

SPECIAL OFFER: Free Quattro Pro 3.0 Demo Disks, Page 97

PCWORLD

INCORPORATING PC RESOURCE

JUNE 1991 \$2.95 CANADA \$3.95

SUMMER BUYERS' GUIDE

DESKTOP COLOR

**110 Practical Peripherals Take
You Out of the Dark Ages**

WORD PROCESSORS

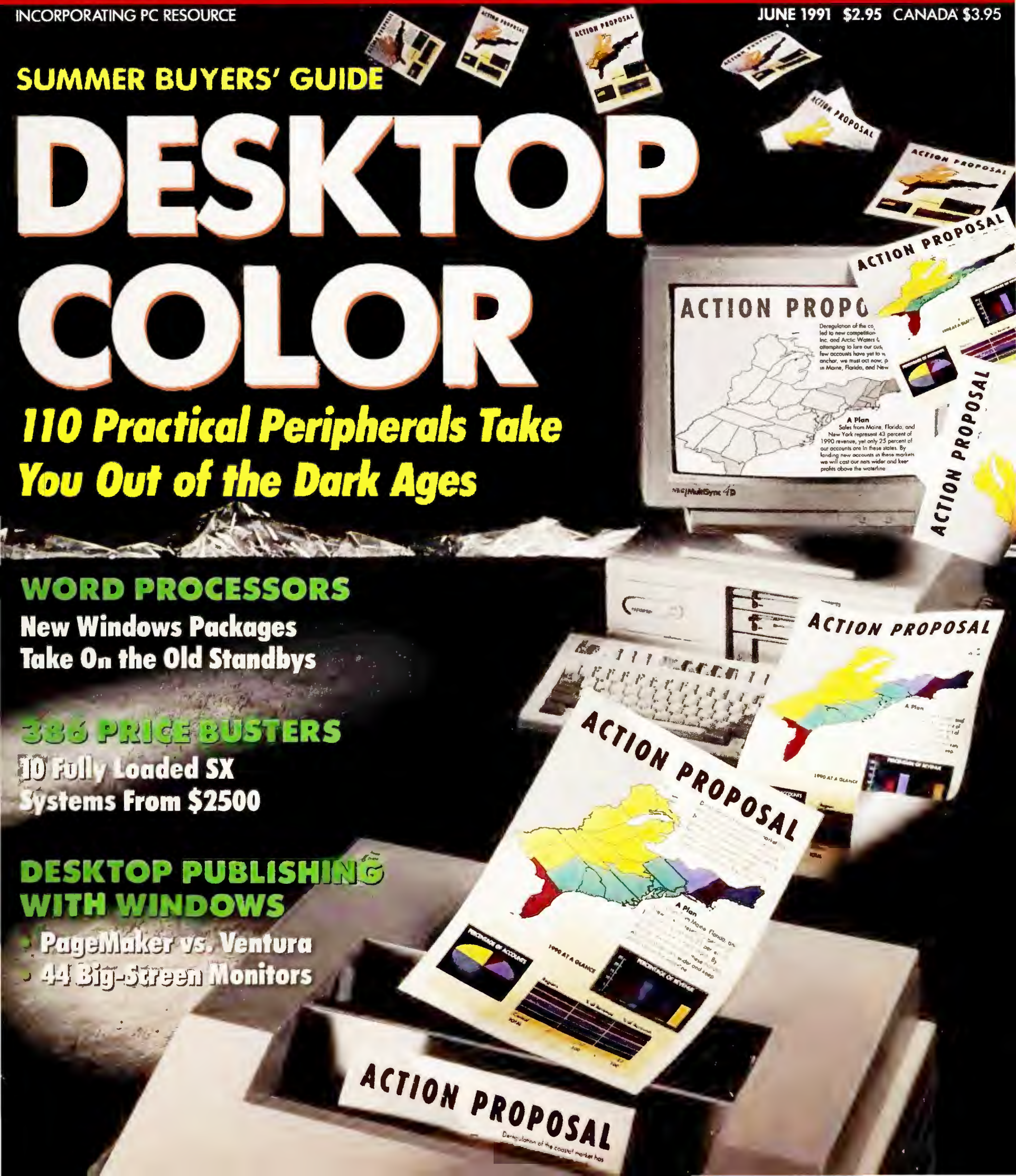
**New Windows Packages
Take On the Old Standbys**

386 PRICE BUSTERS

**10 Fully Loaded SX
Systems From \$2500**

DESKTOP PUBLISHING WITH WINDOWS

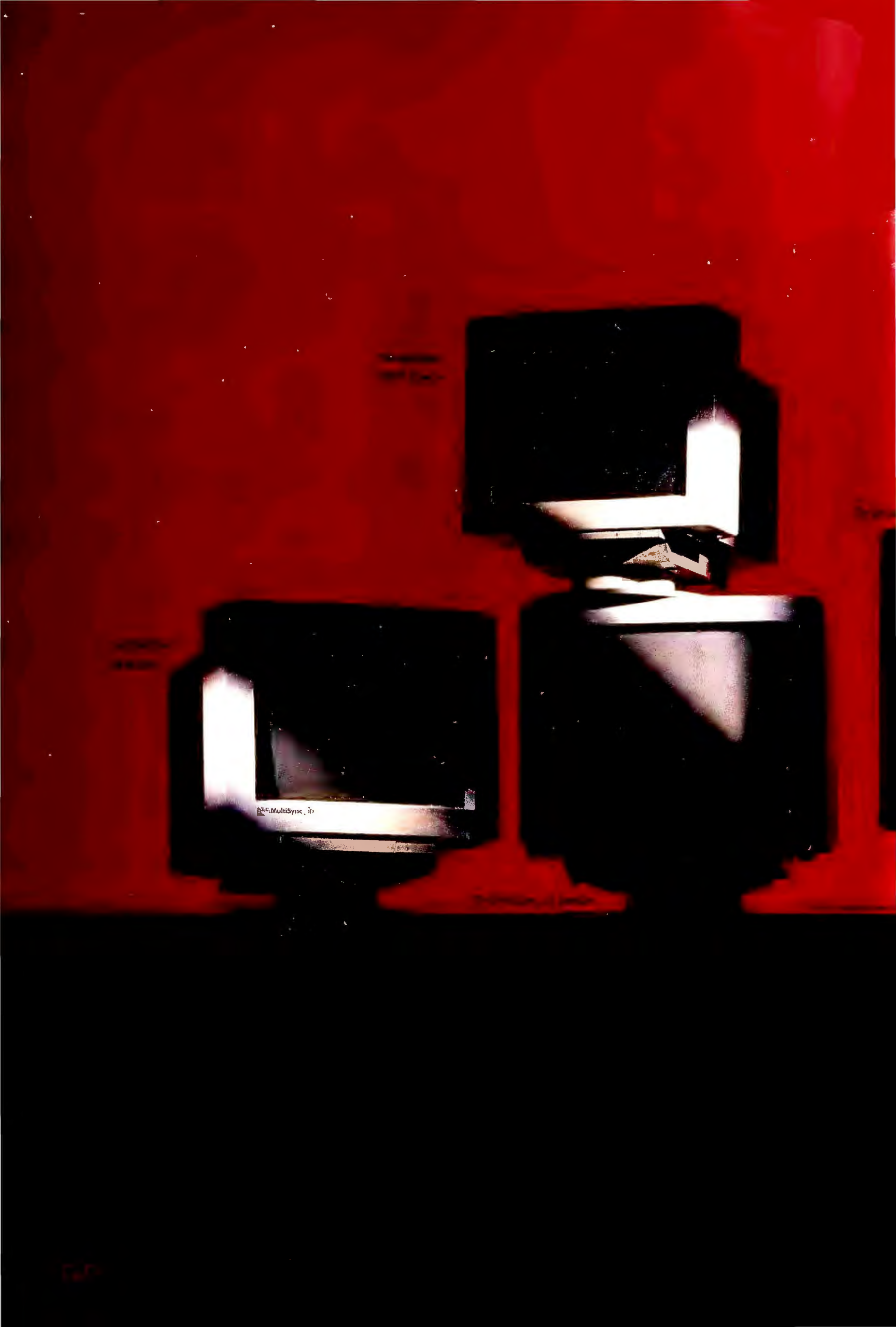
- PageMaker vs. Ventura
- 44 Big-Screen Monitors



To open. Open.

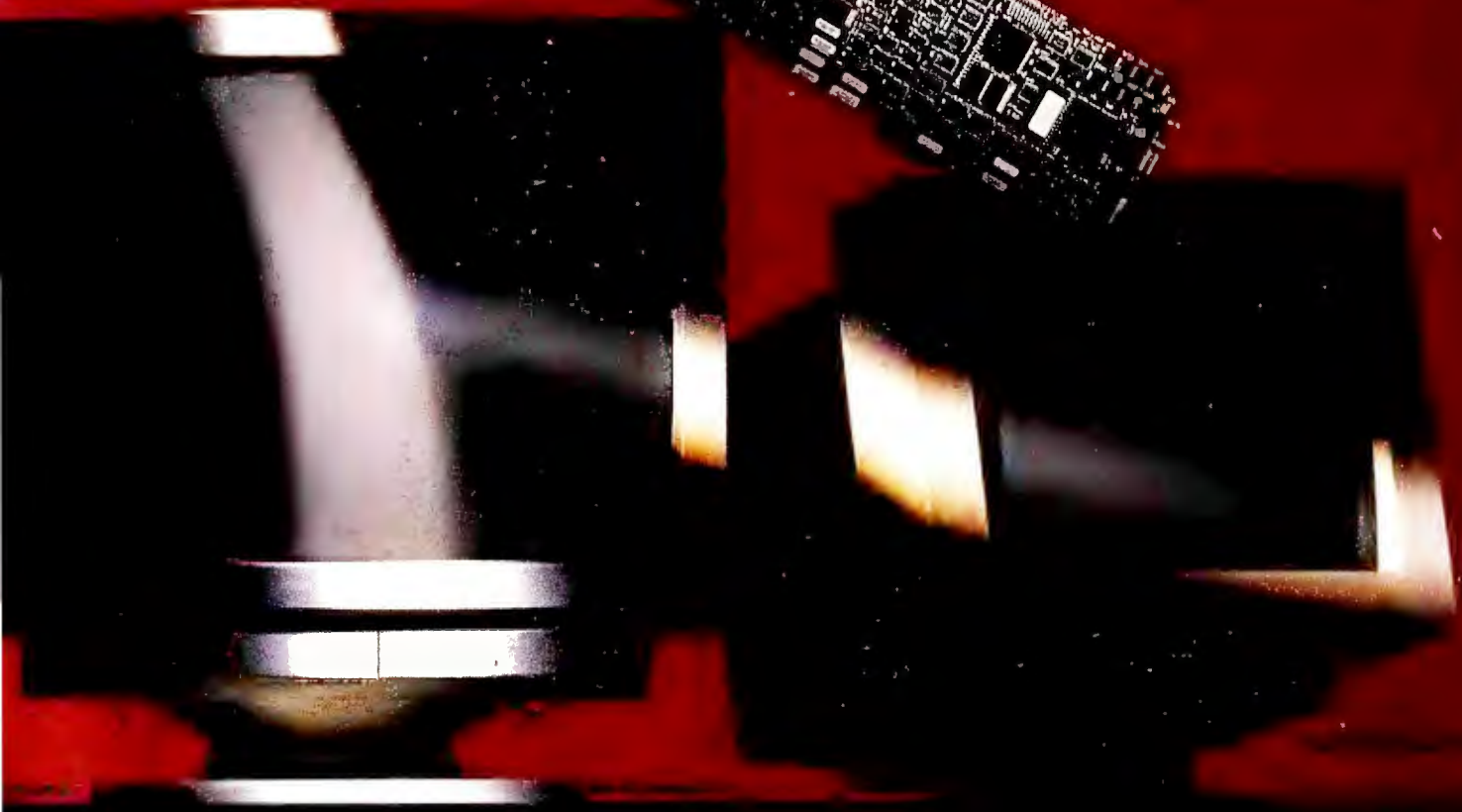
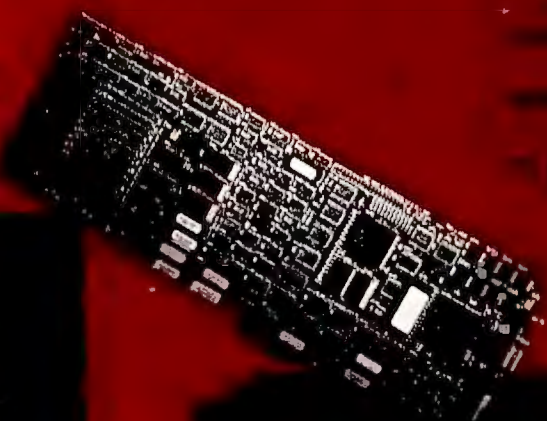


Circle 187 on reader service card





It is a common mistake to think of the world as a single, unified entity. In reality, it is a complex, multi-layered system of interconnected parts. Each part has its own unique function and purpose, and they all work together to create the whole. This is the essence of the world: a vast, intricate web of relationships and interactions that shape our lives and the future of our planet.



NPC

PC WORLD

COVER STORIES

REVIEWS

People's Choice: 20-MHz 386SXs Looking for the ultimate value in a basic business workstation? Look no further. These ten 386SXs have the zip you need to tackle *Windows* at a price you simply can't afford to ignore. **Robert Lauriston**..... 136

Will Your Next Word Processor Wear Windows? Should you buy a *Windows* package with easy access to fonts and graphics, or a character-based program keyed to fast text editing? Our review of the most popular programs from both sides of the fence reveals which one is right for you. **George Campbell**..... 155

FEATURES

Buyers' Guide: Color Peripherals Forget black and white. Take your pick from these 110 affordable color scanners, plotters, printers, and film recorders, and create unforgettable color slides and documents. **Bob Weibel and Daniel Tynan**..... 178

Face-Off: PageMaker vs. Ventura Watch as a pair of layout experts put the top two desktop publishing packages through their paces, and discover which program best suits your needs. **Christine Whyte and Richard Jantz**..... 190

Buyers' Guide: Desktop Publishing Monitors When your screen shows true-to-life pages, you waste far less time printing proofs and scrolling screens. Enter the big-screen high-res monitor, the desktop publisher's best friend. **James Felici and Susan Lusty**..... 198

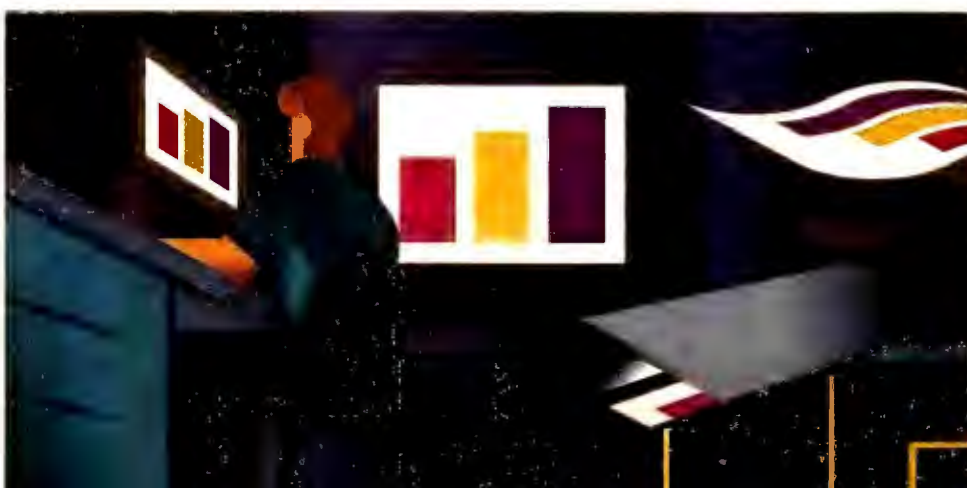


Desktop Publishing Monitors
198



Your Next Word Processor
155

Cover design by Bill Jensen
Cover photograph by David Arky



Color Peripherals
178



Marketing Meets Desktop
Publishing
206

20-MHz 386SXs
136

INSIDE

NEWS

TOP OF THE NEWS

Mike Hogan..... 15

INDUSTRY OUTLOOK

Superstores leap retailing
bounds..... 61

Small businesses struggle
into *Windows*..... 62

PostScript stays standard.... 64

PC World Street Price List:
30 popular PCs in eight
markets..... 68

PRODUCT OUTLOOK

• MultiSync 4Ds, 3Ds..... 101

• Tandy 1000 RLX
• *Finance10*..... 102

• The Complete Font
Cartridge Library,
PacificPage XL • *Systat*
5.0, *QCStat*, *Sample*..... 104

• *Relay Gold 5.0* for
Windows • *NetWare 386*
3.11..... 106

• *Lotus Notes 2.0*
• *Volkswriter 2*, *Volkswriter*
4 2.0, *Volkswriter 6*..... 108

• MicroPac 452 • *Oracle*
Card for Windows..... 110

• *Central Point Backup 7.0*
• *RealWorld Practical*
Accounting System..... 112

• Panasonic KX-P1124i, IBM
Proprinter 24P
• LANstep..... 114

PREVIEWS

1-2-3 Dresses for Success

Version 2.3 inherits 3.1's
graphical interface but
preserves the simplicity and
low memory overhead of 2.2.
Richard Scoville..... 79

Quattro Pro Adds Pizzazz

Quattro Pro 3.0's superslick
interface, digitized sound
effects, and presentation
graphics capabilities make it
a worthy follow-up to version
2.0. Richard Scoville..... 85

Harvard Graphics Scores Again

Smoother interface, global
presentation controls, and
better drawing tools make
version 3.0 a must-have
upgrade. Richard Jantz..... 89

The Personal LaserJet, Take III

HP's LaserJet IIIP carries
a personal printer's price
tag, but its scalable fonts and
crisp output rival those of
the big boys. Robert Luhn.... 99

FEATURE

Marketing Meets Desktop Publishing

Word of mouth alone wasn't
bringing in business, so this
health care consulting group
healed itself with a desktop
published newsletter. Alice
LaPlante..... 206

HOW TO

The Help Screen

Adjust PC speaker volume,
add a third floppy drive, and
more. Karl Koessel and
Robert Lauriston..... 37

Network Q&A

Minimize network traffic
with *WordPerfect*'s start-up
options. Keith Nickerson..... 41

Button-Down Macros With Excel 3.0

Excel macros made easy.
Ralph Soucie..... 215

Words Into Print

Mastering *WordPerfect* tab
settings. George Campbell.. 223

Spreadsheets (A..Z)

Handling large worksheets.
Richard Scoville..... 229

Data Basics

Create a customized to-do
list. Steve Cummings..... 235

The Art of Persuasion

Inexpensive spot color gets
noticed. Richard Jantz..... 241

Windows Workshop

Surviving the Unrecoverable
Application Error. Jesse
Berst and Scott Dunn..... 247

The Information Edge

The best business-related
shareware. Judy Heim..... 251

User Group Tips

Hands-on advice from users
across the nation..... 255

Star-Dot-Star

Look up data in one *Quattro*
Pro file from another,
change case in *WordPerfect*
with a keystroke, and more.
Karl Koessel..... 257

Instant Reference Card

PageMaker 4.0, from menu
operation to using the story
editor..... 263

Developer's Toolbox

The wonders of Borland's
Turbo Pascal for Windows.
Tom Swan..... 265

DEPARTMENTS

In This Issue..... 11

Richard Landry..... 21

Letters..... 27

Consumer Watch..... 45

Rate Your Satisfaction... 46

Manager's File..... 57

Two-Fisted
Management..... 77

Taking It Home..... 306

INFORMATION

PC World Catalog..... 266

Advertiser Index..... 283

Products Featured in
Editorial..... 285

PC World Mail-Order
Shopping Guide..... 287

**THE FOLLOWING PRICES
MAY BE SO SURPRISING,
YOU'LL PROBABLY WANT
TO SIT DOWN.
NEAR A PHONE.**

Tandon Computers cost a lot less than other computers. Here's the surprising part. Tandon Computers also come fully loaded with a number of standard features you won't find on most other machines.

And we didn't stop there. With any Tandon Computer, you also get the support you'd expect from a \$400 million company with fifteen years of manufacturing and design experience. Like prompt delivery, a one year limited warranty, on site service, and helpful toll-free tech support. We even offer a special leasing program. And if for any reason you're not pleased, you get a full refund within the first 30 days.

So if you want a great computer at a great price, why not give Tandon a call right now. After all, you're already sitting next to the phone.

Tandon

TO ORDER DIRECT, CALL NOW:

800-800-8850

FAX 805-529-8408



Tandon LT/386sx Laptop

\$2,499

LEASE: AS LOW AS \$143/MONTH.

STANDARD CONFIGURATION

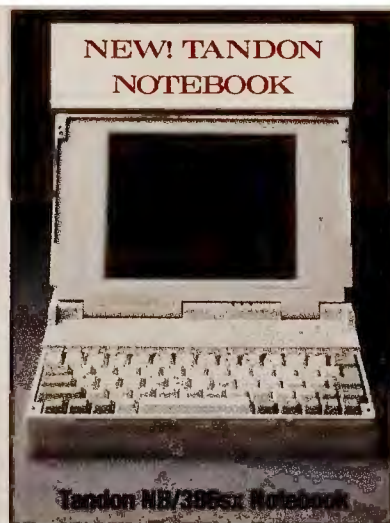
Microprocessor and Main Board: Intel® 80386SX running at 16 MHz. Supports optional 80387SX math coprocessor.

Memory: 1MB standard.

Storage: 1.44MB diskette drive. 40MB IDE hard drive. (Upgradeable to 100MB).

Video: Dual panel EL backlit VGA LCD. Supports external monitor.

Order now and receive a WorldPort Pocket Modem (\$359 Value) at no charge.



Tandon NB/386sx Notebook

\$3,495

LEASE: AS LOW AS \$123/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80386SX running at 20 MHz. Supports optional 80387SX math coprocessor.

Memory: 2MB standard.

Storage: 1.44MB diskette drive. 30MB IDE hard drive.

Video: Paper white VGA, non-glare CCFT backlit LCD, 32 grey shades. Supports external monitor.

Call for information on our 60MB hard drive model.



Tandon SL 386sx/20 Slimline

\$1,999

LEASE: AS LOW AS \$114/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80386SX running at 20 MHz. Supports 80387SX math coprocessor.

Memory: 1MB standard.

Storage: 1.2MB OR 1.44MB diskette drive. 40MB IDE hard drive.

Video: VGA monochrome display.



Tandon SL 486/25 Slimline

\$2,999

LEASE: AS LOW AS \$105/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80486 running at 25 MHz.

Memory: 2MB standard.

Storage: 1.2MB OR 1.44MB diskette drive.

Video: VGA monochrome display.

Call for information on our SL 486 Upgrade Package and additional options.



Tandon 386sx/N Network Station

\$1,199

LEASE: AS LOW AS \$69/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80386SX running at 16 MHz. Supports 80387SX math coprocessor.

Memory: 1MB standard.

Video: VGA monochrome display.

Options: 1.44MB diskette drive. 40MB IDE hard drive. Additional options available. Please call for details.

Call for information on our 286/N Low Profile, Network Station, starting at \$949.



Tandon 386/33 Desktop

\$3,199

LEASE: AS LOW AS \$112/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80386 running at 33 MHz. Supports 80387 or Weitek™ 3167 math coprocessors.

Memory: 4MB standard.

Storage: 1.2MB OR 1.44MB diskette drive. 110MB IDE hard drive.

Video: VGA monochrome display.

Call for information on our 386/25 Desktop.



Tandon 486/33 EISA Desktop

\$7,299

LEASE: AS LOW AS \$183/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80486 running at 33 MHz. Supports Weitek 4167 math coprocessor.

Memory: 4MB standard.

Storage: 1.2MB OR 1.44MB diskette drive. 200MB IDE hard drive. EISA caching SCSI controller available.

Video: VGA monochrome display.



Tandon Tower 486/33 EISA

\$7,699

LEASE: AS LOW AS \$190/MONTH.

STANDARD CONFIGURATION

Microprocessor and Main Board: Intel 80486 running at 33 MHz. Supports Weitek 4167 math coprocessor.

Memory: 4MB standard.

Storage: 1.2MB AND 1.44MB diskette drives. 200MB IDE hard drive. EISA caching SCSI controller available.

Video: VGA monochrome display.

Tandon Tower 386/33

\$4,199

LEASE: AS LOW AS \$121/MONTH.

Call for additional specifications.

ATTENTION:

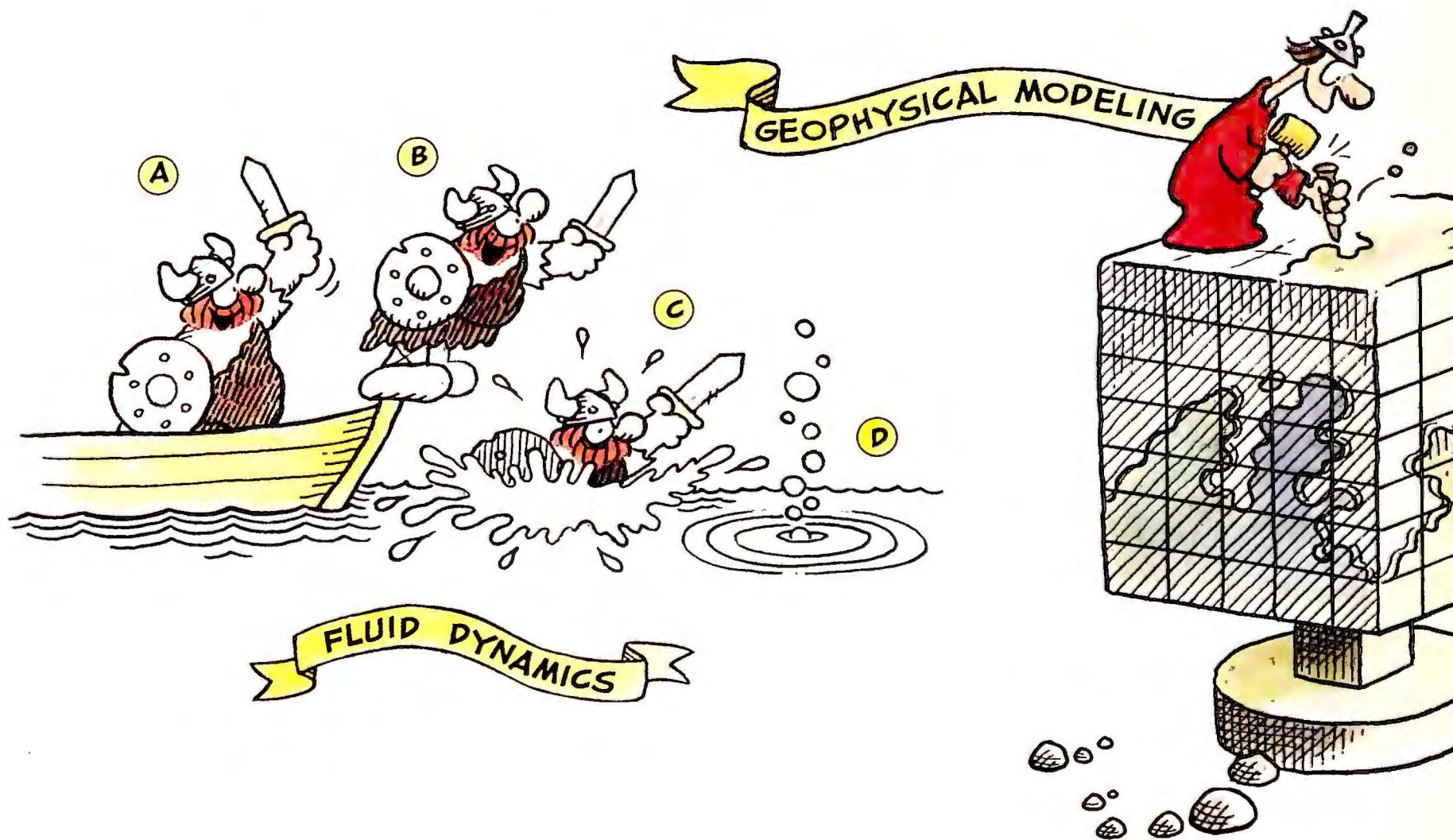
We have a special offer so big it won't fit on this page.
To find out what it is, just pick up the phone.

- 30-Day Money Back Guarantee
- 1-Year Limited Warranty
- 24 Hour Toll-Free, On Call Technical Support
- On-Site Service

OPTIONS AND CUSTOM CONFIGURATIONS

- Hard Drives, Diskette and Optical Drives
- Modems
- Memory Expansion
- Coprocessors
- VGA and Super VGA Monitors
- Additional Options Available On All Systems. Please Call.

The IBM RISC System/ The power you've been seeking



It's a never-ending quest for power seekers. You're always looking for ways to run your favorite applications faster. Well, search no more. The RISC System/6000™ family of POWERstations and POWERservers gives you power that soars as high as 23 MFLOPS.

	MFLOPS	MIPS	SPECmark™
POWERstation 320	8.5	29.5	24.6
DECstation 5000-200	3.7	24.2	18.5

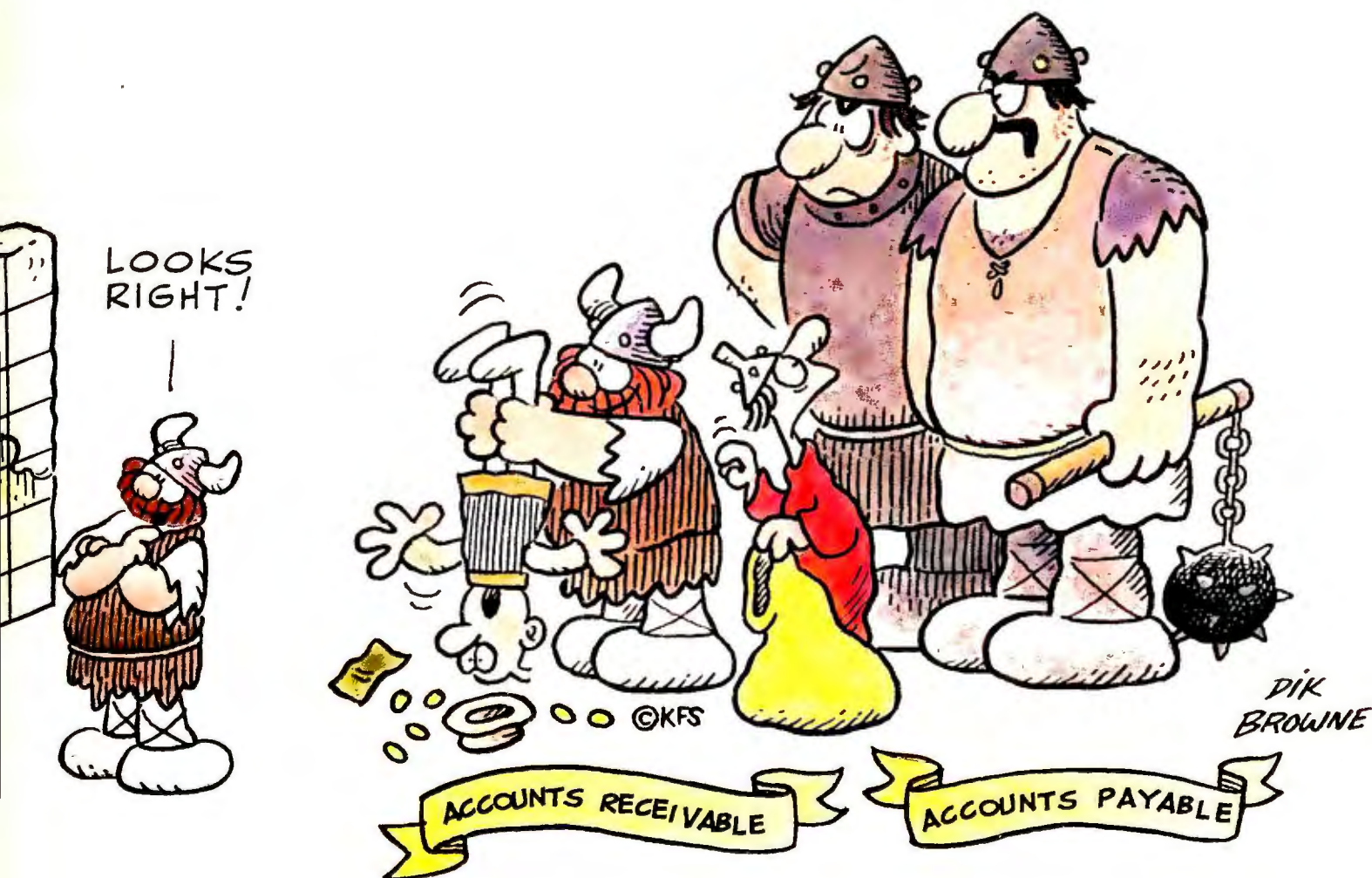
When it comes to porting, your ship has come in. Of course, all the speed in the world wouldn't mean much without the applications you need. So the RISC System/6000 family

already has more than 2,500 of the most popular technical and commercial applications up, running and running fast. And if you think you know a good thing when you see it, so do software vendors. That's why you'll also be seeing more and more applications coming on board the RISC System/6000 platform all the time. And if you like to build your own solutions, there's a full arsenal of enablers and relational data bases from leading vendors, as well as CASE tools and a host of popular programming languages.

A smorgasbord of solutions. Applications already announced include the IBM engineering design packages CADAM™, CAEDS™, CBDS™,

MFLOPS are the results of the double-precision, all FORTRAN Linpack test 100x100 array suite. The Dhrystone Version 11 test results are used to compute RISC System/6000 Integer MIPS value where 1,757 Dhrystones/second is 1 MIPS (Vax 11/780). SPECmark is a geometric mean of ten benchmark tests. All performance data are based on published benchmark information.
IBM is a registered trademark, and RISC System/6000 and CAEDS are trademarks of International Business Machines Corporation. SPECmark is a trademark of Standard Performance Evaluation Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. CADAM is a trademark of CADAM INC. CATIA is a trademark of Dassault Systemes. CBDS is a trademark of Bell Northern Research Corporation. DECstation is a trademark of Digital Equipment Corporation. HAGAR THE HORRIBLE Character(s) © 1990 King Features Syndicate, Inc. © IBM Corp. 1991, all rights reserved.

6000 family. for all your applications.



CATIA™ and AES. Also available are a broad spectrum of solutions from vendors like Valid Logic, MacNeal Schwendler, Swanson Analysis, SAS Institute, SPSS, Wavefront, Alias, Polygen, Cadence, Fluid Dynamics International, Western Atlas, ECL Petro and creare.X. Scientific and technical applications are available in areas like physics, structural analysis, chemistry, securities trading, mathematics, earth resources, operations research, visualization, graphics, technical publishing and more. There's also accounting software like FourGen and support for leading UNIX®-based office automation packages. And there are key industry applications for businesses in medical groups, retail stores, newspapers, pharmacies and many more.

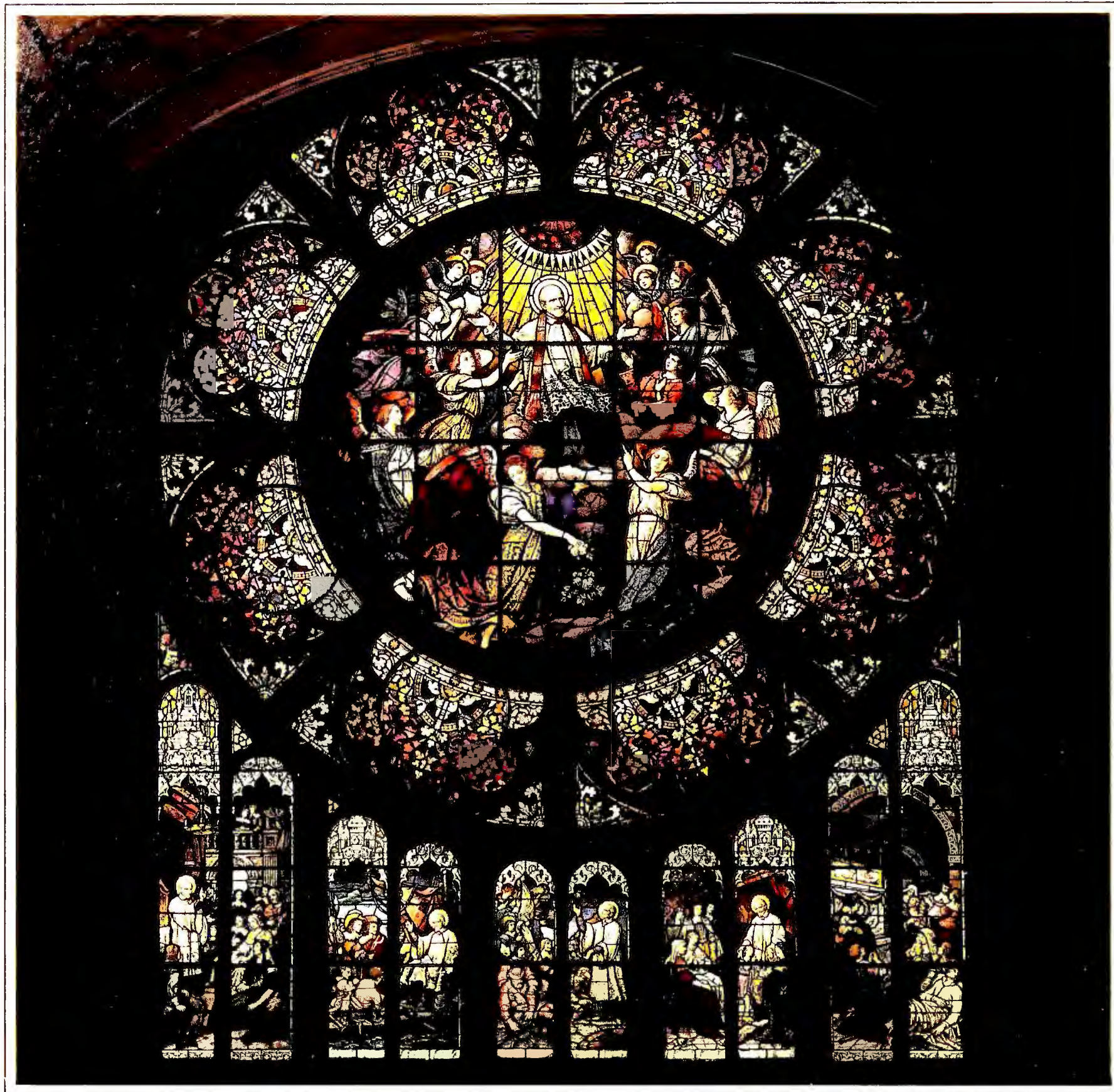
Command enormous processing clout.

The RISC System/6000 family is built to boost the performance of the software power seekers use most. It's got the best floating point processor in the business for numerically intensive applications, plus a new superscalar processor and incredible 3D graphics capabilities. To find out more, call your IBM marketing representative or IBM Business Partner. For literature, call 1 800 IBM-6676, ext. 990.



For the Power Seeker.

IBM (R)



It's been a long time since people have communicated so powerfully with windows.

The power can be yours. CROSSTALK® for Windows is the feature-rich, high-performance communications solution for Microsoft® Windows.™ So you can do more with Windows than ever before.



You get a wide range of terminal emulation, file transfer support, and enhancements which bring the power of communications to the Windows environment. Retrieve information from hosts and information utilities, and "paste" it into other Windows programs. And use Dynamic Data Exchange (DDE) with pro-

grams like Microsoft Excel to build sophisticated applications. CROSSTALK for Windows uses a "phone book," so you can call with a click of the mouse. You can transfer files while using other Windows applications.

CROSSTALK, the standard in PC communications, continues to lead the competition by leveraging the potential of Windows like never before. Call 1-800-348-DCA-1 ext. 62C for more information.

DCA

Now compatible with Windows 3.0.



©1991 Digital Communications Associates, Inc. All rights reserved. CROSSTALK and DCA are registered trademarks of Digital Communications Associates, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners.

Circle 62 on reader service card



We'd rather be in color: Associate Editor Daniel Tynan (left) and author Bob Weibel show off their shades.

I see a slew of black-and-white handouts on new products, and after a while, I have trouble telling one handout from another," laments Associate Editor Daniel Tynan, coauthor of this month's cover story. "If you're creating a document or a presentation that's supposed to leave a lasting impression, do it with color."

You should have a color monitor already. But if you want to do more than admire colorful charts on screen, check out the Buyers' Guide to color printers, plotters, scanners, and slide recorders. For less money than you might think, you can buy the hardware to turn out memorable color flip charts, information-packed technical drawings, and slick 35mm slide presentations.

According to Bob Weibel, the cover story's other coauthor, you can't underestimate color's clout. While making a pitch for his own desktop publishing business, he's seen the evidence firsthand: "When color documents slide across the table, the deal closes a lot faster."

It's a color world, after all. But why is now the time to consider color output? As Weibel notes, you can now buy a 300-dots-per-inch color thermal printer for the same price the original black-and-white Hewlett-Packard LaserJet cost—and that means a mass market can't be far away. Tynan notes that at least one major printer manufacturer expects to sell as many color thermal printers this year as PostScript lasers.

Tynan observes that, as with the garden-variety laser printer, the proliferation of choices will be too much for some users. "Today's profusion of font options leaves users in danger of creating documents that look like

ransom notes. Users are at even more risk of aesthetic disaster with color, since you can cram millions of colors into a single image."

Another problem involves matching the hues you see on screen to what comes out of the printer. Even on professional systems, this is dicey. "Ambient lighting near the monitor has a big effect on the quality of the preview," says Weibel. "Even the humidity level of the paper comes into play. As a printing professional, I've seen output look very different two weeks after it was printed, just because of a humidity change."

Professional systems have color standards to help match printer to monitor, but for PCs, no mainstream standard exists. In moments of frustration, Tynan feels that getting PC color hardware units to work together is "like hooking your blender to your VCR and programming it to pulverize."

Fortunately, color accuracy counts most when you want to print scanned photos—a task not really suited to the under- \$10,000 class of printers we've focused on here. Instead, think logos, charts, drawings, and color typography. With such relatively undemanding tasks, Weibel suggests, you shouldn't split hairs about output quality. "If you have to hold output from two printers side by side to tell the difference, go for the unit that's easier to use, more expandable, and less expensive to operate."

If you're still bound and determined to drop four-color photos of your wares into marketing materials, you won't have long to wait. Predicts Weibel, "In another two years, you'll still pay \$7000 for a color printer—but it'll give you photographic quality." ■

Eric Knorr

Eric Knorr
Editor

There is a difference and a The



\$1090

AUSTIN 286/16

STANDARD CONFIGURATION

Microprocessor: 80286 running at 16MHz.

Special Features: GE on-site service.

Storage: 40Mb IDE hard drive. 1.44Mb or 1.2Mb floppy disk drive.

Memory: 1Mb RAM

Expansion: 7 expansion slots (6 16-bit and 1 8-bit).

I/O Ports: 1 parallel and 2 serial ports.
Video: TTL monochrome monitor with video adapter.

Keyboard: Enhanced 101 keyboard with tactile/click touch.

Compatibility: DOS, OS/2, Novell, Unix.



\$1890

AUSTIN 386/SX16 WINSTATION

STANDARD CONFIGURATION

Microprocessor: 80386SX running at 16MHz.

Special Features: Pre-loaded with Microsoft Windows 3.0 and MS-DOS 4.01. Microsoft mouse. GE on-site service.

Storage: 40Mb IDE hard drive. 1.44Mb or 1.2Mb floppy disk drive.

Memory: 2Mb RAM

Expansion: 7 expansion slots (6 16-bit and 1 8-bit).

I/O Ports: 1 parallel and 2 serial ports.

Video: 14" VGA color monitor with 16-bit VGA color video adapter.

Keyboard: Enhanced 101 keyboard with tactile/click touch.

Compatibility: DOS, OS/2, Novell, Unix



\$1990

AUSTIN 386/SX20 WINSTATION

STANDARD CONFIGURATION

Microprocessor: 80386SX running at 20MHz.

Special Features: Pre-loaded with Microsoft Windows 3.0 and MS-DOS 4.01. Microsoft mouse. GE on-site service.

Storage: 40Mb IDE hard drive. 1.44Mb or 1.2Mb floppy disk drive.

Memory: 2Mb RAM

Expansion: 7 expansion slots (6 16-bit and 1 8-bit).

I/O Ports: 1 parallel and 2 serial ports.

Video: 14" VGA color monitor. 16-bit VGA color video adapter.

Keyboard: Enhanced 101 keyboard with tactile/click touch.

Compatibility: DOS, OS/2, Novell, Unix.



\$2590

AUSTIN 386/25 WINSTATION

STANDARD CONFIGURATION

Microprocessor: 80386 running at 25MHz.

Special Features: Pre-loaded with Microsoft Windows 3.0 and MS-DOS 4.01. Microsoft mouse. GE on-site service. Small footprint chassis.

Storage: 85Mb IDE hard drive. 1.44Mb or 1.2Mb floppy disk drive.

Memory: 2Mb RAM

Expansion: 7 expansion slots (6 16-bit and 1 8-bit).

I/O Ports: 1 parallel and 2 serial ports.

Video: 14" VGA color monitor. 16-bit VGA color video adapter.

Keyboard: Enhanced 101 keyboard with tactile/click touch.

Compatibility: DOS, OS/2, Novell, Unix.

**7 More Great
Reasons to
Buy Austin.**



Award-Winning Reviews

Don't take our word for it. Listen to what our customers and the industry experts say: "The Austin has it all..." PC Magazine

386/SX Editor's Choice Award, 1/30/90 Issue.

"Austin's 386/25 WinStation is a system loaded with value..." PC Magazine's Editor's Choice Review, 1/29/91 Issue

Best PC Value

Austin value starts with the Austin WinStations! Your powerful Austin system comes with the Microsoft Windows Package loaded and ready to go! Just unpack it and plug it in... Microsoft Windows 3.0, DOS 4.01 and a Microsoft mouse are yours—absolutely free!



GE On-Site Service

Every Austin desktop comes with 1 year of GE on-site service. We offer extended GE contracts for up to five years.

between an Austin Dell PC.

Price.



\$3290

AUSTIN 386/33 WINSTATION STANDARD CONFIGURATION

Microprocessor: 80386 running at 33MHz.
Special Features: 128K system cache. Pre-loaded with Microsoft Windows 3.0 and MS-DOS 4.01. Microsoft mouse. GE on-site service. Small footprint chassis.
Storage: 125Mb IDE hard drive with 32K cache. 1.44Mb or 1.2Mb floppy disk drive.
Memory: 4Mb RAM
Expansion: 7 expansion slots (6 16-bit and 1 8-bit).
I/O Ports: 1 parallel and 2 serial ports.
Video: 14" VGA color monitor. 16-bit VGA color video adapter.
Keyboard: Enhanced 101 keyboard with tactile/click touch.
Compatibility: DOS, OS/2, Novell, Unix.

\$3990

AUSTIN 486/25 WINSTATION STANDARD CONFIGURATION

Microprocessor: 80486 running at 25MHz.
Special Features: Internal 8K cache and floating point unit. Pre-loaded with Microsoft Windows 3.0 and MS-DOS 4.01. Microsoft mouse. GE on-site service.
Storage: 125Mb IDE hard drive with 32K cache. 1.44Mb or 1.2Mb floppy disk drive.
Memory: 4Mb RAM (expands to 32Mb on system board).
Expansion: 8 ISA expansion slots.
I/O Ports: 1 parallel and 2 serial ports.
Video: 14" VGA color monitor. 16-bit VGA color video adapter.
Keyboard: Enhanced 101 keyboard with tactile/click touch.
Compatibility: DOS, OS/2, Novell, Unix.

\$7990

AUSTIN 486/33E WINTOWER STANDARD CONFIGURATION

Microprocessor: 80486 running at 33MHz.
Special Features: EISA bus architecture. Internal 8K cache and floating point unit. Optional 64K or 128K external cache. Landmark v1.14 rating-167.8 MHz. Power meter rated @ 14.93 MIPS. Shadow RAM. EMS LIM 4.0 support. Microsoft package. GE on-site service. Vertical chassis.
Storage: 1.2Gb SCSI hard drive. 1.44 Mb or 1.2Mb floppy disk drive.
Memory: 8Mb RAM (expands to 64Mb on system board).
Expansion: 8 32-bit EISA bus master.
I/O Ports: 2 parallel and 2 serial ports.
Video: 14" VGA monochrome monitor. VGA video adapter.
Keyboard: Enhanced 101 keyboard.
Compatibility: DOS, OS/2, Novell, Unix.

\$2295

AUSTIN 386/SX16 NOTEBOOK STANDARD CONFIGURATION

Microprocessor: 80386SX running at 16MHz.
Special Features: Weight 6.1 lbs. without batteries. Notepad size. Dual removable battery packs for up to 4 hour battery life. Visual/Audio low battery warning indicator. Leather carrying case. Batteries & Universal AC adapter/charger included.
Storage: 20Mb hard drive. 1.44Mb floppy disk drive.
Memory: 2Mb RAM (expands to 8Mb on system board).
Expansion: 2 expansion pack slots. External VGA monitor port. External keyboard port. Printer port. 2 serial ports (1 for modem pack).
Video: Brilliant 10" VGA display with 640 x 480 resolution and 32-gray scale.
Keyboard: Full size, embedded numeric pad with 12 function keys.
Compatibility: DOS.
Factory Warranty: One year, parts and labor.

30-Day Guarantee

We don't compromise on quality. If your computer is not perfect the entire first year, we'll fix or replace any part immediately and without charge. You can even return your computer within the first 30 days for a full refund on the hardware price, no questions asked.

Toll-Free Technical Hotline

If you ever have a technical question, or just need information about your Austin Computer, you can call our highly trained specialists, six days a week.



Networking

Businesses can enjoy increased productivity by implementing a Local Area Network to share software and exchange information. Austin Computers is a Novell Gold Authorized Reseller, and our Certified NetWare Engineers can get your business connected today! Call 1-800-874-7182.

100% Financing

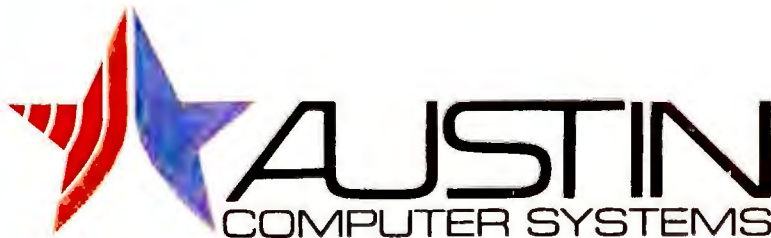
We offer 100% financing with our Austin Computer Systems credit card. Just call and we'll take your application over the phone in minutes!



VAR 1-800-338-1569
GSA 1-800-833-4GSA
FAX (512) 454-1357
OVERSEAS (512) 339-3500
CANADA 1-800-338-1565
NETWORKING 1-800-874-7182
CORPORATE ACCOUNTS 1-800-622-5506
10300 METRIC BOULEVARD • AUSTIN, TEXAS 78758

1-800-833-3657

All Time Zones Mon-Fri 7am-7pm Sat 10am-5pm



Circle 14 on reader service card

More and more business people are making the same connection...



that for affordability, reliability and efficiency, **LANTastic™** is the networking solution

Doctors, lawyers, accountants, butchers, bakers and pottery makers... more and more business people are connecting their PCs with Artisoft's LANTastic. In fact, our network has gained such a following that it was just awarded the 1991 LAN Times Reader's Choice for peer-to-peer network operating systems. And we couldn't be prouder.

After all, we designed LANTastic to make the productive power of a full-featured LAN accessible to anyone who wanted to streamline their computer operations. And whether you're connecting two PCs or 30 or 200, you can rest assured that you are buying into a product that will grow as you grow, with a commitment to developing innovative products that anticipate the needs of business people like yourself.

Just look at how smart our network is... While many networks gobble up huge amounts of

your PC's RAM, which usually means that you'll have to purchase extended memory, LANTastic leaves you plenty of room for even your most RAM-hungry applications. In fact, it's the most RAM-efficient LAN you'll find — taking as little as a mere 12K per workstation and 40K per server.

LANTastic saves you money, too. For as little as \$209* per PC, you'll have everything you need to get your network up and running. Plus, you can share all those expensive peripherals — not buy more of them. Better yet, because LANTastic is a peer-to-peer network, you won't have to spend thousands on a dedicated server machine.

But most important, it makes networking so easy that you'll soon be taking it for granted. You'll be able to edit and proofread your co-worker's documents without leaving your desk. Balancing your books will be easier because your

entire accounting department can share the same data base. Inventory management will be completely streamlined because everyone on the network can access inventory records and track products from when they are received as raw material, to when they are shipped as finished products.

In fact, the only regret you may have after you buy LANTastic is that you didn't install it last year, last month, even last week. Don't wait any longer. Call 602-293-6363 or fax 602-293-8065 and put the power of LANTastic to work for you.

LAN TIMES
READERS
CHOICE
1991



The Tiny RAM Network

See us at
COMDEX '91
The World's Leading Computer Trade Show for Resellers and End-Users
Booth #1062
at SPRING
May 20-23, 1991 • Atlanta, Georgia

*Based on manufacturer's suggested retail price for a 10-computer LAN using LANTastic 2Mbps adapters. Cost is slightly higher for smaller networks.
©1991 by ARTISOFT, Inc. All rights reserved. LANTastic is a trademark of Artisoft, Inc.

ARTISOFT
Revolutionizing Connectivity

575 E. River Road, Tucson, Arizona 85704

Circle 18 on reader service card

MIKE HOGAN

OS/2 Outdoes Windows

Runs Bigger DOS, Windows Apps Better

Struggling to regain leadership in system software after its split with Microsoft, IBM has launched a massive campaign for its OS/2 operating system—cutting current pricing to below DOS's, investing heavily in marketing and support

programs, and promising a new version this fall with unexcelled support for DOS and *Windows* applications.

OS/2 2.0 will offer fast, 32-bit performance (Microsoft's upcoming *Windows 3.1* is still a 16-bit environment) and an upgraded user interface. And OS/2 2.0 multitasks DOS applications (giving each an impressive 620K of memory even with network and mouse support) and *Windows* apps with better protection against system crashes than *Windows* provides. IBM also claims to have solved nagging installation and printing problems.

Analysts caution that even with its performance advantages, OS/2 2.0 will have trouble beating *Windows*' huge momentum. Only 600,000 copies of OS/2 have sold to date, while *Windows 3.0* shipments have reached 4 million. And while corporate customers still invest heavily in in-house OS/2 projects, OS/2 application work has dwindled to a trickle among independent software vendors.

To further complicate matters, Microsoft plans to release late this year a software developers' kit for OS/2 3.0—not a follow-on to 2.0, but a

IBM's OS/2 2.0 Strikes Back



IBM's latest offers safer multitasking and performance advantages over *Windows*.

built-from-scratch 32-bit alternative that will run DOS, *Windows*, and OS/2 packages.

OS/2 2.0 may not stop the *Windows* juggernaut, but IBM is doing what it needs to do for many corporate clients, notes Yankee Group analyst Paul Zagaeski. OS/2 2.0 will sell for under \$200, with upgrades from IBM's DOS for \$99 through year-end. (Pricing on OS/2 1.3 has dropped to \$150, while DOS lists at \$165.)

Zenith Has First 386SL Notebook

During June, Zenith Data Systems will ship the first notebook PC using Intel's 386SL, a microprocessor with built-in power management. Zenith's \$5500 MastersPort 386SL is a 6.8-pound notebook offering 3 hours of battery-powered computing you can use over days or weeks without exiting an application.

Because of Zenith's long experience with software-based power conservation, Intel sought its help in designing power management extensions right into the 386SL processor, says Intel marketing manager David Ryan. The 386SL's clock can be turned down to 0 MHz, compared to 2 to 8 MHz for the 20 MHz 386SX. The two-chip 386SL solution also takes up 40 percent less real estate on the system board than do comparable 386SX designs, letting system makers add more batteries, more storage, or better displays—or produce thinner or

lighter systems. These characteristics will make the 386SL a must for pen-based systems, predicts Ryan.

A keystroke puts the MastersPort 386SL in "rest/resume" mode, where it can remain for up to three weeks, drawing a fraction of a percent of normal power—about as much as a keyboard's LED. A user could make a desktop presentation or unobtrusively take notes in a meeting, turning the computer "on and off" without rebooting.

Although the 386SL is now available in quantity, other vendors have been slow to announce. Dean McCarron, vice president at Instat, predicts several vendors will announce and sell about 120,000 systems this year, followed by 500,000 next year. The current reluctance, he explains, is due to the chip's relatively high price and vendors' desire to recoup their investments in the deluge of recent 386SXs.

AT&T Safari Lets Road Warriors Phone Home More Often

AT&T Computer Systems has introduced a high-end notebook PC with an emphasis on communications to let some 26 million out-of-office professionals stay out of the office longer without losing touch.

At 7.5 pounds, 9.5 by 12 inches, and a minimum sticker of \$5399, the Safari NSX/20 is a little heavier, larger, and costlier than most of the breed. But those trade-offs yield a 10-inch diagonal VGA display, a full-sized, full-travel keyboard, and more memory and storage than average.

"One of most companies' expense reduction goals is to get sales professionals out of

their \$32-per-square-foot office buildings and have them function at home or in transit," explains Ed Coute, Safari general manager. To accomplish that, sales and service people, accountants, realtors, and software engineers need desktop functionality.

Standard features in the art deco-style Safari include twin batteries for up to 6 hours of computing between recharges, and a 2400-bps V.22bis modem with MNP-5 data compression and error correction for downloading files and E-mail through AT&T's EasyLink electronic mail network using the bun-

dled *Access Plus* software.

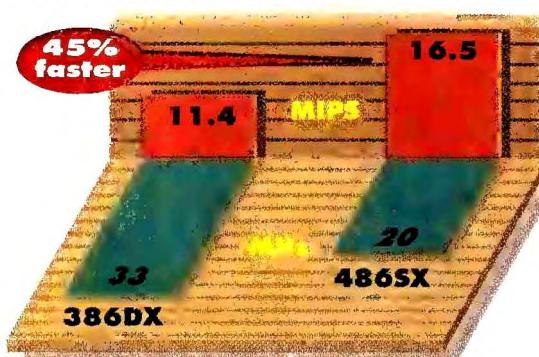
AT&T also plans an internal 9600-bps data/fax modem for third quarter. By then, users should also be able to buy a plug-in wireless paging device for taking messages off the TeleFind global paging network and downloading them to the Safari. A cellular modem will offer still greater flexibility next year with wireless E-mail access.

"We don't want to have just another laptop," explains Ray Tringali, vice president in charge of reseller support. "We are trying to show that AT&T Computer Systems leads in communications."

Intel Shows Cheap 486

Hoping to move users more quickly from 386 to 486 computing and head off 386 clone makers, Intel is shipping a 20-MHz 486SX processor that offers about 45 percent more performance than a 33-MHz 386 for little or no price premium. The 486SX processor alone costs vendors \$50 more than the \$208 processor for the 386, but saves about \$175 in other chips, so even early 486SX systems will be very competitively priced. One of the first, AST's \$3695 Premium II 486SX/20, is actually

When Is 20 MHz Faster Than 33?



Extensive integration makes a 20-MHz 486SX run about 45 percent faster than a 386/33.

less expensive than a comparably configured 33-MHz 386-based system.

Because 486s have more transistors and a higher level of component integration, they can process about twice as many instructions as 386s at the same clock speed, explains

Intel product manager Frank Bryan. But the way Intel brings the 486SX to market is complex. The 486SX is fabricated as though it were a 20-MHz 486DX, but the math coprocessor is not enabled because Intel research shows that only 30 percent of computer users need one. This provides higher manufacturing yields and lets Intel price the chip lower than the \$588 25-MHz 486DX.

Intel will also sell a 487SX-20 math coprocessor that at \$799 is about \$200 cheaper than the 33-MHz counterpart for the 386. The company asks vendors to include a coprocessor socket on their system boards, but because the 487SX-20 is nothing

more than a regular 20-MHz 486DX with the coprocessor enabled, some vendors already are breaking ranks and creating one-socket designs. That could cut them off from unspecified future upgrades planned for this "performance socket," warns Bryan.

The strategy to move customers up is partly a defense against 386 clones, says Instat vice president Dean McCarron. "I think the 486SX will really take off," he adds. "It has the right name, the right level of performance and, most important, the right price." McCarron expects Intel to ship about 230,000 486SX processors this year and 1.1 million next year—about as many as the 25-MHz 486DX.

PC, Mini Vendors Work on RISC Design

Seeking to let PC users move up to higher-powered Reduced Instruction Set Computer (RISC) systems without abandoning their current software, Compaq, Microsoft, and 19 other major vendors are collaborating on a RISC standard that will run DOS, *Windows*, and UNIX programs.

The Advanced Computing Environment (ACE) group, whose annual revenues total a respectable \$50 billion, is designing a computer architecture around MIPS Computer Systems' 64-bit R4000 processor. Its systems should arrive next year and run software atop either Microsoft's next-generation OS/2 3.0 or Santa Cruz Operation's UNIX-based Open Desktop. Apps written for either environment need only be recompiled to run on RISC machines or PCs.

With RISC machines monopolizing a workstation market that increasingly competes with high-end PCs, vendors

such as Compaq are challenged to offer RISC options without abandoning PC standards. "Our customers have told us they want multiple choices, and they want these choices to interoperate with one another," says Compaq president Rod Canion. Since vendors don't know if the R4000 or Intel's upcoming 586 will predominate, "it's really important to have a common software base," adds Mike Perez, Compaq's director of systems engineering.

ACE membership includes Acer, NEC, Olivetti, SCO, Silicon Graphics, Zenith Data Systems, and DEC but not workstation heavyweights Hewlett-Packard, IBM, or Sun, which are deeply committed to their own RISC architectures. ACE could score big for Compaq, Microsoft, and others, but analysts are skeptical that a successful computer can be designed by a committee of competitors.

Borland Cashes In on OOP, Engine

Borland's investments in object-oriented programming (OOP) and a data base engine that is usable across its entire product line are finally reaping financial rewards and giving it a programming edge that could make it the first major company to offer a fully relational data base manager for *Windows*.

Borland showed an early version of *Paradox for Windows* at a recent developers' conference, displaying the ability to treat data as objects and vice versa. Separating the interface layer from the data engine could make data base applications easier to program, let users include graphics and even animation in record fields, and more easily access other data forms such as SQL data bases. Eventually, Borland's *Paradox*, *Object Vision*, *Quattro Pro*, and *Sidekick* will all access *Paradox Engine*-managed data more quickly and transparently via the *Windows* interface.

Borland's investments in this technology and last year's

reorganization are letting it bring new products to market more quickly and more profitably, says Senior Vice President Spencer Leyton. Borland ended fiscal year 1991 on March 31 with a 127 percent increase in profits to \$26.8 million on a 100 percent increase in revenues to \$226.8 million.

That makes Borland the seventh-largest company on the just-released Soft-letter 100 list and gives it the cash to keep its products competitive with those of Lotus, Microsoft, and Ashton-Tate in markets those giants once owned.

Inside, Borland "just gets more done with fewer employees," notes Soft-letter publisher Jeffrey Tarter. Outside, he says, it cuts fat and stays close to customers with results-oriented direct sales. "They aren't wasting a lot of dollars massaging semicompetent dealers."

Borland is now working with Novell to enable its *Windows* front-end products to seamlessly access Btrieve and SQL data in NetWare. ☐



The Hottest Value
In The Industry
Just Got Even Hotter!

INTRODUCING THE NEW C



NEW MINI DESKTOP 286 AND 386SX MODELS ARE BIG ON PERFORMANCE!

Sometimes the best things come in small packages. This saying definitely applies to Gateway 2000's spunky little 286 and 386SX computers. These systems now come in a space-saving mini desktop model that's sizzling with powerful new features.

The motherboard in the 286 and 386SX systems was custom-designed and manufactured for Gateway 2000 using ASICs (Application Specific Integrated Circuits) to create a cleaner, more reliable board. We integrated the floppy drive controller, the video chip set and the I/O card on the motherboard, to leave five 16-bit slots open in the standard configuration.

The Gateway 2000 286 system operates at 16 MHz, rather than 12 MHz, for better performance. Our 386SX is available as a 16 MHz or a 20 MHz system. The 386SX-20 includes a 32K cache, which makes this system another truly outstanding Gateway price/performer.

HOT-PERFORMANCE 386 AND 486 SYSTEMS ARE IN ICY GRAY, CURVILINEAR MODELS

Although Gateway's 386 and 486 systems look entirely new, we limited changes on the inside to fine-tuning performance and reliability. In the

Midwest, we firmly believe in the adage, "If it ain't broke, don't fix it." And these award-winning, price/performance systems did not need fixing.

All 386 and 486 systems include a fast and reliable IDE (Integrated Drive Electronics) hard drive with built-in cache. For added reliability and lower RF emissions, we've incorporated ASICs in the design of our motherboards whenever the change improved cost/performance. Because our 386 and 486 computers already include the fastest, most reliable video card on the market, the only way we could improve video performance was to increase the size of video RAM. So we did. All Gateway 2000 386 and 486 systems come standard with 1 MB video RAM. We also made our new Crystal Scan 1024NI color monitor standard with these systems. The 1024NI is non-interlaced, giving you a flicker-free video display with up to 1024 x 768 resolution.

INTRODUCING THE AWESOME ANYKEY™

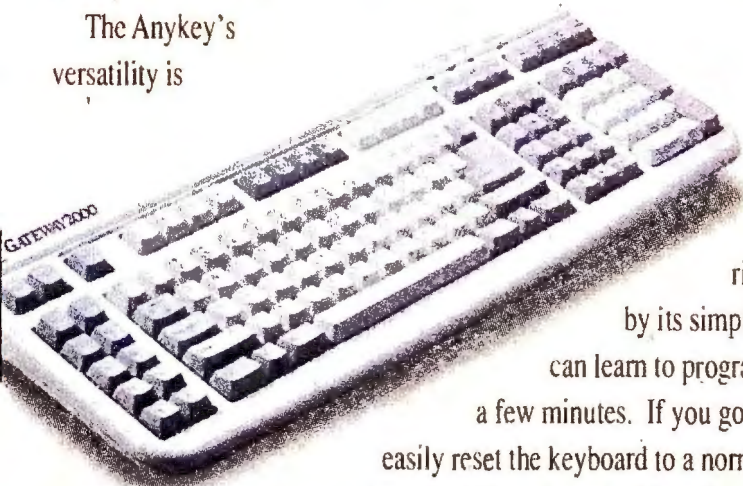
We call our new 124-key programmable keyboard the AnyKey because any key can be programmed to perform any function – anything you can imagine, quickly and easily. Or you can remap the keys to create your own keyboard layout. It's a revolutionary new concept designed to let you talk to your personal computer in a very personal way.

GATEWAY 2000 COMPUTERS



The AnyKey includes a numeric pad and a separate, full-function cursor pad with diagonal keys, plus two sets of function keys located along the top and left side.

The Anykey's versatility is



rivalled only by its simplicity. You can learn to program it in just a few minutes. If you goof, you can easily reset the keyboard to a normal configuration. And if you hate the idea of programming anything, you'll still love the feel and extra keys on the AnyKey. The AnyKey keyboard is an option with all Gateway 2000 computer systems.

EXPANDED SERVICE HOURS

We've also expanded our telephone technical support hours to provide you with even more flexibility and better service. We're here to help you from 6 a.m. to midnight weekdays and 9 a.m. to 2 p.m. Saturdays.

BETTER-THAN-EVER VALUE

Possibly the most dramatic news about our new product line is price. When a manufacturer introduces a new product line, you expect to see an eruption of price hikes. But then you've come to know Gateway is not like most manufacturers. Prices on systems in our new line are better than ever. And that goes for quality and service too, making the hottest value in the industry even hotter.

LOOKING AHEAD

The introduction of our new product line represents almost a year of design and engineering. But it's just one phase in a process of continuous improvement that we employ at Gateway. Each day, Gateway 2000 employees come to work with one primary goal in mind: to provide you with better prices, performance, quality and service. We're committed to making Gateway 2000 the only logical choice in microcomputers.



"You've got a friend in the business."

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

GATEWAY 2000 SYSTEMS

16MHZ 286 VGA

- Intel™ 80286 Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 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
- 101 Key Keyboard
- MS DOS™ 3.3 or 4.01

\$1395

16MHZ 386SX VGA

- Intel 80386SX Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 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
- 101 Key Keyboard
- Microsoft™ Mouse
- MS DOS 3.3 or 4.01
- MS Windows™ 3.0

\$1595

20MHZ 386SX CACHE

- Intel 80386SX Processor
- 32K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 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
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$1995

25MHZ 386 VGA

- Intel 80386 Processor
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$2295

25MHZ 386 CACHE

- Intel 80386 Processor
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$2595

33MHZ 386 CACHE

- Intel 80386 Processor
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$2995

25MHZ 486 CACHE

- Intel 80486 Processor with Co-Pro and 8K Internal Cache
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$3495

33MHZ 486 CACHE

- Intel 80486 Processor with Co-Pro and 8K Internal Cache
- 64K Cache RAM
- 8 MB RAM, Expands to 64 MB
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 17ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- Microsoft Mouse
- MS DOS 3.3 or 4.01
- MS Windows 3.0

\$3995



STANDARD SERVICES

- 30-day money-back guarantee
- One-year warranty on parts and labor
- Free bulletin board technical support
- Toll-free technical support for the life of the machine
- Free on-site service to most locations in the nation
- Replacement parts sent via overnight shipping free of charge
- Leasing options for commercial customers

We custom-build each Gateway 2000 computer to customer specifications. We'll gladly provide you with a quote on your configuration. Due to the volatility of the DRAM market, all prices are subject to change. Prices do not include shipping.

Sales hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CST)

Extended Service hours: 6am-Midnight Weekdays, 9am-2pm Saturdays (CST)



8 0 0 - 5 2 3 - 2 0 0 0
610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023



Microsoft's Choice

Microsoft is in trouble with IBM, Apple, software developers, and the United States government. Is this any way for a standard-setter to live?

If you've been watching lately, you know it's been good news/bad news time over at Microsoft. First the good news: The software giant scored sales of almost \$500 million in the first quarter of 1991, making it more than twice the size of Lotus, its largest competitor.

Now the bad news: Microsoft's marriage with IBM has hit the rocks, the lawsuit with Apple over *Windows* copyrights took a turn for the worse, the Federal Trade Commission is investigating Microsoft's business practices, and software developers are steaming over the company's *Windows* application advantage.

What's wrong with this picture? By aggressively expanding the PC market with DOS, *Windows*, languages, and applications, Microsoft has helped to create enormous opportunities for hardware and software vendors while providing unprecedented freedom of choice for users. Lotus now stands to make about \$800 million in revenues in 1991 and WordPerfect will make about \$500 million. Apple is number one in personal computer sales, ahead of IBM, thanks in part to applications like *Microsoft Excel*, *Word*, and *Works*. And the IBM PC-compatible world itself is now over 60 million strong and still growing.

Hardball, Redmond Style

If software vendors don't seem appreciative, it's because they don't like the way Microsoft has parlayed its standard-setting role in operating systems into incredible success in applications. At an estimated \$1 billion this year, Microsoft's application sales alone are enough to qualify it as the biggest PC software vendor in history, surpassing Lotus, WordPerfect, and everybody else. Numerous software developers privately complain that Microsoft grew to this size by passing important information between its operating system and applications groups before circulating it among other vendors, especially where *Windows* is concerned. As a result, Microsoft is the only major vendor with a full suite of *Windows* software already in users' hands.

Meanwhile, IBM is mad at Microsoft for putting its weight behind the DOS-*Windows* combination rather than focusing on OS/2. And it's a safe bet that Apple's not happy with the latest *Windows* sales figures, which show the environment already outstripping the Macintosh in number of users.

In contrast, Microsoft points out that interchange between the company's applications and operating system groups is responsible for major *Windows* innovations like object linking and embedding (OLE). *Windows* is a success story not because Microsoft failed to support OS/2—the company has more OS/2 applications than any other PC vendor—

but rather because users gave *Windows* an overwhelmingly enthusiastic reception in comparison to the lame response they gave to OS/2. And *Windows*-Macintosh compatibility only serves to boost the Mac as a mainstream business machine.

The Best Solution: Split the Difference?

As a solution to this impasse, many software developers privately favor a government order to split Microsoft's applications and operating system divisions into separate companies. The two new companies would each still tower over the PC industry, but at least Microsoft's competitors in the application arena could expect equitable treatment from their new operating system vendor. Few observers think the FTC will ultimately order such a drastic action, however.

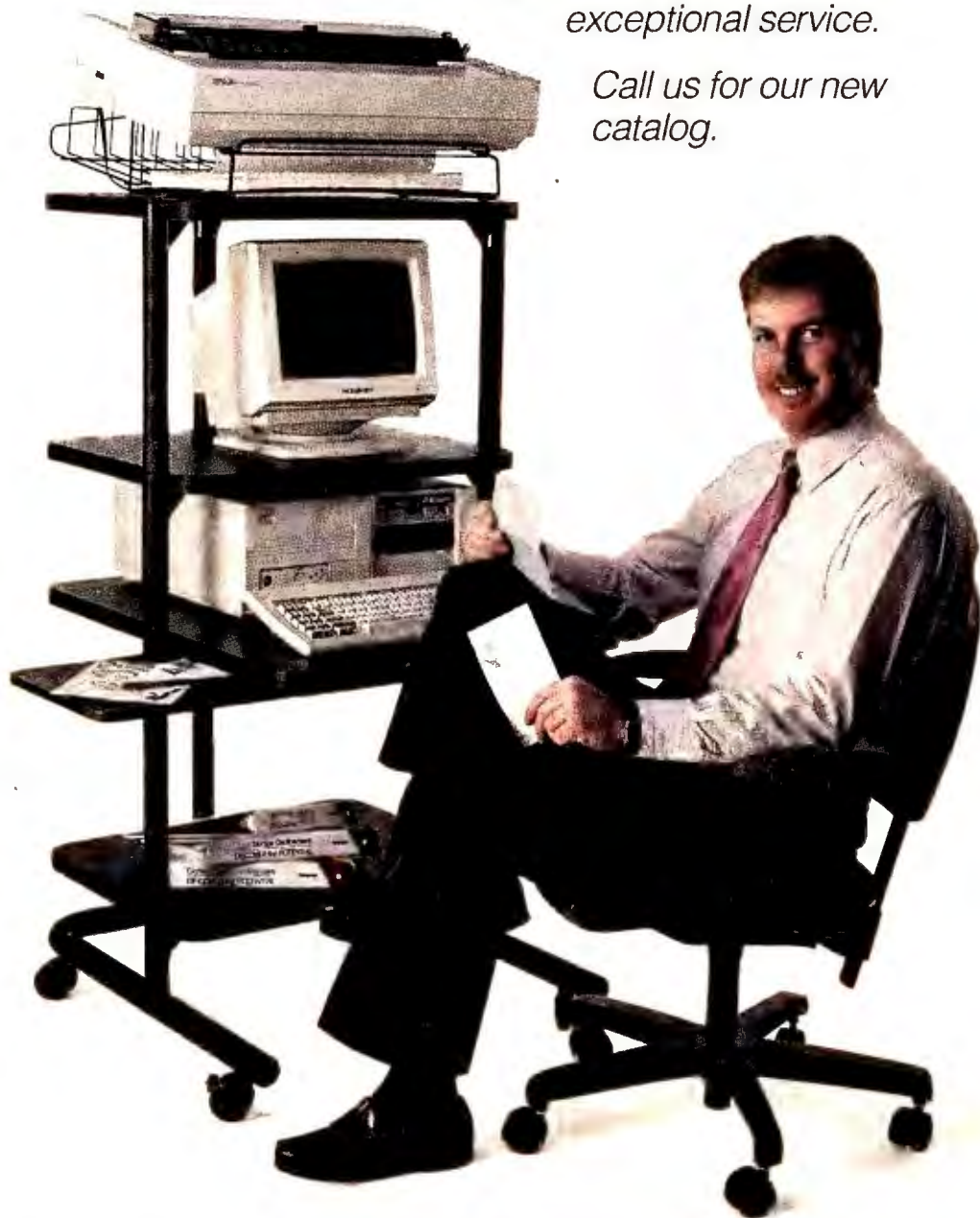
But if that's all it takes to put Microsoft's competitors more at ease with the industry giant, then the company can take steps today to smooth relations with the rest of the PC world. Witness Compaq: Its EISA consortium brought competitors together to challenge IBM for control of the next-generation PC standard, and the group held together because it functioned like a full-fledged standards organization. Microsoft could adopt the same policy with *Windows* and OS/2, opening up its development program to the software community at large for comments, improvements, and *(continues)*

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



collaborative effort, while keeping its application side at bay until new operating system standards became available to all.

We expect 1991 to continue to be a banner year for Microsoft: DOS 5.0 promises to be the most popular upgrade the operating system has ever undergone; *Windows 3.1* will work out most of the kinks of the earlier version and deliver some important new capabilities to boot; most important PC vendors will deliver *Windows* versions of their products; and Microsoft will take advantage of this software wave to launch new and upgraded packages itself. As the industry's de facto leader, it should also take the opportunity to change the nature of its competitive relationships. That's the only way Microsoft can ensure that *Windows* will become the same broad, user-driven standard that DOS is today.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685. ☺

POWER TIP NO. 185

DisplayWrite Text Searches With Norton Utilities

DisplayWrite uses the EBCDIC coding scheme for storing data rather than the ASCII standard used by most DOS applications. This makes *DisplayWrite* document files impenetrable to most text search programs. To search *DisplayWrite* files for text with *Norton Utilities 4.5's* Text Search program (TS.EXE), use the /EBCDIC extension, as in *ts *.doc "text to search for" /ebcdic*.

Freda Miller
Berkeley, California

**“THE MOST
POWERFUL
COMPUTERS
ARE THE
ONES PEOPLE
ACTUALLY
USE.”**

—Apple Computer

First off, let's get one thing straight.
We totally agree with Apple®.
A truly powerful computer is measured in how often it's used.

IF YOU LISTEN TO APPLE, THIS IS THE MOST POWERFUL COMPUTER IN THE WORLD.

But while Apple has taken great strides in making the personal computer more useful, we've gone substantially farther.

Introducing the T2000SX notebook computer.

Quite simply, the T2000 SX is a more useful personal computer because it allows you to work how you want to work. When you want to work. And where you want to work.

Painstakingly engineered with you clearly in mind, the T2000SX will help you work more efficiently than ever before.

Virtually every feature you can find on a desktop computer, you will



Our technologically superior battery can be fully recharged in a mere ninety minutes.

find on the T2000SX: An 80386™ SX processor with a math coprocessor socket, VGA compatible display, 1 MB (expandable to 9MB) of 80 nsec RAM, a 40 MB hard disk with 19 msec access time and 1.5 MB/sec data transfer rate.



The T2000SX has a 40MB hard disk with 19 msec access time.

But more important than the specs themselves, is the way the T2000SX lets you

use them. Which is more often.

Our fluorescent side-lit screen provides even distribution of light. (Actual size.)

Welcome to the next
generation in
personal computing.

Because the T2000SX can fit easily into a briefcase (it weighs a scant 6.9 pounds), you can take it anywhere you go and use it in more ways than you can imagine.

Need to make revisions to a



Our internal AutoResume back up battery automatically saves your work if your main battery runs out.

business proposal? The T2000SX gives you the freedom to do it from a train. The client wants an estimate on costs? You can give it to him right then and there—wherever there is.

No more wasting time running

back to the office. Because the office is always with you.

But just in case there's something



Our user-installed memory card allows you to add up to 8 MB of memory yourself.

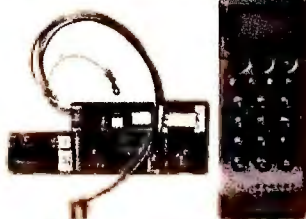
back at the office you still need, you can get back to it with our optional built-in modem. Which supports industry standard error corrections and data compression (CCITT V.42, V.42bis, MNP® 5). It even supports cellular data communications via our optional smart cable adapter.

The T2000SX also has a unique feature you won't find on any other computer in the world. It is called AutoResume.

AutoResume: Think of it as a bookmark for your computer.

AutoResume automatically saves whatever you're working on whenever you turn the computer off. And it lets you go directly to the program you were using last when you're ready to start up again. So you don't have to reboot, restart your application and reload your files.

AutoResume



The T2000SX has an optional modem that allows data communications via a cellular phone.

also helps save on battery life and it allows you to change batteries without losing an ounce of information.

As for batteries, the T2000SX touts the latest in battery technology—Nickel Hydride. Nickel Hydride delivers 22% more watt-hours per pound than NiCad and it doesn't suffer from memory effect.

In keeping with the Toshiba tradition, the T2000SX also offers superior ergonomics. Like full-size, standard-spaced keys on a keyboard which has a full set of 12 dedicated function and 8 cursor control keys. And a VGA compatible, reversible black on white or white on black high resolution display.

Okay, let's wrap this thing up.

These are just a few of the reasons why we believe the T2000SX is the most useful, and therefore, most powerful computer in the world. And why P.C. Week* Labs said, "the T2000SX offers performance comparable to the LTE 386s/20, plus many of the design features that have made Toshiba a market leader in portable PCs."

PC WEEK

We invite you to learn more about the T2000SX and Toshiba's best-selling line of portable computers by calling us at 1-800-457-7777 for a complete information kit.

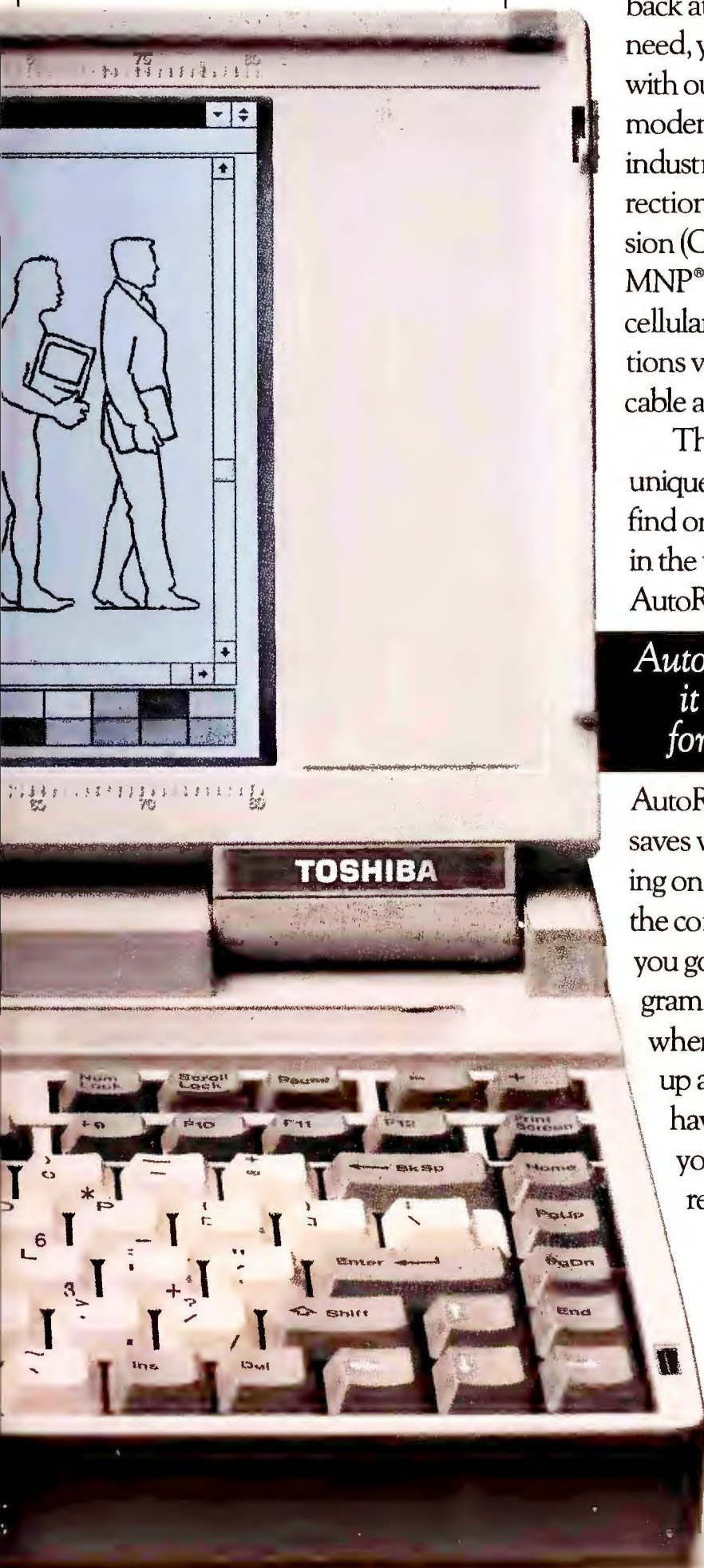
In closing, we'd like to thank you for reading our ad.

We'd also like to thank our friends at Apple for giving us such a wonderful endorsement.

In Touch with Tomorrow
TOSHIBA

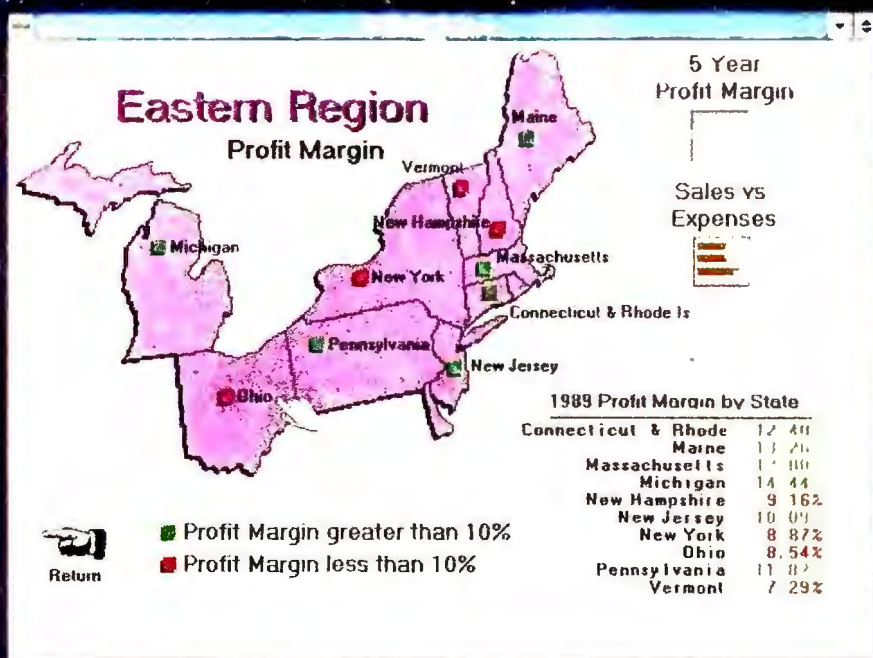


The T2000SX comes complete with Hypertext on-line documentation.



Will You Stay On Course In Today's Ocean Of Information?

Navigate Through Information With LIGHTSHIP, The Data-Driven™ Windows EIS



The right information can guide you through rocky business waters. LightShip™, the Windows 3.0-based executive information system (EIS), brings that information to you in a graphical, easy-to-understand format. Imagine seeing exceptions for each sales region every day. Or detecting production and shipping bottlenecks before they occur. LightShip can bring you the business information you need in colorful screens of charts, tables, graphs, and images.

But LightShip isn't merely fixed reports or pretty pictures. It is dynamic information based on Data-Driven™ hot spots that link your PC to real-time information in spread-sheets, database files, text files, even images. And that information can reside on your PC, LAN server, mini, mainframe, or in external sources, which means you can put LightShip to work today in your existing environment, without a major investment.

With its codeless, visual programming environment, LightShip EIS development is fast and easy, using simple point-and-click operations. Data-Driven hot spots mean those applications are flexible and self-maintaining. LightShip applications can access and present thousands of screens of information without redundant multi-screen programming and time-consuming maintenance.

Chart your organization's direction with the right information. LightShip is a remarkable EIS product at an even more remarkable price: \$795. For a demonstration disk or more information, call (617) 350-7035.

Circle 216 on reader service card

LIGHTSHIP

A Division of Pilot Executive Software

"Delivering Success in EIS"





LETTERS

Reactions and responses from the PC World community

market. If my business had that kind of locked-in profit, I'd probably have that "Full speed ahead—buy those 486s" attitude too!

*Pete Mc Kenney
Manhattan Beach, California*

Two Scents Worth

Joe Guyette's reaction to a rose-scented ad [*Letters*, March 1991], is off base. If you follow his suggestion and substitute after-shave for the rose fragrance, just think of all the women who'll have to explain *that* scent to their husbands. Many women subscribe to and read *PC World*. Welcome to the nineties, gentlemen!

*Joy L. Thompson
Los Lunas, New Mexico*

No Longer Down, Down Under

Thank you, thank you, for the improvement in distribution in Australia. We received the February issue on January 24. In the past, we'd have received it sometime in March, if we were lucky. We often feel neglected down under. This is a real boost to our ego!

*J. Miles
Baulkham Hills, Australia*

SX Versus DX

I'm becoming confused by all the numbers and letters used to designate computer CPUs these days. For instance, your February review "Value Alert! 20-MHz 386SX Systems" suggests that we bypass 16-MHz SXs in favor of 20-MHz SXs. But what does either of these chips offer in comparison to the regular 386? And is there a difference between a 386 and a 386DX?

