1/4 Mb Modules	118/383
IBM/Toshiba Memory	Call
CPI Superset 425	220
CPI DeskRam 256k	125

IBM	
Laser Printer 10/10 L	1699/2190
Laser Printer 4019/4019 E	895/1375
Laser Printer Options	Call
IBM 2390/2391	346/460
ExecJet	780

NEC	
P-3200/3300	276/Call
6200/6300	476/645
Silent Writer 290/390	2430/2895
Silent Writer 2 Mod 90	1549
OKIDATA	
ML 182	228
ML 320/321	324/451
ML 380	289
ML 390+391+	449/613
ML 393+393+color	968/1055

Quality at the best prices under the sun.



Specializing in International Orders

OkiLaser 400/800	639/965
OkiLaser 820/830/840	1276/1495/1949
PANASONIC	
1123/1180	214/149
1124/1624	279/349
1654/1695/2624	548/364/479
4420/4450/4455	779/1129/1883

TERMINALS

Wyse 50/60	375/300
Wyse 30/85	310/339
Wyse 150/185	289/379

SOFTWARE

Aldus Pagemaker 4.0	495
Ashton Tate dBase III+/IV	419/479
Borland Quattro Pro 3.0	302
Carbon Copy 6.0	110
Clarion Prof. Developer	450
Compaq/IBM DOS	125
Harvard Graphics 3.0	370
IBM Displaywrite 5.0	249
Lotus 1-2-3 2.3/3.1	329/399
Microsoft All Titles-Lowest Price	
Microsoft Windows 3.0	93
Norton Adv. Util 6.0	114
Procomin Plus	62
Quicken 5.0	39
Ventura Publisher V 3.0	479
WordPerfect 5.1	245
400 Additional Titles In Stock	

PLOTTERS AND DIGITIZERS

HEWLETT-PACKARD	
7475A/7550B	1349/2699
7570A/7575A	2699/3350
7576 EXL	3999

SUMMAGRAPHICS	
Summasketch 2 12X12/12X18	285/515

CALCOMP	
Pacesetter 2000	3150/3995
12X12/12X18	298/597

MULTIFUNCTION BOARDS CARDS & CHIPS

IBM 5250 Emulation	695
AST 5251 Emulation	499
AST 6-Pack w/384 k	145
Intel AboveBoard Plus w/512 k	289
Intel AboveBoard MC	285
Intel InBoard 386 PC	492
Cyrix Fasmath	Call
80287-XL	99
80387-SX/16/20/25/33	Call

MODEMS & COMMUNICATIONS

ATI 9600 ETC	399
CPI 2400 Internal	69
CPI 2400 Ext Fax	123
CPI 2400 Ext MNP	154
CPI 9600 Ext	439
Everex 2400/2400 MNP	99/164
Hayes 2400/2400B	319/218
Hayes Ultra 96	639
Hayes Ultra 144	760
Practical Pocket Modem	99

Intel 2400/9600	217/454
MegaHertz Laptop Modems	Call
Practical Perif. 2400/9600	132/479
US Robotics Cour HST	550/585
US Robotics Dual Std	760/779

FAX MACHINES

Sharp FO 216/240/334	559/699/795
Intel Satisfaction/MCA	369/421
JT Fax 9600 B	339
CPI 2496 IF	173

MICE

Logitech C9/BUS/PS2	82
Logitech Mouseman	72
Logitech ScanmanPC/PS2	169/240
Microsoft Mice+/Windows 3.0	103/145
Microsoft Ballpoint	129

DRIVES & TAPES

Colorado D110/20	239/309
Conner 40/105/210	199/345/550
ST 225/238	189/192
ST 157A/251-1	229/239
Plus II XL50/105	388/578
Mountain	Call
Panasonic LF 7010 1 Gb	
Erasable Optical Drive	2840
Procom Ext 5.25 PS/2	199
Procom PS2 Hard Drive 120/200 Mb Call	
Procom Laptop Floppy	Call

NETWORK

ARTISOFT	
Lantastic 2 Mb Starter Kit	338
Lantastic 2 Mb Adapter	139
Lantastic 10 Mb Starter Kit	469
Lantastic AE3 Starter Kit	539
Lantastic 10 Mb Adapter	199

NETWARE	
Netware 2.2 5-User	489
Netware 2.2 10-User	1149
Netware 3.11 10/20-User	1395/1995
Netware 3.11 100-User	3900

NE 1000/NE: 2000	159/179
NE2/NE 3200 (EISA)	249/749

SMC	
Arcnet PC 130 8 Bit	99
Arcnet PC 500 16 Bit	289
Arcnet PC 500 w 16 Bit	179

MISC & ACCESSORIES

Keytronics KB101+	89
Kensington Masterpiece/Plus	85/95
AB Switch Box	27
Tripp Lite 450/1200/2000	296/618/1175
Tripp Lite Isotel	440

Win
A Free
Hawaii Vacation!

Ask for details.
No purchase necessary.

Most orders shipped insured next or second day air **FEDERAL EXPRESS** / 24-hour worldwide order tracking / Printer Orders received by 9 PM CST can be shipped same day / All credit card and COD orders checked electronically / We accept Amex, Visa, MC, JCB, Discover, Diners Club, COD's, Wire Transfer, Letter of Credit, **TERMS & LEASE AVAILABLE** (one day approval) / Credit cards not charged until product shipped **GOVERNMENT AND EDUCATIONAL P.O.'S ARE WELCOME** / Allow 10 days for personal checks to clear / Prices reflect a 3 per cent cash discount / Non-defective returns subject to a restocking charge / All warranties good through Paradise Computer Products / Prices subject to change without notice.

HOURS: 8:30 AM TO 8:30 PM CST MON-FRI, 10 AM TO 4 PM CST, SAT.
Paradise Computer Products Ltd. P.O. Box 840312 Dallas, TX 75284-0312



K E N O S H A

We Export!

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN
1-800-255-2989

Shipping, customer service & technical assistance call
414-697-9595 • FAX 414-697-0620

VISA, MASTERCARD, AMERICAN EXPRESS ACCEPTED

EPSON PRINTERS

LX 810	.....\$155	LQ850	.....\$549
FX 850	.....\$289	LQ860	.....\$435
FX 1050	.....\$395	LQ870	.....\$359
LQ 200	.....\$229	LQ1010	.....\$359
LQ 510	.....\$245	LQ1170	.....\$569
LQ 570	.....\$259	LQ2550	.....\$849
EPL7000 - Laser Printer	.....\$789		
Action Laser	.....\$689		
DFX 5000 - 533 cps, 160 niq	.....\$1269		
DFX 8000 - 1066 cps, 160 niq	.....\$2139		

NOTEBOOKS

AST Premium Exec 386-Sx25 83MB	..Call
AST Premium Exec 386-63V	.....Call
Everex Tempo LX 386-40	.....Call
Everex Tempo LX 386-60	.....Call
Packard Bell 386SX-40	.....\$1899
Panasonic CF270/CF370	.....Call/Call
T.I. TM 2000-40	.....Call
T.I. TM 3000-40	.....Call
T.I. TM 3000-60	.....Call

HEWLETT-PACKARD &



Laserjet IIP w/toner	.....\$869
Laserjet IIISi w/toner	.....\$1059
Laserjet IIISi w/toner	.....\$3649
JETWARE Superset Plus - 425 Fonts in one	.....\$209
JETPAGE II and III - postscript emulation in a cartridge	.....\$215
Action Set - 102 fonts in 1 for HP, Epson & Toshiba	.....\$139
1 MG Upgrade	.....\$99
2 MG Upgrade	.....\$129
4 MG Upgrade	.....\$219
256K Upgrade for Deskjet 500	.....\$119
Pacific Data Pac Page XL	.....\$699

PANASONIC

1123/1124i	.....\$199/\$276
1180/1191	.....\$149/\$219
1624/1654	.....\$339/\$539
2624	.....\$379
4420/4450i	.....\$689/\$1079
4455 Postscript Laser	.....\$1729
2mg. Upgrade for 4420 & 4450i	.....\$149
C1381 1024 x 768 VGA Monitor	.....\$329
C1395 1024 x 768 Non Interlaced	.....\$539
CF370 Notebook	.....Call
CF270 Notebook	.....Call

LASERS & UPGRADES

T.I. Laser STD	.....\$879
T.I. Laser PS17	.....\$1195
T.I. Laser PS35	.....\$1499
T.I. Memory Upgrades	.....Call
Pacific Data Pac Page	.....\$329
Pacific Data 25-in-One	.....\$249
Pacific Data Pac Page XL	.....\$699
Pacific Data Library	.....\$259