*J. Hugh Currie
Lower Sackville, Nova Scotia
Canada*

Simply put, 386DX is the correct name for the full 386 chip. The 386SX is like a 386 on the inside and a 286 on the outside. Its smaller size makes it much less expensive to manufacture, and because of its outer similarities to the 286, the SX is a snap to design into systems based on existing AT architecture. Although the SX duplicates the internal functioning of a DX of comparable speed, overall system performance slows because the SX passes data to and from memory 16 bits at a time compared to the full 386's 32 bits. And the SX, like the 286, handles only 16MB of RAM, which is 1/256 the capability of its big brother DX.—Ed.

Watching Prodigy

I'd like to add to the February *Consumer Watch* comments on Prodigy. I tried the service when it was first offered but quit because of the 5-minute log-on and Prodigy's low level of support for my hardware configuration. It takes me less than a minute to log on to GENie or CompuServe, and I can access either service or MCI Mail from my Commodore 128 at home. But Prodigy's proprietary software is not available for Commodore. Graphics are nice, but not at the sacrifice of speed. Let Prodigy conform to computer communications standards or die a natural death.

*Kenneth Bush
Indianapolis, Indiana*

You Can't Wait Forever!

I do nightly unattended long-distance file transfers, and I just had to respond to "Waiting Forever With Procomm" on page 217 in the February issue. The advice to insert "forever" as an alternative parameter in the WAITFOR command (*continues*)



RANDY LYHUS

486s: Raising Your Rates?

Alice LaPlante's March "Pro vs. Con: Are You Ready for a 486?" [the follow-on story to "33-MHz 486s: Ultimate PC Power"] really caught my eye. As an information systems VP and a personal customer of Southern California Gas, I was outraged by the "buy-too-much" attitude of their systems evaluation manager, Bob Holmes. Let's be realistic. In private business we have to be patient and slug it out with existing equipment. Most of us are just trying to make it through the recession without major equipment failures. Utility companies have the advantage over the rest of us with their guaranteed, noncompetitive

ANTHONY RUSSO

sounds like a good way to rack up a horrendous CompuServe bill. For instance, if there's line noise, the script may never read the target string—and there you'll be, waiting *forever* on line! If the default 30 seconds isn't long enough, specify another number that is. Then, to save phone and on-line charges, you can build in error loops with the IF

command to ensure that your scripts go as planned or get aborted.

Tom McCaughey
Nikiski, Alaska

Great-Looking Dot Matrix Output

Your January "Easy Fonts for Great-Looking Documents" was excellent, and we gleaned a lot of much-needed infor-

mation about expanding our font options. But let's set the record straight about the quality of output available from dot matrix printers. Our Fujitsu 24-pin dot matrix color graphics printer produces output of much better quality than any of the dot matrix examples shown in your article. In fact, it approaches the quality of the LaserJet and DeskJet with certain fonts.

June Windblad
Loring Windblad
Westminster, British Columbia
Canada

A Perfect Word Processor?

I read "Perfect Mail Merges for Mass Marketing" in March, and I wish someone would explain to me what makes *WordPerfect* so popular. Any secretary required to use the program should be paid an extra \$5000 a year. I can compose a *Word* form letter with straight typing—no need to burrow repeatedly into the roots of a menu tree or punch up a series of finger-bending function-key combinations. "Create mass mailings quickly" with *WordPerfect*? Do people really go through all that to create a form letter?

Richard Zigler
Marion, Michigan

I give up. It seems that as far as you're concerned, there's only one word processor—*WordPerfect*. I've been using *WordStar* for four years up to version 5.5. It may not be the most user-friendly program, but I've learned to live with it. I can't remember a recent issue where you featured *WordStar* tips.

Arnold Beichman
Stanford, California

We have to be responsive to the majority of our readers, who use *WordPerfect*. But don't think we've forgotten about other word processing favorites. We regularly run Power Tips and User Group Tips for a wide range of word processors. For example, the first of this month's User Group Tips is de-
(continues)

PC Magazine, November 27, 1990
"Of our seven contenders, the Blackship 486-25 earned the top value."
— InfoWorld, March 12, 1990
"With its winning combination of quality off-the-shelf parts, the Blackship 386-33 offers solid performance at an affordable price."
— PC Magazine, February 13, 1990
"The Blackship 386-33 offers low price 33-MHz performance... we rate it a very good value."
— InfoWorld, July 1989
"... its price/performance ratio easily justifies PC World's Best Buy recommendation."
— PC World, August, 1988

Price/Performance Leader... Your "Best Buy" Company.

<p>NEW BLK486 SVGA Systems</p> <ul style="list-style-type: none"> 64K Cache RAM 4 MB RAM 1.2 MB 5.25" Drive 1.44 MB 3.5" Drive 200 MB 15 ms IDE Drive 16-Bit VGA w/512K 14" 1024 x 768 Color Monitor 1 Parallel, 2 Serial Ports, 1 Game Port 101-Key Keyboard MS DOS 3.3 or 4.01 <p>486/25 ISA \$3595 486/25 EISA \$4395 486/33 ISA \$4395 486/33 EISA \$4995</p>	<p>NEW BLK 386SX/20 LAPTOP</p> <ul style="list-style-type: none"> 1 MB RAM 1.44 MB 3.5" Drive 40 MB IDE Hard Drive 640 x 400 VGA LCD Display 2 Expansion Slots 81-Key Low Profile Keyboard Internal Sealed Ni-Cd Battery External AC Power MS DOS 3.3 or 4.01 Weight 14.7 lbs <p>\$2395</p>	<p>NEW BLK 286SX LAPTOP</p> <ul style="list-style-type: none"> 1 MB RAM 1.44 MB 3.5" Drive 20 MB IDE Hard Drive 640 x 400 Mono LCD Display 2 Expansion Slots 81-Key Low Profile Keyboard Internal Sealed Ni-Cd Battery External AC Power MS DOS 3.3 or 4.01 Weight 14.7 lbs <p>\$1595</p>
<p>BLK 386/33 SVGA</p> <ul style="list-style-type: none"> 64K Cache RAM 4 MB RAM 1.2 MB 5.25" Drive 1.44 MB 3.5" Drive 200 MB 15 ms IDE Drive 16-Bit VGA w/1MB 14" 1024 x 768 Color Monitor 1 Parallel, 2 Serial Ports, 1 Game Port 101-Key Keyboard MS DOS 3.3 or 4.01 <p>\$2895</p>	<p>BLK 386/25 SVGA</p> <ul style="list-style-type: none"> 4 MB RAM 1.2 MB 5.25" Drive 1.44 MB 3.5" Drive 105 MB IDE Drive 16-Bit VGA w/512K 14" 1024 x 768 Color Monitor 1 Parallel, 2 Serial Ports, 1 Game Port 101-Key Keyboard MS DOS 3.3 or 4.01 <p>386/25 SVGA \$2395 With 64K Cache \$2545</p>	<p>BLK 386SX VGA Systems</p> <ul style="list-style-type: none"> 2 MB RAM 1.2 MB 5.25" Drive 1.44 MB 3.5" Drive 40 MB IDE Drive 16-Bit VGA w/512K 14" 1024 x 768 Color Monitor 1 Parallel, 2 Serial Ports, 1 Game Port 101-Key Keyboard MS DOS 3.3 or 4.01 <p>386SX/20 \$1795 386SX/16 \$1595</p>
<p>BLK286 VGA Systems</p> <ul style="list-style-type: none"> 1 MB RAM 1.2 MB 5.25" Drive 40 MB IDE Drive 16-Bit VGA w/256K 14" VGA Color Monitor 101-Key Keyboard 1 Parallel, 2 Serial Ports, 1 Game Port MS DOS 3.3 or 4.01 <p>286/25 \$1595 286/16 \$1395 286/12 \$1295</p>	<p>Standard Features</p> <ul style="list-style-type: none"> 30-Day Guarantee Unlimited Toll-Free Technical Support 1-Year Parts and Labor Warranty 1-Year On-Site Service by GE Computer Service Custom Configuration <p>Call Blackship For All Your Other System and Networking Needs.</p> <p>Prices are subject to change.</p>	

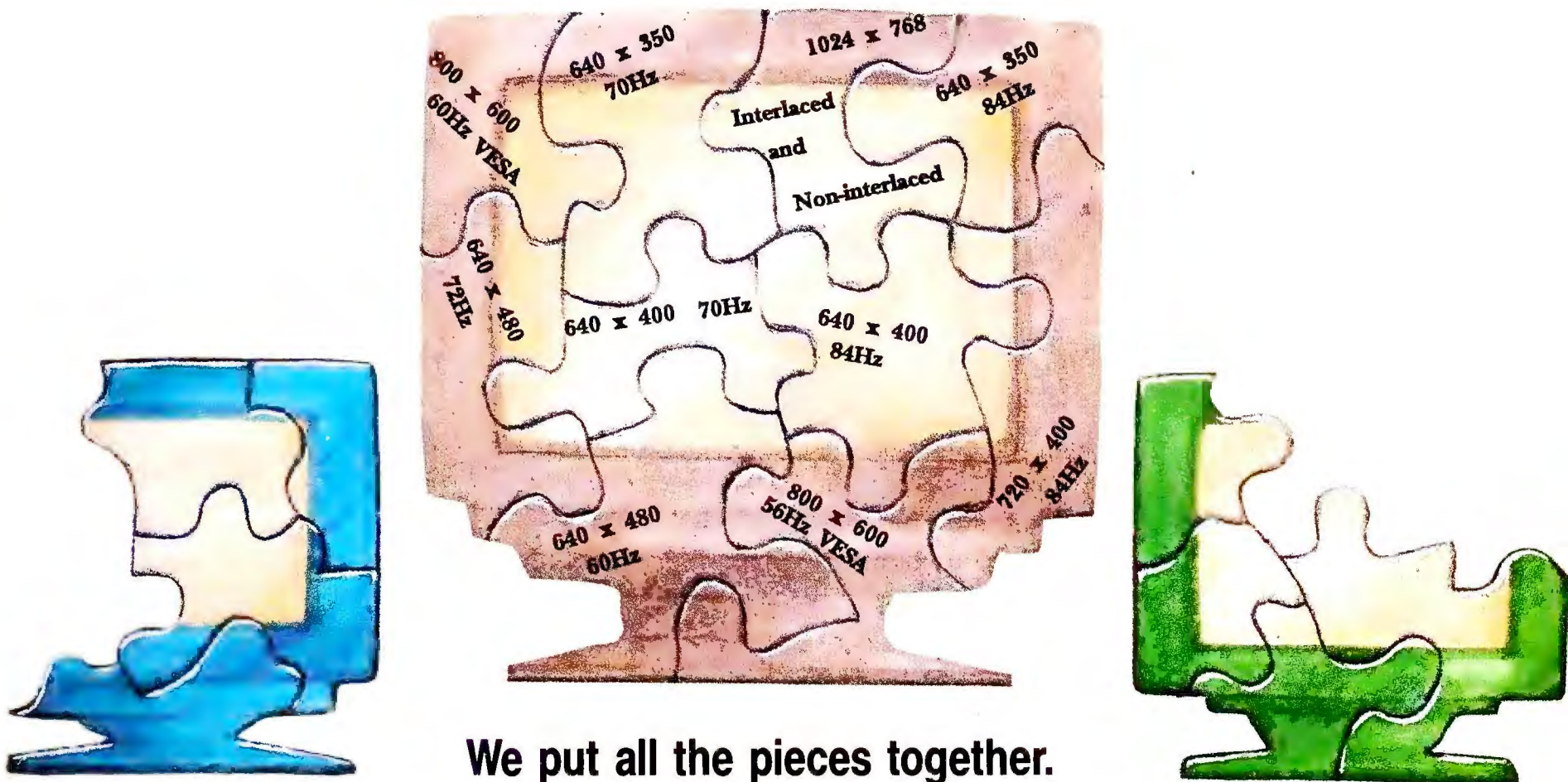
Mono system, deduct \$250

CALL TOLL-FREE 1-800-877-6249

BLACKSHIP COMPUTER SYSTEMS, INC.
4031 Clipper Court • Fremont, CA 94538
Tel: 415-770-9300 • Fax: 415-770-8674

Circle 1 on reader service card

CTX Offers *Total Compatibility.*



We put all the pieces together.

Chances are, you chose a monitor that suffers from a compatibility problem. Selecting a monitor that suits both present and future needs can be tough. Consider CTX, and you will be puzzle-free! With its 28-38 KHz plus 48 KHz horizontal scanning frequencies, CTX Multimode Super VGA has Total Compatibility — no pieces will be missing from your display.

The CTX Multimode Super VGA offers the ultimate display solution. Features include: super fine CRT (0.28mm dot pitch) providing resolutions up to 1024 x 768 (Non-Interlaced), 90-260 VAC auto-sensing power supply, handy up-front controls and detachable tilt-swivel base. All these plus its affordability make CTX Multimode Super VGA your natural choice of monitors.

Excellent CTX servicing programs come standard for all users. For more information on the best monitor deals, contact a CTX dealer today.



CTX

CTX International, Inc.

20530 Earlgate Street, Walnut, CA 91789

Phone (714) 595-6146 Fax (714) 595-6293

CTX South, Inc.

6090-F Northbelt Parkway, Norcross, Georgia 30071

Phone (404) 729-8909 Fax (404) 729-8805

Circle 53 on reader service card



With This \$125 DrawPerfect Offer, Even Columbus Might Have Jumped Ship.

With some other graphics packages, creating visual aids for presentations may seem like sailing off the edge of the world. But fear not. For a limited time, you can switch to DrawPerfect® 1.1 for just \$125*.

Smooth Sailing

DrawPerfect comes with a full cargo of over 500 clip-art images, pre-designed templates for bullet lists and graphs, and a full complement of easy-to-use charting, graphing and drawing tools. With them, you can quickly turn raw information into persuasive slides, on-screen slide shows, overhead transparencies and printed handouts.

Learning The Ropes

DrawPerfect integrates seamlessly with WordPerfect®. If you know WordPerfect, you'll soon be navigating around DrawPerfect like an old hand. Of course, if you



On screen presentation

ever find yourself adrift, you can reach the industry's best technical support with just a toll-free call.

An Extra Incentive To Come On Board

The suggested retail price for DrawPerfect is \$495. But if you presently own any version of Harvard Graphics, Lotus Freelance or Ashton-Tate Applause II, you can get top-rated DrawPerfect 1.1 for only \$125.

To take advantage of this special offer, simply show your DrawPerfect dealer the registration cover sheet (or other proof of purchase) from your old graphics program. Or call us. Then get ready to chart a new course (or nearly anything you want). For a DrawPerfect demo disk, upgrade information, or a free brochure, call (800) 526-5052. New worlds are waiting.

WordPerfect
CORPORATION

1555 North Technology Way, Orem, Utah 84057

Tel: (801) 225-5000 FAX: (801) 222-5077

*Suggested price in the United States (\$165 in Canada).

Offer good in the United States and Canada.

DrawPerfect and WordPerfect are registered trademarks of WordPerfect Corporation within the United States and other countries. All other brand and product names are trademarks or registered trademarks of their respective companies. ©1991 WordPerfect Corporation.



voted to our readers who use WordStar. Check it out for a quick way to convert your WordStar files for use with any word processor. —Ed.

World Class Accounting

I think you did well to explain the accounting and personal finance categories on this March's *World Class Ballot*. But as far as I'm concerned, you should go a step further and split the accounting class into two groups. All-in-one programs, such as *DacEasy*, contain General Ledger (GL), Accounts Receivable (AR), and Accounts Payable (AP) in one integrated program, but they provide only basic reports. Modular programs, on the other hand, like *Great Plains Accounting Series* or *Accpac Plus*, have a central GL that integrates with separate AR, AP, Inventory, or Payroll modules. These programs have multiuser capabilities, provide extensive standard reports, and have custom report generators.

Jody Braaten

Great Plains Software
 Fargo, North Dakota

A Low Cost for High Speed

Your article on 9600-bps modems in February ["Users Turn Toward Higher-Speed Modems," *Industry Outlook*] is enjoyable and timely, but I'd like to point out one error. You contrast the U.S. Robotics internal Courier V.32 modem, which lists for \$895, with the \$1199 Hayes Ultra 96 incorporating V.42 and V.42bis and imply that you have to pay more for these added features. Actually, the fully featured Courier V.32 also incorporates these protocols. We use our own chip technology employing off-the-shelf microprocessors to keep costs down. As a result of our high quality and low prices, CompuServe has selected our modem for its 9600-bps service. If people pay more for the Hayes modem, it's not because of features or performance.

Jonathan Zakin

U.S. Robotics

Skokie, Illinois

Corrections and Clarifications

"A Little Bit More" in April's *User Group Tips* contains a serious error. If you type the command `more > filename` to list a file on screen, you will overwrite the file you are trying to view. The correct command is `more < filename`. *PC World* regrets the error.

Our March "Perfect Mail Merges for

Mass Marketing" has an error on page 218. We instructed you to enter a marker for the Last-Order field by pressing `<F7> <Backspace>`. Actually, you should press `<F7> <Cursor Left>` to get back to the editing screen and inside the IF statement.

Our Features Evaluation in April's (continues)

"I Get Paid To Write Programs. And Now I'm Writing Them Twice As Fast."

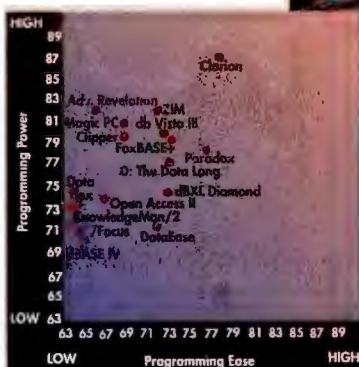
If you write programs for a living, get to know The Clarion Professional Developer® 2.1.

It can cut applications development time by 50% or more without compromising your design. It's so fast and easy, you can complete prototypes while your clients watch.

Professional Developer 2.1 is an immensely powerful, easy-to-use DBMS/programming environment which interfaces to routines from C and Assembler. It allows import and export of dBASE, BASIC and DIF files. Its application generator produces commented source code which can be easily adapted with its utilities to allow you to generate .EXEs. Network support is included at no extra cost. There are no run-time licenses or fees. And now Version 2.1 includes Report Writer, which allows you to easily and intuitively create ad hoc reports and queries (from Clarion files, non-Clarion files or any combination).

In this business where time is money, let Professional Developer help you generate more money for your time. Below is a partial list of our worldwide network of dealers. For the one nearest you, call:

(U.S.A.) 800-354-5444
 (Canada) 305-785-4555



Here's what American corporations in a PC Week survey thought of the power and ease of use of Professional Developer vs. competitors.

See us at Booth 4834

COMDEX '91

at SPRING
 May 20-23, 1991 • Atlanta, Georgia

CLARION SOFTWARE™

150 East Sample Road
 Pompano Beach, FL 33064

CA, Lawndale
 Software
 Supermarket
 (213) 542-3801

CA, Southgate
 Columbia Computer
 Product
 (213) 634-1188

FL, West Palm Bch
 Computarama
 (407) 642-6600

OK, Midwest City
 Software City
 (405) 732-6767

TX, Dallas
 Softsource
 (214) 701-9980

Clarion Software Products run on any IBM PC, PS/2, or true compatible with 512K of memory and a hard disk. Clarion Professional Developer is a registered trademark and Clarion Software is a trademark of Clarion Software. Copyright 1989 Clarion Software. dBASE is a registered trademark of Ashton Tate.

Circle 36 on reader service card



Hassle-Free Printer Sharing

for the HP LaserJet II, IID, III and IIID



"The ServerJet is the smoothest and most practical way I know to share a LaserJet."

Frank J. Derfler, Editor
PC Magazine, 1/15/91

Here's how you and your co-workers can have your own HP LaserJets without breaking the corporate budget.

It's called **SimplAN ServerJet**.

Simply plug the *ServerJet* into the 'Optional I/O' slot of your HP LaserJet. Stretch phone cable, up to hundreds of feet, to each computer. Then, 12 people can simultaneously *whooossh* documents to the LaserJet at speeds as fast as 115,200 baud.

No more wandering down the hall with floppy in hand.

Or borrowing someone else's LaserJet.

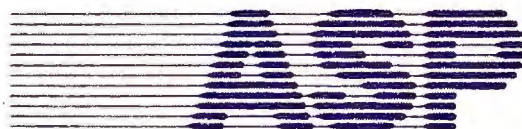
Or wasting time waiting to print.

SimplAN & ServerJet are trademarks of ASP Computer Products, Inc. / HP LaserJet is a registered trademark of Hewlett-Packard Co.

The *ServerJet* is available in a variety of models with up to 4MB of buffer memory. And because your office may have printers other than HP LaserJets, ASP Computer Products offers a complete line of printer sharing solutions.

To order your *ServerJet* or for more information call ASP at:

800-445-6190



ASP COMPUTER PRODUCTS, INC.

1026 W. Maude Avenue, Suite 305
Sunnyvale, California 94086
Phone: 408-746-2965 • Fax: 408-746-2803

LETTERS

"33-MHz 386s: Survival of the Fastest" erroneously reported the AT&T 6386/33 WGS's coprocessor support. The AT&T does support the Weitek 3167.

Our April communications review "Easier Tools for the On-Line World" mentioned a mail-order price for *Procomm Plus 2.0* that didn't reflect the cost increase of this upgraded version. Purchasers are likely to find mail-order prices ranging from \$65 to \$80 for version 2.0. *PC World* regrets any confusion this error may have created.

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, the name of your city and state, and your phone number. We reserve the right to edit letters. ☼

POWER TIP NO. 179

Revealing Tab Settings in WordPerfect

If you frequently change tab settings in *WordPerfect*, you probably want to be able to see your settings. You can display tab set indicators in *WordPerfect* 4.2 and later versions using either Reveal Codes (<Alt>-<F3>) or Window (<Ctrl>-<F3>1#, where # is the number of lines to view). A 25-line display actually shows 24 lines because of the status line, so entering <Ctrl>-<F3>W23 places the window divider at the bottom of the screen. This allows you to view the document in a nearly full edit screen but still see the tab sets.

Charles R. Bovell
Hixson, Tennessee

Circle 43 on reader service card

Premium[®] II 486SX/20. Power Tool For The Professional.

Designed For The
New Office Standard.

Today's workplace is a mirror of modern life. Extravagance is out and efficiency is in. High-technology has become commonplace, and personal space is at a minimum. That's why we created the new AST Premium II 486SX/20.

Powered by Intel[®]'s 20 MHz, i486SX microprocessor, the Premium II 486SX/20 features 8 KB of integrated 4-way cache, 4 MB of standard RAM, and full 32-bit address and data buses. And the small-footprint chassis has won the praise of industry critics for its ergonomic design.

As a member of AST's award-winning Cupid-32[™] family of computers, the Premium II 486SX/20 is also fully upgradeable, allowing you to advance to greater power with a simple board swap. And it's backed by AST's top-rated service and support programs.



For information on our Premium II series, call 1-800-876-4AST, or use our electronic bulletin board, AST On-Line!, (714) 727-4723.

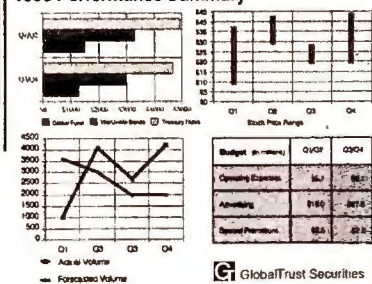
AST markets products worldwide, for more information call AST International on (714) 727-9292 or FAX to (714) 727-9360. AST is a supplier to U.S. government agencies, General Service Contract Number GS00K89AGS6418-PS01. AST, AST logo and Premium registered, Cupid-32 and Cupid-32 logo trademarks AST Research, Inc. All other brand and product names are trademarks or registered trademarks of their respective companies. Copyright © 1991 AST Research, Inc. All rights reserved.

AST[®]
COMPUTERS

The Power Of Choice.

Circle 10 on reader service card

1990 Performance Summary

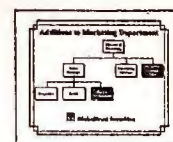


GlobalTrust Securities

Quarterly Revenue Review Program Revenues



GlobalTrust Securities



Additions to Marketing Department

- Sales and advertising managers haven't changed from prior department structure
- Promotion spot has yet to be filled
- Sales manager is in process of making assignments
- Market development person starts next month
- Organizational changes are effective January 1

GlobalTrust Securities

8

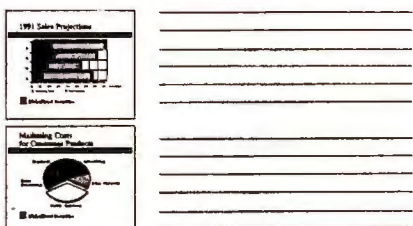
1990 Accomplishments

- Increased market share to 59%
- Concluded Canadian merger
- Expanded Eurobond Fund accounts by 37%
- Successfully opened three new branches



GlobalTrust Securities

National Sales Meeting Notes



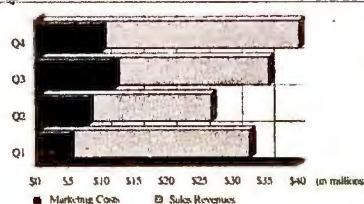
GlobalTrust Securities

1991 Network Expansions



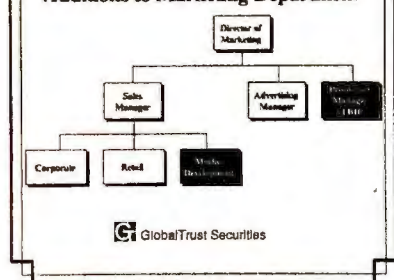
GlobalTrust Securities

1991 Sales Projections



GlobalTrust Securities

Additions to Marketing Department



GlobalTrust Securities

1991 Investment Programs

- Bond Trading Seminars
 - Targeted at new accounts in Europe and Asia
- Financial Planning Direct Mail
 - Directed at customer base
 - Focused on retirement strategies

GlobalTrust Securities

Get people to see things your way.

Introducing New Aldus Persuasion for Windows.

No other presentation software is as automatic as new Persuasion® 2.0 from Aldus. But what exactly do we mean by automatic?

Let us explain the three easy steps. Step 1: Pick one of 55 pre-designed AutoTemplates. Step 2: Put your thoughts into the built-in outliner; Persuasion instantly formats your outline into fabulous finished visuals. Step 3: Now print overheads,

speaker notes or handouts. Or output 35mm slides. That's it.

Yet, Persuasion doesn't stop there. It's such a complete business tool that it also includes

word processing, drawing tools, charting and graphing capabilities. Plus, it allows you to import word processing, spreadsheet, graphic, and CGM files.

With a combination of features like these, you

can easily customize or create your own presentations. And the Windows environment makes it all easy for you to learn and use.

Once you do, you'll want to call on the powers of Persuasion 2.0 every day for any type of meeting—

formal or informal. Something the users of our award-winning Macintosh version have done for years.

So call today for a free demo disk or a \$9.95 video* and see how success with new Persuasion 2.0 is automatic.



For a free demo disk or a \$9.95 video,* call (800) 333-2538, Dept. 33N



Arrange the flow of your presentation with the on-screen slide sorter.



*The Creative Edge
in Business*



Automatically.

Rock Solid OCR

OmniPage Professional



Eight out of ten businesses chose *OmniPage*® for their OmniFont OCR. So we developed *OmniPage Professional*, to meet the needs of the other two.

As with *OmniPage*, you can still scan virtually any document, no matter what font, font size or column format – and accurately enter it into any PC compatible or Macintosh® file. All at impressive speeds of up to 2000 wpm (words per minute) in powerful 486 systems. You still have all the power of *OmniPage*'s AnyFont™ technology, which is the world's most accurate OCR software.

According to *InfoWorld*: "Accuracy is the most important feature of an OCR package. . . *OmniPage* was the most accurate program we tested."

And now with *OmniPage Professional* you have something not found in any other OCR software – including *OmniPage* – complete *customizability*.

The new Custom Characters feature, for example, lets you learn special characters unique to your business or profession; including logo type, stylized fonts, scientific or mathematical symbols – even difficult to read shapes like α, ®, ☞, ~, @ and ⇔, as well as broken or smudged characters.

OmniPage Professional includes the world's only dedicated OCR spellchecker which lets you go beyond 100% page recognition, correcting errors even in the source text.

Add to all of this Deferred Processing, or the ability to scan now and recognize

later, and *OmniPage Professional* delivers not only the world's fastest and most accurate OCR solution, but the most *customizable* as well.

Visit an authorized Caere dealer today and see for yourself how *OmniPage Professional* can help you to eliminate unnecessary keystrokes – forever. *OmniPage Professional*, only from Caere, the Complete Recognition Company.



Caere Corporation
100 Cooper Court
Los Gatos, CA 95030
1-800-535-SCAN

CAERE®

All ®registermarks and ™trademarks are of their respective companies. ©1990 Caere Corporation

Circle 17 on reader service card



THE HELP SCREEN

PC World offers answers and advice at every level

Adjust the volume of your computer's speaker, learn what to do with CHKDSK's files, install three floppy drives, build bibliographies in any word processor, teach your XT to tell time, and minimize the network traffic WordPerfect users generate.

Karl Koessel and Robert Lauriston

Quiet on the Set

Q. *I'm irritated by beeps and other sounds from my IBM PS/2 Model 30, particularly when the machine starts up but also when I'm running applications. Is there a utility that can silence the beep, or can I disconnect the speaker cable inside the computer? (I looked but couldn't find the speaker.)*

*Shinya Shima
Ota-ku, Japan*

A. Software can't silence your system during start-up because you can't run it until after the system has started. Furthermore, shareware and public domain utilities that can turn off the speaker won't do you much good, because most programs just turn it back on. The only

reliable solution is to break the connection to the speaker. On the Model 30, the speaker is a silver cylinder about 1/2 inch in diameter and 1/2 inch high with a small hole in the top. It's mounted directly onto the motherboard at the front left corner, right behind the IBM logo. You can break it off the motherboard, but you probably won't be able to replace it.

On other PS/2 models, you can mute the system by cutting the small metal tab that connects the speaker to a plug-in assembly (which also holds the system's CMOS battery). Silencing the speaker on standard PC/XT/AT systems isn't as drastic an operation: Just pull the speaker wires' connector off its pins on the motherboard or cut one of the wires. In either case, soldering a potentiometer volume control (plus, optionally, an earphone jack) across the broken connection would let you adjust the speaker to a comfortable level or run noisy programs without distracting others in your office. Note that semiconductors can be damaged by heat, so be very careful when soldering inside your system.

CHKDSK's Files

Q. *I've been taught to run the DOS command CHKDSK /F periodically to ensure the integrity of the files on the hard disk. But what do I do with the lost cluster files that I find in the root directory after running the command? How do I figure out where they came from, and how do I put them back?*

*Bryan Kimsey
Los Alamos, New Mexico*

A. CHKDSK doesn't exactly create the FILExxxx.CHK files. It simply finds

clusters that the file allocation table shows as being in use but that aren't assigned to a file, and adds a directory entry file name to assign them to. Often, the data in such clusters no longer has a place in which it belongs, as is the case when through some software error, clusters holding parts of an application's temporary files, or of deleted files, are marked incorrectly as being in use.

Very rarely, a lost cluster holds part of an application, rendering the application inoperable. However, applications are easily restored or reinstalled. Real trouble surfaces when a lost cluster holds lost data. Unless that data is ASCII text, it's virtually impossible to determine which file it belongs to, much less merge it back in. But if you don't restore that file, your next backup will include a deficient version. So although you can generally erase the CHK files without concern, you should also verify the validity of all valuable data files, restoring them if necessary.

Three Floppy Drives

Q. *I've got two 5 1/4-inch floppy drives and a 65MB hard disk (partitioned into two logical drives) in my AT compatible. I'd like to add a third, 3 1/2-inch, floppy drive. I know there are controllers that can handle four floppy drives. My question is, can I keep my drive letter assignments the same—A: and B: for my current floppy drives, C: and D: for the hard disk—and designate the new drive E:?*

*J. E. Brendtke
Port Richey, Florida*

A. With most multidrive controllers, you can. Just check with the board's manufacturer before you buy. One other (continues)

thing to keep in mind is that most power supplies have only four power connectors. If yours is typical, you'll need a "splitter" to let you plug power into the new drive. Note also that unless the controller comes with software to modify DOS 2.x, you need DOS 3.2 or a later version to use a 720K drive, and DOS 3.3 or a later version for a 1.44MB drive.

For the utmost in compatibility, check out CompatiCard from Micro Solutions. This four-floppy controller includes its own ROM routines to support a variety of floppy drive formats and has switches to change interrupt levels and I/O addresses in case the card's default settings conflict with other devices in your system. You can even boot from any of the drives.

WHERE TO BUY

CompatiCard

Micro Solutions Computer Products -
132 W. Lincoln Hwy.
DeKalb, Illinois 60115
815/756-3411, 815/756-2928 (fax)

LIST PRICE: \$95 for II, \$149 for IV
Reader service no. 640

Endnotes as Bibliography

Q. *As an assistant professor of veterinary anesthesiology, I write scientific research articles. My word processor's endnote feature just isn't up to the job of producing my bibliographies in the format required by the American Journal of Veterinary Research. For instance, it won't let multiple notes in text reference the same endnote. This means I have to spend a lot of time manually reformatting before I can submit my article for publication. Is there a way to make my computer do these things?*

*Ron E. Mandsager
Stillwater, Oklahoma*

A. Regardless of what word processing program you use, endnotes aren't appropriate for producing a bibliography. Most word processors won't produce

bibliographies automatically. One that will is Dragonfly Software's *Nota Bene*.

An easier option than switching word processors is the bibliography version of *Notebook II* from Pro/Tem Software, a text-oriented data base that stores your references. Instead of marking the references with endnotes in your word processing document, you use special *Notebook* tags. When you're ready to print, you run your word processing document through *Notebook's* Bibliography utility, which puts the references in correct format and appends the properly formatted bibliography. Pro/Tem includes templates for bibliographies as defined by the four most popular academic style manuals; templates for several hundred journals requiring other formats are available from third parties.

Another alternative is *Endnote*, a similar program that has been popular on the Macintosh and was recently ported to DOS.

APPLAUSE II
Simply great graphics for presentations that mean business
DOS

Eeeek!

New APPLAUSE II™ version 1.5 is the easiest way to create spectacular business graphics. And the free Microsoft Mouse inside each box (a \$125 value) makes it even easier and faster. Because



the APPLAUSE II "windows-like" interface was designed for the mouse.

WHERE TO BUY

Notebook II

Pro/Tem Software, Inc.
3790 El Camino Real #389
Palo Alto, CA 94306
800/533-6922
LIST PRICE: \$264 with bibliography (\$189
for standard version)
Reader service no. 641

Endnote

Niles & Associates
2000 Hearst St.
Berkeley, CA 94709
415/655-6666, 415/649-8179 (fax)
LIST PRICE: \$149
Reader service no. 642

Lost Time

Q. *My system used to set the date and time automatically. But ever since I upgraded to DOS 3.3 from the DOS 2.11 that came with my XT compatible, I've had to enter the date and time manually every time I start the system. How can I access the internal clock?*

*Harry L. DeShaies
Colorado Springs, Colorado*

A. Because your system isn't an AT compatible, you must run a special utility that reads the date and time from a clock on an expansion board and then sets the system clock. If you can't find CLOCK.COM, SETCLOCK.COM, or a similarly named utility on your hard disk, look on the disks that came with the system or with a clock/calendar upgrade board. Copy the utility to your hard disk's DOS directory, and add the command to AUTOEXEC.BAT.

How does...? What can...? Should I...? Send your PC questions to The Help Screen, PC World, 501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Questions with the broadest appeal will be published. ☺

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

POWER TIP NO. 180

Importing 1-2-3 Worksheets in WordStar

If you use WordStar Professional 5.0 or a later version, it's easy to import 1-2-3 worksheets. With a WordStar document open, press <Ctrl>-KR, and type the path and name of the WK1 file you wish to view, edit, or print. You can either specify the worksheet range or press <Enter> to accept the whole worksheet. To print the worksheet, adjust the margins, and print it as you would any text.

*Michael Goodwin
Associate Editor*

There's A Mouse In The Box.

Which means you can do bar, pie, line or word charts—or draw—simply by pointing and clicking. Create 35mm slides, overheads, hard copy or on-screen presentations. In black and white or in your choice of 36 million colors.

InfoWorld says APPLAUSE II is “easier to work with than either Harvard Graphics or Freelance Plus, and faster than the Windows-based prod-

checker, full LAN capability, 700 pieces of clip art, and much more. Including an all-new RunTime that lets you show screenshows to colleagues who don't have APPLAUSE II.

Call 1-800-437-4329 ext. 1311 now for a free demo disk* and the name of your nearest dealer. Current users can call 1-800-2ASHTON to upgrade to APPLAUSE II version 1.5 for just \$50.**

ucts.” And PC Magazine says APPLAUSE II has “a fluidity and ease-of-use not found in either Harvard Graphics or Freelance Plus.” Version 1.5 adds an 80,000-word spelling

But mouse supplies are limited, so act now. If you miss out on this very special opportunity, it's going to gnaw at you.

 Ashton-Tate®

Get a hold of the best value in power protection for just \$199

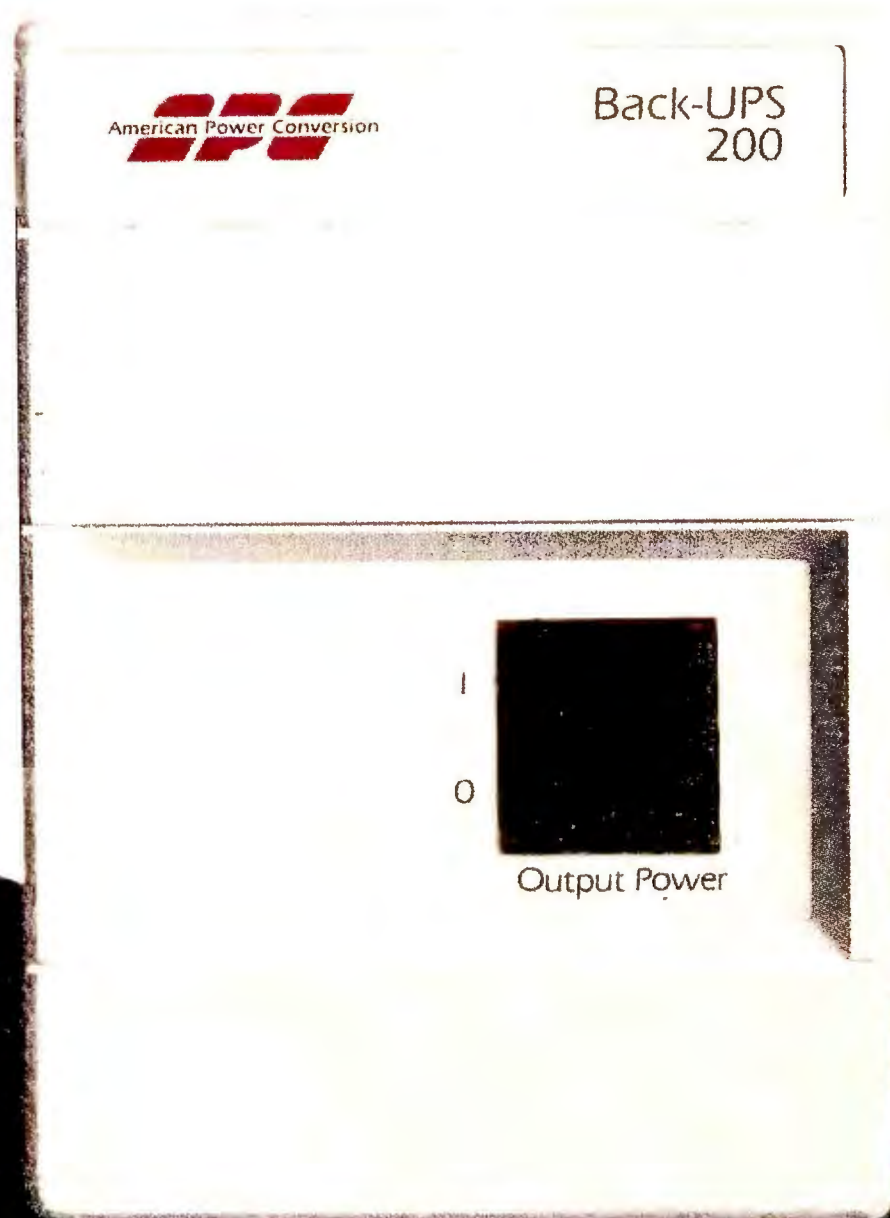
suggested list price

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

Now there's a complete Uninterruptible Power Supply solution. The Back-UPS™ 200 is reliable protection for LAN nodes, 286, 386SX machines, small PS/2 systems, and inter-networking devices such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS series provides a cost-effective solution. Call for your free power protection handbook.

Circle 45 on reader service card



- Full-time surge protection and line filtering
- Models from 200 to 1200 Volt-Amps, many with LAN interface
- Novell approved with a 2 year warranty
- Rack Mount, Extended Runtime, 220V models available
- Ask about Power-Chute® UPS monitoring software and Novell-compatible UPS monitoring boards

LAN TIMES
READERS CHOICE 1990

LAN TIMES
READERS CHOICE 1991

The Back-UPS™
by American Power Conversion
800-541-8896, Dpt. P3
33-1-60078500 in Europe

NETWORK Q & A

Use WordPerfect's Start-Up Options to Minimize Network Traffic

Keith Nickerson

Q. *We have quite a few heavy WordPerfect users on our LAN. As I understand it, many WordPerfect functions download additional program code that's stored on the server. The traffic generated by these overlay files is slowing our network. What can we do?*

*Clorella Blundish
Atlanta, Georgia*

A. Like many applications, *WordPerfect* is too large to fit entirely into a DOS workstation's base memory. To get around this limit (the infamous 640K barrier), programmers use overlay files, which hold program code for various routines. Overlay files are not loaded into memory with the application. Instead, every time you invoke a command for one of those routines, the application loads the appropriate portion of an overlay file into a specific area of memory, overwriting any previous overlay code. The best way to reduce the impact of this overlay traffic is to reduce the frequency with which programs must access those files from the file server.

WordPerfect's most commonly used extra code is in WP.FIL, an approximately 600K file normally stored in the same directory as WPEXE. Starting *WordPerfect* with WP /R (instead of just WP) loads the code from WP.FIL into expanded memory. Because that overlay code is then available from the local workstation, the program's overlay traffic on your network wire is minimized, and the performance of *WordPerfect* itself is improved. To use the /R option, you must have at least 620K of expanded memory free (or about 300K if you're still using *WordPerfect* 5.0).

Temporary files also generate network traffic. *WordPerfect* creates temporary "overflow" files to store whatever portion of your documents won't fit

into memory. By default, *WordPerfect* puts these files in the directory that holds WPEXE. If you access *WordPerfect* over the network, these files will be placed on the file server, generating network traffic. You can direct the temporary files to a local directory with the /D start-up option—for instance, WP /D-C:\TEMP. *WordPerfect*'s background print spooler also creates temporary files. To redirect them to a local drive, use the /PF start-up option: for example, WP /PF-C:\TEMP. Assuming your hardware allows, you'll get the best performance and least LAN traffic by combining all these options.

If you like, you can assign these options via a DOS SET command, which lets users forget all the start-up options and enter just WP at the DOS prompt. Many LAN administrators also assign *WordPerfect* user IDs with the /U start-up option, which makes sure people don't accidentally lose their settings by entering the wrong initials. For a user whose log-in initials are KTN, you'd add SET WP=/R /D-C:\TEMP /PF-C:\TEMP /U-KTN to AUTOEXEC.BAT.

On systems without expanded memory, you can reduce network traffic by copying WP.FIL to a directory on a local drive. When you start *WordPerfect* while logged to the local directory, the program will use that copy of WP.FIL rather than the one on the server, eliminating much of the overlay traffic on the network. This makes upgrading a pain, however, as you have to copy a new release's WP.FIL to every such workstation. Furthermore, older XT and AT systems often run *WordPerfect* more slowly off their sluggish local hard disks than they do off a fast file server.

If, like most of our readers, you're running NetWare on your LAN, one final trick to speed up *WordPerfect*'s performance is to print directly to network print queues rather than using Net-

Ware's Capture utility. At the Select Printer: Edit menu, change the Port to Other (Shift>-<F7>sepo), then enter the name of the desired print queue.

One final tip: A new book, *Running WordPerfect on NetWare* by Joni Taylor of WordPerfect Corporation, provides an exhaustive examination of this topic. It's well worth a look if you're investigating ways to manage and streamline *WordPerfect* on your NetWare LAN. ☺

Keith Nickerson is the editor of NetWare Advisor and a member of the publishing team at Business Systems Group, a Houston-based systems integration firm.

WHERE TO BUY

Running WordPerfect on NetWare

M&T Books
501 Galveston Dr.
Redwood City, CA 94063
800/533-4372, 800/356-2002 California
LIST PRICE: \$29.95
Reader service no. 643

POWER TIP NO. 181

Easy LaserJet Printing With Norton Utilities

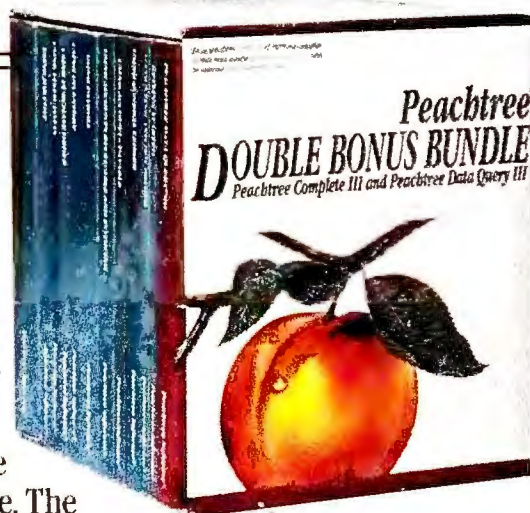
Norton Utilities 4.5's LP (Line Print) program assumes you can print 66 lines on a page, but the HP LaserJet allows only 62. In order to use LP easily with the LaserJet, create a simple one-line batch file: lp %1 /h62. Call it HPLP.BAT and put it in a directory listed in your system's PATH command. To print a text file, simply type hplp filename.

*Lincoln Spector
Assistant Editor*

PEACHTREE ACCOUNTING MAKES

W

hen you're running your own business, every financial decision is an important one. Why not make sure you are getting the most out of your business dollars by using the best value in accounting software, The Peachtree Double Bonus Bundle ■

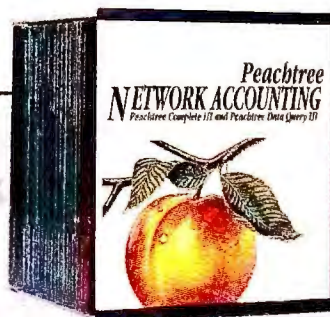


"Rivals packages costing 10 times as much... a joy to use..."

—PC Resource

"This package is truly a bargain and is ideal for a small to mid-sized company."

—Computers in Accounting



Give every workstation the power of Peachtree with Peachtree 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 package—Peachtree Network Accounting. Not only will your hardware costs be reduced by sharing hard disks and printers, but your authorized users will have faster, easier access to shared accounting information. Available now for use with Novell®, LANtastic™ and other NETBIOS compatible LANs.

\$695

ACCOUNT	DEBIT	CREDIT	BALANCE
1000 Cash	100.00		100.00
1010 Accounts Receivable	200.00		200.00
1020 Inventory	50.00		50.00
1030 Prepaid Insurance	10.00		10.00
1040 Supplies	5.00		5.00
1050 Other Assets		10.00	10.00
2000 Accounts Payable		150.00	150.00
2010 Notes Payable		50.00	50.00
2020 Other Liabilities		10.00	10.00
3000 Owner's Equity		100.00	100.00
3010 Capital		100.00	100.00
3020 Retained Earnings			

Peachtree has 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:

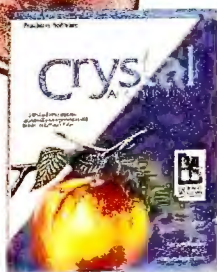
- General Ledger
- Accounts Payable
- Accounts Receivable
- Payroll
- Inventory
- Invoicing
- Purchase Order
- Fixed Assets
- Job Cost

The management reporting capabilities of Peachtree Data Query III provide you with personalized views 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 ■

"The reports will impress you, your accountant, your banker and the IRS... a wonderful tool to help get your business on the right track, and keep it that way in the coming years."

—Journal of the Chicago Computer Society

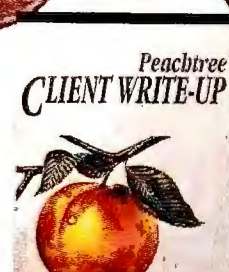
There's a Peachtree Accounting Product for Every Small Business.



Crystal Accounting™ The Clear Choice for Windows Accounting. Includes G/L, A/R, Invoicing, A/P, Payroll and Financial Report Writer. **\$495**



Peachtree Complete III® The Biggest Value In Small-Business Accounting. Includes G/L, A/P, A/R, Invoicing, Payroll, Inventory, Purchase Order, Fixed Assets and Job Cost. **Winner of the 1990 Computer Shopper Best Buy Award. \$199**



Peachtree Client Write-Up. The Accountant's Answer to Increased Productivity. Will interface to Peachtree Complete III, Crystal Accounting and other leading accounting systems. **\$995**

EVERY PENNY COUNT.



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 and an Accounting Primer, 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 to assure that you'll be up and running quickly. Errors are handled with understandable, plain English messages and suggestions ■



"I have installed and set up Peachtree for many small businesses. After the first 30 days, I become the Maytag® Repairman."

—Karen R. Gooding
Economy Bookkeeping, Hilton Head Island, SC.

FEATURES

General Ledger

- Repeating and reversing journal entries.
- One to 13 user-defined fiscal periods.
- Comparative financial statements.

Accounts Payable

- Partial payment of invoices.
- Cash requirements forecasting.
- Check printing from 9 different bank accounts.
- Prints miscellaneous and interest 1099s and handles magnetic media.

Accounts Receivable/Invoicing

- Open item or balance forward customers
- Supports partial payments.
- Multiple "Ship To" addresses per customer.

Purchase Order

- Issues purchase orders for either stocked or non-stocked items.
- Inventory update upon receipt of items.
- Ability to generate A/P invoice from purchase order.

Payroll

- Built-in federal, state, city and county tax tables for all 50 states.
- Automatic payroll processing supporting hourly, salaried, commission or draw-against-commission pay types.

- Supports Cafeteria and 401K Plans.

- Optional Peachtree Complete Tax Service available.

Inventory

- Supports LIFO, FIFO, Specific Unit, standard and average costing methods.
- Optional serial number tracking.
- Supports assembly and disassembly capabilities.

Job Cost

- Tracks costs and profitability on a job-by-job basis.
- Interfaces with A/P, A/R and Payroll.

Fixed Assets

- Handles 13 methods of depreciation.
- Handles short taxable year.
- Mid-quarter convention.

Peachtree Data Query III

- Transfer accounting information in ASCII or WKS formats to spreadsheet and database programs such as dBASE and Lotus 1-2-3.
- Create your own custom reports and save the formats for future use.
- Print stored reports directly from your Peachtree Complete III menu.

"I would highly recommend Peachtree... a peach of a program."

—New Jersey PC User Group News

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. More than 400,000 small businesses trust their accounting to Peachtree ■

"...How good is technical support? I can honestly say it is excellent!"

—Jack J. Neymark
Jack J. Neymark Accounting Services

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

Call now to order
or for the name of a dealer in your area

1-800-247-3224

or 404-564-5800 or to order by Fax 404-564-5888

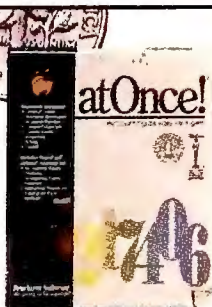
\$298 Add \$12.50
Shipping

*In Georgia, add applicable sales tax
Telephone number required on all orders*

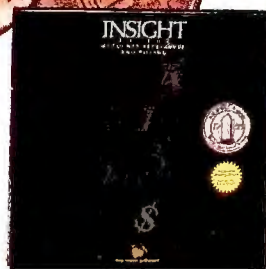


Peachtree Software

Hardware Specifications: Requires PC/MS-DOS version 3.0 or higher (DOS 3.1 required for Network Accounting) 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.



atOnce!® Macintosh Accounting as Easy as it Gets. Includes G/L, A/R and Billing, A/P and Payroll. Winner of the MacUser Eddy Award and the Macworld World Class Award. \$395



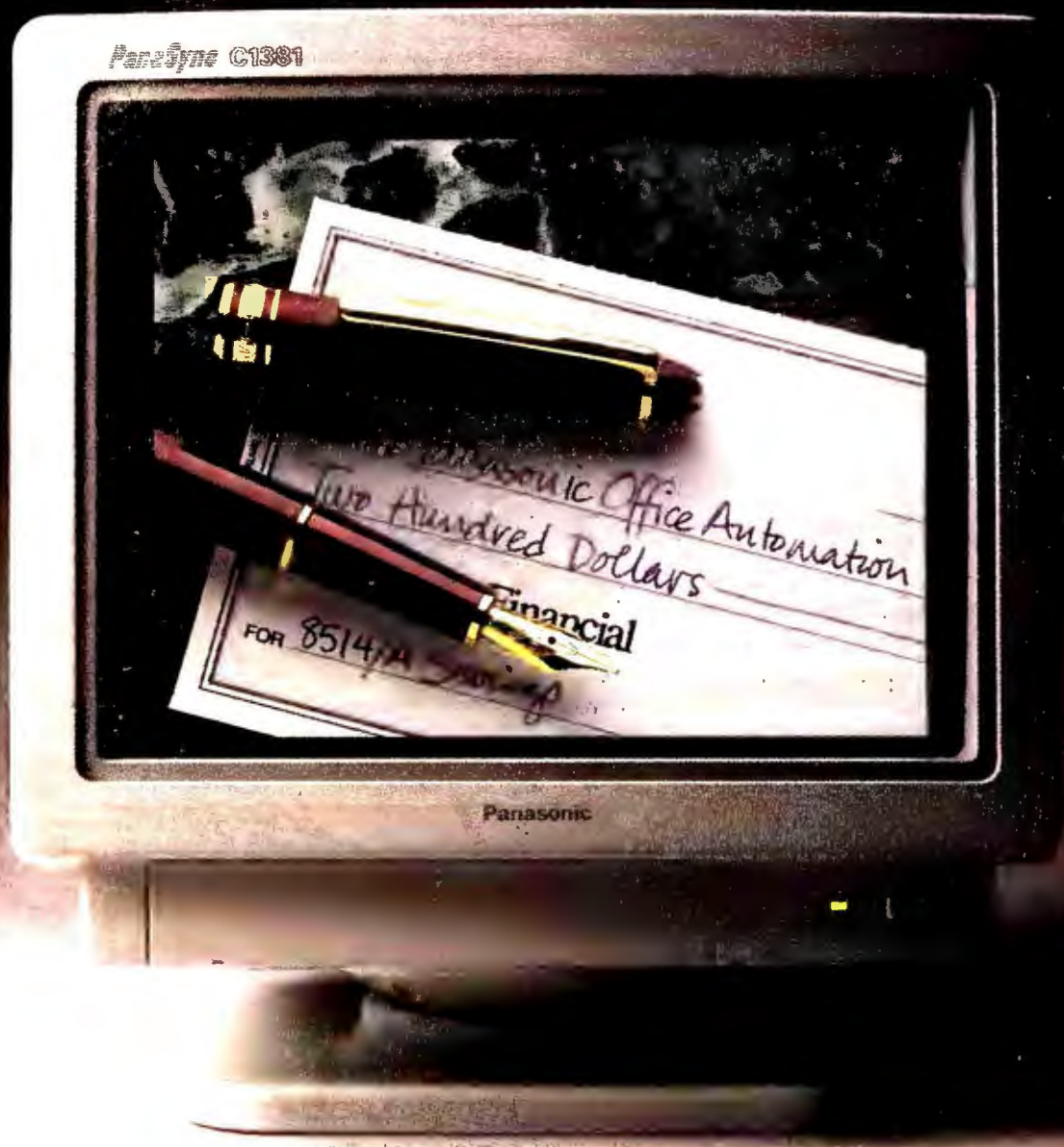
INSIGHT EXPERT!™ The Power to See Beyond the Numbers for Macintosh Users. Includes G/L, A/R and Billing, A/P, Inventory and Payroll. Winner of the MacUser Eddy Award and the Macworld World Class Award. \$695 per module.

Circle 144 on reader service card

PCW

Introducing the PanaSync™ C1381 Monitor.

8514/A resolution. VGA® price.



If you want the ultimate VGA graphics standard, and you've resigned yourself to paying a premium of hundreds of dollars to get it, you'll find our newest monitor pleasant viewing indeed.

The PanaSync C1381 gives you a sharp 1024 x 768 pixels, with 0.28 dot pitch. And virtually infinite color resolution.

It's compatible with the most popular VGA boards, as well as analog RGB, MCGA, SuperVGA, and — of course — 8514/A standards.*

It's comfortable in virtually any IBM-compatible or Mac II environment.**

And it's a masterpiece of ergonomics. With front-mounted controls, tilt/swivel stand, plus a non-glare tinted black-matrix screen.

All this at a suggested retail price comparable to many of the ordinary VGA monitors on the market right now. For more information, simply call toll-free **1-800-742-8086**.

*Peripherals, Computers, Printers,
Copiers, Typewriters and Facsimiles*

Panasonic
Office Automation 

PanaPro™ Monochrome Desktop Publishing Monitors with Video Adapters.



(Mac SE)

(Mac II)

(IBM XT/AT & PS/2 Model 30)

M3-PCD

PanaSync™ Multiscanning Color Monitors.



* VGA, MCGA and 8514/A are trademarks of International Business Machines Corp.

** IBM XT, AT and PS/2 are registered trademarks of International Business Machines Corp. Macintosh is a registered trademark of Apple Computer Inc. An optional cable is required for Macintosh.

Circle 214 on reader service card



CONSUMER WATCH

Advice and information for the computer consumer

Beware of computers that come with preinstalled software on the hard disk but without manuals or licensing agreements. Chances are you've got pirated copies.

Roberta Furger

No Manuals With the Software? You May Have an Illegal Copy

I recently purchased a computer that was advertised as including *Windows 3.0* and *MS-DOS 4.1*. When the computer arrived, both *Windows* and *DOS* were installed on the hard disk, but neither the original floppy disks nor the usual license agreements were included.

Software on disks was included with the last computer I bought. Have the conventions changed? Am I correct in assuming that I am purchasing the rights to the software? How does Microsoft record these sales if the purchaser receives copies only on the hard disk?

Richard R. Pulliam
Chula Vista, California

Editor's note: Many computer manufacturers and dealers now preinstall DOS and other software on the hard disk—a legitimate practice that can save the PC buyer time during setup. In these instances, however, the buyer should still receive a complete set of manuals, floppy disks, and the standard license agreements and registration cards for the software, according to Sara Brown, litigation assistant at the Software Publishers Association. Documentation and registration cards are particularly important. Brown suggests that anyone who fails to receive either of these two items contact the manufacturer to verify that the copies are legal. Microsoft's toll-free number is 800/662-6796.

A Deal That Was Too Good to Be True

I ordered a Canon flatbed scanner (with interface card and cable) from Nevada Systems Inc. (NSI) of Torrance, California. When I placed my order I was told the price included everything I needed to run the unit.

When I received the scanner (about a week later), it was not in its original packaging, and the interface board and cable were not included. I called NSI, and the salesman told me the boards were on back order. I was not told this when I placed the order, and I would not have purchased the unit if I'd known.

I have called NSI once a week since the middle of December to find out when I would receive the board and cable. I have been told that the board was shipped and then, when I didn't receive it, that the order hadn't come in as expected or that they hadn't received enough units to send mine.

I have had \$879 tied up since Decem-

ber 3, 1990, in something I have yet to receive.

Nancy A. Butler
Enfield, Connecticut

Editor's note: Consumer Watch received four letters from NSI customers (continues)



BUG WATCH

Up-to-date information about hardware and software bugs

Andrew Tobias' Managing Your Money 7.0

An install error in the latest version of Andrew Tobias' *Managing Your Money* from MECA Software prevents some users from correctly converting data from version 6.0 of the program to the current version. MECA is working on a maintenance release to fix the conversion problem and other maintenance issues. It will be automatically sent free of charge to all registered users this spring.

MECA Software
203/222-9087

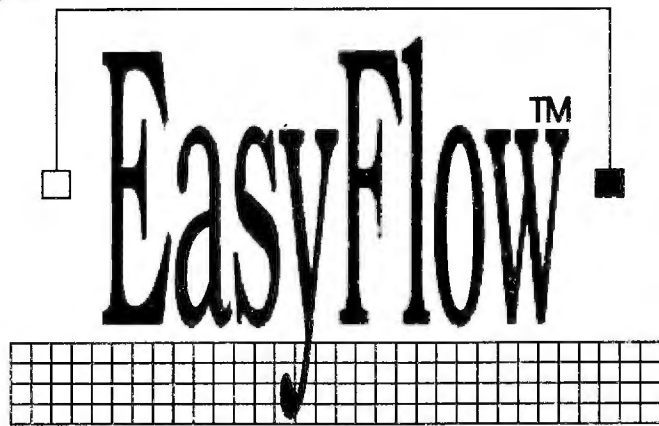
Ventura Publisher 3.0 for Windows

Intermittent problems have been reported with printing Ventura documents that contain PCX files. Although the items (such as bit-mapped graphics) appear to be aligned correctly when viewed on screen, when printed out, the bottom third of the graphic can get cut off, with either blank space or a bar-code type symbol appearing at the top of the frame. A spokesperson for Ventura says the company is aware of the problem and is working on a fix, but declined to give a release date.

Ventura Software
800/822-8221

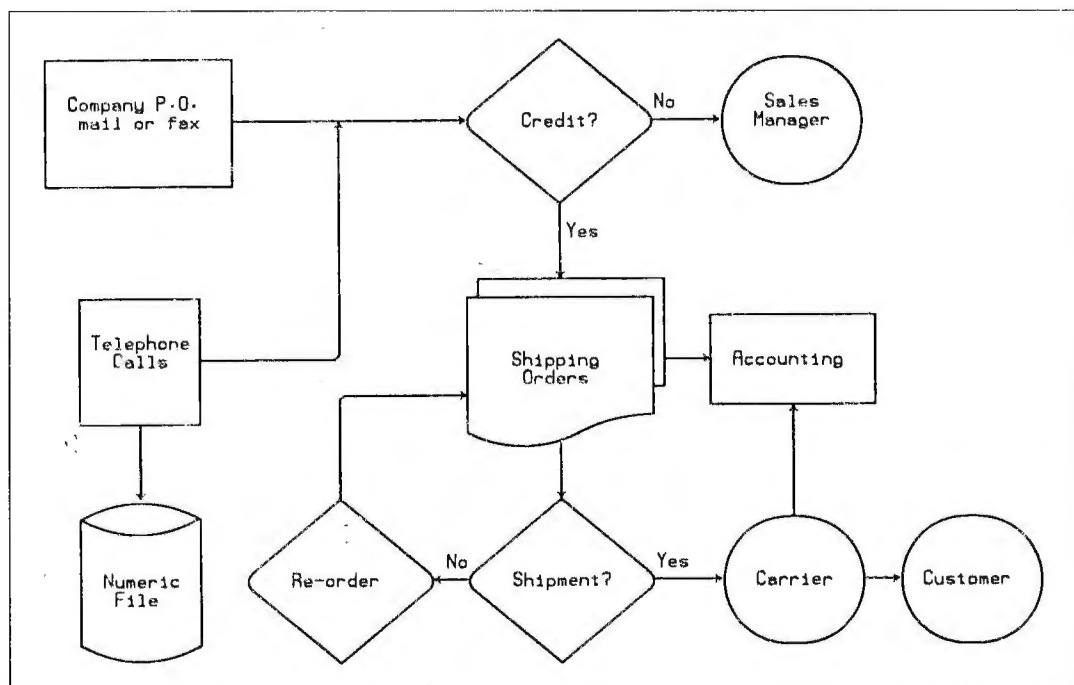
Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and publish those of broadest interest.

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.

Special Introductory Offer \$230

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

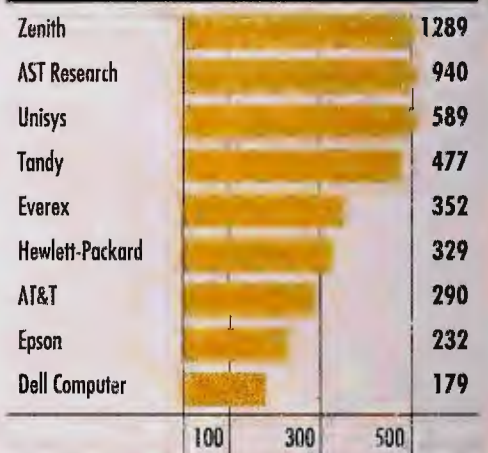


For your local dealer call:
800-724-0794

RATE YOUR SATISFACTION: PC Compatibles

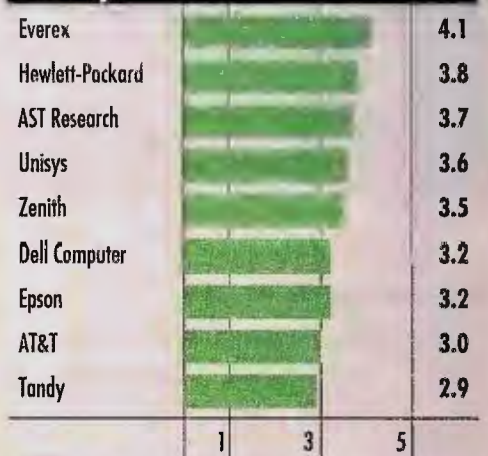
Corporate customers are turning increasingly to compatibles makers for high-quality systems at lower prices than comparable units from IBM or Compaq. Zenith Data Systems is at the top of the list of compatibles makers. It does not rate as high in user satisfaction or purchase plans, however. Instead, systems from Everex rate highest in both those categories, reflecting the company's reputation for high-performance systems and competitive prices.

Installed base at survey sites



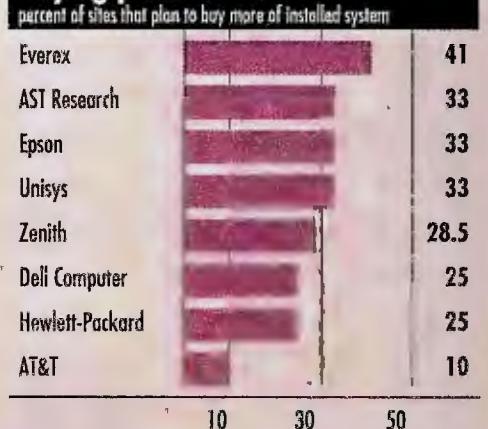
Users rate their satisfaction

1=low 5=high



Buying plans

percent of sites that plan to buy more of installed system



Source: International Data Corp. From a survey of 200 large organizations, each with at least 50 PCs.

(continues)

who took the company up on its offer of low-priced scanners, which were selling for less than half the suggested retail price. Customers report having paid for—but not received—products, receiving incomplete orders (scanners minus interface cards), or getting seemingly used merchandise.

After receiving inquiries from Consumer Watch, NSI contacted customers with unfulfilled orders to begin rectifying outstanding problems.

According to president Chuck Campbell, NSI, which frequently purchases discontinued merchandise, bought 1900 Canon scanners but did not receive all the necessary interface cards. Although customers writing to Consumer Watch say they were not informed of the shortage of boards prior to placing their orders, Campbell says he indicated at the time of sale that the items were on back order.

Unfulfilled Promises

Northgate's ad states, "We hear you." Unfortunately, getting them to respond is another matter. I received my hard drive-equipped Slimline 386 minus the 64K cache I had ordered. Further, my credit card was charged a month before my computer was shipped, contrary to Northgate's advertised policy. To the five letters I sent concerning these problems Northgate responded only once. Attempts to contact the company by phone from my duty station in Germany have proved expensive and futile.

The one reply I received from Northgate said they would reimburse me for telephone costs (\$38.95) arising from the delayed shipment of my system. They also acknowledged the hard disk error and agreed to supply a hard disk with cache. I was also told I would be reimbursed \$38.57 for credit card costs due to the billing error.

Unfortunately, Northgate hasn't followed through on its promises, and my subsequent three letters have gone unanswered.

Michael S. Vaughn
APO, New York

Editor's note: After being contacted by Consumer Watch, Northgate has sent Mr. Vaughn the correct hard drive and reimbursed him for his phone costs and credit card interest. According to Northgate customer satisfaction representative William Everson, the lengthy delay (the new hard drive and refund were originally promised by

Northgate in December 1989) was due to changes in personnel and failure to refer the matter to the customer satisfaction department. The fact that several letters and phone calls went unanswered, however, indicates a need to revamp the system—which, according to Everson, is being done.

(continues)

So You're Feeling Squeezed



Ouc Another typical day at the office — rush projects, training seminars, capital crunches and trade shows — just for starters. No need to panic. Now there's help.

Rent a PC or a workstation from Genstar — Apple, IBM, Compaq, Toshiba or Sun Microsystems. Get the equipment overnight and keep it as long as you want. Imagine using state-of-the-art equipment with no obsolescence worries. Plus, you can expense, rather than capitalize, to take the pinch off your balance sheet.

One call and we're on your team. Together, we'll find the best way to take the squeeze off. Call toll free today.

GENSTAR
RENTAL ELECTRONICS, inc.

1-800-422-3300 (US)

1-800-387-6646 (Canada)

1-800-361-5447 (PQ and the Maritimes)

Impress yourself.



(This impression courtesy of Microsoft Excel and Word for Windows.)

When you combine Microsoft Windows™ applications with any Hewlett-Packard® LaserJet® III printer, you will not only get excited about your work, but a lot of other people will get excited about the work you do.

You see, Microsoft Windows applications make it possible to do incredible things

on-screen, while the HP® LaserJet III family lets you print them in all their glory.

This is possible, in part, because Microsoft Windows applications make it easy to format text, data and graphics in a completely WYSIWYG way.

But also because the HP LaserJet III

Microsoft®
Making it all make sense™

And everybody else.

LAKE & SONS

HARDWARE DISTRIBUTORS

Weekly Sales Report:
March 3 - 9, 1991



Area sales reflected one of our best weeks so far this year. The Westside again leads the pack.

Topline Summary

What a terrific week! Our *Do-It-Yourself* promotion has depleted our dealers' stock by up to 50% in just the first five days. As a result, we're 18,300 units ahead of our most optimistic forecasts.

Congratulations to Chef for coming up with the promotional theme, and to Tim, Barney and Bill for persuading 92% of our dealers to participate.

Hand Tools

It's been a record week for hand tool sales. Over 7,500 units and still climbing. Astounding. What are people lacking with all those tack hammers?

Light Power Tools

With 450 sales in just the first week (that's 175 above forecast), our new Super Scale Power Sander looks like its going to hit it big.

Wish we could say the same for small power saws. We are below forecast -- with 675 predicted, but only 605 out the door. We've got to push harder.

Heavy Power Tools

Thanks to the resurgence of woodworking as a hobby, sales in joiners, lathes and jig saws are more than holding their own. Because sales related to this winter activity customarily fall off this time of year, we're launching a *20% Off Power Tool Sale* in April. See next week's report for details.

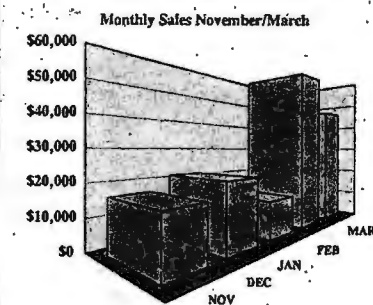
We're also picking up the slack with strong sales in seasonal items.

Paint

Sales of indoor and outdoor paint and paint supplies just continue their upward spiral -- now at 147% of forecast.

Seasonal

The proposed ban on gas lawn mowers has thrown that market into a tailspin, while electric mower sales are soaring. With spring on the way, it's time to start booking orders on our four most popular electric models.



Monthly sales dropped in January, but showed a strong recovery in February and March.

(This impression courtesy of the Hewlett-Packard LaserJet III printer.)



The Hewlett-Packard LaserJet III family of printers. The perfect companion to Microsoft Windows applications.

And to ensure that you get crisp, clear out-

comes with scalable fonts supported by our Windows applications.

So you get thousands of font choices. As well as the ability to print in record speed.

put, HP developed a new technology they call Resolution Enhancement. But you'll call it simply amazing.

To learn more about how Microsoft Windows applications and the HP LaserJet III family uniquely work together, call (800) 541-1261, Department. Q19.

We think you'll be impressed.



HEWLETT
PACKARD

So many columns, so little time.

We've taken two of our best selling Lotus add-ins — Sideways and P.D.Queue — and combined them into one money-saving package. So you can print as many columns as you want, and get back to work fast.

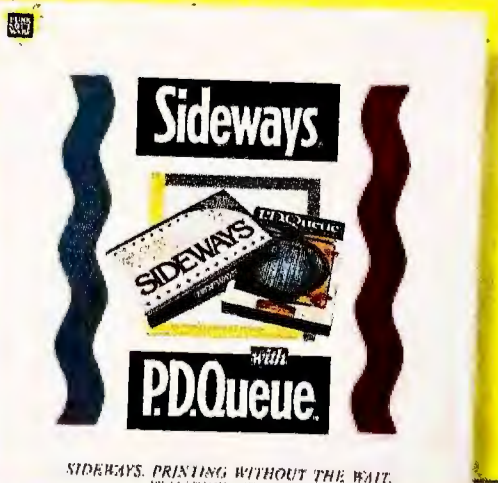
Sideways turns your text on its side as it prints. So you can make great-looking extra-wide spreadsheet printouts all in one piece — without staples, glue or tape.

And P.D.Queue, the add-in print spooler, gives you back control of your computer seconds after you start a printout. So you can get right back to work while P.D.Queue operates your printer in the background.

Now you can get both at one great price of \$129.95 — a savings of over 25%.

Ask for "Sideways with P.D.Queue" at your software dealer or call us at 1-800-822-3865 ext. 228.

**Sideways®
printing
without
the wait.**



SIDEWAYS. PRINTING WITHOUT THE WAIT.
FOR 1-2-3 RELEASE 2 AND SYMPHONY

**FUNK
SOFT
WARE**

FOR 1-2-3 RELEASE 2 AND SYMPHONY.

© 1991 Funk Software, Inc. Sideways and P.D.Queue are trademarks of Funk Software, Inc., 222 Third St., Cambridge, MA 02142.

Circle 60 on reader service card

PC WORLD

**SERVICE
EXCELLENCE**



Each month Consumer Watch recognizes one PC company's commitment to service based on reports from readers.

Last November I purchased a 386-25 tower computer with a Sony monitor from Gateway 2000. Everything worked fine initially, except that the video board had an unacceptably loud hum. Gateway shipped at no cost a replacement board, but while Windows worked in color with the new board, everything else stayed in monochrome. Gateway tried to correct the problem with two other boards, new software, and a new monitor. Finally, they shipped a complete system.

When installing the new system I discovered the problem was specific to the monitor cable (which I had not changed, despite Gateway's having sent one earlier). Gateway had needlessly spent a large amount of money on consultation and shipping.

When I offered to reimburse Gateway for the shipping costs, they refused my offer. Not merely does Gateway stand behind its products, they insist on satisfying their customers—at their own expense.

*Douglas Purl
Missoula, Montana*



Your Passport To Translation.

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 also include on-line bilingual dictionaries, grammar help topics, and a verb conjugator.

A Great Deal In Any Language!

- ▶ Helps you translate and write while improving your foreign language skills
- ▶ Pop up help with powerful reference tools
- ▶ Easily add foreign and accented characters
- ▶ Includes integrated ASCII text editor

Only \$79.95—Order Now!

Give your PC bilingual power with Spanish Assistant, French Assistant, German Assistant or Italian Assistant. Order your copy today! 30-day money-back guarantee.

**See Your Software Dealer
Or Call (800) 366-4170.**



MICROTAC SOFTWARE

4655 Cass St., Suite 214, San Diego, CA 92109
Phone: (619) 272-5700 • Fax: (619) 272-9734

Circle 157 on reader service card

Until now, sharing a printer could cause excessive wear on some of your equipment.



If you're on a sneaker network running between several PCs and one printer, your patience and productivity—among other things—are probably wearing a little thin.

And it could be worse. Major manufacturers report that you may actually damage your laser printer if you use a mechanical switchbox. But now there's The Logical Connection Jr.™

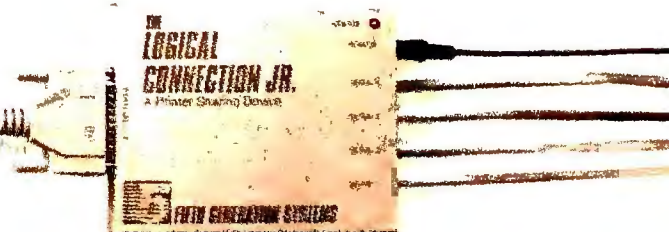
The Logical Connection Jr. safely connects four PCs to a single parallel printer using easy-to-install phone wires.

Working entirely with its own memory, it manages all incoming print jobs simultaneously in the background, freeing your PCs for business while it prints jobs in the order received. And although it

runs beautifully without any software, it comes with a powerful utility program that maximizes printing speed. And it does all that for less than \$60 per PC.

To find out more about The Logical Connection Jr., call 1-800-388-0362. Buy it, and we'll foot the bill for a free copy of Mace Performance™, the \$69 hard disk optimizer. Just write "sneaker network" on the registration card

and return it to us. This is a limited-time offer, so step on it.



Fifth Generation Systems, Inc.
10049 N. Reiger Road, Baton Rouge, LA 70809
Technical Support: (504) 291-7283

Circle 235 on reader service card

thing worked as expected.

I ordered an update in June of last year so that I could create my own opening screen (something not possible with the basic program). The newer version was supposed to be available in July, but by the end of that month I hadn't received anything. August, September, and October passed without a word.

By this time I was losing my trust in shareware. I wrote a letter to the president of Computer Knowledge and enclosed a copy of my money order in the hope that the company was still in business.

At the end of December I received the program with a letter of apology, telling me they had misplaced my order

unopened. Not only did I receive the program, but the president enclosed my uncashed money order (for \$105), plus another application that I had not ordered. My trust in shareware has been restored.

Ferry Strube

The Netherlands

Credit Due, but not Forthcoming

I purchased a math coprocessor from Unitex of Irvine, California, which failed and was returned during the warranty period. I was told that a new unit would be shipped and charged against my credit card, but that my account would be credited as soon as the defective chip was received.

When I called to find out why the credit had not been issued, I was told the credit department was behind in its paperwork. I have spoken with Unitex employees four times and have been promised immediate action each time.

At no time has Unitex denied that they owe me a refund; they just keep making excuses about why it hasn't been issued yet. I can't believe that my \$249 is worth so much trouble to them, unless they are in financial straits.

Steve Peaslee

Stockton, Kansas

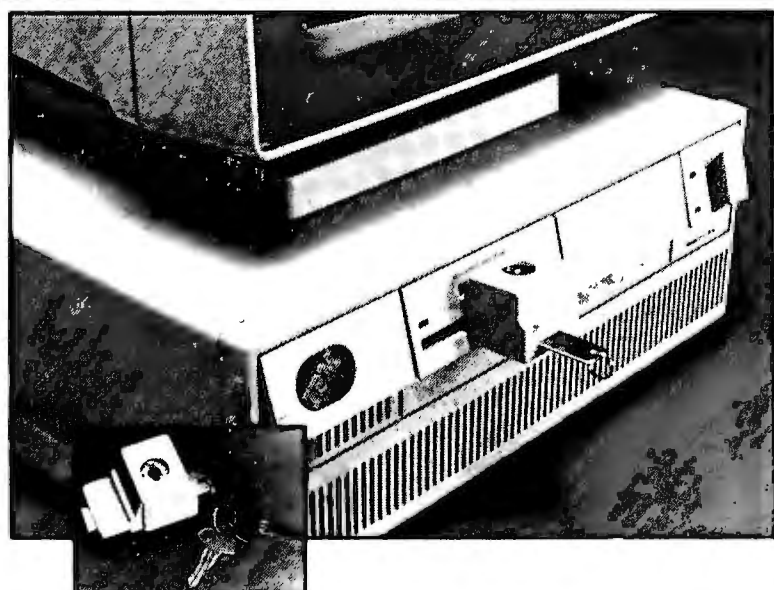
Editor's note: Unitex's attorney Richard Brownstein told Consumer Watch that the company has filed for reorganization under Chapter 11 of the U.S. bankruptcy laws. A reorganization plan is expected to be filed toward the end of the second quarter of this year.

Customers owed money or products have been included on the company's list of creditors, which was submitted to the court last March, and should have received official notification of the reorganization proceedings. No refunds or back-ordered products will be shipped, however, until after the reorganization plan has been approved.

Think you've gotten a raw deal—or a great one? Send the details to (continues)

DISK DRIVE LOCK™

PROTECT THE INFORMATION YOU DEPEND ON!



- Prevent anyone from copying your data.
- Protect your data from harmful viruses.
- Prevent the unauthorized use of your drive.
- Installs easily and quickly - just lock it on.
- Removes easily and quickly

Universal model DLK-250 - Fits most 5 1/4" & 3 1/2" drives.
Macintosh models DLK-260 & DLK-261 fit all Mac drives.

Quantity pricing available. Purchase orders accepted. Send for catalog.
Dealer inquiries invited. Shipping not included.

Secure-It, Inc. 18 Maple Ct. East Longmeadow, MA 01028 **\$24.95**
1-800-451-7592 MC/VISA

Circle 31 on reader service card

TELL ME MORE!

FREE information on the products featured or advertised in *PC World* can be requested using the postage-paid Reader Service Card found in this issue.

PC WORLD

Introduce yourself to an Acer reseller and you'll meet more than an expert in computer solutions. You'll meet the only person who can sell you three different 486SX computers today.



You'll find out how the new Intel®486™ SX™ chip will change the way you do business, dramatically increasing your productivity for a very affordable price.

You'll get to know America's only full line of 486SX computers. The elegant **AcerPower 486SX** ISA desktop, upgradeable to 33MHz. The **AcerPower 486SX/E** EISA desktop, upgradeable to 33MHz or 50MHz for sophisticated graphics, image processing, and database applications. And the **AcerFrame1000** EISA tower, upgradeable to 33MHz or 50MHz for the most demanding server environment.

But even better than our exclusive 486SX family, you'll meet someone who can listen to your needs, configure solutions to fit your business and your budget, get you up and running, and follow-up with round-the-clock service and support.

Yes, we're proud of our 486SX products. But we're even prouder of our partnerships with our customers. Call **1-800-SEE-ACER** for a test run today.

MEET THE ONLY PERSON IN AMERICA WITH THREE 486TMSXTM COMPUTERS.

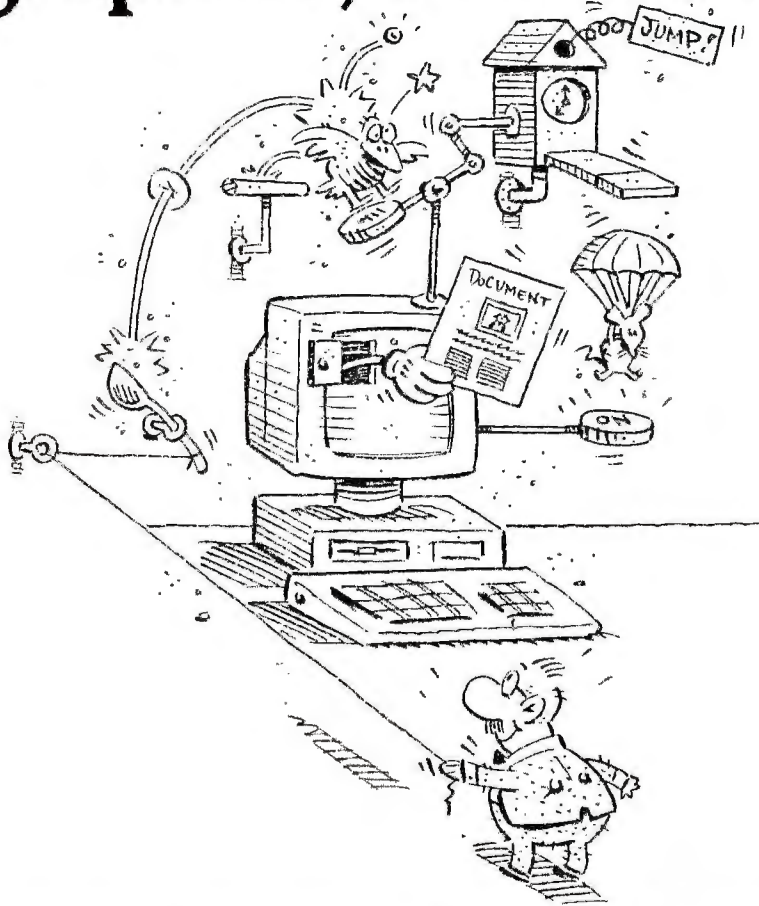


Your Global Partner in Computing

©1991 Acer America Corporation
Acer and the Acer logo are registered trademarks of Acer America Corporation.
Intel is a registered trademark of Intel Corporation. 486 and SX are trademarks of Intel Corporation.

Circle 3 on reader service card

You can go to great lengths to produce a document with text, graphics, and data.



Or you can get Legacy.

You'll find all kinds of bells and whistles built into other advanced word processors. And while they might seem appealing at first, using them to create high-impact documents means you spend a lot of time just spinning your wheels.

But not with Legacy. Because Legacy was designed specifically to give you the best combination of word processing, graphics and desktop publishing in one complete program. Its unique frame-based design and powerful word processing lets you create high-impact documents easier and faster than with any other advanced word processor. All on one screen, without ever exiting your document.

Using Windows™ 3.0, Legacy makes things simple with pull-down menus and dialog boxes. And full WYSIWYG ability makes editing easy in any view. In fact, everything is easy with toll-free support, on-line tutorials and context-sensitive help. All for only \$495.

Call 1-800-NBI-1111 or your software dealer for more information. And see how, with Legacy, you can get a jump on your work. Without having to jump through hoops.

Trade up your current word processing or desktop publishing software to Legacy for just \$150.



© 1991 NBI, Inc. Legacy is a registered trademark of NBI, Inc., The NBI stylized logo is a registered trademark of NBI, Inc. Windows is a trademark of Microsoft Corporation.

Circle 119 on reader service card

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. ☉

POWER TIP NO. 182

Switching Screen Modes in Windows 3.0

If you have a super-VGA card and monitor, you'll probably want to install high-resolution drivers for Windows 3.0. But you may also want to be able to switch from one resolution to another. So that you can do this, set up Windows for the standard 640-by-480 VGA mode, exit to the DOS prompt, and enter `md\640x480`. Go to your Windows subdirectory, and enter `copy *.ini 640x480` to copy the configuration files into their own directory. Follow the installation instructions that come with your high-resolution drivers; then make another directory, such as `\800x600` or `\1024x768`, and copy the INI files into that. Finally, create a batch file for each video mode you've installed and place them in a directory that's named in your PATH.

Here's a sample batch file called WIN800.BAT (substitute your own drive and directory names):

```
@echo off
```

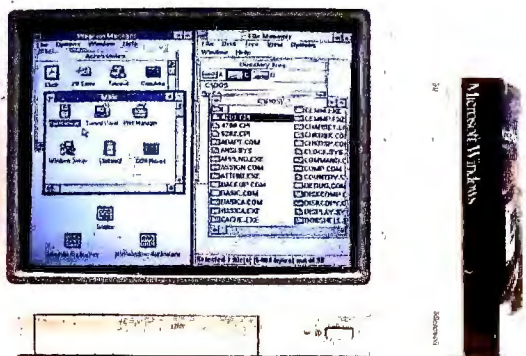
```
cls
```

```
copy c:\800x600 c:\windows >nul win
```

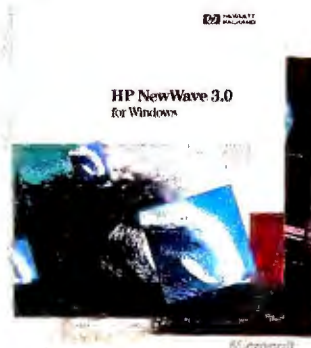
Start Windows in any screen mode by executing the appropriate batch file.

George Campbell
Contributing Editor

You're one of millions who started with this vision of productivity...



...and are about to discover how to actually achieve it.



HP NewWave teamed with Windows has been chosen over Windows alone as PC Magazine's 1990 "Environment of the Year."

Words can't capture what HP NewWave software adds to Windows. You have to experience it in motion.

Get our interactive demo disk, and you'll know why the editors of PC Magazine chose NewWave as "Environment of the Year." You'll discover:

- how much easier NewWave is to learn and use than Windows alone.
- how much simpler it is to combine information from word-processing, spreadsheet, graphics and other applications, for greater impact.

• how only NewWave can perform everyday tasks like sales reports and inventory updates automatically, even while you're home asleep.

To put it simply, people had hopes for Windows, but it's NewWave with Windows that really delivers on them. Don't take our word for it, get our interactive demo disk. (\$3.95 handling charge)



Call 1 800 345 9111 x23B



Act now for a \$25 rebate

Buy HP NewWave between 5/1/91 and 8/30/91, then send this coupon, original product registration card, and your sales receipt to HP Program Awards Center, P.O. Box 59058, Minneapolis, MN 55459-0058. Must be postmarked by 9/6/91.*

Name & Title

Company

Phone

Street address

City, state, zip.

*Dealers of HP products and their employees not eligible. Allow 6-8 weeks for your check to arrive.



Just Another Hardworking Guy Who Gets Paid Every Week Through North America's Leading Accounting Software.