LAPTOP MEMORY

4 MB AST Premium Exec	.....\$249
2 MB Compaq LTE 286	.....\$169
2 MB Everex Tempo LX	.....\$179
2 MB Toshiba T1600	.....\$129
2 MB Toshiba T2000 SXE	.....\$215
2 MB Toshiba T3200SX	.....\$129
2 MB TI 2000	.....\$129
All other models	.....CALL

PLOTTERS & DIGITIZERS

HOUSTON INSTRUMENTS	
DMP-52	.....\$2099
DMP-61	.....\$2499
DMP-61DL	.....\$3099
DMP-62	.....\$3369
DMP-62DL	.....\$3999
Summasketch 12x12	.....\$299
Summasketch 12x18	.....\$549

Kcc Computers

- All systems include 1 year on-site service.
- All KCC systems come with a 30 day money-back guarantee.
- Toll-free technical support for all KCC systems.
- One Year Limited Warranty.

KCC 386 SX/20 with 1.2 MG Floppy,
1 MG, 40 MG Hard Drive, with DOS\$899

KCC 386-25 2 MG RAM, 1.2 MG Floppy,
40 MG Hard Drive, with DOS\$1099

KCC 386-33 with 64K Cache, 1.2 MG Floppy,
4 MG RAM, 89 MG Hard Drive, with DOS.....\$1399

KCC 486-33 with 256K Cache, 1.2 MG Floppy,
4 MG RAM, 211 MG Hard Drive, with DOS.....\$2199

*We will custom configure all KCC Computers with the
name brand peripherals of your choice. Call for a quote!!*

HARD DISKS

SEAGATE	
40MB for AT ST251-1	.....\$249
40MB 157A Kit	.....\$249
80MB for AT ST296N Kit	.....\$299
89MB 1102A	.....\$299
120MB 1144A	.....\$439
106MB 3120A	.....\$369
211MB IDE	.....\$549

PLUS HARD CARDS

20MB/40MB	.....\$489/\$549
80MB	.....\$589
Hardcard 50 XL	.....\$309
Hardcard 105MB	.....\$449

TAPE BACK UP

Maynard 60MB External	.....\$829
Mountain 40MB Internal	.....\$299
Mountain 40MB External	.....\$559
All other models	.....CALL

MONITORS

Mitsubishi EGA	.....\$299
Mitsubishi DiamondScan	.....\$489
Mitsubishi HL 6605 16"	.....\$1049
Mitsubishi HL 6945 20"	.....\$1789
NEC Multisync III FGX	.....\$639
NEC Multisync IHD	.....\$535
NEC Multisync IV FGX	.....\$769
NECMultisync VD	.....\$2099
Panasonic C1381 1024x768	.....\$329
Panasonic C1395 1024x768	.....\$539
All Goldstar Monitors	.....CALL

Prices and availability
subject to change.

SOFTWARE

D Base IV	.....\$479
Harvard Graphics 3.0	.....\$389
Lotus 123 2.2/3.1	.....\$329/\$389
Microsoft Mouse	.....\$89
Microsoft Excel	.....\$299
Microsoft Windows 3.0	.....\$79
Microsoft DOS 5.0	.....\$79
Multimate Version IV	.....\$239
R Base for DOS	.....\$439
Symphony	.....\$459
Ventura Desktop Publ.	.....\$519
Word Perfect 5.1	.....\$249

GRAPHICS CARDS

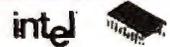
ATI Basic 16	.....\$89
ATI Wonder XL	.....\$179
ATI 8514 1MG	.....\$489
Everex VGA VRAM	.....\$199
NEC Graphic Engine	.....\$849
Orchid Pro Designer IIS 1 MG	.....\$279
Paradise VGA 1024	.....\$149
Paradise VGA Plus 16	.....\$149
Boca Super VGA	.....\$129
Hercules Station	.....\$649

OKIDATA PRINTERS

ML320	.....\$319
ML321	.....\$439
ML380	.....\$219
ML390	.....\$439
ML391	.....\$599
ML393	.....\$919
OLC 400 Laser	.....\$629
OLC 800 Laser	.....\$929
OLC 820 Laser	.....\$1239
Oklaser 400 2MB Upgrade	.....\$185

NETWORKING

Netware 2.2 5 User	.....\$499
Netware 2.2 10 User	.....\$1099
Netware 2.2 50 User	.....\$1949
NE1000	.....\$139
NE2000	.....\$159
ARCNET PC 130	.....\$95
ARCNET PC 130E	.....\$125
ARCNET Active Hub/ Passive Hub	.....\$269/\$79
ARCNET PC 500FS	.....\$279
ARCNET PC 500WS	.....\$175
Thomas Conrad 6142 8-bit	.....\$99
Thomas Conrad 6045 16-bit	.....\$199
LANTASTIC	
2MB Starter Kit/Adapter	.....\$349/\$145
10MB Ethernet Starter Kit	.....\$469
Adapter	.....\$209
Accessories	.....Call



Intel Snap-in 386	.....\$359
80287-XL	.....\$89
80387-16 DX/SX	.....\$195/\$129
80387-20 DX/SX	.....\$195/\$139
80387-25MHz or 33 MHz	.....\$195
80487-SX	.....\$449
The Intel Plus 8 w/2MB	.....\$399
Intel 9600 Ext. Modem	.....\$439
Satisfaction (Fax Modem)	.....\$359

MEMORY UPGRADES

COMPAQ MEMORY

386 1MB/4MB MODULES	.....\$100/\$249
386 1MB/4MB BOARDS	.....\$169/\$329
SLT 286 1MB	.....\$149
LTE 286 2MB	.....\$185
Other Models	.....Call

IBM UPGRADES

2MB Kit 30-286	.....\$139
2-8MB BD w/2MB 50, 60, 70 & 80	.....Call
All Others	.....Call

CHIPS & LASER UPGRADES

All Simm & Drums	.....Call
Panasonic 1MB/2MB	.....\$129/\$149
OKI LASER 400 1MB/2MB	.....\$129/\$149
IBM 1MB/2MB	.....\$135/\$185
Epson EPL 6 & 7000 Series	.....Call
TI Micromaster	.....\$149

MODEMS

Dove Fax Modem	.....\$189
Everex 2400 int/ext	.....\$89/\$155
Hayes V Series int	.....\$499
Hayes Ultra 9600	.....\$639
Intel 2400 ext	.....\$159
Intel 2400 w/MNP	.....\$209
Intel 9600 ext	.....\$479
Intel 9600 ext 14.4 ext	.....\$479
US Robotics 14.4 int/ext	.....\$549/\$569
US Robotics V-32 int/ext	.....\$549/\$599
US Robotics Dual Std.	.....\$829

KENOSHA COMPUTER CENTER

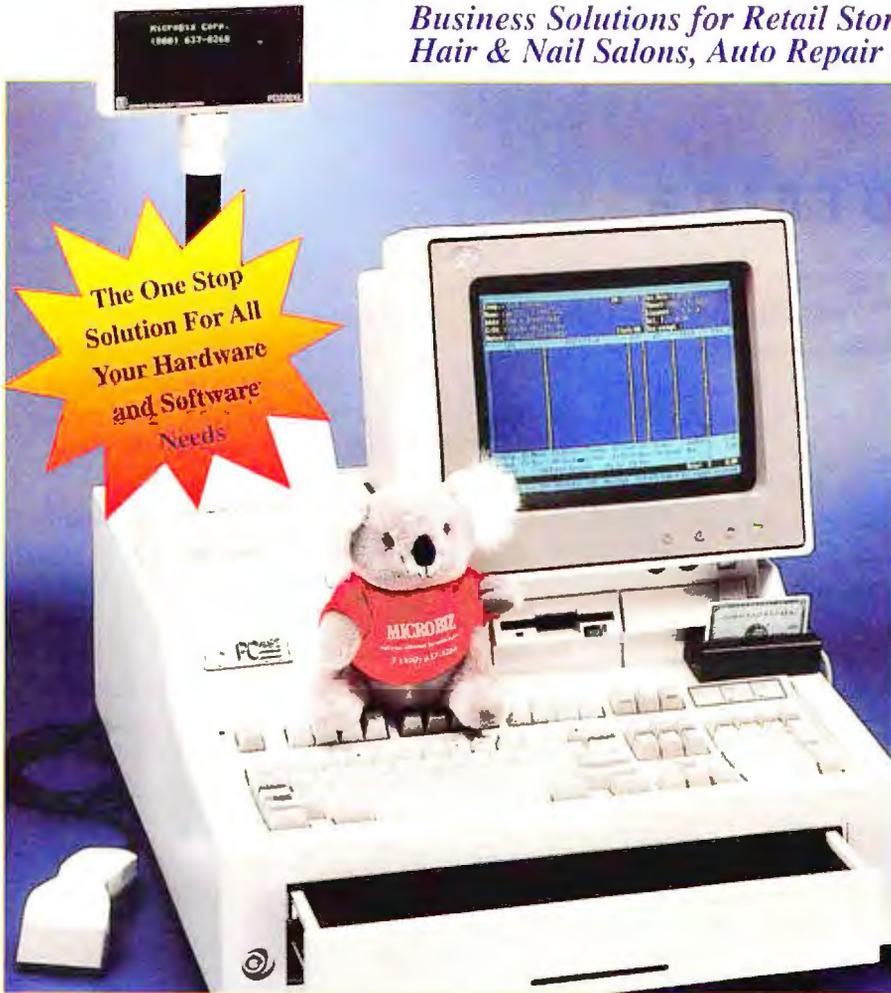
2133 91st Street
Kenosha, Wisconsin 53140