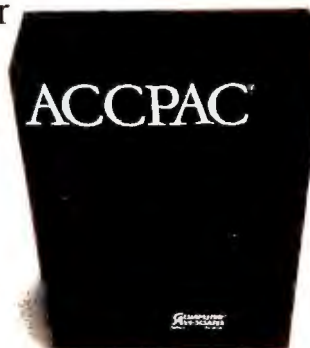
Of course, Patrick Ewing — the highest paid player in the NBA — makes a little more than most.



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

But the amount doesn't matter. Whether your payroll is a couple hundred or a couple million, there's an ACCPAC accounting solution that's right for you.

For small and growing businesses there's easy-to-learn and easy-to-use ACCPAC Bedford® and the more comprehensive ACCPAC BPI®. For larger companies there's more



advanced ACCPAC® Plus with a broad range of integrated modules, industry-specific add-ins and a coast-to-coast network of Qualified Installers. All kinds of companies — big and small — choose ACCPAC more than any other brand of accounting software. You should too.

Call 1-800-531-5236 right now to find out more about the best accounting software you can buy. You'll love it.

Almost as much as Mr. Ewing.



MANAGER'S FILE #3

Getting the Most Out of Consultants

Consultants, like lawyers, often get a bad rap. Although U.S. businesses spend millions of dollars each year on consulting services, more often than not you hear about the disasters, not the successes.

Still, few companies have the experience and expertise necessary to design and maintain a computing architecture that's going to ensure competitiveness over the long haul. For most businesses, turning to an outside expert is inevitable. So what can you do to ensure that your money and time are well spent?

Understanding your company's needs and conveying them clearly to the consultant are key, say businesspeople and consultants alike. You may not know what you want or need from a technical perspective, but a good consultant should be able to translate your business goals into technical solutions. That means finding someone who "speaks your language"—someone who knows your business and has assisted other companies in similar circumstances.

One Size Doesn't Fit All

As the technology gets more complex, consultants tend to specialize in one particular facet of computer design and installation. So the person who designs a strategic data base for your company's sales force isn't likely to be the one who recommends a strategy for connecting all your departments via a local area network. And your network designer is probably not going to be the person who installs the hardware and software. Be prepared, then, to deal with not one but a series of providers, particularly on larger, more complex projects such as implementation of strategic systems.

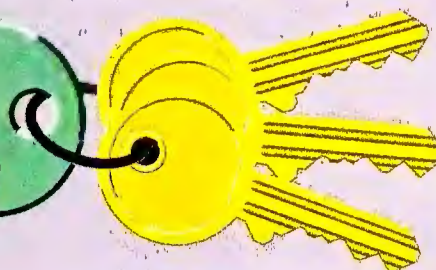
Regardless of the project, beware of your consultant's prior affiliations—either with particular hardware and software companies or with certain computing strategies or approaches. You'll minimize the risk of having to retrofit a solution to your needs if you're aware of someone's preferences ahead of time. You may want to consider splitting projects into design and implementation phases. By dividing responsibility in this way you minimize the danger that the recommended solution is

based primarily on a consultant's financial motives.

Set Specific Goals

Your work isn't over once you've hired the consultant. It's important to have clearly defined checkpoints throughout the project so you can evaluate progress. Make sure you've developed measurable criteria by which you can assess performance, and keep open the option of terminating the relationship if either you or the consultant is dissatisfied. ☺

Keys to Effective Consultant Management



It takes a lot of work to ensure a successful consulting arrangement, but knowing what you want and communicating your needs to the consultant increase your chances for success.

Before hiring:

- ✓ Conduct a detailed needs assessment—know what you want before you sign a contract.
- ✓ Obtain references from associates in your field; ask specific questions about reliability, responsiveness, quality of work performed.
- ✓ Look for someone with a proven track record; review prior work (if hiring a consultant to create an application) and visit installations (for strategic systems design).
- ✓ Make sure that the consultant's style matches that of your organization.

When negotiating:

- ✓ Establish clear areas of responsibility and authority.
- ✓ Have a legal counsel review the contract.
- ✓ Determine "ownership" of code at project completion.
- ✓ Obtain a detailed cost breakdown.
- ✓ Establish a specific time frame for project completion.

When working with a consultant:

- ✓ Designate a company liaison.
- ✓ Involve users in system design.
- ✓ Develop specific checkpoints for evaluating progress.

Our 8ppm printer
earned the Okidata OK!TM
by offering you something
the LaserJet[®] III doesn't.



The OL800: 8ppm page printer \$1499



The OL820: W/built-in font scaling \$1999



The OL840: W/PostScript \$2999



The OL800: W/200 sheet 2nd paper tray



The OL820: W/200 sheet 2nd paper tray



The OL840: W/200 sheet 2nd paper tray



The OL800: W/multi-user port (3 add'l users)*



The OL820: W/multi-user port (3 add'l users)*



The OL840: AppleTalk Network Ready

Freedom of choice.

Your best choice in an 8 ppm page printer is the one that gives you the most to choose from: the Okidata OL800 Series.

With Okidata, you're free to choose the features you need, free to save money by eliminating features you *don't* need, and even free to change your mind later.

The OL800: No Frills, But All The Options.

For only \$1499** list, the Okidata OL800 gives you a full-featured 8 ppm printer: 26 fonts, 4 typefaces, HP Series® II compatibility, both serial and parallel interfaces, and the industry's only 5-year warranty—on Okidata's unique LED printhead.

As your needs grow, you can easily add options that are *no* option with the LaserJet® III—a second paper tray for more flexible paper handling, or a network port that automatically accepts output from three additional PCs in a workgroup. You can even upgrade your OL800 to match either of our high-performance printers described below.

The OL820: Faster Than A LaserJet III.

Besides having more resident scalable fonts than the LaserJet III (13 versus 8), the OL820 also has more brains. Thanks to a unique hardware chip designed by Okidata engineers, it instantly solves complex font scaling, type rotation and grayscaling problems "on the fly"—problems the LaserJet has to go back to its software to work out.

So the Okidata OL820 can deliver up to three pages of sophisticated text while

the LaserJet III is still thinking about printing its first page. In fact, InfoWorld magazine found the Okidata OL820 to be "the fastest office printer we've tested."

Second paper tray and 4-station workgroup options are available for your Okidata OL820 as well.

The OL840: PostScript From PC To Mac And Back.

If Adobe PostScript® printing is on your menu, the Okidata OL840 offers it for \$700 less than a comparably equipped HP. Yet that low list price includes 35 genuine Adobe PostScript fonts, plus 26 bitmapped fonts (4 typefaces); 2 megabytes of installed RAM; plus serial, parallel, and AppleTalk Network® interfaces. You can connect the OL840 to both PC and Macintosh® workstations, and switch between systems instantly.

And the OL840 still leaves you with plenty of options—a second paper tray, extra memory, and a wide selection of additional PostScript fonts on easy-to-install ROM cards.

Finally, every Okidata OL800 Series printer has earned the Okidata OK!—your personal promise from us that it will deliver not just good value, but exceptional value...will provide not just adequate performance, but outstanding performance.

If you're looking for an 8 ppm page printer, your best choice is the one that gives you freedom of choice—the Okidata OL800 Series. For additional information call 1 (800) OKI-DATA.



We don't just design it to work. We design it to work wonders.™



The TI TravelMates. They're making a hit coast to coast.



The new look of power.

Editors across the country are praising the performance, size and weight of the Texas Instruments TravelMate™ 2000 and 3000 notebook computers.



"The TravelMate is as close as you can get to the ultimate portable." — BYTE, November 1990.





"Now TI assumes the lead in performance/pound/price measure of a notebook." — PC Magazine, December 11, 1990.*

"Not until you hold this computer in your hands do you begin to understand what sets it apart from the pack."



PC Computing, December 1990.**

Both TravelMate models are only 8½" x 11" in size, including a hard disk drive,  and feature a 10" diagonal  VGA display and comfortable full-function keyboard.

With the TM 2000 you get 286™ processing in a computer

that's 1.4" thin and 4.4 lbs. light. The TM 3000, meanwhile, packs 20MHz 386™ SX power into a mere 1.8" and 5.7 lbs.



Find out how to take the new look of power with you coast to coast. Or wherever your work takes you.

For the name of the dealer nearest you, call 1-800-527-3500.


**TEXAS
INSTRUMENTS**

TravelMate is a trademark of Texas Instruments Incorporated. 286 and 386 are trademarks of Intel Corporation. *Reprinted from PC Magazine, December 11, 1990. Copyright ©1990 Ziff Communications Company. **Reprinted from PC Computing, December 1990. Copyright ©1990 Ziff Communications Company. TravelMate 2000 has earned the following awards: 1990 PC Magazine Editor's Choice Award (October 16, 1990); 1990 PC Magazine Award for Technical Excellence; BYTE Award of Excellence; 1990 PC World Best Buy. TravelMate 3000 has earned the following awards: 1990 PC Computing Most Valuable Product; 1990 BYTE Award of Merit.

Circle 264 on reader service card

INDUSTRY **IO** OUTLOOK

Edited by ERIC BENDER

Traditional Dealers, Software Stores Pressured

Superstores Leap Retailing Bounds

Giant Outlets Offer Bargains, Diversity of Products



"In Dallas, the superstores have driven most of the other retailers out of business," notes consultant Jim Hoisington.

Users everywhere are talking more and more about computer "superstores" as the cheapest, easiest way to buy hardware and software. These huge warehouses stock tens of thousands of name-brand PC hardware, software, peripheral, and related office products at 60 to 80 percent off retail—the lowest prices in town.

A superstore is to the local ComputerLand or Businessland what a gigantic supermarket is to a corner mom-and-pop grocery. It offers low prices coupled with a wide selection of products. Usually located outside traditional shopping districts in warehouses from 15,000 to 35,000 square feet in size, superstores provide ample parking and even loading docks for their more voracious consumers.

Chains such as Comp USA (formerly Soft Warehouse) and Micro Center stretch across the country. Nation-

wide, 78 superstores will be open by year-end, estimates Seymour Merrin, president of Merrin Associates, in Palo Alto, California. He attributes this meteoric rise—at a time when traditional PC retailers are suffering financial woes—to the increasing sophistication of users.

"It's rare that I can find a computer salesman who knows more than I do," says Paul Bryant, an assistant vice president at the International Bank of Japan in Los Angeles. "A technology warehouse where I can tell them to send me 300 of a given product immediately, pay the lowest price, and not have to listen to a naive sales pitch is therefore very attractive."

Crowding Out Dealers

When a superstore enters a region, traditional retailers' prices drop almost immediately. Many of these stores

can't take the pressure, notes Jim Hoisington, a Dallas PC consultant and president of the North Texas PC User Group, who lives across the street from a Comp USA store. On weekends Hoisington battles hoards of buyers who overflow two parking lots and street parking for blocks in all directions. "In Dallas, the superstores have driven most of the other retailers out of business," he says.

Superstores stock even more business titles than software-only stores—as many as 3000. Although peripherals such as printers, fax boards, and modems are offered from just about every vendor, the choice of PCs generally excludes IBM, Compaq, and Apple. There are some exceptions among superstores that started out as retailers.

As they kept overhead costs to an absolute minimum, superstores got a reputation for skimpy service and support. However, buyers say this is changing. The major chains now have reputable carry-in service departments—some even offer third-party on-site service contracts. And most superstores have added corporate sales staffs that are assigned to business accounts.

Super Advice?

Ken Zoline, a Chicago networking consultant, has listened in at the service counters of local superstores and says the level of help is inadequate. Others point out, however, that this problem is hard-

ly limited to superstores.

"I'm not sure that superstores are worse offenders than nonsuperstores in terms of giving out bad advice," says Sanford Rosen, president of The PC Consulting Company in Columbus. The no-questions-asked, 30-day money-back guarantee most superstores offer makes purchasing much less risky, he says.

Many PC users find help both before and after the purchase by pairing superstores with independent consultants. "A knowledge-provider who is not a reseller has much lower overhead, and so services can be offered much less expensively," Merrin points out. —Alice LaPlante

Superstores on the March

Top six chains, projections for year-end 1991

Chain	Location	Number of Stores
Comp USA	nationwide	33
CompuAdd	nationwide	8
Intelligent Electronics	Northeast	8
Inacom	not announced	6
Micro Center	Midwest/Southeast	5
Fry's	California	3



JEFF BERLIN

Superstore chains are branching out across the U.S., with 78 outlets expected by year-end, according to Merrin Associates. While traditional dealers struggle, revenues for superstores will more than double this year to \$2.8 billion.

Small Businesses Struggle Into Windows

A Minefield of Problems Waiting to Be Discovered

When Udo Winkler picked up a copy of *Windows 3.0* for his laptop last fall, he had no inkling of the trouble in store. Winkler, a wholesale hardware salesman who works from his home in Running Springs, California, couldn't get past the second *Windows* installation disk on his Turbo-Sport 386.

During the next ten weeks he called Microsoft's *Windows* support line repeatedly, only to remain on hold for 45 minutes or more each time before hanging up in disgust. Finally, after holding on for an hour and 20 minutes, he reached a technician who promised to call back but never did. In frustration, Winkler complained to several magazines; that expedient produced a call from Microsoft, and, at last, a solution to his installation woes.

Well, sort of. Microsoft could guide him through installation, but only if *Windows* was installed in CGA mode—a crippled configuration. The company also informed Winkler that his troubles lay in the computer's BIOS rather than Microsoft's package. Still, Winkler is bitter. "I spent the money for all these products, and they just kind of dropped the ball," he says. Winkler estimates he's spent more than \$150 on phone charges to Redmond. He's still trying to get through to Zenith for a BIOS upgrade, and he can't run *Windows* yet.

Small Companies, Big Snags

Winkler's problem is extreme but not uncommon: As one of the first widely sold protected-mode packages, *Windows 3.0* reveals incompatibilities and bugs in BIOSes, drivers, and applications that previously



Udo Winkler spent more than \$150 on phone calls to Microsoft, but *Windows* still won't run acceptably on his laptop.

passed undetected. Large companies that have considerable support resources take these snags in stride, but smaller firms can't. And when things go wrong, they blame Microsoft.

Factor in *Windows* sales that have surprised even Microsoft, and you get a phone support nightmare. "I can appreciate how frustrating that is," responds *Windows* product manager John Roberts. He reports that the company has nearly tripled phone staff since last year and launched several programs this spring aimed at delivering key installation and configuration tips to users, including a 20-page magazine sent to all registered users, free workshops held around the country, and a \$14.50 resource kit.

"We realize that people are experiencing migration issues, and we have answers," says Roberts. He hopes that by giving users more tools and information, they'll diagnose more problems on their own.

He also says that PC manufacturers need to address incompatibility problems. Jordan Rosenberg, consultant and cofounder of the user

group San Francisco Business Computers, agrees. "I had a hell of a problem with *Windows* and my Plus Hardcard driver, and [Plus] doesn't tell you until you call.... Whoever knew about the problem, Microsoft or Plus, should have told me." He gives Microsoft the benefit of the doubt, explaining that "they have always treated me very well as a customer."

Not for Novices?

Most problems arise for users still struggling to understand how their computers work, says Carole Patton, editor of *ACKnowledge, the Windows Letter* in Mendham, New Jersey. "Anybody who understands memory and networking is not going to have problems," she maintains. Jim Weiler, director of the Boston Computer Society's *Windows* group, believes that Microsoft isn't the best place to go for hand-holding. "So many people are getting into *Windows*, and they don't know that they need support until it's too late. I tell them that CompuServe is the best source of information."

Nevertheless, a small business that can't afford to spend a lot of time on CompuServe *Windows* forums or pay for third-party support may fall through the cracks. The bottom line, Patton stresses, is that *Windows* may be too sophisticated for such firms. "I don't see *Windows* being a success with smaller companies for a year or two, until all the complexities are covered up." —Scott Spanbauer

Stumbling Blocks for Windows Users

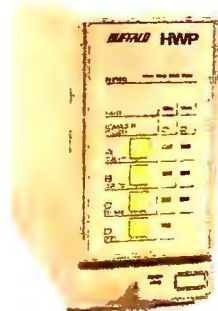
A sampling of start-up problems and solutions

Problem	Potential solution
! Incompatible system BIOS	OK Replace BIOS if possible
! Incompatible display, hard disk	OK Replace device driver if possible
! Doesn't run on network	OK See if Microsoft or network vendor offers work-around. (Same popular nets not supported.)
! SmartDrive won't work with disk-partitioning software	OK Partition disk using DOS 4.0, or don't use SmartDrive.
! Difficulties installing DOS applications	OK Learn PIF file procedures. Get help for specific configuration from suppliers or other users.
! Difficulties running memory-hungry DOS applications	OK Add, reconfigure memory. Consider third-party 386 memory managers.

Users report many hurdles in installing and configuring Windows. While Microsoft offers various resources, asking your peers or joining a CompuServe forum may afford a quicker solution.

Printer Sharing Solutions

5 or 10 Ports



- * **Reliable Automatic Switching**
- * **Easy to Install and Use**
- * **No PC RAM Memory Required**
- * **Toll-Free Technical Support**
- * **45-Day Money-Back Guarantee**



HWP *5 Ports*

HWP-256	with 256KB	\$325
HWP-512	with 512KB	\$375
HWP-1000	with 1MB	\$425

User Upgradable Memory:
From 256KB to 16MB buffer

Input/Output Settings – 4/1 or 3/2:
All parallel ports; user configurable as either three inputs to two outputs, or four inputs to one output, buffered auto-switch

Rapid Data Transfer – 100,000 cps:
The HWP uses Direct Memory Access (DMA) for data transfers into the buffer, making the HWP hardware capable of receiving parallel data at the high rate of 100,000 characters per second.

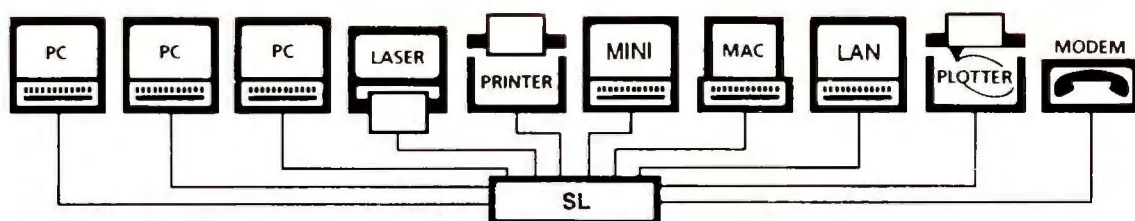
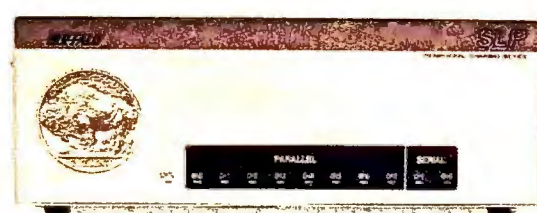
Pop-up Menu or Front Panel Buttons:
Use either the pop-up menu or the front panel switches to select printers, select the next available printer, send multiple copies, clear data, and other functions.

AS-41 *5 Ports* *\$200*

Smart Switch – No Pop-up or Buffer:
Four parallel inputs to one parallel output, electronic automatic switch with no buffer

SPPS *(not shown)* *\$100*

Interface Converter – No Buffer
Combination serial-to-parallel, or parallel-to-serial interface converter in a single unit; low-power CMOS design derives power from serial connection, no power supply needed; supports 9,600 to 115,200 bps, DIP switch configurable



Save Money by Sharing Office Resources:

The SL is the peripheral sharing solution which enables everyone to share lasers, printers, plotters, and modems. The HWP is ideally suited for sending large graphics files, but is economical enough for any kind of printing within a small workgroup.

Greater access by more users reduces unproductive idle time and the expense of purchasing additional peripherals. With a buffer, all users can simultaneously send print data and quickly release their PCs to continue working.

BUFFALO

We are the world's largest manufacturer of buffered data switches for PCs which assures your getting the best value and highest performance from our products.

Call For More Information

(800) 345-2356

Fax (503) 585-4505

Buffalo Products, Inc.
2805 19th St. SE, Salem, OR 97302-1520

SL or SLP *10 Ports*

SL or SLP-256	with 256KB	\$495
SL or SLP-512	with 512KB	\$575
SL or SLP-1000	with 1MB	\$675

Two Configurations – Ten Ports Each:

SL – four parallel and six serial ports
SLP – eight parallel and two serial ports
Both include 15 ft. serial null-modem cable

User Upgradable Memory:
From 256KB to 4MB buffer

Any Combination of Printers or PCs:
All ten SL or SLP ports can be software configured as either input or output.

Automatically Routes and Buffers Data:
Automatic switching and queuing of jobs; automatically converts data from parallel-to-serial or serial-to-parallel

115,200 bps PC-to-PC File Transfers:
Transfer files serially between PCs up to 115,200 bps; buffer serial data to the SL several times faster than normal 9,600 bps

Pop-up Menu via Hotkeys or Mouse:
Keyboard selection of printers and many other control functions; pop-up is for convenience, but is not required

Simple Installation:
Plug in your cables; if desired, run the installation software for the pop-up menu

PostScript Stays Standard

Adobe Expands Font Capabilities

Starting late this year, you'll be able to take special PostScript fonts and manipulate them almost at will—altering size, weight, width, and style—and they won't lose their good looks.

This is the promise of Adobe Systems' Multiple Master technology, hailed by analysts and users alike. "For professional designers, it adds a level of control to publishing that has been missing since the advent of electronic type on the PC," comments Joseph Prieb, consultant for Home Box Office in New York City.

Multiple Master technology also demonstrates Adobe's determination to hold its ground in high-end printing—and to create spin-offs that ease user headaches in general.

For instance, notes Adobe chairman John Warnock, take the letter or worksheet that doesn't quite fit onto a single page—with these malleable fonts, you can condense or expand the type so it fits neatly with no loss of quality. Or when someone sends you a document formatted with a font you lack, you normally must fix it manually to make it print out properly. But a Multiple Master font could automatically mimic the original font's exact size so that the document printed out in fine style. "This will have a huge impact on the way we communicate with each other," Warnock predicts.

Technology and Partnerships

Over the past two years, Adobe has been feeling pinched between Hewlett-Packard LaserJets and compatibles, which sell at much higher volume than PostScript devices, and a strange-bedfellows partnership between Micro-

soft and Apple at the high end. The Mountain View, California, firm has held its territory partly through advances such as Multiple Masters, better color support, and upcoming fax integration products. More important has been friendlier relations with other vendors—including lower licensing fees.

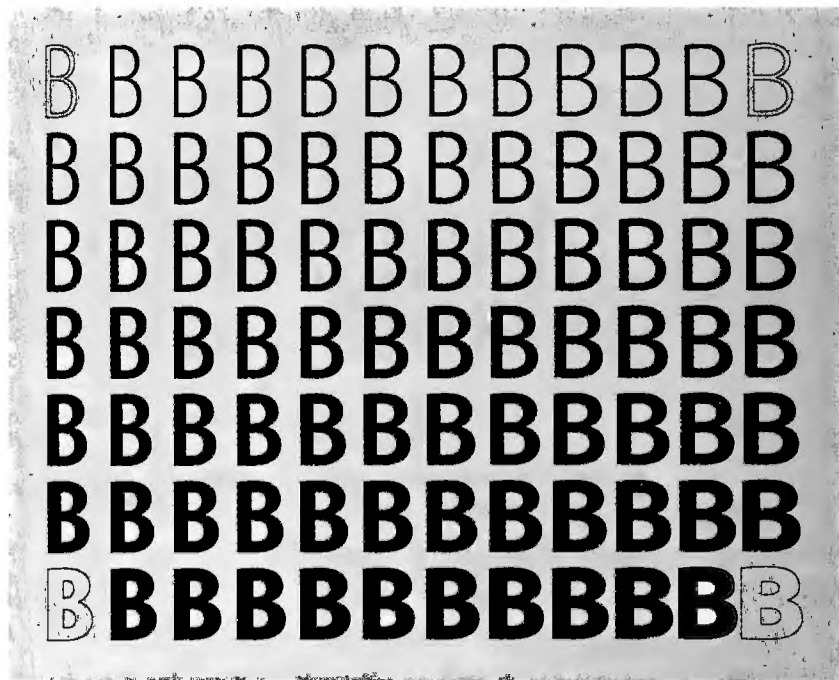
Apple, Epson, and HP are among the major players introducing PostScript products this year. RISC-powered designs have helped to overcome PostScript's nagging performance limitations. Hordes of LaserJets and compatibles go out the door with a PostScript cartridge—a trend that will be bolstered by new network-oriented printers. Even PostScript compatibles, like the PhoenixPage embedded in Pacific Data's fast-selling cartridges, end up as a net plus for the PostScript standard.

"A lot of vendors see PostScript as a way around HP," comments Carolyn Perrier, product manager for non-impact printers at Epson America in Torrance, California. "PostScript printer prices will continue to erode very rapidly."

TrueType to Your Word

Adobe's biggest challenge remains TrueType and TrueImage, the rival font/page-description-language combo from Microsoft and Apple that will run on today's PostScript devices. The challenge has remained purely verbal for much longer than expected. Apple finally shipped its first TrueType products in March (and

But when *Windows 3.1* finally ships, the rules of the game will change because TrueType will be included free. "If you get in the *Windows* box the same 13 fonts that Adobe ships, why go out and buy them from Adobe?" asks Dennis Adler, manager of Microsoft's type effort. "TrueType will be widespread on Intel and Mac platforms, prob-



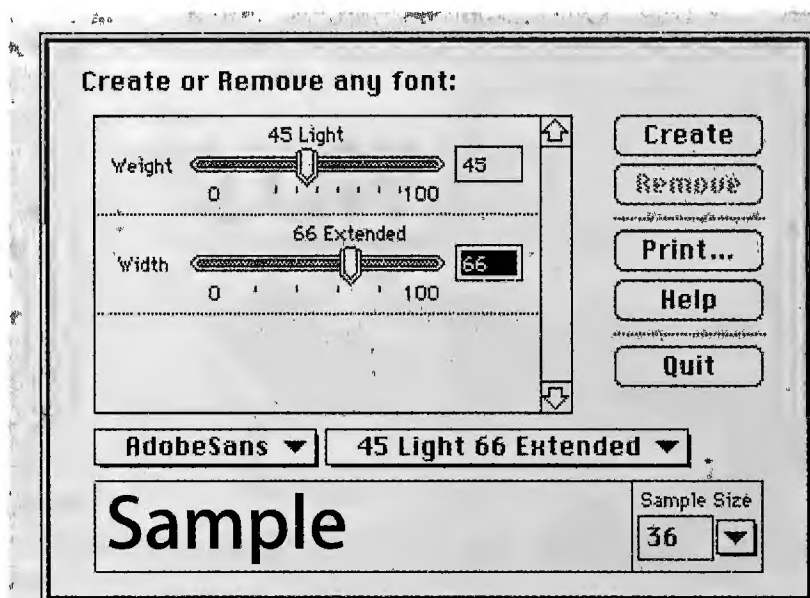
Adobe's Multiple Master technology is designed to give you almost unlimited variations on a given typeface. Here, the system can generate any combination of weight and width between four "master" fonts.

fell on its face due to surprising installation problems). For the PC, TrueType will most likely celebrate its second birthday as vaporware in September.

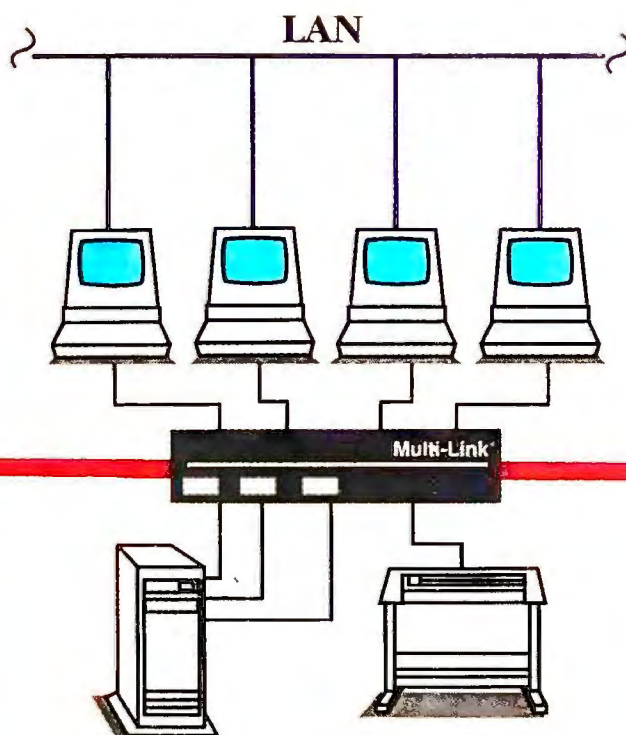
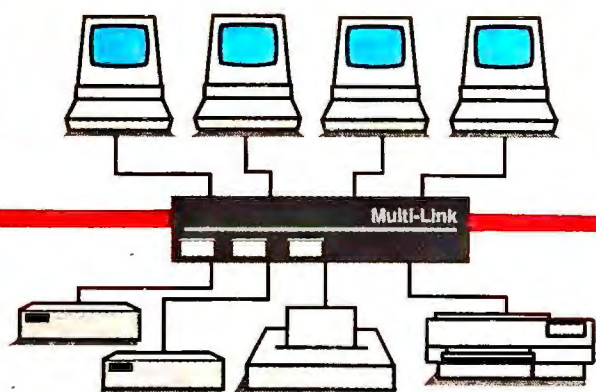
ably mostly at the low end," predicts Jonathan Seybold of *The Seybold Report on Desktop Publishing* in Malibu, California.

However, while users are intrigued by TrueType, they're wary about calls for new hardware. "PostScript is the one standard we use around the company for professional graphics," Joseph Prieb says. "I don't care whether my users want PostScript or TrueType fonts," says another corporate user. "I do want to buy one printer environment through the corporation." —E. B.

Alice LaPlante is a freelance writer in Palo Alto, California, and Scott Spanbauer is a PC World contributing editor.



Upcoming PostScript font software will offer users unprecedented flexibility, as this Macintosh prototype shows.



ANY DEVICE AT YOUR FINGERTIPS!

A New, Expandable, Any-Port-To-Any-Port Data Sharing System

Now from Western Telematic, the leader in peripheral sharing, comes an easy, cost-effective way to access any peripheral, any time right from your computer screen. Introducing LASERNET® Multi-Link™ — an expandable, 12-port any-to-any data sharing system for high-speed printer and data sharing.

With Multi-Link, share any device with any device, transfer files between PCs and conduct modem or FAX pooling. And do it over distances of up to 4,000 feet using inexpensive twisted-pair wire!

Flexible, Expandable and Windows® Compatible

Each high-speed port, 8 serial or 4 parallel, can be designated for PCs, printers, plotters, modems, or any RS-232 device. Multi-Link features up to 4MB, field-expandable SIMM memory and a convenient data-link port, which

enables the linking of up to 32 Multi-Link devices. That gives you 384 ports! And peripheral access is at your fingertips with our MS-DOS® or Windows® 3.0-compatible device-select menu.

Increased LAN Efficiency

If you have a LAN, Multi-Link can off-load printing functions for increased efficiency. Now

LAN and non-LAN PCs can have access to all office peripheral resources — all for less than \$67 per port!

Set-up Ease and Convenience

An entire system can be configured from one PC. And serial cabling is made practical with telephone-style, snap-in connectors. Parallel ports accept standard PC-to-printer cables.

Multi-Link is compatible with popular word processing, spreadsheet and high-level graphics software, and supports all dot-matrix and laser printers including, HP® and PostScript® printers. Prices start at just \$795 for 256KB memory.

Full Service and Support

Multi-Link is made in the U.S.A., backed by a full **three-year** limited warranty with pre- and post sale technical support. So to get your fingertips on a Multi-Link, call WTI toll free at **1-800-854-7226**, FAX 714-583-9514 or write Western Telematic, 5 Sterling Irvine, CA 92718.

wte western™ telematic inc.
Making good connections.™



Visit Us At
PC Expo New York,
Booth #2312

Copyright- 1991 Western Telematic Inc. All rights reserved.
LASERNET is a registered trademark and Multi-Link, Western Telematic
and WTI Logo are trademarks of Western Telematic Inc. All others are
registered trademarks of their respective companies.

Circle 325 on reader service card

Changing Trends in Windows 3.0 Use

Exclusive PC World Surveys Chart Windows Use and Satisfaction

Businesses are latching on to *Windows 3.0* in a big way, according to two surveys of *PC World* readers. More than half of all respondents report that their companies are running the operating environment. Personal use is lagging behind, however, with fewer than one-third of the readers surveyed using *Win-*

dows themselves.

Word processing packages, which boasted the largest installed base of all applications run under *Windows* last October, have moved to the number two position behind spreadsheets. A whopping 72 percent of readers surveyed run their spreadsheet under *Windows* (although not all of them are

running *Windows* spreadsheets). Over 75 percent of respondents are running *Windows* on a 386-based system, with only 15 percent using a 286, which Microsoft identifies as the minimum system required.

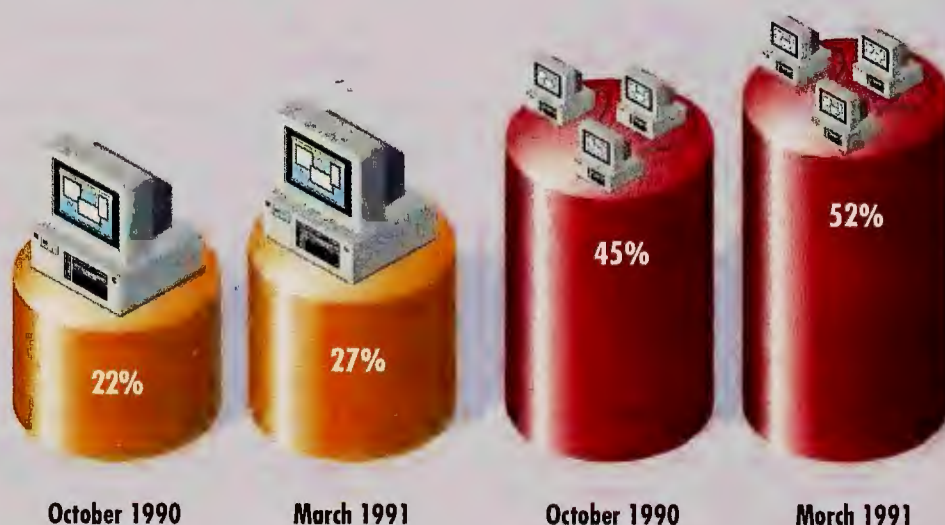
According to our survey, *Windows*' more basic interface features rate highest in

user satisfaction. The relatively low ratings of some of the high-end functions reflect the fact that a full 62 percent of *Windows* users surveyed moved to Microsoft's graphical environment from plain old DOS and are likely still getting used to the *Windows* way of computing. —*Roberta Furger*

Use of Windows 3.0 Climbs Steadily

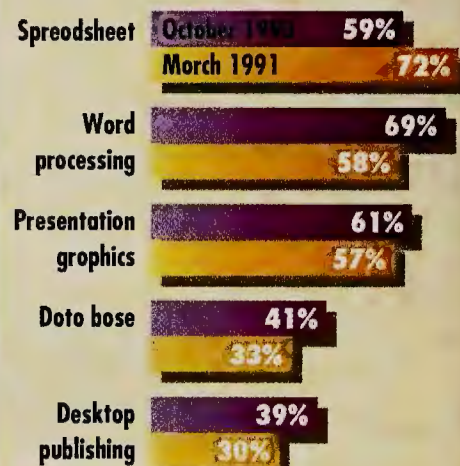
Users running Windows 3.0

Companies running Windows 3.0



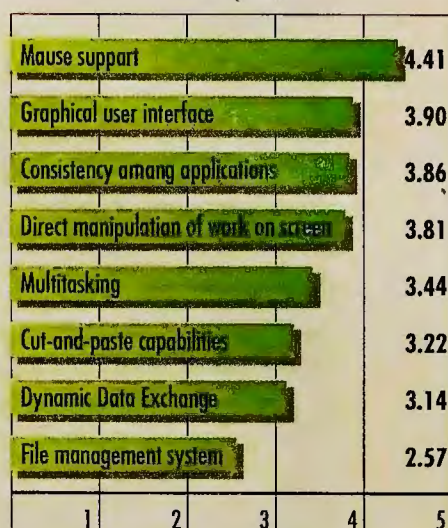
What's in That Window?

Applications in use



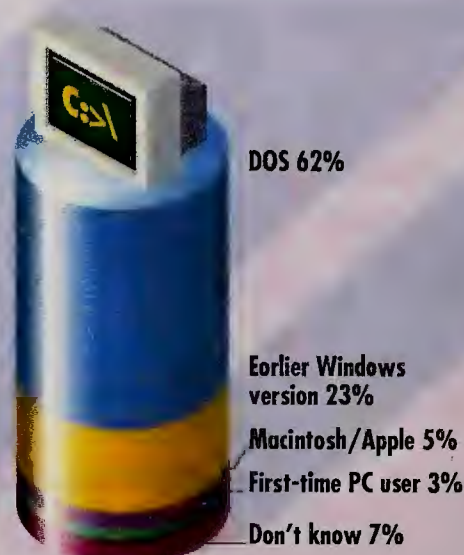
Interface Issues Top List

Satisfaction with Windows functions
1=low, 5=high



Who's Moving to Windows 3.0?

Previous interface used



Users Hungry for Power?

Type of PC in use

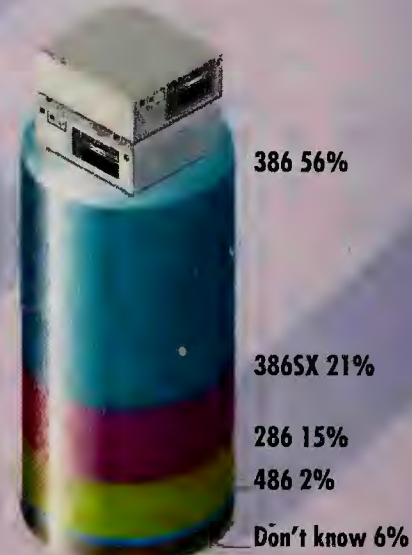


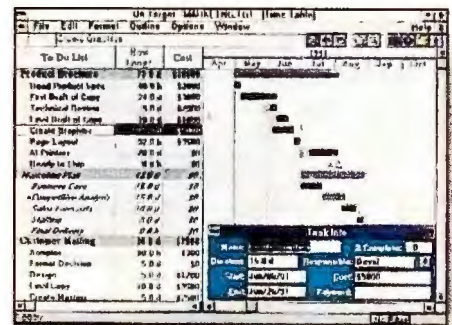
Chart data based on two surveys of 250 *PC World* readers conducted in October 1990 and March 1991.

— Coming soon to a department under you. —

NIGHT OF THE LIVING DEADLINES.



Project Calendar™ presents your schedules in a familiar calendar format—and that's just one of the many On Target reports.



On Target is designed specifically for Windows™ 3.0. Its graphical user interface, familiar spreadsheet format, and full color WYSIWYG graphics make project planning easy.

It's 2:30 a.m. Do you know where your projects stand? Now you can avoid those horrifying all-nighters with On Target™ from Symantec.

On Target is the easiest way to keep tabs on virtually all your projects at once. It's the most appropriate way, short of formal "project management," to manage all your schedules and deadlines.

On Target instantly converts your projects into a variety of detailed schedules, charts and graphs. Just enter your schedules into the familiar spreadsheet interface, and choose your own colors, fonts, and display format. On Target does all the rest.

On Target's *Schedule Assistant*™ guides you logically through the planning process. It even comes with *Starter Schedules* to help you start planning right away. So if your workload has become a nightmare, rest easy. It's all in a day's work with On Target.

Call now for a free demo disk.*

1-800-228-4122 Ext. 303-W

SYMANTEC.

On Target creates a number of different reports. You can also copy graphics into other Windows applications.



With On Target, everyone is clear about their responsibilities—so your team can work together more effectively.

le 272 on reader service card

*Demo disk available in US and Canada only. Outside the US, call (408) 253 9600. © 1991 Symantec Corporation. On Target, Project Calendar and Schedule Assistant are trademarks of Symantec Corp. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

PC WORLD STREET PRICE LIST

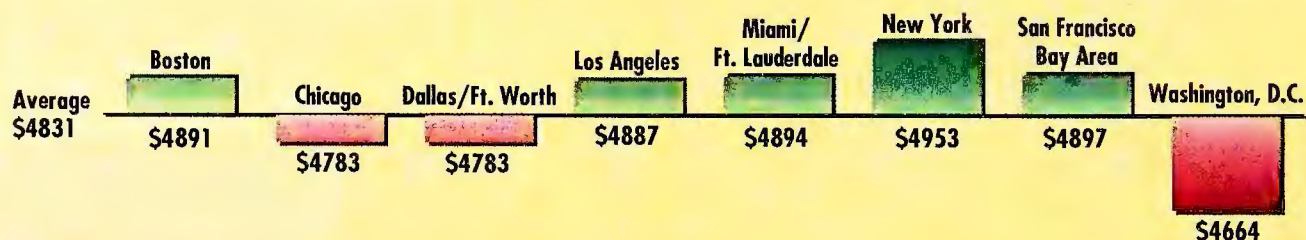
What to pay at retail for PCs, based on IDC's PC Pricing Report survey.

PC WORLD	National				Metropolitan							
	List	Average	Low	High	Boston	Chicago	Ft. Worth/Dallas	Los Angeles	Miami/Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
80286-based desktop PCs												
AST Bravo/286	\$1695	\$1268	\$895	\$1500	\$1329	\$1283	\$1298	\$1182	\$1400	\$1385	\$1151	\$1290
Compaq Deskpro 286n	\$2399	\$1809	\$1295	\$2176	\$1805	\$1753	\$2008	\$1586	\$1947	\$1866	\$1720	\$1787
Dell 210	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400	\$1400
IBM PS/2 50 Z-031	\$2745	\$2016	\$1399	\$2470	\$2019	\$2045	\$2014	\$1839	\$2187	\$2004	\$1851	\$2100
Tandy 2500 XL/2	\$1959	\$1959	\$1959	\$1959	\$1959	\$1959	\$1959	\$1959	\$1969	\$1959	\$1959	\$1959
80386SX-based desktop PCs												
AST Bravo/386SX	\$2845	\$2121	\$1779	\$2495	\$2196	\$2190	\$2280	\$2020	\$2296	\$2241	\$1908	\$2129
Compaq Deskpro 386s	\$2999	\$2402	\$1900	\$2890	\$2447	\$2400	\$2670	\$2276	\$2521	\$2402	\$2298	\$2291
Dell System 316 SX	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600	\$1600
Epson Equity 386SX Plus	\$2999	\$1726	\$1295	\$2150	\$1718	\$1870	\$1917	\$1562	\$1756	\$1695	\$1645	\$1742
IBM PS/2 55-061	\$3295	\$2628	\$1999	\$3223	\$2594	\$2548	\$2737	\$2557	\$2704	\$2711	\$2371	\$2700
NEC PowerMate SX+	\$2149	\$1907	\$1499	\$2550	\$1835	\$2043	\$2033	\$1951	\$1830	\$2088	n/a ¹	\$1960
80386DX-based desktop PCs												
AST Premium 386/25	\$5595	\$4056	\$3149	\$5000	\$4004	\$4233	\$4098	\$3835	\$4650	\$4511	\$3704	\$4159
Compaq Deskpro 386/33L	\$7999	\$6220	\$4999	\$7874	\$6605	\$6319	\$5815	\$5766	\$5997	\$6362	\$6300	\$6063
Epson Equity 386/25 Plus	\$4999	\$3481	\$2679	\$4249	\$3581	\$3658	\$3678	\$3375	\$3500	\$3580	\$3601	\$3125
IBM PS/2 70-061	\$4745	\$3406	\$2950	\$4270	\$3378	\$3474	\$3411	\$3208	\$3420	\$3625	\$3101	\$3175
IBM PS/2 70-A61	\$6245	\$4728	\$4285	\$5620	\$4686	\$4693	\$4736	\$4690	\$4991	\$5028	\$4309	\$4602
Tandon 386/33	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079
Tandy 4033 LX	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898
80486-based desktop PCs												
AST Premium 486/25E	\$8595	\$6362	\$4799	\$7500	\$6756	\$6503	\$6450	\$5987	\$6586	\$6661	\$5722	\$6512
Compaq Deskpro 486/33L	\$10,999	\$8872	\$7127	\$11,391	\$9039	\$9397	\$8905	\$8176	\$8282	\$8849	\$8999	\$8403
Dell 425E	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700	\$5700
IBM PS/2 95 XP	\$17,745	\$13,113	\$10,650	\$15,500	\$12,580	\$13,223	\$14,206	\$12,609	\$12,920	\$13,063	\$13,105	\$12,600
NEC PowerMate 486/25E	\$9899	\$6665	\$5500	\$7919	\$6899	\$6688	\$7450	\$6360	\$6563	\$6407	n/a ¹	\$6444
Portables/laptops												
Compaq LTE/286	\$3499	\$2555	\$2049	\$3000	\$2654	\$2576	\$2593	\$2494	\$2633	\$2558	\$2446	\$2456
Compaq LTE 386s/20	\$6499	\$4831	\$4290	\$5975	\$4891	\$4783	\$4783	\$4887	\$4894	\$4953	\$4897	\$4664
Dell 320LT	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799	\$3799
Epson Equity LT-386SX	\$5598	\$3563	\$2995	\$4249	\$3517	\$3824	\$3551	\$3065	\$3301	\$3460	\$3645	\$3766
IBM P70 386	\$7695	\$5793	\$4179	\$7000	\$5641	\$5784	\$5849	\$5465	\$5708	\$6212	\$5410	\$5521
Toshiba T1000SE	\$1499	\$1055	\$798	\$1350	\$1101	\$1114	\$1130	\$1002	\$1023	\$966	\$979	\$1132
Toshiba T3100e	\$3699	\$2707	\$2199	\$3300	\$2863	\$2771	\$2834	\$2701	\$2795	\$2432	\$2699	\$2799

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. ¹Due to the limited number of NEC dealers in the San Francisco area, IDC was unable to collect enough price quotes.

Big-Apple Buyers Pay Big for Compaq Notebook

Retail pricing for Compaq LTE 386s/20 in eight metropolitan regions



While New York is usually hard to beat when you're shopping for any kind of electronic equipment, it produced the worst prices for Compaq's hot-selling LTE 386s/20 in IDC's March survey.

ZEOS[®]
386[™]SX.



“With
so much
going for it,
how could you
go wrong?”

— *PC Magazine*



You Simply Can't Go Wrong!

"The ZEOS 386SX-16 successfully combines the two things people most want in their systems: solid performance and attractive pricing... The ZEOS is the fastest SX tested."

*PC Magazine, On why the ZEOS[®]
386SX Wins Editor's Choice.*

Starting complete at only \$1,295 the ZEOS 386SX will be your choice too. Come on in and take a look!

YES, COMPLETE. \$1295

Editor's Choice! "ZEOS comes in a winner... The fastest SX tested... packing plenty of value... great expandability, quality parts and down to earth pricing... how could you go wrong?" *PC Magazine, Editor's Choice.*

How could we say it any better? You simply can't go wrong. The ZEOS 386SX is the best you can buy.

And right now, you can buy your own *complete* ZEOS 386SX 42MB hard drive system for only \$1295!

Nothing can touch it. The ZEOS 386SX gives you Guaranteed Value you simply can't get anywhere else. And ZEOS is America's premier '386 systems manufacturer. After all, *PC Magazine* selected ZEOS '386 systems "For Overall Excellence" above all others. But why do they call the ZEOS 386SX "a terrific choice"? Four key reasons:

Performance. Quality.



YOU WANT PERFORMANCE? THIS IS IT!

ZEOS has invested literally thousands of hours creating the world's finest 386SX.

And as *PC Magazine* said "it is the fastest SX tested," an awesome performer indeed!

This is no rehashed '286 design. It's a true '386 from the ground up. A Rock Solid Investment that runs circles around everything else out there.

QUALITY YOU CAN COUNT ON. ZEOS QUALITY.

Your ZEOS 386SX is designed and manufactured right in our own laboratories. We have used only the *very best* components available. From the power supply right thru to the video, every component is absolute top quality.

As an example. If you order a mono system you'll appreciate the fact that we use only genuine Hercules® brand monochrome graphics cards. They cost us more than double what others pay for their cheaper "Hercules compatible" cards. But Hercules® is quality. Quality you deserve.

And if you're a VGA buyer you'll absolutely *love* our VGA display. As *PC Magazine* said "the ZEOS VGA display and card prove to be one of the fastest overall... tying with the Compaq Deskpro 386S." Now that's *hot* video!

Even the floppy drive. Yours will be a genuine Teac®. They cost a lot more but you simply can't buy better. ZEOS systems. Quality from the ground up.

AN INCREDIBLE PRICE FOR AN INCREDIBLE MACHINE.

Incredible is the word! How can we build your

PC LABS BENCHMARK SERIES

	Instruction Mix	Floating Point Calculation
PC ZEOS 386SX/16	3.99	6.98
IBM PS/2 Model 55SX	4.46	8.46
Compaq Deskpro 386S	4.48	9.67

award winning ZEOS 386SX for only \$1295? After all, there are *no compromises* in this system. Quite frankly, a great price is the result of many ZEOS advantages.

For instance. Unlike most of the others, ZEOS maintains its own chip level Research and Development staff *plus* our own board level manufacturing facilities. All right here in St. Paul. When it comes with the ZEOS® name it comes with World Class Quality. It's the best you can buy.

You are saving too because you are buying direct from ZEOS. And you can buy with confidence because ZEOS is a strong and rapidly growing public company (NASDAQ Symbol: ZEOS). Our professional Systems Consultants and expert Technical Support staff serve tens of thousands of customers World Wide, twenty four hours a day. And these are happy customers. How do we know?

Because nearly 50% of our system sales comes from previous ZEOS customers. Now that's incredible! But that won't surprise you

after you buy your first ZEOS system. You'll be back too.

ZEOS 24 HOUR A DAY SUPPORT.

It was ZEOS who invented 24 Hour Tech Support and is it ever good! Anytime you need help your telephone is a Toll Free Hotline direct to your own personal technician—one who knows your system inside and out. We're here if you need us. Toll Free, Around the Clock, Every day. No additional charge.

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 Parts Replacement Policy. You're going to be very satisfied. We don't just say it. *We Guarantee it.*

ORDER YOUR OWN ZEOS 386SX TODAY!

Ordering your ZEOS 386SX is easy. Simply pick up the phone and give us a call at 800-423-5891. Buying the 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 HARD DRIVE SYSTEM INCLUDES ALL OF THESE FEATURES FOR ONLY \$1295!

20MHz Systems Available too!

- '386SX-16 CPU. 8/16MHz Dual Speed, Keyboard selectable. Reset/Turbo Buttons.
- Fast 42MB IDE Hard Drive, 1.2MB Teac® Floppy Drive.
- 512K of high speed memory expandable to 16MB.
- ZEOS 14" flat screen High-Res amber monitor with Tilt and Swivel Base.
- Genuine Hercules® brand graphics controller!
- ZEOS/RS Enhanced keyboard with pleasant Tactile/Click feel.
- Two high speed serial ports plus parallel and game ports.
- Six 16-bit and two 8-bit expansion slots.
- Speed demons appreciate our Shadow RAM/EMS capability, and full 387SX support.
- Includes our 7-bay ZEOS space saver case. Two cooling fans and 200Watt power supply for added expandability and reliability. Top notch.
- Plus your ZEOS Absolute Satisfaction 30 Day Money Back Guarantee, Full One Year Limited Warranty and Express Replacement Parts policy.
- Wrap it all up with 24 Hour a Day 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 U.S./Canada: 612-633-6131

MasterCard, VISA, Discover,

AmExp, Z-Card and COD.



TAKE YOUR PICK!

Choose from 4 great money saving packages.

or specify your own custom configuration!

The Complete ZEOS 386SX, Package #1. Your complete 386SX system!

ONLY \$1295

This is your complete 386SX system for only \$1295. It includes all the features described in the column to the left. System highlights include:

- Screaming ZEOS 16MHz 386SX motherboard.
- Ultra-fast 42MB IDE Hard Drive.
- Genuine Teac® 1.2MB floppy.
- 512K of High Speed 60ns DRAM, 16MB capacity.
- 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 \$1895

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

- Top quality 16-bit high res 1024 VGA color graphics card with 512K video RAM.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel.
- One full Megabyte of 60ns DRAM.
- Microsoft® DOS 4.01 with Disk Cache Software.



**PC Magazine
said it best.
"Great expandability,
quality parts, and
down-to-earth
pricing...the
result is a winner!"
— Editor's Choice!**

20MHz Now Available!

Call now for details on the New ZEOS 386SX-20. Complete with 64K SRAM Cache! Absolutely Incredible. Add only \$200 to any package.

Incredible Upgrade Package #3

ONLY \$2095

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

- Top quality 16-bit high res 1024 VGA color graphics card with 512K video RAM.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel.
- Two full Megabytes of High Speed DRAM.
- A second Teac floppy drive, 3.5", 1.44 MB.
- Microsoft® DOS 4.01 with Disk Cache Software *plus* Microsoft Windows™ 3.0 and mouse!

Incredible Upgrade Package #4

ONLY \$2295

Want an even bigger hard disk? Package #4 gives you all the extras *plus* our Fast 85MB hard drive. Outrageous savings!

- High Speed 85MB IDE Hard Drive.
- Top quality 16-bit high res 1024 VGA color graphics card with 512K video RAM.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt & Swivel Base.
- Two full Megabytes of High Speed DRAM.
- A second Teac floppy drive, 3.5", 1.44 MB.
- Microsoft® DOS 4.01 with Disk Cache Software *plus* Microsoft Windows™ 3.0 and mouse!

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

Your own ZEOS 386SX!
Only \$1295

Call Now!
800-423-5891

10 Good Reasons To Buy From ZEOS®

Reason #1

"Overall Excellence"

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road."

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but seven times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

Reason #2

Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world."

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

Reason #3

Exceptional Quality.

PC Resource Magazine put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

Reason #4

Value.

InfoWorld says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent."

24 HOURS!
ZEOS is Open
24 Hours a Day,
365 Days a Year!
Toll Free!

Value: Excellent"

Personal Computing said, "ZEOS... is the best value we've come across... its performance is right up there with the slickest, most expensive PCs you can buy."

Reason #5

Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

Reason #6

24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

Reason #7

Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

Reason #8

A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

Reason #9

Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

And now the Z•CARD! It's your very own ZEOS Credit Card and you can apply today. With the Z•CARD you can charge your ZEOS purchases and pay in easy monthly installments. It's just like a Bank Card. Why not apply for your Z•CARD now!

Reason #10

You're Going to be Very Satisfied.

When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value*. We don't just say it, *we Guarantee it!*

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.

Order Now
Toll Free



800-423-5891

TWO-FISTED MANAGEMENT

TWO-FISTED MANAGEMENT



© 1991 MARK, 34

INTERVIEWING JOB PROSPECTS IS AN EXACT SCIENCE. KNOWING JUST WHAT TO ASK IS CRUCIAL. IT'S ALSO A GREAT OPPORTUNITY TO ASK HIGHLY PERSONAL QUESTIONS OF TOTAL STRANGERS.



PSYCHOANALYTICAL TRICK QUESTIONS CAN BE PARTICULARLY EFFECTIVE.



GAUGE THEIR SENSE OF HUMOR.



DISCUSS SALARY EXPECTATIONS.



LAY OUT THE BASIC GROUND RULES EARLY ON.



FINALLY, SEE IF THEY SNAP UNDER PRESSURE.



AS A MANAGER, YOU'LL BE GLAD YOU WENT THROUGH THE EFFORT WITH EACH INTERVIEWEE.



DUE TO THE STRONG GRAPHIC CONTENT OF THIS PROGRAM, USER DISCRETION IS ADVISED.

We don't want to infringe on anyone's freedom of expression.

Limit the number of fonts used to no more than two per presentation. Be consistent and use underlines, italics or bold type for emphasis.

we felt a warning was necessary.

Once you try it, you'll understand why. Charisma's extensive word and data charting functions, real drawing capabilities and total user control make it the most complete graphics solution for business. Unfortunately, some people have trouble resisting the temptation to use every Charisma feature on every presentation. That's understandable.

When you have access to 16.8 million colors, more than 40 fully editable fonts, thirteen drawing tools, a library of 2200 clip art images and the ability to turn any graphic element

But Charisma gives you so many graphic possibilities in one powerful, Windows-compatible program,

into a bullet, it's easy to get a little too enthusiastic.

It's just as easy to get overly excited about the way Charisma lets you assemble entire presentations without switching between word processing, graphics and spreadsheet programs. Plus you see the results of your creativity immediately, since Charisma doesn't make you go back and forth between text and graphic



Add visual interest and keep audience attention focused with freeform illustrations or custom edited clip art. One graphic per chart works best.



Break out information logically and understandably with a variety of chart types. Then use the Harmony Palette for a unifying blend of just the right colors.

screens. And with more than 30 import and export filters for graphic formats—including Harvard Graphics—Charisma gives you more power and control than ever before.

But you shouldn't expect any less from a program designed specifically to take full advantage of the Windows environment. Now, even without overdoing it, you can output the most provocative business graphics you've



As you lay out word charts, use a template that provides maximum readability. Add spark to presentations by turning any graphic element, even your company logo, into a bullet.

ever seen to 35mm slides, overheads and handouts. Or make your point with SlideShow, Charisma's on-screen graphics presentation utility that includes dozens of transition effects.

Its strong graphic content prompted *InfoWorld's* Michael J. Miller to say, "Charisma offers the greatest flexibility in creating and editing charts that I've seen."

We think you'll agree.

Call 1-800-733-3729, ext. 5050 (3710 in Canada) for your free working model of Charisma*.



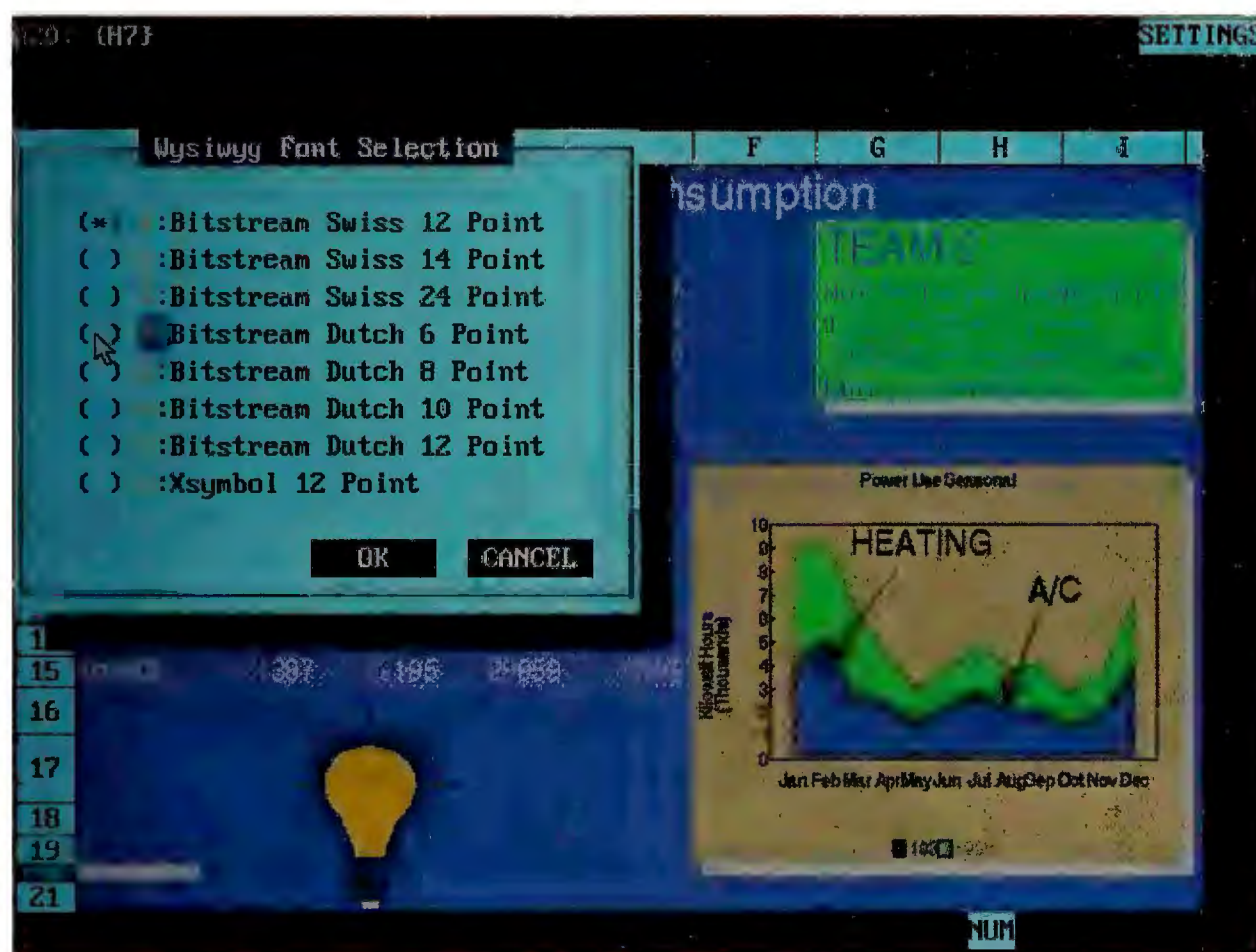
8 0 0 - 7 3 3 - 3 7 2 9

PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

1-2-3 Dresses for Success

Release 2.3 boosts the all-time best-seller with major add-ins, enhanced graphs, and other much-needed improvements.



The new 1-2-3 sports the most compliant spreadsheet interface this side of Windows. You can put live graphs beside your data, import CGM graphics, and dress up reports with fancy fonts.

Richard Scoville

For years Lotus has struggled with a tricky riddle: How can you revamp the world's best-selling computer program without changing its classic command structure?

Lotus's current answer: add-ins. Graft a few features to the core 1-2-3 engine, then attach some serious accessories—a WYSIWYG graphical user interface just like release 3.1's, with on-board draw program, text editing, and styles; the file management Viewer from Lotus's *Magellan*, and

an Auditor to help you unravel tangled formulas. Then, make it run fast in as little as 512K of memory.

The new release 2.3 narrows inconsistencies between Lotus's low-end and high-end DOS spreadsheets. Release 2.3 is essentially a subset of 3.1, with all of 3.1's presentation skills but without its advanced data base or 3-D worksheets. (Lotus will ship a 3.1+ upgrade concurrent with 2.3 and at the same price. It includes the Viewer, the Auditor, a few new graph options and printer drivers from 2.3; and

the Solver technology from 1-2-3/G.)

1-2-3 users will encounter few surprises in release 2.3. The command structure of the core program is basically unchanged, except for some new graph options and a few other minor additions. The screen has gained a white background, and the frame headings indicate the current row and column position (as in release 3.x and *Quattro Pro*).

WYSIWYG Is Good to Get

As with the new *Quattro Pro*, the big news for 1-2-3 is a WY-

SIWYG interface. Instead of *Windows*-like pulldown menus, release 2.3 retains Lotus-style menus, with mouseable, more extensive setting sheets. (Lotus aficionados will find this approach a natural extension of what they're doing, but novices may find the menu tree initially hard to grasp.) But 2.3 turns out to have the most compliant graphical user interface this side of *Excel*, with a flexible spreadsheet publishing system and good speed-up tools.

The interface is attractive and handles well when you're scrolling or mousing. Mouse operation of commands and settings sheets is smooth and fast. For instance, you can select a range with the mouse, then execute several commands on the same range. You

SNAPSHOT

1-2-3 for DOS release 2.3

Add-ins boost the most popular spreadsheet's power and usability.

KEY FEATURES

- WYSIWYG interface
- Improved graphs
- Magellan-style file Viewer
- Auditor to analyze worksheet formula structure
- Background printing

AVAILABILITY

May 1991

PRICING

\$495, upgrades \$150

Lotus Development Corp.

55 Cambridge Pkwy.
Cambridge, MA 02142
800/343-5414

Reader service no. 706

can also adjust row height and column width.

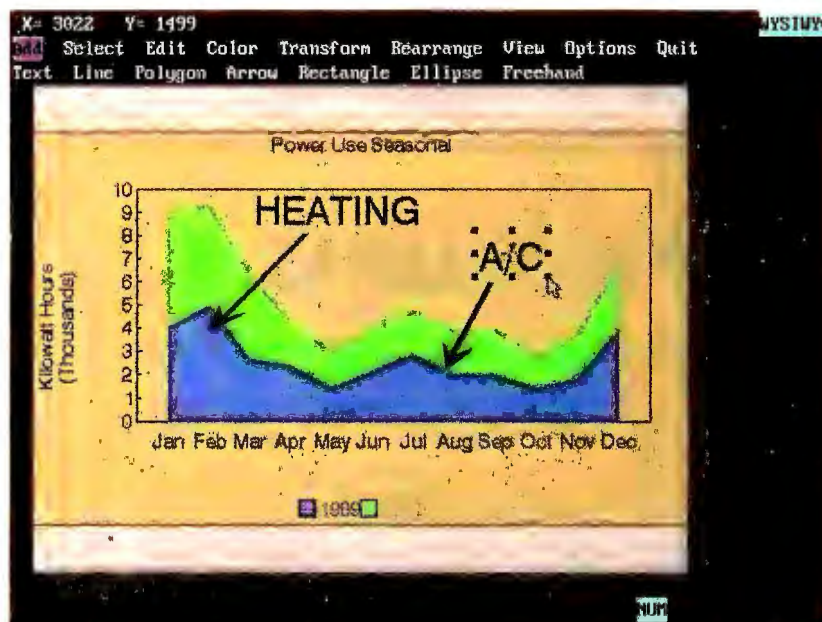
What-you-see is impressive; so is what-you-get. You can control the font, including boldface, italics, and underlining; three Bitstream fonts are provided. You can attach a live graph or an external CGM file to a worksheet range, then edit the graph or image with a built-in draw program that looks and feels like Lotus's *Freelance*. You can add text, rectangles, lines, and other vector elements; rotate objects; and arrange them in layers.

A text editor lets you define a "page" within a worksheet range; in this page you can enter and edit text, complete with justification control and other enhancements. A nifty shortcut lets you center titles at the top of a report. In addition, you can put lines around cells, shade them, and add drop shadows.

Fancy formatting gets tedious if there's no way to automate the process. Release 2.3's format styles let you assign a name to a collection of settings, then apply those settings quickly to additional ranges. As with *Excel*'s Copy Special command, you can also copy format characteristics from one range to another.

More Generous Graphs

The new graphics features are a subset of release 3.1+'s and almost a match for *Quattro Pro*'s lineup. You can choose high/low graphs, mixed-line and horizontal bar charts, and area display for line graphs. Three-dimensional effects are available for bar charts. You can display the y-axis on both sides of the graph, but you can't set up two independent y-axes. You can suppress display of selected sides of the graph frame, and you can choose whether to leave a margin between the frame and the first data point. As it does with



You can enhance your graphs with a Freelance-like drawing tool that lets you add text and annotations, control color, and align objects on a grid.

range names, release 2.3 generates a table of graph names for reference and macro use.

These are welcome additions, but there's still work to be done, at least on the beta version: Y-axes and frame edges are confusingly referred to as "left" and "right," but when you rotate the graph to horizontal, "left" becomes the bottom and "right" is on top.

The View From the Disk

The Viewer add-in is based on Lotus's much-acclaimed *Magellan* file manager. It lets you peek inside worksheets on disk, select a cell to build a linked formula, or browse ASCII and 1-2-3 text files. In contrast to the regular 1-2-3 File commands, the Viewer provides excellent point-and-shoot navigation of directories, and you can use cursor keys to move around inside a displayed worksheet. It represents another grafted-on user interface, but one that's simple to understand.

However, the Viewer's features could go a great deal further. Why not let us navigate with <F5> (Go To) and <F3> (Range Names) in the displayed worksheet, or select and copy cells from the disk sheet to the screen clipboard?

Sounding Out Formula Errors

Many a hapless spreadsheeter has foundered on formula shoals. But with 1-2-3's Auditor add-in, help is near.

In your efforts to trace formula errors, the Auditor lets you select a formula, then identifies all the cells to which the formula refers. Or you can pick a cell, and the Auditor will find the formulas that refer to it. It can highlight the resulting cells, move the cell pointer to them, or list the results as a table in your worksheet. It also identifies circular references and traces the recalculation order of formulas.

The Auditor sounds great, but it's no panacea for sloppy work—just a way to make the hitherto impossible task of finding formula errors merely onerous. *Quattro*'s auditor works about as well; neither is as agile or useful as an *Excel* Info Window, which has notes, references, and dependent cells that show you where you are in the formula process.

The Little Extras

Other features make life a little easier. The settings sheets from release 2.2 have been groomed and extended. And they work well: For operations such as printing, graphing,

sorting, and global settings, you get a near-full-screen display of current options. Settings sheets are mouseable in WYSIWYG or character mode. If you don't have a mouse, press <F2>, and edit selections inside the settings sheet instead of proceeding with the normal 1-2-3 menus.

One subtle but important enhancement is that the program lifts the restrictions on expanded memory that have waylaid users of big worksheets. You can elect to store both data and cell tables in expanded memory, thus increasing the maximum size of your worksheets.

Another welcome change: 1-2-3 alerts you if you're about to retrieve a worksheet without saving your current one.

Background printing is available, but you must load a memory-resident utility before entering 1-2-3. You get improved printer control with print preview and an automatic compression feature that shrinks a large print range onto a single page, and you can change the worksheet frame into a ruler. And release 2.3 supports PostScript.

Spreadsheets Do Battle

1-2-3 release 2.3 lacks *Quattro*'s complex interfile formulas, external data base links, and goal seeking, but users interested in those capabilities should make the comparison with 1-2-3 release 3.1+.

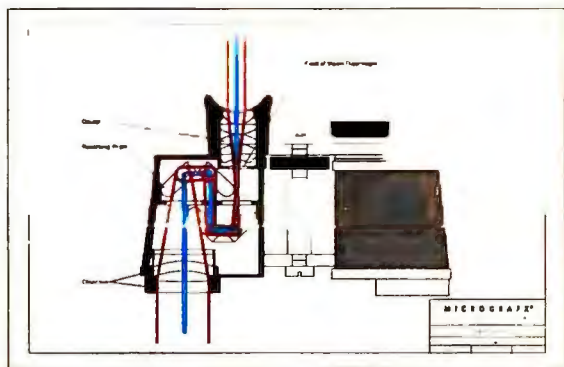
2.3 offers most of the features on a spreadsheet's wish list. Its WYSIWYG interface is smooth and tractable, it offers formatting timesavers, and its settings sheets are comprehensible. If you want a slick graphical interface to add flavor to your number crunching, 2.3 is worth a taste. ☺

Richard Scoville is a contributing editor for PC World.

New!
3.1 Release
Free Trial Software

Focus on Precision Illustration With New Designer 3.1

See for yourself. New Designer 3.1 turns your PC into a precision illustration tool, running under the Microsoft® Windows™ environment. You'll get more accuracy in technical illustrations, greater performance in graphic designs and higher speed in desktop publishing layouts. It's now easier to turn what you can imagine into an image all can see. Call for your free trial software and feel the high performance yourself.

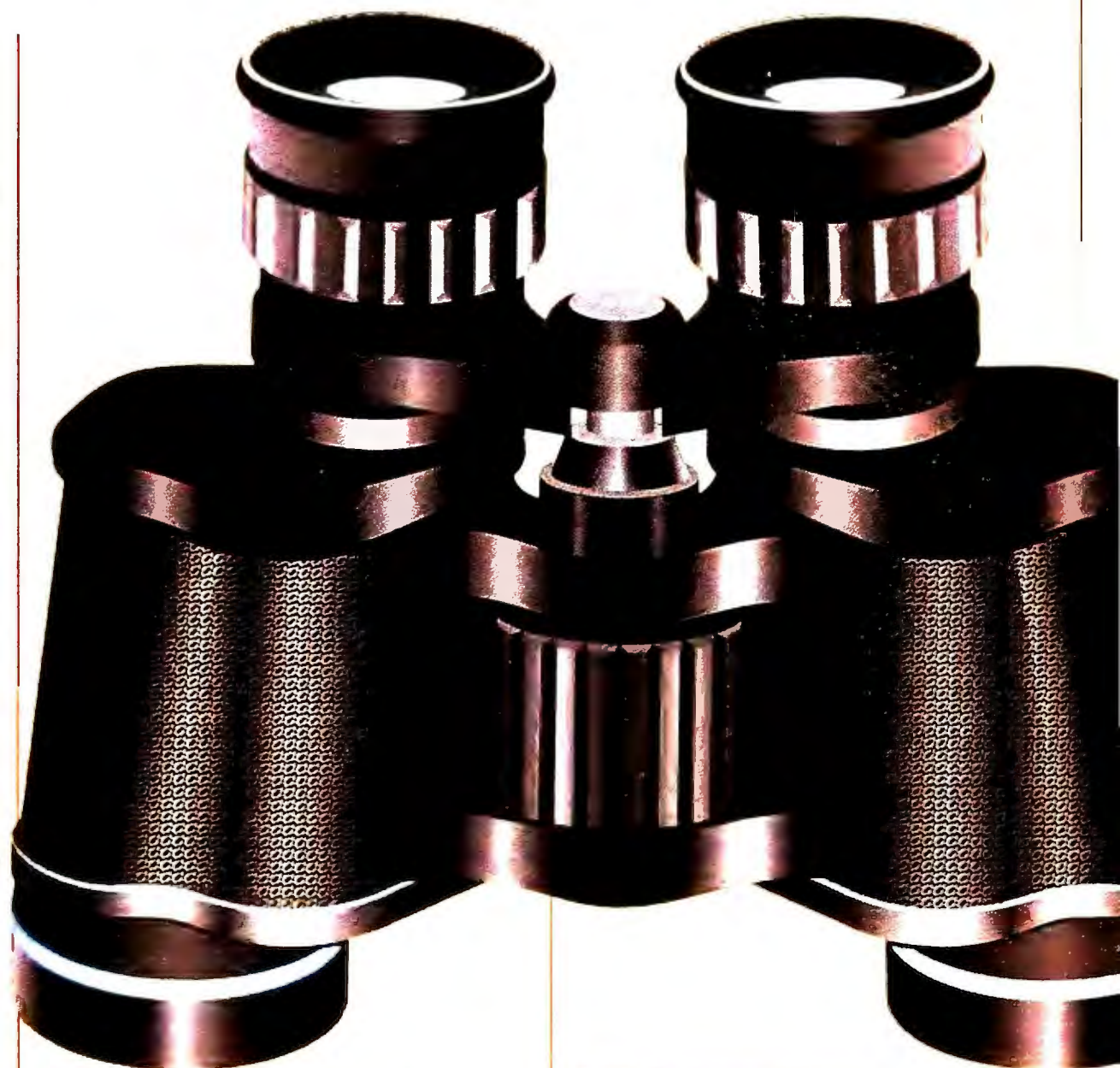


▲ Higher performance in Designer 3.1 speeds up drawings with faster wide styled lines—even wide dashed lines. Object snap points make precision a given.

The view from out front. With new Designer 3.1 you're ahead of the pack no matter how you look at it. With more usable features, higher performance operation and more flexible file handling, you'll be able to create and manipulate an image until it's just right. That's precision.

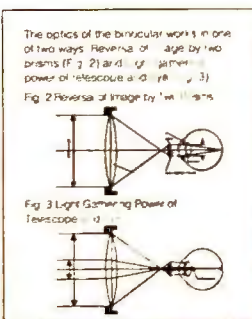


▲ Choose from 16.4 million colors and save any number of custom palettes for later use. Combine text and graphics with bitmapped images and true layering.



▲ "The power-users choice . . . a customizable toolbox has a tool for just about anything; precise and accurate autotracing utility, CAD-like layering and superb color-publishing capabilities," says PC Magazine.

► Desktop published articles become clearer with precision illustration from Designer 3.1. Multiple file formats speed up import and export of files.



Outside perspective reflects well.



"Designer is an outstanding illustration package that receives Editor's Choice recognition. Designer is perhaps the most sophisticated of all the illustration packages," writes PC Magazine.



Software Digest reports that "Designer provides the best overall graphics package. The program offers state-of-the-art features, good performance, and unmatched ease of learning and use in a sophisticated package. Designer can handle virtually any free-form graphics or design task with ease." Designer was awarded a top-of-the-class rating.

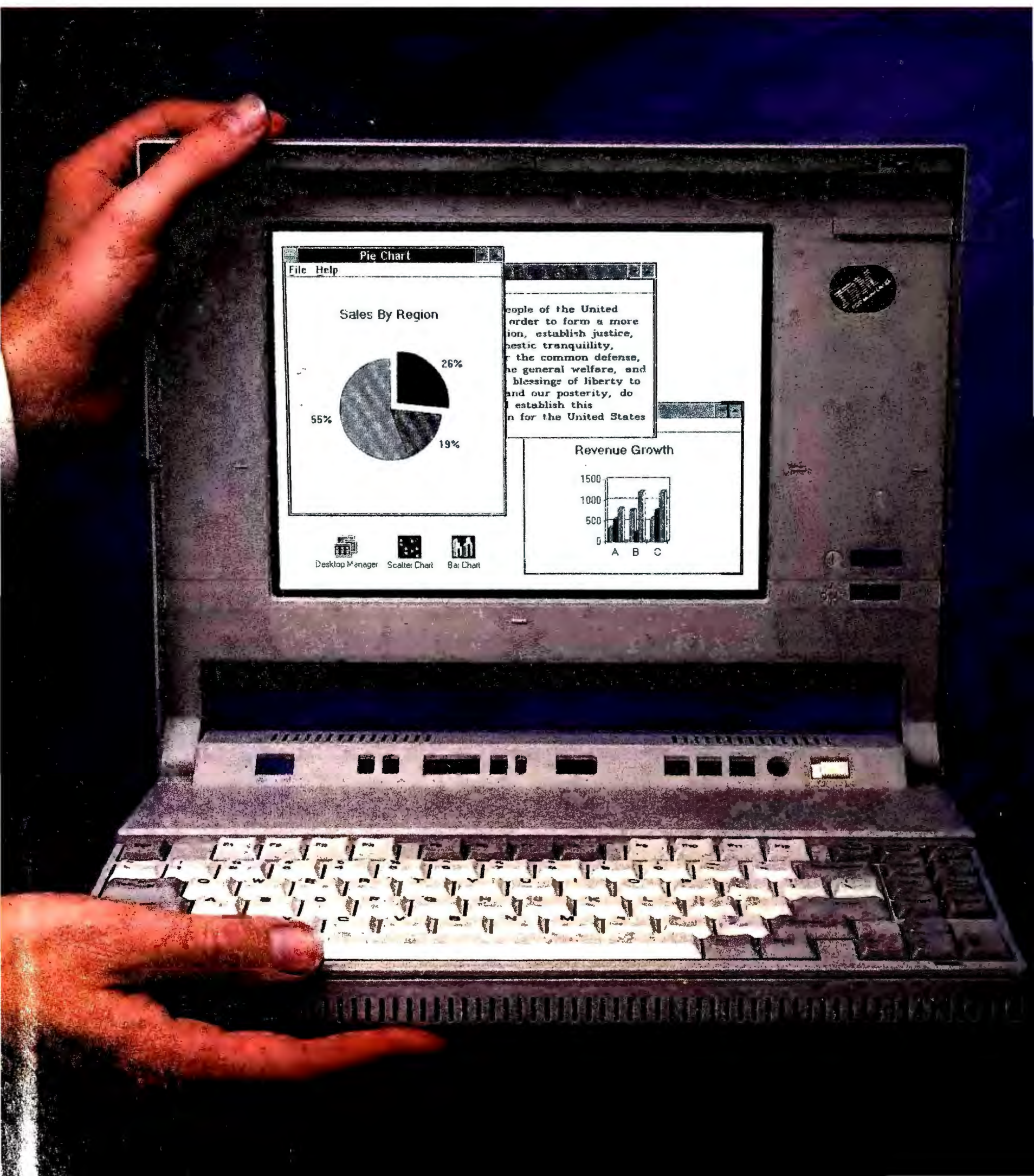
DESIGNER



DESIGNER

Free hands-on trial. Call now, for a free working model of the new Designer, 800-733-3729, ext. 5050.

The body of The heart and

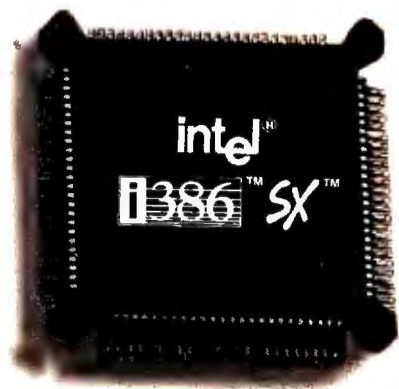


a laptop. soul of a PS/2.

INTRODUCING A PS/2 LAPTOP THAT'S FULL OF FEATURES. NOT COMPROMISES.

Making a computer light enough to take anywhere and small enough to sit on a lap isn't enough. Making it perform like one that sits on a desk is the true challenge. That's why IBM has created a computer that delivers true portability without sacrificing true performance—the Personal System/2® Laptop 40 SX. At just 7.7 pounds it's clearly a lightweight computer. But it certainly doesn't act like one.

DESKTOP PERFORMANCE, WITHOUT THE DESK.



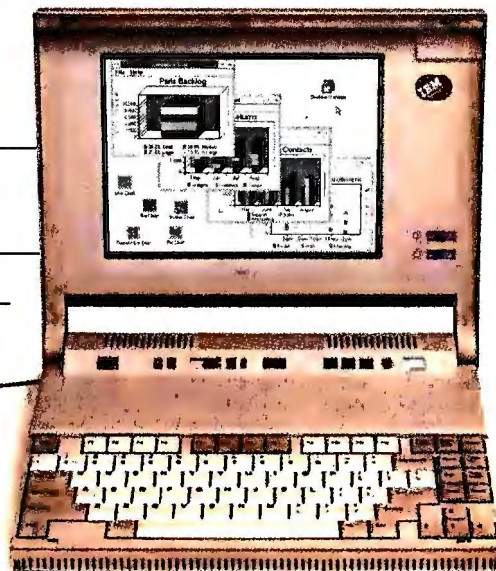
The PS/2® Laptop looks great from the outside. But its true beauty lies inside, where you'll find uncompromised computing power. It has the same 386SX™/20 MHz processor found in best-selling desktop models. A 3.5" 1.44MB disk drive and 2.5" 60MB

fixed disk provide fast access to programs and data, and standard 2MB RAM is expandable to 18MB.

Instead of compromising comfort by altering the keyboard, the PS/2 Laptop has a full-size keyboard spaced and arranged the same way as a desktop PS/2's. And instead of squeezing information onto a pint-size screen, it has a sidelit LCD that offers a 10"-diagonal viewing area. It delivers sharp, clear text and graphics with VGA quality in 32 shades of gray. With so much to offer, the PS/2 Laptop succeeds at being small, without being small-minded.

THE PS/2 LAPTOP IS ONE LAPTOP NOT TO BE TAKEN LIGHTLY.

IBM knows it's not how small you make it—it's how you make it small. The PS/2 Laptop has system status icons that monitor assorted functions and battery life. Extensive power management controls include the ability to change batteries in the



IBM PS/2 LAPTOP 40 SX	
FEATURES	
MICROPROCESSOR	80386SX With Suspend/Resume
Standard	20 MHz
Clock Speed	
MEMORY	
Standard	2MB
Maximum	18MB
STORAGE	
Standard Diskette Drive	3.5" 1.44MB Diskette Drive
Standard Hard Drive	2.5" 60MB Fixed Disk
PACKAGING	
Dimensions	21" (H) x 12.8" (W) x 10.7" (D)
Weight	7.7 Lbs. W/Battery
POWER	
Battery	Up to 3 Hours; W/ Non-Disruptive Exchange; W/ Battery Status Indicator
KEYBOARD	
	101 Keys (W/Numeric Keypad); 5 Degree Slant; Standard Key Spacing
DISPLAY	
	LCD/Sidelit; VGA/32 Gray Scale
OPTIONS	
	Data/Fax Modem; Trackpoint (Mouse/Track Ball); Quick Charger

middle of an application without exiting and a special feature that suspends power when the screen is closed, then returns to full power when reopened, resuming applications where they were left off without the need to save to the hard drive.

Of course, it comes with an AC adapter, and a 2400 BPS Data Modem/9600 BPS Fax Modem is available, as well as a special mouse that doubles as a trackball when turned over. And the PS/2 Laptop comes with something no laptop should be without—an international warranty* backed by thousands of Authorized Remarketers worldwide, so service and support are never far away.

To find out more, contact your IBM Authorized Remarketer or IBM marketing representative. You'll see why with the new PS/2 Laptop, you don't need a whole lot of room to get a whole lot of computer.

How're you
going to do it?
PS/2 it!





While others struggle to break into Windows, the #1 Windows database just got better.

If you're moving your database operations to Microsoft® Windows™, you need dependability and experience. You should be looking at Superbase®, the world's best-selling Windows database.

Superbase has all the tools you need to create Windows relational database applications that really work. An intuitive and easy-to-use interface. A superior Form Designer. Powerful procedural and non-procedural tools for application development. Full DDE and DLL support. Network connectivity and WYSIWYG functionality. Even non-programmers can build powerful applications quickly and easily.

And now, Superbase SQL Library lets you connect to multiple SQL databases and servers like Microsoft SQL Server, Gupta's SQL Base®, Oracle® Server and others. Concurrently.

Proven Performance

While other companies scramble to produce their first Windows version, Superbase is celebrating its third year as a Windows database technology. Three years of continual refinement have made the new Version 1.3 the solid, dependable and easy to use product that it is today.

Which is why it is the leading Windows DBMS. Why it is used with confidence by major corporations around the world. Why it was selected by Microsoft and AT&T for some of the largest Defense Department and US Government PC contracts ever awarded. And why hundreds of VARs and systems consultants use it as their database platform of choice for Windows application development.

A Complete System

Superbase is a complete family of products designed to meet a broad range of requirements, from executive use with Superbase 2, to MIS application development

with Superbase 4. Not only are these products fully upward-compatible, but applications designed with Superbase 4 can run with Superbase 2 as well as with royalty-free Runtime Systems. Version 1.3's Network Extensions offer state-of-the-art concurrency control on networks, while Superbase SQL Library ensures easy integration with SQL database servers.

Find out why Superbase is the only Windows database that can meet *all*

of your Windows database needs.

Visit your dealer today or call us for information and a working model demo disk.

PRICING:

Superbase 2	.....	\$345.00
Superbase 4	.....	\$695.00
Superbase SQL Library	.....	\$495.00
Superbase 4 Developers Edition	.....	\$1295.00
Superbase 4 Developers Upgrade (Runtime)	.....	\$600.00
Superbase Network Extensions	.....	CALL

Superbase is available through all major retail dealers including Egghead Software, Corporate Software, SoftWarehouse and independent dealers and VARs everywhere. All prices are US list.