C O M P U T E R C E N T E R

Circle 141 on reader service card

REPLACE YOUR CASH REGISTER!

Business Solutions for Retail Stores, Liquor Stores, Video Stores, Hair & Nail Salons, Auto Repair Shops, Rental Stores and more!



MicroBiz solutions start at \$179.95. Biz Bear included.

Dealer Inquires Welcome 1-800-637-8268

MicroBiz offers a complete one-stop solution to computerizing your business, with twice as many features at half the price. ★ Computerize any retail store, auto repair shop, video store, hair & nail salon or liquor store. ★ MicroBiz offers a complete solution including software, cash drawers, bar code readers, receipt printers and everything else you need to computerize your business. ★ All MicroBiz products work on any IBM PC or compatible with 640K RAM and 40 megs of hard drive space (your computer or ours!!!).

- automatic credit card authorization
- bar code compatibility
- color/size matrix
- multiple pricing levels
- track inventory by size/color/style
- mailing labels
- track customer history
- daily closeout reports
- accepts split tender
- view in-stock status
- pull down menus
- pop-up windows
- 99 levels of password protection
- tracks promotional sales
- prints bar code labels
- reorder reports
- extensive sales reports
- item/invoice discounts
- tracks sales by employees
- set limited-time promos
- links to One-Write Plus
- receiving reports
- pop-up calculator
- built-in word processor
- works on any IBM PC or compatible with hard disk drive
- Multiuser and source code available
- dBase compatible compiled with Clipper...



Auto Repair Shop Controller

★ Maximize inventory, track detailed service history, guarantee repeat business, reduce billing errors, improve cash flow, schedule appointments and produce reports for smarter business decisions directly.



Video Store Controller

★ This "beginner-proof" video retail management system is flexible enough to work in any location. Scan a bar code or key in video membership information. Financial and rental information is always up to the minute.



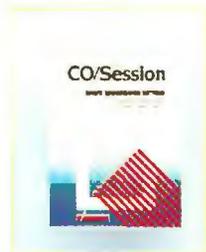
Liquor Store Controller

★ Multi User for two or more stations. Used by thousands of growing liquor stores and chains nationwide. Monitor every sale, reduce theft, increase profits and meet the needs of your customers.



Hair & Nail Salon Controller

★ Imagine a computerized system that keeps in touch with your clients, sending out birthday cards, perm and color reminder letters, customer "thank you" notes...plus keeps complete financial control of your business!



CO/Session Host FREE

★ Access files and programs on your office PC from home. CO/Session is fast, powerful and designed for the businessperson on the go. Use with a modem, and our support staff can see and operate your computer directly.

Unlimited Computers (S. Florida) 305-923-7937 • Computer Terminal (Canada) 416-372-3005 • Armstrong and Assoc. (New Zealand) 011-647-1348-111

Computer Trends (Wisconsin) 414-435-8088 • RDN Associates (Buffalo) 716-838-6747 • ABS Business Systems (N. New Jersey) 914-352-1215 • Desktop Data (Texas) 713-270-4288



MicroBiz

500 Airport Executive Park
Spring Valley, NY 10977
Ph: (914)425-9500 Fx:(914)425-4598



Overnight
Software
Delivery

1-800-637-8268

MicroBiz...programming your business for success.



Circle 168 on reader service card



THE HOME OFFICE

The practical guide to home/office computing

Steve Bass

Besides my word processor, the most important programs on my hard disk are utilities. Over the years I've collected a toolbox of indispensable gems I use regularly—sometimes even daily.

Utilities come in all shapes and sizes. What most have in common is dedication to one or two specific tasks. Many are shareware or in the public domain; some are commercial. I found most of mine via the Pasadena IBM User Group library, local BBS's, and shareware mail-order houses.

Like all tools, utilities have to be handy. To make sure I have instant access to these programs, I created a UTIL subdirectory and added it to my AUTOEXEC.BAT's PATH command.

Because I'm in and out of text files all day—doing a quick edit on an outgoing E-mail file, changing my CONFIG.SYS or WIN.INI file, or revising an Xbase program file—*QEdit* is my most often used utility. Using this flexible and inexpensive shareware text editor, I can open multiple files simultaneously from the DOS prompt with a single batch command. For example, I edit CONFIG.SYS, AUTOEXEC.BAT, and a series of .INI files with CONFIG.BAT

(`Q CONFIG.SYS AUTOEXEC.BAT C:\WINDOWS*- .INI`), a batch file that brings up *Qedit* with all those files loaded.

For \$10 and 2K of RAM, *DialThat* will pluck any phone number out of any file displayed on screen and dial it. When it rings, pick up the phone and talk. My second favorite, *dbDIAL*, dials numbers and acts as a personal electronic Rolodex for only 7K of RAM. I can track unlimited clients, user group members, and others with two addresses and four phone numbers each. In addition, this utility logs every call I make and reminds me to make follow-up calls.

I use *Ventura Publisher* for DOS to produce the Pasadena IBM User Group newsletter. I have a full-page Radius



monitor at the office, but when I'm home Aristosoft's *Softkicker* screen driver lets me quickly scroll to portions of my *Ventura* document that are beyond the borders of my 14-inch monitor.

When Victor Borge was asked what the middle pedal on a piano was for, he said, "to keep the other two pedals apart." Only God and Bill Gates know why the right mouse button is ignored by most *Windows* programs. But when I use *Windows*, *RightOn* lets me pro-

gram the right and middle mouse buttons to execute frequently used menu items or any two-character command quickly. That allows me to switch between *Excel* and *Word for Windows* with a touch of the mouse. Using the right mouse button with other control keys broadens my repertoire.

With two Plus Hardcards, a 90MB Bernoulli, and a fixed disk, I have more than 400MB of data stretched across six partitions; it's easy to lose files. *SST* searches each drive and finds files at speeds that seem to defy physics.

The next time you're on a bulletin board or at a swap meet and you see an interesting utility, give it a shot. You may find the next WD-40. ●

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

dbDial \$49, Zpay Payroll Systems Inc.; 800/468-4188, 813/866-8233
Reader service no. 602

DialThat \$10, Real Software; 408/476-3550, 408/476-1055 (BBS)
Reader service no. 603

QEdit \$54.95, SemWare; 404/641-9002
Reader service no. 604

RightOn \$49.95, Fanfare Software; 818/886-8787, 818/886-2250 (fax)
Reader service no. 605

Softkicker \$99, Aristosoft; 800/426-8288, 415/426-5355
Reader service no. 606

SST \$15, Keith Ledbetter; 804/674-0780
Reader service no. 607

UltraVision \$119.95, Personics; 800/445-3311, 508/897-1519
Reader service no. 608

Fasten your seat belts. Because now you can get the speed and power of an i386 system without laying out any serious dollars. Or having to deal with a suspect company.

It's the Dell 325P for only \$1,999. This full-blown 25 MHz, i386DX system with an 80 MB hard drive offers maximum performance at the lowest possible price. So it's ideal for any mainstream business application. And it comes from Dell, a company that has built a \$546 million international business in just 7 years.

When you buy from Dell, you always deal with us directly. So there's no high dealer margins or erratic support. You'll get a computer we designed, manufactured, and rigorously tested ourselves. And it comes with the service and support that helped us become one of the most awarded PC companies in the world.

So don't wait. Call us today for the Dell 325P.

Because even though the price is stripped down, the computer isn't.

IT'S KIND OF LIKE GETTING A PORSCHE FOR THE PRICE OF A YUGO.