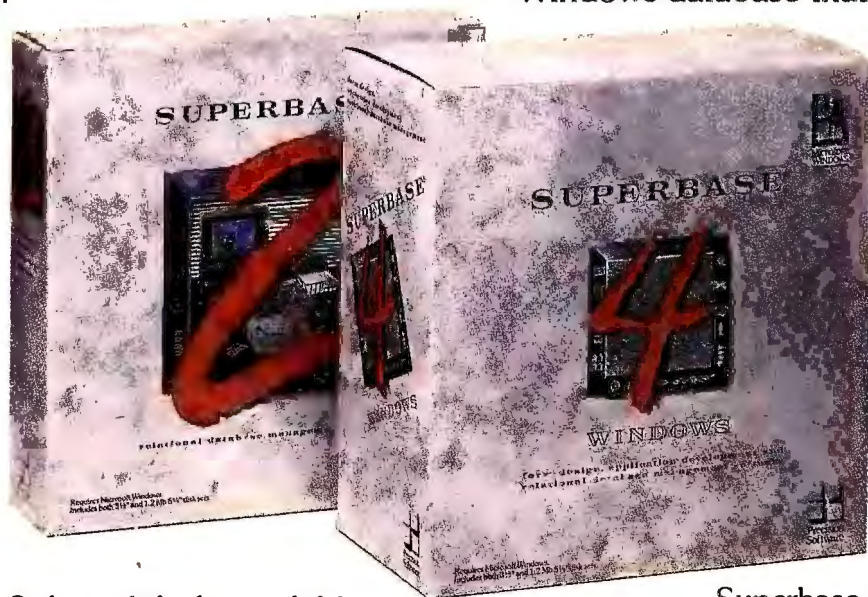
SUPERBASE®

1-800-562-9909

Precision, Incorporated

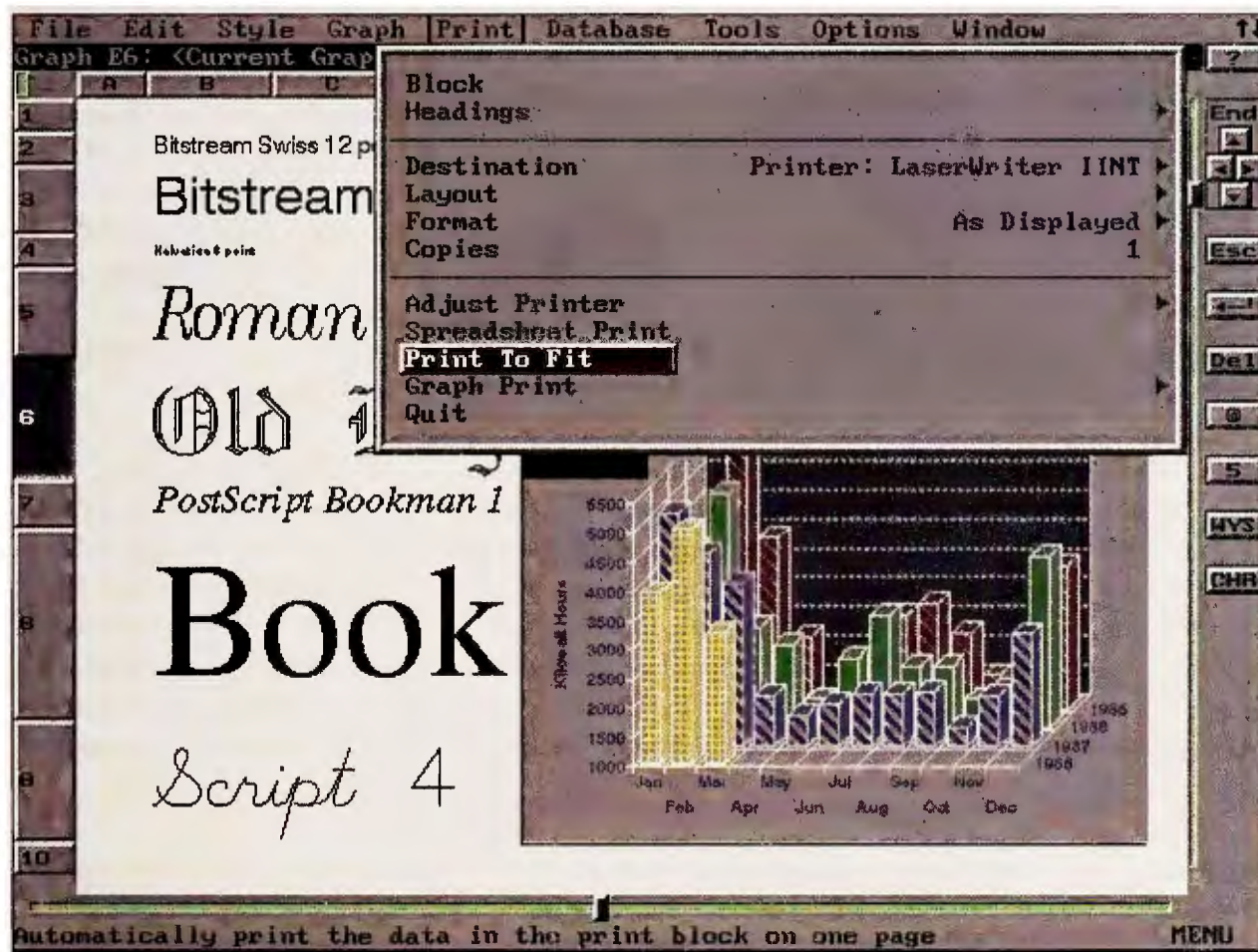
8404 Sterling Street • Irving, TX 75063
Tel: (214) 929-4888 • Fax: (214) 929-1655

Superbase is a registered trademark of Precision Software, Ltd. Precision acknowledges all trademarks belonging to their respective companies.



Quattro Pro Adds Pizzazz

Quattro Pro 3.0 offers a snazzy new interface, improved printing, and automated slide shows—plus a host of other business presentation features.



The addition of a WYSIWYG display in Quattro Pro 3.0 enables you to see your fonts and graphics on screen just as they will appear in a printed document or slide.

Richard Scoville

At its debut, Borland International's *Quattro Pro* offered pulldown menus and spreadsheet publishing features that put the original *1-2-3* to shame. Version 2.0 continued that tradition by adding superior graphics capabilities for both data analysis and presentations.

Quattro Pro 3.0 tops them all, providing a new graphical interface and even better presentation features. That means better output for users who require sophisticated presentation capabilities but don't need the advanced analytical features of such hardware-hungry products as *Excel 3.0* and *1-2-3* release 3.1.

A Dazzling New Look

The changes to *Quattro Pro*'s interface are not just cosmetic. Having a WYSIWYG interface means that your worksheet appears on screen just as it will look in print, requiring fewer test printouts to get the page just right.

To cut down on all that scrolling when you move through a big worksheet, *Quattro*'s normal screen area has been enlarged: It displays 23 rows, and an extra half column in width. You can zoom the view from 25 to 200 percent of normal size, checking any fine publishing details before printing. Row height and column width are now easily adjusted with a mouse, so it's easier to tweak the spacing.

With version 3.0, you can also attach live graphs to spreadsheet ranges, checking on trends as you plug in new numbers. *Quattro*'s annotator lets you draw diagrams and import CGM files, so you can spruce up your worksheet with these graphs as well.

Overall, *Quattro*'s new interface is attractive and functional, but it lacks the support for multiple operations that competitors offer. You can't select multiple ranges and then issue a single command, as in *Excel*, nor can you execute multiple commands on a single preselected range, as in *1-2-3* release 2.3 and 3.1.

More Powerful Printing

If you've ever wrestled with

big reports, you'd kill for *Quattro Pro*'s Print-to-Fit function. Select a big print range, and you can adjust the whole thing to fit on a single page—and say good-bye to repeated trips to the printer.

For really wide spreadsheets, you can print sideways on a dot matrix printer, just as with Funk Software's venerable *Sideways* utility for *1-2-3*. Take a wide worksheet, block it, issue Print, and *Quattro* will print long rows across the page breaks to create one huge report.

Graphical Gizmos

The new *Quattro* also includes some handy twists on its su-

SNAPSHOT

Quattro Pro 3.0

A snazzy graphical upgrade dresses up *Quattro Pro* and adds frills for great business presentations.

KEY FEATURES

- **WYSIWYG interface** with Bitstream screen fonts and zoomable views
- **Print enhancements**, including Print-to-Fit sizing and banner printing
- **Enhanced graphics annotator**
- **Supports attachment of live graphs to worksheets**
- **Special slide-show effects** such as wipes, dissolves, and spirals
- **Digitized sound effects**

AVAILABILITY

Immediate

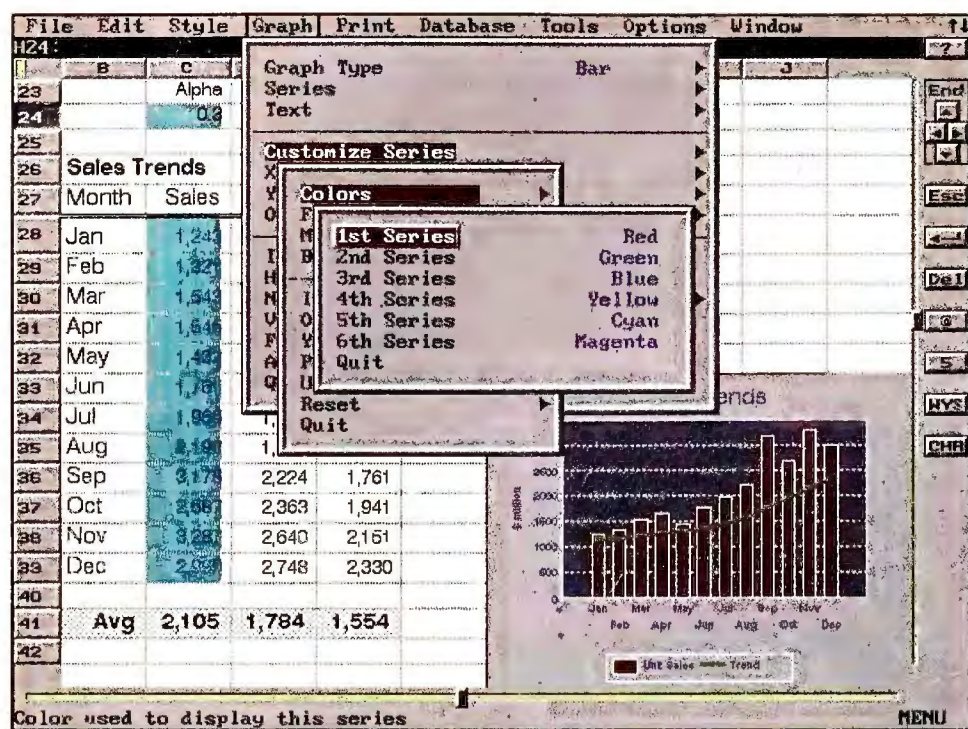
PRICING

\$495; upgrade from version 2.0 \$49.95, from version 1.0 \$99.95; *PraView* Power Pack \$49.95 with upgrade

Borland Int'l, Inc.

1800 Green Hills Rd.
Scotts Valley, CA 95067
800/331-0877

Reader service no. 707



Quattro Pro allows you to insert a spreadsheet graph anywhere on your worksheet and redraws the graph automatically when spreadsheet data is changed.

ries of presentation aids in its *ProView Power Pack*, which is available free with version 3.0 (upgraders pay \$49.95). *Power Pack* includes Bitstream fonts and 100 color images for spiffing up your business shows.

Power Pack emphasizes training aids and ease of use. For example, a set of templates provides consistent background designs as well as suggested type sizes and spacing for titles and bullets. Additionally, the new macro library includes a helpful feature that applies a template to a set of specified graphs, contributing to uniform design.

perb graphics annotator, the built-in drawing program that lets you enhance data graphs or create diagrams. There's now a scalable snap-to grid, which allows you to automatically align such objects as bullets, boxes, or clip art. A new

graph-aligning tool precisely aligns the tops, bottoms, or sides of a group of objects. These features are a big help in getting professional-quality layout with a minimum of fuss.

Quattro 2.0 or 1-2-3 users know the frustration of mak-

ing changes to a graph, only to lose them by neglecting to recreate the graph name. Quattro 3.0 ends that aggravation with a feature that automatically saves changes to named graphs.

Borland also includes a se-

Slide Shows Sound Off

Quattro 2.0 pioneered the spreadsheet-cum-presentation graphics program with its annotator, hypertext buttons, and slide shows. Now 3.0's *Power Pack* forges ahead with some remarkable new gad-

Introducing Pocket Edition™ 2400

The people who wrote the book on modems proudly present the Pocket Edition. The first Hayes modem specially designed for people who use laptop and notebook computers.

The people who wrote the book on modems proudly present the Pocket Edition.

Weighing in at a slight three ounces, the Pocket Edition 2400 comes with everything you need to take it on the road—a 9-pin connector, cables, a handy carrying case, and our simple-to-use Hayes Smartcom EZ communications software.

And, because it gets all its power from the

phone line and your computer's serial port, you'll never find yourself searching for an outlet to plug it into.

The Pocket Edition is incredibly compact yet it contains many of the features you expect from our "full-size" Hayes modems. It's ideal for working remotely with your

Once again, Hayes has set modems will



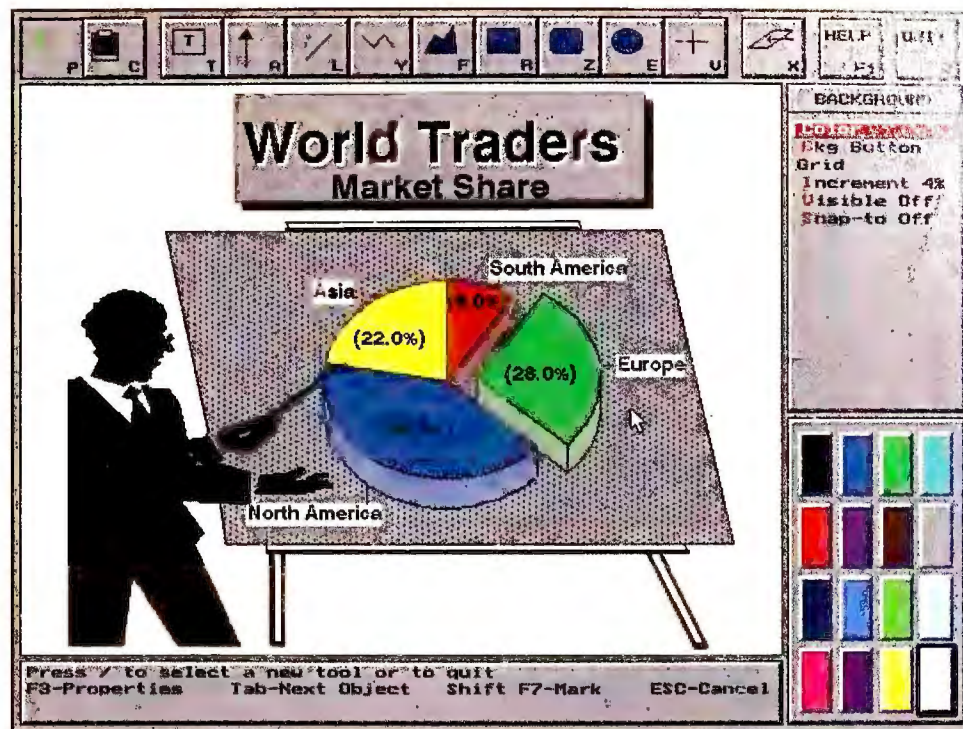
getry for adding special effects to your presentations.

You create a *Quattro 2.0* slide show by setting up a table of graph names and time codes. With 3.0, you can add another column of codes to get snazzy transition effects like wipes, dissolves, and spirals.

Power Pack also includes digitized sound effects. If you've specified a sound file in your slide-show table, for instance, *Quattro* can herald the next slide with a tinny but easily recognizable drum roll that issues from the PC's speaker. Such features are helpful if you need to whip up an entertaining in-house show.

A Matter for Further Analysis

Quattro Pro 3.0's interface has changed, but its main capabilities remain the same. It's certain to appeal to users who want all the capabilities of 1-2-3 release 2.2, plus superior



you can jazz up business data by adding clip art or using exploded charts. With *Quattro's* graphics annotator, you can label sections of a pie and add customized colors.

presentation graphics. However, *Quattro* doesn't offer some advanced tools useful to engineers and financial managers that are currently found in products like 1-2-3 3.1 and *Excel 3.0*: a full-powered solver (for nonlinear equations),

true 3-D worksheets, and smart consolidation.

Still, *Quattro Pro 3.0* improves on an already great program while running in only 512K. For users who don't own a 386, it's one of the best choices available, and it's par-

ticularly recommended for users who want to show off their data in the best possible light. ☺

Richard Scoville is a contributing editor for PC World.

company's computer system. It keeps you in touch with electronic mail. You can even use to deliver a FAX with an on-line service. And while the Pocket Edition was created for people on the go, it's also a great space-saver for those who stay at home. At the suggested retail price of \$179

(and with our unique Hayes performance warranty and money-back guarantee), you'll find the Pocket Edition extremely easy on your pocketbook.

For more information about the new portable Pocket Edition 2400, call us at 1-800-635-1225.

It's time you gave your laptop a new traveling companion.

Hayes®

Our technology has the computer world talking. More than ever.

the standard by which all be measured.



There's No Way Around Your Business Accounting, But Here's a Great Way To Get Through It.

Full-Featured, Easy-to-Use Accounting from DacEasy.

DacEasy™ Accounting won't do your accounting for you, but it will make it easier to manage.

With hundreds of powerful features and a user interface that works the way your business works, DacEasy Accounting has earned the most industry awards and is the accounting system of choice for over 700,000 businesses worldwide.

DacEasy Accounting General Features

- Unlimited transactions,
- Context-sensitive & indexed help
- Instant lookup capability
- Mouse support (optional)
- Built-in backup/restore routines
- Recurring transaction option
- Complete line of forms & checks available

General Ledger

- Modifiable sample chart of accounts
- Allows 13 user defined periods
- Allows up to 18 months open
- Auto-reversing transactions

Accounts Receivable

- Open invoice/balance forward/cash
- Flexible aging reports
- Automatic finance charges
- Supports partial payments

Accounts Payable

- Prints 1099 (Misc)
- Multiple checking accounts

Cash Management

- Handles deposits, prints checks
- Account reconciliation
- Writes checks from G.L.

Billing

- Unlimited number of sales tax rates
- Sales journals & credit memos
- Automatic revenue and cost allocation by dept.
- Point-of-sale invoicing
- Sales analysis report

Inventory

- Supports last purchase, average and standard costing

Product Assembly

- Internal product building before billing
- Unlimited number of items per product

Purchase Order

- Multiple tax rates per vendor
- Purchase journal/unlimited items per P.O.

Budgeting

- Monthly budgeting
- Year-to-date comparison

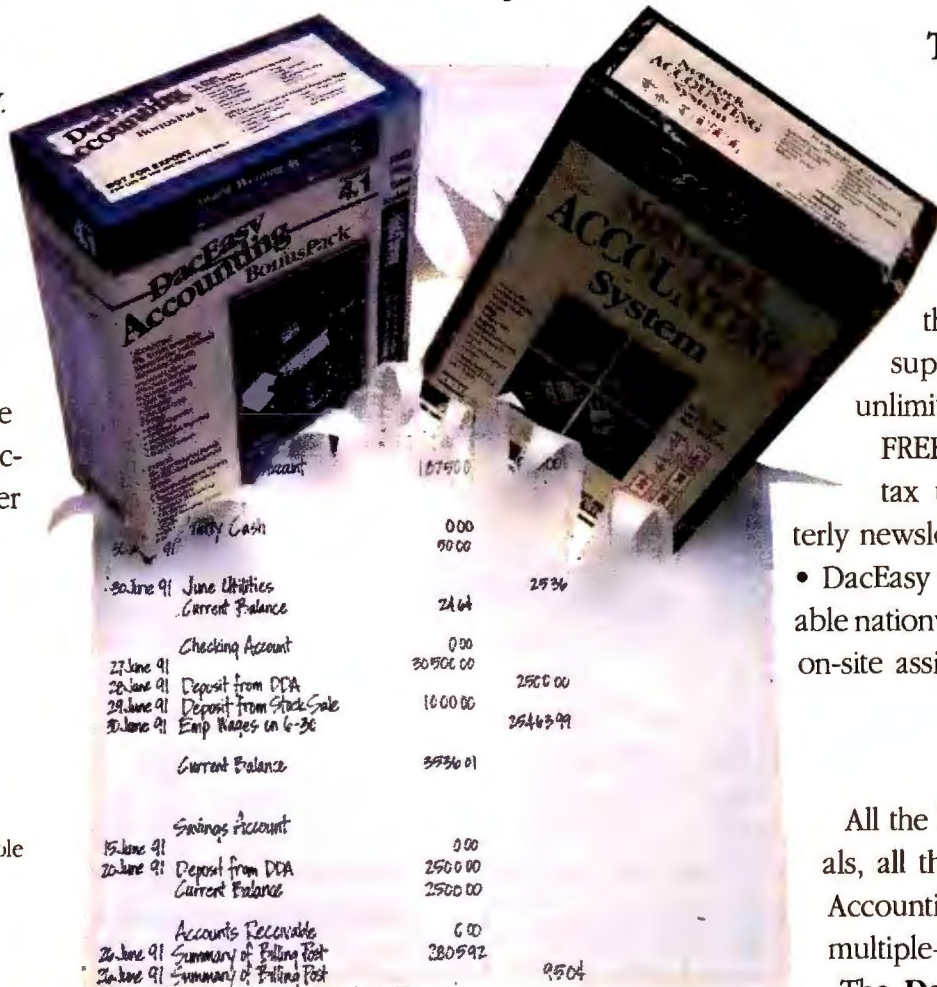
3-D Graphics

- Bar, 3-D bar, 3-D pie, line, stacked bar, overlay bar, high/low close combination line and bar, & filled line graph capability
- Dual orientation capability
- Supports 150 different printers

Management Reporting

- Builds custom reports using any field
- Generates reports from master files
- View reports on screen

MEDIA CODE: PCW



DacEasy Payroll

- Prints continuous payroll checks, W-2's, 1099 (MISC) forms
- Supports hourly, salaried and contract labor
- Automatic Federal & State withholding
- Creates W-2's on magnetic media
- Tracks hire dates, raises, vacation, etc.
- Fast check reconciliation
- Supports cafeteria plan

DacEasy Video Tutor

- Covers DacEasy Accounting and Payroll

The DacEasy BonusPack includes DacEasy Accounting, Payroll and the Video Tutor, all for just \$229.95.

More Training Options

DacEasy makes it easy to quickly get productive with DacEasy Accounting with training programs and materials unequaled in the industry.

- Classroom Seminars are offered in cities all across the Nation, providing hands-on instruction from a qualified professional DacEasy Accounting specialist.
- Self-paced training materials are convenient and economical for on-site learning and employee training.
- The DacEasy Video Tutor is a great way to get a quick start with DacEasy Accounting.

The Support You Need, When You Need It

DacEasy offers the best in telephone and on-site support programs.

- The DacEasy Advantage Club, the best in complete, affordable support, provides a full year of unlimited telephone assistance, plus FREE maintenance revisions, FREE tax updates, an informative quarterly newsletter, and more.
- DacEasy Certified Consultants are available nationwide by referral for customized, on-site assistance.

Complete Network Accounting, Too

All the features, all the training materials, all the support options of DacEasy Accounting are available in a powerful, multiple-user version.

The DacEasy Network Accounting System has everything you get with the BonusPack in a Local Area Network format that offers these powerful network features:

- Unlimited number of users
- Custom password protection
- Support for up to six printers

And, the DacEasy Network Accounting System is priced at just \$499.95.

To get the best award-winning accounting features, plus the most Training and Support plans for your business, ask your local software dealer for DacEasy Accounting, or call DacEasy toll free today.

1-800-877-8088

For Canadian Version with GST call
(416) 940-3314

DacEasy, Inc.

17950 Preston Rd. • Ste. 800 • Dallas, Texas 75252
30 Day Money-Back Guarantee

DacEasy software is backed by a full, money-back guarantee within 30 days, when purchased directly from DacEasy.

Hardware Requirements: IBM or compatible PC's, Accounting 4.1-640K, Hard Disk, DOS 3.1 or later, mouse optional. Payroll 4.1-512K, Hard Disk, DOS 3.1 or later, mouse optional. Network Accounting: NetBIOS Compatible LAN, 640K, DOS 3.1 or later, mouse optional. Rolodex is a trademark of Rolodex Corp. DacEasy is a trademark of DacEasy, Inc. © Copyright 1991. All rights reserved.

* Editor's Choice 1985 for Version 1.0, 1987 for Version 2.0.



Circle 94 on reader service card

Harvard Graphics Scores Again

The leader in PC graphics gets a timely upgrade, with more presentation tricks and improved drawing features.



Harvard Graphics' new drawing tools offer improved color and graphics.

Richard Jantz

With its simple, fill-in-the-blanks approach to chart building and editing, Software Publishing's *Harvard Graphics* remains the most popular of presentation graphics packages. While *Windows*-based products such as Microsoft's *PowerPoint* offer better desktop presentation tools for getting your arms around an entire presentation (such as light-table-like slide sorters), *Harvard Graphics* is still the top choice for DOS users.

Now comes *Harvard Graphics 3.0*, a major upgrade featuring a smoother interface, new templates for creating consistent presentations, and vastly improved drawing tools—all welcome enhancements. The latest version is a must-have upgrade for *Har-*

vard's huge following. Veteran users will find that charts contain new shapes, such as 3-D pie slices, cylinders, and pyramids, while streamlined menus and pop-up forms make program navigation easier.

Achieving Global Control

Though some of *PowerPoint's* very helpful desktop presentation tools—such as an integrated outline, and a slide sorter for organizing a presentation—are still missing from *Harvard*, new global presentation features are a step in the right direction. You can create a unified, consistent presentation using a master form to control titles, fonts, colors, rules, and backgrounds. You can also save the master form as a permanent template and generate speaker notes to accompany charts.

As in previous versions, *Harvard* will link to an external spreadsheet file, and you can update charts based on this file with a single command. One new plus is that you can view either a 1-2-3 or *Excel* spreadsheet from within *Harvard* and simply highlight the data ranges you want to import into a chart.

Drawing Enhancements

The revamped drawing module now uses icon-based tools and provides the point-and-click simplicity of *Windows* packages. This module lets you perform some impressive new tricks: You can add scanned images (TIFF or PCX files) to charts, “evolve” one object into another (say, gradually change a circle into a square), and “animate” an object during an on-screen

presentation to give the illusion of movement, such as an arrow shooting across the screen.

To make your presentation even more presentable, you can take advantage of the program's support for 64 colors (up from 16), blended colors, and Bitstream scalable fonts with multiple fonts per chart.

If you're not yet wedded to *Windows*, *Harvard 3.0* is the program to beat for presentation graphics. However, if you love *Harvard* but are migrating to *Windows*, don't fret: Software Publishing is promising *Harvard for Windows* later this year. ☉

Richard Jantz is a contributing editor for PC World and author of Ventura for Windows (John Wiley & Sons, New York, 1991).

SNAPSHOT

Harvard Graphics 3.0

An upgrade to longtime favorite *Harvard Graphics* offers enhanced presentation tools and is a must-have for veteran users.

KEY FEATURES

- New global presentation controls
- Broader range of chart styles
- Animation effects
- Supports Bitstream scalable fonts
- Supports 64 colors per chart

AVAILABILITY

June 1991

PRICING

\$595, upgrade from *Harvard Graphics 2.3* \$125

Software Publishing Corp.

1901 Landings Dr.
Mountain View, CA
94043
415/962-8910

Reader service no. 705

Set yourself free

1990 World Class Award 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 only carry the latest versions of products. Version numbers in our ads are current at press time. Products listed here in red are Microsoft Windows Applications.

Adobe Systems ... NCP

- 7547 ☒ Adobe Type Manager 1.1 for Windows \$65.
 - 9623 ☒ Adobe TypeAlign 1.0 for Windows . . . 69.
 - 9874 ☒ Adobe TypeAlign 1.0 for Windows & Adobe Type Manager 1.1 for Windows Bundle . 125.
 - 7928 ☒ Adobe Plus Pack 129.
 - 8367 ☒ ATM & Plus Pack Bundle. 189.
 - 7392 ☒ Adobe PostScript Cartridge. 319.
- (Entire Adobe Type Library, from 1 to 210 is available. Call for more information.)

Aldus ... NCP

- 8000 ☐ Persuasion 1.0 for Windows 339.
- 1332 ☐ PageMaker 4.0 499.

Alpha Software ... NCP

- 5104 ☒ Alpha Four 1.1 319.

Application Techniques ... NCP

- 1214 ☒ Pizazz Plus 2.0 69.
- 9621 ☒ Picture Eze 1.0 for Windows 99.

Ashton-Tate ... NCP

- 4450 ☐ dBASE IV 1.1 499.

Asymetrix ... NCP

- 7384 ☒ Toolbook 1.0 for Windows. 309.

Atech Software ... NCP

- 9436 ☐ Publisher's Powerpak 1.2 for Windows. 49.
- 9435 ☐ Publisher's Powerpak 2.1 for WordPerfect & Microsoft Word 49.

Avery ... NCP

Laser and Dot Matrix labels available.
Call with Avery part number.

- 6006 ☒ Label Pro 1.0 (Laser). \$49.
- 7336 ☒ Label Pro 1.0 for Dot Matrix 49.

Berkeley Systems ... NCP

- 9885 ☒ After Dark 1.0 for Windows 29.

Better Software ... NCP

- 9786 ☐ Switch-It 3.23 55.

Bitstream ... NCP

- 7568 ☒ FaceLift 1.0 for Windows 2.x/3.0. 59.
- 8040 ☒ FaceLift 1.0 for WordPerfect 5.0/5.1 . . . 59.
- 7569 ☐ Companion Value Pack 1.0. 125.
- 8883 ☒ Type City Cartridge with Deli 259.
- ☒ Typeface Packages. each 89.

Bloc Publishing ... NCP

- 1447 ☒ FormTool Gold 3.0 55.
- 9039 ☒ 3-D CHARTS To Go! 1.0 59.

Borland International ... NCP

- 6242 ☒ Quattro Pro 3.0. 339.
- 9695 ☐ Borland's C++ 2.0. 339.
- 1514 ☒ Paradox 3.5 529.
- 7356 ☐ Pascal Pro (2nd Edition) 209.
- 1524 ☐ SideKick 2.0 65.
- 9635 ☒ Object Vision 1.0 call



Bitstream ... NCP

8883 *Type City*—New high-speed type cartridge system for HP LaserJet II, IIP & III - entirely new text & headline faces with Windows screen fonts. Expands with add-on cards. Innocent's Guide to Type & \$99 Deli card included free . \$259.

Broderbund ... NCP

- 9831 ☐ BannerMania 27.
- 1416 ☒ New Print Shop Companion 33.
- 1434 ☒ New Print Shop. 39.
- 7288 ☒ Prompt 2.0 for Windows (from Access). 79.
- 7289 ☒ Dragnet 2.1 for Windows (from Access) 89.

Brown-Wagh ... NCP

- 8579 ☒ MicroLogic More Fonts 2.0 75.

ButtonWare ... NCP

- 6419 ☒ PC-File 5.01 89.

Caere ... NCP

- 6004 ☒ Omnipage 386 3.0 489.
- 8933 ☒ Omnipage Professional 1.0 699.

Central Point ... NCP

- 5039 ☐ PC Tools 7.0 115.
- 8114 ☒ Backup 7.0 (DOS and Windows) 84.
- 9751 ☒ AntiVirus 1.0 84.

Checkfree Corporation ... NCP

- 6360 ☒ Checkfree. 19.

Chronologic Corporation ... NCP

- 8849 ☒ Instant Recall 1.2 64.

CompuServe

- 7546 ☒ DOS Membership Kit 1.2 23.

Concentric Data Systems ... NCP

- 6575 ☒ R & R Relational Report Writer 4.0. . . . 159.

Corel Systems ... NCP

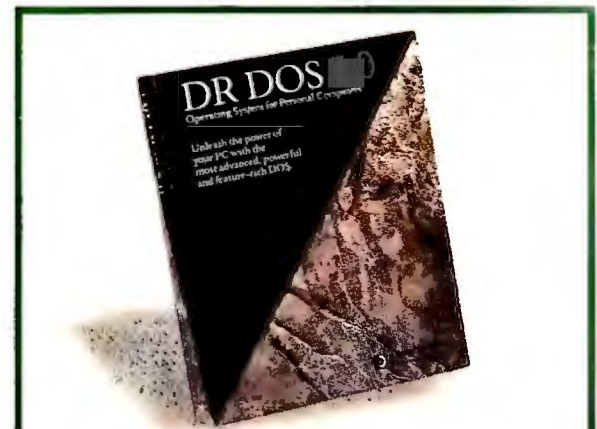
- 5506 ☐ CorelDRAW! 2.0 389.

Data Storm ... NCP

- 4798 ☒ PROCOMM PLUS 2.0 69.

DCA ... NCP

- 5611 ☐ Crosstalk for Windows 1.1. 125.



Digital Research ... NCP

9694 ☐ DR DOS Upgrade to 5.0—For any version of any DOS. Easily installs, works with all software and files. Increases 286/386 RAM availability to over 620K. \$77.

Deirina Technology ... NCP

- 4325 ☐ PerFORM 2.1 95.
- 7351 ☒ PerFORMPRO 1.0 for Windows (limited time) 129.

Digital Research ... NCP

- 8288 ☒ DR DOS 5.0 145.
- 9694 ☐ DR DOS Upgrade to 5.0 (from any DOS version) 77.

DMA ... NCP

- 8378 ☐ PC Anywhere IV 4.03 105.

Fifth Generation Systems ... NCP

- 7725 ☒ Direct Access 5.0 65.
- 3950 ☒ Fastback Plus 2.1 119.

FormWorx ... NCP

- 5810 ☐ FormWorx with Fill & File 2.5 85.
- 7311 ☒ Form Publisher for Windows 1.2 139.

Fox Software ... NCP

- 6188 ☒ FoxPro 1.02 459.

Funk Software ... NCP

- 7380 ☒ P.D. Queue 1.0 (print spooler). 59.
- 2228 ☒ Sideways 3.3 59.
- 9488 ☒ Sideways & P.D. Queue 85.

Geoworks ... NCP

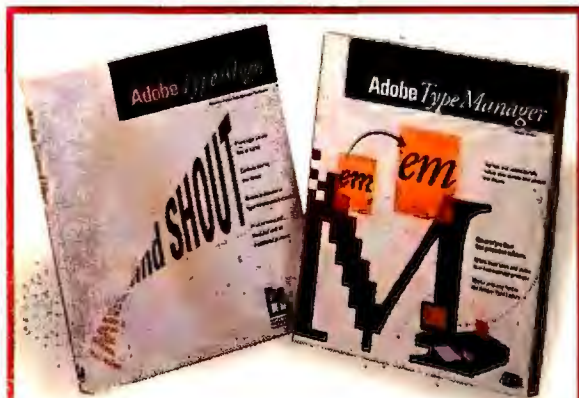
- 8789 ☒ Ensemble 1.0 129.

Gibson Research ... NCP

- 9832 ☒ SpinRite II 2.0 64.

Great American Software ... NCP

- 9827 ☒ Business Pack (Money Matters 2.0 & Payroll 2.0) 99.
- 4880 ☐ One Write Plus Acct. Sys. 2.06 189.



Adobe Systems ... NCP

9874 ☒ Adobe TypeAlign 1.0 and ATM 1.1 for Windows Bundle—TypeAlign provides customized text-manipulation with mixed typefaces, styles & sizes. ATM cleans up the jagged or stick figure type. ATM includes 13 scaleable fonts . \$125.



Corel Systems ... NCP

5506 ☐ CorelDRAW! 2.0—The PC graphics software that's fast, fun and powerful. CorelDRAW! 2.0 now comes with more drawing power, more type control, and more value...and it's still easy to use \$389.

with more memory



Inner Media, Inc. ... NCP

8846 ☒ **WideAngle 1.0 for Windows**—A unique solution to the crowded windowing screen. By spreading out your applications over a super sized desktop, your monitor becomes a viewport over the expanded desktop . . . \$69.

Hayes ... NCP

7983 ☒ **Smartcom Exec 2.0** 79.
9639 ☒ **LANstep 1.0** 349.

hDC Computer Corporation ... NCP

8974 ☒ **Icon Designer 1.0** 35.
7389 ☒ **Windows Express 3.0** 52.
7383 ☒ **First Apps 1.0** 52.

Helix Software ... NCP

9627 ☒ **Netroom 1.1 (single user)** 52.
9626 ☒ **Netroom 1.1 (4 user)** 95.
9625 ☒ **Netroom (10 user)** 159.
9628 ☒ **Headroom 2.0** 65.

Hilgraeve ... NCP

2323 ☒ **HyperACCESS/5 2.0 (DOS & OS/2)** . . . 115.

Individual Software ... NCP

6222 ☒ **Resume Maker 1.3** 29.

Inner Media, Inc. ... NCP

8846 ☒ **Wide Angle 1.0 for Windows** 69.

Inset Systems ... NCP

7298 ☒ **HiJaak 2.0** 99.
7300 ☒ **Inset Plus HiJaak** 125.

Insight Development ... NCP

8320 ☒ **PrinTools 1.0** 85.



Inset Systems ... NCP

7298 ☒ **Hijaak 2.0**—Capture screens & convert graphics files with Hijaak release 2.0. New features include 5K pop-up window, many new raster & vector formats and support for more than 16 Group 3 fax devices. \$99.

Insight Resource ... NCP

8851 ☒ **KO-Pilot for WordPerfect 5.1** \$55.

Intult ... NCP

2426 ☒ **Quicken 4.0** 39.

Isogon ... NCP

7478 ☒ **FontSpace 2.0** 59.

LaserGo ... NCP

7635 ☒ **GoScript Plus 3.0** 189.

LaserTools ... NCP

6882 ☒ **PrintCache 2.3** 99.

Lord Publishing ... NCP

5191 ☒ **Ronstadt's Financials 1.02** 75.

Lotus ... NCP

5417 ☒ **1-2-3 3.1** 429.

5653 ☒ **1-2-3 2.2** 349.

5134 ☒ **Magellan 2.0** 109.

4131 ☒ **Agenda 2.0** 299.

MECA ... NCP

2798 ☒ **Managing Your Money 7.0** 139.

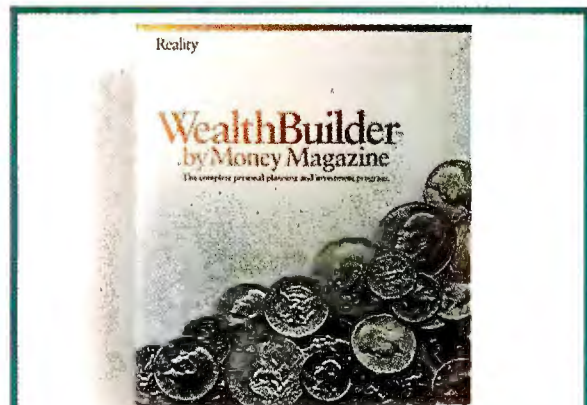
Micro Logic ... NCP

6787 ☒ **Info Select 1.1** 95.

Microcom ... NCP

7649 ☒ **Virex-PC 1.1** 79.

6234 ☒ **CarbonCopy Plus 5.2** 119.



Reality Technologies ... NCP

6572 ☒ **WealthBuilder by Money Magazine 1.1**—Save & invest wisely. Set financial goals & achieve them. Plan for retirement, a child's education, a home. Optimize your portfolio & track all of your investments. \$99.

Microlytics ... NCP

9636 ☒ **Strunk & White Elements of Style** 35.

7931 ☒ **Random House Encyclopedia** 68.

Microsoft ... NCP

2894 ☒ **QuickBasic 4.5** 69.

7010 ☒ **Windows 3.0** 99.

7388 ☒ **Project 1.0 for Windows** 459.

7882 ☒ **Productivity Pack 1.0 for Windows** 45.

2904 ☒ **Works 2.0** 99.

2901 ☒ **Word 5.5** 209.

7387 ☒ **PowerPoint 2.0 for Windows** 329.

6195 ☒ **Word 1.1 for Windows** 329.

2856 ☒ **Excel 3.0 for Windows** 329.

8137 ☒ **Office for Windows (includes Excel, Word for Windows, and PowerPoint)** 659.

2853 ☒ **C Compiler 6.0** 329.

1-800/243-8088

MEMBER
MMC
of the Direct Marketing Association, Inc.

PC Connection

6 Mill Street
Marlow, NH 03456

SALES 603/446-7721 FAX 603/446-7791

850W



Microsoft ... NCP

8137 ☒ **Office for Windows**—A bundle of Word for Windows, PowerPoint for Windows, & the new version of Excel for Windows make up a powerful combination for the serious Windows user in one convenient package \$659.

Multisoft ... NCP

4925 ☒ **PC-Kwik Power Pak 2.0** 75.

NBI, Inc. ... NCP

9618 ☒ **Legacy 1.1** 289.

Nolo Press ... NCP

5122 ☒ **For The Record 2.0** 35.

2982 ☒ **WillMaker 4.0** 39.

OCR Systems ... NCP

9879 ☒ **ReadRight 2.01** 309.

9878 ☒ **ReadRight 3.0 for Windows** 309.

PC Globe ... NCP

5902 ☒ **PC Globe 4.0** 39.

5900 ☒ **PC USA 2.0** 39.

Personics ... NCP

9288 ☒ **Laptop Ultravision 1.0 (3 1/2" only)** 49.

4384 ☒ **Ultravision 2.0** 79.

7048 ☒ **Monarch 1.0** 319.

PowerUp ... NCP

7860 ☒ **Calendar Creator Plus 4.0** 45.

7861 ☒ **Address Book Plus 3.0** 49.

7857 ☒ **Labels Unlimited 3.0** 49.

7858 ☒ **Express Publisher 2.0** 89.

Precision Software ... NCP

6600 ☒ **Superbase 4 for Windows 1.2** 429.

Qualitas ... NCP

7539 ☒ **386MAX 5.1** 75.

7967 ☒ **BlueMAX 5.1 for PS/2 (3 1/2" only)** 85.

Quarterdeck ... NCP

6422 ☒ **QRAM 1.0** 54.

3221 ☒ **Expanded Memory Mgr. 386 5.1** 65.

3220 ☒ **DESQView 2.3** 85.

4586 ☒ **DESQView 386 2.3** 145.

QUE Software ... NCP

4155 ☒ **RightWriter 4.0** 54.

Reality Technologies ... NCP

7891 ☒ **WealthStarter 1.0** 39.

6572 ☒ **WealthBuilder 1.1** 99.

Reference Software ... NCP

4396 ☒ **Grammatik IV 2.0** 59.

7483 ☒ **Grammatik for Windows 2.0** 59.

Revolution Software ... NCP

4480 ☒ **VGA Dimmer 3.0 (screen saver)** 29.

Roykore ... NCP

8162 ☒ **ABC Flowcharter 1.1** 189.

Samna ... NCP

5799 ☒ **Ami Pro 1.2** 309.

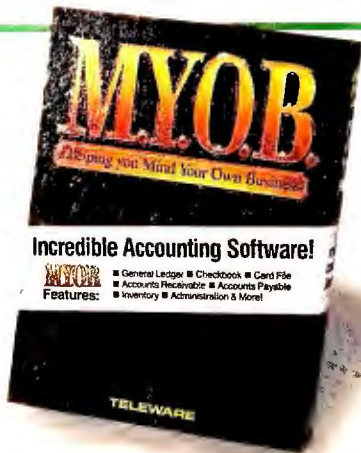
Sitka ... NCP

6675 ☒ **TOPS Network Bundle 3.0** 159.

3720 ☒ **Flashcard 2.1 (AppleTalk network card)** . . 155.

PC CONNECTION®

We have the chips



Teleware ... NCP

9847 ☐ **M.Y.O.B. for Windows**—Incredible Accounting Software for Windows. M.Y.O.B. contains full-featured G/L, A/R, A/P, Inventory and Card file. The hottest selling program for the Mac is now available for PC users . \$139.

Softlogic Solutions ... NCP

3542 ☐ Software Carousel 5.0 55.

Software Publishing ... NCP

3496 ☐ Professional Write 2.2 169.

9638 ☐ Professional Write Plus 1.0 175.

3482 ☐ Harvard Graphics 2.3 329.

9490 ☐ Harvard GeoGraphics 269.

Software Toolworks ... NCP

9859 ☐ Word for Word (Windows version) 47.

Solution Systems ... NCP

7977 ☐ Brief 3.1 (Programmer's Editor) 189.

8915 ☐ Sourcerer's Apprentice 1.0 379.

Spinnaker ... NCP

3478 ☐ PFS:First Choice 3.1 105.

7604 ☐ PLUS for Windows 1.0 289.

Symantec ... NCP

6397 ☐ The Norton Backup 1.2 105.

3146 ☐ The Norton Utilities 5.0 119.

3425 ☐ Q&A 3.0 239.

7999 ☐ Norton Anti-Virus 1.0 89.

Systems Compatibility ... NCP

8215 ☐ Outside In 1.0 65.

6564 ☐ Software Bridge 5.0 79.

Teleware ... NCP

9847 ☐ M.Y.O.B. for Windows 139.

TIMESLIPS ... NCP

2987 ☐ Timeslips III 4.0 195.

6994 ☐ PercentEdge 1.0 69.

Timeworks ... NCP

6253 ☐ Publish-It! 1.1 139.

T/Maker ... NCP

☐ ClickArt (EPS and Bitmap available) . . . call

Touchstone Software ... NCP

7420 ☐ Check It 3.0 89.

Travelling Software ... NCP

5179 ☐ LapLink III 3.0 95.

Ventura Software (Xerox) ... NCP

7796 ☐ Ventura Publisher for Windows 3.0 . . . 569.

West Lake Data Corporation ... NCP

7577 ☐ PC-FullBak+ 2.0 52.

WordPerfect Corporation ... NCP

7781 ☐ LetterPerfect 1.0 129.

3804 ☐ WordPerfect 5.1 265.

6685 ☐ DrawPerfect 1.1 279.

WordStar International ... NCP

6791 ☐ WordStar Prof. 6.0 219.

XTREE ... NCP

6161 ☐ XTree Gold 2.0 95.

RECREATIONAL/EDUCATIONAL

Broderbund ... CP

8068 ☐ Where in the World is Carmen

San Diego Deluxe Edition 52.

5851 ☐ SimCity 33.

8886 ☐ SimEarth 45.

Electronic Arts ... NCP

4534 ☐ Mavis Beacon Teaches Typing (CP) . . . 35.

7865 ☐ PGA Golf 35.



ATI Technologies ... 2 years

9620 **9600etc/e Modem**—Combines V.32 with V.42bis data compression, allowing simultaneous transmission and reception of data at over 28,400 bps. Includes front panel push-button controls. \$499.

Harvard Associates ... NCP

2324 ☐ PC Logo 3.0 59.

Microsoft ... NCP

7881 ☐ Entertainment Pack for Windows 1.0 . . 29.

2858 ☐ Flight Simulator 4.0 42.

8270 ☐ Aircraft and Scenery Designer 1.0 . . . 29.

Microsoft Press (Books)

8129 Running Windows (2nd Edition) 22.

8136 Running Microsoft Excel 22.

Penton Overseas ... NCP

☐ VocabuLearn/ce Levels I & II (French,

Italian, German, Spanish, Russian,

Hebrew and Japanese) each 35.

Sierra ... CP

8146 ☐ Quest for Glory II 39.

9466 ☐ Space Quest IV (VGA) 39.

7972 ☐ King's Quest V (VGA) 45.

SirTech. ... CP

8235 ☐ Bane of the Cosmic Forge 39.

Software Toolworks ... NCP

4659 ☐ Chessmaster 2100 (CP) 35.

7372 ☐ World Atlas 42.

Spectrum Holobyte ... NCP

3467 ☐ Tetris 22.

Stone & Associates ... NCP

5231 ☐ Phonics Plus 1.1 22.

7564 ☐ Young Math 2.2 22.



Toyogo ... NCP

7676 ☐ **Nemesis Go Master Deluxe 4.7**—Chaos Manor Users Choice Award 1990 (Byte 4/90). Unites the Go playing abilities of Go Master, the corner-opening tutorial Joseki's Genius, & the life & death consultant, Tactical Wizard \$88.

SubLogic ... NCP

6190 ☐ Air Transport Pilot 39.

Toyogo ... NCP

7844 ☐ Go Junior 4.7 25.

7674 ☐ Nemesis Go Master 4.7 41.

7676 ☐ Nemesis Go Master Deluxe 4.7 88.

True BASIC, Inc. ... NCP

☐ Kemeny/Kurtz Math Series each 45.

HARDWARE

Warranties listed next to manufacturer.

Acme/SAFE Power Systems ... 2 years

6747 Safe 400S 399.

American Power ... 2 years

7108 Smart UPS 400 339.

7105 Smart UPS 600LS 469.

6811 360SX (stand-by power source) 219.

7106 520ES (stand-by power source) 329.

AST Research ... 5 years

1299 SixPakPlus 384k C/S/P 179.

8041 SixPak 286 0k 99.

ATI Technologies ... 2 years

9629 VGA Wonder+ (256K upgradable to 512K) 199.

9619 8514/Ultra Graphics Card (512K) (req. VGA) 419.

9620 9600etc/e Modem 499.

Boca Research ... 5 years

7001 BOCARAM/AT PLUS (0-8 Meg) 119.

7061 BOCARAM/XT 0K (0-2 Meg, LIM 4.0) . . . 99.

6998 I/O Board for AT 59.

6999 I/O Board for Microchannel (S/S/P) . . . 109.

8380 BasicVGA (256K, 640 x 480) 69.

8381 SuperVGA (1 Meg, 1024 x 768) 145.

Bravo Communications ... 2 years

7400 2 Position Laser Compatible Switch Box. 109.

Brown-Wagh ... 1 year

8578 Creative Labs Sound Blaster 159.

Canon ... 1 year

7894 BJ-10e Printer with free case (4.6 lb.) . . 349.

7897 BubbleJet Ink Cartridge (BJ-10e) 23.

9037 BJ-300 Printer (80 column) 549.

9038 BJ-330 Printer (136 column) 649.

9828 BubbleJet Ink Cartridge (BJ-300 & BJ-330) 26.

CH Products ... 1 year

7801 FlightStick w/Falcon 49.

8119 FlightStick w/Falcon & GameCard III . . . 79.

7345 Rollermouse (Trackball) serial . 85. bus . 99.

CoStar ... lifetime

6091 The Organizer (mobile storage cart) . . . 199.

7453 The Organizer Jr. 75.

Curtis ... lifetime

9756 Keyboard Space Saver II KS-2 39.

1708 Ruby-Plus SPF-2 Plus 65.

7358 Command Center 89.

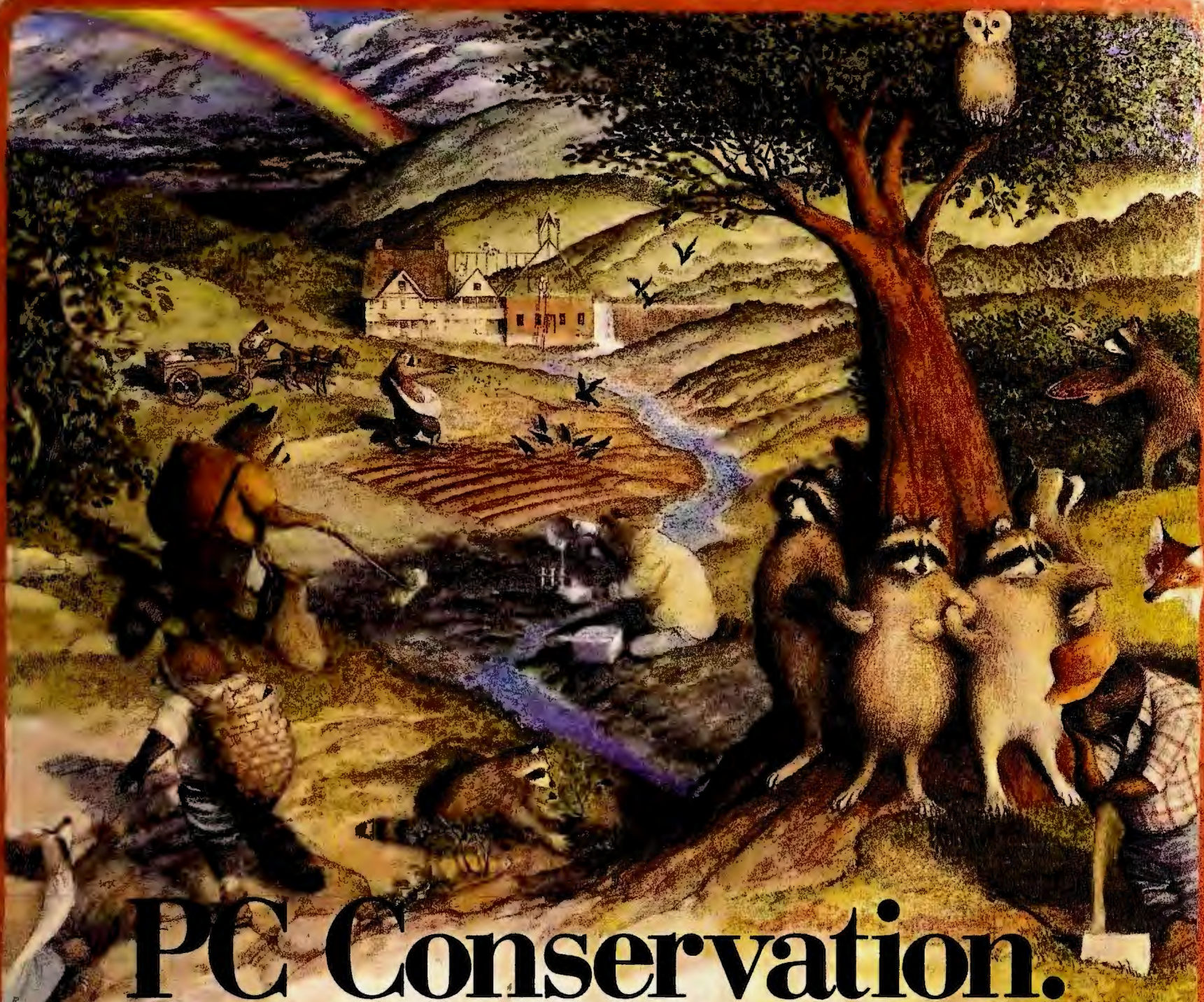
Glass Filter Plus (specify size) each 65.



TIMESLIPS ... NCP

2987 ☐ **Timeslips III 4.0**—Perfect for service professionals (ie. accountants, lawyers, etc.) who need to track & bill their time. . . . \$195.

6994 ☐ **PercentEdge 1.0**—Calculates mortgages, loans, annuities, present values, & more. . 69.



PC Conservation.

Our favorite multiuser environment. (Or, the greening of Big Blue.)

It's only natural that you'd find some serious environmental awareness here in the pristine preserve of Marlow, NH (pop. 565). After all, we have some pretty nice environment to be aware of. In fact, 90% of Marlow is undeveloped forest and wetlands. And our headquarters are on the banks of the Ashuelot River, a popular white-water rafting stream. So we're making sure our act is as clean as it can be.

For example, we now recycle all our used four-color magazines and catalogs. They are beaten to a pulp and transformed into 100% recycled paper right here in New Hampshire.

We, in turn, use this very same paper as a packing material *instead of those annoying foam peanuts*. Overall, we've cut our waste by over 75% in just one year. And, inspired by our down-to-earth mascots, we continue looking for ways to do more (with less), and encourage our vendors to do the same.

The Four Rs: Reduce, Re-use, Recycle, Raccoon.

You'll find it easy to stow it, not throw it when carrying your very own PC Connection insulated lunch bag and re-usable string shopping bag. You won't ever want to leave home without them. They're both free when you place an order of \$750 or more between now and June 30.



Save paper by packing it in PC Connection lunch and shopping bags! One per customer.

PC CONNECTION

to expand your PC.



ATI Technologies ... 2 years

VGA Wonder+—Offers superior performance, expandable to 1 Mb for 1024 x 768 with 256 colors and 72 Hz support in all modes.

9629 VGA Wonder+ with 256K \$239.
9624 VGA Wonder+ with 512K 239.

Cyrix Corporation ... 5 years

MATH COPROCESSORS

9875 83D87-25 379.
9876 83D87-33 459.
9877 83S87-16 (SX compatible) 249.

Datadesk ... 3 years

6901 Switchboard 175.

Epson ... 2 years

We are an authorized Epson Service Center.

1906 FX-850 (80 col., 264 cps, 9 pin) call
1904 FX-1050 (136 col., 264 cps, 9 pin) call
5183 LQ-510 (80 col., 180 cps, 24 pin) call
1930 LQ-850 (80 col., 264 cps, 24 pin) call
1917 LQ-1050 (136 col., 264 cps, 24 pin) call
5184 LX-810 (80 col., 180 cps, 9 pin) 185.

Hauppage Computer ... 1 year

9031 20 MHz 386 Motherboard for PC 995.
9032 20 MHz 386 Motherboard for XT 995.
9870 25 MHz 386 Motherboard for AT 995.
9034 33 MHz 386 Motherboard for AT 1399.

Hayes ... 2 years

2307 Smartmodem 2400 349.
7391 Ultra 96 Modem 799.
9884 Pocket Edition 2400 129.

Hewlett-Packard ... 1 year

7976 DeskJet 500 (with ink cartridge) 549.
6582 LaserJet IIP (with toner) 949.
6754 LaserJet III (with toner) 1699.

Hitachi ... 2 years

9492 CM1483M 14" SVGA Monitor (1024 x 768) 599.
9491 CM2085M 20" SVGA Monitor (1280 x 1024) 1995.

Intel ... 5 years

6421 2400B MNP Internal Modem 199.
4696 2400B Internal Modem 149.
5119 2400 Baud External Modem 179.
6420 2400EX MNP Modem 229.
7880 9600EX Modem 549.
2346 Inboard 386/PC with 1 Meg 495.
5336 Above Board Plus 8 2 Meg 549.
5342 Above Board Plus 8 I/O 2 Meg 569.
7782 SatisFAXtion (fax board) 399.
8778 SatisFAXtion for Microchannel 449.
8901 Matched Memory 2 Meg (PS/2) 159.
8903 Matched Memory 4 Meg (PS/2) 299.

MATH COPROCESSORS

7385 80287XL (16 MHz 80286 CPU's) 199.
4750 80387SX (16 MHz 80386SX CPU's) 309.
2372 80387-20 (20 MHz 80386 CPU's) 399.
4121 80387-25 (25 MHz 80386 CPU's) 499.

Kensington Microware ... 1 year

2582 Master Piece Plus \$99.
7899 Expert Mouse serial. . 119. 7900 bus. . 119.

Keytronic ... 3 years

4518 101 Plus Keyboard 99.

Kraft ... 5 years

5800 3 button Thunder Joystick 29.
5813 Game Card/Thunderstick Bundle 55.
7862 TopTrak (Laptop Trackball) 75.

Logitech ... limited lifetime

6029 Trackman serial. . . 85. 6028 bus. . . 89.
7975 ScanMan 256 319.
8694 MouseMan (serial) 69.
9766 MouseMan (cordless) 139.

Micron Technology ... 2 years

7595 2 Meg Expansion for HP LaserJet IIP or III 129.
7012 Memory Upgrade PS/2 70 - 2 Meg. 149.

Microsoft ... lifetime

7597 Microsoft Mouse 89.
2897 Mouse with Paintbrush 105.
2898 Mouse with Windows 3.0 149.

MicroSpeed ... 1 year

PC-TRAC Trackball
6007 serial 75. 6008 bus 89.
7271 Inport 79. 6330 PS/2 79.



Pacific Data Products ... lifetime

9833 PacificPage XL for HP LaserJet IIP/III/IIID—New! High-speed PostScript emulation cartridge & accelerator board. Includes Intel i960 processor & 2 Mb of memory for output up to 8 times faster than stand-alone cartridges \$799.

Pacific Data Products ... lifetime

6779 25 Cartridges in One! (for LJ II, IIP, III) ... 275.
8816 PacificType (40 PostScript Typefaces for PacificPage PE 4.0 users) 275.
8975 Complete Font Library (for LJ III) 275.
Memory upgrade for LaserJet IIP/III:
7055 2 Meg 169. 7759 4 Meg 279.
Memory upgrade for LaserJet II/IIID:
6838 2 Meg 249. 6836 4 Meg 379.
7158 PacificPage PE 4.0 (for LJ IIP/III) 379.
6834 PacificPage with free 2 Meg Memory Board (for LaserJet II) 379.
9833 PacificPage XL (includes high speed accelerator board) 799.

Practical Peripherals ... 5 years

3100 1200 Baud External Modem 75.
3103 2400 Baud Internal Modem 129.
3102 2400 Baud External Modem 179.
8993 2400 Baud Internal Modem (V.42 bis) .. 169.
8994 2400 Baud External Modem (V.42 bis) .. 209.
4542 2400 Baud Internal Modem for PS/2 ... 229.
8132 PM2400 Pocket Modem 109.
7934 PM9600SA Modem 489.



Hayes ... 2 years

9884 Pocket Edition 2400—Laptop communications system comes complete with 2400/1200/300 bps modem, communications software, telephone and computer cables, and carrying case. Lightweight and needs no batteries ... \$129.

Mouse Systems ... lifetime

5997 Trackball (1 yr. wrnty.) serial. . 65. bus. . 69.
7878 PC Mouse III (bus or serial) 89.

NEC ... 2 years

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

Orchid Technologies ... 4 years

7863 ProDesigner VGA II with 1 Meg 329.

PC Power & Cooling ... 1 year

REPLACEMENT POWER SUPPLIES

3203 Turbo Cool 200 149.
7915 Turbo Cool 300 165.
3200 Silencer 150 (84% noise reduction) 115.
7053 InnerSource 2210 (power backup) 349.

1-800/243-8088

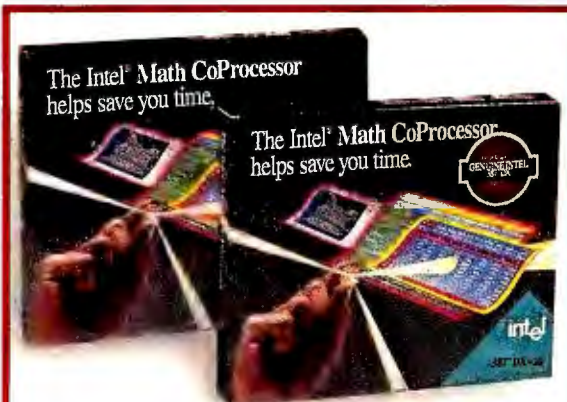


PC Connection

6 Mill Street
Marlow, NH 03456

SALES 603/446-7721 FAX 603/446-7791

850W



Intel ... 5 years

80387 Math CoProcessors—Get the most out of your 80386 or 80386SX system. This simple upgrade speeds up the performance of many spreadsheets, database, CAD, graphics and font programs see line listings.

PC CONNECTION®

© COPYRIGHT PC CONNECTION, INC., 1991. PC CONNECTION, PCTV AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH. ALL OTHER TRADEMARKS REMAIN THE PROPERTY OF THEIR RESPECTIVE COMPANIES.

Fill it up!

Reflection Technology ... 1 year		
7127	Private Eye (virtual display).....	\$499.
Targus ... lifetime		
4900	Lappac 2 Carrying Case (Horizontal) : . . .	55.
6037	Premier Leather Carrying Case	199.
TheComplete PC ... 2 years		
8082	TheComplete Half Page Scanner/400 w/ReadRight Personal OCR Software. . .	289.
6797	TheComplete Fax Portable.	319.
5828	TheComplete Communicator.	449.
9758	TheComplete Flatbed Scanner	995.
9760	TheComplete Page Scanner with Calera's Word Scan	619.
Toshiba ... 1 year		
7322	T3200SX Laptop (40 Meg)	call
9893	T2000SX Notebook (40 Meg)	call
9894	T1200XE Laptop (40 Meg)	call
Tripp Lite ... 2 years		
6199	Isobar 4-6 (4 outlets, 6 ft. cord)	49.
6200	Isobar 6-6 (6 outlets, 6 ft. cord)	59.
9193	BC375 (375W Battery Backup)	219.
9312	BC450 (450W Battery Backup)	269.
7889	BC1200 (1200W LAN Backup)	669.
Video 7 ... 7 years		
5883	1024i VGA (includes 512k)	199.
4931	VRAM II VGA 512k.	369.

DRIVES

CD Technology ... 1 year		
8057	Porta-Drive CD-ROM	649.
8105	Installation Kit for Standard Bus	95.
8106	Installation Kit for Microchannel	249.



Hauppauge Computer Works ... 1 year
9034 33 MHz 386 Motherboard for AT—Need 386 power, performance, and compatibility? Easily upgrade your PC, XT, AT or true compatible with the NEW Hauppauge Motherboard. 30 day Money Back Guarantee **\$1399.**

Conner Peripherals ... 1 year		
8875	CP3044 40 Meg IDE HD (25 ms)	325.
8874	CP3184 80 Meg IDE HD (25 ms)	499.
8876	CP3104 100 Meg IDE HD (25 ms)	549.
IOMEGA ... 1 year		
5116	Bernoulli II 44 Meg Internal	829.
7551	Bernoulli II Transportable 44 Meg.	929.
5113	44 Meg Cartridge Tripak (5 1/4")	269.
2500	PC2B Controller.	209.
Mountain Computer ... 2 years		
2917	40-60 Meg Internal Tape Drive.	259.
5500	83-152M Internal Tape Drive.	629.
5190	DC2000 Pre-formatted Cartridges. . . ea.	35.
6153	DC2120 Tape Cartridge (5 pack)	149.
Pacific Rim ... 1 year		
5010	1.2 Meg External (for PS/2's)	215.
6602	1.44 Meg External (for PC/XT/AT)	239.
Plus Development ... 2 years		
8304	Hardcard II XL 50 Meg (9 ms)	399.
8287	Hardcard II XL 105 Meg (9 ms)	689.
Seagate ... 1 year		
2285	20 Meg Internal Hard Drive ST225 (with controller and cables, 65 ms)	249.

2286	30 Meg Internal Hard Drive ST238R (with controller and cables, 65 ms)	\$269.
4554	40 Meg Internal HD ST251-1 (28 ms)	269.
4624	80 Meg Internal HD 4096 (28 ms)	599.
TEAC ... 1 year		
4670	1.44 Meg Drive for PC/XT (3 1/2")	79.
4326	1.44 Meg Drive for AT (3 1/2") with Bastech software	99.
4951	720k Drive for PC/XT (3 1/2")	69.
6951	1.2 Meg Drive for AT (5 1/4")	89.

DISKS/MEDIA

Maxell ... lifetime		
2789	5 1/4" MD2-D 360k Disks (Qty. 10)	10.
2790	5 1/4" MD2-D 1.2 Mb Diskettes (Qty. 10)	15.
2792	3 1/2" DS/DD 720k Diskettes (Qty. 10)	13.
2793	3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10)	21.



Plus Development ... 2 years
8304 Hardcard II XL 50 Meg (9 ms)—Add a super fast, 50 Mb hard drive to any 286/386 system. Anyone can install in just minutes. Takes up only one 16-bit slot. **\$399.**



Canon ... 1 year
7894 BJ-10e BubbleJet Printer—Light weight, excellent print quality and a great price make this 4.6 lb. printer a winner. Choice of black or white. Optional sheet feeder **\$349.**

Sony ... lifetime		
3291	5 1/4" DS/DD 360k Disks (Qty. 10)	9.
3297	3 1/2" DS/DD 720k Diskettes (Qty. 10)	12.
3298	3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10)	19.
6148	3 1/2" DS/DD (3 Pack)	29.
6375	3 1/2" DS/HD (3 Pack)	49.
8185	QD 2040 Tape Cartridge	19.
3M ... lifetime		
3943	DC 2000 Tape Cartridge	20.
6065	DC 2080 Tape Cartridge	25.
3944	DC 600 Tape Cartridge	29.
5679	DC 6150 Tape Cartridge.	29.

MEMORY

6556	256k DRAM (100 ns, set of 9)	call
5510	1 Meg x 9 SIMMs (80 nanosecond)	call
5746	1 Meg Chips (80 ns, set of 9)	call
7813	256k x 4 Chips.	call

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.
- 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 AM to 1:00 AM, or Saturday 9:00 AM to 5:30 PM. You can call our business offices at 603/446-3383 Monday through Friday 9:00 AM to 5:30 PM.



Practical Peripherals ... 5 years
7934 PM9600SA Modem—Practical Peripherals does it again by making communications affordable with their newest modem featuring the data compression & error correction of 9600bps V.32 & V.42bis operation **\$489.**

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.

Knights of the Sky™ Shoots Down The Competition

Realistic World War I dogfighting is more than pretty art and canned missions, and MicroProse — the company that *invented* the combat flight simulator — realizes that. *Knights of the Sky* delivers all the sweaty-palm excitement of real World War I dogfighting with great graphics, superior gameplay, authentic aircraft and challenging missions, as well as head-to-head and modem play. Feature for feature, no other W.W. I simulation even comes close.



IBM (VGA)



IBM (EGA)



IBM (VGA)

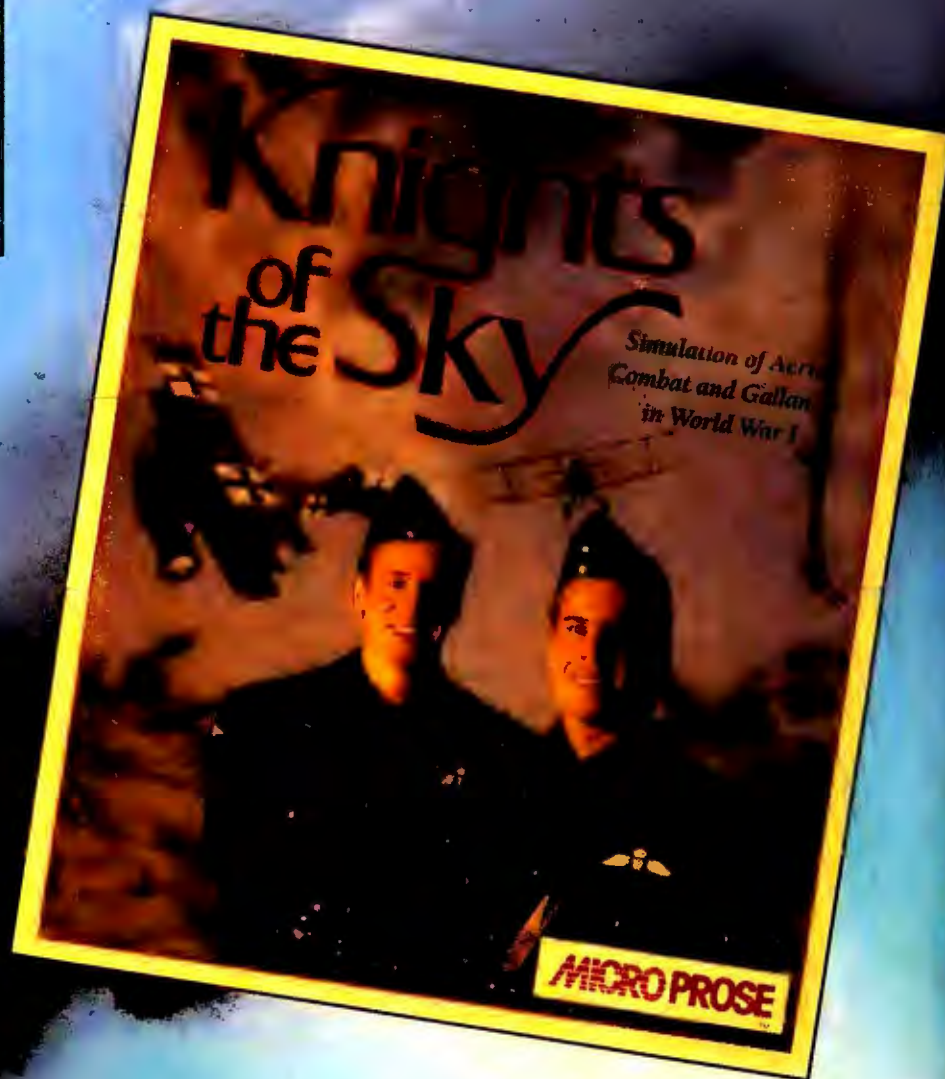


IBM (EGA)

Actual screens may vary.

- *Knights of the Sky* was developed for *all* IBM-PC/Tandy/compatibles. The graphics and animation are dazzling and smooth with any graphics system, at any machine speed.
- *Knights of the Sky* features realistic, random encounters with enemy and friendly pilots and a sophisticated, authentic campaign option.
- *Knights of the Sky* lets you build a reputation and prestige among your fellow pilots. Become good enough, and *the enemy looks for you*.
- *Knights of the Sky's* flight equations accurately reflect World War I flying.
- *Knights of the Sky* alone supports head-to-head and modem play, for fast-paced, one-on-one dogfighting duels.

No other game on the market can claim all of the features above. There's only one genuine World War I dogfighting simulation: *Knights of the Sky*.



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.

**EXCLUSIVE
PC WORLD
OFFER!**

BORLAND® QUATTRO PRO 3.0

FREE

**TRIAL
DISKS!**

**Test Drive the Only Spreadsheet
With VROOMM™ Borland's Quattro Pro!**
CALL: 1-800-622-1005

What's on the Test Drive disks?

You'll receive a working model of Borland International's® *Quattro Pro* version 3.0, the only DOS spreadsheet that gives you all the advantages of a graphical user interface with none of the overhead. *Quattro Pro* makes it easy to create professional-looking worksheets, charts, and presentations. When you're ready for hard copy, use *Quattro Pro*'s Print-to-Fit™ function to automatically resize your spreadsheet for perfect output. And you won't find any surprises at the printer because *Quattro Pro*'s WYSIWYG features display documents on the screen exactly as they will appear when you print them. If you're a 1-2-3 user, no problem: *Quattro Pro* has file-command and macro compatibility.

Your *PC World* Test Drive comes complete with valuable additional features you won't find elsewhere. You'll receive exclusive sample files and a unique product guide that together really put *Quattro Pro* to work for you. And Test Drivers can call their own special 800 help line. So hurry: Supply is limited, and demand is very high.

How do I get my disks?

It's easy. Simply call Borland at: 1-800-622-1005, or complete and mail the postage-paid reply card. Expect your disks to arrive in three to four weeks. Remember...the supply is limited, and you won't see this offer anywhere else.

What are the system requirements?

- IBM personal computer or compatible with 512K RAM
- DOS 2.0 or later version
- Hard disk with 3MB of free space
- 5¼-inch 1.2MB high-density disk drive or 3½-inch 720K low-density disk drive
- CGA, EGA, VGA, MCGA, or compatible graphics adapter and monitor; EGA or VGA required for WYSIWYG
- Microsoft Mouse or compatible recommended



Month/Day	London	Paris	Munich	Moscow
1. Airfare	\$1,200	\$800	\$900	\$1,100
2. Car Rental	\$150	\$100	\$120	\$180
3. Local Taxes	\$25	\$20	\$30	\$40
4. Lodging	\$800	\$600	\$700	\$900
5. Meals	\$200	\$150	\$180	\$250
6. Travel Insurance	\$50	\$40	\$50	\$70
7. Transportation	\$100	\$80	\$90	\$120
8. Tipping	\$100	\$80	\$90	\$120
9. Subtotal (\$1.00)	\$2,525	\$1,770	\$2,080	\$2,780
10. Miscellaneous Fee	\$100	\$80	\$90	\$120
TOTAL	\$2,625	\$1,850	\$2,170	\$2,900

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	TOTALS
Product A	\$40,000	\$35,000	\$25,000	\$20,000	\$120,000
Product B	\$42,000	\$33,000	\$24,000	\$22,000	\$121,000
Product C	\$46,000	\$40,000	\$30,000	\$28,000	\$144,000
Product D	\$47,000	\$44,000	\$35,000	\$33,000	\$159,000
TOTALS	\$175,000	\$152,000	\$114,000	\$105,000	\$546,000

Limited-time offer! Only in **PC WORLD**

■ YES! I want to experience the excitement of Borland *Quattro Pro* version 3.0. Please send me the *PC World-Quattro Pro* version 3.0 Test Drive without cost or obligation.

My disk format is as follows (check one only):

- ☐ 3½" 720K
 ☐ 5¼" 1.2 MB

CALL: 1-800-622-1005

NAME _____

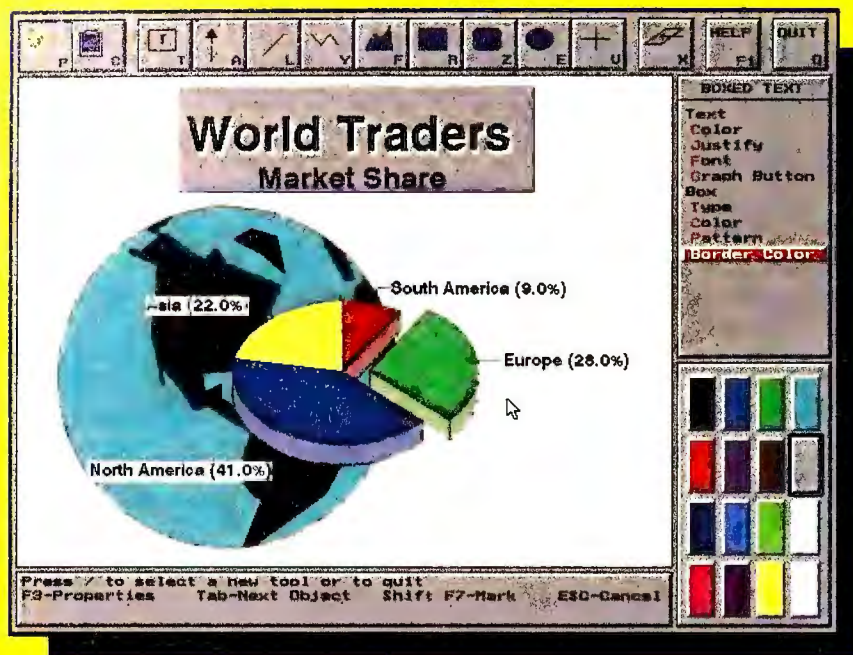
COMPANY _____

ADDRESS _____

CITY, STATE, ZIP _____

Offer good in U.S. and Canada only. One per person. Offer expires September 30, 1991.
Look for more exciting trial disk offers in future issues.

FREE QUATTRO PRO 3.0



**This Exclusive
Quattro Pro 3.0
TEST DRIVE**

Brought to You by:

PCWORLD

File Edit Style Graph Print Database Tools Options Window

WORLD TRAVEL, INC.

Joe Smith

Purpose of Travel: International Conference

Month/Day	London	Paris	Munich	Mile
1. Air Fare	\$1,200	\$400	\$500	
2. Car Rental	\$100	\$75	\$80	
3. Local Trans.	\$25	\$20	\$20	
4. Lodging	\$200	\$240	\$230	
5. Meals	\$75	\$75	\$75	
6. Tip/Check	\$25	\$15	\$30	
7. Telephone/Tele	\$25	\$25	\$30	
8. Parking	\$15	\$7	\$12	
9. Mileage @ 8.3¢	\$0	\$0	\$0	
10. Miscellaneous	\$10			
TOTALS	\$1,602	\$803	\$972	

Due Employee

Receipts are required for expenditures over \$25.

Business meals must be accompanied by an itemized bill or a credit card receipt.

Zoom percentage for WYSIWYG image

File Edit Style Graph Print Database Tools Options Window

DIVERSIFIED INTERNATIONAL

	DIVISION 1	DIVISION 2	DIVISION 3
1st Qtr.	\$40,000	\$35,000	\$26,000
2nd Qtr.	\$42,000	\$33,000	\$24,000
3rd Qtr.	\$46,000	\$40,000	\$30,000
4th Qtr.	\$47,000	\$44,000	\$35,000
TOTALS	\$175,000	\$152,000	\$115,000

TOTAL SALES

DIVISION.WQ1 [2]

BUSINESS REPLY MAIL

First Class Mail Permit No. 200 Santa Cruz, CA

Postage will be paid by addressee

PC WORLD-BORLAND QUATTRO PRO 3.0 TEST DRIVE
P.O. BOX 660005
SCOTTS VALLEY, CA 95067-9932

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**Absolutely
free while
supply lasts.
Special to
PC World
readers.**

See Other Side for Details

The Personal LaserJet, Take III

HP's latest laser printer looks like the IIP but packs the wallop of a LaserJet III. And it's only \$1595.



The IIIP, HP's newest personal laser, delivers PCL 5 scalable fonts and graphics in a pint-size box.

Robert Luhn

The HP LaserJet IIP is the PC's Sancho Panza—and small wonder. For \$1295 (around \$800 on the street), this tough little printer delivers crisp text and graphics yet fits easily on a desk.

Now Hewlett-Packard has lifted personal printing to another level. The LaserJet IIIP gives you the same compact footprint as the IIP but adds an armada of features—including a faster processor, double the standard RAM, and all the font-scaling goodies of the LaserJet III—for just \$300 more.

Sharper, Faster Output

Like its 8-page-per-minute (ppm) big brother, the 4-ppm IIIP sports HP's PCL 5 printer language and the Intellifont

type system. You can scale fonts to 999 points, rotate text and graphics, print finer shades of gray, and create special effects such as reverse (white-on-black) type. And it features HP's Resolution Enhancement technology, which changes the size and position of printed dots to create jaggy-free text and curves (though it doesn't affect bit-mapped graphics much).

The IIIP also should improve on its predecessor's slugabed reputation. Though it uses the same engine as the IIP, the prerelease IIIP examined here is roughly 30 percent faster, thanks to its 16-MHz processor, 1MB of standard RAM (expandable to 5MB), and a superfast parallel port that accepts 55K of data per second for speedy file downloads. (By comparison, the

IIP's port runs at 10K per second.) You should see even greater performance gains when printing vector graphics from programs such as *Harvard Graphics* and *Freelance* that support the IIIP's enhanced HP-GL/2 language.

But the IIIP also shares its sibling's shortcomings. Like the III, it comes with only two scalable type families (CG Times and Univers) in four styles; to add more, you must buy cartridges or software fonts. Paper handling is also minimal: The IIIP's paper tray holds a paltry 70 pages, and a 250-sheet cassette will run you another \$195.

Fortunately, buying a IIIP doesn't mean abandoning your HP add-ons. The printer can use IIP or III RAM boards and font cartridges (including PostScript cartridges) and

any IIP paper tray or toner cartridge. If your application lacks a IIIP driver, don't sweat; install the program for the IIID, and you can access all of the IIIP's features.

The Personal Choice

The IIIP isn't built for shouldering network work loads or producing complex documents, but its scalable fonts, speed, and sharp output will win the loyalty of many users looking for a faithful desktop companion. Although HP will keep the IIP on the market (and plans to offer a PCL 5 cartridge in the fall), there's really no question—the IIIP is worth the extra bucks. ☼

Robert Luhn is a contributing editor for PC World.

SNAPSHOT

HP LaserJet IIIP

HP's newest personal laser is still small and cheap, but it has the font and graphics panache of the LaserJet III.

KEY FEATURES

- Same compact footprint as IIP
- Resolution Enhancement for sharper, smoother text and curves
- PCL 5 with on-the-fly font scaling, text rotation, and special effects
- 16-MHz processor and fast parallel port
- Comes with 1MB of RAM and 8 scalable typefaces

AVAILABILITY

April 1991

PRICING

\$1595

Hewlett-Packard

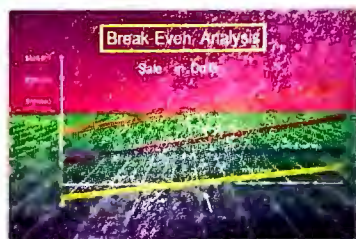
Customer Information Center
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900

Reader service no. 702

Now available on CD-ROM!

COREL DRAW!

PC Graphics for Everyone!



SUPERSALE



LAYOUTS
WITH
COREL DRAW!

Easy to Learn/Easy to Use

CorelDRAW! was designed to be easy to learn and easy to use. The goal was to create a program that would be fun to use and that would make it easy to create professional-looking graphics. The program is designed to be easy to learn and easy to use. The goal was to create a program that would be fun to use and that would make it easy to create professional-looking graphics. The program is designed to be easy to learn and easy to use. The goal was to create a program that would be fun to use and that would make it easy to create professional-looking graphics.



It's **FAST**
It's **FUN**
It's **POWERFUL**



Amazing special effects

- envelope (warp) text and graphics
- simulate 3D with perspective function
- extrude to give depth to text/graphics
- blend between shapes and/or colors

Incredible type control

- over 150 fully scalable outline fonts
- see exact fonts on-screen
- paragraph and multi-column text
- import ASCII text files
- fit text to a curve
- create your own fonts or symbols

Superb value

- over 4000 symbols and clipart images
- dotted and dashed line styles
- over 80 arrowheads
- dozens of vector and bitmap patterns
- free Pantone* license
- 24 bit color supported
- 31 import/export filters
- CorelTRACE - batch autotrace utility
- MOSAIC - visual file manager
- WFNBOSS - typeface converter



Tel: (613) 728-8200
Fax: (613) 761-9176

Call customer service: (613) 728-8200 for information and a free demo disk
*Pantone, Inc.'s check-standard trademark for color reproduction and reproduction materials.
Requires MS-WINDOWS 3.0

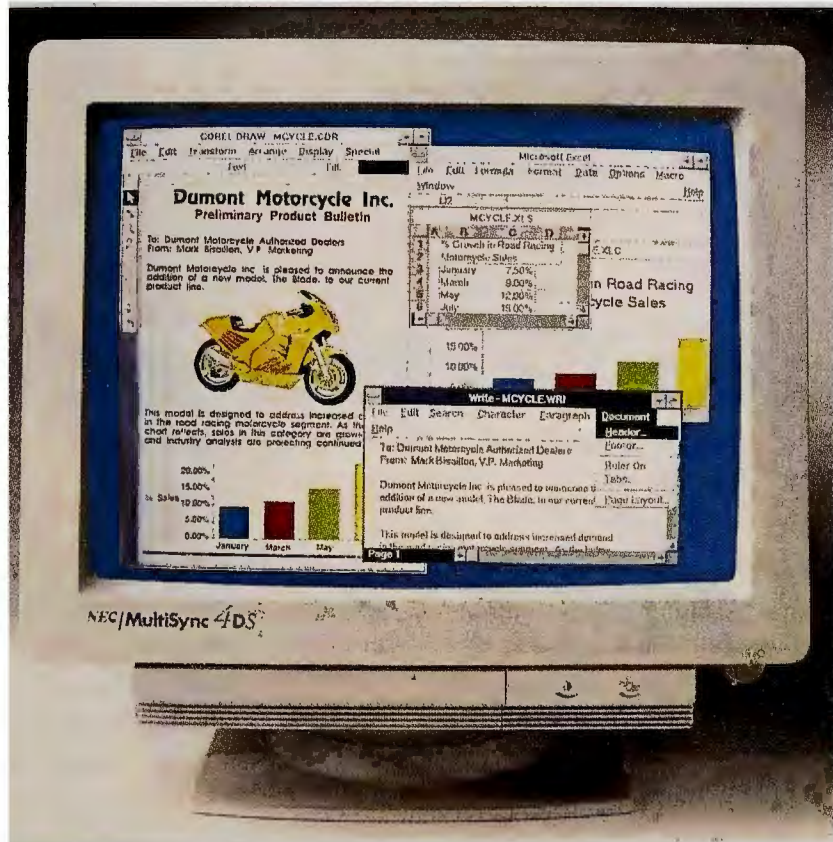
Circle 48 on reader service card

PRODUCT OUTLOOK

Edited by MIKE HOGAN

MultiSync 4Ds, 3Ds

Monitoring Your Health and Safety



The 16-inch MultiSync 4Ds provides the best in emission controls and ergonomic niceties as well as reducing sources of eye fatigue.

Whether monitor ergonomics and emissions are subjects of deep concern to you or only of mild interest, it's impossible to ignore them now that several states are considering adopting Swedish government rules for limiting monitor emissions.

This year the Swedish agency MPR expanded its guidelines to include extremely-low-frequency (ELF) emissions (see *Consumer Watch*, May 1991), a challenge that NEC Technologies meets with the MultiSync 4Ds. This 16-inch monitor not only is one of the first to comply with the newest MPR specifications, but it successfully addresses a slew of ergonomic issues.

The MultiSync 4Ds makes a three-pronged attack on electric and magnetic emissions. A cancellation yoke over the tube limits stray magnetic

fields; grounding wires drain off power supply and transformer fields; and additional shielding reduces radio wave emissions. The combination of these three elements reduces very-low-frequency (VLF) and ELF electric and magnetic emissions to levels within the new MPR limits. As a bonus, a coating on the screen dissipates static electricity, eliminating that annoying layer of dust that has probably gathered on your current screen.

But emissions controls are only the start. Front-mounted switches mean you don't have to hug the display to turn it on, or tweak its image from the rear. A .28mm dot pitch and dynamic beam focusing combine to provide sharp focus and clarity. And a noninterlaced 70-Hz refresh rate

reduces irritating screen flicker, along with eye fatigue—one issue that the much-ballyhooed Swedish studies do not address.

The rest of the 4Ds feature set is equally strong. Its 16-inch screen is large enough for all but the most demanding users of *Windows*, spreadsheet, or CAD programs. A 1024-by-768-pixel resolution displays images from most high-resolution drivers in all their glory. The combination of tube design and dynamic beam focusing keeps images sharp even in the corners—a must with *Windows*.

As you might expect, the reassurance of having a very-low-emissions monitor comes at a price: \$1499. You may not find the investment worthwhile unless you need a large-screen display and plan to spend a few hundred more on a super-VGA card that will do the monitor justice. If price is an object, NEC offers the MultiSync 3DS at a more attractive \$1049. However, the older monitor was made to meet earlier Swedish VLF magnetic standards and doesn't satisfy the recent recommendations.

—Matthew Lake

IN BRIEF

MultiSync 4Ds, 3Ds

This big multiscan monitor reduces electric and magnetic emissions and combines high resolution with ergonomic features.

NEC Technologies, Inc.

1255 Michael Dr.
Wood Dale, IL
60191-1094
800/366-3632,
708/860-5618 (fax)

Reader service no. 675

INSIDE PRODUCT OUTLOOK

102 Tandy 1000 RLX Home PC gets more RAM, more power, more storage.

102 Finance10 Perform financial calculations from within other programs.

104 The Complete Font Cartridge Library, PacificPage XL Get faster PostScript output from your LaserJet, plus scalable fonts.

106 Relay Gold 5.0 for Windows *Windows* simplifies PC-to-mainframe communications.

106 NetWare 386 3.11 Expanded links to Macs and UNIX highlight upgrade.

108 Lotus Notes 2.0 Beefed-up group communications package lowers price, distribution barriers.

110 MicroPaq 452 Multifunction board packs a disk controller, multiple ports, and VGA in one slot.

110 Oracle Card for the PC Environment gives *Oracle Server* offices easier access to SQL-stored data.

112 Central Point Backup 7.0 A backup favorite adds *Windows*, versatility.

114 Panasonic KX-P1124i, IBM Proprinter 24P New entries—one dazzling, one down-to-earth—liven up dot matrix market.

114 LANstep Hayes introduces easy operating system for peer-to-peer LANs.

Tandy 1000 RLX

More Is Better, at Home or at the Office

When Tandy introduced its 1000 RL home PC in August 1990, it said an 8086 processor with 512K of RAM and a monochrome CGA display was enough for folks who were just going to catalog their butterfly collections and keep a few recipes.

But enough is never sufficient, and the upgrades just keep coming. Predictably, Tandy has introduced a better home PC, a lot better home PC, for just a few dollars more.

IN BRIEF

Tandy 1000 RLX

More is as desirable at home as at the office, and Tandy's home PC has been beefed up with a 286 CPU, VGA color, 1MB of RAM, and a 40MB hard drive.

Tandy Corp.

400 Atrium
One Tandy Center
Fort Worth, TX 76102
817/390-3011

Reader service no. 678

The 1000 RLX comes with a 10-MHz 286, 1MB of RAM, a color VGA display, and a 40MB hard drive for \$1600 (\$1200 in the single-floppy version). By comparison, a CGA color version of the 1000 RL with only 640K of RAM and a 20MB hard drive remains \$1360.