Lease⁰: \$75/MO.**

TECH STUFF

i386DX 25 MHz processor ➤ Upgradeable to i486™DX 33 MHz processor ➤ 2 MB RAM (expandable to 16 MB) ➤ 80 MB, 15ms IDE Hard Drive ➤ 640 x 480 VGA Color Monitor ➤ 5.25" 1.2 MB or 3.5" 1.44 MB Floppy Drive

SERVICE AND SUPPORT

On-site desk-side service contract included in the system price the first year ➤ Toll-free technical support hotline ➤ Toll-free TechFax™ line for 24-hour system information ➤ On-line Bulletin Board communication with technical staff and other users ➤ Self-diagnostic software ➤ Free factory installation of selected MS-DOS® software applications ➤ Information Service Support Forum on CompuServe

COMPANY AWARDS

Dell has won PC Week Corporate Satisfaction Polls an unprecedented 8 times ★ Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D. Power and Associates® Customer Satisfaction Index ★ Dell has won PC World's 1991 World Class Award for Best Service and Support/Hardware



To order, call. Please reference 11D54

800-825-0044

Mon-Fri. between 7am-9pm CT, Sat 8am-4pm CT, Sun 10am-3pm CT ➤ In Canada, (800) 668-3021 ➤ In Mexico, 95-800-010-0664 ➤ Custom-built and shipped with a 30-day no questions asked money-back guarantee





Lease: from \$192/MO.**

Dell® PowerLine™ SE * Series Available with i486 DX 50 MHz or 33 MHz processor, i486SX 25 MHz or 20 MHz processor 128 KB external cache on i486DX systems Processor upgradeable via board Up to 128 MB RAM Integrated non-interlaced 1024 x 768, 256 color VGA Starting at \$5,299 for complete systems.



Lease: from \$123/MO.**

Dell PowerLine DE * Series Available with i486DX 50 MHz or 33 MHz processor, i486SX 25 or 20 MHz processor 128 KB external cache on i486DX systems processor upgradeable via board Up to 96 MB RAM Integrated non-interlaced 1024 x 768, 256 color VGA 1 MB video RAM Starting at \$3,299 for complete systems.



Lease: from \$104/MO.**

Dell 486D * Series Available with i486DX 33 MHz processor, i486SX 25 MHz or 20 MHz processor Processor upgradeable via chip Up to 64 MB RAM Integrated non-interlaced 1024 x 768, 16 color VGA Video RAM upgradeable to 1 MB Starting at \$2,799 for complete systems.



Lease: from \$67/MO.**

Dell 325P * i386 DX 25 MHz processor, 33 MHz also available Upgradeable to i486DX 33 MHz processor RAM expansion to 16 MB Integrated non-interlaced 1024 x 768, 2 color VGA 256 KB video RAM upgradeable to 512 KB Starting at \$1,799 for complete systems.

IF YOU ALREADY BOUGHT AN EXPENSIVE COMPUTER, BURN THIS BEFORE YOUR BOSS READS IT.



†Source: Compaq Computer Press Release 11/4/91. All other suggested retail prices as of 11/5/91. All prices and specifications are subject to change without notice. **Payment based on 36-month, open-end lease. ††Lease based on Dell End User Satisfaction Study: Phase I: Office Based Small to Medium Sized Businesses. Responses from Business End Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with between 10 and 50 employees. Intel is a registered trademark and 386, 486 and the Intel Inside Logo are trademarks of Intel Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Dell disclaims proprietary interest in the m



Lease: from \$53/MO.**

Lease: from \$93/MO.**

Hz Dell 316SX * i386SX 16 MHz processor, 20 MHz also available
 RAM expansion to 8 MB Integrated 1024 x 768, 2 color VGA 256 KB video RAM, upgradeable to 512 KB 2 Serial, 1 Parallel and 1 Mouse port Starting at \$1,399 for complete systems.

Dell 320N * i386SX 20 MHz processor 2 time award-winner 6.4 lbs 3-4 hour battery life Up to 5 MB RAM 40 MB or 60 MB hard drive Data/Fax modem option Starting at \$2,499 for complete systems.



SERVICE AND SUPPORT

On-site desk-side service contract included in the system price the first year
 Toll-free technical support hotline Toll-free TechFax line for 24-hour system information
 On-line Bulletin Board communication with technical staff and other users Self-diagnostic software Free factory installation of selected MS-DOS software applications
 Information Service Support Forum on CompuServe

COMPANY AWARDS

Dell has won PC Week Corporate Satisfaction Polls an unprecedented 8 times
 Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D. Power and Associates Customer Satisfaction Index
 Dell has won PC World's 1991 World Class Award for Best Service and Support/Hardware.



To order, call. Please reference 11D55

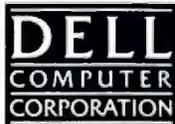
800-289-1140

Mon-Fri. between 7am-9pm CT, Sat 8am-4pm CT, Sun 10am-3pm CT
 In Canada, (800) 668-3021 In Mexico, 95-800-010-0664 Shipped with 30-day no questions asked money-back guarantee.