Tandy added a 28ms 40MB IDE Smartdrive to the RLX for those who need to handle still more butterfly specs and maybe bring a little work home. DOS 3.3 and other system programs are preinstalled on the disk and loaded in ROM as well; press the On button, and you'll be computing.

Up on the screen is the *DeskMate* character-based graphical environment, with its handy set of DOS and desktop utilities easily accessible from a pulldown scroll bar. You scroll down to the *DeskMate* editor, address book, or draw utilities, or pick custom home application from the information center or home organizer menus.

Walk away, and the 1000



Tandy offers an upscale home PC with a 286 CPU, VGA color, a 40MB hard drive, and a big bundle of software.

RLX screen will blank after a user-defined period of time. The Smartdrive will doze off 5 minutes later, so the system uses about as much power as a clock radio. Hit a key, and take up exactly where you left off.

The 101-key keyboard is sculpted for easy typing, and Tandy throws in a two-button mouse. You get the same 1.44MB floppy and whisper-quiet, fanless operation as

with the 1000 RL. Put a \$150 2400-bps internal modem in the single 8/16-bit expansion slot, and you can connect to the PC-Link consumer network from the *DeskMate* screen or use the *DeskMate* communications module for regular inter-computer communications. And of course, the 1000 RLX still has the *Good Housekeeping* Seal of Approval. —Mike Hogan

Finance10

Financial Calculations at Your Fingertips

Usually when you want to know the future value of an investment, a bond yield, or some other financial equation, you're in the middle of something else—a letter, a spreadsheet, an accounting program.

You can reach for the good old Hewlett-Packard calculator, or you can pop up *Finance10*, a utility that brings the answers to detailed financial calculations within easy reach of finance professionals and home users. You can run *Finance10* either as a stand-alone application or as a TSR

that requires only 8K of RAM.

The program includes a suite of ten ready-to-use modules preloaded with the formulas for calculating bond-to-yield maturity, depreciation, internal rate of return, lease-versus-purchase figures, loan amortization schedules, and present value/future value. It also is helpful in compiling and tracking personal assets and making buy/sell/lease decisions for, say, a car or a house.

All ten modules are selected from the main menu and share the same fill-in-the-

blank interface. You choose the function you want, punch in numbers when prompted, and press the <F10> key for a quick answer—no calculator modes to deal with, no formulas to remember.

Finance10 also includes two pop-up calculators. One is a tape calculator for doing simple math. The second is an accountant's calculator with almost twice the number of keys and functions, including some special keys for financial and statistical calculations.

Finance10's \$69.95 retail price includes unlimited telephone technical support as well as bundled coupons worth

more than \$1000 off a variety of other software products, including *XtreePro Gold* and *Who-What-When*. The package requires DOS 3.0 or a later version. —Roberta Furger

IN BRIEF

Finance10

A pop-up utility provides quick answers to complex financial questions.

Financial Software Co.

P.O. Box 481290
Los Angeles, CA 90048
800/332-2983,
213/931-1529 (fax)

Reader service no. 687

Quick, do you know
the first name
in microprocessors?

_____ 486™

_____ 386

_____ 386sx™

The Complete Font Cartridge Library, PacificPage XL

The Mother of All Font Cartridges



The Complete Font Cartridge Library crams 51 scalable font outlines—roughly 4MB of data—into a single cartridge for HP's LaserJet III and IIID printers.

Pacific Data Products has made its reputation—and a tidy sum of money—by providing the missing pieces in the HP LaserJet picture. Now Pacific Data is solving a few puzzles of its own, introducing an enhanced scalable-font cartridge and a RISC-based accelerator board for faster PostScript processing.

The Complete Font Cartridge Library crams 51 scalable PCL 5 font outlines—roughly 4MB of data—into a single cartridge for HP's LaserJet III and IIID printers. The \$399 cartridge combines all the fonts offered in the \$299 Pacific Outlines I and II cartridges, leaving the printer's second slot free for PostScript-emulation or another font cartridge.

The font library features Agfa Compugraphic's scalable Intellifonts: 12 font families in four styles, plus ITC Zapf Dingbats, Cooper Black, and Letraset faces. Matching screen fonts for *Windows 3.0* and *Ventura* are available on request from Pacific Data, but installing all of them requires a whopping 5.5MB of hard disk space.

The \$499 PacificPage PE

cartridge is well known for squeezing low-cost PostScript output from a LaserJet, but no one's ever accused it of being in much of a hurry. Fortu-

Systat 5.0, QCStat, Sample "What If..."

Knowledge about your product and your market is fundamental to business success. If you can't manage the first, plan to be born to rich parents. If you come up short on the second, *Systat* can help. Version 5.0 of this statistical program will help you explore the who, what, how, and why of your business.

Systat 5.0 features a new menu-driven interface with integrated modules, but its most significant improvements are the *QCStat* and *Sample* add-ons that bring quality control and marketing to *Systat 5.0*'s regular statistical suite.

Sample helps you analyze the characteristics of a target market—for instance, detecting industrywide trends and identifying the populations best suited to your products

nately, the PacificPage XL accelerator board gives the sluggish cartridge a needed boost.

Crunching numbers is a big part of handling PostScript files, and that's what the XL's i960 processor does best. The XL plugs into one of the two memory slots in your LaserJet IIP, III, or IIID and speeds processing of complex PostScript graphics files by an estimated 200 to 700 percent. You can also download Adobe Type 1 fonts to its 2MB of on-board RAM.

For transferring data or handling files in the LaserJet's native PCL mode, you must rely on the printer's built-in M68000 processor. When the printer switches from PostScript to PCL, the XL's 2MB of RAM can be used for storing page data or downloading fonts—just like a normal memory upgrade board.

However, the accelerator

and services, using your existing *Systat 5.0* data files to perform probability tests. *Sample* writes its own files and notations on population selections and sends the results back to *Systat*. Additionally, *Systat* saves information about the testing specifications and commands, so you can keep track of how populations for a given test were selected. You can slice your population in a variety of ways—anything from a basic random sample to highly complex samples that use stratification, clustering, and variable probabilities.

QCStat employs *Systat 5.0* data files for both on- and off-line quality-control analysis. *QCStat* produces control charts based on the sample's distribution, and it designs experiments to test new methods of improving your products or services. In addition to eight types of Shewhart charts, *QCStat* can plot seven other

board won't work without the cartridge, which is why the XL is available only as a \$999 bundle with the PacificPage PE 4.0 or as a \$499 upgrade for current PE 4.0 owners. The XL is not compatible with previous versions of the PacificPage cartridge. —Daniel Tynan

IN BRIEF

The Complete Font Cartridge Library, PacificPage XL

Pacific Data Products speeds up its sluggish PostScript cartridge and adds a passel of scalable fonts to its LaserJet III offering.

Pacific Data Products

9125 Rehco Rd.
San Diego, CA 92121
619/552-0880,
619/552-0889 (fax)

Reader service no. 683

control charts such as boxplot, Pareto, and linear regression.

QCStat's command line interface writes *Systat* and ASCII data files that can be fed into *Systat*'s internal graphics application, *Sygraph*. Both add-ons require the \$895 *Systat 5.0*. *QCStat* retails for \$400, while *Sample* is \$110; the upgrade to *Systat 5.0* is \$195. —Cathy Smith

IN BRIEF

Systat 5.0, QCStat, Sample

A new interface and add-ons help you analyze markets and production methodology.

Systat, Inc.

1800 Sherman Ave
Evanston, IL 60201
708/864-5670,
708/492-3567 (fax)

Reader service no. 690

Time's up.

Intel 486™

Intel 386™

Intel 386SX™

You scored perfectly. Because Intel is the world's leader in microprocessor design and development. It's also the company that introduced the first microprocessor. And when it comes to investing money into the technology, Intel is first again. Giving you the assurance that with an Intel microprocessor inside your computer, you'll have the power and compatibility to take you into the future.

So if you want all that working for you, make sure the 386SX, 386 or 486 computer you choose has the first name in microprocessors inside. Intel.

intel®
The Computer Inside.™

Intel486, Intel386, and Intel386SX are trademarks of the Intel Corporation. ©1991 Intel Corporation. All rights reserved.

Circle 112 on reader service card

Relay Gold 5.0 for Windows

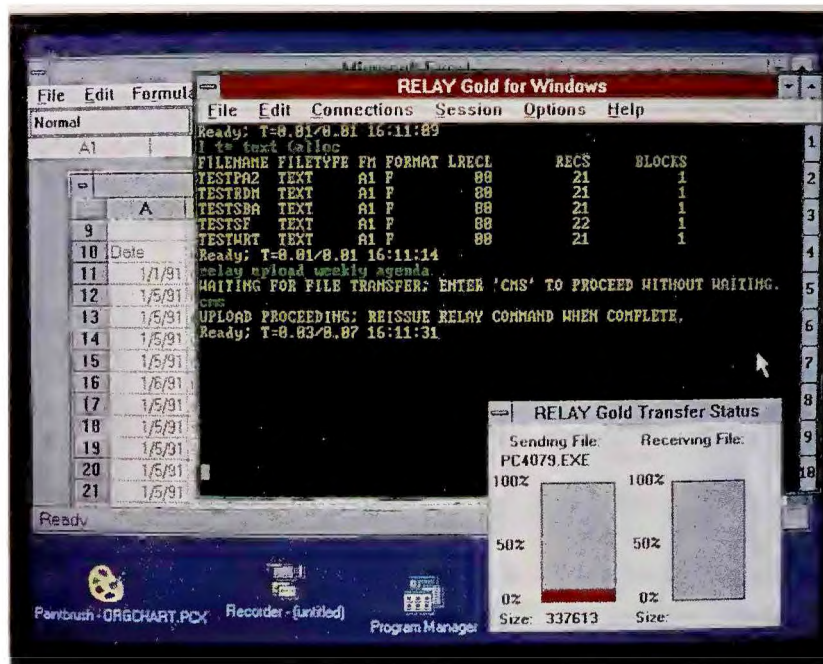
Multiple Windows on All Kinds of Corporate Communications

If you're tired of dealing with the company mainframe on its terms, relax. PC-to-mainframe software maven Microcom has brought the point-and-click simplicity of *Windows* to its *Relay Gold* line.

In addition to providing myriad mainframe idioms—everything from ANSI, Telex, and DEC VT 100/VT 220/VT 52 terminal emulations to those for TeleVideo 910 and IBM 3101, 3270, and 3278—*Relay Gold 5.0 for Windows* handles PC-to-PC communications with aplomb.

Relay Gold 5.0 incorporates all features of the *Windows* environment—from cut-and-paste functions to full DDE support. Pop-up programmable keyboards and sizable windows enable you to juggle up to 15 simultaneous unattended and/or background comm sessions.

Relay Gold can directly control 3270 boards and sup-



Mainframe data transfers become as intuitive as those between PCs, with this high-end communication package.

ports token ring networks, LAN modem sharing, and LAN gateways such as SNA/SDLC and X.25. *Relay Gold* speaks through synchronous modems as well—if you purchase the optional \$149 SDLC Dial-Up Module.

Microcom doesn't scrimp on PC-to-PC communications features, either. *Relay Gold* offers a convenient phone directory, a learn mode, and a hearty transfer protocol list that includes standards like CompuServe B-Plus, Kermit,

and XMODEM. *Relay Gold's* own proprietary protocol provides on-the-fly data compression and encryption, as well as simultaneous two-way file transfers.

If all you do is talk to other PCs, you may find *Relay Gold 5.0 for Windows's* \$399 price hard to swallow. But if you have to parley with the mainframe on a regular basis, *Relay Gold* speaks your lingo. Current *Relay* users can upgrade for \$95. —Art Wilcox

IN BRIEF

Relay Gold 5.0 for Windows

Microcom combines *Relay's* vast number of terminal emulations with the ability to run under *Windows*.

Microcom Inc.

Still River Corporate Center
55 Federal Rd.
Danbury, CT 06810
203/798-3800,
203/798-3917 (fax)

Reader service no. 679

NetWare 386 3.11

NetWare Broadens Links, Price Ranges

With version 3.11 of *NetWare 386*, Novell finally delivers most of the value-added networking facilities it has been promising since the unveiling of its powerhouse network operating system. But all this comes at a price: Novell has raised the cost of the full 250-user product more than 60 percent to a hefty \$12,495, and many of the new capabilities are extra-cost add-ons. On the other hand, a new 20-user version gives smaller LANs a major price break of more than \$4000 from the \$7995 charged for that many nodes before.

The basic 3.11 package includes a mix of goodies—some

for enterprise-scale networks, others for those of lesser size. They include improved backup, support for OS/2 1.3 and TCP/IP (a communications protocol for connecting a wide variety of computers), and compatibility with IBM's popular *NetView* network management utility. There's also support for a variety of software standards upon which UNIX developers can build network applications.

The rest of *NetWare's* new tricks are sold separately as *NetWare Loadable Modules*. Macintosh support is better than that in *NetWare 286*: Macs can send output to any

printer on the LAN, not just those hooked to the AppleTalk cable. *NetWare NFS* gives UNIX workstations full LAN access, including shared *NetWare* server drives and LAN printers. An upgrade to Novell's MHS E-mail-

interchange utility allows MHS-compatible E-mail programs to attach up to 64 files and can send a single transmission to multiple recipients on a remote LAN.

Two mainframe-oriented options round out Novell's new offerings. *NetWare FTAM* links LANs to OSI (European government) and GOSIP (U.S. government) networks and internetworks. *LAN WorkPlace* for DOS 4.0 hooks DOS or *Windows* users to a variety of IBM, DEC, and UNIX mainframes and minicomputers.

NetWare 386 3.11 costs \$3495 per server for 20 users, \$6995 for 100, \$12,495 for 250; upgrades from earlier versions of *NetWare 386* are free. NLMs are variously priced.

—Robert Lauriston

IN BRIEF

NetWare 386 3.11

Novell delivers not only Macintosh and UNIX connectivity but lots of enterprisewide capabilities.

Novell, Inc.

122 East 1700 South
Provo, UT 84606
800/453-1267,
801/429-7000

Reader service no. 677

To understand
the basic
principle behind
Fastback Plus,
tear out
this page
and destroy it.

LIKE A BOLT FROM THE BLUE,

your hard disk will eventually come crashing down. Manufacturers expect it. They even give hard disks an "MTBF" rating—the Mean Time Between Failures.

Before you lose your valuable data, back it up with Fastback Plus.

BACKUPS IN A FLASH With Fastback Plus, you can do things that DOS Backup never dreamed of. Like back up all your daily file changes in less than a minute. Or blaze through your entire hard disk at three megabytes a minute on 386 machines, or 10 megabytes in four minutes on an AT. It even formats your backup diskettes – automatically.

STRIKING SIMPLICITY Fastback Plus has three user levels – beginner, intermediate and advanced. Simple menus tell you how long your backup will take, and how many diskettes you'll need. And a unique data compression feature cuts the number of diskettes you need in half. You can even automate the entire process with one-touch macros.

DAZZLING SAFETY Only Fastback plus gives you reliable Advanced Error Correction. To illustrate, we punched a hole

larger than a .22 calibre slug right through a backup diskette – and retrieved all the data! That's security. And if you need help dodging even bigger bullets, our technical support staff will surprise you with its courtesy and ingenuity. Just call, and you're guaranteed same-day service.

GLOWING REVIEWS *PC Magazine* said it best in giving Fastback Plus its prestigious 1989 Editor's Choice Award: "Fastback Plus has virtually everything a backup program needs: top-speed performance, clear menus, every imaginable option, even a built-in macro program for automating complex tasks. A superb achievement."

A POWERFUL GUARANTEE Use Fastback Plus for 30 days, and if you're not completely satisfied, return it for a full refund. You have nothing to lose. And everything to save.

FREE PYRO For a limited time, get a FREE copy of Pyro!™, our popular screen-saving program just for writing "Pyro" on the Fastback Plus registration card before you return it. That's a \$49.95 value – free!

Call now for complete details and the dealer nearest you.

1 - 8 0 0 - 3 8 8 - 0 3 6 2



Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Sales Number: (800) 388-0362 Technical Support: (504) 291-9953

Money-back guarantees are offered to end-users only. Dealers should return all merchandise to the distributor from which it was purchased.

This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation.

Circle 71 on reader service card

Lotus Notes 2.0

Group Comm Tool Extends Its Reach

In its first year, *Lotus Notes* dramatically remapped the way some critical information flows within dozens of large corporations. Lotus has since beefed up its innovative group communications package and lowered price and distribution barriers—a few inches, anyway—so that smaller firms

will have an easier time buying into the network tool.

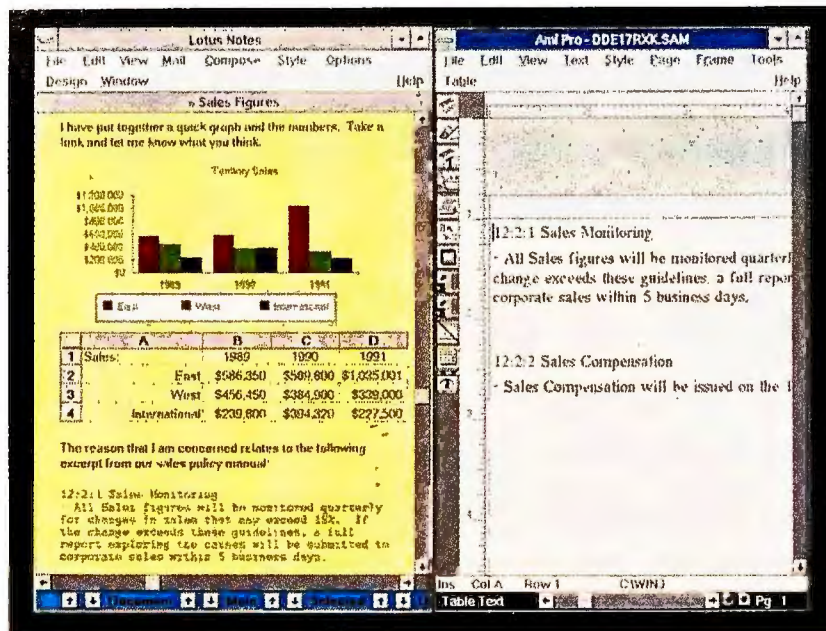
Easier access to *Notes 2.0* also means a *Windows 3.0* look, more application integration hooks, and a workable system so that laptop users can do serious *Notes* work from a remote location. *Notes 2.0* will automatically route their work

once the laptop is connected by modem or network, and remote updates are handled much more quickly.

Notes gains the ability to exchange data with other *Windows* applications via DDE hot links. It implements the new OLE (Object Linking and Embedding) standard, which lets you automatically invoke *Windows* OLE applications to work on material created within them. (For example, if you've inserted an *Excel 3.0* worksheet within a *Notes* message, you can make changes on the worksheet simply by clicking on it to launch *Excel*.)

Previously, *Notes* images were limited to 64K, but that ceiling has been bumped up to 4GB, and Lotus has added automatic compression/decompression to help you manage those larger bit maps. *Notes 2.0* also provides enhanced electronic-mail features and a wide repertoire of file import/export options. The package runs over NetWare, OS/2 LAN Manager and its derivatives, and VINES nets.

Lotus hasn't overlooked se-



Thanks to Dynamic Data Exchange, you can easily move data between *Notes 2.0* and other *Windows 3.0* applications.

Volkswriter 2, Volkswriter 4 2.0, Volkswriter 6

Three of a Kind Make for an Easy Draw

It's not easy picking a word processor with just the right degree of sophistication. Choose wrong or outgrow your word processor, and you must write off its cost, perform cumbersome file conversions, and then start all over again at the bottom of the learning curve.

Volkswriter introduces a word processing threesome that makes the climb easier. Your entry-level, intermediate, and high-end choices all have the same user interface and file format, and other differences are smoothed over by a flexible upgrade (and down-

grade) policy. This structure also makes it easier for advanced and beginning users to cohabit peacefully in the same work environment.

The centerpiece of the troika is version 2.0 of the long-running *Volkswriter 4*. New features include a graphics page preview, improved proportional font support, macros, and automatic recognition of file formats during document conversion. Previously, style and synonym checkers cost extra, but now *Grammatik IV* and a 310,000-word thesaurus are built into the \$249 product.

A scaled-down version—the \$149 *Volkswriter 2*—is aimed at the home market and the casual business user. It has the same interface and basic feature set as its big brother but lacks the style checker, thesaurus, and page preview.

You'll have to wait awhile for the third leg of the triad: Volkswriter is recasting *Total Word*, its high-end word processor, into *Volkswriter 6*. Due in the third quarter, this \$449 advanced word processor will add personal publishing features to *Volkswriter 4*'s basic feature mix, including an integrated outliner.

Volkswriter lets you move up or down the product line. Upgrading from *Volkswriter 2* to 4 costs \$79 and from 4 to 6

\$149; moving from 6 down to 4 costs \$125 and from 4 to 2 \$75. Upgrades from *Total Word* will be \$50. —Eric Brown

IN BRIEF

Lotus Notes 2.0

Get into group communication more easily, thanks to powerful *Windows* application hooks, useful remote support, and wider distribution.

Lotus Development Corp.

55 Cambridge Pkwy.
Cambridge, MA 02142
800/343-5414
617/693-3981 (fax)

Reader service no. 682

curity. The public-key encryption technology has been bolstered with physical encryption of data as it is written to disk. You also can encrypt fields within a document and documents within a data base.

Citing high support requirements, Lotus still sells *Notes* direct for \$62,500 per 200 users. But the package is also offered now through selected value-added resellers in much smaller quantities, with pricing set by the reseller. —Eric Bender

IN BRIEF

Volkswriter 2, Volkswriter 4 2.0, Volkswriter 6

Volkswriter's common file format and interface for advanced, medium, and low-end word processors make it easy to trade up or down.

Volkswriter, Inc.

One Lower Ragsdale Dr.,
Bldg. 2 #100
Monterey, CA 93940
408/648-3000,
408/648-3016 (fax)

Reader service no. 693

Now that you
get the basics,
here's why you
should get the
most popular
backup software
available.

LIKE A BOLT FROM THE BLUE,

your hard disk will eventually come crashing down. Manufacturers expect it. They even give hard disks an "MTBF" rating—the Mean Time Between Failures.

Before you lose your valuable data, back it up with Fastback Plus.

BACKUPS IN A FLASH With Fastback Plus, you can do things that DOS Backup never dreamed of. Like back up all your daily file changes in less than a minute. Or blaze through your entire hard disk at three megabytes a minute on 386 machines, or 10 megabytes in four minutes on an AT. It even formats your backup diskettes – automatically.

STRIKING SIMPLICITY Fastback Plus has three user levels – beginner, intermediate and advanced. Simple menus tell you how long your backup will take, and how many diskettes you'll need. And a unique data compression feature cuts the number of diskettes you need in half. You can even automate the entire process with one-touch macros.

DAZZLING SAFETY Only Fastback Plus gives you reliable Advanced Error Correction. To illustrate, we punched a hole

larger than a .22 calibre slug right through a backup diskette – and retrieved all the data! That's security. And if you need help dodging even bigger bullets, our technical support staff will surprise you with its courtesy and ingenuity. Just call, and you're guaranteed same-day service.

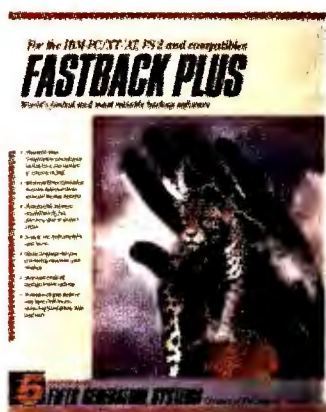
GLOWING REVIEWS *PC Magazine* said it best in giving Fastback Plus its prestigious 1989 Editor's Choice Award: "Fastback Plus has virtually everything a backup program needs: top-speed performance, clear menus, every imaginable option, even a built-in macro program for automating complex tasks. A superb achievement."

A POWERFUL GUARANTEE Use Fastback Plus for 30 days, and if you're not completely satisfied, return it for a full refund. You have nothing to lose. And everything to save.

FREE PYRO For a limited time, get a FREE copy of Pyro!™, our popular screen-saving program just for writing "Pyro" on the Fastback Plus registration card before you return it. That's a \$49.95 value – free!

Call now for complete details and the dealer nearest you.

1 - 8 0 0 - 3 8 8 - 0 3 6 2



Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Sales Number: (800) 388-0362 Technical Support: (504) 291-9953

Money-back guarantees are offered to end-users only. Dealers should return all merchandise to the distributor from which it was purchased.

This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation.

Circle 71 on reader service card

MicroPaq 452

One-Slot Shopping for VGA and More

With the proliferation of printers, scanners, internal fax modems, and networks, your PC stands a chance of becoming as overpopulated as a rabbit warren in springtime.

The MicroPaq 452 multifunction board solves PC overpopulation problems by giving you a disk controller, ports aplenty, and a graphics adapt-

er upgrade that leaves your old VGA in the dust.

The MicroPaq 452 incorporates a new graphics chip from Edsun Laboratories with continuous edge graphics (CEG), an antialiasing technology that makes images and text on a standard VGA or multiscan monitor look almost three times sharper. With its vast palette of 742,000 colors, images and gradual fills have near-photographic quality. The video section of the board is fully compatible with VGA, super VGA (800 by 600 resolution with 16 colors), and non-standard resolutions of 960 by 720 pixels with 16 colors, and 1024 by 768 with 16 colors.

In addition to driving your display, the MicroPaq provides more ports than most people need—analogue and digital monitor outputs, VGA and EGA connectors, two serial ports, and one parallel port. If you have no more than one

hard disk and two floppies, the board can handle all your disk controller needs as well. Operating at bus speeds up to 12.5 MHz and equipped with a full 1MB of video memory, the XT-height board is a neat solution to a crowded PC shell.

However, not everything is rosy in multifunction land. If any of the board's functions are duplicated on your motherboard or another add-in, you'll either have to fiddle with DIP switches or, much worse, try to slip sleeves on the board's jumpers. This is not a task for the fainthearted.

If you don't need all the

board's functions, you might consider the company's upcoming MicroVGA card, which provides only the video offerings of the MicroPaq. Furthermore, the allure of CEG's beautiful images hides the current lack of a full complement of drivers. Before buying, you should check whether your applications are supported.

Nonetheless, for the task at hand, this \$725 board, which comes with a five-year limited warranty, provides a lot in a small space, saving your expansion slots for *real* expansion. —Matthew Lake

IN BRIEF

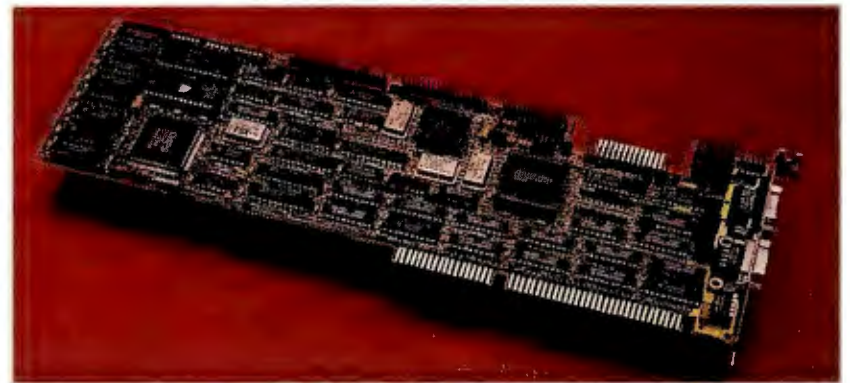
MicroPaq 452

This VGA-compatible board provides a disk controller, serial and parallel ports, and impressive continuous edge graphics and takes up only a single expansion slot.

Monolithic Systems Corp.

7050 Tucson Way
Englewood, CO 80112
303/790-7400,
303/790-7118 (fax)

Reader service no. 685



The MicroPaq 452 saves I/O slots by combining a hard and floppy disk controller, ports aplenty, and a continuous edge graphics (CEG) VGA adapter on a single board.

Oracle Card for Windows

SQL Meets Hypertext Under Windows

If SQL ever becomes a standard in the PC world, it will be by virtue of programs that let people avoid it. Only easy-to-use front ends, for defining SQL tables as well as entering and querying data, can offer the advantages of client-server data handling without the headaches of yet another obscure language.

Enter *Oracle Card for Windows*, a graphic, hypertextlike front end that gives *Windows 3.0* users easier access to *Oracle Server* on OS/2-based servers and large-system data bases. The *Oracle Card* environment lets you graphically create data base

applications by designing stacks of cards that interact with each other and your SQL-stored data.

Oracle Card won't relieve your company completely of the need for a SQL expert—someone still has to set up the server and each user account. But the average user can define and alter tables through *Oracle Card* without extensive knowledge of the underlying server, as well as give other work-group members access to those tables.

Like most hypertext environments, *Oracle Card* lets you paint or paste graphics into your cards, which can be

turned into buttons so that clicking a picture or a portion of a picture will set a process in motion. The graphic images you use in your interface, along with others, can be stored in a data base. You can query through a menu-driven module or—if you prefer—directly with SQL SELECT commands.

Oracle Card's use is limited to offices that have standardized on *Oracle Server*. When we last compared OS/2-based SQL servers (October 1990), we found *Oracle Server* to be unusually difficult to set up and most appropriate for offices where at least part of the data is on mainframes or minis.

Oracle Card for Windows requires a 286 system, *Win-*

dows 3.0, and a whopping 3MB of RAM. Unavailable at your local computer store, it will be sold only through VARs, specialized network resellers, and directly from Oracle for \$299. No run-time version is available. —Lincoln Spector

IN BRIEF

Oracle Card for Windows

This hypertext program gives you easy access to Oracle SQL data bases.

Oracle Corp.

500 Oracle Pkwy. #20D
Redwood Shores, CA
94065
800/672-2531

Reader service no. 684

TI microLaser™ printers open new windows.



With powerful fonts and graphics, ease of use and economy.

By now you've heard how fast and easy Microsoft® Windows™ makes it to tap all that PC power you've got on your desk.

Well now there's an affordable, easy way to put that power on paper — microLaser from Texas Instruments.

Right out of the box, microLaser comes with what you need to print the razzledazzle pages of text and graphics you've dreamed of creating.



Just plug it in and go.

That's because microLaser PS models come with the Adobe® PostScript® language



POSTSCRIPT®

and the memory it takes to use it. Plus you get your choice of either 17 or 35 scalable fonts, starting at just \$1,999.*

When it comes to print speed, microLaser zips along at 6 ppm. If you need a shared printer solution, turn to its cousin, microLaser XL. This workhorse gallops at a formidable 16 ppm.

If all that isn't enough, just look at what else you get with microLaser. It's the smallest printer in its class. It handles more paper and envelopes in more ways. And it supports more than 4,000




software packages, including your Windows applications.

So when you add it all up,

you'll understand why MacUser the power of your ideas **4 1/2** needs the power, convenience and economy of microLaser. Let microLaser open new windows for you.

For the name of the nearest dealer, call **1-800-527-3500.**

The microLaser PS17 has earned the 1990 PC World Best Buy award; microLaser PS35 has earned the 1990 InfoWorld Excellent Value award and 4 1/2 mice from MacUser, October 1990.


**TEXAS
INSTRUMENTS**

*TI suggested retail price. (Dealers' prices may vary.) microLaser is a trademark of Texas Instruments Incorporated. Adobe, PostScript and the PostScript Logo are registered trademarks of Adobe Systems, Inc. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation. ©1991 TI 71816

Circle 296 on reader service card

**Panasonic KX-P1124i,
IBM Proprinter 24P**

Dot's All, Folks

The age of the low-cost laser may be upon us, but dot matrix printers can still make an impact. Industry giants Panasonic and IBM have both rolled out sub-\$500 24-pin units aimed at an increasingly competitive personal printer market; the differences between the narrow carriage offerings are striking.

Panasonic's \$499.95 KX-P1124i is the next step in the evolution of its top-selling KX-P1124, adding speed, enhanced font and paper capabilities, and an easy-to-use control panel. Feature for feature, IBM's \$499 Proprinter 24P can't match it, but its respectable speed and font options

should satisfy most true Blue users who are tired of sharing the work-group laser.

The KX-P1124i comes with 11 typefaces—3 draft, 7 letter quality, and 1 super letter quality (SLQ)—in sizes from 5 characters per inch (cpi) to 20 cpi, plus proportional spacing. The SLQ font produces text of near-laserlike quality, but at a loss of print speed. The printer hits a top speed of 300 characters per second (cps) at 15 cpi, hums along nicely at 240 cps in 12-cpi draft and 80 cps in letter quality, and downshifts to 40 cps for SLQ text. Graphics print at a full 360 by 360 dots per inch (dpi).

IBM's 24P offers seven fonts (six letter quality) at sizes ranging from 10 to 24 cpi, plus proportional spacing. Print speeds top out at 192 cps in 12-cpi draft and 64 cps in

letter-quality mode, comparable to most 24-pin printers in this price range. Graphics print at 180 by 360 dpi.

The Panasonic's paper handling is top-notch. The unit accepts continuous-form paper, single cut sheets, and envelopes; comes with an adjustable push/pull tractor; and prints four-part forms.

IBM's 24P comes with an unexpandable 32K print buffer and a parallel port and handles three-part forms, envelopes, continuous sheets, and single cut sheets. An automatic cut-sheet feeder costs \$199; a pull tractor is \$69.

The Panasonic's 12K print buffer expands to 44K via a \$60 upgrade. A parallel port is standard (serial optional), and emulations include Epson LQ-850 and IBM Proprinter X24E. —*Daniel Tynan*

LANstep

Hayes Steps Into the LAN Market

Longtime modem standard-bearer Hayes Microcomputer is venturing into a new form of connectivity with a network operating system designed to be easy to use for first-time LAN buyers and small work groups.

LANstep is a peer-to-peer network that makes life easier for LAN members, starting with a symbol-based interface that provides access to network resources. Users can customize this screen to create symbols representing frequently used applications and activities and call them from within LANstep.

The LANstep workstation software permits sharing of directories, applications, and up to three printers. Each printer has its own spool, and users can cancel and monitor their own print jobs. Network users get a list of available

printers and of shared applications and directories for which they have access rights.

The electronic-mail facility offers most of the features you would expect, such as mail forwarding, distribution lists, registered mail, copies, blind copies, attachments, and text editing. Hayes has a mail gateway for sending messages to remote LANstep networks via modem or direct asynchronous connection.

LANstep runs on any NETBIOS network, but to ease installation it comes preconfigured for specified ethernet, token ring, and ArcNet network interface cards and common packages such as *Windows 3.0*, *Word*, *1-2-3*, *dBASE*, and Hayes's own *Smartcom Executive*. Just pick the cards and applications you want to use from a menu, or select 'Other' to install a

network driver or application that doesn't appear on the list.

While LANstep's operation is virtually administration-free, someone must periodically create new user IDs and assign printer, directory, file, and application access rights—assigning passwords to permit modify, read-only, or no-permission access. Tools for this part-time administrator include a log of network users, and a display of statistics with the size of shared network disks, their percentage of free space, and the number of unusable blocks.

LANstep doesn't require a dedicated server, but you do need to run the server software on one machine; it looks like a client-server network to users because they can share resources without having to know where they are housed. AT-class or better workstations can run under LANstep and gain full access rights to the network; lesser PCs can run under DOS and share only

IN BRIEF

Panasonic KX-P1124i
The best-selling KX-P1124 gets an upgrade with faster printing, more fonts, and better paper handling.

Panasonic Communications & Systems Co.
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086,
201/348-9090
Reader service no. 680

IBM Proprinter 24P
Big Blue's latest 24-pin printer gives you all the basics for under \$500.

IBM Information Products Co.
740 New Circle Rd.
Lexington, KY 40511
800/426-2468
Reader service no. 681

printers. LANstep system software needs 28K of conventional memory and 1.5MB of extended memory on the "server," 28K of conventional memory and 1MB of extended on every LANstep node, and 122K on DOS workstations (only 9K of which needs to be conventional memory).

LANstep costs \$595 for the first five users and \$395 for each additional five users; the LANstep Mail Gateway is \$395. —*Cheryl Goldberg*

IN BRIEF

LANstep
A peer-to-peer operating system adds some unique touches for ease of use and administration.

Hayes Microcomputer Products, Inc.
P.O. Box 105203
Atlanta, GA 30348
404/441-1617
Reader service no. 676

New!
CompuAdd CompanionSX™
Heavyweight Power Travels Light!

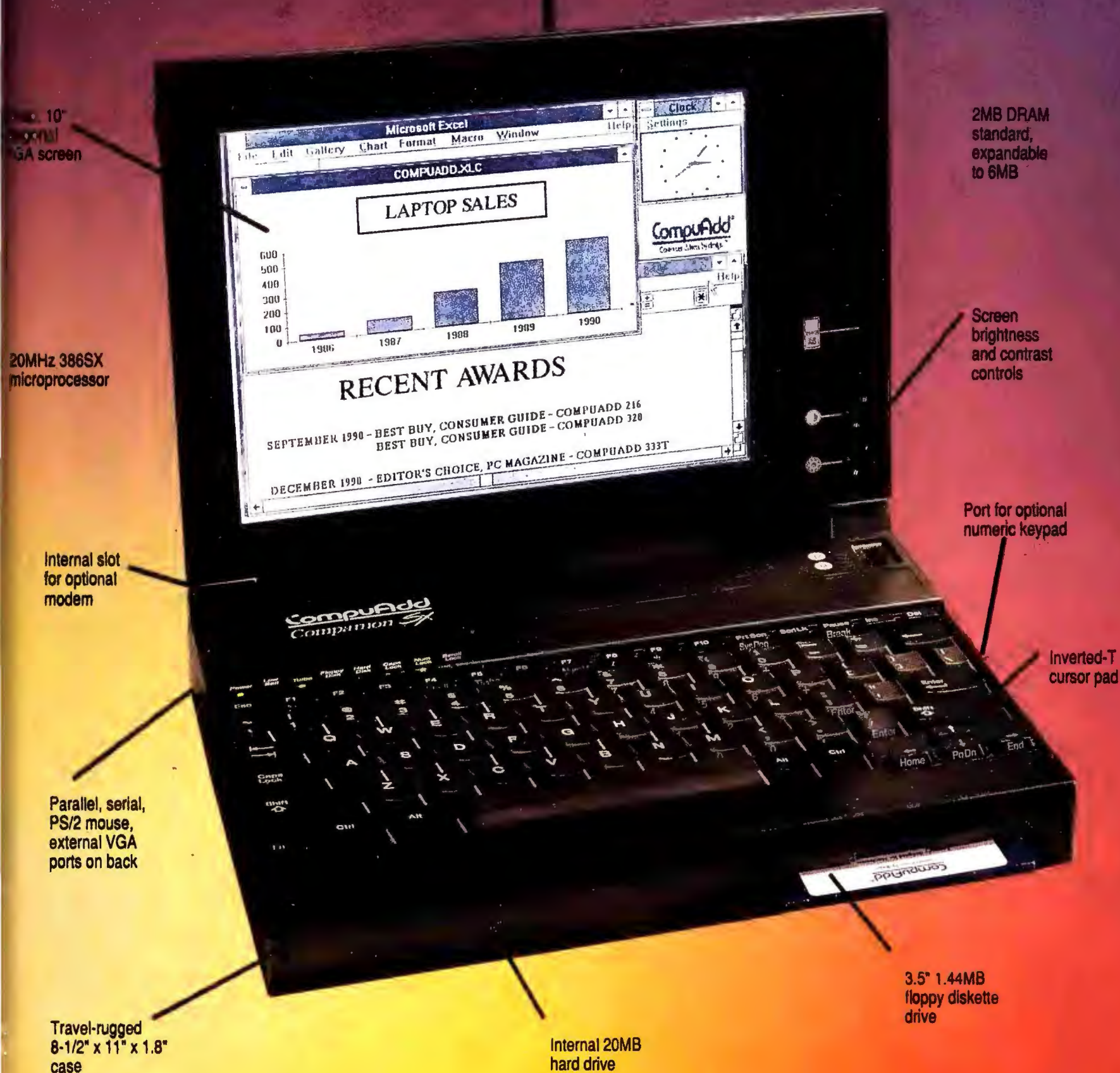
Only \$3595!



CompuAdd®
Customer driven, by design.

C O M P U A D D

Lightweight 386SX Notebook Packs Heavyweight Features!



CompuAdd CompanionSX™

Only \$3595!



Add on the optional numeric keypad for quick data entry.

lighter than the Compaq LTE 386s/20!

Packed with features you expect on a 386 desktop computer, this 8-1/2" x 11" notebook sports a 20MB hard drive *and* a 1.44MB 3.5" floppy diskette drive! Plus you can expand the standard 2MB DRAM all the way to 6MB.

Now you can run Windows applications on the road with the power of a desktop 386SX. And you get the security and convenience of a computer that stows in your briefcase — with plenty of room to spare!

CompuAdd extras include MS-DOS 4.01 preloaded on the hard drive. Add in CompuAdd's award-winning customer service, and you have a system that travels light but works like a heavyweight!

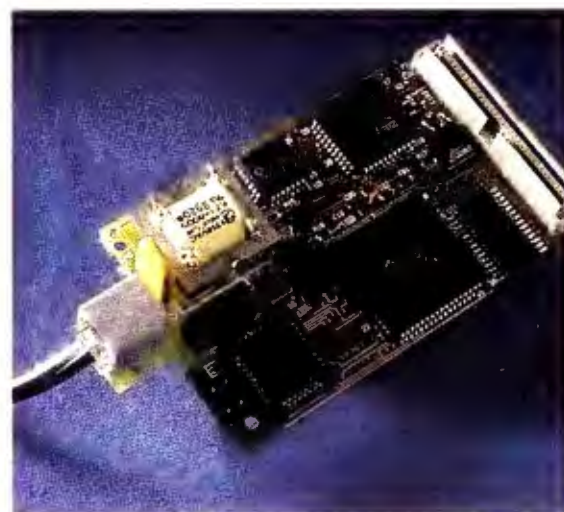
The CompanionSX continues the CompuAdd tradition of bringing you the latest PC technology plus all the famous CompuAdd extras! Powered by the Intel™ 20MHz 386SX microprocessor, the CompuAdd CompanionSX puts 32-bit processing power in a package less than two inches thick and only 5.7 pounds — almost *two pounds*

This notebook-sized wonder gives you a 10" diagonal, mono VGA display that's crisp and legible in a variety of lighting conditions. And the built-in CRT interface lets you hook up your full-sized color VGA monitor for desktop use.

The 79-key keyboard has separate cursor movement keys arranged in the inverted -T preferred on desktop keyboards. It also has the feel of your desktop keyboard, with solid tactile response and plenty of room between keys.

Standard I/O ports — parallel, serial, PS/2 mouse and external VGA monitor — are conveniently located behind a hinged door.

You can add capability to your CompanionSX as your needs require. Plug in an optional numeric keypad or add an optional internal modem to keep in touch when you're on the road.



Add an optional modem to keep in touch on the road.



Standard I/O ports make peripheral hook-up easy.

Carry the power of a 386SX anywhere! Call now and get an unbeatable deal on an unbeatable portable — the CompuAdd CompanionSX!

CompuAdd®

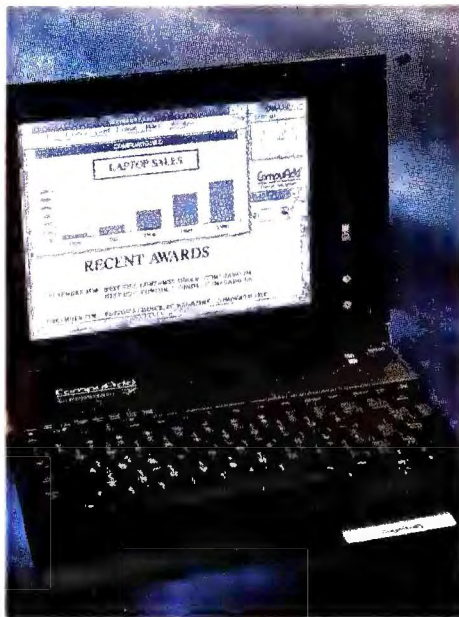
Customer driven. by design.

12303 Technology, Austin, Texas 78727

CompuAdd CompanionSX™ \$3595!

The NEW CompuAdd CompanionSX notebook continues the CompuAdd tradition of bringing you the latest technology at incredible savings! The CompanionSX is incredibly light and compact — only 5.7 pounds and 8-1/2" x 11" x 1.8". Yet it packs the power of a desktop 386SX computer!

Equipped with a 20MB hard drive and a 3.5" 1.44MB diskette drive, the CompuAdd CompanionSX fits securely and discreetly in your briefcase with room to spare. You get the same functionality and software capability you have with a desktop computer, plus options that enable you to plug into your office network, send fax documents, download data



from remote computers and send error-free file transfers. All this plus a crisp, 10" VGA display!

Call today for a CompuAdd price on the latest 386SX notebook technology!

The CompuAdd 320sl Laptop upgrades our *hottest-selling laptop* to 20MHz! It packs the power of the 386SX microprocessor into a convenient laptop — at a price far below competitive models! Plus you get FREE CompuAdd MS-DOS 4.01, LapLink II communications software and a carrying case.



You'll find the crisp, clear VGA display and spacious keyboard a pleasure to use. And if you want to use your desktop color monitor and expanded 101-key keyboard when you're not on the road, simply plug them into the built-in external ports.

CompuAdd also offers portable printers, projectors and data displays to make your 320sl a complete office on the road! Check out the savings when you buy CompuAdd's 320sl Kit with Diconix printer and modem/send-only fax.

CompuAdd CompanionSX

- 386SX microprocessor running at 20MHz
 - Standard 2MB DRAM expandable to 6MB
 - Built-in serial, parallel printer, numeric keypad, PS/2 mouse and external VGA ports
 - High-resolution 640x480 mono VGA display
 - 10" diagonal LCD screen
 - 20MB hard disk drive with 23ms access speed
 - 79-key keyboard with 101-key emulation and 12 function keys
 - FREE! CompuAdd MS-DOS 4.01
 - Rechargeable/removeable internal battery pack
 - Modular AC adapter
 - Dimensions: 8.5" x 11" x 1.8"
- System Price: \$3595 (62301)**

CompuAdd 320sl Laptop

- 386SX microprocessor running at 20MHz
 - Standard 2MB DRAM expandable to 6MB
 - Built-in serial, parallel printer, external VGA monitor, external keyboard and 5.25" drive ports
 - High-resolution 640x480 mono VGA display
 - 8.75" diagonal LCD screen
 - 3.5" 1.44MB high-density diskette drive
 - 40MB hard disk drive with 28ms access speed
(call for optional 100MB drive prices)
 - 85-key keyboard with 101-key emulation, 12 function keys and four cursor keys
 - FREE! CompuAdd MS-DOS 4.01 and LapLink II
 - FREE! Carrying case
- System Price: \$2895 (62205)**
Kit Price: \$3349 (62208)

CompuAdd®

Customer driven, by design.



Call 800-388-1296

Key Code 832

Hours: Monday - Friday 7:00am to 9:00pm CST; Saturday 9:00am to 5:00pm CST
12303 Technology, Austin, Texas 78727



800-387-3266



95-800-010-0401



0800-373535



0130-6009

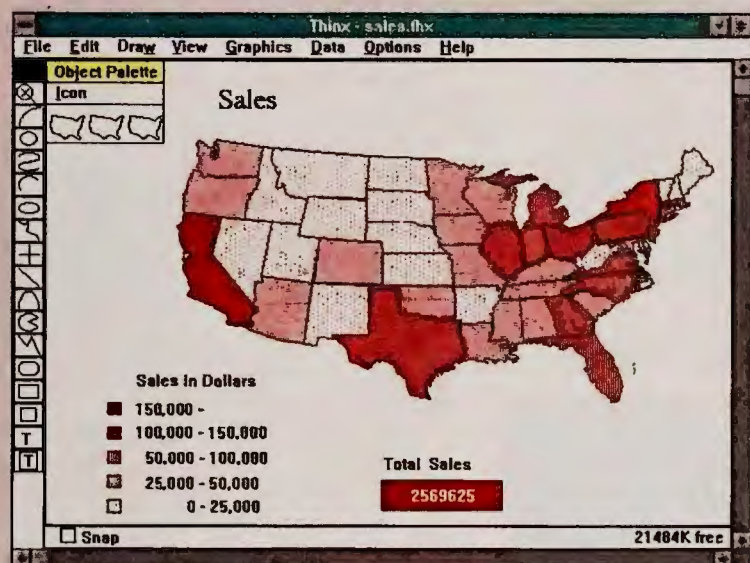


1-40364949

UPDATE

New Versions of Your Favorite Products

Thinx 1.1



Thinx's vector-based drawing tools let you perform what-if analyses such as sales estimates graphically.

Bell Atlantic's *Thinx* software, which lets you marry data base and spreadsheet data to objects for graphical what-iffing, has added a new training module, new applications, and bundled clip art to version 1.1. Clip art for the *Windows 3.0*-compatible applications includes basic geometric shapes and popular business graphics, all of which can be modified with *Thinx*'s vector-based

drawing tools. The \$495 *Thinx 1.1* also includes four ready-to-use sample applications for office planning, staff organization, product management, and sales forecasting and evaluation. The *Thinx QuickTour* uses these applications to step new users through the program. Bell Atlantic, 145 Fayette St., 3rd fl., C&P Building, Morgantown, WV 26505; 800/688-4469.

Reader service no. 694

PC File 6.0

The popular shareware non-programmable data manager has undergone a radical face-lift. In version 6.0, *PC File*'s old keyboard-driven cascading menus are replaced by standard mouse-supporting pulldowns, along with scroll bars, windows, dialog boxes, and everything that makes up a modern interface. Another important improvement surfaces in the table view, which is

no longer read-only. And simple report design is easier, thanks to predesigned options. *PC File* retails for \$149.95. Buttonware, Inc., P.O. Box 96058, Bellevue, WA 98009; 800/528-8866, 206/454-1838 (fax).

Reader service no. 698

Calendar Creator Plus 4.0

Version 4.0 of *Calendar Creator Plus* goes beyond print-

ing top-notch calendars. With its new support for the Agfa Compugraphic Intellifont system, you can print crisp type at any size between 6 and 72 points at resolutions up to 300 dpi. The program comes with two fonts and supports all Intellifont typefaces. You also can illustrate your calendar with PCX graphics—scanned logos, or clip art from *Calendar Creator*'s substantial library. *Calendar Creator Plus 4.0* retails for \$69.95. Power Up Software Corp., 2929 Campus Dr., San Mateo, CA 94403. 415/345-5900, 415/349-1356 (fax).

Reader service no. 699

CheckFree 3.0

Two-way electronic mail and simplified payment inquiry and cancellation procedures are two of the new features in *CheckFree 3.0*, the recent upgrade to the electronic bill payment package. *CheckFree* users will now receive inquiry replies electronically any time they log into the service. The program also features new hot keys for quicker navigation through menu options; mouse support; and more detailed information on the merchants you regularly send payments to. Version 3.0 exports in *Microsoft Excel* file format. *CheckFree 3.0* retails for \$29.95. Upgrades are free for registered users. CheckFree Corp., 720 Greencrest Dr., Westerville, OH, 43081; 800/882-5280, 304/284-1350 (fax).

Reader service no. 695

R:base 3.1A

R:base 3.1A lets you more easily integrate your other ap-

plications into *R:base* as menu items. By including those applications as selections on the main menu, you can shell out to them and then return to exactly where you left off. Version 3.1A is the first installment in Microrim's plan to upgrade the \$795 *R:base* every four months. Each upgrade is \$99; a year's worth is \$129. Microrim Corp., 15395 S.E. 30th Pl., Bellevue, WA 98007; 800/248-2001, 206/746-9350 (fax).

Reader service no. 696

Compaq Intelligent Array Expansion System

Is *Windows 3.0* using more room on your home PC than you anticipated? Now you can pack a Compaq Systempro multiprocessor server with almost 20GB (that's gigabytes, with a G) of fast hard disk. The Compaq Intelligent Array Expansion System ships with 2.6GB standard plus a 32-bit controller for a trifling \$21,999. You can expand storage to 9.1GB by adding five 1.3GB drives at \$9099 a pop, and then repeating the process to reach the maximum. If your Systempro started with its normal complement of 1.7GB, you'll need only \$134,988 to bring that up to 19.88GB—more than enough for those new *Windows* utilities. Of course, the Systempro and tape backup are extra. Compaq Computer Corp., P.O. Box 692000, Houston, TX 77269-2000; 800/345-1518.

Reader service no. 700

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

After I Bombed with dBASE, I Almost Gave Up Automating Our Invoices...

Simpler Than dBASE and 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 Application in Minutes.



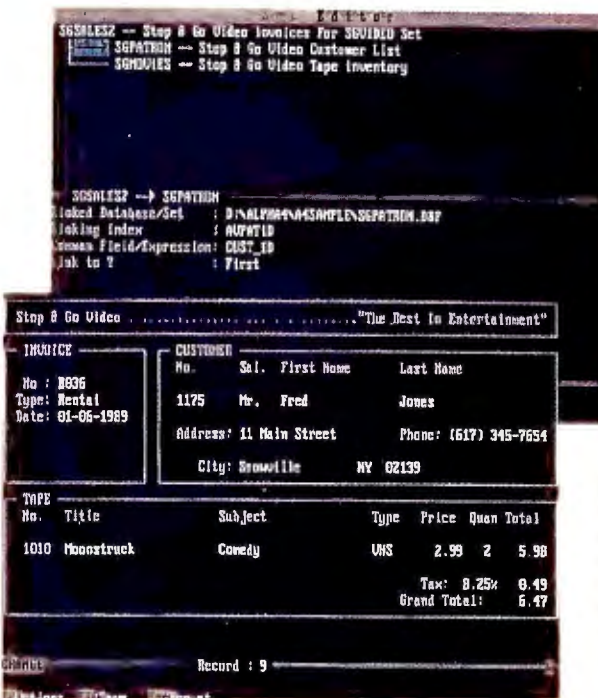
First, I needed a system of menus and sub-menus. Was I ever surprised to see how easy that was! With Alpha FOUR's "Application Editor" I wrote an outline of my menus and sub-menus. (Look at the screen.) Alpha FOUR automatically created my multi-level menus right from there. Changing my menus was just 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.

SPECIAL PRICING
\$549 VALUE
JUST \$99.00!

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 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.

In the future, I'll use Alpha FOUR's "Documentation" program to print out a full report of my database design, complete with all the details. That way, someone else can pick up where I left off and further expand the system.

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.

*Qualifying packages include programming databases (dBASE II, III and IV, Paradox, Clipper, Foxbase Fox 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.



Alpha FOUR Version 1.1

CQ3455-5 Alpha FOUR V1.1 5 1/4" \$99.00
CQ3455-3 Alpha FOUR V1.1 3 1/2" \$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.

Risk-free, 60-day money-back guarantee. Limit one per customer. Offer good through July 31, 1991. Sorry shipping is not included on this special offer.



TIGERSOFTWARE

FREE FEDERAL EXPRESS

(INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

Eye-Stabbing 3-D Charts for Use in Lotus, Excel, PageMaker and Others.

3-D CHARTS TO-GO Makes Numbers Sing in 3 Dimensions.

Why settle for two-dimensional charts when you can create explosive 3-D charts in just seconds with 3-D CHARTS TO-GO? This easy-to-use system will produce 3-D Pie, Bar, Area, Text and Line charts instantly, using your existing Excel numbers through its advanced clipboard. The innovative "split-screen" feature allows you to see both the data and the chart together for fast editing — you don't have to flip-flop between two applications when you create charts. And 3-D CHARTS TO-GO will give you three different chart views: Perspective, Isometric and Oblique.

Control Size, Angle, Color, Type and Reproduction Quality.

3-D CHARTS TO-GO allows you to interactively control the size of your charts — so you see the adjustments as you make them! Sizing is as easy as clicking to get the exact size you need. Click again and adjust the viewing distance, click once more and change the rotation angle to add unique perspective to your chart. This rotation-angle control allows enormous flexibility in presenting your charts so that the data is clearly displayed. Quickly select from 17 different chart drawing patterns and 8 foreground and 8 background colors. Want to get crazy? Click to create a host of available special effects on the background and shadows to enhance the three-dimensional effect.

There's more, like the ability to select your choice of chart quality: Draft, Fine Black and White and Fine Color. And 3-D CHARTS TO-GO gives you

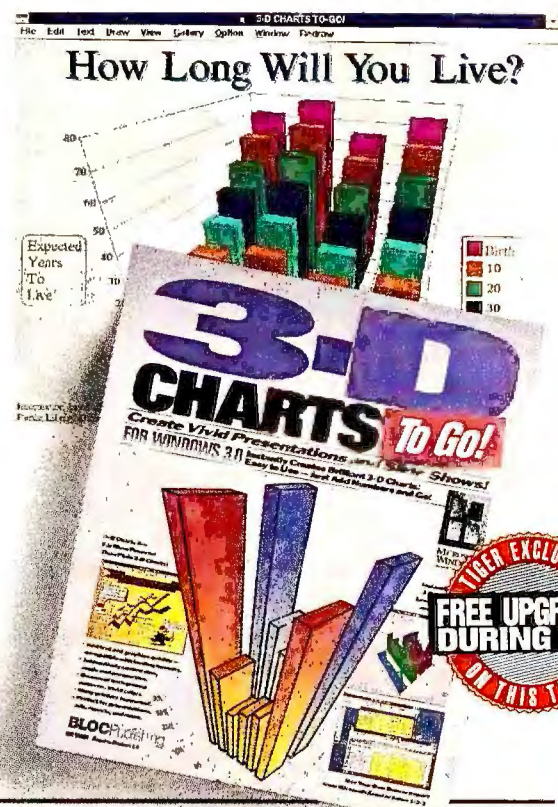
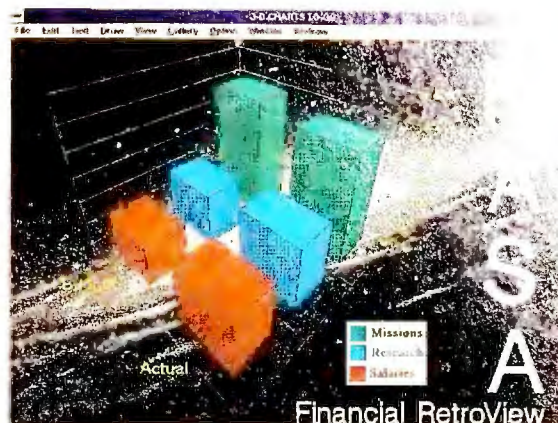
creative freedom when adding type to your charts. Your chart's title, subtitle, descriptive lines, labels, legend and footnotes can all be individually sized, colored and employ different fonts.

What makes 3-D CHARTS TO-GO even more impressive (and useful) is its ability to use data from Excel (and many other Windows-based applications). You'll quickly export numbers to 3-D CHARTS TO-GO without exiting Excel. You can easily merge up to 10 individual charts, print them together and perform fast, accurate data comparison. If you're a PageMaker user, you can enhance documents containing financial information and grids following the same simple steps. And since 3-D CHARTS TO-GO supports .WMF, .PCX and .BMP file import formats, you can add professionally prepared clip art images to your charts to make them even more visually striking.

BLOC Publishing

3-D CHARTS TO-GO

CQ1300 3-D CHARTS TO-GO 5 1/4" & 3 1/2" \$99.95
Requires Windows 3.0 and 640K.



From 29 Cents to 7.4 Cents For A One-Ounce Letter!

Certified by the U.S. Post Office

Professional Mailing to the masses — that's the theory behind Arc Tangent's decision to lower their price from thousands (and requiring special hardware) to hundreds (and run on any PC).

The Cadillac of mailing list software, this is the most advanced, professional-level package available on any PC. Certified by the U.S. Postal Service, you get a highly compressed version of the 3.2 gigabyte U.S. Post Office file on a single CD!

Eradicate bad addresses by checking your list against every valid address in the United States. Put advanced, professional-level features on your desktop that before were only available to huge mailing houses. Slash costs to the bone and get increased response from your mailings.



The Arc Tangent system is engineered for substantial mailing lists and saves you thousands of dollars. It could pay for itself on the first mailing!

Professional Mail

The heart of the system, Professional Mail generates and manages your entire mailing — including these advanced features:

- Database fully customizable; unlimited number of names and addresses
- Eradicate duplicates — even complex "sound-alike" dupes on up to 6 lists at once
- Presorting of 1st, 2nd, and 3rd Class Mail
- Supports 5-digit, Zip+4, Zip+4 Barcode, Basic Bulk, and Carrier Route
- Prints required Post Office reports
- Samples new lists (Test a list by mailing to every 10th address.)
- Highly personalized form letters
- Print any mailing label, including Zip+4 Barcodes
- Convert valuable lists from dBase and others
- Novell network version available

ZIP++

With a CD of every valid address in the U.S., ZIP++ cleans your lists for the highest accuracy you can get. Give it an address and ZIP++ will tell you what postman will deliver it! (And print the Carrier Route with the address.) Save money on postage and printing, improve the quality of your mailings, and get the best results possible.

- Correct bad addresses
- Missing City? ZIP++ can still find it.
- Insert Zip+4 codes
- Insert Carrier Route codes
- Compare each address against the USPS database of all mailing addresses in the US

- Highly accurate — updated 4 times a year
- Slash rates with Zip+4 codes
- Slash rates even more with Carrier Route codes
- Bare-bone rates with Barcodes printed on dot-matrix, laser, or direct-impression printers
- Certified by the U.S. Post Office for accuracy

Merge-Purge

Rid your lists of bad and undeliverable addresses and get real savings. Merge-Purge has the same professional-level features of Professional Mail, but is sold separately for those who want the power of Professional Mail's merge-purge capabilities while managing their lists with dBase, R:Base, ASCII and other general-purpose database files.

- Detect dupes, near-dupes, or "sound-alike" dupes on up to 6 lists at once.
- Merge dupes from 6 files into one file
- Handles any size list

Arc Tangent, the leader in the mailing-list industry, offers the most powerful package available on any PC, you'll save thousands — both on postage rates and printing costs. And this industrial-strength system is easy enough for any PC-user to understand.



ARC TANGENT

Arc Tangent

CQ8600 ZIP++ 5 1/4" & 3 1/2" \$195.00
CQ4065 Merge Purge 5 1/4" & 3 1/2" \$149.00
CQ4060 Professional Mail 5 1/4" & 3 1/2" \$695.00
Professional Mail and Merge Purge require a hard disk. ZIP++ requires a CD-ROM reader.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

Circle 259 on reader service card

JUNE 1991 PC WORLD 121

The Intelligent Grammar Checker.

Improve Your Writing by Checking Grammar, Style, Punctuation, and More.

In business, you're judged by what you say — and by how you write. Nothing can kill the confidence of a prospective customer or client faster than a proposal littered with grammatical, usage and punctuation errors.

The fact is, there's no excuse for sloppy, error-filled written communication. Each letter, report, proposal, press release or other business document you prepare should represent you as a professional.

RightWriter Is the Premier Grammar and Style Checker.

It's designed to flag errors in your writing from a rule base of over 5,500 — including rules of grammar, style, usage, punctuation, sentence structure, subject-verb agreement and more. RightWriter produces a copy of the document and performs its analysis. Then displays (or prints) 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.

You use your word processor to create your document as you normally would. When you're ready to use RightWriter, you simply press a two-keystroke sequence.

How RightWriter Knows When Your Writing is Wrong.

RightWriter proofreads your documents using two artificial intelligence (AI) technologies called parsing and expert systems. Each technology has a

separate, unique function, but together they rely on one another to identify parts of sentences and to locate errors.

Parsing performs the critical function of sentence dissection. It first identifies sentences' individual parts, breaking each sentence into major phrases and looking for both dependent and independent clauses. Parsing goes further by identifying the subject and predicate of each clause and noting the word's part of speech. This technology, for example, can tell the difference between "can" used as a noun and as a verb.

The expert system relies on the parser to break down the sentences so it can determine their accuracy. RightWriter's expert system examines your writing, judges the accuracy, and suggests improvements without your making any specific query.



Now Runs From Within Eight Word Processors.

RightWriter's interface works within eight word processors: WordPerfect, LetterPerfect, Microsoft Word, WordStar, Professional Write, Q&A, Q&A Write and MultiMate Advantage II.

Compatible With: Microsoft® Works pfs: First Choice®
Bank Street Writer® Microsoft® Write Q&A Write®
DeskMate Text® Multimate Adv.® Samna®
Edix/Wordix® I & II SideKick®
Enable® Multimate® VolksWriter®
HomeWord II® New Word® (Deluxe, Plus & 3.0)
IBM Writing Asst.® OfficeWriter® WordPerfect®
Leading Edge® PC-Writer® WordStar®
Microsoft® Word PeachText® 5000 WordStar 2000®
Microsoft® Word pfs: Write® XyWrite®
for Windows pfs: Prof. Write® ...And More

INCLUDES FREE
Strunk & White's
The Elements of Style
Electronic Edition!
WHEN YOU BUY RIGHTWRITER PC VERSION.



QUE

RightWriter 4.0

CQ3660 RightWriter (PC) 5¼ & 3½ (Dual Media) \$89.95
CQ3365 XENIX/UNIX \$295.00
CQ3366 Mac Version \$79.95
CQ3367 Network 5 Pack \$299.00

Never Read a Manual Again!

On-Line Instructions for WordPerfect 5.0 & 5.1, and Lotus 1-2-3!

As the popularity of WordPerfect and Lotus' new releases sweep the industry, more users are attracted to their incredible power, design and functionality. But learning these pro-

grammes can be some work. Now anyone can quickly master WordPerfect and Lotus 1-2-3 without spending days or even weeks with the manuals.

Ko-Pilot is available from anywhere by just hitting a function key, then it takes over, outlining your options from a pull down menu. You won't have to memorize any complex commands or series of steps.



grams can be some work. Now anyone can quickly master WordPerfect and Lotus 1-2-3 without spending days or even weeks with the manuals.

Ko-Pilot is available from anywhere by just hitting a function key, then it takes over, outlining your options from a pull down menu. You won't have to memorize any complex commands or series of steps.

For WordPerfect 5.0 & 5.1

WordPerfect has become the standard word processing software for

Ko-Pilot for Lotus 1-2-3.

The brilliance of the electronic spreadsheet doesn't have to be intimidating. Ko-Pilot takes you by the hand and leads you through any operation with just a keystroke. Hit F1 and pull down menus allow you to perform @ functions, record and use macros, move ranges, set up your printer and dozens of other Lotus features that could take weeks to master.

INSIGHT RESOURCE INC.

Ko-Pilot

CQ3430-5 For WordPerfect 5.0 & 5.1
5¼" \$89.95
CQ3430-3 For WordPerfect 5.0 & 5.1
3½" \$89.95
CQ3440-5 For Lotus 1-2-3
5¼" \$89.95
CQ3440-3 For Lotus 1-2-3
3½" \$89.95
System Requirements: IBM PC, XT, AT, PS/2.
Wordperfect requires 640K; Lotus requires 512K. Lotus 1-2-3 Ver. 2.2 w/3.1 available 1st quarter '91.

Automatically Turn Ideas into Diagrams...

Faster, More Impactful Communication.

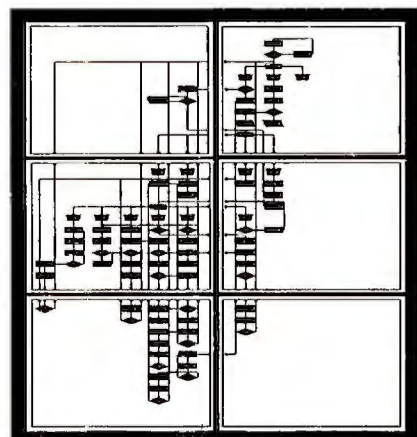
How do you convey to a client how projects flow in your company? How can you ensure new employees really understand the procedure for using a purchase order, or when to use express shipping? With allCLEAR, your thoughts are instantly expressed as pictures — accurate, presentation-quality tree and flowcharts. All created without any preplanning or drawing on your part.

A Milestone in Communication.

There is no other product we've seen that can help managers and others within organizations to clearly explain corporate policy, structure and procedures like allCLEAR. We've found allCLEAR extremely useful here at Tiger for helping with customer service problems and providing technical assistance. The fact is, this is a powerful tool for communicating precisely how to accomplish any procedure-based task.

Here's How allCLEAR Does It...

Using the built-in text editor, or your favorite word processor (or any text or Lotus 1-2-3 file) you give all-



Multi-page charts are no problem for allCLEAR. Enter text, or import it from your word processor and see it on the screen.

CLEAR a plain English description of any organization or procedure you can imagine. With the addition of a few punctuation marks, allCLEAR now understands the underlying relationships. The result is clear, unmistakable — visual — communication.

CLEAR SOFTWARE, INC.

allCLEAR

CQ3070 allCLEAR
5¼" & 3½" \$299.95
System Requirements: IBM XT, AT, PS/2 and compatibles; 640K memory; DOS 3.0 or later; hard disk; CGA, EGA, VGA, Hercules, or compatible; any dot-matrix, HP LaserJet, HP DeskJet, Canon, or PostScript printer.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER 1-800-888-4437

The Long-Awaited New Version! The Winningest Lottery System In The World!

NEW! Version 4.0.
The Science of Winning
Pick-5,-6,-7 Lotteries.

TigerSoftware is the first to offer its readers the hot new upgrade to one of our most popular titles (this version won't be in stores until after press time). The best gets better. 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 and more efficient to maximize payoff possibilities on any state or international lottery game — choosing from up to 80 numbers!

Hundreds of New Innovations for Higher Winnings!

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. And now you can create trend charts, analyze past winning numbers any way you like, produce accurate statistics on frequency, recency, bell curves, percentages and "hot" or "due" winning numbers.

Version 4.0 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. The developers of The Complete Lottery Tracker & Wheeler listened what they had to say about the science of winning lotteries and incorporated a lot of their techniques into this new version.

We've seen them all, and there is simply no better lottery software available anywhere — at any price!

FREE BONUS "Lottery Winning Strategies" Audio Cassette!

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.

It helps you develop your own winning numbers, provides insight into which games are best to play and win, what numbers you should avoid. You'll learn all aspects of the concept of wheeling, how to analyze your data, how to develop your own charts and much more.

You'll hear step-by-step strategies that are



proven winners, you'll understand how incorporating the Numerology Theory into your strategy can increase chances of winning even higher!

FREE BONUS!

Coupon for a Free "Winning Combinations" Database!

Approximately 250 winning combinations in your state's lottery history are included to help you precisely track trends.

ENTERTAINMENT
ON-LINE, INC.

Lottery Tracker & Wheeler

CQ3610 Lottery Tracker & Wheeler 5¼" & 3½" \$49.95
IBM PC, XT, AT, PS/2 and compatibles. Requires 256K.

Required Software for Every Family Computer.

From Designing a Floorplan to Flying an F-16 Fighter...

Family/Better Living.

The Family/Better Living Pack, includes FloorPlan, Portfolio Manager, World Atlas, Crossword Magic and Home Inventory.

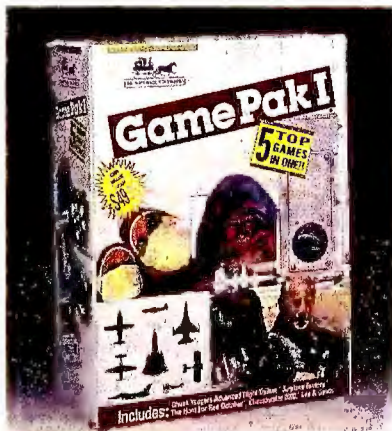
With FloorPlan, you can quickly lay out your dream house in just a few minutes. Portfolio Manager allows you to organize, manage and create reports on your investments with powerful financial tools. The World Atlas brings the world to your screen, with hundreds of maps, facts, figures, and statistics about the world. Crossword Magic is the Crossword Puzzle fanatic's "must have" guide. And, Home Inventory helps you create a complete list of your property contained within your home.

Game Pak I.

Chuck Yeager's Advanced Flight Trainer, the incredible Chessmaster 2000, the chilling Hunt For Red October, Life & Death and Airplane Factory. All smash hits!

Skill Builder.

Family computing gets down to business with four educational software packages. There's Evelyn



Wood's Dynamic Reader, Mavis Beacon Teaches Typing!, DOS Tutor — a crash course on how your PC actually works, and U.S. Atlas.

SPECIAL OFFER! Buy All Three BundlePacks and Save \$40!



Toolworks Packs

CQ3501 Family/Better Living Pack	5¼" & 3½"	\$59.95
CQ3502 Game Pak I	5¼" & 3½"	\$49.95
CQ3503 Skill Builder	5¼" & 3½"	\$69.95
CQ3500 All 3 Bundle Packs	... Save \$40.00 ...	\$139.95
IBM PC, XT, AT, PS/2 and compatibles with 384K and CGA.		

The "Astronomy" Software.

The Entire Universe at Your Fingertips.

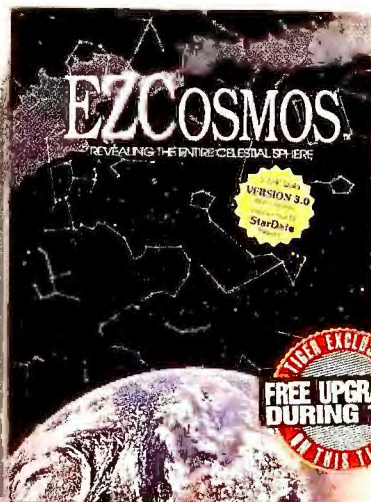
Throughout the history of mankind, the heavens have captured the imaginations of thinkers and scientists. In 1609, Galileo perfected his telescope's lenses and saw for the first time Jupiter's four moons. In 1671, Sir Issac Newton created the revolutionary reflecting telescope and a new age of astronomy was ushered in. Today, NASA probes and enormous land-based observatories provide a broad understanding of our universe.

See the Stars as the Romans Did...

Now you can have the astronomical knowledge of the centuries right

on your PC with new EZCosmos. Whether you're a casual observer, aspiring stargazer, or professional astronomer, you'll find EZCosmos an exciting and complete reference tool.

Using its unique SkyPlot feature, EZCosmos will quickly display the entire celestial sphere for any date, time and location you specify from 4000 B.C. to A.D. 10,000. You can select from a host of unusual celestial events, like the upcoming solar eclipse as seen from Hilo, Hawaii, which will occur on July 11, 1991. Or select from 1,100 cities around the globe and instantly see what the sky looks like at any time. Great for the entire family, and a wonderful educational tool for students.



FUTURE TRENDS SOFTWARE

EZCosmos

CQ3090-5 EZCosmos 5¼" \$69.95
CQ3090-3 EZCosmos 3½" \$69.95
IBM PC, XT, AT, 512K RAM, VGA, EGA, CGA or Hercules monitors supported.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER 1-800-888-4437

CD-ROM: The Inform

Instant Access to Facts, Figures, Maps, A World of History, Animals,

Dear Tiger Reader:

Introducing the all new CDR-36 CD-ROM reader. This baby is sleeker and faster, with improved capabilities to squeeze even more power and productivity (not to mention fun!) out of your PC.

An important note here: this is not an off-brand CD-ROM reader like you'll find elsewhere. The CDR-36 (and its big brother, the CDR-73, see below) is made and backed by NEC — the industry leader in CD-ROM technology. Why not buy off-brand? First, CD-ROM technology requires advanced design and engineering to achieve superior performance. The optical technology involved is sophisticated, so the materials used in assembling the CDR-36 are the finest available. Speed, failure rate and overall enjoyment of CD-ROM is based on what goes into each device.

The NEC CD-ROM readers you see here are built to last and crafted to perform. But, surprisingly, with this commitment to quality and performance, it comes with a very modest pricetag.

Put Your CDR-36 to Work with These Discs at Unbeatable Prices!

Tiger has assembled the definitive collection of CDs for use with your reader (see opposite page). All on compact disc — in fact, the information contained would fill enough books to take up an entire room! But space isn't the only advantage of having a world of valuable information on CD-ROM. The ability to quickly access any of it makes learning and researching hundreds of times faster and easier.

Children are exposed to much more knowledge, because they can move quickly through topics without flipping pages, chasing down additional volumes and scouring through indexes. It makes learning fun. The topics collectively covered by these discs are virtually endless.

TIGER CD BUNDLES



The Toolworks 21-Volume Illustrated Encyclopedia. Critically acclaimed and widely used, *The Toolworks Illustrated Encyclopedia* features the entire text of a 21-volume encyclopedia (9 million words) — stored on a single compact disc!

Toolworks Reference Library. A complete home and office reference library on a single compact disc. Includes *Webster's New World Dictionary*, *Third College Edition*, *Webster's New World Thesaurus*, *Webster's New World Dictionary of Quotable Definitions*, *The New York Public Library Desk Reference*, *Dictionary of 20th Century History*, *J. K. Lasser's Legal and Corporation Forms for the Smaller Business*, *Guide to Concise Writing*, and *The National Directory of Address and Telephone Numbers*.

Multi-Media Birds of America. Each bird has a fascinating story told by James Audubon,

including its habitat, range, and other interesting details of the bird's life.

Guinness Disc of Records. Find records instantly using your own search words: e.g., what record did Elizabeth Taylor break in the film *Cleopatra*? Learn from sections like *The Living World* or *Human Achievements*. View photographs, listen to music and sound effects, or run an animation.

Shakespeare on Disc. The complete text of all William Shakespeare's works, including plays, poems, and sonnets in both the Queen's English and modern versions.

Sherlock Holmes on Disc. The entire treasury of Sir Arthur Conan Doyle's classic tales on a single CD. Full word text search and browsing capabilities, along with table of contents.

A Unique Time Table. Slip in the disc and travel anywhere in time to see important people and chronological events as you navigate back and forth. Just click on an event and you'll get the in-depth story — with voice-over narrations!

United States History. U.S. History on CD-ROM provides detailed coverage from a variety of historical perspectives on political, aerospace, geographic, social, military and economic history. Includes 1,000 photographs, maps and tables relating to historical events.

World and USA Atlas. Atlas, almanac and world fact book in one, *World Atlas* and *USA Atlas* give you instant access to over 240 fully detailed, EGA/VGA color maps and a huge database of international information.

CD Game Pack. The ultimate competition! Includes *The Chessmaster 2000*, *Bruce Lee Lives*, *Beyond the Black Hole*, *Gin King-Cribbage King*, and *Life & Death*.

Mammals. NOTE: Limited units available — order today! Photos, animation, facts and details on the most amazing beasts on earth — the mammal. From the pages of *National Geographic*, this classic collection is perfect for students and animal lovers.

Time Compact Almanac. NEW! Millions of facts and figures, statistics, comparisons, rankings, records, annual averages and other information. From the publisher's of the world's foremost news magazine.

Show Time. Features over 1,000 full-running demos of the hottest software products, including details on how to easily order the full running versions.

Britannica Family Choice. Includes *Berenstain Bears*, *History*, *Geography*, *Designa-saurus*, *The Body Transplant* and more!

The Fastest, Sleekest.
The New NEC
CDR-36

The New
CDR-73



NEC CD-ROM Readers

CQ9036 CDR-36 Reader w/interface	\$798.00
Your Cost	\$499.00
CQ9073 CDR-73 Reader	
instead of CDR-36	Add \$399.00
CQ9083 CDR-83 Reader(internal)	
instead of CDR-36	Add \$299.00
Please specify XT, AT, PS/2, NEC Prospeed or Macintosh.	

CD-ROM Software

CQ8510 Toolworks Illustrated Encyclopedia	\$395.00
CQ8520 Toolworks Reference Library	\$159.95
CQ8530 Toolworks USA Atlas	\$99.95
CQ8540 Toolworks World Atlas	\$159.95
CQ8550 Toolworks Game Pack	\$99.95
CQ8560 Mammals	\$149.00
CQ8563 Time Compact Almanac	\$159.95
CQ8596 Sherlock Holmes	\$99.00
CQ8597 Shakespeare	\$99.00
CQ8598 Birds of America	\$99.00
CQ8580 U.S. History	\$395.00
CQ8570 Timetable of History	\$99.95
CQ8590 Guinness Book of World Records 1991	\$149.00
CQ8610 Show Time	\$149.00
CQ8620 Britannica Family Choice	\$199.00

TIGER BUNDLE #1

CQ9136 Includes all of the following:	
CDR-36 CD-ROM Reader	
All the above listed CD-ROM Software	
Complete Interface Kit (specify XT, AT, PS/2, NEC Prospeed, or Macintosh)	
Clip Art 3-D (IBM) 2,500 color graphics	
Total Value	\$4,867.70
Your Cost	\$899.00

To Upgrade Bundle #1 to:

CQ9173 CDR-73 instead of the CDR-36	Add \$399.00
CQ9183 CDR-83 instead of the CDR-36	Add \$299.00

TIGER BUNDLE #2

CQ9236 Includes all of the items listed in Bundle #1	
plus your choice of any one of the following:	
Image Folio (IBM) 4,000 stock photos	
or Type Gallery LJ (any 12 of 76 fonts on disc)	
or Image Gallery (IBM) any 600 images on disc	
or Photo Gallery (Mac/IBM) 1,500 stock photos	
Total Value	\$4,759.70
Your Cost	\$1,295.00

To Upgrade Bundle #2 to:

CQ9273 CDR-73 instead of the CDR-36	Add \$399.00
CQ9283 CDR-83 instead of the CDR-36	Add \$299.00

Prices subject to change. Limited availability.
Sorry free shipping is NOT included on above items.

TIGER SOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

Creation Tool of the 90's

Reference Library, World Records — even Shakespeare on Compact Disc!

Turn Your PC into a Creative Design Studio.



The elements of graphic design are available to you on compact disc! NEC, Adobe and a host of stock photography, illustration and design organizations bring you a complete set of tools to turn anything you print or desktop-publish into a work of art. Professional typefaces can make your letters, ads, brochures, flyers, reports, proposals, sales sheets and more sing with 1000 typefaces on a single CD.

Need a photo? Choose from the NEC library of stock photographs for any purpose: business, life-style, locations, landmarks, people, places, things, technology, industry, religion, holidays, animals, kids, sports, health and dozens of other useful topics. Just select one, bring it into your application (using virtually any popular format) and size it into your document.

Does your proposal scream for an illustration? Find the one that's perfect in just seconds! Crisp, contemporary styles — not outdated sketches. These are finished drawings in a myriad of techniques: highly detailed, technical, cartoon, graphic and architectural. Hundreds of individual artists and styles are represented.

Or, reach for something different. There's a gallery of designs, graphics, symbols, logos and other images that can give any document a finished, professional look. Use them to spice up charts and graphs, reports and proposals and give excitement to your newsletter. For added impact, pop in the treasury of 3-D graphics.

2800 Illustrations!



Put a full-time artist on staff! Image Gallery contains up to 2800 professionally drawn line art images in dozens of categories. Choose Art Deco, Cartoons, Computers & Technology, Fashion, Fitness, Travel, Sports, People, Religion and more. These images are from Metro ImageBase, a leading source for over 75 years, and are stored in TIFF or EPS file formats for maximum compatibility. Image Gallery's convenient index allows you to find any image in seconds.

IMAGE GALLERY

CQ8320 Image Gallery Premium,
2800 Metro Images (\$0.25 ea.) \$719.00
CQ8000-3 Image Gallery, any 600 on CD
(ea. \$0.67) \$399.00

1,500 Stock Photos!

Instantly turns your PC into a stock photography house! Over 1500 professionally shot B&W photographs from the UNIPHOTO agency — one of the world's foremost stock agencies. These photos are all stored on one CD-ROM, conveniently indexed and referenced for instant access, with a catalog including reproductions of each photo contained in the collection. Select the photo you want from 20 individual categories by simply entering its number on your screen.



NEC PHOTO GALLERY

CQ8000-4 Photo Gallery, 1500 stock photos \$399.00

4000 Full-Color Stock Photographs!

This remarkable volume contains over 4000 high quality digitized photos covering a long list of subjects from business and industry to nature and people. Perfect for layouts, comps and presentations.



Alter photos to suit your creative needs! An innovative tool allows air-brushing, color and lighting changes, as well as instant cropping,

resizing and reversing. Images can be exported to your desktop publishing system in black and white TIFF or color WIN formats.

IMAGE FOLIO

CQ8000-1 Image Folio, 4000 stock photos \$399.00

1000 Typefaces!

Available for PostScript and HP LaserJet and Compatible Printers.

The most extensive collection of typefaces available anywhere! CD-ROM Technology allows you to store 600 individual typefaces on a single CD-ROM (rather than gobbling up precious space on your hard disk) and instantly access them for use in letters, reports, brochures — anything you publish on your PC. Purchase either Type Gallery PS or Type Gallery LJ, and you'll have access to your choice of typefaces contained on the CD-ROM. If you need additional typefaces, just select them from the catalog and contact NEC (toll-free) to extend the license — instantly!



NEC TYPE GALLERY

CQ8440 Type Gallery PS Premium, all 1000
PostScript Typefaces (\$15.99 ea.) ... \$15,995.00
FREE CDR-73 & interface w/Type Gallery Premium PS!
CQ8420 Type Gallery PS, license to use any 15
of 1000 typefaces on disc (\$26.60 ea.) ... \$399.00
CQ8410 Type Gallery LJ Premium, all 76
AGFA PCL Typefaces (\$15.78 ea.) ... \$1,499.00
CQ8000-2 Type Gallery LJ, license to use any 12
of 76 typefaces on disc (\$24.92 ea.) ... \$299.00

Over 2500 3-D Images!

Imagine having over 2500 vibrant three-dimensional graphic images on one CD-ROM. Imagine choosing from over 50 subject categories and having the ability to edit the images to achieve an endless range of creative possibilities. Imagine choosing colors from a palette of over 16 million choices. Clip Art 3-D allows you complete and instant control over the size, perspective and lighting of each image.



CLIP ART 3-D

CQ8200 Clip Art 3-D, 2500 color images \$399.00

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

Time and Expense Tracking for Client/Project Management.

TimeSheet Professional®'s features and functions are extremely easy to use and understand. Designed around a weekly view of projects, each user simply selects the project they're working on and enters the time. Handle time the way you wish. Turn the automatic Timer on and off, enter time directly on the timesheets, or instantly add and subtract time. Expenses are tracked just as easy. Up pops a window for easy entry of expenses. And you'll always see a week's worth of work — including total time per day and total time per project.

The Project Manager instantly and easily sees the information he needs. Customized reports can be created in a spreadsheet-style format, so they are easy to understand. Choose between detailed or summary data.

Week-At-A-Glance TimeSheet.

Unique electronic time sheet lets you and your workgroup easily record time for projects, activities, clients, etc.

- Use week-at-a-glance time sheet for quick data entry
- Record time three different ways — directly on the time sheet, using from/to format and with stopwatch timer
- Track project details with pop-up note editor
- Monitor project and client expenses
- View time spent totals by day and week
- Print time sheets with signature blocks for management approval

Summary Report Simplifies Project Analysis.

The Summary Report simplifies analysis of time utilization in project-based workgroups and professional practices.

- Consolidate workgroup activity from multiple employees
- Easily identify projects ahead of or behind schedule
- Report work activity by budget-vs-actual and percentage-of-completion
- Develop time and resource project budgets
- Compare hours and expenses, month-to-month and year-to-year
- Customize your report using familiar spreadsheet format
- Spreadsheet-style summary reports with individualized criteria using a variety of mathematical calculations.

Detail Report Delivers with Full Flexibility.

The Detail Report lets you review project details, notes and expenses. Organize and report data in the manner most meaningful to you.

- Categorize by project, activity, individual employee and client
- Review and edit notes and expenses before printing reports
- Prepare project management reports

Additional Capabilities.

- Customize terminology according to standard usage in your profession
- Export data to word processors and spreadsheets
- Import data from standard ASCII text files.
- Network version available supporting most networks
- Data Exchange Utility available to transfer data to and from leading project management and accounting packages

ALL NEW

From The Publishers Of Timeslips III



Timesheet Professional Is Perfect for:

Project Managers
Corporate Workgroups
Engineering Managers
Consultants
MIS/DP Managers
Computer Professionals

Engineers
Programmers
Software Engineers
Auditors
Architects
and many more...

TIMESLIPS CORPORATION

NETWORK EDITION ALSO AVAILABLE!

TimeSheet Professional

CQ3012-5 TimeSheet Professional 5 1/4" \$199.95

CQ3012-3 TimeSheet Professional 3 1/2" \$199.95

Network Version

CQ3013-5 TimeSheet Professional 5 1/4" \$999.95

CQ3013-3 TimeSheet Professional 3 1/2" \$999.95

Requires IBM PC, XT, AT, PS/2 or 100% compatible. Hard disk recommended. Requires 420K RAM. DOS 2.1 or higher. Network Edition requires DOS 3.1 or higher.

Beat Postal Rate Increases & Easily Manage Your Mail List!

Maximize the Performance and Minimize the Cost of Everything You Mail.

With a sharp increase in postal rates for several categories of mailed materials coming in early 1991, FastPak Mail can save you money the very first time you use it. FastPak Mail automatically eliminates duplicates from your lists (nothing does that right out of the box, if at all), quickly handles zip-code sorting (a real money-saver), imports names from existing databases (like dBASE, for example) and allows you to perform sophisticated (and very selective) mail-merge with no problem at all. FastPak Mail allows you to print labels of virtually any shape or size, print customized envelopes, post cards, rotary index cards, clear labels and more. And it can handle up to 64,000 names!

Easy to Learn and Use.

FastPak Mail is great for beginners, yet contains all the power and functionality that the advanced users demands. And when you consider the time and money that FastPak Mail save you — from the one-man operation to the Fortune 500 vice president — it's one software title you'll use often!

More than just a list manager, smarter than just a label printing program, FastPak Mail is the complete mail and customer list tracking system, designed to keep your mailings cost-effective and timely.

Direct Mail Superstar.

FastPak Mail was designed by direct mail pros. It contains all the power and functionality of systems in use at large direct mail houses — at a fraction of the cost. Without the tools that FastPak Mail puts at your fingertips, you'll spend a lot more than you



need to (and substantially reduce profits) on your mailings.

Ready To Print Lists and Labels.

FastPak Mail will support virtually any label made — by any manufacturer. Choose from pre-defined formats available from the menu, or quickly create your own format to fit your particular needs.

Print labels 1, 2, 3 and 4 across in dozens of sizes and shapes. FastPak Mail supports all popular continuous feed label brands.

Print all of this and more... labels (any configuration), return address labels, envelopes, rotary index cards, clear adhesive labels, file folder labels, shipping labels, packing labels and dozens more — anything you can put a name and address on. Just

select the type you need from the list of built-in formats and they're done!

Easily Merge Information.

FastPak Mail 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 a letter.

And if you have existing lists stored in other applications, they can be quickly and accurately converted for use in FastPak Mail for powerful merges with easy set-up.

Sorting, Printing & Preparation.

FastPak Mail 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.

Addresses Express Shipping, Airbills, UPS C.O.D. Labels.

You can use FastPak Mail to finish up mailing chores by addressing Federal Express airbills, U.S. Post Office Express Mail airbills — even UPS C.O.D. labels. The pre-designed templates for these forms are available from the menu and will support virtually any printer.

FastPak Mail will also print shipping labels using a pre-defined format — or create your own.

BLOC Publishing

FastPak Mail

CQ1170 FastPak Mail 5 1/4" & 3 1/2" \$79.95

IBM PC, XT, AT, PS/2 and compatibles with 256K. Supports hundreds of dot matrix or laser printers.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

The First 800 DPI Scanning System...

**Unmatched Resolution,
64 Levels of Gray, Scans to
640,000 Dots per Square Inch!**

There is no other system available that can scan images, text, logos, photos, illustrations and designs with more precision than the Marstek M800W scanner and the incredible battery of image processing and OCR software in this exclusive Tiger-Software bundle!

The Marstek M800W scanner's unmatched technology delivers the 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.

The Marstek M800W also includes: Image-In Scan & Paint, Image-In Plus, Image-In Read and Image-In Vert (an \$1100 value), for fine tuning your scanned images as well as providing a toolbox of sophisticated image manipulation features. Perfect for desktop publishing applications, as well as the new breed of Windows word processors, the Marstek M800W 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 M800W's special Inverse Scanning capability creates a wide variety of special effects.

800 DPI Plus an Unbeatable Software Package!

While 800 DPI technology will make your images scream, it's the software Tiger has assembled to

accompany this technological marvel that makes this offer irresistible! Over \$1100 in free software to crop, flop, invert, alter, enhance, posterize, re-touch, digitize, resize, smooth and pattern-fill images — and to read, translate and convert text from any printed page for use in your documents. This image reading/processing software is used in higher-end imaging and publishing systems. And because it's so simple, anyone can produce the highest quality results with very little effort. Everything you need is included — the scanner, interface kit, Image-In software and comprehensive user's guide.

BONUS! FREE with The Marstek M800W Image-In & Perceive Personal

Image-In: The Premiere Image Processing Software...

Introducing the Image-In Scanning system. 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.

Perceive Personal For Marstek Model 105W Plus and 800W Hand Scanners.

Perceive Personal now brings advanced, full page OCR (Optical Character Recognition) to PC/AT compatible hand



scanners. It combines the power of true "omnifont" (automatic) OCR with the convenience of full-page text recognition in the powerful Microsoft® Windows environment.

Marstek

Marstek

CQ6180 M800W w/Image-In & Perceive	.....	\$399.00
CQ6175 M800W w/Image-In ONLY	.....	\$299.00
CQ6190 M105W (400 dpi) w/Image-In & Perceive	.....	\$329.00
CQ6185 M105W With Image-In ONLY	.....	\$229.00
CQ6140 Marstek Mouse E22	.....	\$59.00

Powerful Windows Performance, Amazingly Modest Pricetags.

Perfect Screens, Lightning-Fast Memory, Extra Ports.

Boca Research, the performance leader in the microcomputer industry, comes through with a full range of solutions at prices you can afford.



BasicVGA. The lowest-priced, 16-bit, standard VGA board made in North America. Available in two models — 640×480 or 800×600.

SuperVGA w/512KB. Add 800×600 in 256 colors and 1024×768 in 16 colors. The 16-bit design is 50% faster than 8-bit boards.

SuperVGA w/1MB. All the above plus 1024 x 768 in 256 colors in either interlaced or non-interlaced modes.

BOCARAM/AT Plus. Boca memory boards (in your choice of DIPS or SIMMS) are top-rated by PC Week and

approved by Novell. Expandable to 8MB per board and available in four configurations (see the price box). Supports conventional, extended or expanded memory.

IO/XT. Add extra serial and parallel ports in any PC. The IO/XT has a built-in clock/calendar and is available with one serial and one parallel port — or two serial and one parallel port.

IO/AT. For ATs and above, the IO/AT does not include a clock/calendar. Also available with two serial and two parallel ports (including one bi-directional parallel port).

Boca boards come with a 5-year Warranty, free technical support, and a 24-hour BBS.

Boca Boards

IO/XT or AT w/1S & 1P	.....	\$65.00
IO/XT or AT w/2S & 1P	.....	\$70.00
IO/AT w/2S & 2P	.....	\$75.00
AT Plus SIMM w/0MB	.....	\$120.00
AT Plus DIP w/0MB	.....	\$130.00
AT Plus DIP or SIMM w/2MB	.....	\$280.00
AT Plus DIP or SIMM w/4MB	.....	\$399.00
AT Plus DIP or SIMM w/8MB	.....	\$699.00
Basic VGA 640×480	.....	\$70.00
Basic VGA 800×600	.....	\$75.00
Super VGA w/512KB	.....	\$135.00
Super VGA w/1MB	.....	\$165.00

If You Work with Images, DoDOT Is a MUST!

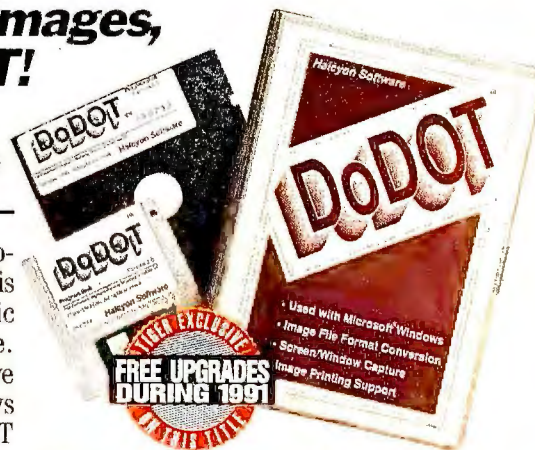
DoDOT Starts Where Paint Programs Leave Off.

I work with images and screen captures all day long, and DoDOT is one of my vital tools. I do the graphic images here at TigerSoftware. DoDOT is the only application I've found that can capture a Windows screen with all 256 colors. DoDOT gives me the file conversions I need to handle anyone's image, no matter what format it's in.

If you work with images like me, you know the barrier you hit when you hear, "Sorry, but I can only take TIFF files." Or how about getting images from a Mac to your DOS machine? This is when I load DoDOT. DoDOT can open, convert, and save in a multitude of valuable formats. For the Mac, the PC, in or out of Windows, I count on DoDOT.

See It? Like It? Capture It!

It's fun to work in Windows, and it's even more fun when you can capture what you see on the screen to use in your paint program, word processor, or just to print. DoDOT will capture the entire screen, any window, or a specific area you define — and then save it in your favorite format.



Cut & paste, mix & match and rearrange your images to suit your special needs. For the professional, there are vital tools like color separation, dithering, palette editing, and more.

DoDOT Does Dots.

Images are basically dots on your screen. DoDOT takes total control of your dots and puts them at your disposal. Convert color images to shades of grey, or convert to different patterns of black & white for printing (called dithering). Invert from Black/White to White/Black. Separate colors so a local print shop can print color images in your publication.

Halcyon Software

DoDOT

CQ5040 DoDOT 5¼" & 3½" ..	\$139.95
Requires Windows 3.0 and 640K.	

TIGERSOFTWARE

FREE FEDERAL EXPRESS · [INT'L ORDERS 305-443-8212]

TO ORDER 1-800-888-4437

Turn Your PC into a Fax Machine!

Send, Receive and Re-route Faxes — Even Remotely!

Your PC is the perfect fax machine: it connects to a modem, it has powerful printing capabilities and contains plenty of storage space. It allows you to use software that automatically transmits faxes at a certain time, or even to send faxes from a remote computer, like your client's office (fax yourself the report you forgot to bring!). Your PC's print drivers allow you to send crisp, clean facsimile documents right from your desktop or laptop PC. You

could preview the document, change fonts, add special effects, transmit at 9600 bps and more. Of course, using your PC would make it much easier to manage and archive your faxed communications. And, using your laser or dot-matrix printer, you can receive faxes ON PLAIN PAPER. All you need is the compact, affordable little board known as Fax96.

Tiger presents the price-busting fax board that has swept the industry, and captured *PC MAGAZINE*'s "Editor's Choice" with its flawless reliability record. And Fax96 is fully Group 3 compatible. No other fax board can match Fax96's incredible

99.91% error-free transmission rating. In speed tests, using identical documents, Fax96 delivered a finished facsimile over fourteen seconds ahead of the nearest finisher. Fax96 is fast, because it doesn't have to scan documents before transmitting, so your faxes cost significantly less. And "scanless" document imaging eliminates dirt and transmission "noise" that translate to dots, lines and patterns on the finished fax.

Send, receive, print and manage your faxes — quickly and easily with the award-winning Fax96.



Features:

- Full 9600 BPS Group III compatibility.
- Background Receive operation.
- Automatic Transmittal Sheet generation.
- Automatic Redial.
- Automatic Log of sent and received messages.
- Compatible with laser and dot-matrix printers.
- Shares your existing phone line.
- Remote control for sending faxes.

Direct Scanner Control.

With your scanner, Fax96 will directly control the scanner and send the image as a fax. Fax96 supports all the popular scanners. If you want to use your own scanner program, simply save the image as a .TIF or .PCX file, then send it from Fax96.

Share One Phone Line.

Don't install another phone line for your fax. Save money with advanced "1-Liner" faxboard. 1-Liner shares your existing phone line, meaning it will automatically recognize and answer another fax machine, or pass a regular voice call to your telephone answering machine.

Fax It Fancy.

Big letters, small letter, in the typeface of this paragraph, or maybe the typeface used in the headline — you can fax fancy with "Faxography" software. Really create an effect at the other end with professional and impressive faxes.



Fax96

CQ6240 Fax96 board w/software	\$195.00
CQ6250 1-Liner board w/software	\$295.00
CQ6260 Faxography Software	\$99.00
PC, MS-DOS 2.1 or higher, 512 KB RAM, hard disk.	

If You Bill Your Time

Easily Prevent Billable Time from "Slipping through the Cracks."

Do you know which jobs are the most profitable and which ones are a complete waste of time? Do you know which clients have outstanding accounts receivable? Are you billing all of the time you're entitled to or do billable hours "slip through the cracks?" For people who bill for their time, tracking it may be the toughest job of all. Many professionals, including architects, law firms, designers, CPAs, ad agencies, engineers, repair services, project managers and others are turning to the software system designed specifically to calculate and report all time spent on each job.

Timeslips® III is fast, easy, flexible time and expense recording along with a complete set of financial and productivity analysis tools. It's so simple to use, it practically runs itself, and features a pop-up timer function that can be accessed anytime — from within any application.

Different clients require different bills. With Timeslips III you have the power of custom billing.

- Have a client on the

phone? Press *TSTimer*'s hot key to track time and jot down notes.

- Returning from a business trip? Just type in your expenses.
- Spend hours writing an analysis? Tell *Timeslips III* who is paying for it.
- Want to manipulate your *Timeslips III* data? Export it to Lotus 1-2-3 or word processors.
- Need to know who's billing the most hours this month? *Timeslips III* knows.

The Time and Billing Software of Choice.

Timeslips III lets you record, analyze, and bill both time and expenses with ease and complete accuracy. In fact, many customers report up to a 25%

increase in billable time once they have installed Timeslips III.

Track 250 activities, for as many as 250 people, working on 128 projects per client — with a maximum of 3,400 clients.

- Detail services by activity, expense, project, or matter with complete descriptions.
- Automate your invoice preparation with convenient macros.
- Include several types of flat fees, such as absolute, minimum, maximum or base.
- Itemize and/or include totals for hours and expenses.
- Include dates, previous balances, aged receivables, employee initials, customized messages on your bills.

FREE BONUS!

Timeslips III Speller™ — FREE!

Prevent Spelling Errors in Bills and Reports.

TSSpeller is an electronic spell-checker tailored specifically for use with *Timeslips III* time/expense-tracking and billing software. Depending on how you choose to work with it, *TSSpeller* can:

- monitor your keystrokes and report an apparent spelling error or "typo" immediately;
- check a field/block of text after entering it;
- scan all your slips (or a subset) before printing.

TIMESLIPS
CORPORATION

Timeslips® III

CQ3300-5 Timeslips III 5 1/4"	\$239.95
CQ3300-3 Timeslips III 3 1/2"	\$239.95
CQ3306 8-User Network Edition	\$599.95
IBM PC, XT, AT, PS/2, compatibles with 384K.	



TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212)

TO ORDER 1-800-888-4437

Make Your PC Run up to 60 Times Faster!

Unleash Your System's Hidden Potential for Blistering Speed!

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 60 times! Simple to install, a snap to use, this software solution can make a stock XT outrun a full-blown 386! In tests, we loaded a 386 with FAST! and we almost blew the doors off the lab!

How Can It Be Possible?

How can a software package 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.

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, retrieved before the system asks for it!

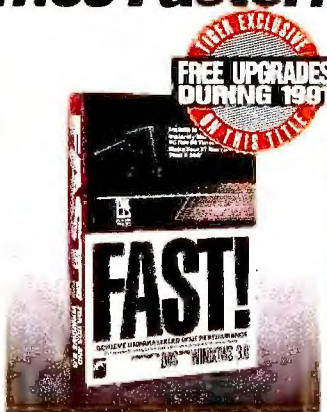
As a result, your CPU simply spends no time waiting for disk reads, so processing can be done as fast as the system is capable — faster than you've ever seen it! The more disk-intensive the application is, the more dramatic the increase in speed can be achieved using FAST! Database, spreadsheet and complex 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.

FAST! Under Windows 3.0!

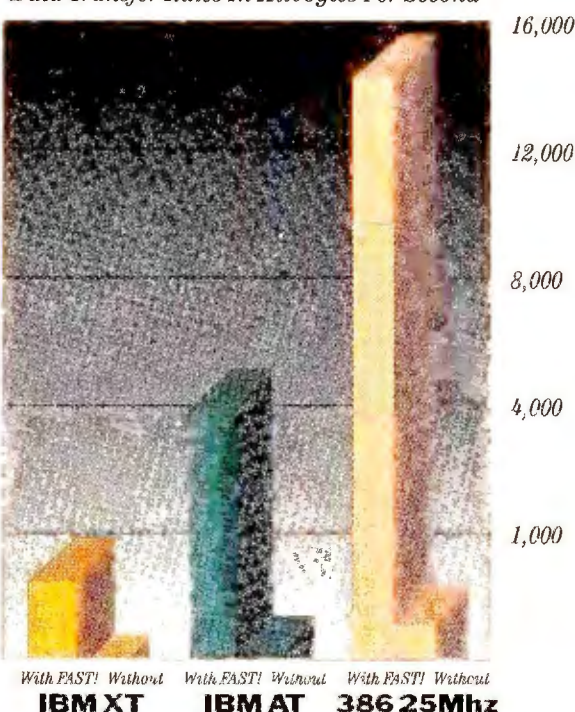
Charles Bermant, author of The Windows 3.0 Comparison, wrote "One solution (to the speed problem) is to replace Windows' disk cache, SMARTDRV.SYS, with another cache. One such program, FAST!, has made my recent Windows life a lot easier. FAST! makes everything appear faster."

On a standard Drive Evaluation Comparison test, FAST! increased performance over 1700% — and 550% over Windows' caching software!



With FAST! vs. Without FAST!

Data Transfer Rates In Kilobytes Per Second



FAST!

CQ3460-5 FAST! 5 1/4" \$79.95
 CQ3460-3 FAST! 3 1/2" \$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 or floppy disk systems, and supports conventional, expanded or extended memory.

Avoid Hard Disk "Heart Attack."

Fragmentation is Inevitable and Fatal!

When your hard disk was new, it ran lean and swift, retrieving files in just a few seconds. But as you added programs and files, your hard disk became fat and sluggish. The fact is a fragmented, "dirty" hard disk can take up to 100 seconds to retrieve a file that used to take 10 seconds — **that's 10 times slower!**

The problem? Fragmentation kills hard disk performance. It causes excessive head movement across the media, creating bad spots throughout the drive. It's aggravating and dangerous! A fragmented hard disk, left unmaintained, is almost certain to

crash. That means major data loss. Disk Optimizer 4.0's sleek, *easy-to-use menu system* makes hard disk maintenance simple.

Why Optimize?

Simply everyone who owns a hard disk, and relies on the speed and convenience it gives them. But unfortunately, DOS is doing its best to slow hard disks — by breaking files up into pieces. Storing different chunks in different places. As a result, loading is slower. Sorting is slower. Everything takes longer because your hard disk has to chase around picking up and laying down pieces of your file.

After un-fragmenting with Disk Optimizer, a file that once occupied 20 different sectors in 20 different locations is now in one contiguous piece. The next time your drive reads it, there's just one place it has to look.

FREE Cubit!
 When You Buy Disk Optimizer
 A \$49.95 Value!

SOFTLOGIC SOLUTIONS

Disk Optimizer

CQ3400-5 Disk Optimizer 4.0	
5 1/4"	\$69.95
CQ3400-3 Disk Optimizer 4.0	
3 1/2"	\$69.95
Runs on IBM PC and compatibles. Supports DOS 2.1 and above.	



Open and Run 12 Programs at Once!

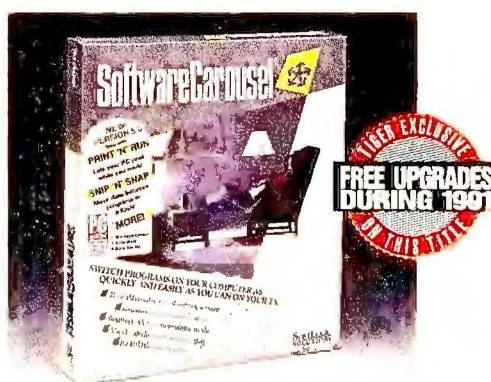
Imagine switching programs on your computer as quickly and easily as you change channels on your TV! No more 10 step routines just to exit one program to work in another. Just switch and you're in your spreadsheet for work on the budget, switch you're in your word processor to zip off a memo, switch over to your database to add items to your mailing list, and then just switch back to your spreadsheet — to the exact spot you left off!

Software Carousel Release 5.0 allows you to load up to 12 programs when you begin work and simply switch between them all day long, or load several sessions of the same program, each with a different file, and snap back and forth to work on several spreadsheets, reports, letters — anything you need — all at once.

Not everyone will want Software Carousel to work exactly the same. There are a number of convenient ways to configure Software Carousel to suit everybody's needs and tastes.

New Print'n' Run.

Print 'n' Run works by directing printer output from any application running in a Software Carousel partition into a configurable pool of Software Carousel memory. Print 'n' Run, simultaneously sends the output to the printer as fast as the printer can take it.



NEW! 5.0 Features.

New Personal Message Center lets users write and display messages on screen and automatically stack programs at a particular time of day.

And new SNIP 'N' SNAP is a powerful cut and paste facility that enables users to transfer text or numerical information from an application or file running in one Software Carousel work area to another.

FREE Double DOS!
 A \$69.95 Value!

SOFTLOGIC SOLUTIONS

Software Carousel

CQ3405-5 Software Carousel 5.0	
5 1/4"	\$89.95
CQ3405-3 Software Carousel 5.0	
3 1/2"	\$89.95
IBM PC, XT, AT, PS/2 or compatibles; 256K.	

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER

1-800-888-4437

Create Dozens of Legal Documents for Home and Business.

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 your agreements in writing fast.

With over 500 pages of concise, informative doc-

umentation 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 about 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, without question.

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.

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
Living Will
Residential Lease
Power of Attorney
Living Together Agreements
Prenuptial Agreements
Postnuptial Agreements
Marital Settlement Agreements
Child Guardianship Consent Form
Commercial Real Estate Lease
Work for Hire Agreement
Maintenance Agreement
Personal Guarantee

Release of Lien
Promissory Note
Trade Secret Protection
License of Intellectual Property
Assignment of Intellectual Property
Bill of Sale
Warranty Agreement
Software Escrow Agreement
Letter of Offer to Purchase
Demand Letter
Rejection of Goods Letter
Termination of Contract
Notice of Contract Breach
Notice of Contract Assignment

BLOC Publishing

Personal Law Firm

CQ1050 Law Firm 5 1/4" & 3 1/2" \$99.95
System Requirements: 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.



Connect Computers Without Expensive LANs

LANs are great. You can share printers, modems, faxes, and other expensive accessories, have E-Mail for inter-office memos, even transfer files from other computers. But unfortunately you pay the price — both for the original purchase and the high cost of specialized support. You become a slave of LAN expert support forever thereafter.

But now there's a solution! Join 100,000 corporate power-users, and the U.S. and Canadian governments with the Systemizer® solution. You'll do all the things a LAN can do mentioned above — at a fraction of the cost — with NO special expertise needed to install or use it.

There's a Systemizer solution available for any computer — PCs, MACs, and others — plus the perfect future-benefit of connecting to full-blown LANs (like Novell), minis, and even mainframes. You'll never outgrow the Systemizer solution.

Start with the Systemizer SC — a card that plugs into any PC. Buy one

for each PC and you'll reap the benefits of connected computers. Wiring isn't a problem either. Plain phone wire is all it takes. Expand when you're ready with other Systemizer components and you'll have the best



of both worlds — an inexpensive and easy solution now, and an investment to build on in the future.

- Begin networking NOW, without changing existing hardware or software.
- Mix computers of all brands using other Systemizer components.
- Works with DOS and WINDOWS.
- Readily accommodates growth.
- Easy installation.

CONNEXPERTS®
Systemizer SC

CQ4040-5 Systemizer SC 5 1/4" \$249.00
CQ4040-3 Systemizer SC 3 1/2" \$249.00
PC, XT, AT, compatibles, hard disk, use: 57K RAM

Automatically Turn On Your PC When You Call It By Modem!

Compatible with ALL Remote Control and Communications Software.

Occasionally, we'll run across a product that's so well conceived, so desperately needed, we simply can't say enough about its importance to today's computing environment. Remote Power On/Off is just such an innovation.

Remote Power On/Off detects incoming calls and turns on the power for the PC, modem, printer and other peripherals that are plugged into its four outlets.

Don't Run Remote Computers 24 Hours a Day!

Just connect the Remote Power On/Off unit to your office PC (or any remote PC). Then, from your home or another location, actually turn on the remote PC and begin work. The included communications software allows you to access and use software applications, perform lightning fast data transfers, even use printers and other peripherals connected to the remote PC.

The remote PC does not have to be running 24 hours a day. You'll see significant savings in energy costs (esti-



mates suggest that running a PC and laser printer 24 hours a day can cost an extra \$50 each month) and you'll reduce wear on the equipment.

Compatibility.

Remote Power On/Off is fully compatible with other communications packages such as Co-Session, Carbon Copy, pc ANYWHERE, Close Up and ProComm. You can even use Remote Power On/Off with the Apple Macintosh and many mini computers.

Server Technology, Inc.

Remote Power On/Off

CQ6300 Remote Power On/Off
5 1/4" & 3 1/2" \$229.00
IBM PC, XT, AT and compatibles with 256K.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER 1-800-888-4437

The Word Processor That Lets You Get the Most Out of Windows.

For Pages That Need Drama and Flair.

When you made the decision to run Windows 3.0, you experienced the wonder of the Graphical User Interface. The fact is, there's only one Windows-based word processor that truly exploits the beauty of this remarkable operating system. Ami Pro.

Ami Pro was designed for Windows 3.0 from the ground up. It combines all of the features you counted on in your character-based word processor and combines a complete set of tools found only in desktop publishing applications.

More than word processing, more than desktop publishing, Ami Pro makes the best use of the powerful WYSIWYG environment and brings your documents to a new level of sophistication — and ironically, we found it much easier to use than Microsoft Word for Windows. Ami Pro's extremely intuitive nature makes it fast and fun to use.

View your documents as you edit them, including all text, headers, footers and footnotes. Use Ami Pro's "frames" (which can contain text for page-within-page formats) to pick-up-and-place graphics easily and position them precisely within the page. You'll see it right on-screen as you work!

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. Occasional

users are out of the chute faster because Ami Pro is easier to learn and use.

Heavy users enjoy features they can't find anywhere else, like tables that allow you to perform math, automatically create charts and graphs (easily import data for charts from spreadsheets with 12 styles to choose from), draw, employ its Dynamic Data Exchange capabilities with other Windows applications and even create documents using its powerful style sheets. You can't do this with any other word processor under Windows. Why not use all the power that you paid for when you bought Windows 3.0 in the first place?

Have You Always Found Mixing Text and Graphics Difficult?

Who hasn't? But you'll actually have fun doing it with Ami Pro. Today, with most businesspeople drowning in paper, your documents need the snap that graphics provide. But you've always had to wrestle with different formats, complex import commands and then work for hours to position your images neatly within your text.

Ami Pro takes a far more enlightened approach. It includes a set of style guides that you can use to quickly put together ads, multi-column newsletters, brochures, letters, reports, presentations and even your everyday correspondence.

With Ami Pro's graphics handling features (and using its "frames" described above), inserting graphics is just a mouse-click away — in exact position, exactly the way you want them. No other word processor or desktop publisher under any platform makes it as easy for you to look good in print.



EXCLUSIVE TIGER PACK

AMI PRO PLUS WINDOWS 3.0

AND

THE LOGITECH MOUSE

ALL JUST \$169!

Lotus®

Ami Pro

CQ5090 Ami Pro Competitive Upgrade 5¼" & 3½" . \$119.95

CQ5095 Tiger Pack: Ami Pro Competitive Upgrade, Logitech

Mouse and Microsoft Windows 3.0; 5¼" & 3½" . . . \$169.95

Sorry, free shipping is not included on this special offer.

A Better-Than-Windows File Manager; Create Custom Menu Selections!

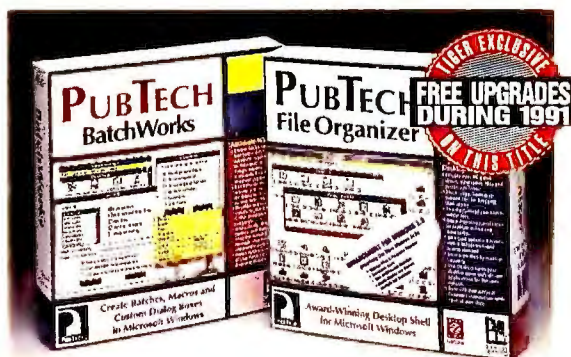
File Organizer

In case you haven't noticed, Windows 3.0 isn't a FULLY graphical interface. But there is a true, fully icon-based system for manipulating files and programs in Windows 3.0. File Organizer actually replaces Windows' Program Manager and File Manager with a vivid, easy-to-navigate interface very similar to the Macintosh operating system.

In fact, File Organizer has file folders like the Mac; icons to represent programs, data files, printers and drives like the Mac — it even has a trash can like the Mac. It makes everything you do fast, easy and fun — the clumsy File Manager and Program Manager are replaced with one, single (and beautiful) interface!

BatchWorks allows you to quickly and easily create keyboard macros that automate repeated tasks in the Windows 3.0 environment. You can assign macros as menu commands in any or all Windows applications. BatchWorks records macros and batch files by learning keystrokes. It's easy and it saves time.

The BatchWorks scripting language provides a robust collection of easy-to-access commands that can



BatchWorks

Only BatchWorks can give you the powerful tools — harnessed in a simple-to-use format — to totally automate all the features contained within the Windows programs you're running. Why can't this be done in Windows? The answer is simple. The Windows environment simply isn't capable enough to handle it.

help you develop complex automation applications in just a few minutes.



PubTech

CQ5410 File Organizer \$199.00
CQ5420 BatchWorks \$99.00
Dual Media. Require Windows 3.0 and 640K.

Corel Draw! + NEC CD = Picture Power!

Corel Draw! on CD?

That's right. Now you can get the world's best drawing program on CD. Pop in this CD and discover a truckload of exciting and powerful graphics tools. You get over 150 typefaces, over 3000 symbols and designs, a free Pantone® color license, a free copy of CorelTRACE, and more.



In addition to all the fabulous features of Corel Draw! 2.0, you get over 3500 extra professional, color clipart images! Not just your average clipart, this is from ArtRight — a leader in the art business. PC Mag recently awarded ArtRight their Editor's Choice Award after reviewing lots of clipart (including Arts & Letters).

This same clipart alone (without Corel Draw!) is still sold on diskette for \$1192 and takes up 43 diskettes. But you can have it on a single CD for a fraction of the cost. And as a bonus

— your CD clipart is not compressed, meaning it will load up to 10 times faster than the diskette version!

NEC CD Reader

Why settle for an off-brand when you can have the best? The NEC CDR-36 is the latest release in a long line of proven CD Readers. Tried and true, this sleek new CD Reader will welcome you into the world of CDs. You'll soon fall in love with the vast amounts of information CDs place at your fingertips. Perhaps next you'll add an entire encyclopedia on a single CD to your library — or maybe all the phone books in the U.S. (Think about the mailing and telemarketing possibilities!)



Corel Draw! & CDR-36

CQ8635 Corel Draw! CD-ROM & NEC CDR-36 Reader \$999.00

CQ8673 Upgrade to NEC CDR-73 . . . Add \$399.00

CQ8630 Corel Draw! CD-ROM only \$595.00

CQ5080 Corel Draw! Disk Version \$399.00
Requires AT or above, hard disk, 640K, Windows 3.0, mouse.

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER

1-800-888-4437

Razor-Sharp 262,144 Color Hand Scanner!

Unmatched Resolution and Color that Fits in the Palm of Your Hand!

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. Brilliant colors and unmatched resolution can be yours with the Marstek family of scanners.

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, your wedding picture, or your 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. The M-6000CG also scans in true 64 gray scales with 400 dpi. In color mode, the M-6000CG scans in 200 dpi. (200 dpi is just right for photos and artwork. Picture this: If you have a standard VGA monitor and scan in a 3" wide photo — it fills your entire screen with a perfectly duplicated image.)

For precise scanning of anything small, you need the M800 — delivering an incredible, unmatched 800 dots per inch. 800 dpi means crisper, cleaner, more highly detailed images for use in desktop published documents, reports, proposals, newsletters, flyers, and brochures. Scan in a postage stamp and it fills the screen with stunning detail.

And with a host of special effects and patterns built right in, controlling the look of the image is simple — and fun! 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.

Or imagine simply scanning text from printed pages, magazines and books — no more re-keying!



The Marstek hand scanners deliver unmatched resolution for precise character recognition regardless of the type style or size and even include free optical character recognition (OCR) software to turn the scanned text into ASCII — ready to use in your word processing or desktop publishing application.

And the whole system is ready to run right out of the box. The installation is fast and easy, the technology is simply amazing.

The Marstek Family Of Mice.

The Marstek Mice are designed for higher performance. They're 100% Microsoft compatible and impeccably accurate — but they come with a surprisingly modest price tag. We tested the Marstek Mice (E22 and P93 models) for accuracy and speed against other leading nameplates, and it equalled or outperformed the Microsoft Mouse, Logitech's

Series 9, and several others. The secret is in the outer shell design and durable construction. You'll notice a silkier movement and an increased feeling of control the very first time you use it. The Marstek E22 and P93 also feature buttons with firm, clean clicks. A far cry from the "mushy" buttons you find on other mice, great for fast, rapid-fire computing.

BONUS!

Free When You Buy A Marstek Hand Scanner.

Marstek CAT Reader or Perceive Personal/DOS OCR Software — These packages allow fast, easy optical character reading (OCR) for text pages. Imagine having the ability to simply SCAN text — instead of re-keying it! You'll improve efficiency for a variety of office tasks.

PC Paintbrush Plus or Rainbow Paint — the industry's most respected and capable paint programs — put the most extensive electronic palette at your fingertips — colors, image blending and more.

Marstek

Marstek Scanner/Mice

CQ6150 M-6000CG w/Rainbow Paint and Perceive Personal/DOS OCR	... \$649.00
CQ6130 M-800 w/CAT Reader OCR and PC Paintbrush Plus	... \$279.00
CQ6120 M-800 w/CAT Reader OCR and PC Paintbrush Plus and E22 Mouse	... \$299.00
CQ6140 Marstek Mouse E22	... \$49.00
CQ6160 Marstek Mouse P93 w/PC Paintbrush Plus	... \$99.00
CQ6170 Mac 800 Scanner (for Macintosh) w/FREE Enhance Software	... \$399.00

Design The Perfect Career Move!

Turn Your Computer Into A Personal Career Advisor.

One of the hardest tasks any adult faces is looking for a new job. Whether you're just out of college, returning to the work force, laid off, fired or just looking for a new job, the whole situation is fraught with anxiety and stress.



Career Design will help you design the perfect career move. Using a multi-phase approach that focuses you in the right direction every step of the way, Career Design always gives you the help you need.

More than just a resume-writing program, Career Design gives you control of your career direction.

Discover Hidden Talents.

With Career Design, you'll get help answering the three important

questions: "Who Am I?," "What Do I Want?," and "How Do I Get There?." These answers determine the direction you should go and Career Design helps you get there.

Career Design focuses you more clearly on what you want to accomplish with your life. Through a series of enjoyable and informative exercises you'll discover what your true interests and aspirations are.

When you're ready to write your resume, Career Design gives you 7 proven formulas to use, plus a powerful stand-alone word processor. There's even a section that lets you practice your answers to over 100 of the most commonly asked interview questions.

"I was dazzled by its thoroughness and ease of use. I would definitely recommend it to anyone who is even remotely considering a career move," says Joyce Lain Kennedy, careers columnist, Los Angeles Times Syndicate.



Career Design

CQ3040-5 Career Design 5 1/4"	... \$79.95
CQ3040-3 Career Design 3 1/2"	... \$79.95
IBM PC, XT, AT, PS/1 or compatible with 525K of available RAM, 2.7 megabytes of hard disk space, & DOS 2.0 or higher.	

A Fully Automatic Memory Manager. 30% Faster!

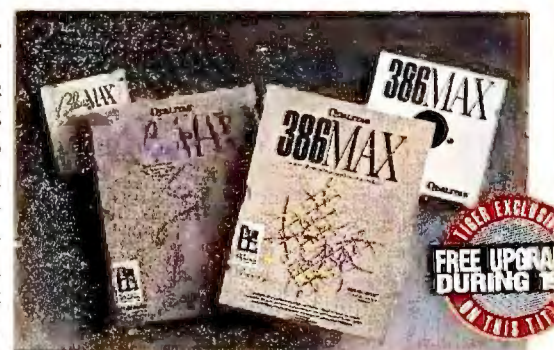
Congratulations! You own one of the hottest computers around. But do you use it the way you should? Do you take advantage of its incredible capabilities? Are you confused by all the types of memory, not knowing what program needs what kind of memory or how to provide it? Then 386MAX is your solution.

Speed Is the Key.

386MAX is the ultimate memory manager for today's 386 and 486 hi-tech computers. And best of all, hi-tech doesn't mean highly complicated. 386MAX automatically analyzes and configures your system for maximum performance and efficiency — from making utmost use of your extended memory — to providing Expanded Memory and/or XMS memory to programs that need it — to loading your pop-up utilities and network drivers between the 640K and 1MB area. And it's 30% faster than previous award-winning versions!

Windows Users...

With 386MAX your Windows applications get all the memory your system has to offer — plus any programs you run out of Windows (from



DOS) get the Expanded Memory they need! You get the best of both worlds! You can even run pop-up utilities reliably in Windows — thanks to a special feature of 386MAX that allows many TSRs to appear more than once in multiple windows!

BlueMAX for the PS/2.

The only memory manager designed specifically for 386 PS/2 — BlueMAX does everything 386MAX does, plus uses proprietary technology to recover 80k more memory than any other memory manager.

QUALITAS®

386MAX

CQ3080-5 386MAX 5 1/4"	... \$130.00
CQ3080-3 386MAX 3 1/2"	... \$130.00
CQ3085 BlueMAX PS/2, 3 1/2"	... \$155.00
Any 386 or 486 based computer, minimum 256K extended memory, PC/MS DOS 3.0 or later. Supports LIM 4.0 EMS, XMS 3.0, VCP/ and Virtual DMA Services 1.0.	

TIGERSOFTWARE

FREE FEDERAL EXPRESS (INT'L ORDERS 305-443-8212) TO ORDER

1-800-888-4437

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.

With FormFiller 3.0, you can decide the order in which the blanks should be filled in, give certain areas color codes for fast visual recognition, include non-printable notes to instruct data entry, "lock" certain information into the form so it won't have to be manually entered each time the form is filled out. You can also quickly set up FormFiller 3.0 to import and automatically fill-in forms directly from your database, and "batch print" your forms.

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 functions in all, including amortization, interest, present and future values, depreciation, percentages — dozens of others!

There's more! FormFiller 3.0 includes a unique "Look-up" feature that stores pieces of information and automatically places them into position with just a menu selection. Part numbers, shipping and billing addresses, names, phone numbers, account numbers, payment terms and hundreds of other details can be organized and stored and retrieved anytime — without looking for them or retyping them. In addition, FormFiller 3.0 allows you to control exactly HOW the data is to appear and be printed. For example, negative numbers can be entered and automatically appear and print in parentheses. Enter a series of 10 digits into a specific field and FormFiller 3.0 displays them as an area code and telephone number, or make the data entered into certain spaces on the form automatically print bold.

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.

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 blank to blank.

BONUS!
FREE QUICK TEMPLATE
When you buy FormFiller!

Quick Template is the perfect replacement for your lost plastic templates. Pop up a list of every special key from within FormFiller. A \$49.95 value!

BLOC Publishing

FormFiller 3.0

CQ1200 FormFiller 3.0 5 1/4" & 3 1/2" \$149.95
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.

The World at Your Fingertips.

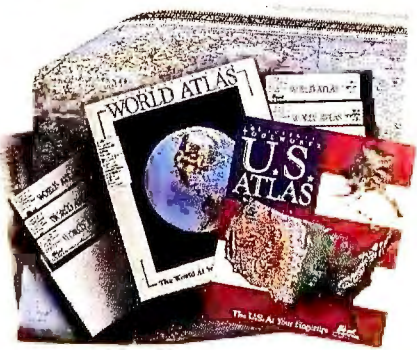
Complete Atlas On Disk.

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 240 fully detailed, EGA/VGA color maps along with a vast database of useful international information. You'll explore the geography, people, government and economy of any nation on Earth, including such details as climates, population, language, labor force, military strength, industry, highways and more.

Indispensable Guide and Reference Tool.

World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. With just a couple of keystrokes any bit of data is on your screen.

You don't need to learn lengthy commands. Just point to a country on any index map, click — the desired map appears instantly. From there, simply select specific information and statistical maps for individual countries from sleek, drop-down menus. You can easily print customized reports mixing maps and text — even export maps to desktop publishing programs.



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, and local time.

INTRODUCING ATLAS PACK
Both of these titles — just \$79.95!

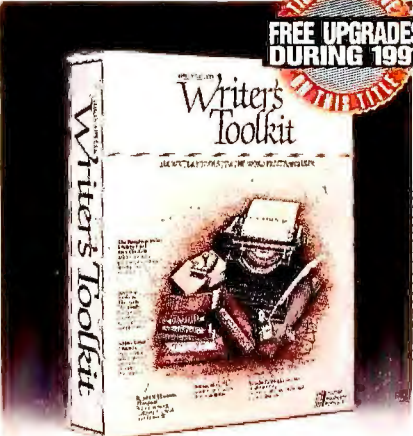
World Atlas

CQ3225 World Atlas 5 1/4" \$59.95
CQ3220 U.S. Atlas 5 1/4" \$49.95
CQ3230 Atlas Pack (World & U.S.)
5 1/4" ... Save \$30 ... \$79.95
IBM PC or compatibles with 640K. Hard disk;
EGA or VGA graphics card color monitor;
Microsoft mouse or compatible.

Six Classic Writing Tools in One!

Complete On-Line Grammar System.

The Complete Writer's Toolkit includes six powerhouse programs. The Complete Writer's Toolkit is perfect for students, executives, professionals, secretaries, managers and novelists — anyone who wants to write better, faster, and with more clarity and impact.



Let's take a look at the individual components of the system:
The American Heritage Electronic Dictionary. The preferred dictionary in the United States. This extensive volume provides definitions for over 115,000 words and word forms. Also provides anagrams and spelling correction.

Roget's II Electronic Thesaurus. A complete, electronic version of the premier publication of its kind, featuring over 500,000 synonyms for 42,000 words. Simply pop it up from within your word processor.
The Concise Columbia Dictionary of Quotations. Just hot-key to a treasury of over 6000 bits of wisdom.
Houghton Mifflin's Abbreviation Program. Look up the proper abbreviation (or expansion) for hundreds of common and not-so-common terms.
The Written Word III — Principles of Grammar & Style. The prestigious publisher Houghton Mifflin provides this on-line reference book of grammar and style rules. Includes sample business letters and resumes, a proofreading guide and more.
The Houghton Mifflin CorrectText Grammar and Style Checker. Use this sophisticated grammar and style checker to flag and correct your grammar, punctuation, spelling and style errors.

Writer's Toolkit

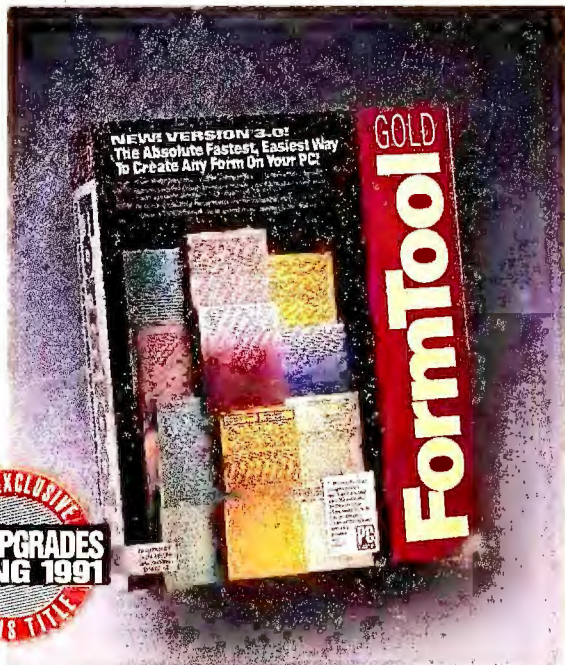
CQ4005-5 Writer's Toolkit
5 1/4" \$129.00
CQ4005-3 Writer's Toolkit
3 1/2" \$129.00

TIGERSOFTWARE **FREE FEDERAL EXPRESS** (INT'L ORDERS 305-443-8212) **TO ORDER 1-800-888-4437**

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 busi-

nesses 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. If you spot a problem, quickly make the revision, 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 and makes FormTool even easier to use — and enhances creativity and accuracy in the design process.

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 TEMPLATE When you buy FormTool Gold!

Quick Template is the perfect replacement for your lost plastic templates. Pop up a list of every special key from within FormTool Gold. A \$49.95 value!

See below for details.

BLOC Publishing

FormTool Gold

CQ1020 FormTool 3.0 5 1/4" & 3 1/2" \$95.00
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 printers.

The Virus Protection Used by Law Enforcement Officials.

It Takes Software AND Hardware for Total Protection.

Viruses — if you're part of a LAN computer system, connect up to bulletin boards, or simply use floppy diskettes (who doesn't?), then you could be a victim. Don't be a statistic! Protect and immunize yourself with PC-cillin — the absolute best anti-viral system that protects like nothing else can. Here's why...

The Only Total Solution.



PC-cillin is the only anti-viral product that provides software and hardware protection against malicious viruses. Your computer's vital information is safely stored in the external memory of the PC-cillin Immunizer Box. The Immunizer Box plugs into your parallel port, between your computer and your printer, so it is totally isolated. It is impossible for a virus to get at it. If one of the 'new generation' intelligent viruses gets by



all the other numerous traps, PC-cillin still has its reserved, totally isolated, external memory backup. PC-cillin also does a regular self-check to ensure it remains free from virus infection. If the self-check indicates an infection, a clean copy of the PC-cillin file is generated.

When PC-cillin detects an attempt to infect your software, it captures the offending code, protects all programs on your disk, and issues an on-screen warning with instructions.

TREND

PC-cillin

CQ4010 PC-cillin 5 1/4" & 3 1/2". \$129.00

Special Key Labels At Your Fingertips — Where They Belong.

What does this key do again? Which key begins a Block? If you ever ask yourself questions like these — here's your answer. Quick Template tells what your Function Keys and Control keys do, from within your program. Whether it's WordPerfect, dBase, or a long list of others, Quick Template puts the help you need at your fingertips.

Quick Template is the perfect replacement for your lost plastic templates and even your manual. From WordPerfect — up pops a list of every special key in WordPerfect. New program — new list. Smart.

Includes Templates for:

dBase III, dBase IV
First Choice
First Publisher
FormTool
FormFiller
Lotus 123 2.01, 2.2, 3.0
Microsoft Word 3.0, 4.0, 5.0
Multimate Advantage
Paradox
PC/MS DOS
Professional Write
Quattro, Quattro Pro
Quicken
WordPerfect 4.2, 5.0, 5.1
WordStar 4.0, 5.0, 5.5
and more...

FREE Bonus!

Save keystroke sequences in your own, custom macros. Quick Template's Macro Menu keeps them ready to go, only a quick keystroke away.



Software

Marketing Corporation

Quick Template

CQ4000 Quick Template
5 1/4" & 3 1/2" \$49.95
PC, XT, AT, PS/2; VGA, EGA, CGA, Hercules;
DOS 3.1 or greater, 385K RAM

TIGERSOFTWARE

FREE FEDERAL EXPRESS

(INT'L ORDERS 305-443-8212)

TO ORDER

1-800-888-4437

TIGER WAREHOUSE YELLOW SHEET

The Latest Software! The Hottest Hardware! If it's not here, call us — we'll find it!

Sorry, but because these prices are so low, shipping is not included.

5th GENERATION

CQ Y1234	5th Generation Brooklyn Bridge 3.0	\$89
CQ Y1244	5th Generation Mace Utilities 1990	\$98
CQ Y1254	5th Generation Fastback Plus 2.1	\$121
CQ Y1264	5th Generation Mace Vaccine 1.0	\$88
CQ Y1274	5th Generation Direct Access 5.0	\$66
CQ Y1284	5th Generation DiskLock	\$121
CQ Y1294	5th Generation Logical Connection Plus 512k	\$636

ADOBE SYSTEM

CQ Y1314	Adobe System Illustrator Windows 1.1	\$317
CQ Y1324	Adobe System Streamline Windows 1.1	\$253
CQ Y1334	Adobe System Adobe Type Manager for Manager	\$65

ALDUS

CQ Y1394	Aldus PageMaker 3.01	\$539
----------	----------------------------	-------

ALPHA SOFTWARE

CQ Y1414	Alpha Software Alpha Four 1.1	\$336
----------	-------------------------------------	-------

ASHTON-TATE

CQ Y1434	Ashton-Tate D-Base IV 1.1	\$525
----------	---------------------------------	-------

ASYMETRIC

CQ Y1454	Asymetric Toolbook 1.0 for Windows	\$322
----------	--	-------

AUDODESK

CQ Y1474	Audodesk Autosketch Animator 1.0	\$253
----------	--	-------

BORLAND INTERNATIONAL

CQ Y1494	Borland International Turbo C++ 1.0	\$151
CQ Y1504	Borland International Turbo Pascal Professional 2nd Edition	\$209
CQ Y1514	Borland International Quattro Pro 2.0	\$344
CQ Y1524	Borland International Paradox 3.5	\$556

BRODERBUND

CQ Y1584	Broderbund New Print Shop	\$38
CQ Y1594	Broderbund Where/Time Carmen Sandiego	\$31
CQ Y1604	Broderbund Where in the World Is Carmen Sandiego	\$35
CQ Y1614	Broderbund The Play Room	\$32
CQ Y1624	Broderbund Where In Europe Is Carmen Sandiego	\$35
CQ Y1634	Broderbund Deluxe Edition	\$51
CQ Y1644	Broderbund SimCity	\$32
CQ Y1654	Broderbund Where in the USA Is CS	\$32

CENTRAL POINT

CQ Y1674	Central Point PC Tools Deluxe 6.0	\$98
CQ Y1684	Central Point Copy II PC 6.0	\$28

CHIPSOFT

CQ Y1704	ChipSoft Turbo Tax 8.0 1990	\$45
----------	-----------------------------------	------

CHRONOS SOFTWARE

CQ Y1724	Chronos Software Who What When	\$185
----------	--------------------------------------	-------

CLARION SOFTWARE

CQ Y1744	Clarion Software Personal Development 2.0	\$75
CQ Y1754	Clarion Software Professional Dev. 2.1	\$507
CQ Y1764	Clarion Software Report Writer	\$120

COREL SYSTEM

CQ Y1784	Corel System CorelDRAW! 2.0	\$417
----------	-----------------------------------	-------

CURTIS

CQ Y1804	Curtis Emerald Sp-2 (6 Outlet Code)	\$39
CQ Y1814	Curtis Ruby SPF-2 (6 Outlets Wall)	\$65
CQ Y1824	Curtis Command Center Plus	\$93
CQ Y1834	Curtis SP-3 Safe Strip (6 Outlet Surge w/7' Cable)	\$22

DACEASY

CQ Y1904	DAC Easy Accounting 4.1	\$90
CQ Y1914	DAC Easy Bonus Pak 4.1	\$136

DATA STORM

CQ Y1984	Data Storm PROCOMM Plus 1.1	\$72
CQ Y1994	Data Storm PROCOMM Plus Network 5 Pack	\$399

DCA

CQ Y2014	DCA Crosstalk XVI 3.71 w/Prodigy	\$120
CQ Y2024	DCA Crosstalk For Windows	\$128
CQ Y2034	DCA Crosstalk Communicator	\$65

DICONIX

CQ Y2054	Diconix 150 Plus Printer	\$517
----------	--------------------------------	-------

DMA

CQ Y2074	DMA PCANYWARE IV LAN	\$299
----------	----------------------------	-------

CQ Y2084	DMA PCANYWARE IV (Host)	\$77
CQ Y2094	DMA PCANYWARE IV (Remote)	\$60

DOW JONES

CQ Y2104	Dow Jones News/Retrieval Pkg.	\$24
----------	------------------------------------	------

FOX SOFTWARE

CQ Y2124	Fox Software FoxPro 1.02	\$498
CQ Y2134	Fox Software FoxPro/LAN 1.0	\$699

GENERIC SOFTWARE

CQ Y2154	Generic Software Generic CADD Level 3	\$317
CQ Y2164	Generic Software Autosketch 3.0	\$195

GREAT AMERICAN SOFTWARE

CQ Y2184	Great American Software One Write Plus System	\$192
CQ Y2194	Great American Software Financial Manager	\$575

HAYES

CQ Y2214	Hayes Smartmodem 2400	\$358
CQ Y2224	Hayes Ultra 9600 Modem	\$895
CQ Y2234	Hayes JT-FAX 9600B	\$538
CQ Y2244	Hayes V-Series Smartmodem 9600	\$732

HERCULES

CQ Y2264	Hercules Graphics Card Plus	\$202
----------	-----------------------------------	-------

INDIVIDUAL SOFTWARE

CQ Y2284	Individual Software Resume Maker 1.1	\$28
----------	--	------

INTEL

CQ Y2304	Intel Above Board Plus 512k	\$365
CQ Y2314	Intel Above Board Plus I/O 512k	\$395
CQ Y2324	Intel Above Board Plus 8 w/2 Meg	\$595
CQ Y2334	Intel Above Board Plus 8 I/O 2 Meg	\$619
CQ Y2344	Intel Above Board 2 Plus 512k PS/2	\$465
CQ Y2354	Intel Above Board 2 Plus w/OK PS/2	\$298
CQ Y2364	Intel Above Board 2 Plus w/2MB PS/2	\$604
CQ Y2374	Intel Above Board MC 32 OK PS/2	\$361
CQ Y2384	Intel Above Board MC 32 4MB PS/2	\$1,028

INTUIT

CQ Y2394	Intuit Quicken 4.0	\$40
----------	--------------------------	------

KENSINGTON MICROWAVE

CQ Y2474	Kensington Microwave Master Piece Plus	\$110
CQ Y2484	Kensington Microwave Expert Mouse (bus)	\$126

KRAFT

CQ Y2504	Kraft 3 Button Thunder Joystick	\$29
CQ Y2514	Kraft Trackball	\$69

LOGITECH

CQ Y2534	Logitech Serial Mouse for PS/2	\$80
CQ Y2544	Logitech Serial Mouse with Windows	\$148
CQ Y2554	Logitech Trackman (Trackball) serial	\$86
CQ Y2564	Logitech Trackman (Trackball) bus	\$93
CQ Y2574	Logitech Trackman (Trackball) PS/2	\$96
CQ Y2584	Logitech ScanMan Plus	\$185
CQ Y2594	Logitech ScanMan Plus PS/2	\$246

LOTUS

CQ Y2614	Lotus 1-2-3 3.1	\$447
CQ Y2624	Lotus 1-2-3 2.2	\$366
CQ Y2634	Lotus Magellan	\$108
CQ Y2644	Lotus Agenda 2.0	\$297

MECA

CQ Y2744	MECA Managing Your Money 7.0	\$146
----------	------------------------------------	-------

MICROCOM

CQ Y2764	Microcom CarbonCopy Plus 5.2	\$122
----------	------------------------------------	-------

MICROLYTICS

CQ Y2784	Microlytics GOfier 2.0	\$50
----------	------------------------------	------

MICROSOFT

CQ Y2804	Microsoft Productivity Pack for Windows ..	\$49
CQ Y2814	Microsoft Windows 3.0	\$102
CQ Y2824	Microsoft Project for Windows	\$480
CQ Y2834	Microsoft Power Point for Windows	\$341
CQ Y2844	Microsoft Works 2.0	\$102
CQ Y2854	Microsoft Word 5.0	\$236
CQ Y2864	Microsoft Word for Windows	\$341
CQ Y2874	Microsoft Excel 2.1	\$341
CQ Y2884	Microsoft QuickBASIC 4.5	\$68
CQ Y2894	Microsoft QuickC 2.5	\$68
CQ Y2904	Microsoft C Compiler 6.0	\$341
CQ Y2914	Microsoft Flight Simulator 4.0	\$42
CQ Y2924	Microsoft Bookshelf	\$205
CQ Y2934	Microsoft Windows Entertainment Pack ...	\$33

MULTISOFT

CQ Y2944	Multisoft PC-Kwik Power Pak 1.5	\$79
----------	---------------------------------------	------

NEC

CQ Y3024	NEC Multisync 2A	\$512
CQ Y3034	NEC Multisync 3D Monitor	\$707
CQ Y3044	NEC Multisync 4D Monitor	\$1,195
CQ Y3054	NEC Multisync 5D Monitor	\$2,495

ORCHID TECHNOLOGIES

CQ Y3074	Orchid Technologies ProDesigner VGA II 512k (1024X768)	\$303
CQ Y3084	Orchid Technologies Peanut VGA (256k) ...	\$125
CQ Y3094	Orchid Technologies ProDesigner/e (256k) .	\$212
CQ Y3104	Orchid Technologies Tiny Turbo XTRA	\$290

PLUS DEVELOPMENT

CQ Y3124	Plus Development HardCard II 40Meg (19ms)	\$428
CQ Y3134	Plus Development HardCard II 80Meg (19ms)	\$685

QUARTERDECK

CQ Y3154	Quarterdeck QRAM 1.0	\$53
CQ Y3164	Quarterdeck Expanded Mem. Mgr 386 5.1 .	\$69
CQ Y3174	Quarterdeck DESQView 386 5.1	\$144
CQ Y3184	Quarterdeck DESQView 2.3	\$86
CQ Y3194	Quarterdeck Manifest 1.0	\$39

REALITY TECHNOLOGIES

CQ Y3214	Reality Technologies WealthBuilder 1.1	\$150
----------	---	-------

SOFTWARE PUBLISHING

CQ Y3234	Software Pub. Pfs: First Pub. 3.0	\$99
CQ Y3244	Software Pub. Pfs: First Choice 3.02	\$110
CQ Y3254	Software Pub. Harvard Graphics 2.3	\$355
CQ Y3264	Software Pub. First Choice Network 2.0 ...	\$330
CQ Y3274	Software Pub. First Graphics 1.0	\$101
CQ Y3284	Software Pub. Pfs: Preface 1.0 w/Viruscan .	\$49

SYMANTEC

CQ Y3304	Symantec Grandview 2.0	\$212
CQ Y3314	Symantec Q&A 3.0	\$237
CQ Y3324	Symantec Timeline 4.0	\$489
CQ Y3334	Symantec Nathon Commander 3.0	\$105
CQ Y3344	Symantec The Norton Utilities 5.0	\$124
CQ Y3354	Symantec The North Backup 1.1	\$107

THE COMPLETE PC

CQ Y3424	The Complete PC The Complete Half Pg. Scanner 400	\$201
CQ Y3434	The Complete PC The Complete Page Scanner	\$599
CQ Y3444	The Complete PC The Complete Communicator	\$470
CQ Y3454	The Complete PC The Complete Fax 9600	\$425
CQ Y3464	The Complete PC The Complete Answering Machine	\$268
CQ Y3474	The Complete PC The Complete Flatbed Scanner	NEW \$1031

TIMETWORKS

CQ Y3494	Timeworks Publish It! 1.2	\$150
----------	---------------------------------	-------

TRAVELING SOFTWARE

CQ Y3514	Traveling Software Battery Watch 2.0	\$35
CQ Y3524	Traveling Software LapLink III 3.0	\$95

VIDEO 7

CQ Y3544	Video 7 Vega VGA (800X600)	\$154
CQ Y3554	Video 7 VRAM VGA 512k (1024X768)	\$387

WORDPERFECT CORP.

CQ Y3574	WordPerfect Corp. WordPerfect 5.1	\$273
CQ Y3584	WordPerfect Corp. DrawPerfect 1.1	\$297
CQ Y3594	WordPerfect Corp. Letter Perfect	\$147

WORDSTAR INTERNATIONAL

CQ Y3614	WordStar International WordStar Prof. 6.0 .	\$285
----------	---	-------

XTREE

CQ Y3634	XTree XTreePro Gold	\$99
----------	---------------------------	------

TIGER YELLOW SHEET POLICY

- Your card is not charged until we ship.
- No sales tax, except FL residents (add 6% tax).
- International orders U.S. \$250 minimum.
- We charge actual shipping costs for domestic and international orders.

PRICES SUBJECT TO CHANGE.

All versions of these products are absolutely the latest available as of press time.

TIGERSOFTWARE

INTERNATIONAL ORDERS 305-443-8212

TO ORDER 1-800-888-4437

People's Choice: 20-MHz 386SXs

Never has so much computer cost so little. Discover the top values among ten new 20-MHz SX systems—and learn which companies back them with solid service and support.

Robert Lauriston

Fast, economical, and ready to run all the latest software, today's 20-MHz 386SX systems make it foolish to consider anything less capable. For only a couple of hundred bucks more than a similarly configured 16-MHz SX, you can get a machine that's likely to be a full 34 percent faster—a visible and welcome difference, especially if you're using *Microsoft Windows*.

What's more, most 20-MHz SXs are better able to keep up with software's ever-increasing hardware requirements than their 16-MHz cousins, thanks to more room for drives, expansion boards, and fast (CPU-speed) RAM. So with that extra power comes a system that will hold its value longer.

Everything's relative, of course. Compared to 25- or 33-MHz 386DXs, these SX machines are not particularly fast. You wouldn't want one for a file server or a heavy-duty graphics workstation—and multitasking four or five *Windows* applications can slow down an SX to the point of pain. But for most people, a 20-MHz SX has all the speed you'll need for a long time to come.

SXs on Parade

We looked at SX-20s only four months ago ("Value Alert! 20-MHz 386SX Systems," February 1991), but so many machines have come out since then that we had no trou-

ble finding ten hot systems that weren't available the last time around. For a real-world comparison, we priced and speed-tested each system in an ample, *Windows*-ready configuration, which included at least 4MB of RAM, a 100MB or larger hard disk, and color VGA graphics. And since dealer discounts vary (and mail-order companies don't discount at all), we used *street prices*, not list prices, to compare these systems. *PC World* researchers obtained and averaged price quotes from 90 dealers in eight cities across the United States.

You'll want an SX system that's fast, can take plenty of fast RAM, and comes with strong service and support from the manufacturer, all at a reasonable price. Performance is particularly important since it varies greatly in this category; if you're not careful you could end up paying a 20-MHz price for a system that's not much faster than a 16. Our *PC World* performance tests simulate real-world applications, and at least one of them should fit your own work habits.

When *Windows* turns sluggish, you can usually feed it RAM chips to perk it up. But RAM installed on a conventional memory card will slow down an SX, so make sure your new system can accept plenty of RAM on the motherboard or in a special fast-RAM slot. A 16MB ceiling is none too high. For a detailed guide to SX



buying issues, see “Buying Smart: SX Excellence.”

Whether you’re a novice or the office computer doctor, at some point you’ll have to talk to someone who knows more than you do; you may even need him or her to come to your office. You should therefore demand prompt, knowledgeable telephone technical support—either local or toll-free—as well as an on-site repair option. With this review, *PC World* initiates tough new guidelines for grading the customer service and technical support you’re likely to get from the companies that make these systems and the stores that are authorized to sell them (see “How We Rate Service and Support”).

Which System Should You Buy?

Naturally, we compared the new kids on the block with the best of the last batch to see if any of the newcomers

could beat the previous winners. Only the CompuAdd 320sc measures up to the two Best Buys from our February review—the Compaq Deskpro 386s/20 and the NCR PC386sx20. The Best Buy CompuAdd 320sc is faster than most, offers superb service, and comes with DOS and *Windows* already installed. The Zeos 386SX-20 comes close—it’s faster, cheaper, and more expandable than any of the three Best Buys—but quality-control problems knock it out of the winners’ circle.

The CompuAdd 320sc may be the only Best Buy this go-around, but there are several other good SX values. And that’s good news for the smart PC buyer.

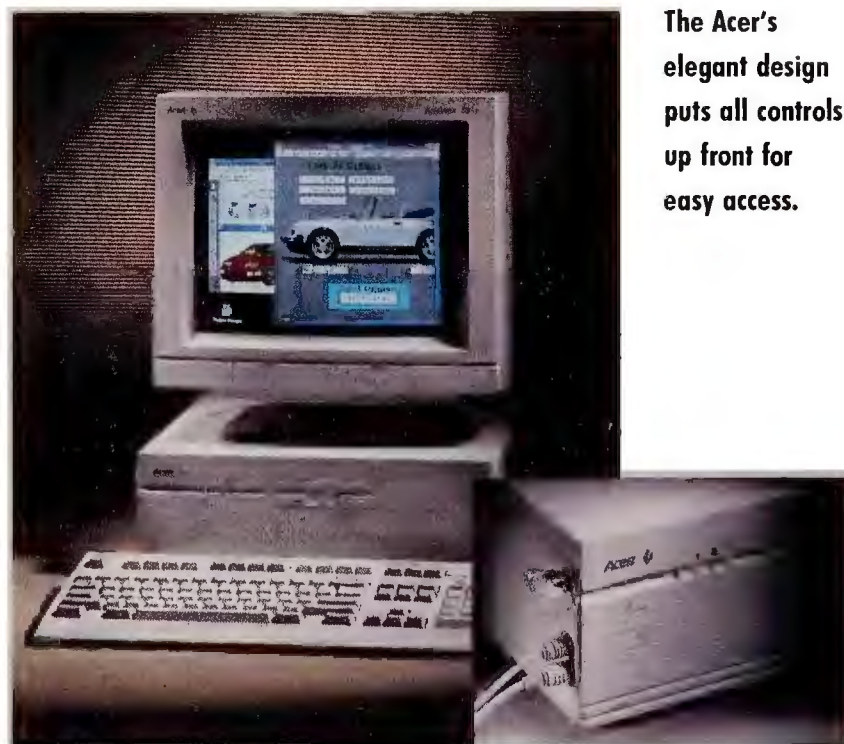
Robert Lauriston is a contributing editor for PC World. Cathy Smith is a PC World editorial assistant.

Acer 1120/SX

PROS: Low price, great ergonomics, good keyboard, two-year warranty
CONS: 8MB fast-RAM limit, low drive capacity

Acer designed the 1120/SX with human beings in mind—human beings on a budget! At \$2651, this is the second cheapest system in the roundup. Moreover, the system and monitor controls, as well as the keyboard and mouse jacks, are up front where you can reach them easily, and the keyboard has a crisp feel to it. You won't be able to put 5¼-inch floppy, 3½-inch floppy, and tape drives into the Acer, however; the 5¼-inch drive uses up two of the three front-access bays.

Acer's service and support are outstanding, with a toll-free number open 12 hours a day and a good two-year warranty. At times we had to wait for a technician, but never for more than 4 minutes. Despite its unexceptional performance, the 1120/SX is a good value.



The Acer's elegant design puts all controls up front for easy access.

Within the AGI's ample case are only three drive bays and four free slots.



AGI Model 3000B

PROS: Relatively fast
CONS: 8MB fast-RAM limit; poor ergonomics

The \$2915 3000B is slightly faster and slightly cheaper than average, but not enough to set it apart from the crowd. It has many of the problems of a small-footprint machine—without the small footprint. To shave a mere 4 inches off the width of a standard AT case, AGI cut the usual five drive bays to three; that's enough for a LAN workstation but not for a stand-alone system. The keyboard feels mushy, and it's the only system reviewed that makes you use a screwdriver to adjust some common monitor controls.

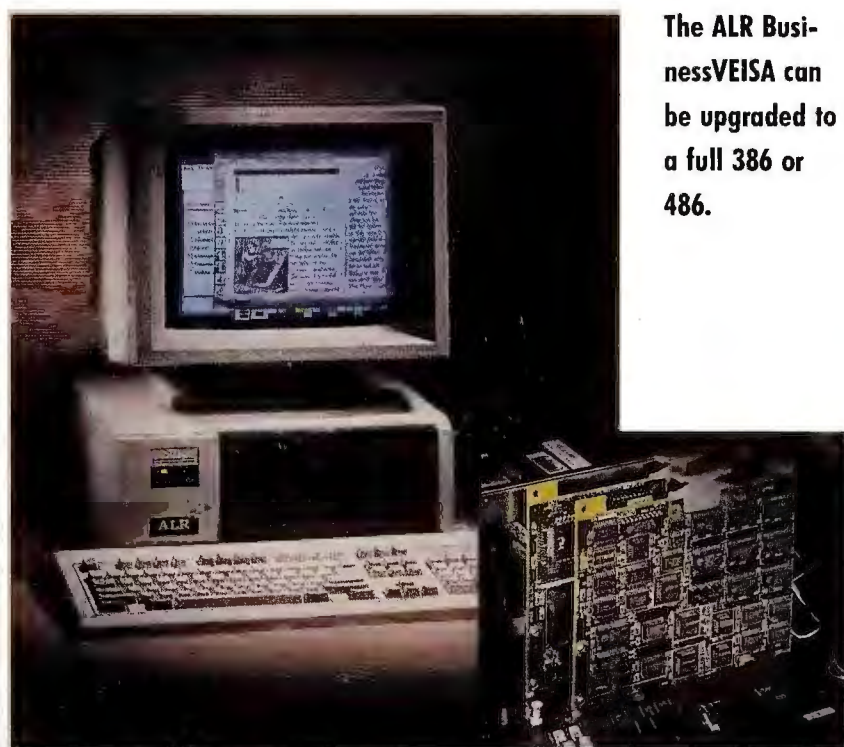
AGI—a new division of Everex—responded quickly to our service calls, which is a good thing since the number is a toll call. Like the service that comes with it, the 3000B is good but not great.

ALR BusinessVEISA 32CSX

PROS: CPU upgrade path, relatively fast
CONS: Expensive, mushy keyboard, poor construction

Thanks to a CPU upgrade option, you can't really outgrow the BusinessVEISA 32CSX, and that justifies its \$4538 cost—the highest in the roundup. But don't be fooled: Until you upgrade to a 386DX or 486 CPU, you can't use the three 32-bit EISA slots for EISA boards. The CPU upgrade also raises the fast-RAM limit to 49MB.

The VEISA has its flaws: The power switch on our test unit didn't work right—a problem ALR says it has fixed in newer units. And we had to wait for up to 10 minutes for a technician to answer the central support line. Fortunately, your local dealer has access to a direct line. What do *you* have access to? A great upgrade path, and that makes the VEISA worth considering.



The ALR BusinessVEISA can be upgraded to a full 386 or 486.

Buying Smart: SX Excellence

So how do you pick which 20-MHz 386SX to buy? Do you run down to your local Park 'n' DOS and buy the cheapest SX/20 they sell? Or the one with the most colorful ads? Hey, at these prices, how can you lose?

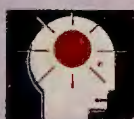
An SX may be a low-cost computer, but you should still expect it to be fast, long lasting, and backed by solid support. This makes performance, fast-RAM capacity, and quality of service your key buying criteria.



PERFORMANCE

Performance varies widely from system to system and from one application to another. A computer may zip through *Windows*, for instance, only to slog through *1-2-3*. So it's important to check our Test Report to see how well a system did on the applications you use most often.

Although many factors, including video controller and hard disk speed, affect performance, a memory cache controller makes the biggest difference. A cache places a small amount of very fast—and very expensive—RAM between the CPU and the main memory. By keeping frequently used code in the cache as well as main memory, system performance is increased significantly: All the cache systems were faster than any of the cacheless systems. But don't let the size of the cache fool you. A small but well-designed cache will speed your system more than a large but poorly designed one.

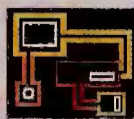


FAST-RAM CAPACITY

Windows, *1-2-3*, *Word-Perfect*, and *Paradox* all run faster with extra RAM, and your memory requirements are almost certain to go up—while the price of

RAM is likely to go down.

For RAM to keep up with a 20-MHz CPU, it must be placed on the motherboard or on a special card in a proprietary fast-RAM slot; a standard-slot memory card intended for a 286 will only slow your system down. Since you can never install more fast RAM than a system was originally designed to hold, look for a computer that will let you upgrade to 16MB—the most the SX chip will support.



EXPANDABILITY

You'll need a way to install tape drives, fax cards, and whatever other accessories you may buy in the coming years. The more drive bays and expansion slots at your disposal, the greater your freedom to add functionality to your aging system.

You probably won't use an SX system as a network file server, so you don't need massive drive or board capacity. SXs make dandy network workstations, though, and in this mode—using the server's hard disks and peripherals—three drive bays and three free slots should be plenty. If you're planning to use your SX computer as a stand-alone, non-networked system, your needs are sure to increase. You'll want four bays (for two floppy drives, a tape backup, and a hard disk), and slots (for fax/modem boards, CD ROM drive controllers, network interface cards, high-capacity hard disk controllers, and so on).



DESIGN AND CONSTRUCTION

A computer workstation should be designed for your comfort, not the other way around. Look for

easy-to-reach system and monitor controls, a sharp display, a quiet fan and hard drive, and a comfortable and responsive keyboard. Don't put too much emphasis on the keyboard, however—even if it is arguably the most ergonomically important part of the computer. You can, after all, buy an excellent replacement keyboard for less than \$100.

Clever layout inside the case will make it easier to add or swap boards, drives, or RAM. A small footprint can save desk space, though even the smallest of these systems is only 2 inches shorter, front to back, than a standard AT case.



SERVICE AND SUPPORT

Whether you buy your system from a local dealer or order it direct from the manufacturer, you should demand and get top-quality service and support. With this issue, *PC World* introduces a new policy for judging the telephone-based technical support offered by system manufacturers and their authorized dealers. We tested the quality of vendors' centralized support by calling them and seeing for ourselves what sort of service they provide. Since we couldn't test local stores as closely, we scrutinized vendors' policies to make sure they were requiring their dealers to properly support you, and giving dealers what they need to do the job.

In addition to telephone support, you should demand at least a one-year warranty, but a longer term will save you money in case of trouble. And on-site service—through your dealer or a contracted service center—will save you a lot of that trouble. See "How We Rate Service and Support" for further details.

FEATURES EVALUATION

CompuAdd Design and Support Are Key to Success

With so many similar units vying for your \$X dollar, benefits like support and design details give a standout like the CompuAdd 320sc the Best Buy edge.

- Yes
○ No
n/a = not applicable

	Aer 1120/sx	AGI Model 300B	AIK Business- VEISA 32CSX	CompuAdd 320sc	Mitac MPC-2386e	Tandon SL 320SX	Tandy 4020SX	Twinhead Superset 590/20	Wyle Decision 386sx/20	Zeos 386SX-20
Standard features										
Street price ¹	\$2651	\$2915 ²	\$453B	\$3158	\$2895	\$3007 ³	\$414B ⁴	\$2435 ⁵	\$3162	\$2795 ⁶
List price	\$3535	\$3620 ²	\$5672	\$3158	\$3630	\$3007 ³	\$414B ⁴	\$2988 ⁵	\$4161	\$2795 ⁶
80387SX coprocessor support	●	●	●	●	●	●	●	●	●	●
Mouse port	●	○	●	●	○	○	●	○	○	○
Setup utility in ROM	●	●	●	●	●	●	○	●	○	●
Fast-RAM copocity	BMB	8MB	16MB ⁷	16MB ⁸	BMB	5MB	5MB	5MB	BMB	16MB
Expandability										
8/16-bit slots/number free	4/4	6/4	5/3 ⁹	3/3	5/4	3/2	3/3	4/4	6/5	7/6
8-bit slots/number free	0/0	2/0	1/1	2/2	1/1	1/1	0/0	0/0	2/1	1/1
External/internal drive bays ¹⁰	3 ¹¹ /1	3/0	3/1	2/2	3/1	2/1	3/0	3/1	3/1	4/3
Largest hard disk option	100MB	n/a ¹²	1.2GB	200MB	200MB	200MB	440MB	300MB	110MB	1.1GB
Design and construction										
Compact footprint ¹³	●	○	○	●	○	○	●	●	○	○
Front-panel on/off switch	●	○	●	●	●	●	●	●	○	●
Service and support										
Warranty period (months)	24	12	12	12	12	12	12	12	12	12 ¹⁴
On-site service available	● ¹⁵	● ¹⁵	● ¹⁵	● ¹⁵	●	●	● ¹⁵	●	● ¹⁵	● ¹⁵
Vendor support										
Central support/toll-free	●/●	●/○	●/○	●/●	●/●	●/●	●/○	●/●	●/○	●/●
Daily support (hours)	12	11	10	11	10	24	8	12	8	24
Weekend support	○	○	○	●	○	●	○	○	○ ¹⁵	●
Electronic BBS	●	●	●	●	●	●	●	●	●	●
Vendor-to-dealer support										
Dedicated support staff required	○	○	○	●	○	○	●	○	○	n/a
Support staff training required	● ¹⁶	● ¹⁶	● ¹⁶	●	● ¹⁶	○	●	○	●	n/a
Dedicated support line for dealers	●	○	●	●	○	○	●	●	●	n/a
Inventory and parts requirement	● ¹⁶	● ¹⁶	● ¹⁶	●	●	○	○	○	○	n/a

BEST
BUY

¹ Except as noted, price based on 4MB RAM, 100MB or larger hard disk, 1.2MB 5¼-inch (or 1.44MB 3½-inch) floppy drive, VGA and color monitor, at least one parallel and two serial ports (or one serial and one mouse port), 101-key keyboard, mouse, and DOS 3.3 or later version. If the vendor doesn't offer a mouse, we added \$99 to the street price and \$125 to the list price to represent the cost of a basic Microsoft Mouse.

² Includes 160MB ESDI hard disk and controller.

³ Includes 5MB RAM and 110MB IDE hard disk.

⁴ Includes 5MB RAM and 105MB IDE hard disk.

⁵ Includes 5MB RAM and 104MB IDE hard disk.

⁶ Includes 130MB IDE hard disk, second floppy drive, and game port.

⁷ Up to 16MB additional capacity for expanded memory. Total is 49MB if microprocessor is upgraded.

⁸ Up to 16MB additional capacity for expanded memory.

⁹ Three or 32-bit EISA slots; one ISA slot (two if fast-RAM expansion board is installed); can't hold a full-length board.

¹⁰ Half-height, third-height, or 3½-inch bays. Except as noted, at least one externally-accessible bay is half-height 5¼-inch.

¹¹ All bays are 3½-inch; two joining 3½-inch bays can hold one 5¼-inch drive; other bay is third-height.

¹² Hard disks are sold and installed by dealer only.

¹³ No more than 16 inches wide or deep.

¹⁴ 60-month warranty on the keyboard.

¹⁵ Extra-cost option.

¹⁶ Required of Authorized Service Centers; not a requirement of the dealer.

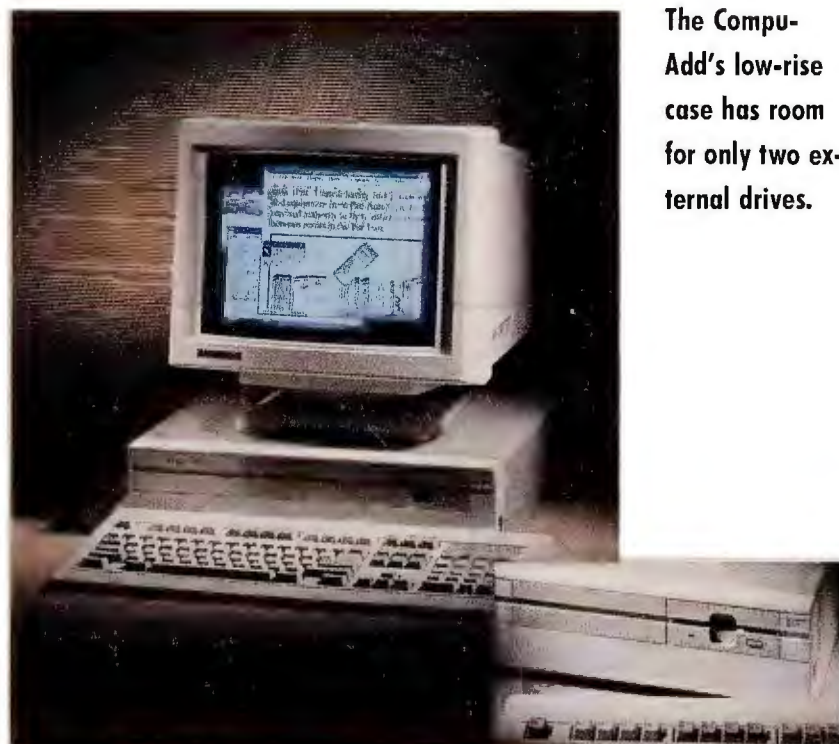
CompuAdd 320sc



PROS: Fast, great service, DOS and Windows already installed **CONS:** Mushy keyboard

If you want to be up and running yesterday, this Best Buy is for you. From step-by-step directions on the shipping box to the preinstalled copy of *Windows*, the \$3158 CompuAdd 320sc is easy to set up. And if you do have a problem, you can expect first-rate service and support from any of the 91 CompuAdd stores across the country.

The 320sc also proved a good performer, rating second in this roundup and even beating the Compaq (one of February's Best Buys) in the 1-2-3 test. But forget about getting two floppy drives and a tape drive into this system at the same time; only two of the four bays have front access. Still, if you think easy setup is more important than limitless drive bays, the 320sc is your Best Buy.



The CompuAdd's low-rise case has room for only two external drives.

The Mitac is a sturdy machine at a reasonable price, but it's sluggish.



Mitac MPC-2386e

PROS: Prompt service, good keyboard **CONS:** Very slow, 8MB fast-RAM limit

If you're going to use a Mitac MPC-2386e, be prepared to wait. This \$2895 creeper came in last in the important 1-2-3 test, and second to last in most of the others. It wasn't on average the slowest computer in the roundup—but it was close. And you'll find that upgrading it is no picnic. Before you can add RAM, for instance, you have to expose the motherboard's memory sockets, and that involves partially dismantling the system.

If it weren't for the short hours, Mitac's service and central tech support would shine. One year of on-site service is included in the price, and we got very prompt responses to our questions on its toll-free support line. But fast service doesn't make up for slow performance.

Tandon SL 320SX

PROS: Terrific service **CONS:** 5MB fast-RAM ceiling, few drive bays, slow

The best description for the \$3007 Tandon SL 320SX is "claustrophobic." The 5MB fast-RAM ceiling will soon seem cramped and the case already seems cramped. The chassis is almost as big as an AT's, and you will find only three bays; two of them are front-loading and the other is difficult to install a drive in. The Tandon placed near the bottom in our benchmarks, coming in last in the *Paradox* test.

On the bright side, Tandon's service policies are tops. If you start seeing ominous error messages at 3 a.m., a technician is waiting at an 800 number. We also tried during business hours (when the wait is longer), and we always got through right away. If the SL 320SX were as fast, or as impressive, as Tandon's support, we'd recommend that you buy it.



Installing a hard drive in the Tandon requires skill and dexterity.

How We Rate Service and Support

Cathy Smith

Vendors may boast about size, speed, and enormous upgrade capacity, but when your computer isn't working properly, those words are meaningless. If you can't get competent help right away, your work won't get done on time.

How does *PC World* rate service and support? To receive an Excellent rating, a system must come with a one-year warranty and an on-site service option. A vendor must offer either prompt, central, toll-free, 12-hour-a-day telephone support or require that dealers offer phone support via trained personnel. In the latter case, the vendor must provide the training and have a dedicated phone line for dealer tech support.

High-quality telephone support is the keystone of a good service policy—whether it comes from the vendor or your local computer store. You're unlikely to get excellent support from both of these sources, but you should demand it of at least one. Since you can't solve all your prob-

lems over the telephone, having a repairperson nearby—preferably one who makes housecalls—is your next priority.

Quick access to a technician is the most important element of good central telephone support, followed by a toll-free number and—if you work late nights or weekends—long support hours. Without identifying ourselves, *PC World* called technical support phone lines morning, noon, and night, asking about hard disks crashing, upgrades ruining the system, and the location of that elusive “any key.” We found out which vendors answered their phones right away and which ones let you sample local radio stations for 15 minutes.

Unfortunately, surveying authorized dealers in a similar fashion is beyond our means. We can't call your local store, but we can find out which vendors are taking the necessary steps to ensure their authorized dealers will support you properly. We learned which vendors require

their dealers to keep full-time support technicians on the payroll, and which vendors offer (and require) training for their dealers' support staffs. We also found out which vendors have a direct technical support line for dealers.

If something goes wrong with your PC, you'll want on-site service—a repair specialist who comes to you. If a vendor doesn't require dealers or service centers to provide on-site service options, buy elsewhere. If possible, look for a vendor that requires its dealers or centers to keep replacement parts in stock.

PC World can't really judge the quality of your local dealer, but you can. Find out if the store has dedicated support people on staff and whether they make house calls. Ask your salesperson a highly technical question and see if he or she can answer it. Ask other users about their experiences. And if you like a dealer, establish a relationship; regular customers always get the best service.

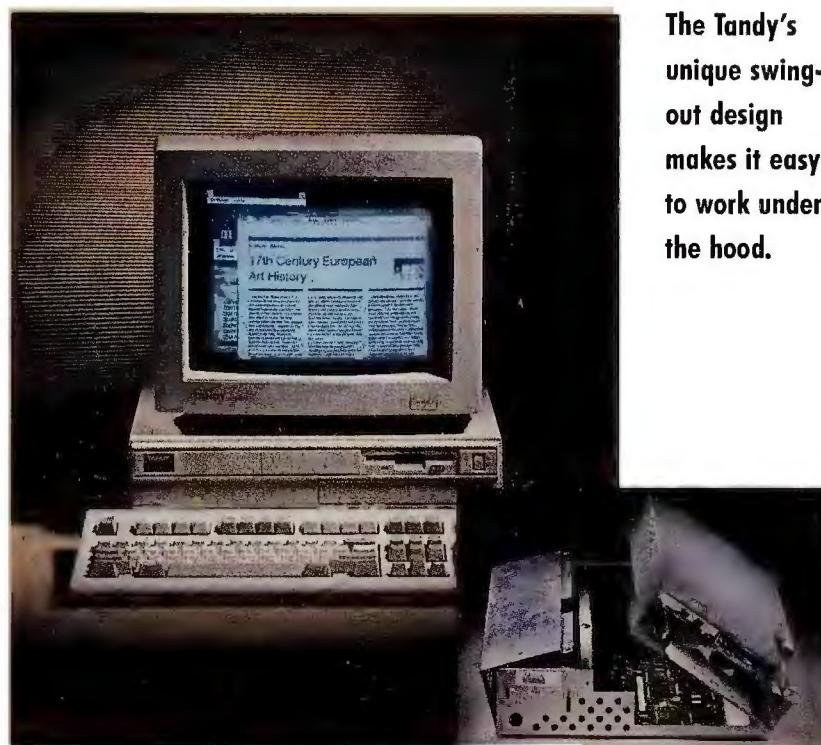
Tandy 4020SX

PROS: Clever fold-out design, small footprint

CONS: Limited fast-RAM capacity, expensive

The 4020SX has the same major flaw as the Tandon: a stingy 5MB fast-RAM ceiling that you're likely to hit before you know it. But at least the 4020SX is well designed: It's the smallest machine in the roundup yet one of the easiest to upgrade. Once you remove two screws, pop the cover, and fold the hard drive bays out on their hinges, you've got unhampered access to every component in the system. If you're on a network, you'll find the three bays (all front loading) and three slots acceptable—but they're tight if you stand alone.

Every Radio Shack Computer Center in the country has a trained technician ready to answer your questions and repair your system. But great support isn't enough to justify the 4020's steep \$4148 price tag and low RAM capacity.



The Tandy's unique swing-out design makes it easy to work under the hood.

PC WORLD TEST REPORT

Zeos Speed Unsurpassed

The Zeos 386SX-20 leads the pack, coming in first in five out of six tests, with Best Buy CompuAdd 320sc on its coattails. One of the two Best Buys from our February roundup, the Compaq Deskpro 386s/20, is among the top contenders.

■ Best Buy

WordPerfect

Zeos 386SX-20	82
Compaq 386s/20	86
CompuAdd 320sc	87
AGI Model 3000B	90
ALR BusinessVEISA	90
Acer 1120/SX	97
Tandy 4020SX	100
Tandon SL 320SX	102
Mitac MPC-2386e	103
Twinhead Superset	106
Wyse Decision	107

seconds 0 50 100

AutoCAD

Compaq 386s/20	305
Zeos 386SX-20	327
CompuAdd 320sc	357
ALR BusinessVEISA	380
Acer 1120/SX	391
AGI Model 3000B	399
Tandon SL 320SX	436
Twinhead Superset	436
Tandy 4020SX	455
Mitac MPC-2386e	460
Wyse Decision	489

seconds 0 250 500

dBASE IV

Zeos 386SX-20	653
Compaq 386s/20	712
AGI Model 3000B	742
ALR BusinessVEISA	752
Acer 1120/SX	759
Tandy 4020SX	767
CompuAdd 320sc	770
Tandon SL 320SX	789
Twinhead Superset	799
Mitac MPC-2386e	828
Wyse Decision	880

seconds 0 450 900

Windows 3.0

Zeos 386SX-20	144
AGI Model 3000B	152
Compaq 386s/20	155
ALR BusinessVEISA	161
Acer 1120/SX	163
Tandy 4020SX	163
CompuAdd 320sc	164
Twinhead Superset	168
Tandon SL 320SX	173
Mitac MPC-2386e	187
Wyse Decision	204

seconds 0 100 200

1-2-3

Zeos 386SX-20	626
CompuAdd 320sc	637
ALR BusinessVEISA	638
Compaq 386s/20	638
AGI Model 3000B	662
Acer 1120/SX	737
Twinhead Superset	756
Tandy 4020SX	762
Wyse Decision	797
Tandon SL 320SX	799
Mitac MPC-2386e	811

seconds 0 400 800

Paradox

Zeos 386SX-20	827
Acer 1120/SX	991
ALR BusinessVEISA	993
Tandy 4020SX	995
Compaq 386s/20	996
CompuAdd 320sc	1006
Wyse Decision	1034
AGI Model 3000B	1035
Twinhead Superset	1036
Mitac MPC-2386e	1048
Tandon SL 320SX	1050

seconds 0 525 1050

Methodology

We tested all the computers with 4MB RAM except the Tandon and the Twinhead, which had 5MB RAM. We used the vendor's version of DOS, and the systems had the following sizes of hard disk: Acer, Mitac, NCR 100MB; Twinhead 104MB; Tandy 105MB; ALR 106MB; CompuAdd, Tandon, Wyse 110MB; Compaq 120MB; Zeos 130MB; AGI 160MB.

WordPerfect

We reformat three *WordPerfect 5.1* documents that vary in size from 5K to 55K. The files are basic text with some boldface and underlined text; one of the documents includes a TIFF image.

dBASE IV 1.1

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 past 600 records.