Finally, computers for users who need blazing speed, but don't have money to burn. Notebooks, desktops and servers packed with features and priced significantly lower than comparable machines sold through traditional retail channels. And all backed by Dell, the company that's built a \$546 million international business by always going above and beyond the call. By putting them through tests the Marines would be proud of. And backing each one with a service and support package described as "overkill" by the editors of PC Week.

So if you need a computer you can fire up without getting fired, call Dell today. We promise you won't get burned.



arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell is a registered trademark. Powerline is a trademark and TechFax is a service mark of Dell Computer Corporation 1991 J.D. Power and Associates Computer and 499 employees. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses J.D. Power and Associates is a registered service mark of J.D. Power and Associates Contains an Intel i386 or Intel i486 microprocessor, and names of others Service provided by third party service On-site service may not be available in certain remote locations Shipping, handling and applicable sales tax not included in the price ©1991 Dell Computer Corporation All rights reserved.

7 NOTEBOOK USERS WERE LOCKED IN A ROOM. LESS THAN 4 HOURS LATER, 6 OF THEM WERE DEAD.

Recently, an independent laboratory ran *PC Magazine's* Battery Rundown Test on 7 leading notebook computers. And we're happy to report that Dell came in dead last.

In fact, Dell's power management system and NiMH battery helped the 320N+ run a full 30 minutes longer than the nearest competitor. More than enough to get you through the next marathon meeting or epic plane flight.

And, Dell has found a way to make your budget last longer too. The 320N+'s \$2,999 price is up to a third lower than most of the competition. And still includes Dell's award-winning service and support. Which can get a trained technician right to your home, office or hotel room; usually by the next business day.[△]

Just what you'd expect from a company that's become a \$546 million international business in just 7 years. And one of the most awarded PC manufacturers in the world.

So call us and order a Dell[®] 320N+ today. You won't have to be afraid of dying any more.

You charge less.

Dell 320N+	4:00 Hours
Toshiba T2000SXe	3:21 Hours
Compaq LTE 386s/20	3:05 Hours
TI Travelmate 3000	2:32 Hours
Zenith MastersPort 386SL	2:26 Hours
AST Premium Exec	2:08 Hours
IBM PS/2 Model L40SX	1:55 Hours

Test in accordance with PC Magazine's testing parameters.

We charge less.

Dell 320N+ 4 MB RAM and 60 MB Hard Drive	\$2,999
Toshiba T2000SXe—4 MB RAM and 60 MB Hard Drive	\$4,178
Compaq LTE 386s/20—4 MB RAM and 60 MB Hard Drive	\$4,297*
TI Travelmate 3000—4 MB RAM and 60 MB Hard Drive	\$3,498
Zenith MastersPort 386SL—4 MB RAM and 60 MB Hard Drive	\$4,798
AST Premium Exec.—4 MB RAM and 80 MB Hard Drive	\$3,295*
IBM PS/2 Model L40SX—4 MB RAM and 60 MB Hard Drive	\$4,545

*4 MB and 60 MB Hard Drive retails for \$400 more. Go figure.

Actual dealer prices may vary.

DELL 320N+ \$2,999

TECH STUFF

Dell 320N+ 20 MHz i386™SX System Lease: \$112/MO.** 6.8 lbs 8 1/2x 11" footprint Full-travel keyboard 4 hour battery life on NiMH battery System includes 60 MB Hard Drive, VGA Edgelit LCD, 4 MB RAM 80 MB Hard Drive also available

SERVICE AND SUPPORT

Nationwide on-site lapside service contract included in the system price the first year[△] Toll-free technical support hotline Self-diagnostic software Free factory installation of selected MS-DOS[®] software applications

COMPANY AWARDS

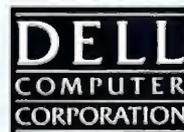
Dell has won *PC Week* Corporate Satisfaction Polls an unprecedented 8 times ★ Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D.Power and Associates[®] Customer Satisfaction Index ★ Dell has won *PC World's* 1991 World Class Award for Best Service and Support/Hardware



To order, call. Please reference 11DA2

800-289-1260

Mon-Fri between 7am-9pm CT, Sat 8am-4pm CT, Sun 10am-3pm CT In Canada, (800) 668-3021 In Mexico, 95-800-010-0664 Shipped with a 30-day no questions asked money-back guarantee



Circle 66 on reader service card