1-2-3

In the 1-2-3 2.2 test, we complete the following operations: First, we load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We make various changes and run recalcs on each. Finally we use the MAPS add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

AutoCAD

We use *AutoCAD* release 10 to load a 500K drawing. We then mask layers, change zooms, and remove the hidden lines.

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 recalc. Then the macro loads Samna's *Ami Professional* along with a 50K document, in which is placed a 500K TIFF image. Finally, the macro launches *Micrografx Designer*, opens a drawing, displays it on screen, and exits to DOS.

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.

dFacts Are In.

DATABASE COMPARISON TABLE	dBASE IV version 1.1	Paradox version 3.5	FoxPro version 1.02
EASE OF USE			
Control Center organizes data, queries, forms, reports, labels, applications on <u>one</u> screen	Yes	No	No
Create applications <i>without programming</i>	Yes	Yes	No
Modem pulldown menus for all Design Tools	Yes	No	Limited
Query by Example (QBE) for easy access to information	Yes	Yes	No
Context specific help by menu item	Yes	No	No
PRODUCTIVITY			
Quick Layout for automatic forms, reports <u>and</u> labels	Yes	No	Yes
Application Generator for quick application development	Yes	Yes	No
Automatic code generation for all Design Tools	Yes	No	No
Automatic maintenance of <u>multiple</u> indexes for ordering data	Yes	No	No
Memo fields for notes, letters, descriptions	Yes	No	Yes
POWER & FLEXIBILITY			
Bold, underline, italic, subscript, superscript text for high impact reports and labels	Yes	No	No
User Defined Functions for extending programming language	Yes	No	Yes
Data input validity checking in forms	Yes	Yes	Yes
Multi-user transaction processing ensures data integrity	Yes	No	No
Number of file formats imported/exported	7	6	3
INDUSTRY STANDARDS			
#1 Selling, #1 Rated multiuser database; over 3 million users (1)(2)	Yes	No	No
Compatible with dBASE III PLUS data and applications	Yes	No	Yes
Compatible versions for DOS, VAX VMS, Macintosh, SunOS and other UNIX platforms (3)	Yes	No	Limited
Structured Query Language (SQL) integrated with programming language	Yes	No	No

(1) dBASE III PLUS and dBASE IV comprise approximately 55% of PC database systems sold (3 times nearest competitor) according to the most recent report by the market research firm Audits & Surveys (Oct. 1990) (2) Software Digest rated dBASE IV #1 among multiuser databases, October 1990 (3) Versions of dBASE IV are shipping for DOS, VAX, and SunOS. Macintosh and other UNIX Platforms are announced.

Based on what our customers tell us, we made a list of some of the most important features to look for in data management software.

Then we compared the new dBASE IV® version 1.1 with two other database products.

As you can see, dBASE IV offers exclusive advantages in

many categories.

For instance, only dBASE IV lets you access all its functions from a single screen. Called the Control Center, this screen lets you manage existing data, and create new tables, queries, reports, forms and labels totally without programming.

When all the facts are on the table, it's easy to see which database software is best.

Of course we aren't the only ones who have come to this particular conclusion.

Software Digest rates dBASE IV version 1.1 the #1 Multiuser Database (Vol. 7, No. 13, Oct. '90).

dTruth Comes Out.

Software Digest

RATINGS REPORT
The Independent Comparative Ratings Report
for Selecting IBM PC Business Software

Volume 7, Number 13

MULTIUSER DATABASE PROGRAMS

Ratings Key: ■ 7.0-10.0 ■ 5.0-6.9 ■ under 5.0

Software Digest Rating	Overall Evaluation	Overall Power	Program Name	Version Tested	Performance	Versatility	Error Handling	Ease of Learning	Ease of Use	Memory Requirement	Price	Volume Purchase Agreements	Page
★★★	7.0	6.7	dBase IV	1.1	■	■	■	■	■	450KB	\$795	✓	28
★★	6.8	5.1	Paradox	3.5	■	■	■	■	■	640KB	\$995	✓	32
★★	6.8	7.1	FoxPro/LAN	1.02	■	■	■	■	■	512KB	\$1,095	✓	30
★★	6.4	5.1	DataEase	4.2	■	■	■	■	■	640KB	\$750	✓	26
★	5.8	3.6	R:Base	3.0	■	■	■	■	■	520KB	\$995	✓	34
★	5.7	6.0	Clarion Professional Developer	2.1	■	■	■	■	■	512KB	\$845	✓	24
★	5.7	6.6	Advanced Revelation	2.01	■	■	■	■	■	640KB	\$995	✓	22

REPRODUCTION OR QUOTATION, IN WHOLE OR IN PART IS PROHIBITED WITHOUT PRIOR WRITTEN PERMISSION
All rights reserved. © 1990 by NSTL, Inc., Plymouth Corporate Center, Plymouth Meeting, PA 19462. 800-223-7093

Perhaps the most independent publication in the industry, *Software Digest* accepts no advertising whatsoever. Corporations pay hundreds of dollars a year to receive their monthly reviews—which are considered highly unbiased and objective. Their exhaustive, 75-page report concludes:

"Among the top ranking programs, dBASE IV (version 1.1) is the most well-rounded, with solid performance, versatility, and usability." Commenting on speed, *Software Digest* points out that "dBASE IV produces all three test reports as fast as or faster than FoxPro/LAN." As for Ease of Use and Ease of Learning, dBASE IV scored in the Excellent Range as many times as any other multiuser database product tested.

For a free evaluation kit, including competitive details and a free demo disk, call toll-free:

1-800-437-4329 ext. 1416.
Better yet, call 1-800-2ASHTON to upgrade to the new dBASE IV now.



The truth is, no other database can do so much to improve productivity.

 **Ashton-Tate**

EXECUTIVE SUMMARY

CompuAdd Speed and Support Add Up to a Best Buy

Only one of this new batch of SX/20s measures up to February's leading contenders.

For low-cost, entry-level systems, nothing beats 20-MHz SXs for 386-specific software compatibility and price/performance ratio. The best of these SXs are fast and able to hold up to 16MB of CPU-speed RAM. The **CompuAdd 320sc** joins two Best Buys from our February roundup: Compaq's Deskpro 386s/20 and NCR's PC386sx20. While the speedy **Zeos 386SX-20** beats all comers in performance tests, compatibility problems suggest poor quality control.

	Acer 1120/SX	AGI Model 3000B	ALR Business-VEISA 32cSX	CompuAdd 320sc	Miac MPC-2386e	Tandon SL 320SX	Tandy 4020SX	Twinhead Superset 590/20	Wyse Decision 386sx/20	Zeos 386SX-20
Performance	Fair	Good	Good	Good	Poor	Fair	Fair	Fair	Poor	Excellent
CPU-speed RAM	Good	Good	Excellent	Excellent	Good	Fair	Fair	Fair	Good	Excellent
Expandability	Good	Good	Excellent	Good	Good	Fair	Good	Excellent	Good	Excellent
Design and construction	Excellent	Fair	Fair	Excellent	Fair	Fair	Excellent	Fair	Fair	Poor
Service and support	Excellent	Good	Good	Excellent	Good	Excellent	Excellent	Excellent	Good	Good
Price	Excellent	Good	Poor	Good	Good	Good	Poor	Excellent	Good	Good
Overall value	Good	Good	Good	Excellent	Fair	Fair	Fair	Good	Fair	Good
				BEST BUY						

Reader service no.	622	623	624	625	626	627	628	629	630	631
--------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

How we rate 20-MHz 386SX systems

We rate these systems based on information in the Features Evaluation and the Test Report, combined with our opinions of quality and reliability.

Performance is derived from standard-deviation analysis of benchmark results, giving extra weight to the *WordPerfect*, 1-2-3, and *Windows* tests.

CPU-speed RAM refers to the amount of RAM that is available to the CPU without wait states. To win an Excellent, a system must accept 16MB.

Expandability covers the number and type of free slots and drive bays available. An Excellent rating requires four open slots, four drive bays, and a total of 300MB of hard disk storage.

Design and construction considers the footprint, manufacture, keyboard, monitor, compatibility, controls, and ease of working inside. An Excellent rating requires quality of most of these features and freedom from major design flaws.

Service and support rates the quality of techni-

cal support and repair service (see "How We Rate Service and Support").

Price ratings are calculated using standard deviation from the average street price, determined from our survey of 90 dealers in eight U.S. cities.

Overall value is averaged from all of the above criteria, with special emphasis placed on performance, CPU-speed RAM, and service and support.

Installing a disk drive in the Twinhead is a major challenge.



Twinhead Superset 590/20

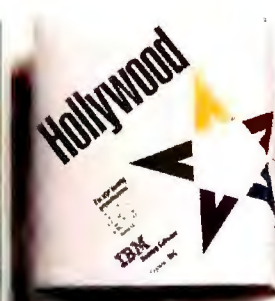
PROS: Very low price, excellent service, good keyboard

CONS: 5MB fast-RAM capacity, slow

If money's tight and top performance isn't important, the Superset 590/20 is a good choice. Although it's slow and sticks you with a 5MB RAM limit, its virtues make it worth considering for light work. At \$2435, the 590/20 is the least expensive SX in the roundup. And Twinhead's excellent support is second only to Tandon's.

Considering the manual—the only one to come without an index—first-rate support is important. Twinhead's toll-free number is open 12 hours a day, and we never called without getting a technician immediately. Technically speaking, the Twinhead is not a great machine, but when you add it up, the top-notch service and rock-bottom price make it worth considering.

Presenting Hollywood™. It's where your idea can become a star.



Some presentation packages don't take your ideas very far. And even if they do, chances are pretty good it won't be exactly where you want to go.

PRESENTATIONS MADE SIMPLE.

But now there's Hollywood™, a whole different kind of presentation tool that makes it easy for anybody to create complete presentations with real star quality. The steps are quick, simple—even

fun. First, Hollywood has an integrated outliner to help you organize your thoughts. Next, you select a look from a variety of exciting templates designed by professional graphic artists. Then Hollywood gives you an overview feature and lets you view and edit your entire presentation as a whole, not just page by page, so even sweeping changes aren't a big deal. And finally, you

can produce your award-winning output in any combination of slides, overheads or hard copy. Or for some real show biz, present it in a lively screen-show format.

Hollywood runs in the Windows™ 3.0 environment and gives you a supporting cast of fully scalable fonts, dynamic special effects, a comprehensive spellchecker and more. And because it's compatible with most popular graphics and spreadsheet software, importing and changing data is easy, too.



In Canada call 1 800 465-1234.

Take the first step. Try Hollywood and give your ideas the big break they deserve.

IBM®

Desktop Software

IBM is a registered trademark and Hollywood is a trademark of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation ©1991 IBM Corp.

Circle 108 on reader service card

Surveying the Field: 20-MHz SX Systems

In this article, we've examined ten of the latest and most interesting 20-MHz SX systems—a fraction of the units shipping at press time. The table below gives you a broader view of the field. Six of the 20 listed were reviewed in our February issue; Compaq's Deskpro 386s/20 and NCR's PC386sx20 won Best Buys.

	List price ¹	Fast-RAM capacity	8/16-bit slots/ number free	8-bit slots/ number free	Drive bays ²	Compact footprint ³	Warranty (months)	On-site service
*ALR PowerFlex 20CSX	\$4298 ⁴	5MB	5/4 ⁵	1/1	4	N	12	Y ⁶
Arche Triumph 386SX/20	\$3769	16MB	4/4	1/1	4	Y	24	Y ⁷
*AST Premium II 386SX/20	\$3770 ⁸	16MB	2/2 ⁹	1/1	5	N	12	Y ⁷
AT&T 6386SX/EL20 WGS	\$5400	20MB	3/3	0/0	3	N	12	Y ⁷
Austin 386SX/20	\$2568 ¹⁰	8MB	6/5	1/1	4	Y	12	Y
*Compaq Deskpro 386s/20	\$7316 ¹⁰	16MB	4/4	0/0	5	Y	12	Y ⁷
Dell 320LX	\$3378	8MB	6/5	2/2	5	N	12	Y
Eltech Model 2200	\$2499	8MB	6/6	2/2	5	N	12	Y
Epson Equity 386SX/20	\$4691	14MB	3/2	1/1	3	N	12	Y ⁷
Everex Step 386SX/20	\$4185	16MB	6/5	2/2	4	Y ¹¹	12	Y
FastMicro FastData SX/20	\$1979	8MB	6/4	2/2	5	Y	12	Y
Gateway 2000 386SX/20 Coche	\$2020 ¹²	16MB	5/5	0/0	3	N	12	Y ¹³
Grid 386isx-20	\$5028 ¹⁴	16MB	5/3	0/0	4	N	12	Y ⁶
Hyundai Super-386STc	\$3848	16MB	4/3	1/1	3	Y	18	Y ⁶
Leading Edge D3/SX20c	\$3874 ¹⁵	8MB	4/4	0/0	4	Y	20 ¹⁶	Y ¹⁶
*NCR PC386sx20	\$5744	16MB	4/4	0/0	4	N	12	Y ⁶
*NEC PowerMate SX/20	\$4946	12MB	4/3	0/0	3	N	12	Y ⁷
Northgate SlimLine 386/SX 20	\$2999 ¹⁷	8MB	3/3	2/2	3	N	12 ¹⁸	Y
Packard Bell Legend 520SX	\$4199 ¹⁹	16MB	3/3	1/1	4	N	12	Y
Zenith Data Systems 386SX/20	\$4997	8MB	6/4	0/0	2	Y	12	Y ⁷

*Reviewed in February 1991.

¹ Except as noted, price based on 4MB RAM, 100MB or larger hard disk, 1.2MB (or 1.44MB 3½-inch) floppy drive, VGA and color VGA monitor, at least one parallel and two serial ports or one serial port and one mouse port, 101-key keyboard, mouse, and DOS 3.3 or later version. If the vendor doesn't offer a mouse, we added \$99 to the street price and \$125 to the list price.

² Half-height, third-height, or 3½-inch bays. Except as noted, at least one externally accessible bay is half-height 5¼-inch.

³ No more than 16 inches wide or deep.

⁴ Includes 5MB RAM and 800-by-600 VGA.

⁵ One slot is slightly too short to hold a full-length card.

⁶ Extra-cost option.

⁷ Available through dealer.

⁸ Includes 80MB hard disk.

⁹ System also includes two free 8/16/32-bit slots.

¹⁰ Includes 120MB–125MB hard drive.

¹¹ Also available with a larger footprint and an additional drive bay.

¹² Includes 120MB hard disk, extra serial port, and Windows 3.0.

¹³ Free within 100 miles of a TRW service center.

¹⁴ Includes 5MB RAM, 800-by-600 VGA and monitor, one extra parallel and one extra serial port.

¹⁵ Includes both 1.2MB and 1.44MB floppies.

¹⁶ End user can choose a 6-month on-site service warranty or 20-month parts-and-labor warranty.

¹⁷ Includes 1.2MB and 1.44MB floppies and Windows 3.0.

¹⁸ Five years for the keyboard.

¹⁹ Includes 125MB hard disk, 1.2MB and 1.44MB floppies, and internal 2400-bps fax-modem.

WHERE TO BUY

Advanced Logic Research, Inc.

9401 Jeronimo
Irvine, CA 92718
800/444-4257

Reader service no. 770

Arche Technologies

48881 Koto Rd.
Fremont, CA 94539
800/422-4674

Reader service no. 771

AST Research Inc.

16215 Alton Pkwy.
Irvine, CA 92713-9658
714/727-4141

Reader service no. 772

AT&T

One Speedwell Ave.
Morristown, NJ 07920
800/247-1212

Reader service no. 773

Austin Computer

10300 Metric Blvd.
Austin, TX 78578
800/752-1577

Reader service no. 774

Compaq Computer

20555 State Hwy. 249
P.O. Box 692000
Houston, TX 77269-2000
800/231-0900

Reader service no. 775

Dell Computer Corp.

9505 Arboretum Blvd.
Austin, TX 78759-7299
800/426-5150

Reader service no. 776

Eltech Research Corp.

47266 Benicia St.
Fremont, CA 94538
415/438-0990

Reader service no. 777

Epson America

20770 Madrona Ave.
Torrance, CA 90503

213/782-0770

Reader service no. 778

Everex Systems, Inc.

48431 Milmont Dr.
Fremont, CA 94538
800/821-0806

Reader service no. 779

FastMicro

3655 E. La Salle St.
Phoenix, AZ 85040
800/441-3278

Reader service no. 780

Gateway 2000

610 Gateway Dr.
North Sioux City, SD
57049

800/523-2000

Reader service no. 781

Grid Systems Corp.

47211 Lakeview Blvd.
Fremont, CA 94538
415/656-4700

Reader service no. 782

Hyundai Electronics America

166 Baypointe Pkwy.
San Jose, CA 95134
800/727-6972

Reader service no. 783

Leading Edge

117 Flanders Rd.
Westborough, MA 01581
800/874-3340

Reader service no. 784

NCR Corp.

Workstation Products Div.
1601 S. Main St. PCD-1
Dayton, OH 45479
800/544-3333

Reader service no. 785

NEC Technologies

1414 Massachusetts Ave.
Boxborough, MA 01719
800/632-4636,
800/343-4418
Massachusetts and
Canada

Reader service no. 786

Northgate Computer Systems

7075 Flying Cloud Dr.
Eden Prairie, MN 55344
800/548-1993

Reader service no. 787

Packard Bell

9425 Conoga Ave.
Chotsworth, CA 91311
818/773-4400

Reader service no. 788

Zenith Data Systems

2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331

Reader service no. 789

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

Wyse Decision 386sx/20

PROS: Prompt telephone support

CONS: Very slow, strange keyboard layout

Performance hounds be warned: The Wyse Decision 386sx/20 is the slowest machine in the roundup, coming in last in four out of six tests. Compared to this, even the Mitac's performance looks good. Slow speed aside, there's little to say about the \$3162 386sx/20; its fast RAM, drive, and board capacities are adequate but unexceptional. One odd detail: The keyboard is laid out with a narrow <Alt> key, a double-width <Ctrl> key, and a <Select> key that, according to the manual, "has no function." Come again?

Wyse offers both vendor and dealer-based support, but the central line is a toll call, and dealers aren't required to keep a technician on staff. All things considered, the Wyse Decision is not a smart buy.



The Wyse provides ample room to expand, but it's the slowest SX in the roundup.

The Zeos's clever design leaves lots of room for drives and boards.



Zeos 386SX-20

PROS: Very fast, plenty of drive and board room, money-back guarantee
CONS: Quality-control problems

The \$2795 386SX-20 is the fastest, most expandable SX in the roundup. It would have rated a Best Buy if we hadn't encountered some problems testing it. The first 386SX-20 we tested couldn't load 1-2-3 release 3, and the second corrupted dBASE data files—an inconsistency that suggests quality-control rather than compatibility problems. During the one-year warranty period, Zeos will replace a defective part or system within 24 hours.

Zeos's phone support is open around the clock, seven days a week. Rather than keeping us on hold, they took our number and called us back between 14 and 35 minutes later. The Zeos's blazing speed and reasonable price make it a good buy. Just be prepared to make use of Zeos's warranty. ☺

WHERE TO BUY

Acer 1120/SX

Acer America Corp.
401 Charcot Ave.
San Jose, CA 95131
800/733-2237,
408/922-0176 (fax)
LIST PRICE: with 2MB RAM; 1.44MB floppy; IDE; one parallel, two serial, one mouse port; 101-key keyboard; 800 by 600 VGA; DOS 3.3; Windows 3.0 \$1995. With 3MB RAM, 40MB IDE hard disk, mouse \$2549
ACCESSORIES: 1MB

RAM \$110, 4MB RAM \$390; 100MB IDE hard disk \$875; 1.2MB floppy \$117; 14-inch VGA color display \$445, DOS 4.01 \$150
WARRANTY: two years
EXTENDED WARRANTY: through dealer
SUPPORT: toll-free number, M-F 6-6, BBS
Reader service no. 622

AGI Model 3000B

AGI Computer
48431 Milmont Dr.

Fremont, CA 94538
800/821-0806
LIST PRICE: with 2MB RAM; 1.2MB floppy drive, parallel, serial port; 101-key keyboard \$1950. With 4MB RAM \$2150
ACCESSORIES: 1MB RAM \$170, 1024 by 768 VGA card \$295, 14-inch VGA color display \$590, DOS 4.01 \$110
WARRANTY: one year, on-site service optional

EXTENDED WARRANTY: through dealer
SUPPORT: toll number M-F 6-5, BBS
Reader service no. 623

ALR BusinessVEISA 32CSX

Advanced Logic Research, Inc.
9401 Jeronimo
Irvine, CA 92718
800/444-4257,
714/581-9240 (fax)
LIST PRICE: with 1MB RAM; 1.2MB floppy; parallel, serial, mouse port. 101-key key-

board \$2799. With 2MB RAM, 40MB IDE hard disk, 800 by 600 VGA card \$4299; with 106MB IDE hard disk, VGA card \$4999
ACCESSORIES: 1MB RAM \$199; 40MB IDE hard disk \$949, 80MB IDE hard disk \$1099, 106MB IDE hard disk \$1399, 1.44MB floppy with mounting kit \$250; 14-inch 800 by 600 VGA color display (continues)

Pocket Power



The world's fastest 3.5 inch,
Erasable Optical Drive.

The world's first 3.5 inch, Erasable Optical Drive.

Pinnacle Micro, the leader in 5.25 inch optical storage systems, now brings you the first 3.5 inch erasable optical drive.

The new REO-130™ with its small size and quick 30 msec. speed is what the world's been waiting for in optical storage.

Each 3.5 inch disk holds 128 megabytes of valuable data, safe and secure.

You can hold the disk in the palm of your hand. You can put it in your pocket, or drop it in the mail.

If you need to distribute or archive large amounts of data, the REO-130™ is the perfect choice.

The drive system is available in both internal or external versions. Interface kits available for MAC, SUN, DEC, IBM and compatibles.

Pocket sized. Amazingly fast. Large capacity, is optical storage now.

Another first from Pinnacle Micro, the Optical Storage leader.

Call today for the name of your nearest authorized dealer.

☎ (800) 553-7070

REO and REO-130 are trademarks of Pinnacle Micro. In Sun is a Sun Microsystems, DEC is Digital Equipment Corp., IBM is International Business Machines Corporation, Macintosh is Apple Computer, Inc.

PINNACLE MICRO

THE OPTICAL STORAGE COMPANY™

15265 Alton Parkway • Irvine, CA 92718 • In CA (714) 727-3300 • FAX (714) 727-1913

Circle 204 on reader service card

WHERE TO BUY

(continued)

\$699; DOS 4.01 \$150
WARRANTY: one year
EXTENDED WARRANTY: through dealer or Intel
SUPPORT: toll voice and fax numbers M-F 7-5, BBS

Reader service no. 624

CompuAdd 320sc

CompuAdd Corp.
12303 Technology Blvd.
Austin, TX 78727
800/627-1967,
512/335-6236 (fax)
LIST PRICE: with 1MB RAM; 1.44MB or 1.2MB floppy; one parallel, two serial, one game port; 1024 by 768 VGA; 101-key keyboard; DOS 4.01; Windows 3.0 \$1295
ACCESSORIES: 2MB

RAM \$340; 40MB IDE hard disk \$429, 80MB IDE hard disk \$699, 110MB IDE hard disk \$799; 1.2MB floppy \$75; 14-inch 640 by 480 VGA color display \$359
WARRANTY: one year optional on-site service
EXTENDED WARRANTY: available
SUPPORT: toll-free number
M-F 8-7, BBS

Reader service no. 625

Mitac MPC-2386e

American Mitac Corp.
410 E. Plumeria Dr.
San Jose, CA 95134
800/648-2287,
408/432-0866 (fax)
LIST PRICE: with 1MB RAM, 1.2MB floppy, one parallel and two serial ports, 800 by 600 VGA, 101-key

keyboard, mouse, DOS 4.01, Windows 3.0 \$1995
ACCESSORIES: 1MB RAM (installed) \$100; 40MB hard disk with controller \$470, 100MB hard disk with controller \$770, 200MB hard disk with controller \$1170; 1.44MB floppy \$95, 14-inch VGA monochrome display \$175, 14-inch 1024 by 768 VGA color display \$495
WARRANTY: one year including free on-site service
EXTENDED WARRANTY: available
SUPPORT: toll-free number
M-F 7:30-5:30, BBS

Reader service no. 626

Tandon SL 320SX

Tandon
405 Science Dr.
Moorpark, CA 93021
800/800-8850,
805/378-7801 (fax)
LIST PRICE: with 1MB RAM, 1.44MB or 1.2MB floppy, 40MB IDE hard disk, VGA monochrome card, one parallel and two serial ports, 101-key keyboard, DOS 3.3 or DOS 4.01 \$1999; with 3MB RAM, 110MB IDE hard disk, color VGA card and display, mouse, Windows 3.0 \$2807; with 5MB RAM \$3007
ACCESSORIES: 110MB IDE hard disk \$329, 200MB IDE hard disk \$859; 1.44MB or 1.2MB floppy \$89; 640 by 480 VGA card and 14-inch color

display \$279
WARRANTY: one year including free on-site service
EXTENDED WARRANTY: available
SUPPORT: toll-free number, 24 hours a day, toll fax, BBS

Reader service no. 627

Tandy 4020SX

Tandy Corp.
1800 One Tandy Center
Fort Worth, TX 76102
817/390-3011,
817/390-3802 (fax)
LIST PRICE: with 1MB RAM; 1.44MB floppy; 1024 by 768 VGA; one parallel, one serial, one mouse port; IDE; 101-key keyboard \$1999
ACCESSORIES: 1MB



Announcing A Better, Smarter, Faster

NEW 2.0 FOR DOS & WINDOWS!

Why did we make the #1 grammar and style checker better, smarter, and faster? Well, we've sold over 600,000 copies of Grammatik™ because it's the easiest way to improve your writing. And the only way to make it even easier, was to make it even better. Introducing Grammatik IV 2.0 for DOS, and Grammatik Windows 2.0.

More Speed. Now Grammatik works just like the spelling

checker inside the latest versions of your favorite DOS and Windows word processors like MS Word, WordPerfect, WordStar, and Ami Pro, just to name a few. Simply click your mouse or tap a hot key inside a DOS word processor. Or in Windows, click on "Grammatik" in the same pull down menu as your spelling checker. In seconds, Grammatik proofreads every sentence in your document. It checks for thousands of errors in grammar, style, syntax, improper sentence construction, subject/verb agreement, passive voice, spelling and more. (It even checks personal words and abbreviations you've added to your word processor's

Reference
Software™

Reference Software International, 330 Townsend St., Suite 123, San Francisco, CA 94107. (415) 541-0222. *Supports Word, Ami, and WordPerfect User's Personal Spelling Dictionaries (DOS & Windows). **See your software dealer for details. Grammatik is a trademark of Wang Laboratories. Other product names are trademarks of their respective holders. © 1991

RAM \$200, 2MB RAM \$300; 52MB IDE hard disk \$599, 105MB IDE hard disk \$899, 170MB SCSI hard disk—no controller \$1899, SCSI host adapter \$350; 1.2MB floppy \$170; 14-inch color VGA display \$500; DOS 3.3 \$100, DOS 4.01 \$140, Windows 3.0 \$149
WARRANTY: one year
EXTENDED WARRANTY: through dealer
SUPPORT: through dealer and in-house and on-line service
 BBSs
Reader service no. 628

Twinhead Superset 590/20
 Twinhead Corp.
 1537 Centre Pointe Dr.
 Milpitas, CA 95035

800/545-8946, 408/945-1080 (fax)
LIST PRICE: with 1MB RAM, IDE, 1024 by 768 VGA, 1.2MB or 1.44MB floppy, 101-key keyboard, DOS 4.01, utilities \$1695
ACCESSORIES: 1MB RAM \$55; 40MB IDE hard disk \$249, 80MB IDE hard disk \$349, 104MB IDE hard disk \$395, 1.44MB or 1.2MB floppy \$79; 14-inch VGA color display \$395, Windows 3.0 \$99
WARRANTY: one year, free on-site service
EXTENDED WARRANTY: available
SUPPORT: toll-free number, M-F 6-6, BBS
Reader service no. 629

Wyse Decision 386sx/20
 Wyse Technology
 3471 N. First St.
 San Jose, CA 95134-1803
 800/438-9973
LIST PRICE: with 1MB RAM, 1.44MB or 1.2MB floppy, IDE, one parallel and two serial ports, 102-key enhanced keyboard, DOS 4.01, utilities \$1999; with 40MB IDE hard disk \$2599; with 110MB IDE hard disk \$3099
ACCESSORIES: VGA card \$199, 14-inch color VGA display \$599
WARRANTY: one year
EXTENDED WARRANTY: available
SUPPORT: toll number, M-F 7-3, BBS
Reader service no. 630

Zeos 386SX-20
 Zeos Int'l, Ltd.
 530 5th Ave. NW
 St. Paul, MN 55112
 800/423-5891, 612/633-1325 (fax)
LIST PRICE: with 512K RAM; 1.44MB or 1.2MB floppy; 42MB IDE hard disk; Hercules monochrome graphics card; 14-inch monochrome display; one parallel, two serial, one game port; 101-key keyboard \$1595. With 4MB RAM, second floppy, 130MB IDE hard disk, 1024 by 768 VGA card, 14-inch 1024 by 768 color VGA display, mouse, DOS 4.01, Windows 3.0 \$2795

ACCESSORIES: 512K RAM \$89, 1.5MB RAM \$179, 3.5MB RAM \$349; 1.44MB or 1.2MB floppy \$119; hard disk upgrade to 85MB \$225, to 130MB \$445, to 200MB \$775; 1024 by 768 VGA card with color display \$495; DOS 3.3 \$98, DOS 4.01 \$119, Windows 3.0 \$119
WARRANTY: one year, five years on keyboard
EXTENDED WARRANTY: available
SUPPORT: toll-free number, BBS
Reader service no. 631

For more information about all products in this article, circle reader service no. 904.

Grammatik™
 Grammar & Style Checker.

Reference Software™

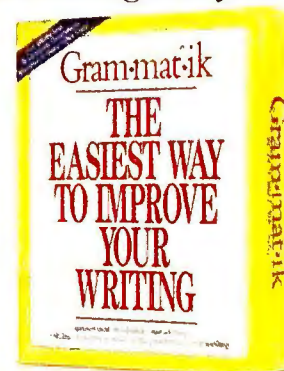
Easier Way To Improve Your Writing.

spelling dictionary. *) With new Grammatik, checking all your writing is as fast and easy as just checking your spelling.

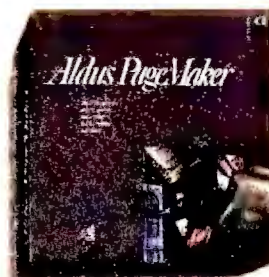
More Smarts. Because Grammatik IV 2.0 and Grammatik Windows 2.0 are now smarter, writing improvement is now easier. You can add writing rules that are unique to you or your business. You get easier to understand on-line grammar and style advice that helps you discover where you went wrong, and how to correct your mistakes. And, with expanded network support in the Business Pack, your entire workgroup can safely write smarter, right away.

WHOOPS!
More Better. Everyone makes mistakes. But now that Grammatik is faster and smarter, its proofreading (and your writing) will be better than ever. So improve your writing the easy way, get new Grammatik IV 2.0 for DOS or Grammatik Windows 2.0. See your software dealer or call

(800) 872-9933 Ext. 100
To Order Now
 (Ext. 10 U for low-cost upgrades)



30-Day Write Better Or Your Money Back Guarantee**



Desktop publishing on your PC is about to see the light of a new day: with Aldus PageMaker® 4.0

for Windows. Put the two together and you can produce a wider range of documents more easily and cost-efficiently than ever before.

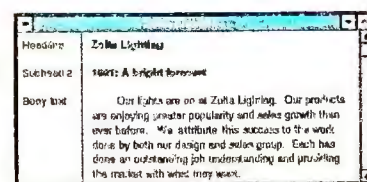
Like long documents. New PageMaker automates page-numbering, indexing, and the table of contents. What's more, with new Links management, you can automatically update your documents with the

latest versions of text, spreadsheets, tables, databases, and

graphics. Plus, files are compatible across Macintosh, DOS, and OS/2 platforms.

New PageMaker also includes a host of new graphics capabilities. For instance, you now have the ability to expand or condense type, rotate it 90°, and wrap it around irregular objects. Plus there's true track kerning, and 24-bit color TIFF image support.

To change the course of your PC's life, call 800-333-2538, Dept. 33L, for a free brochure, or a \$9.95 working model.* To upgrade, call 800-243-3173, Dept. 33U.



The new Story Editor is a powerful, built-in word processor that can enter and edit text, check spelling, and search and replace.



*The Creative Edge
in Business*

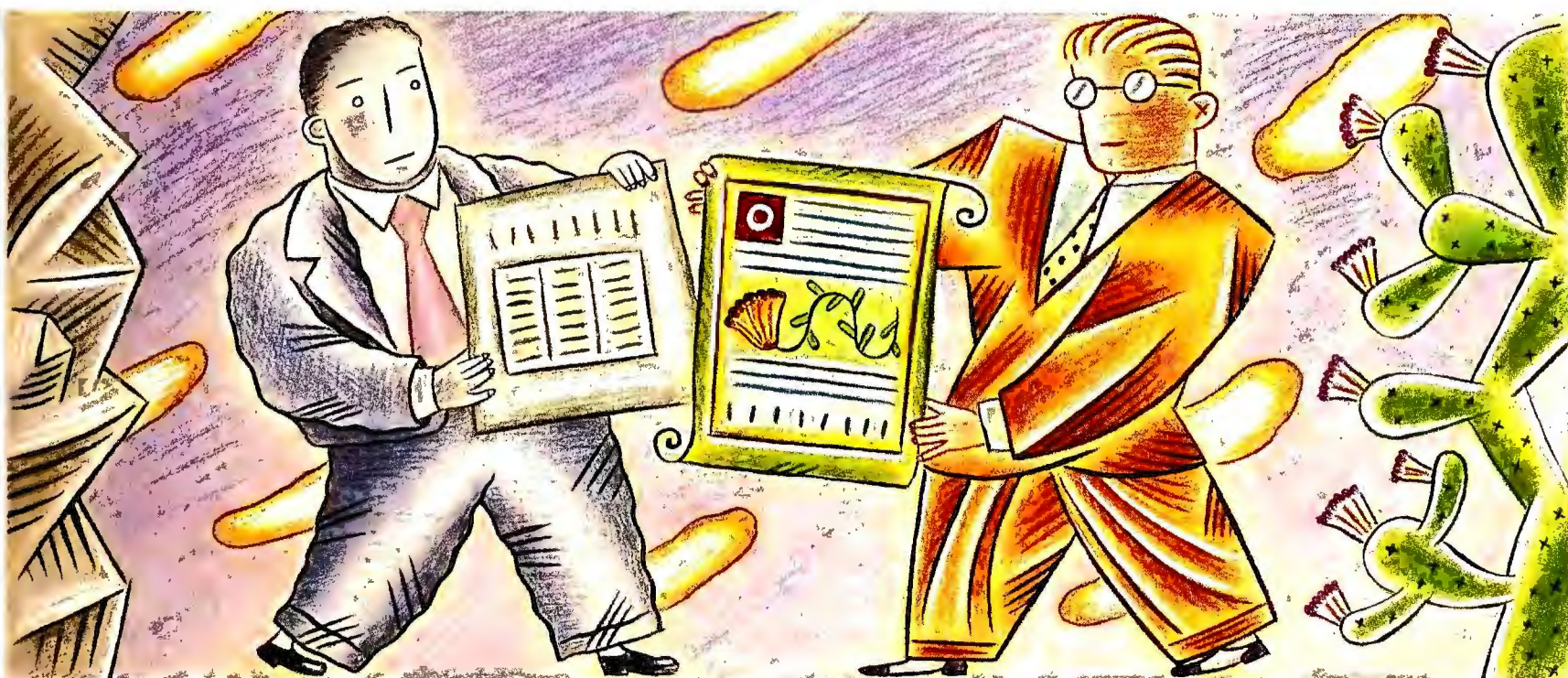
PageMaker 4.0 for Windows.

Today is the first day of the rest of your PC's life.

Will Your Next Word Processor Wear Windows?

True or false—Windows word processors are easier to use. True in most cases, but traditional programs still have their place.

George Campbell



Chances are you're a *WordPerfect* user. Nothing wrong with that—it's a very powerful program, and because there are so many other *WordPerfect* users out there, help with its complex inner workings is usually close at hand. But it's also likely that you're incorporating more and more fonts and graphics in your documents. If so, it's time you looked into *Windows*-based word processors like *Ami Pro* and *Word for Windows*—packages that make complex formatting and font control much easier.

Character-based programs like *WordPerfect* and *Word* still have a place, especially with users who are stuck with slower systems. To get decent performance with a *Windows* word processor, you'll need a 386SX PC

with at least 2MB (and preferably 4MB) of RAM and a VGA display. Even on a capable 386, you'll find *Windows* word processors somewhat slower than their character-based rivals.

But few users will mind waiting a second or two longer to reformat a file if they can shave minutes off a job like setting up a table, changing fonts, or importing and scaling a logo. Character-based programs bog down when you move beyond simple formatting, but with graphical interfaces that sport icons, interactive dialog boxes, and flexible graphics manipulation, *Windows* packages make creating complex documents relatively easy. Their editing screens show accurate images of the printed page, including fonts, so you don't have to flip to a

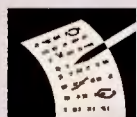
Buying Smart: Sizing Up Word Processing Tools

Most users call on their word processor more often than any other application. For most, ease of use, editing, and formatting are the most important features, followed by customization and automation, performance, and graphics handling.



EASE OF USE

Look for well-organized menus that you can control with a mouse, along with keyboard shortcuts. Icons let you select common commands with a single click. You should also be able to decide which icons to display and assign selected commands or macros to icons or menus. Also, look for context-sensitive help and good documentation.



EDITING

All these packages provide essentials such as cut and paste; word, line, sentence, and paragraph delete; global search and replace; and undo commands. Look for the ability to display multiple files at once and to edit documents in several views, ranging from draft text to complete graphics. Most will want an editing screen that accurately represents printed output—at the very least, demand a page preview mode.

More advanced editing features can be broken down into three categories:

Writing aids. At a minimum, you need a complete spelling checker

with custom, user-defined dictionaries and a thesaurus that offers synonyms and definitions. An outliner is a big help, especially if you can expand and collapse the outline and include standard text. Only one program here includes a built-in grammar checker.

Long-document options. At the very least, look for automatic table of contents and index generation. You may also want bookmarks for jumping to fixed locations in a file, and cross-references, which automatically update tables, figures, and “see page xx” references as your document changes. Academic users will want capable footnoting tools, and engineers and financial experts will want an equation editor.

Group editing tools. If you’re on a LAN, you’ll want such multiuser tools as annotations, which embed hidden notes within documents, and redlining, which compares documents and marks suggested additions and deletions automatically. Work groups also need complete document summaries that include revision tracking (automatic marking of who edited what and when). LAN support that allows users to browse files that others are working on—but not to edit them—is essential.



FORMATTING

Today’s documents are more complex than ever. Demand a full range of text format-

ting and page layout features such as the ability to format newspaperlike snaking columns. It should be easy to select fonts, and you want to be able to use scalable fonts on printers that support them.

Style sheets let you quickly tag paragraphs with style formatting, making it unnecessary to repeat complex commands. Look for style sheets that you can save separately from the document so you can copy them easily to other documents. More advanced desktop publishing features include kerning and tracking, which let you modify the space between letters and words—a handy feature for headlines.



CUSTOMIZATION AND AUTOMATION

These business-oriented features help you link your word processor with other applications. Most important is a macro language with a learn mode that lets you automatically record keystrokes for later playback. Just in case you require more advanced automation, make sure the language is programmable, so you can write the macros directly. One nice touch is an automated template function that lets you set up forms and documents with custom formatting and prompts for users to fill in the blanks.

Look for a mail merge function (which matches form letters with lists of addresses) equipped with user prompts. Conditional commands let you further customize your mailing,

separate preview mode to view the overall effect. Also, *Windows* packages function more logically than *WordPerfect*—you select the text and *then* act upon it, rather than vice versa.

If you’re still unsure whether *Windows* word processing is the answer, you’ll find help in these pages. First, investigate our decision tree (“Know Your Options: Pick Your Word Proces-

sor”) to find the right questions to ask. Then check out “Five Problems in Search of a Word Processor” to see what applications best match your situation. Next, see “Windows Word Pro-

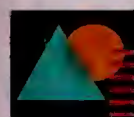
for example, by inserting an extra paragraph for customers above a certain income. Spreadsheet links that can automatically insert the latest worksheet version are helpful. You'll then want a table editor to format the worksheet by easily adjusting columns and adding lines and shading.



PERFORMANCE

Speed is important, yet our tests show sur-

prisingly small differences among most of the packages. *Word 5.5* is the overall champ, followed closely by *WordPerfect*. The *Windows* group is a bit slower, but still pretty quick on a 386. Users of 286 systems will find that the *Windows* packages run much more slowly. See the PC World Test Report for more details.



GRAPHICS

Graphics are playing an expanding role in busi-

ness documents. A program should import a variety of formats; let you move, crop, or scale an image with the mouse alone; and wrap text around graphics automatically. Look for a frame-based approach to text and graphics—because you simply draw frames in which to pour text and graphics instead of assigning coordinates, it's easier to move and resize the elements. Additional features like drawing, charting, and scanning modules are nice extras—you may not need to buy separate packages for these functions.

cessing—Thumbs Up or Thumbs Down?" for two opposing views on the subject. Finally, our "Buying Smart" sidebar is your guide to the make-or-break features to look for.

Ami Pro 1.2



PROS: Easy to use, flexible editing views, superb graphics handling, business graphics

CONS: Weak outliner, no redlining, no cross-references

Beg or borrow time on a system running *Ami Pro*, and you'll soon see what a word processor *should* be. Matching rival *Word for Windows* at formatting and all but the most advanced editing tools, *Ami Pro* has an edge in ease of use and a solid advantage at graphics. It's the Best Buy for *Windows* users.

Ami Pro's interface is the easiest to use in the roundup. A customizable icon bar runs down the left of the screen—you can select 12 icons from a long list or assign your own macros to icons. The program lacks its *Windows* rivals' push-button ribbon for quick text formatting, but you can set up similar functions in the icon bar. Most will appreciate the optional floating style-sheet window—properly positioned, it can reduce the distance your mouse travels when you're tagging paragraphs with styles. You can also select tags from pulldown menus or with function keys.

Ami Pro provides the most flexible screen views in the roundup—you can choose from full-page, half-page, magnified, and fast draft views or create your own custom magnification. With version 1.2, *Ami Pro's* vexing lack of windowing support is a thing of the past—you can open up to nine files at once, and cut and paste among them. *Ami Pro's* macro language is powerful, letting you create new menus or add your own macros to existing menus.

The style sheets are unsurpassed. Unlike with *Word for Windows*, you can create or alter a style using a single dialog box, and because style sheets travel separately from documents, it's a little easier to store and apply them. Not only are *Ami Pro's* one-stop dialog boxes well organized, but they show examples—if you alter a setting, the changes show up in a preview window, so

you don't have to wait for the screen to reformat to view the effect.

Ami Pro's layout and graphics skills are unmatched. Because you locate and manipulate text and graphics elements in frames, as in a desktop publishing program, they're easier to manipulate than in *Word for Windows*. After creating a frame, just drag it around or size it with the mouse. Another bonus: You can alter brightness and contrast on scanned TIFF images, so you don't need to use a separate scanning utility.

If you need a chart, a table, or a drawing on the spot to back up your document's message with images, the tools are built right in. The chart module offers bar, pie, and line styles, with legends and colors, in flat, three-dimensional, or even perspective formats.

Ami Pro has a few weak spots—for long documents, you'll miss *Word for Windows's* cross-referencing tools, which automatically update references to tables and figures, and *Ami Pro's* outliner can't expand and contract to include document text. Also missing is redlining—collaborative work groups will have to use a third-party program like *ForComment* to compare edits.

If you can live with these gaps, *Ami Pro* may well be your next word processor. Its ease of use, formatting prowess, and graphics power make it a Best Buy for just about everyone.

Legacy 1.1

PROS: Advanced desktop publishing features, text flow between frames

CONS: No macros, weak group editing tools, slow printing, poor menu organization, no multiple windows

NBI's *Legacy* offers a formidable formatting and graphics repertoire aimed at desktop publishers. Missing some advanced editing tools like math, macros, and redlining, *Legacy* can't match its *Windows* rivals, but it's a good value if light desktop publishing is your goal.

At press time, WordStar International announced that it had licensed the

FEATURES EVALUATION

Best Buys Combine Ease of Use, Abundant Features

Best Buy Ami Pro combines Windows' ease of use and uninterrupted view of the page with loads of formatting and graphics features. For those with less need for fonts and graphics (and for those without a 386), Best Buy Word 5.5 is nearly as easy and provides better group-editing features.

	Ami Pro 1.2	Legacy 1.1	Microsoft Word 5.5	Microsoft Word for Windows 1.1	Multimate 4.0	Wordperfect 5.1	WordStar 6.0
● Yes ○ No ◐ Deficient ▼ Limited only by available disk space							
Standard features							
Memory required	1MB	1MB	384K	1MB	384K	384K	384K
Disk space required	4.5MB	5.2MB	2.5MB	3.2MB	8MB	4.5MB	3.5MB
Uses mouse	●	●	●	●	○	●	○
Editing							
Basic editing							
Custom editing views	●	●	◐	○	○	○	○
Page preview	●	●	●	●	●	●	●
Math functions	●	○	●	●	●	●	●
Maximum windows	9	1	9	8	1	2	2
Undo/undelete levels	4	1	1	1	▼	3	1
Writing aids							
Spelling checker/thesaurus	●	●	●	●	●	●	●
Outliner	◐ ¹	◐ ¹	●	●	○	◐ ¹	◐ ¹
Grammar checker	◐	○	◐	○	●	○	○
Long-document options							
Index/table of contents	●	●	●	●	●	●	●
Bookmarks	●	○	●	●	◐ ²	●	●
Cross-referencing	◐	●	●	●	○	●	○
Footnotes/endnotes	●	●	●	●	●	●	●
Group editing tools							
Annotations	●	●	●	●	●	●	●
Redlining	◐	○	●	●	●	●	○
Document summary/revision tracking	●	○	●	●	●	●	○
Multiuser file browsing	●	○	●	●	○	●	◐ ³
MHS E-mail module	◐	○	◐	○	●	○	○
Customization and automation							
Programmable macros	●	○	●	●	○	●	○
Macro learn mode	●	○	●	●	●	●	○
	BEST BUY		BEST BUY				

Legacy source code from NBI and would sell the program under a new name. Later in the year, WordStar will modify the code and release *WordStar for Windows*. NBI, however, will continue to sell and update its own version.

NBI has taken good notes from the competition. Like *Word for Windows*,

Legacy offers an icon bar for quick font, formatting, and alignment changes. Like *Ami Pro*, it displays examples of some formatting choices in dialog boxes, but not for as many options. You can edit in a speedy draft view or one of three graphical views, and like *Ami Pro*, *Legacy* lets you set up a customized view

with whatever magnification you prefer.

Despite these pluses, *Legacy* is harder to learn and use than its *Windows* competitors. For example, to modify a frame, you must first click on an icon, then move to the pulldown menus, negating the benefit of the icon shortcut. Style controls are scattered among the

	Ami Pro 1.2	Legacy 1.1	Microsoft Word 6.5	Microsoft Word for Windows 1.1	MultMate 4.0	WordPerfect 5.1	WordStar 6.0
Customization and automation (contd.)							
Mail merge	●	○ ⁴	●	●	●	●	●
Spreadsheet links	●	●	●	●	●	●	●
Table editor	●	●	●	●	○	●	○
Equation editor	●	○	●	●	○	●	○
Automated templates	●	○	●	●	○	○	○

Formatting

Basic formatting							
Style sheets	●	●	●	●	○	●	●
Uneven column widths	●	●	●	●	●	●	●
Icon formatting shortcuts	●	●	●	●	○	○	○
Conditional page breaks	●	●	●	●	○	●	●
Kerning and tracking controls	●	●	○ ⁵	●	○ ⁵	●	○ ⁵
Text formats imported	15	18	3 ⁶	11	13 ⁶	11	6
Text formats exported	14	17	3	11	13	8	6

Printing							
Background/queue printing	●	●	●	●	●	●	●
Supports LaserJet III scalable fonts	●	●	●	●	○	●	●
Prints broken range of pages	●	●	●	○	○	●	●
PostScript support	●	●	●	●	○ ⁷	●	●

Graphics

Move, size, crop graphics	●	●	●	●	●	●	●
Flow text around graphics	●	●	●	●	○	●	○
Frames for text and graphics	●	●	●	○	○	○	○
Snap-to-grid	●	●	●	○	○	○	○
Lines, boxes, borders	●	●	●	●	○ ⁸	●	○ ⁹
Drawing program	●	●	●	○	●	○	●
Charting module	●	○	●	○	○	○	○
Brightness/contrast control for scanned images	●	○	●	○	○	○	○
Overlays text on graphics	●	●	●	○	●	○	●
Graphics formats imported	7	9	10	14	11	14	1
	BEST BUY		BEST BUY				

¹ No expand or contract.

² Bookmarks not named; jump only to next mark.

³ Multiple users may read files but can't save them.

⁴ No conditional merge commands.

⁵ No tracking control.

⁶ No PostScript file export.

⁷ Additional conversions available from publisher.

⁸ No automatic boxes.

⁹ Must enter line-drawing characters one by one.

Edit, Create, and Format menus, and styles are stored with the document, making it too easy to overwrite style sheets accidentally.

There are other annoyances. Network support is limited—when a file is in use, a second user can't browse it—and the mail merge module lacks user

prompts and conditional commands. *Legacy* is also a disk hog, storing all text and images in *Ventura*-like chapters—if you use a graphic in more than one document, it's wastefully duplicated in each file. Worse, you're limited to displaying one document at a time unless you load a second copy of *Legacy*, and

printing is the slowest in the roundup.

Legacy's big draw is its precise control over page layout. Like *Ami Pro*, it's a frame-based system and so is especially adept at handling graphics and boxed text. *Legacy* is the only program reviewed that lets you precisely position frames with snap-to columns and grids

—horizontal and vertical lines that snap page elements into place as if they were magnetically attracted. Better yet, its letterspacing (kerning) and word spacing (tracking) controls are tops in the roundup. It's the only program that lets text flow between frames—perfect for newsletters with continuing stories. But where *Ami Pro*'s frames are optional, *Legacy* makes you set up frames for even the simplest text documents—a bothersome extra step.

Legacy's lack of macros and weak mail merge rule it out for many offices. But it's a good deal for users who need some desktop publishing features for creating newsletters and don't want to master *PageMaker* or *Ventura*.

Microsoft Word 5.5



PROS: Easy Windows-like interface, fastest in roundup, powerful macro language, easy editing tools

CONS: No table editor, limited file import routines

Version 5.5 of *Microsoft Word* now works much like its *Word for Windows* cousin. *Word*'s treasure chest of features is now more accessible, thanks to pulldown menus, pop-up dialog boxes, and fully adjustable windows. Equally powerful at editing and formatting and the fastest program in the roundup, *Word* is the Best Buy for non-*Windows* users.

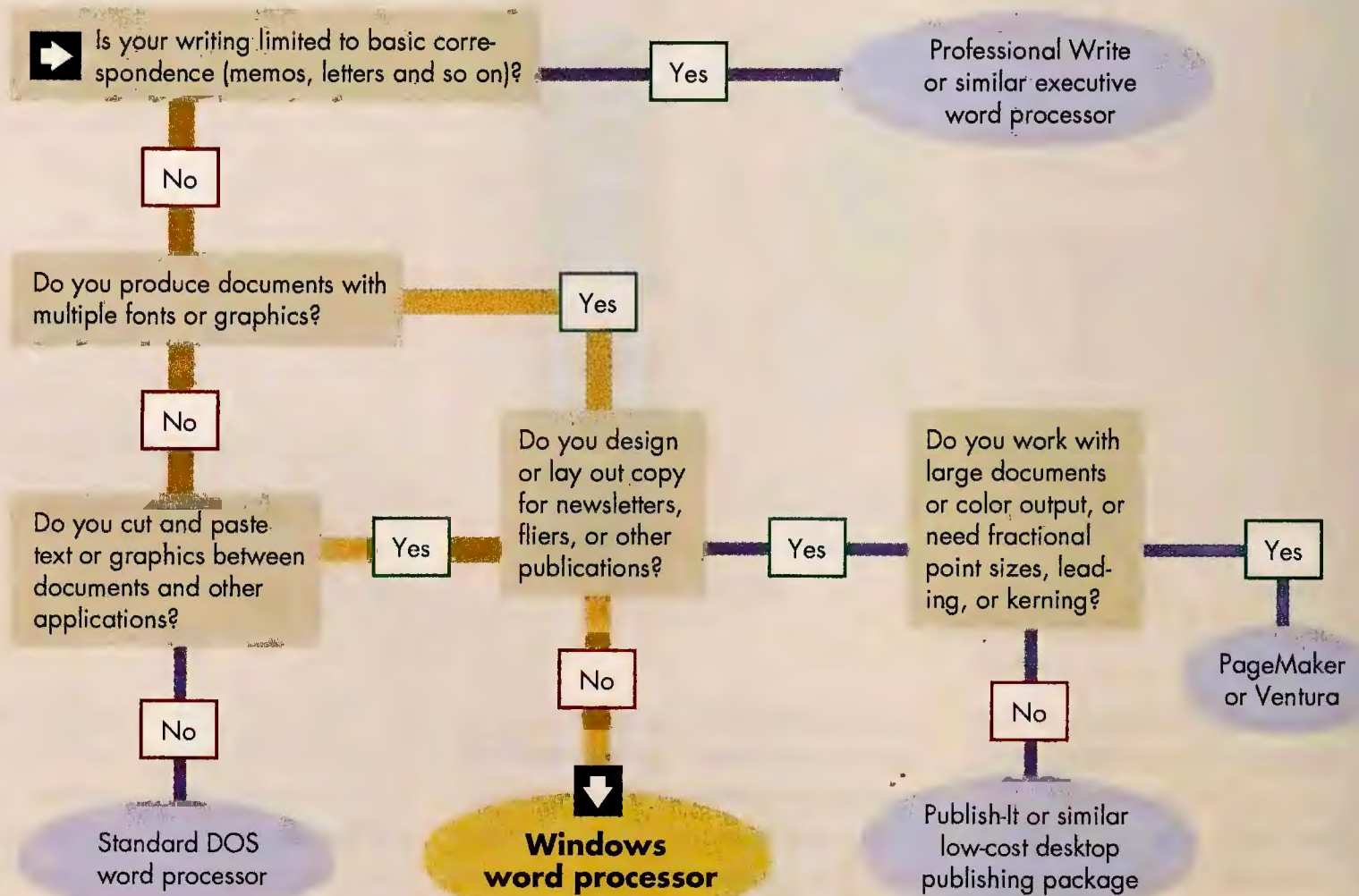
Version 5.5 is much easier to learn and use than version 5.0. It's still character based, but it imitates *Word for Windows*' graphical interface—an icon-based Ribbon and Ruler puts most formatting tasks only a mouse click away. You can open up to nine windows and quickly block text for cut and paste or formatting. There are only a few text import routines, but you can buy an inexpensive conversion utility that imports and exports to all major formats.

New, well-designed dialog boxes simplify formatting, and *Word*'s powerful style sheets are much easier to use. *Word*'s graphics-handling skills are the best among the character-based products—you can even wrap text around

KNOW YOUR OPTIONS

Pick Your Word Processor

Answering a few questions about the word processing you do will point you toward the right tool. Use this decision tree in conjunction with "Five Problems in Search of a Word Processor."



Five Problems in Search of a Word Processor

Which word processor fits your profile? That depends on how you'll use it. Below, look for the situation that best matches your own. That scenario will show you which features and performance issues to watch out for and will help you better interpret the Features Evaluation and PC World Test Report.

Corporate Word Processing Pool

Production is the key here. In most cases, employees will be doing simple, heads-down typing, with document layout decisions made elsewhere. Speed and simplicity are crucial. There are probably more 286 units than 386 PCs in this shop, so *Windows* programs are out.

Key features: Fast editing, excellent mail merge, style sheets, macro language, good network compatibility, group editing tools

Key tests: All

Recommendation: *Word*, *WordPerfect*

Management

Managers need tools with easily accessible features. These users prepare memos, letters, reports, and presentations and frequently have state-of-the-art hardware, so a *Windows* application is appropriate. Managers often include tables and graphics in their documents but usually lack the time to master advanced features.

Key features: Ease of use, excellent page formatting, table editor, spreadsheet links, easy graphics manipulation, charting

Key tests: Tests on complex files

Recommendation: *Ami Pro*



Word Processing Professional

This category includes technical writers, journalists, academic users, editors, and creative writers. They work primarily with relatively unadorned text; powerful layout tools are largely unnecessary, but writing aids are a plus.

Key features: Speed, powerful editing tools, macro language, spelling checker, thesaurus, outliner, multiple-file windowing, file conversion tools, footnotes

Key tests: Tests on simple files

Recommendation: *Word*, *WordPerfect*

Collaborative Work Group

These users work together to prepare large compound documents

designed by a variety of people.

Typically produced in a networked setting, the documents undergo numerous revisions. This scenario makes big demands on word processors, requiring the incorporation of spreadsheet data and charts to create large, complex reports.

Key features: Document summaries/revision tracking, redlining, annotations, outlining, long document features, powerful graphics manipulation, spreadsheet links, charting and table tools

Key tests: Tests on complex files

Recommendation: *Word for Windows*

Light Desktop Publishing

Users in this category prepare brochures, newsletters, and heavily formatted reports. Often gathering graphic and type elements from different sources, they need tools approaching full-scale desktop publishing programs. Because the screen must closely imitate printed output, state-of-the-art equipment is a given here, making a *Windows* program a natural choice.

Key features: Access to multiple fonts, extensive layout tools, frames for text and graphics, table editor, laser/PostScript printer support, file conversions, accurate screen images, spreadsheet links

Key tests: Tests on complex files

Recommendation: *Ami Pro*, *Legacy*

images.

Advanced editing features are also complete. The mail merge and long-document features are powerful, and the outliner, which can include document text and collapse and expand, is outstanding. *Word*'s macro language is

second only to those in *Ami Pro* and *Word for Windows*—too bad it's largely incompatible with version 5.0's.

Academic and legal users who need formula editing, tables, and combined footnotes and endnotes will probably prefer *WordPerfect*. But for most busi-

ness applications where *Windows* isn't an option, *Word 5.5* is the Best Buy. If you're planning to move to *Windows* but don't have the horsepower to make the switch now, *Word 5.5* is a nice stepping-stone, offering the feel of *Windows* without the overhead.

New EasyCAD 2.60 Tops the #1 Rated CAD Software

Number 1 in user satisfaction—PC Week poll.

In competition against other top CAD software for performance, hardware compatibility, ease of use and value, EasyCAD 2.05 handily won the award that counts most—User Satisfaction. Now the best is even better.

You Pay Only \$169.95 for the Program CAD Users Rate Number 1.

PC WORLD said it best, "This easy-to-learn program is blindingly fast, and its flexibility, wealth of features and



excellent user interface match those of professional programs costing thousands of dollars more."

In fact, because it is written entirely in assembly language experts say new EasyCAD 2.60's speed rivals CAD packages costing up to twenty times more. So why spend well over \$2000 to get



what EasyCAD 2.60 can deliver for just \$169.95?

Expanded, productivity-boosting associative dimensioning.

EasyCAD 2.60's associative dimensioning feature allows you to rotate, stretch or change the scale factor of a drawing and all dimensions are instantly updated to reflect the change. This includes ordinate, angle, radius and diameter as well as other dimension formats. You never have to erase or re-enter dimensions.

Whisk through even the largest drawings.

An enhanced memory manager lets you work through the largest drawings faster than ever.



Plot to file means you can store drawings on disk now and send it to the printer later. And version 2.60 supports PostScript printer fonts and line weight controls.

More features, less money—guaranteed.

No other CAD software gives you so many features for so little money (and a 30-day money back guarantee):

Customizeable pull-down menus, script and macro capabilities that automate complex or repetitive tasks, DXF for exchanging drawings and files with other CAD programs and spread sheets. The list goes on.

Call 1(800)874-4028 now for more information, plus the name of your nearest dealer. If you already own EasyCAD, ask about our special 2.60 upgrade offer.



EVOLUTION
EasyCAD 2
COMPUTING

437 S. 48th St., Ste. 106
Tempe, AZ 85281-9936
1(800)874-4028

© 1991 Evolution Computing
EasyCAD2 is a registered trademark of Evolution Computing

as *Ami Pro*, nor is it as clever in its handling of graphics. Still, it's an excellent value for a variety of needs, and it's especially well suited for corporate work groups where group editing tools, macros, and templates are required for customization.

MultiMate 4.0

PROS: Grammar checker, built-in E-mail

CONS: Poor font support, slowest in roundup, confusing interface, no mouse support, weak formatting tools, no macros, no style sheets

Harking back to an age of dedicated word processors and daisy wheel printers, Ashton-Tate's *MultiMate* seems anachronistic. Version 4.0 attempts

modernization with pulldown menus, laser printer support, page preview, and graphics integration, and it's the only program in this review to give you grammar-checking and LAN E-mail modules. Yet the new features are often poorly implemented, and performance is by far the slowest in the roundup. *Word* and *WordPerfect* are much better choices.

Unlike most modern word processors, *MultiMate* makes you edit one page at a time—inserting text on a full page doesn't reformat the document. Editing is a slow, multikeystroke process, with prompts like 'Copy what?' and 'To where?' interrupting your editing. The lack of mouse support, context-sensitive help, and windowing doesn't help.

Formatting is difficult—there are no style sheets, and *MultiMate* uses confusing formatting codes. Worse, there are no shortcuts for using boldface or italic type—instead, you must change fonts. To print on LaserJet or PostScript printers, you choose a special command (not Print) and fill out a lengthy dialog box.

To integrate graphics, you must use a separate add-on utility, and options are limited. While you can import numerous formats and even draw simple images, text doesn't wrap around graphics, and it's difficult to position images. Other features are also lacking—there's no table editor, outliner, or macro language.

MultiMate does have its unique benefits. It includes the superb *Grammatik*

Windows Word Processing—Thumbs Up or Thumbs Down?



BRAD BOWER

Thumbs up:

"I've been a diehard *WordPerfect* user for years, but I'm switching to *Word* for Windows. It's much easier to use because you don't have to remember commands or look at a template—all you do is select an icon. The structure is more logical—you select something and then you tell the program what to do with it. That can be difficult at first for DOS veterans, but it's faster for new users. Also, the mouse makes it much easier to cut and paste text, and with the Clipboard, it's easier to link up with my spreadsheet. If I'm copying a range from *Excel*, I don't have to write down the range first—I can see the spreadsheet in another window and mark the range on screen. I can't wait to see *WordPerfect for Windows*." —Nancy Louis, PC trainer and consultant, Newtown Square, Pennsylvania

Thumbs down:

"I've tried using Windows 3.0 on a 386 with 4MB of RAM, and I still don't care for it. Jumping back and forth between the mouse and the keyboard gets irritating—I don't like having to take my hand off the keyboard in order to use the mouse. I can move around faster by using arrow keys than most people can with a mouse—and once you know what you're doing, shortcut keys are faster. Also, we're bumping into technical problems with Windows 3.0—it tends to lock up when you try to move large parts of a document, and we get unrecoverable application errors all the time." —Dann Sandell, business analyst, Minneapolis, Minnesota



MARK LUJENBURG

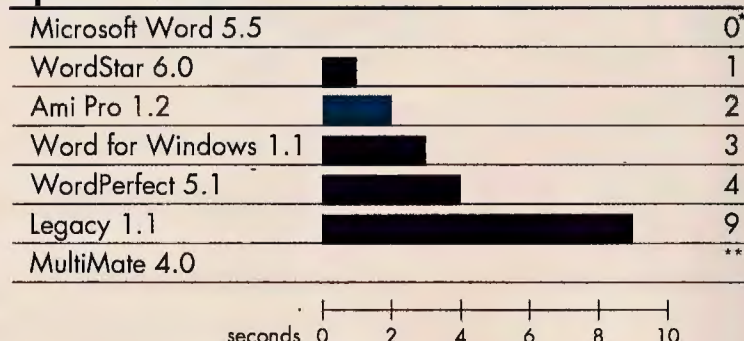
PC WORLD TEST REPORT

Word and WordPerfect Zip Past Windows Rivals

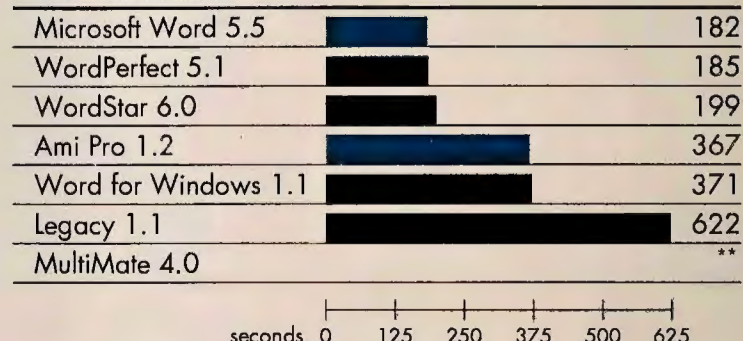
Ami Pro and Word for Windows are surprisingly fast (except in printing), but character-based Word and WordPerfect still have the performance edge.

■ Best Buy

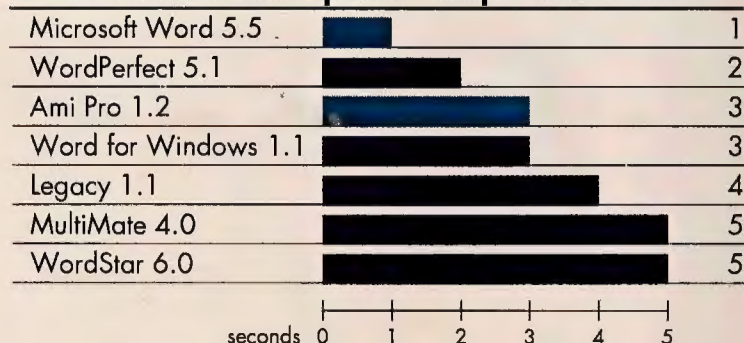
Open document



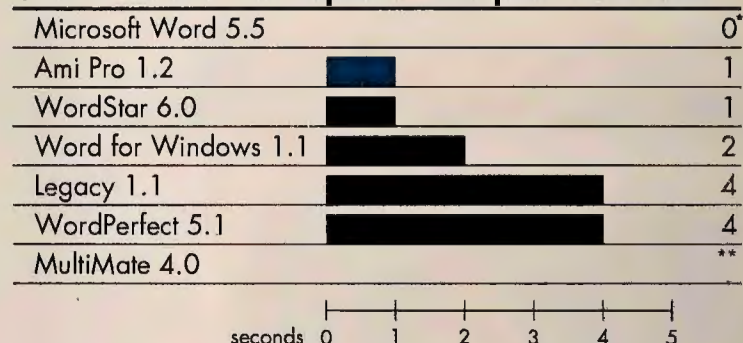
Print document



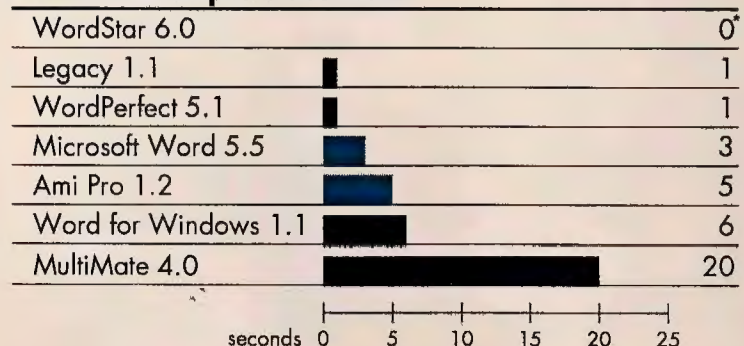
Global search and replace—simple document



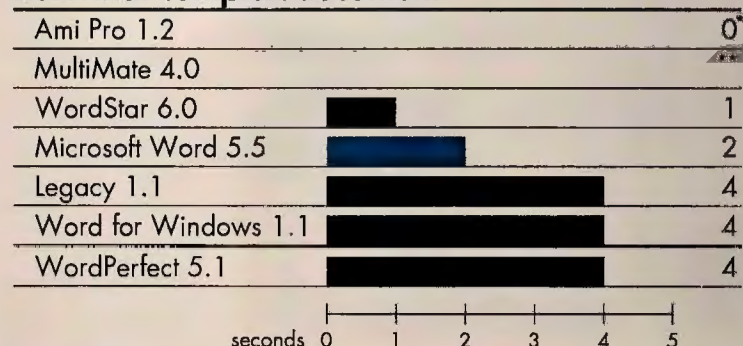
Global search and replace—complex document



Reformat simple document



Reformat complex document



*Elapsed time was less than 1 second.

**MultiMate 4.0 is unable to handle proportionally spaced text. As a result, it couldn't open our complex document and was unable to complete the test.

Methodology

All tests were performed on a 20-MHz Compaq Deskpro 386/20e with 2MB RAM and a 110MB hard disk. For tests of Windows 3.0 products, we included a mouse and ran the tests in standard mode. For non-Windows products, we used Quarterdeck's QEMM 5.11 to convert 1MB of extended RAM into expanded memory. The products were benchmarked using a simple, 19-page text-only document and a 4½-page complex document containing subheads, a 1-2-3 2.2 worksheet table, a monochrome PCX image, and a Lotus PIC graph. Simple document tests were printed on a Hewlett-Packard LaserJet Series II; complex documents used a QMS PS810 PostScript printer. We tested products offering more than one editing mode in their default mode.

Open document

We measure the time from initiation of the command until the complex document is open.

Print document

We measure the time to print the complex document from initiation of the command until the last page is ejected from the printer.

Global search and replace—simple document

We measure the time spent searching for 104 incidences of a six-letter word and replacing with a seven-letter word (from initiation of the command until cursor control is returned).

Global search and replace—complex document

We measure the time spent searching for 75 incidences of a seven-letter word and replacing with a ten-letter word (from initiation of the command until cursor control is returned).

Reformat simple document

We enlarge the top margin from 1 inch to 1½ inches and measure the time necessary to reformat.

Reformat complex document

We change the base font for the body text from Palatino to Times Roman and, if necessary, initiate a reformat command. The benchmark is taken only on the time spent reformatting.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

It's probably because they want to avoid comparison. Next to our SyncMaster™4 the differences become very apparent. Our flat screen EVGA monitor lets you have a full inch more than NEC's Multisync 4D, yet it sells for the same price.

With its 17" display, the SyncMaster™4 gives you more space to create in, from larger windows to more legible text. And the flat surface screen does it all without the strain-producing glare you get from round face displays like the Multisync 4D. When

you include its additional up front controls for easy access, our SyncMaster™4 is the clear choice.

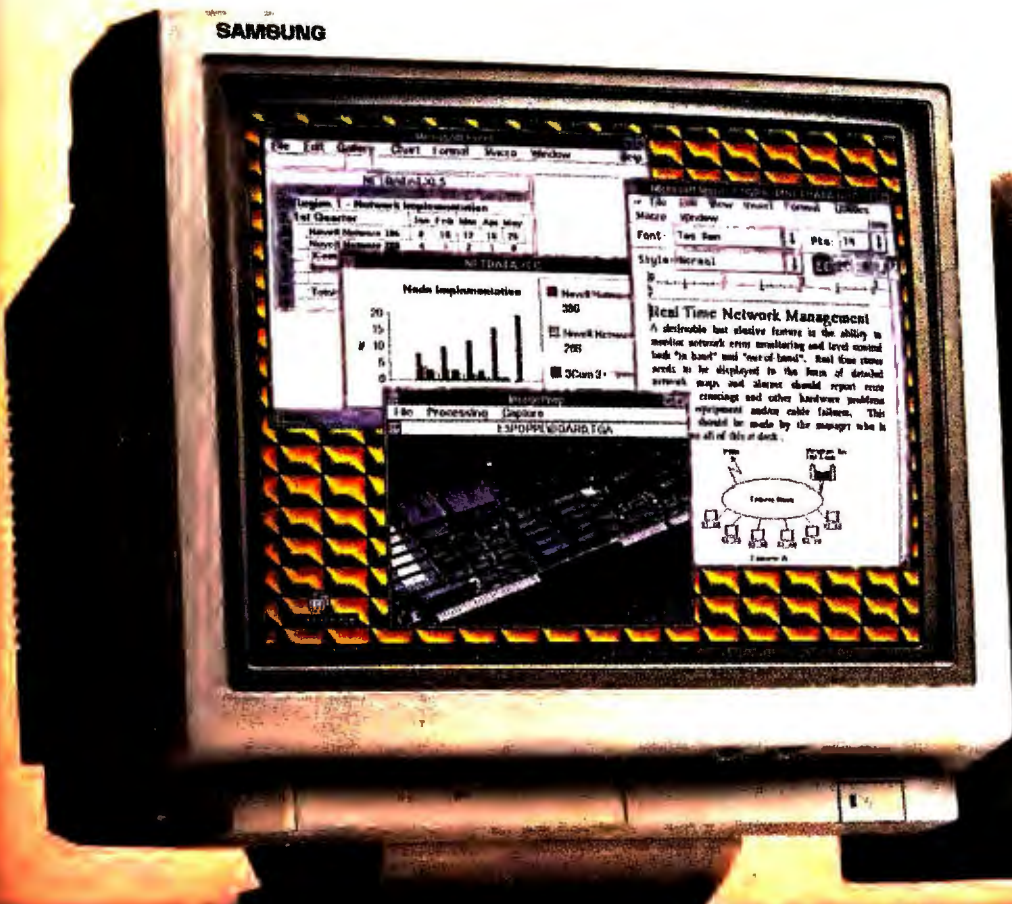
And the SyncMaster™4 is backed by Samsung, the world's largest monitor manufacturer and the 20th largest corporation worldwide.

So if you want to see your EVGA graphics come to life, look at a Samsung. Then call 1-800-624-8999, extension 85T for your nearest dealer.

It won't be hard to tell the difference.

	<i>Samsung SyncMaster 4</i>	<i>NEC Multisync 4D</i>
<i>CRT</i>		
<i>Diagonal size</i>	<i>17 inches</i>	<i>16 inches</i>
<i>Maximum Display size</i>	<i>300mm x 224mm (HxV)</i>	<i>290mm x 217mm (HxV)</i>
<i>Screen type</i>	<i>Flat face</i>	<i>Round face</i>
<i>Cabinet depth</i>	<i>453mm</i>	<i>475mm</i>
<i>Controls</i>	<i>On/off up front Degauss up front pincusion up front</i>	<i>On/off recessed Degauss in back None</i>
<i>Modes</i>	<i>Supports EGA</i>	<i>None</i>
<i>Retail price</i>	<i>\$1499</i>	<i>\$1499</i>

Now you know why they don't show screen graphics in their ads.



Samsung 17" flat screen SyncMaster 4

NEC 16" round screen Multisync 4D

Unretouched Photography.



See us at
Booth Number
5309



Technology that works for life.

Product names are Trademarks or Registered Trademarks of their respective companies. Copyright 1991 Samsung Information Systems America, Inc.

Circle 265 on reader service card

You Take Care Of Business.



New ACCPAC PLUS
Version 6.0 Now Available

Introducing the accounting software that does just what you need it to do.

Everything.

ACCPAC® accounting software was designed specifically for businesses like yours—so you can spend less time balancing your books and more time building your business.

No matter what you need to do—send an invoice, pay a bill, write a paycheck—ACCPAC provides a quick and simple way to do it. And it's so easy to learn you'll have it up and running in minutes.

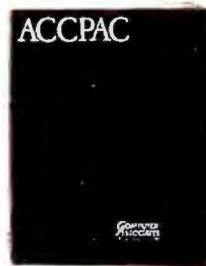
At the same time, the ACCPAC family offers more advanced and comprehensive accounting packages that your company can easily upgrade to as your business grows.

That's why today, ACCPAC is the best-selling accounting software in the U.S. and Canada. All kinds of businesses in every type of industry trust their books to ACCPAC.

So should you.

Ask for ACCPAC BEDFORD®, ACCPAC BPI® and ACCPAC PLUS at your local software dealer or call 1-800-531-5236.

And then take care of business. We'll take care of your books.



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.



We'll Take Care Of Your Books.

ACCPAC BEDFORD INTEGRATED ACCOUNTING, ACCPAC BPI and ACCPAC PLUS run on PC/DO.
© 1990 Computer Associates International, Inc.; 711 Stewart Avenue, Garden City, NY 11530-478

Circle 42 on reader service card

EXECUTIVE SUMMARY

Word Processing Best Buys for Windows and DOS

Ami Pro and Word edge out Word for Windows and WordPerfect.

These seven top word processors can handle anything from LAN-based group edits to nicely formatted newsletters. The Windows products make polished output a breeze, but they need powerful hardware to run at a decent clip.



Ami Pro takes Best Buy overall—it provides the friendliest interface, excellent editing and formatting, and superb graphics manipulation. **Word for Windows** can't match **Ami's** effortless icons, but it offers unsurpassed customization and automation to work groups. Ironically, Best Buy **Word 5.5** boasts better ease of use than **Word for Windows**, along with terrific editing and long-document features. The ever-popular **WordPerfect** nearly matches **Word 5.5** feature for feature, but **Word 5.5** has the better interface.

	1.2 Ami Pro	1.1 Legacy	Microsoft Word 5.5	Microsoft Word for Windows 1.1	4.0 MultiMate	5.1 WordPerfect	6.0 WordStar
Ease of use	Excellent	Fair	Excellent	Good	Poor	Good	Fair
Editing	Excellent	Good	Excellent	Excellent	Poor	Excellent	Fair
Formatting	Excellent	Excellent	Good	Excellent	Fair	Good	Fair
Customization and automation	Good	Fair	Good	Excellent	Poor	Excellent	Fair
Performance	Good	Fair	Excellent	Good	Poor	Excellent	Good
Graphics	Excellent	Excellent	Good	Good	Fair	Good	Fair
Overall value	Excellent	Good	Excellent	Excellent	Poor	Excellent	Fair
	BEST BUY		BEST BUY				
Reader service no.	609	610	611	612	613	614	615

How we rate word processors
Our evaluations are based on information in the Features Evaluation and PC World Test Report, combined with our opinions of quality, reliability, ease of use, and suitability for word processing tasks.

Ease of use is critical in these much-used applications. To earn an Excellent rating, a program must have a consistent interface that makes it easy to edit and format text and manipulate graphics. It must offer mouse support, full menus and shortcut keystrokes, icon shortcuts, context-sensitive help, unlimited technical support, and good manuals.

Editing tools should be fast and intuitive. An Excellent rating here demands fast editing commands, easy cut and paste, text selection with

the mouse, an undo command, and the ability to cut and paste between multiple documents. A program must also offer one-step spell checking, a good thesaurus, and an integrated outline; deliver solid long-document features; and include capable group editing tools.

Customization and automation covers features that let you personalize the program and help you integrate the package with other business applications. To win on Excellent, the program should provide a programmable macro language and a macro learn mode. It should also offer a table editor and powerful, conditional mail merge.

Formatting tools are key to preparing today's complex documents. To be rated Excellent in this category, a program must offer a complete selection of formatting options, multiple columns,

style sheets for quick formatting, easy selection of fonts, and an editing screen display that mimics the printed page.

Performance is based on PC World Test Center benchmarks. To earn an Excellent mark, a program must provide fast speeds in all six tests.

Graphics are becoming increasingly crucial. Here, an Excellent rating means that a program offers a frame-based approach to formatting graphics and permits scaling and cropping of images. Extra points are given for a charting module and drawing tools.

Overall value weighs all of the categories above plus price and gives extra weight to ease of use, editing, and formatting.

IV grammar and style checker, and the program excels at group editing—there's an excellent document summary and good redlining, annotations, and revision tracking. Network members can use a built-in MHS-compatible E-mail program. Unfortunately, the network version prohibits a second person from browsing files that are in use.

All told, even current *MultiMate* users should consider switching.

WordPerfect 5.1

- PROS:** Table and equation editors, excellent customer support, extensive printer and font support
- CONS:** Fairly difficult to learn

WordPerfect is an industry standard—and consequently, it's easy to overlook a few of its flaws. Cautious buyers can rest assured they won't be left out on a limb.

WordPerfect is bound to be supported for years to come, and you'll never have to go far to find knowledgeable users and add-on utilities. It's still not as easy to use as *Word*, but you'll find compensation in friendly, toll-free technical support, fast performance, and top-notch features. *WordPerfect* is an excellent all-around word processor, and it's especially fitting for academic and legal users.

(continues)

Now you can upgrade without upgrading

An unimpressive report is something you'll never have to create again.

Align titles or text across a range of columns—left, right, or center—with one simple command.

You can wrap text around graphs automatically.

Add freehand drawings or symbols to call attention to critical data.

A feature that only 1-2-3 offers to DOS spreadsheet users is the ability to embed as many "live" graphs on a worksheet as you'd like.

Improved, 3D-effect graphs can add even more impact to your report.

Mix bold, italics, underlines, colors, and typefaces to create over 100 text style combinations—more than any other spreadsheet.

Thanks to Auto Compress, you can easily make an entire report fit on one page.

WeCycle Waste Corporation The Materials Research Group Recommendation: FOCUS: ALUMINUM

-- Research Group provides the
... continue to

This stu
basis for
expand :
next 6
proport
during

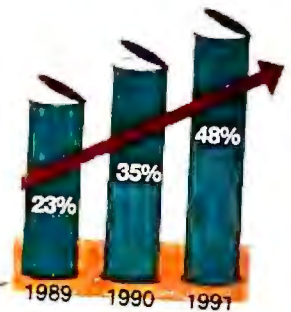


WeCycle Waste Corporation

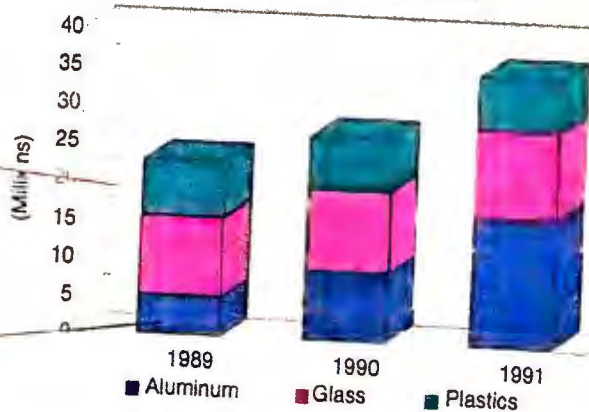
The Materials Research Group Recommendation:

FOCUS Aluminum

This study conducted by the Materials Research Group provides the following recent recommendation that WeCycle continue to expand its aluminum recycling capacity by another 70% over the next 6 years. The graph to the right shows the increasing proportion of business provided by the aluminum division during the past three years, now approximately half of all revenues. It is our opinion that, at this rate of growth, aluminum recycling will continue to offer our company its greatest opportunity for expansion over the next decade, and certainly into the 21st century.



Gross Revenues by Product



Glass and Plastics

As can be inferred from the graph to the left, glass and plastics recycling has been holding steady throughout this same period, and has consequently become a smaller proportion of our overall sources of revenue.

Although this group would strongly recommend that WeCycle Waste Corporation do all that is necessary to increase its activities in these areas, our studies have shown that aluminum will become increasingly the material of choice in the shipping, heavy manufacturing and container industries.

Aluminum

It is our opinion that sources of aluminum products will be pressed close to their limits over the next decade.

Therefore, we propose that WeCycle Waste Corporation invest in more aluminum capacity during the next five years in order to take the best advantage of this increasing market demand.

WECYCLE PRODUCT	1989	1990	1991
Aluminum			
East	2,323,426	4,019,527	7,315,539
Central	1,372,347	2,374,160	4,320,972
West	1,726,492	2,986,831	5,436,033
Total	5,422,265	9,380,518	17,072,544
Glass			
East	2,496,721	2,567,821	2,798,925
Central	3,598,757	3,217,693	3,507,285
West	4,217,635	4,471,294	4,873,710
Total	10,313,113	10,256,808	11,179,920
Plastics			
East	2,897,493	3,171,243	3,234,668
Central	1,873,938	1,823,697	1,860,171
West	2,378,942	1,967,421	2,006,769
Total	7,150,373	6,962,361	7,101,608

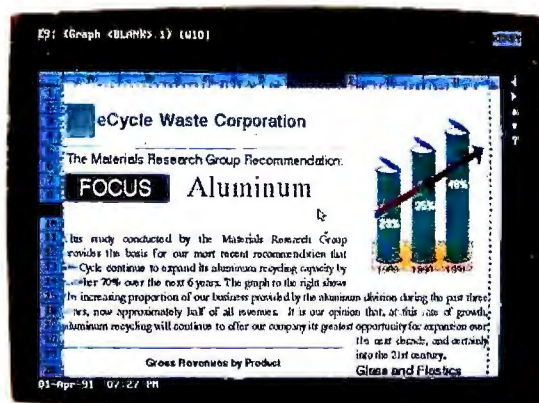
Make your spreadsheet sing your hardware.

There's a lot to like about the new Lotus® 1-2-3® Release 2.3.

For starters, it's not just a graphical spreadsheet. It's a fast, graphical spreadsheet for DOS. It's easy to use. And it works as well on an older XT with just 512K of memory as it does on the newest 486 machine.

It also shares many features in common with our powerful 3D spreadsheet, Release 3.1. Including its superb spreadsheet formatting and publishing capabilities and full mouse support. Along with its popular Auto Compress feature that gives you a trouble-free way of making larger worksheets print on a single page.

We've also added new features you won't find in other spreadsheets. Like the



With its WYSIWYG graphical environment, you can do all your formatting "live" on screen.

Viewer (based on Lotus Magellan® technology) which helps you find the file you want before retrieving it. And a very helpful Auditor that simplifies the job of documenting and analyzing complex worksheet logic.

Of course, you won't just like what Release 2.3 does. You'll like how it feels.

It's quick and smooth. With a WYSIWYG (what-you-see-is-what-you-get) graphical environment that lets you format text, data, and graphics "live" on screen. Plus, what you see on screen is what you'll get when you print. With the mouse, you can execute commands, highlight cells or ranges, open dialog boxes, place and size graphs, change type styles, fonts and point sizes. All with unparalleled speed and ease.

What's more, Release 2.3 gives you a wide range of printing and reporting capabilities. Including the capacity to place as many live graphs on a worksheet as you'd like.

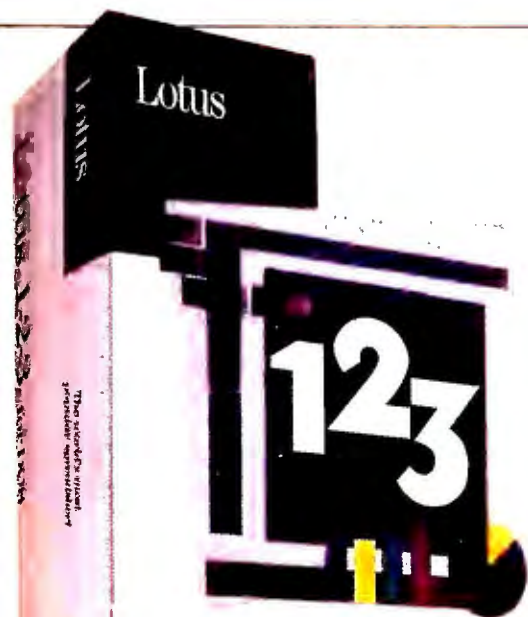
Along with 96 type style combinations, new 3D-effect graphs, drawing and annotation tools, and the most font support, choices of colors and shading available.

Compatibility? As with any 1-2-3 product, it's no problem. Because Release 2.3 will read all of the files you've created on previous versions of 1-2-3, including files you've formatted using Allways™ and Impress™. So you'll preserve all your work, as well as your training.

For more information about the new Release 2.3 or for upgrade details, call us today at 1-800-TRADE-UP, ext. 1112.

What's New In Lotus 1-2-3 Release 2.3.

- A WYSIWYG graphical environment with live on-screen formatting
- Lotus Magellan viewer technology for fast file pre-viewing, retrieving and linking...all without leaving your active worksheet
- More graph types, including 3D-effect graphs and graph annotation capabilities
- Auto Compress, for a trouble-free way of making larger worksheets print on single page
- Dialog Boxes for an easier, more interactive way of working
- Text-editing for easy on-sheet word processing, including automatic word wrap, even around graphs
- The Auditor for documenting or highlighting your spreadsheet logic
- Improved memory management for building larger worksheets up to 12 MB in size
- New printer drivers that support all leading laser and dot-matrix printers
- Context-sensitive Help and an interactive tutorial



Lotus 1-2-3

The world's most popular spreadsheet

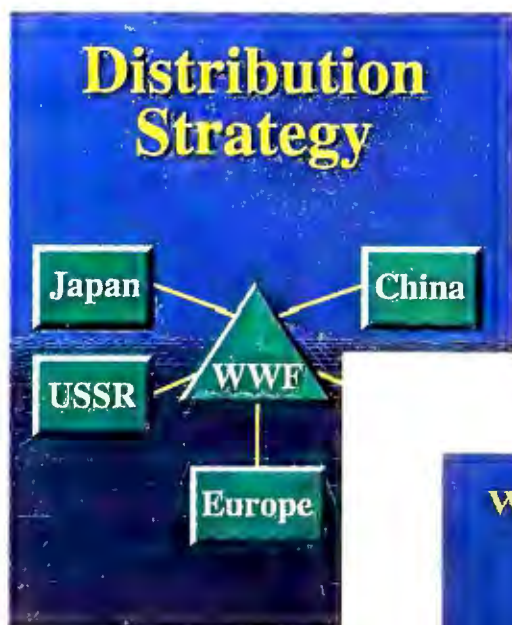


© Copyright 1991 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3, and Magellan are registered trademarks and Impress and Allways are trademarks of Lotus.

The new Lotus 1-2-3 for DOS

Lotus

Introducing the new It will create your next Not to mention



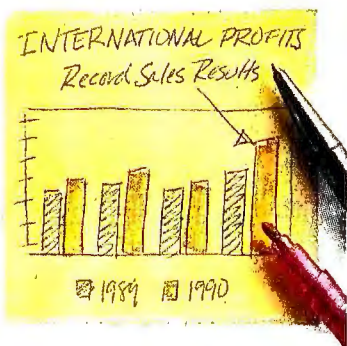
Automated Smart Features make it easier than ever to produce everything from simple word charts to impressive flow charts, diagrams and other business drawings.

The new Freelance Graphics for DOS offers a WYSIWYG (what-you-see-is-what-you-get) environment where you work with actual colors and fonts while you're creating your graphics. And with the mouse you can do it all in record time.

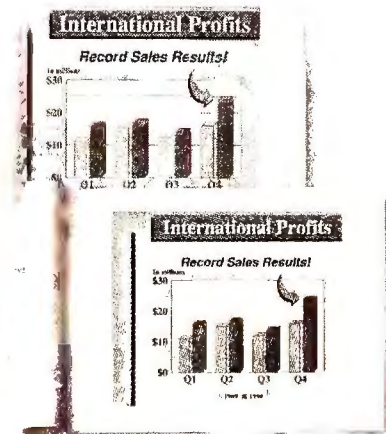
Freelance Graphics. presentation beautifully. automatically.

Now there's an even better version of Freelance® Plus, the award-winning graphics program praised by *PC Magazine*, *PC World* and *Software Digest*. It's so improved, in fact, we even changed its name. Introducing Freelance Graphics™ 4.0. The best presentation graphics program for DOS.

For starters, we've added a graphical WYSIWYG environment. Which means you'll work with actual colors and fonts while creating your graphics. Plus, you'll know what your output



Only Freelance Graphics, with its unique automated Smart Features, can turn your rough ideas into a smooth presentation this easily.



will look like before you print.

And with the mouse you'll do it all—from executing menu commands to moving a chart—in record time.

Yet what's really unique about the new Freelance Graphics is its *Smart Features*. Unlike other DOS graphics programs, its hard-working *Smart Features* automate

the process of turning your ideas into persuasive presentations. So while you're concentrating on what you want to say, Freelance Graphics will take care of how it looks. Whether you're creating slides, overheads, or hard copy, in color or black-and-white.

Here are a few of its *Smart Features*:

Portfolio, a built-in presentation manager, helps you organize and prepare your presentation; a Text Chart Outliner, complete with a spell-checker, creates stacks of text charts in seconds; Auto-charting makes weekly or monthly reporting a snap by printing hundreds of up-to-date charts with a single command; Smart Chart Update automatically recomposes a chart whenever the data changes... even if you've added annotations or symbols; and over 1,000 Pre-drawn Symbols and Design Backgrounds.

All of which means you can now create an incredibly impressive presentation. With incredible speed and ease.

The new Freelance Graphics.

It could actually have you looking forward to your next presentation.

Upgrade to Freelance Graphics now and you won't just save time. You'll save money.

Right now we're offering—direct from Lotus®—a price of just \$99.00² for anyone upgrading from an earlier version of Lotus Freelance or Graphwriter, or any other eligible³ graphics program, including Harvard Graphics.

Plus, you'll be covered by the Lotus Technology Guarantee. Which means a guaranteed price of just \$49.00 on our upcoming Freelance Graphics for Windows™ product.

For information or to purchase your upgrade directly from Lotus, call us⁴. Please have your credit card and eligible product package ready.

1-800-TRADE UP ext. 1100.

Freelance Graphics for DOS



For two consecutive years, Software Digest awarded Freelance Plus its highest-rating. Now with Freelance Graphics, we've made the best even better.

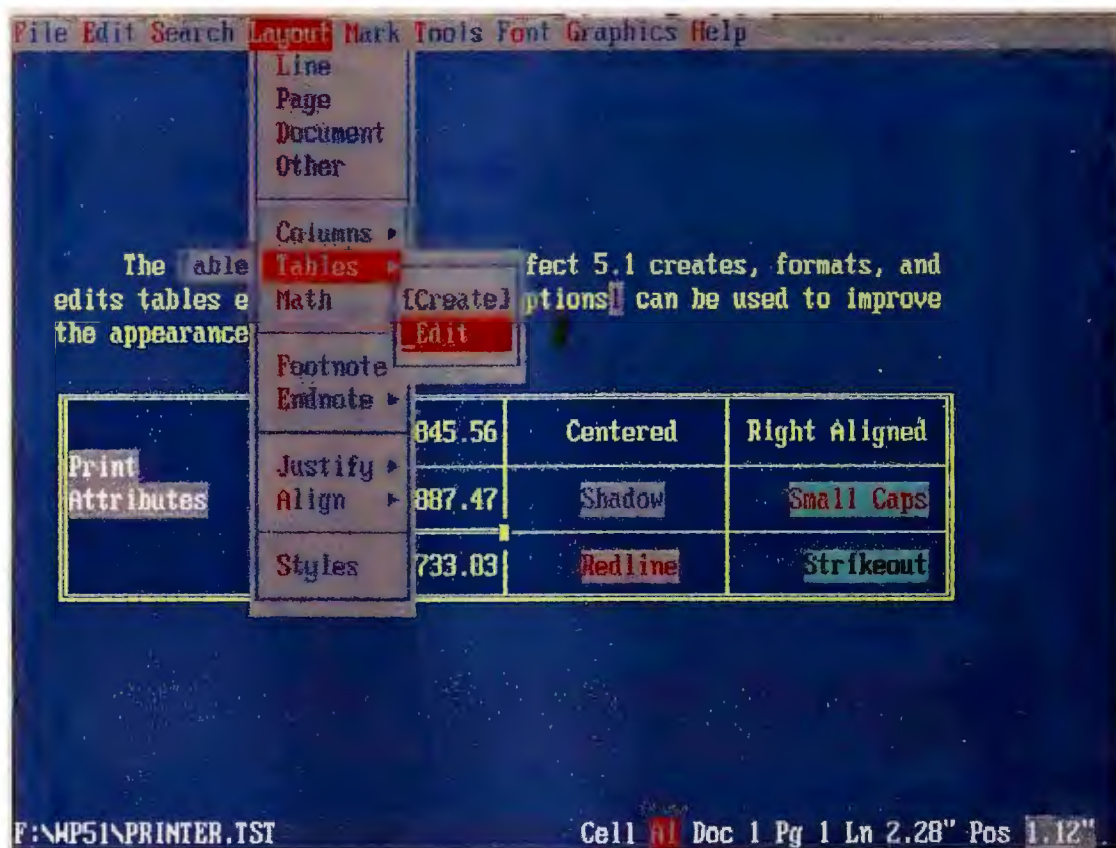
¹Developed by Symantec Corporation, especially for Freelance Graphics. ²Offer expires September 30, 1991, after which the Lotus direct upgrade price will be \$119. ³Eligible products for upgrade offer include all versions of the following products: Lotus Freelance Plus or Graphwriter, Harvard Graphics, DrawPerfect, Applause II/Draw Applause, Graph Plus, Charisma, Microsoft Chart, Pixie, Gem Series, ChartMaster, Diagram Master. ⁴Freelance Graphics Upgrade also available at participating Lotus resellers.

Freelance Graphics for DOS

Lotus

With version 5.1's pulldown menus and mouse support, previously buried tools become more accessible. Improved ease of use is apparent in everything from editing, where the mouse supplements cumbersome block-marking commands, to complex formatting operations. Yet once new users get past the first layer of the optional pulldown menus, they may puzzle over the less-than-intuitive dialog screens. Other annoyances: You can split the screen, but you can't load the same document into both parts. Also, *WordPerfect* still pushes text off the screen when you insert words, waiting until you move the cursor up or down before it reformats.

Bountiful formatting features include adjustable-width columns and graphics integration. Group workers will profit from top-notch redlining tools, plus a convenient tool for assembling long documents from individual files. *WordPerfect* is the only DOS-based package to offer both equation and table editors—the latter makes it easy to spice up imported spreadsheets with lines and shading. The program's custom keyboards aren't available in *Word 5.5*, and there's an excellent spell-



WordPerfect 5.1's pulldown menus make it far easier to access once-buried features. The new table editor lets you add shading and lines to imported spreadsheets and text tables.

ing checker. The extensive macro language, unlike *Word 5.5*'s, doesn't let you edit macros as text.

Thanks to its exhaustive feature set and superb technical support, *WordPerfect 5.1* is an excellent value. But *Word 5.5*'s simpler interface gives it the edge for most users.

WordStar 6.0

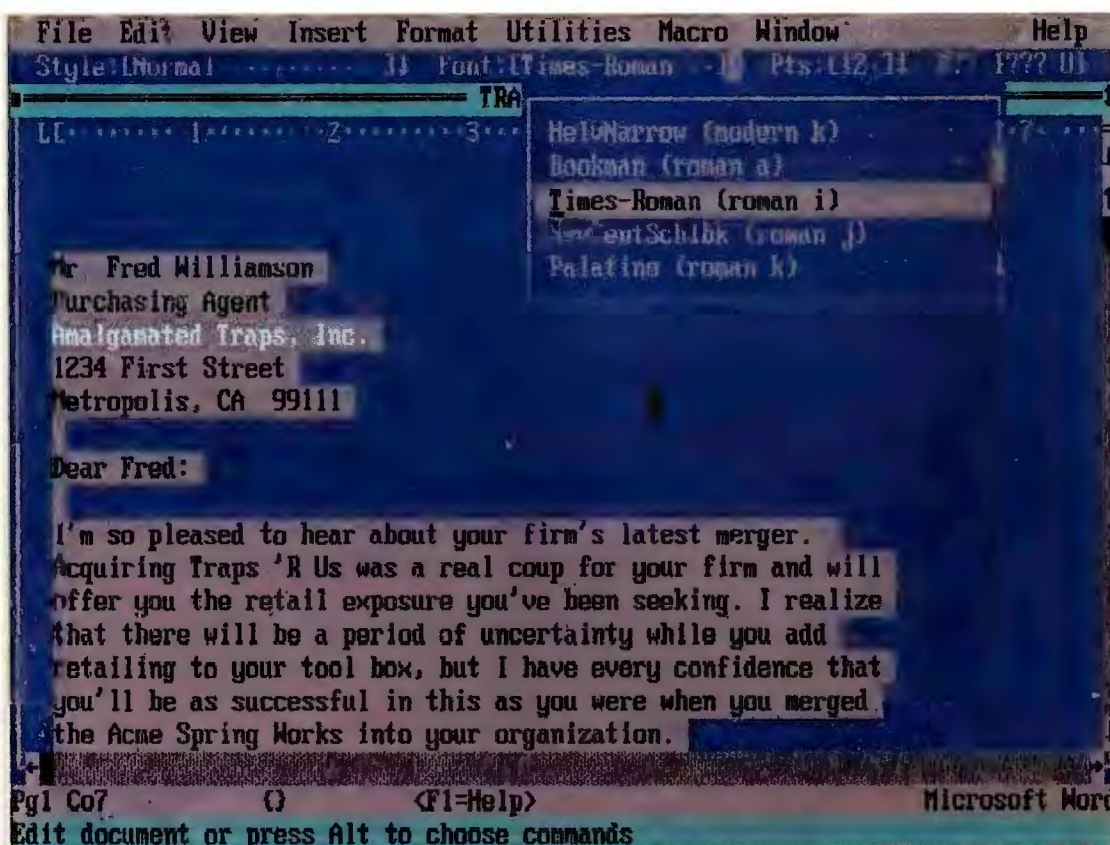
PROS: Fast editing, multipage preview, outliner, telecommunications and data management modules

CONS: Difficult formatting, no mouse support, weak macros, poor graphics integration

Like *MultiMate*, *WordStar 6.0* has its roots deep in the past. Unlike *MultiMate*, it's relatively up-to-date, and it's a possibility if your formatting needs are slim and you're looking for a fast editor. Overall, however, *WordStar*'s primitive formatting interface makes it only a fair value.

WordStar's popularity is based on editing speed, especially for touch typists who hate taking their hands off the home row—most cursor movements and commands can be given with <Ctrl>-key combinations. One nice touch for professional writers: With a single command, you can write a block of text directly into a new file without having to open a window.

New users will appreciate pulldown menus, but the lack of either mouse support or single-key menu commands is frustrating. Marking or formatting a block requires a command at the begin-



Bringing Word for Windows interface innovations into the character-based world, Best Buy Word 5.5 makes font selection just a mouse click away.

How to get your life organized in 40 minutes, guaranteed.

(30 minutes if you skip ahead to the 800 number.)



That gives you
ten minutes

pads, and slips of paper that littered my desk
are gone...I just put them into Agenda.'

—Grant Tipler, Manager, Corporate
Banking, Head Office, The
Royal Bank of Canada

to read this ad. Probably
the most luxurious deadline you've had in months.

Which is why you should buy new Lotus®
Agenda® Release 2.0. It's the personal
information manager for your PC or
laptop that will help you get
better control of infor-
mation like appoint-
ments, personnel,
figures, projects,
stray thoughts and
more, in only 30 minutes.

Just type it all in and
Agenda sorts it out, grouping
relevant information in an organized, easy-

to-read format.

Choose from the
ready-to-use starter
applications, including
the Activities Planner,
People Manager, Account
Manager or Information
Sifter. Or

Lotus Agenda



"The first program...
that allows me to easily
enter information, file it, and
then use it." —Corson Ellis III,
President, Kessler-Ellis Products

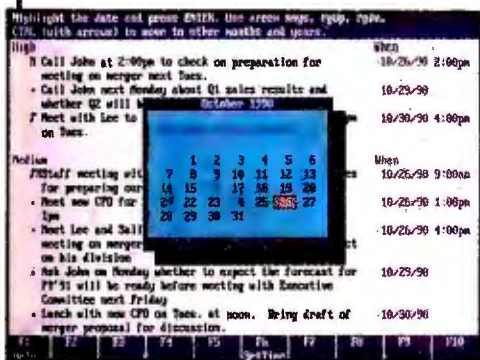
"The two most important things in manage-
ment are follow-up and follow-through. Agenda is
essential for both." —Randy Fields, Chairman,
Mrs. Fields, Inc.

To see for

yourself what Agenda
can do, send someone
to the nearest software
store to buy it. We're so sure
you'll like it, we back it with a 30-day money-
back guarantee. Or, for a free demo disk,
call **1-800-842-8455, extension 929.**

Finally, a word to every-
one who read this ad all the
way from the beginning.

Your ten minutes are about up. Get
back to work.



Lotus Agenda 2.0 is so easy to work with,
you'll start getting better control of your
professional life within 30 minutes.

customize applications for more spec-
ific needs. If it all sounds too good to
be true, consider what these Agenda
users have to say: "All of those notes,

Introducing New Lotus Agenda 2.0

© 1990 Lotus Development Corporation. All rights reserved. Lotus and Agenda are registered trademarks of Lotus Development Corporation.



ning and end of each block. The editing screen is cluttered with control characters and confusing dot commands, which are required for most formatting tasks. Style sheets are limited, and you can use only one style per file. The page preview, however, is the best in the character-based group, letting you display several pages at a time.

Printer support is excellent, as is footnoting, and the mail merge matches *Word for Windows*' for top billing. But *WordStar* has no table editor, line drawing, or programmable macros.

WordStar ships with a lot of extras, but they're poorly integrated—each module has its own interface and command structure. To integrate graphics, you must turn to a separate add-on product, and there are no graphics conversions. A capable single-user flat-file data manager is helpful in mail merge, but the external telecommunications module lacks a dialing directory.

Loyal *WordStar* users with 286 or 8088 hardware will profit from an upgrade to version 6.0, but for everyone

else, *Word 5.5* or *WordPerfect 5.1* makes more sense.

More Windows On the Horizon

How do you know if *Windows* makes sense for you? If everyone used *Windows 3.0* on a suitable platform, the answer would be simple. Most users who try *Ami Pro* or *Word for Windows* like what they see: Their documents look better, and complicated formatting jobs such as setting fonts go much faster.

Best Buy *Ami Pro* is ideal for most *Windows* users, especially those who work with graphics. *Word 5.5*'s easy new interface and powerful tools make it a Best Buy if you prefer (or are stuck with) plain old DOS.

Our two runners-up, *Word for Windows* and *WordPerfect*, came quite close to winning Best Buys. *Word for Windows* beats out *Ami Pro* if group editing and customization are crucial, and *WordPerfect* bests *Word* for users who need to integrate tables or organize long documents.

If you don't find your dream word

processor here, hot new packages are on the way. Soon after you read this, *WordPerfect for Windows* should be shipping, as well as a *Windows* product from Symantec. Later this year, you can look for a *Windows* version of IBM's *Signature*. Based on *XyWrite* (and replacing *DisplayWrite*), the DOS-based *Signature* should be shipping when you read this. The latest trend is the spin-off: Software Publishing has weighed in with *Professional Write Plus for Windows*, which is based on *Ami Pro*, and *WordStar for Windows* will be shipping later this year.

The word processing market is clearly heating up again after years of stability. And almost all the action is happening with *Windows*. ☹

George Campbell, who writes the column Words into Print, is a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 902.

WHERE TO BUY

Ami Pro 1.2

Lotus Development Corp.
Word Processing Division
5600 Glenridge Dr.
#300
Atlanta, GA 30342
800/831-9679
LIST PRICE: \$495;
\$199 for network nodes
REQUIREMENTS: AT or compatible, 1MB RAM, DOS 3.1 or later version, hard disk, graphics, Windows 2.x or later version
TECHNICAL SUPPORT: unlimited, toll number, M-F 8-7
OTHER SUPPORT: CompuServe, fax support, corporate extended support
Reader service no. 609

Legacy 1.1

NBI, Inc.
3375 Mitchell Ln.

P.O. Box 9001
Boulder, CO 80301
800/624-1111
LIST PRICE: \$495
REQUIREMENTS: AT or compatible, 1MB RAM, DOS 3.2 or later version, hard disk, graphics, Windows 3.0
TECHNICAL SUPPORT: unlimited, toll-free, M-F 7-5
OTHER SUPPORT: CompuServe, fax support
Reader service no. 610

Microsoft Word 5.5

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-6399
800/426-9400
LIST PRICE: \$450, upgrade from 5.0 \$50
REQUIREMENTS: 384K RAM, DOS 2.0 or later version, two floppy drives or hard disk

TECHNICAL SUPPORT: unlimited, toll number, M-F 6-6
OTHER SUPPORT: BBS, CompuServe, GEnie, corporate extended support
Reader service no. 611

Microsoft Word for Windows 1.1

LIST PRICE: \$495
REQUIREMENTS: AT or better, 1MB RAM, DOS 3.1 or later version, hard disk, graphics, Windows 3.0
TECHNICAL SUPPORT: unlimited, toll number, M-F 6-6
OTHER SUPPORT: BBS, CompuServe, GEnie, fax support, corporate extended support
Reader service no. 612

MultiMate 4.0

Ashton-Tate Corp.
20101 Hamilton Ave.

Torrance, CA 90509-9972
800/227-4866
LIST PRICE: \$495
REQUIREMENTS: 384K RAM, DOS 3.1 or later version, hard disk
TECHNICAL SUPPORT: unlimited, toll number, M-W, F 6-4:30, Th 6-4
OTHER SUPPORT: CompuServe, fax support
Reader service no. 613

WordPerfect 5.1

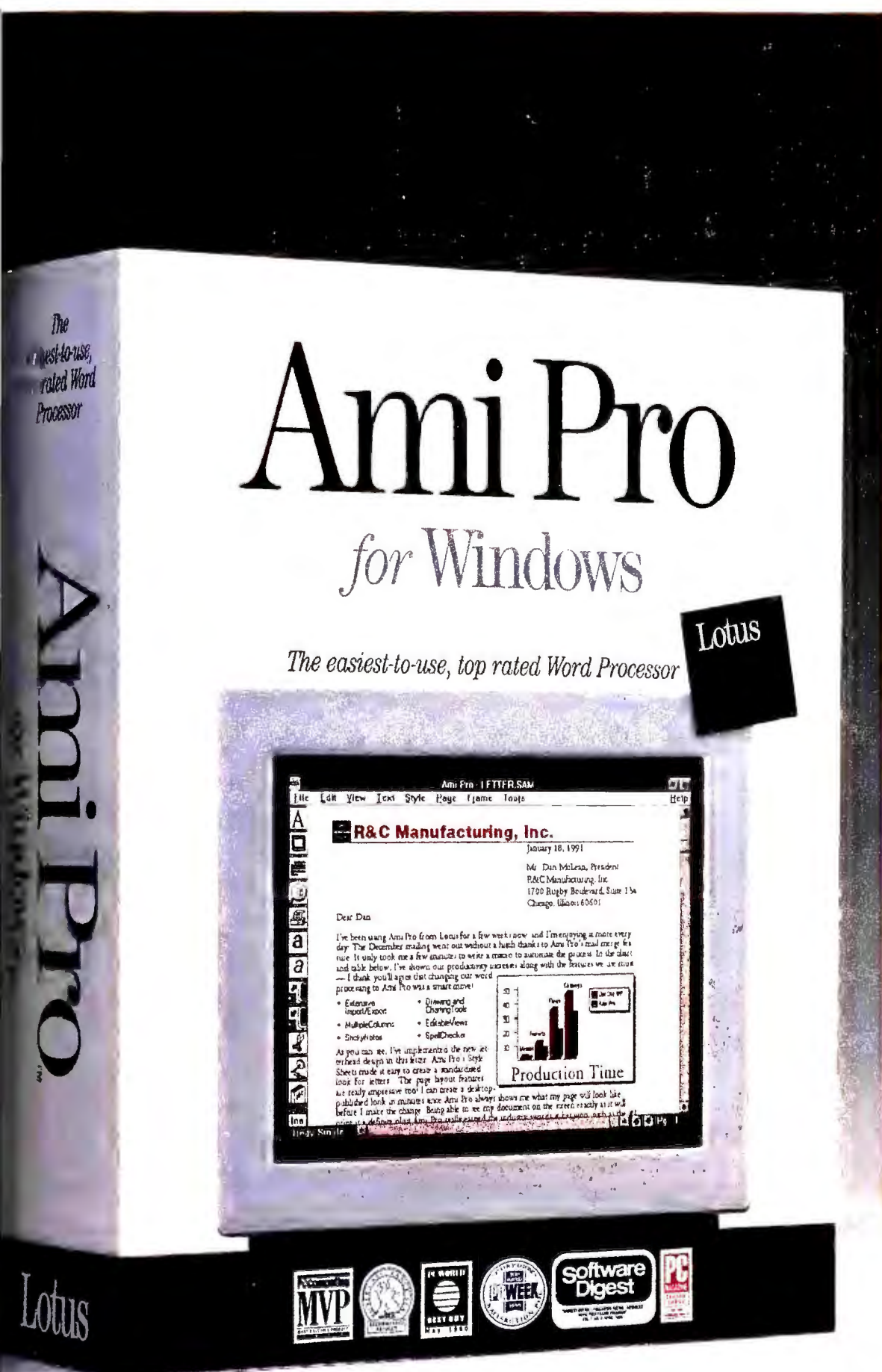
WordPerfect Corp.
1555 N. Technology Way
Orem, UT 84057
801/225-5000
LIST PRICE: \$495
REQUIREMENTS: 384K RAM, DOS 2.0 or later version, two 720K floppy drives or hard disk

TECHNICAL SUPPORT: unlimited, toll-free number, M-F 7-6
OTHER SUPPORT: BBS, CompuServe, fax support, corporate extended support
Reader service no. 614

WordStar 6.0

WordStar Int'l
201 Alameda del Prado
Novato, CA 94949
800/227-5609
LIST PRICE: \$495
REQUIREMENTS: 384K RAM, DOS 2.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M-F 7-4
OTHER SUPPORT: CompuServe, fax support, corporate extended support
Reader service no. 615

Pick a winner.



Try Ami Pro™ from Lotus just once and you'll see why it's the only word processor for Windows™ that's winning it all

...praise from experts and raves from users.

Designed to take full advantage of the Windows™ environment, Ami Pro combines power word processing with the power to create professional documents. And with its icons and interactive features, it's incredibly easy to learn and use.

No wonder Ami Pro has received top ratings from virtually all the industry experts, winning such coveted awards as PC World's Best Buy, The Buyer's Assurance Seal from InfoWorld and PC Magazine's Editor's Choice.

But that's not all. In a recent independent survey* users ranked Ami Pro "Best Overall" at a rate of *more than two to one* over

Word for Windows and WordPerfect® for DOS.

If you're ready to see first-hand what word processing for Windows is all about, call our toll free number, for a free working model of Ami Pro. Then go ahead and pick a winner. **Call 1-800-831-9679 (In Canada 1-800-668-1509.)**

Independent User Survey for Windows*			
Word Processing Features	Ami Pro for Windows	Word for Windows	WordPerfect for DOS
Best Overall	50%	22%	16%
Ease of Learning	47%	28%	8%
Ease of Use	52%	23%	8%

Ami Pro for Windows
from
Lotus®

Word Processing Division, 5600 Glenridge Drive, Atlanta, GA 30342. 404-851-0007/1-800-831-9679

*Independently conducted Windows word processing Usage & Attitude Study, November, 1990. Figures cited are among Word for Windows users that are also users or triers of Ami Pro.

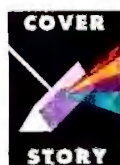
© 1991 Lotus Development Corporation. All rights reserved. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, wholly owned subsidiary of Lotus Development Corporation. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation. WordPerfect is a registered trademark of the WordPerfect Corporation.

COLOR



PERIPHERALS

Isn't it time you showed your true colors? Take your pick of over 100 color scanners, plotters, printers, and film recorders, and produce unforgettable documents and presentations.

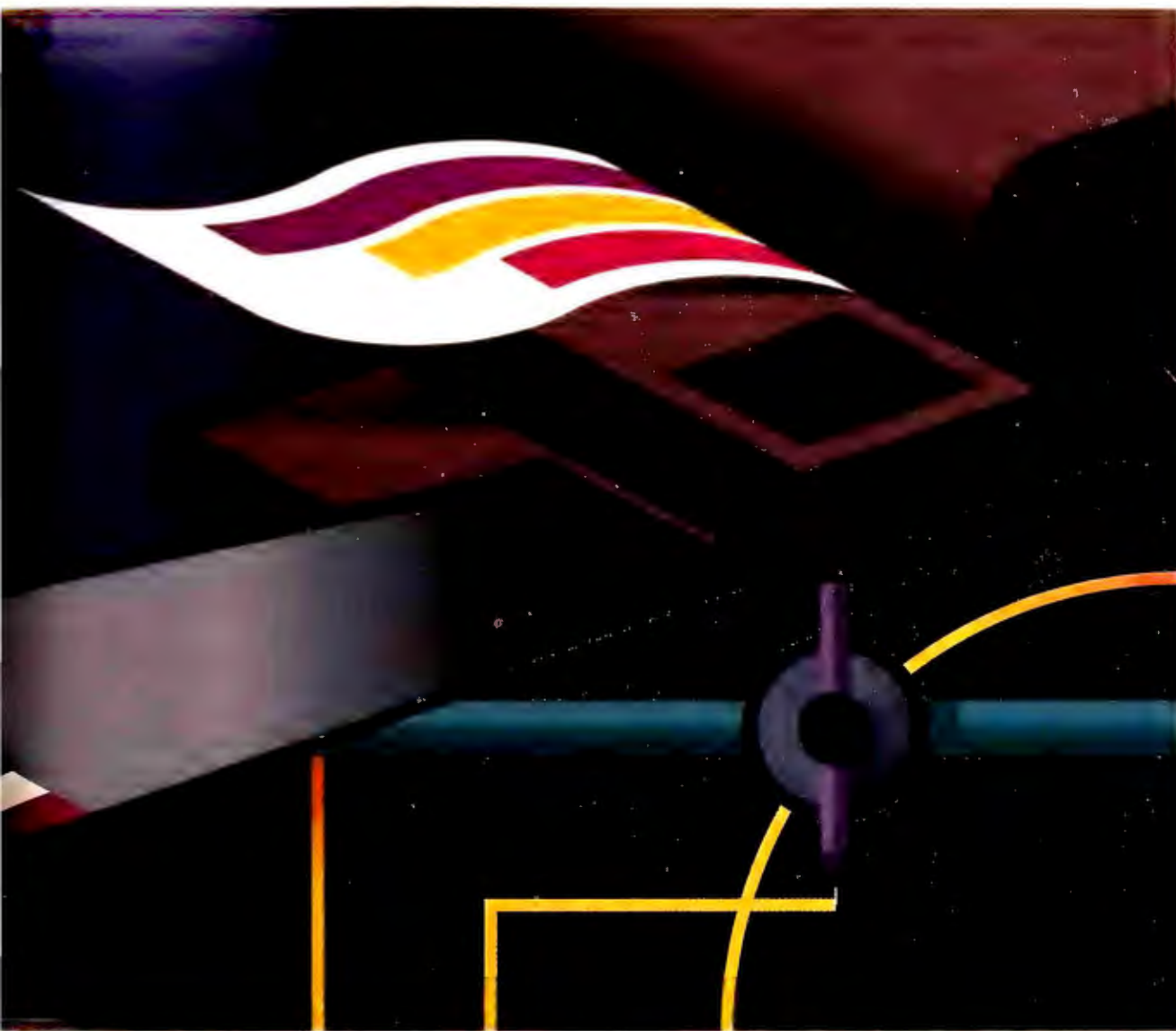


Climbing the ladder of success sometimes means showing off your fancy footwork in public. Whether you need pie charts for a weekly sales report, overhead transparencies for a board meeting, or state-of-the-art 35mm slides to wow a big audience, color output gives you a leg up on the competition. Your information is easier to understand, your presentation more memorable.

The cost of color input and output devices has dropped low enough to make them viable presentation tools. Affordable color is here now—and savvy business users will be colorizing their presentations faster than you can say Ted Turner.

RON CHAN

Bob Weibel and Daniel Tynan



To help you move from the shadows of PC noir into the wonderful world of color, we've put together this comprehensive guide to color scanners, printers, plotters, and 35mm slide recorders—from \$300 dot matrix models to \$10,000 film machines. Along the way we'll discuss how you can use color, what features to look for, and some of the hidden costs.

LIGHTS, COLOR, ACTION

The kind of color devices you buy depends on what you want to produce and how much you want to spend. For simplicity's sake, we've divided the common uses of PC color into primary business applications (in-house documents and professional presentations) and secondary uses (proofing and technical printing).

In-House Documents A little color can go a long way toward making the sales fig-

ures in a printed pie chart crystal clear or sparking up a report or newsletter. If your documents and presentations are meant for in-house use, you don't need top-of-the-line colors or graphics capabilities, so you don't need to spend a lot of money. Dot matrix and ink jet printers and low-cost plotters give you spot-color printouts and transparencies for \$300 to \$3000.

Pro Presentations Short of mass hypnosis, the most effective way to mesmerize an audience is to make your pitch in color. Low-resolution text and graphics look scraggly and crude when projected as 35mm slides or overhead transparencies. Presentation Svengalis need the smoothest possible output and are willing to spend more to get it. For around \$2000, a color scanner lets you capture photographic-quality images, add text and graphics, and use the en-

hanced images in 35mm slide shows. When there's a call to print full-color transparencies—or color flip charts for one-on-one presentations—smart users turn to 300-dot-per-inch (dpi) thermal wax printers, which start at around \$5000.

Proofing Somewhere in your organization, someone is designing sales brochures, product packaging, or marketing hit pieces. PostScript-based thermal wax printers let you look at a *proof*, or full-color sample, of the design before giving the OK for final production. You'll save money by making corrections in-house instead of at the print shop, and you'll be happier with the final product.

Technical Printing Engineers and architects need color for creating complex schematics and diagrams but require greater precision and larger paper formats than the

average business user. Color plotters deliver both. But for sophisticated tasks like thermal analyses and 3-D modeling, you'll need the broader spectrum of colors offered by thermal wax devices.

ADVENTURES IN THE SCAN TRADE

Clip art and computer-generated charts are great cures for business users suffering from art failure. But sometimes presentations demand real-world images, such as photos of your company's products or personnel, and for that you'll need a color scanner. Our table lists 24 models—hand-held units, desktop machines, and 35mm slide scanners.

Remember, at this price level, scanned images can't match the quality of the original. To gauge quality, look at specs like maximum resolution (page scanners range from 75 dpi to 900 dpi, with 300 dpi being typical) and the number of colors you can capture (from a scant 64 per image to a full 16,777,216). More important, try a hands-on investigation. Use the scanner's software to zoom in and examine scanned images pixel by pixel. The images should be free of flaws, with different color dots properly aligned along the edge. Consistency is key: If the colors for the same image vary from scan to scan, you may have to spend a lot of time futzing with images to get them right.

Color-image files can be monstrous—as big as 30MB for a full-color page at 300 dpi—but you can decrease file size by scaling down the resolution. (For example, 72 dpi is fine for on-screen display and most print jobs.) Look for flexible resolution controls and a good set of image editing tools—preferably *Windows* based for easy file transfer. The software must save images in a format your applications can

COLOR SCANNERS



Manufacturer	Product	Price	Resolution (dpi)	Maximum colors	Maximum scan size (inches)	Windows-based image editor	FILE FORMATS SUPPORTED			Warranty	Reader service number
							Color TIFF	PCX	EPS		
HAND-HELD											
A4TECH	A4Color Scanner	\$699	90-270	256	7.5 x 5.5	N	Y	Y	N	1 year	707
DFI	CHS-4000	\$695	100-400	64	4 x 20 ¹	N	Y	Y	N	1 year	708
KYE INT'L	GS-C105 Plus	\$799	100-400	4096	8.5 x 14 ¹	Y	Y	Y	Y	1 year	709
MARSTEK	ColorArtist	\$695	50-200	262,144	8.5 x 11 ¹	Y	Y	Y	N	1 year	710
MOUSE SYSTEMS	Pagebrush/Color/PC	\$799	100-400	4096	8.5 x 11 ¹	Y	Y	Y	N	2 years	711
NCL AMERICA	Clearscan Color	\$695	100-400	4096	8.5 x 14 ¹	N	Y	Y	N	1 year	712
DESKTOP											
AVR	AVR 3000/CL Plus	\$2590	12-300	16.8M	8.5 x 14	Y	Y	N	Y	1 year	713
CHINON AMERICA	DS-3000 ²	\$995	75	4096	8.5 x 11	Y	Y	Y	N	1 year	714
EPSON AMERICA	Epson ES-300C	\$2494	50-600	16.8M	8.5 x 11.7	Y	Y	Y	Y	1 year	715
HOWTEK	Personal Color Scanner	\$2295	50-300	16.8M	8.5 x 14	Y	Y	Y	N	1 year	716
	Scanmaster 3	\$8195	75-400	16.8M	11.7 x 17	Y	Y	Y	N	90 days	716
MICROTEK LAB	MSF-300Z	\$2695	75-300	16.8M	8.5 x 14	Y	Y	Y	Y	1 year	717
	ScanMaker 600Z	\$1995	75-600	16.8M	8.5 x 14	Y	Y	Y	Y	1 year	717
NISCA	Spectra for the PC ³	\$899	50-400	16.8M	4 x 6	Y	Y	Y	Y	1 year	718
OBM	ProScan PS-3000	\$995 ⁴	75-300	16.8M	8.5 x 14	Y	Y	N	Y	1 year	719
SHARP ELECTRONICS	JX-100 ³	\$995	200	262,144	4 x 6	N	Y	Y	N	90 days	720
	JX-300	\$2345	75-300	16.8M	8.5 x 11	Y	Y	Y	N	90 days	720
	JX-450	\$5995	75-300	16.8M	11 x 17 ⁵	Y	Y	Y	N	90 days	720
UMAX	UC300	\$2495	1-300	16.8M	8.5 x 14	Y	Y	Y	Y	1 year	721
XRS	OmniMedia 3c ⁶	\$4500	75-300	16.8M	8.5 x 14	Y	Y	Y	Y	1 year	722
35mm SLIDE SCANNERS											
BARNEYS CAN	CIS-3515	\$4495	1000	16.8M	35mm	N	Y	Y	Y	90 days	723
HOWTEK	Scanmaster 35 Plus	\$5795	1333 ⁷	16.8M	35mm	Y	Y	Y	N	90 days	724
MICROTEK LAB	ScanMaker 1850	\$2995	462-1850	16.8M	35mm	Y	Y	Y	Y	1 year	725
NIKON, INC.	LS-3500	\$10,495	4400 ⁸	16.8M	35mm	Y	Y	Y	N	1 year	726

¹ Large images require multiple passes with scanner.
² Converts gray-scale image to color via software.
³ Small format (4-by-6-inch) scanner.

⁴ Micro Channel-compatible scanner \$1045.
⁵ 35mm slide scanner attachment costs \$500.
⁶ X-ray and transparency scanner; 3cx scanner with higher dynamic range costs \$5400.

⁷ Or 1333 x 2000 screen pixels.
⁸ 6144 x 4096 screen pixels.

For more information about all products in this table, circle reader service no. 908.

accept, such as TIFF or PCX, or EPS if you plan to output scans directly to a PostScript device. Finally, consider the size and type of originals the unit can handle, especially if you scan glossy photos or transparencies.

Hand-Held Scanners

A hand scanner is like a Dustbuster—it's good for small jobs in tight corners, but you wouldn't want to do a whole room with one. At \$700 to \$1000, a hand-held scanner is the cheapest way to capture color images, good for on-screen slide shows. But hand scanners are limited in the

number of colors and size of image they can capture, and they require a slow and steady hand for properly aligned images. If the image is wider than the scan head (typically 2½ to 4 inches), you'll have to make two or more passes and stitch the image together via software. Look for models that let you scan full-size images and adjust resolution in increments of 50 dpi or less.

Desktop Scanners

If your presentations demand a steady diet of scanned images, do yourself a favor and fork out \$2000 or more for a full-page 300-dpi scanner.

Desktop scanners present none of the alignment problems of hand-held units—just place the image on the glass, like on a photocopier—and they usually handle originals up to 8½ by 14 inches. Most also let you capture 8-bit (256 colors or gray shades) and 24-bit (16.8 million colors) images.

Do you *really* need 16 million colors? In most cases, the answer is no. Unless you have an expensive 24-bit video board, you won't be able to see more than 256 colors on screen. The difference comes when you want to create 35mm slides: 24-bit color helps to create smooth gradients

(where one shade blends gradually into another) and simulate continuous color tones.

Look for scanner software that lets you specify resolution in fine increments (from 1 to 15 dpi) to fit your output device. Finally, since the unit will be sharing your desktop, consider factors like size, noise of operation, and how easy it is to place bulky items like books on the scanner.

35mm Slide Scanners

Simply put, slide scanners take digitized photos of 35mm slides, which are generally of higher quality than photographs. At \$3000 to \$10,000,

they'll burn a bigger hole in your budget than most full-page scanners, but they produce more accurate colors. If you need to import images from an existing slide library or scan the highest-quality originals, slide scanners are a good investment. All the models listed in the table capture 24-bit images, and most come with powerful *Windows*-based image editors. Look for a scanner that lets you select resolution and final image size from a quick preview scan and that doesn't require a special add-on board or monitor.

HUES YOU CAN USE

It's no good dressing up your color images if they've got nowhere to go. You need a color output device that gives you the right quality for the job, whether it's a down-and-dirty office newsletter or a high-powered presentation. Fortunately, you're not hurting for options. We've selected 46 machines—including dot matrix, ink jet, and thermal wax units—that let you print all the colors of the rainbow.

The key to buying a color printer is finding the right balance between output quality and cost. Quality varies depending on the device's resolution and color range and the

COLOR OUTPUT: THE PROOF IS IN THE PRINTING



Epson LQ-2550



HP PaintJet XL



Tektronix Phaser II PX

Compared to 2400-dpi Linotronic output (left), dot matrix and ink jet units create coarse images with visible interference patterns; thermals produce smoother color gradations.

type of media it prints on. Examine output samples printed on the kind of paper or film you plan to use. Top-notch color units produce smooth color gradients, solid colors free from *banding* (horizontal or vertical streaks), and minimal *moiré effects* (interference patterns that appear when color dots overlap at odd angles).

Besides the initial purchase price, give thought to cost per page. You should also consider paper types and sizes, built-in fonts, and the ability to add typefaces via downloading or cartridges. Speed is less of a consideration; at this price

range, all color devices are slow. If you want to print more than a handful of color pages, you'll save time by printing out one original and using a color copier to produce the rest.

Finally, be prepared for some surprises at print time. Some screen colors can't be reproduced by printers—and vice versa—and colors vary depending on the monitor and printer. At press time Hewlett-Packard announced a *Windows 3.0* driver for its PaintJet printer that matches screen and page colors, but industrywide color standards are probably at least a year away.

Dot Matrix

Color printing just doesn't get any cheaper than with dot matrix printers, which run from \$300 to \$2700 per unit and cost you less than a penny per page. Many (such as Citizen's \$499 GSX-140) are simply monochrome printers with a color upgrade kit—plug-in circuitry and a multicolored ribbon (typically red, yellow, blue, and black). The printer combines these colors to produce seven solid shades, though software drivers can simulate more by *dithering* (alternating colored dots).

Dot matrix units handle almost any kind of paper, but quality suffers with large blocks of solid shades; full-page graphics and transparencies are not recommended. Your typeface options are also limited, though some printers offer 80K or more RAM for downloaded fonts. Look for units that offer color dithering and print at a full 360 dpi for cleaner text and graphics.

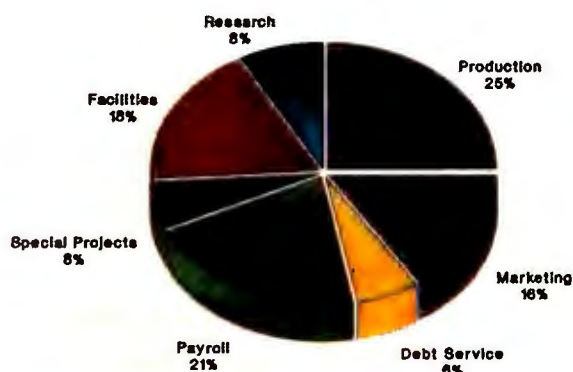
Ink Jet

At \$1400 to \$2500 a pop, liquid ink jet printers cost more than most dot matrix units, but they deliver better quality. Most provide a color range comparable to that of pricey thermal transfer printers, though colors are less vivid. Still, they might be your best choice for paper handouts and reports—at 10 to 30 cents per page, they're far cheaper than thermals.

Ink jet printers can handle full-page graphics, if you're willing to wait 1½ to 4 minutes per page. You can use standard photocopier stock, but on paper with a high cotton content (such as quality letterhead), the ink tends to spread as it dries, producing fuzzy-looking text. Most vendors recommend specially coated stock to

PLOTTER CHARTS AS EASY AS PIE

Landau Associates 1990 Expenditures



Color pen plotters such as HP's 7550 Plus can generate sharp-looking overheads with just a handful of colors.

COLOR PRINTERS



EMULATIONS

Manufacturer	Product	Price	RAM (standard/ maximum)	Rated speed	Resolution (dpi)	Maximum colors	PostScript	HP-GL	Resident typefaces
DOT MATRIX									
ALPS AMERICA	ALQ224/gx	\$799 ³	23K/256K	336 cps	360	7	N	N	5
CITIZEN AMERICA CORP.	GSX-145	\$649	8K/40K	192 cps	360	7	N	N	6
	GSX-140	\$499	8K/40K	192 cps	360	7	N	N	6
	200GX	\$299	8K/40K	213 cps	240 ⁶	7	N	N	5
	HSP-500	\$499	8K/40K	300 cps	240 ⁶	7	N	N	4
	HSP-550	\$699	8K/40K	300 cps	240 ⁶	7	N	N	4
C-TECH ELECTRONICS	ProWriter C-610C+	\$859	32K/32K	240 cps	360 ⁷	7	N	N	2
	ProWriter C-715A	\$1499	32K/32K	300 cps	360 ⁷	7	N	N	2
EPSON AMERICA	Epson LQ-860	\$949	6K/38K	300 cps	360	7	N	N	5
	Epson LQ-2550	\$1499	8K/40K	500 cps	360	7	N	N	9
GENICOM	3410XCQ	\$2704	2K/2K	400 cps	144	7	N	N	2
	1040	\$1924	56K/56K	360 cps	360	7	N	N	1
NEC TECHNOLOGIES, INC.	Pinwriter P9300	\$1395	80K/80K	400 cps	360	7	N	N	8
	Pinwriter P6200	\$749	80K/80K	300 cps	360	7	N	N	8
	Pinwriter 6300	\$999	80K/80K	300 cps	360	7	N	N	8
OKIDATA	Microline 393c+	\$1599	23K/40K	520 cps	360	7	N	N	4
STAR MICRONICS AMERICA	XR-1500 Multi-Font	\$699	32K/160K	300 cps	240 ⁶	7	N	N	9
	XR-1000 Multi-Font	\$499	32K/160K	300 cps	240 ⁶	7	N	N	9
	NX-1020 Rainbow	\$329	16K/16K	225 cps	240 ⁶	7	N	N	6
	XB-2415 Multi-Font	\$899	41K/201K	240 cps	360	7	N	N	17
	XB-2410 Multi-Font	\$699	27K/59K	240 cps	360	7	N	N	17
	NX-2420 Rainbow	\$499	30K/62K	250 cps	360	7	N	N	7
INK JET									
DIGITAL EQUIPMENT CORP.	LI 252	\$1549	2K/2K	167 cps	180	255	N	N	1
EASTMAN KODAK	Diconix Color 4	\$1495	64K/64K	150 cps	192	330	N	N	3
HEWLETT-PACKARD	HP PaintJet	\$1395	5K/8K	167 cps	180	16.8M	N	N	3
	HP PaintJet XL	\$2495	189K/189K	167 cps	180	16.8M	N	N	3
SHARP ELECTRONICS	JX-730	\$2195	19K/19K	1/2 ppm	180	16.8M	N	N	1
TEKTRONIX	Colorquick	\$2345	128K/128K	1/2 ppm	216	16.8M	N	N	1
THERMAL WAX									
CALCOMP	ColorMaster	\$2999	1.5MB/1.5MB	1 ppm	200	16.8M	N	Y	2
	ColorMaster Plus 6603	\$6995	6MB/6MB	1 ppm	300	16.8M	Y	Y	39
	ColorMaster Plus 6613	\$9995	10MB/10MB	1 ppm	300	16.8M	Y	Y	39
GENERAL PARAMETRICS	Spectra-Star 410	\$5995	1MB/1MB	1 ppm	300	16.8M	Y ¹⁰	Y	35 ¹⁰
	Spectra-Star 420	\$6595	4MB/4MB	1 ppm	300	16.8M	Y ¹⁰	Y	35 ¹⁰
	Spectra-Star 430	\$7995	6MB/6MB	1 ppm	300	16.8M	Y	Y	35
MITSUBISHI ELECTRONICS AMERICA	G650-10	\$6995	0MB/0MB	1 ppm	300	262,000	N	N	21 ¹¹
	G370-10	\$5495	1MB/1MB	1 ppm	300	262,000	N	N	21 ¹¹
NEC TECHNOLOGIES	Colormate PS 80	\$8995	8MB/8MB	3 ppm	300	16.8M	Y	N	35
	Colormate PS 40	\$6995	4MB/8MB	3 ppm	300	16.8M	Y	N	17
OCE GRAPHIC	G524I-PS	\$8990	5MB/8MB	1 ppm	300	16.8M	Y	N	35
PANASONIC	EPL-8543	\$7995	3MB/3MB	2/3 ppm	203	226,000	Y ¹²	Y	35 ¹²
QMS	ColorScript Model 10	\$8995	5MB/8MB	1 ppm	300	16.8M	Y	Y ¹²	35
SEIKO INSTRUMENTS USA	ColorPoint PS 14	\$9999	0MB/34MB	1 ppm	300	16.8M	Y	N	39
	ColorPoint PS 4	\$6999	6MB/34MB	1 ppm	300	16.8M	Y	N	39
TEKTRONIX	Phaser II PX	\$7995	6MB/10MB	1 ppm	300	11.39M	Y	Y	35
	Phaser II SX	\$4995	1MB/5MB	1 ppm	300	11.39M	Y ¹²	N	35 ¹²
XEROX-VERSATEC	Versacolor	\$8995	16K/16K	2/3 ppm	300	250,000	Y ¹²	N	35 ¹²

¹ A = 8.5" x 11" and 8.5" x 14", B = 11" x 17", C = 18" x 24"; ISO and DIN sizes not listed.

² P = parallel, S = serial.

³ Wide-carriage model \$999.

⁴ Accepts continuous-form paper only.

⁵ Serial port costs extra.

⁶ 240 by 216 resolution.

⁷ 360 by 180 resolution.

⁸ On-site service optional.

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

reduce ink saturation.

Ink jets will print transparencies, but due to their lower resolutions (180 to 216 dpi), projected text may appear jaggy, and colors aren't as dense as with thermals. (At press

time, HP announced brighter inks for its PaintJet line.) Look for models that offer 24-bit color output for smoother gradients. Since resident typefaces are minimal, you'll want a unit that accepts downloaded fonts.

Thermal Wax

Thermals produce sharper text and brighter colors than liquid ink jets, but they will cost you. For printing color transparencies and glossy-paper flip charts, they can't be

beat; just don't try to use plain paper stock.

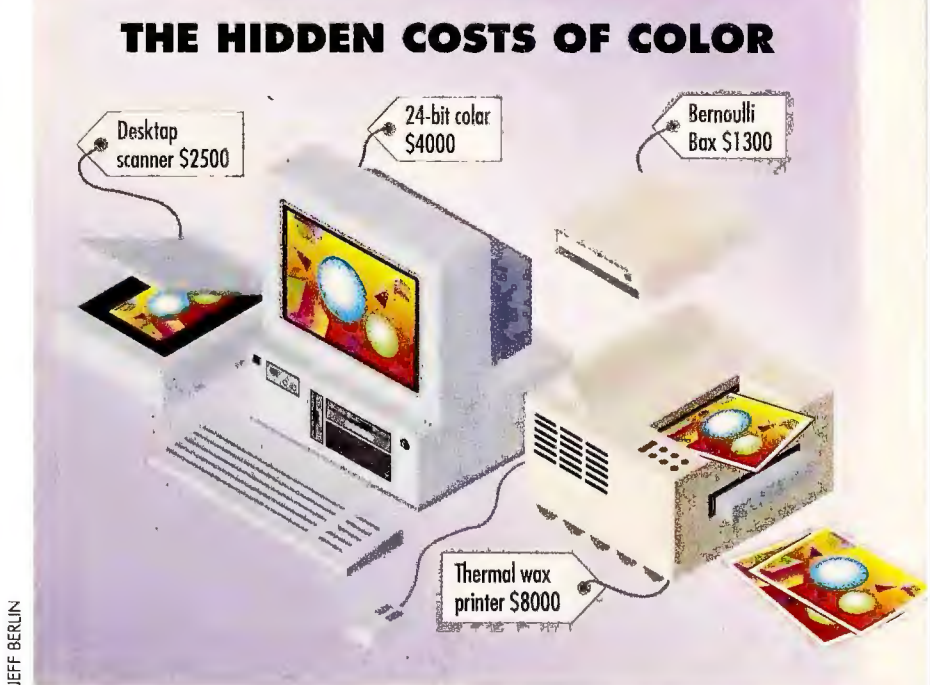
Two years ago, thermal printers cost \$10,000 or more; now you can buy models like Tektronix's Phaser II SX for \$4995. Because thermals use

Accepts font cartridge/downloaded fonts	Prints transparencies	Maximum paper capacity	Media sizes ¹	Ports ²	Warranty	Reader service number
Y/Y	Y	100	A	P,S	1 year	743
N/Y	Y	n/a ⁴	A	P,S ⁵	2 years	744
N/Y	Y	n/a ⁴	A	P,S ⁵	2 years	744
N/Y	Y	n/a ⁴	A	P,S ⁵	2 years	744
N/Y	N	n/a ⁴	A	P,S ⁵	2 years	744
N/Y	Y	n/a ⁴	A	P,S ⁵	2 years	744
Y/Y	Y	100	A	P,S	2 years	745
Y/Y	Y	200	A,B	P,S	2 years	745
Y/Y	N	185	A	P,S	2 years	746
Y/Y	N	185	A	P,S	1 year	746
N/N	N	200	A	P,S	1 year	747
Y/Y	N	150	A	P,S	1 year	747
Y/N	Y	360	A,B	P,S ⁵	1 year	748
Y/N	Y	360	A,B	P,S ⁵	1 year	748
Y/N	Y	360	A,B	P,S ⁵	1 year	748
Y/Y	Y	170	A,B	P,S	1 year	749
N/Y	N	120	A,B	P,S ⁵	2 years	750
N/Y	N	120	A,B	P,S ⁵	2 years	750
N/Y	N	120	A,B	P,S ⁵	2 years	750
Y/Y	Y	120	A,B	P,S ⁵	2 years	750
Y/Y	Y	120	A,B	P,S ⁵	2 years	750
Y/Y	N	120	A,B	P,S ⁵	2 years	750
N/N	Y	n/a ⁴	A	P,S ⁵	1 year	751
N/Y	Y	60	A	P	1 year	752
N/N	Y	n/a ⁴	A	P,S	1 year	753
Y/Y	Y	200	A,B	P,S	1 year	753
N/N	Y	100	A,B	P	90 days	754
N/N	Y	100	A,B	P	90 days ⁸	755
N/Y	Y	100	A	P,S	90 days	756
N/Y	Y	100	A	P,S	1 year ⁹	756
N/Y	Y	100	A,B	P,S	1 year ⁹	756
N/Y	Y	100	A	P,S	90 days ⁹	757
N/Y	Y	100	A	P,S	90 days ⁹	757
N/Y	Y	100	A	P,S	90 days ⁹	757
N/N	Y	100	A,B	P	6 months	758
N/N	Y	100	A	P	6 months	758
N/Y	Y	100	A	P,S	1 year	759
N/Y	Y	100	A	P,S	1 year	759
N/Y	Y	100	A	P,S	1 year	760
N/Y	Y	100	A	P	1 year	761
N/Y	Y	100	A	P,S	1 year	762
N/Y	Y	80 ⁴	A,B	P,S	90 days ⁹	763
N/Y	Y	145 ⁴	A	P,S	90 days ⁹	763
N/Y	Y	100	A	P,S	1 year ⁸	764
N/N	Y	100	A	P,S	1 year ⁸	764
N/N	Y	250	A	P	90 days	765

⁹ On-site service.
¹⁰ Uses supplied PC-based PostScript software.
¹¹ Via supplied SuperPrint utility.
¹² Requires extra-cost software utility.

pecially coated paper and an expensive Mylar film coated with colored wax, their colors are richer than ink jets', but the cost per page is exorbitant—from 40 cents to \$1.50. A full page of graphics prints

in 1 to 2 minutes, and colors are usually smooth and vivid. Most thermal units are PostScript printers, providing 35 or more scalable typefaces and top graphics capabilities. Others come with software-



Moving into color is hardly a black-and-white proposition—how much you spend depends on the kind of jobs you need to do. If you need to edit full-color (24-bit) images or maintain a large image data base, you'll need a color system similar to the one shown above—a 386 with a \$4000 24-bit color video board and monitor, \$2500 desktop scanner, and \$8000 thermal wax printer, plus a \$1300 Bernoulli Box for storing and transporting large image files.

based PostScript interpreters like *Freedom of Press*—a cheaper but slower option. If you plan to print the final document on a high-resolution PostScript device such as a 1270-dpi Linotronic, you'll want a PostScript thermal printer to ensure accurate proofs. You'll also want at least 6MB of printer RAM for handling large images and downloaded fonts, plus the ability to print 24-bit color at a full 300 dpi for smooth color blends and crisp text. Some printers also let you reduce moiré patterns via software for fine-tuning full-page graphics.

THE PLOTS THICKEN

Color pen plotters are literally robots that draw on paper with an array of colored pens. Though employed primarily for complex technical diagrams, any of the 33 plotters in our table can also produce high-quality text and simple charts. A plotter's color options typically depend on the num-

ber of pens it can hold (usually eight). That's not enough for sophisticated images but is sufficient for many pie and bar charts. Since plotters don't come with built-in typefaces—and use their RAM for storing pages, not downloading fonts—you must specify fonts via software such as *Harvard Graphics*. Plotters draw text characters as if they were simple graphics, but they do so more smoothly than most 300-dpi printers, making them a fine choice for creating simple overheads.

The key to plotters is precision: The machine must be able to return to the exact point in a drawing where it started (*repeatability*) and draw lines of precise length (*accuracy*). Repeatability and accuracy measurements indicate relative margins of error—for example, a plotter with a .05mm accuracy rating might draw 10mm lines at 10.05mm. Resolution is also crucial—plotters that let you use (or address) smaller line seg-

COLOR PEN PLOTTERS



Manufacturer	Product	Price	RAM (standard/ maximum)	Number of pens	Repeat- ability (mm/sec.)	Accuracy (mm)	Maximum accel- eration ¹	Resolution (address- able, in mm)	Media sizes ²	Warranty	Reader service number
CALCOMP	Artisan Plus 1026M	\$7995	1MB/3MB	8	.127	.25	2.8	.0125	A-E	1 year	733
HEWLETT- PACKARD	HP CalarPra	\$1495	60K/1MB	8	.1	n/a ³	1.2	.025	A	1 year	734
	HP 7475A	\$1995	1MB/1MB	6	.1	n/a ³	2	.025	A,C	1 year	734
	HP DraftPra	\$3995	7.2K/7.2K	8	.1	.05	2.8	.025	C,D	1 year	734
	HP 7550 Plus	\$3995	32K/2MB	8	.1	n/a ³	6	.025	A,C	1 year	734
	HP DraftPra DXL	\$4995	31K/2MB	8	.1	.5	2.8	.025	A-D	1 year	734
HOUSTON INSTRUMENT	HI Image Maker	\$1195	1K/5K	8	.1	.1	n/a ³	.025	A,C	1 year	735
	DMP-52	\$3295	1K/7K	1	.05	.25	5.65	.025	A,C,D	90 days	735
	DMP-52 MP	\$3895	1K/7K	14	.05	.25	5.65	.025	A,C,D	90 days	735
	DMP-61	\$3995	16K/1MB	8	.05	.254	5.65	.025	A-D	1 year	735
	DMP-62	\$5300	16K/1MB	8	.05	.254	2.8	.025	A-F	1 year	735
IOLINE CORP.	Ialine LP3500	\$2995	14K/14K	1	.025	.063	.8	.025	A-D	1 year	736
	Ialine LP3700	\$4195	14K/14K	8	.025	.063	.8	.025	A-E	1 year	736
	Ialine LP4000	\$4995	4K/4K	8	.025	.025	2	.025	A-E	1 year	736
	Ialine Signature 5000	\$5995	25K/25K	10	.025	.025	3	.025	A-E	1 year	736
JAPAN DIGITAL LABORATORY	JDL AutoPlotter XP	\$3495	1.5MB/ 2.5MB	15/20 ⁴	.075	.075	n/a	.025	A-C	90 days	737
	JDL OmniPlatter	\$6690	2MB/6MB	15/20 ⁴	.075	.075	n/a	.025	A-D	180 days	737
MUTOH AMERICA	iP530A	\$4800	1MB/1MB	8	.001	.1% ⁵	2.1	.025	A-D	1 year	738
	iP530AL	\$6300	1MB/1MB	8	.001	.1% ⁵	2.1	.025	A-E	1 year	738
	F-920A	\$8900	1MB/1MB	8 ⁶	.1	.1% ⁵	5.7	.01	A-E	1 year	738
OCÉ GRAPHIC	G1022	\$1190	4K/4K	6	.150	.3% ⁵	2	.025	A, B	1 year	739
	G1824-C	\$4990	1MB/1MB	8	.1	.25	3	.01	A-E	1 year	739
	G1835-C	\$6990	1MB/1MB	8	.1	.25	6	.01	A-E	1 year	739
ROLAND DIGITAL GROUP	SketchMate	\$695	5K/5K	8	n/a ³	n/a ³	n/a ³	.025	A	1 year	740
	DXV-1300	\$1995	1MB/1MB	8	.1	.1	3	.025	A-C	1 year	740
	GRX-300AR	\$4495	1MB/1MB	8	.1	.1	3	.025	A-D	1 year	740
	DPX-2500	\$4995	1MB/1MB	8	.05	.1	3	.025	A-C	1 year	740
UNITED INNOVATIONS	Mural Flatbed Platter	\$2195	24K/88K	8	.025	.1% ⁵	1	.025	A-C	1 year	741
ZETA GRAPHICS	ZETA 600	\$4395	40K/1MB	8	.2	.01	4.2	.0025	A-E	90 days	742
	ZETA 912is	\$4450	18K/18K	8	.1	.025	3	.0025	A,B	90 days	742
	ZETA 650	\$6395	40K/1MB	8	.2	.01	4.2	.0025	A-E	90 days	742
	ZETA 924is	\$6450	18K/18K	8	.1	.025	3	.0025	A-D	90 days	742
	ZETA 675	\$7195	40K/1MB	8	.2	.01	4.2	.0025	A-E	90 days	742

¹ Measured diagonally in g's.

² Paper sizes: A = 8.5" x 17", B = 11" x 17", C = 18" x 24", D = 24" x 36", E = 36" x 48"; ISO and DIN sizes not included.

³ Information not available from vendor.

⁴ Dot matrix plotter emulates 15 pens (AutoPlotter) or 20 pens (OmniPlotter).

⁵ Percent of distance moved by pen.

⁶ Or 260 pencils.

For more information about all the products in this table, circle reader service no. 910.

DESKTOP SLIDE RECORDERS



Manufacturer	Product	Price	Instant camera	Maximum resolu- tion (lines)	Size of CRT (inches) ¹	Resident fonts (bit- mapped/ scalable)	Post- Script compat- ible	APPLICATION SUPPORT			FILE FORMATS SUPPORTED			Reader service number
								Win- dows 3.0	Harvard Graphics	Lotus Free- lance	Color TIFF	PCX	Warranty	
AGFA	PraColor Film Recorder	\$5495	\$1095	4096	7	4/4	Y	Y	Y	Y	Y	Y	90 days	727
GCC TECHNOLOGIES	Calorfast	\$5999	included	4096	3.5	2/2	N	Y	Y	Y	Y	N	2 years	728
LASERGRAPHICS	LFR	\$8950	\$1495	4000	6	8/1	Y	Y	Y	Y ²	Y ²	Y ²	90 days	729
NISE, INC.	Rubens/XLT FR-900	\$9995	\$850	2048 x 1376 ³	7	0/0 ⁴	N	N	N	N	Y	N	90 days	730
POLAROID	Digital Palette CI-5000	\$5995	included	4096	3.25	0/9	N ⁵	Y	Y ²	Y	Y ²	Y ²	2 years	731
PRESENTATION TECHNOLOGIES	Screen Star	\$3995	\$495	2000	3.5	0/0 ⁴	Y	Y	Y	Y	Y	Y	1 year	732
	Mantage FR1	\$6995	\$895	4000	3	8/8	Y	Y	Y	N	Y	N	1 year	732

¹ Measured diagonally.

² Requires separate utility.

³ 4096 x 2732 lines with additional RAM.

⁴ Uses screen fonts.

⁵ PostScript-compatible model expected by June 1991.

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

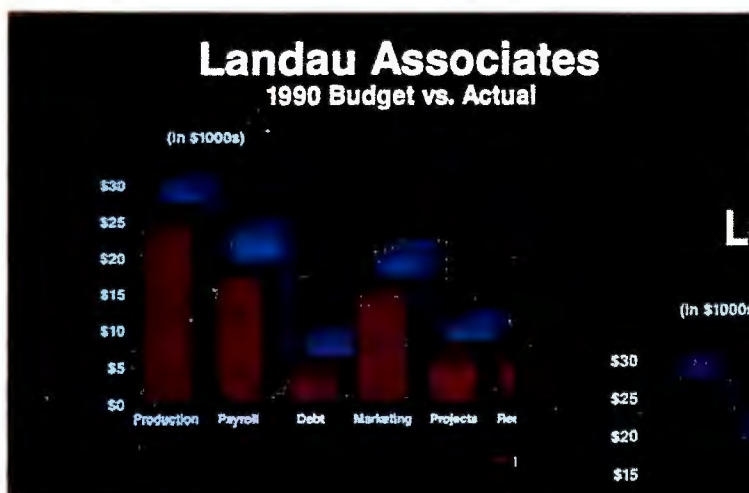
ments produce smoother curves.

Plotters are generally slow, though speed varies according to pen type and image complexity. Plotter pens change directions so often they rarely hit full throttle, so diagonal acceleration (measured in *g*'s, or units of gravity) has more bearing on performance than maximum velocity. Cost depends largely on the types and sizes of paper the machine can handle—an A-size (8½-by-11-inch) model starts at around \$700; an E-size (36-by-48-inch) unit for creating large-scale diagrams costs \$4000 or more. Make sure your graphics applications support the plotter you want to use. While all the plotters in the table support the HP-GL standard, specific device drivers let you do more with the machine.

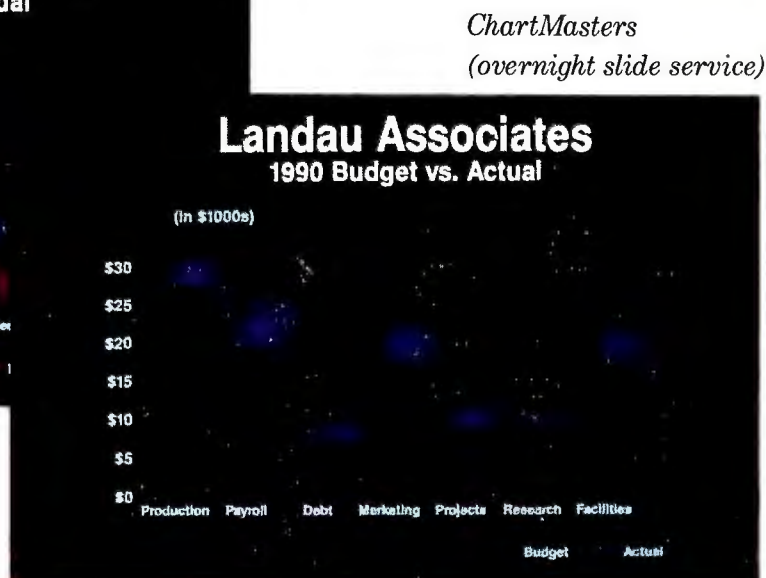
COLOR ON THE SLIDE

A desktop slide recorder puts you in charge of slide production—a big plus when you need to make changes to a presentation and can't wait 24 hours for a service bureau to return your slides. Although they usually are big-ticket items, we've uncovered a hand-

OVERNIGHT OR OVER EASY—DO-IT-YOURSELF SLIDES



Presentation Technologies' Montage FR1



ChartMasters (overnight slide service)

Film recorders offer faster turnaround on 35mm slides, with quality comparable to a service bureau's.

ful of recorders that give you complete control over slide production for under \$10,000.

But while a recorder can save you time, it won't necessarily save you money. If you buy a \$4000 model, you'll have to make around 250 slides before you realize any savings over the \$15 to \$20 per slide charged by service bureaus, and the quality usually isn't as good.

The recorders listed here capture images using a small

monochrome cathode ray tube (CRT) and color filters. Again, the main issue is slide quality, and eyeball judgments are more important than specs—a 4000-line slide from a \$12,000 recorder usually looks much sharper than one produced on a \$5000 unit, thanks to the pricier model's superior CRT and optics. Generally, bigger CRTs produce better-looking slides. Lower-cost recorders create fine slides for use with small audiences, but

if you project images to widths of 15 feet or more, you'll want to shell out for a higher-quality machine.

All the devices in the table support full 24-bit color, and most come with drivers for popular graphics packages. Make sure that the device supports the typefaces you use—PostScript support is a big plus. Most recorders offer an instant camera attachment that gives you quick sneak previews of slides; look for models that offer one as standard equipment.

HERE'S LOOKING AT YOU—IN COLOR

One day you'll be creating color documents and presentations—maybe not today or tomorrow, but soon, and for the rest of your life. Before you take the plunge, you need to decide on the level of color quality you need. Then look for products that offer the best combination of quality, convenience, cost, and serviceability. It could be the start of a beautiful friendship. ☺

Bob Weibel is a freelance writer in Ashland, Oregon. Daniel Tynan is an associate editor for PC World.



Color scanners help bring real-life images to your PC. Whether you choose a desktop (left), hand-held (bottom), or 35mm-slide scanner depends on the kind and size of pictures you need to capture.

WHERE TO BUY

A4Tech (USA) Corp. 124 Raymond St. Hasbrouk Heights, NJ 07604 201/288-3060 (fax)	Westford Technology Park Westford, MA 01886-1197 508/351-4401, 508/635-8556 (fax)	KYE Int'l 2605 E. Cedar St. Ontario, CA 91761 800/456-7593	Carrollton, TX 75006 214/242-9234, 214/245-0942 (fax)	Seiko Instruments USA, Inc. 1130 Ringwood Ct. San Jose, CA 95131 408/922-5800, 408/922-5835 (fax)
Agfa Compugraphic One Ramland Rd. Orangeburg, NY 10962 914/365-0190, 914/359-3201 (fax)	Eastman Kodak Co. 901 Elmgrove Rd. Rochester, NY 14653 800/344-0006	Lasergraphics, Inc. 20 Ada Irvine, CA 92718 714/727-2651, 714/727-2653 (fax)	NISE Inc. 20018 State Rd. Cerritos, CA 90701 213/860-6708, 213/860-6928 (fax)	Sharp Electronics Sharp Plaza Mahwah, NJ 07430 800/237-4277, 201/529-9454
Alps America 3553 N. First St. San Jose, CA 95134 800/825-2577, 408/432-8337, 408/432-6035 (fax)	Epson America, Inc. 20770 Madrona Ave. Torrance, CA 90509-2842 800/289-3776	Marstek Inc. 17795 Skypark Cir., Ste. F Irvine, CA 92714 800/366-4620, 714/833-7813 (fax)	Océ Graphic USA, Inc. 385 Ravendale Dr. Mountain View, CA 94039-7169 800/545-5445	Star Micronics America, Inc. 420 Lexington Ave. #2702 New York, NY 10170 800/447-4700, 212/286-9063 (fax)
AVR, Inc. 2201 Qume Dr. San Jose, CA 95131 800/544-6243, 408/434-0968 (fax)	GCC Technologies 580 Winter St. Waltham, MA 02154 800/422-7777, 617/890-0822 (fax)	Microtek Lab, Inc. 680 Knox St. Torrance, CA 90502 800/654-4160, 213/321-2121, 213/538-1193 (fax)	Okidata 532 Fellowship Rd. Mt. Laurel, NJ 08054 800/654-3282, 609/778-4184 (fax)	Tektronix, Inc. 26600 S.W. Pkwy. Wilsonville, OR 97070-1000 800/835-6100, 503/682-3408 (fax)
Barneyscan Corp. 1125 Atlantic Ave. Alameda, CA 94501-1145 415/521-3388, 415/521-9780 (fax)	General Parametrics Corp. 1250 Ninth St. Berkeley, CA 94710 415/524-3950, 415/524-9954 (fax)	Mitsubishi Electronics America, Inc. 991 Knox St. Torrance, CA 90502 800/843-2515, 213/527-7661 (fax)	Our Business Machines 12901 Ramona Blvd., Ste. J Irwindale, CA 91706 800/433-1435, 818/337-9614, 818/960-1766 (fax)	UMAX Technologies, Inc. 2352 Walsh Ave. Santa Clara, CA 95051 800/562-0311, 408/982-0771, 408/982-0776 (fax)
CalComp 2411 W. LaPalma Ave. Anaheim, CA 92803 800/225-2667, 714/821-2832 (fax)	Genicom One Genicom Dr. Waynesboro, VA 22980-1999 800/443-6426, 703/949-1392 (fax)	Mouse Systems Corp. 47505 Seabridge Dr. Fremont, CA 94538 415/656-1117, 415/656-4409 (fax)	Panasonic Communications & Systems Co. 2 Panasonic Way Secaucus, NJ 07094 800/742-8086, 201/348-7000	United Innovations 171 Interstate Dr. West Springfield, MA 01089 413/733-3333, 413/785-1993 (fax)
Chinon America, Inc. 660 Maple Ave. Torrance, CA 90503 800/441-0222, 213/533-1727 (fax)	Hewlett-Packard Co. 19310 Pruneridge Ave. Cupertino, CA 95014 800/752-0900	Mutoh America Inc. 895 Cambridge Dr. Elk Grove Village, IL 60007 708/952-8880, 708/952-8808 (fax)	Polaroid Corp. 575 Technology Sq. Cambridge, MA 02139 800/225-1618, 617/577-5718 (fax)	Xerox Engineering Systems Versatec Products 2710 Walsh Ave. Santa Clara, CA 95052 408/988-2800, 408/727-2399 (fax)
Citizen America Corp. P.O. Box 4003 Santa Monica, CA 90411-4003 213/453-0614, 213/453-2814 (fax)	Houston Instrument 8500 Cameron Rd. Austin, TX 78753 800/444-3425, 512/835-1916 (fax)	NCL America Computer Products 1753 S. Main St. Milpitas, CA 95035 800/521-0121, 408/956-1006	Presentation Technologies 779 Palomar Ave. Sunnyvale, CA 94086 800/782-2543, 408/749-0746 (fax)	XRS 4030 Spencer St. #101 Torrance, CA 90503 213/214-1900, 213/214-1474 (fax)
C-Tech Electronics, Inc. P.O. Box 19673 Irvine, CA 92713-9673 714/833-1165, 714/757-4533 (fax)	Howtek Inc. 21 Park Ave. Hudson, NH 03051 800/444-6983, 603/880-3843 (fax)	NEC Technologies, Inc. 1414 Massachusetts Ave. Boxborough, MA 01719 800/632-4636, 508/264-8673 (fax)	QMS, Inc. One Magnum Pass Mobile, AL 36618 800/523-2696, 205/633-4300, 205/633-4866 (fax)	ZETA Graphics Corp. 777 Arnold Dr. Martinez, CA 94553 415/372-7568, 415/372-3382 (fax)
DFI Inc. 2544 Port St. W. Sacramento, CA 95691 916/373-1234, 916/373-0221 (fax)	Ioline Corp. 12020 113th Ave. NE Kirkland, WA 98034 206/821-2140, 206/823-8898 (fax)	Nikon, Inc. 1300 Walt Whitman Rd. Melville, NY 11747 516/547-4355, 516/547-0305 (fax)	Roland Digital Group 1961 McGaw Ave. Irvine, CA 92714 714/975-0560, 714/975-0569 (fax)	
Digital Equipment Corp. 6 Technology Park Dr.	Japan Digital Laboratory Co. 4770 Calle Quetzal Camarillo, CA 93012 805/388-8709, 805/388-8708 (fax)	Nisca Inc. 1919 Old Denton Rd. #104		

You're always ready to present with the Digital Palette Color Film Recorders from Polaroid. Now you can turn your great ideas into high quality presentations instantly with the Digital Palette Color Film Recorders from Polaroid. In fact, you can make top quality, full color 35mm slides, prints and overhead transparencies right from your PC in just minutes. And because you're creating presentations at your desk, you save money on outside vendors. And of course, only Polaroid's Color Film Recorders come with a two year warranty, the longest in the industry. The CI-3000 and CI-5000 are compatible with leading software packages including Polaroid's Presentation Express, Lotus Freelance and Harvard Graphics. For a free information kit, fill out the coupon or call 1-800-225-1618. And start turning your best ideas into reality right away.

**This morning,
this entire presentation
was just a scribble.**

Get up to \$320 worth of presentation accessories
FREE with purchase by 6/30/91.

- ☐ Please send free information.
☐ Please contact me to arrange a demonstration.

Name _____

Title _____

Organization _____

Address _____

City _____ State _____ Zip _____

Phone number () _____

PC make and model _____ W/C691

Mail to: Polaroid Corp., Box 5011, Clifton, NJ 07015

Nothing Works Like
Polaroid
Instant-Presentation Solutions

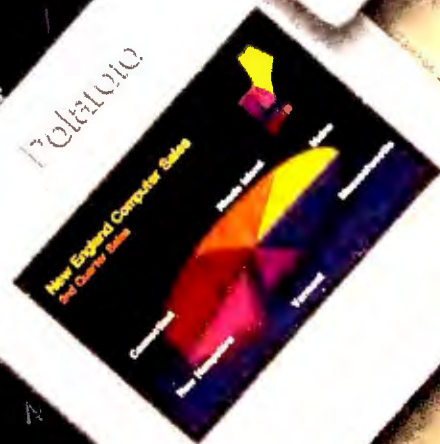
Capitalization History

\$ Millions



Bond Yields

15%



Welcome
to the Islands



Circle 221 on reader service

© 1991 "Polaroid"®

Sir Lawrence pulled Volume IV from the shelf, blew off a cloak of dust and opened the brittle pages. He could scarcely believe what he found inside.

True, he hadn't consulted these particular journals in years and, admittedly, he had acquired the ten-volume set in his youth from an odd little book store on the

Thames, but still! Holes!? A bookworm had eaten clean through the pages. Indeed, to Sir Lawrence's considerable chagrin, he found the ravenous little bugger had chewed, in a straight line, from the front cover of Volume I to the back cover of Volume X.

All of which brings us to our seemingly simple question: If each book is exactly two inches thick, how far did the bookworm travel?





In tussling with this type of cerebral aerobics, most people make a simple but serious error: They *assume* something. Of course, this happens without realizing it. But still, it happens.

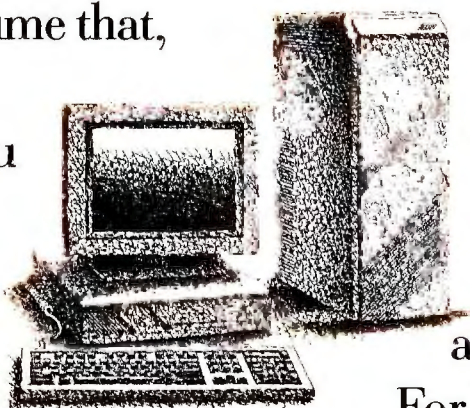
As you'll see in a moment, the way to avoid making a false assumption is to work things out methodically. Carefully thinking through each step.

For instance, consider this question. A company makes one of the broadest lines of computer terminals in the world. They have for years. In fact, they've delivered over three million of them.

If you needed terminals you'd probably think of them. But what if you needed PCs? Would you assume that, since this company is so dominant in terminals, they must

Tsk, tsk. Have you

Well, as you may have *correctly* assumed, the company in question is Wyse. And if you've been assuming we don't have an impressive array of powerful, priced-right PCs it would be a shame.



For both of us.

Consider our models that offer a rich set of features. Generous power supplies, three styles of ergonomically advanced chassis, multiple configurations, popular Wyse-designed keyboards, aggressive pricing and bundled DOS 4.01. For starters.

Of course we realize there's a good chance some of you may have read this far because you're more interested in the answer to our puzzle than in our products. You've *assumed* we'd bury the answer down here somewhere. Well, you're wrong again. At least partially. So go look on page 269.

Now that it's clear we make an impressive line of PCs, you might be tempted to assume we stop there and don't get into the even more sophisticated products like super fast multi-processing systems for the UNIX environment. With speed in the 100 MIPS range.

But you wouldn't assume that after all this. Would you?

WYSE

You're doing it again. Just because this little type is down here and printed upside down, you assumed you'd find the answer this easily. No way, San Jose. Refer back up to the ad and your patience will be rewarded.

Face-Off: PageMaker

Put two publishing pros in a locked room with a couple of PCs, give them a select mix of layout and formatting tasks, and you'll learn a lot about the two top desktop publishing packages.

Aldus technical writer Olav Martin Kvern puts PageMaker to the test.

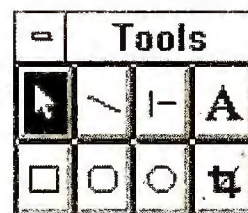


The day may arrive—or maybe it already has—when creating crucial documents for many pairs of eyes becomes a regular part of your job. For serious desktop publishing

like this, you've got two obvious options: *PageMaker 4.0* and *Ventura Publisher 3.0*. These rivals have long dominated page layout for the PC, and because both now cost the same (\$795) and run under *Windows*, competition is fiercer than ever.

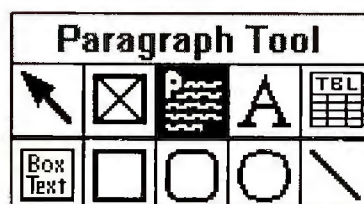
The choice between these desktop publishing titans used to be clear-cut: *Ventura* for long, structured documents such as books and technical manuals, and *PageMaker* for short, design-oriented publications such as brochures and newsletters. But this hard-and-fast distinction is blurring, thanks mainly to *PageMaker 4.0*'s new and improved long-document capabilities.

To help you decide which package is best for you, *PC World* flew in a *PageMaker* expert and a *Ventura* expert to join us at our San Francisco editorial office.



vs. Ventura

Christine Whyte and Richard Jantz



Under our watchful eyes, these publishing pros used their respective programs to produce the same set of

predesigned test documents: a 1-page brochure, a 4-page newsletter, and a 25-page technical manual.

Besides typifying three of the kinds of documents you're most likely to produce, our tests aimed to show some of the programs' striking similarities and differences. Most important, the tests reveal how often each program requires you to follow a manual step-by-step procedure rather than automatically doing the job for you.

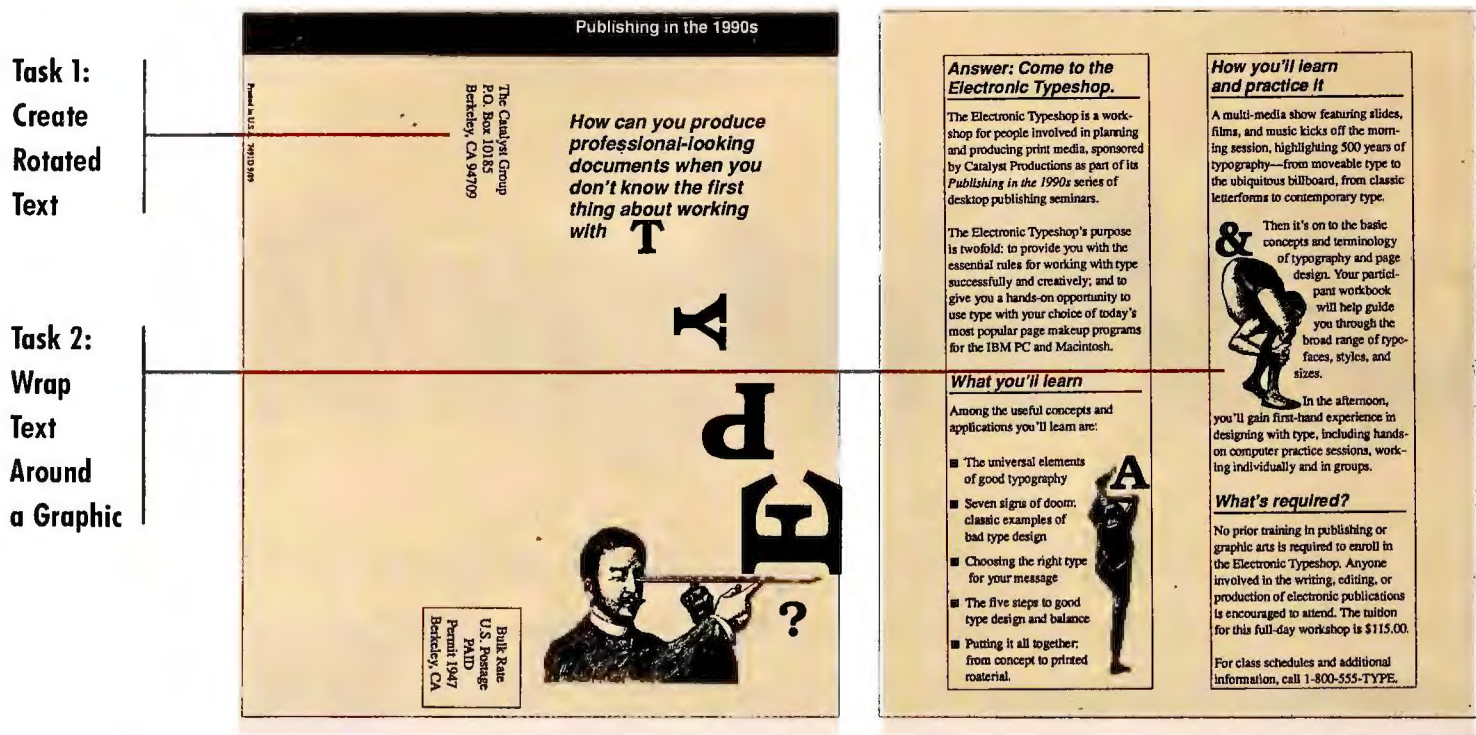
In the following pages, we describe the techniques that Olav Martin Kvern, technical writer for Aldus, and Anne Galdos, product marketing manager for Ventura Software, used to complete six of the publishing tasks required to create our test documents. Compare these with documents of your own, and you'll gain insight into which desktop publishing program best fits your needs.

FRED MERTZ



Anne Galdos, Ventura's product marketing manager, kerns under pressure.

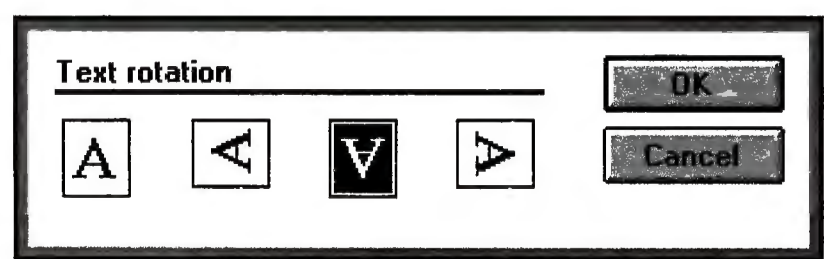




We used this sample brochure to test each program's ability to handle unique designs, including rotated text and text that fits irregularly around a graphic—both attention-getting effects favored by graphic artists. PageMaker is easier to use than Ventura at such jobs.

Task 1: Create Rotated Text

When preparing copy for mailings (return addresses and so on), you'll often want *rotated text*—type printed sideways or upside down. Rotated text is also useful as a design element and for vertical table headings in forms and schedules.



PageMaker's text rotation feature (shown here) is easier to learn and use than Ventura's, which uses the numbers 90, 180, 270, and 0 instead of simple icons.

Plug in the right commands, and both *Ventura* and *PageMaker* will automatically rotate text in 90-degree increments. The key difference is that *Ventura* uses a pulldown menu to list the text rotation options for 90, 180, 270, and 0 degrees, while *PageMaker* uses simple icons for the same choices, making the program easier to learn and use.

Anne and Olav used similar techniques to prepare the text before rotating it. In *Ventura*, Anne drew a separate box to hold each block of text to be rotated, then created a *style tag* (paragraph formatting instruction) for each different degree of rotation. In *PageMaker*, Olav created a separate block of text with its own style tag for any rotated type.

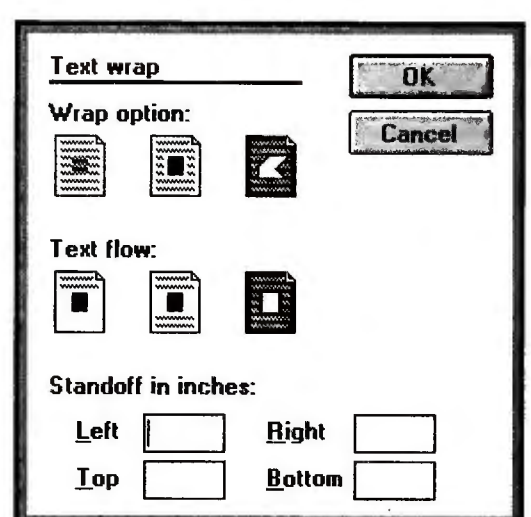
As for editing rotated text, each program offers its own advantage. In *PageMaker*, Olav triple-clicked the rotated text to open the program's built-in Story Editor and display the text in its normal (horizontal) position, which is preferable for extensive editing. In *Ventura*, Anne edited the text directly on the page, where it remained rotated, preferable for minor changes.

Task 2: Wrap Text Around a Graphic

Wrapping text around graphics is a popular, attention-getting design technique. If you do this manually, you may spend a lot of time tweaking the text so that it conforms to the shape of the graphic and adjusting the *standoff*, the amount of white space between the graphic and the text. In this instance, *PageMaker* is the answer to your prayers—its automated text-wrap feature is efficient and easy to use. *Ventura* requires manual labor, which means you may spend about twice as much time to get the results you want.

Using *PageMaker*, Olav started by choosing an option that automatically wrapped the text around the contortionist graphic. Then, clicking at different points on the dotted line that marks the on-screen wrap boundary between the text and the graphic, he stretched the boundary into the shape he wanted. He also used the default standoff of 1 pica.

Ventura wraps text automatically only around rectangular objects. To repel the text from the irregularly shaped graphic, Anne had to add a new frame under the graphic for each line of abutting text. By widening or narrowing each of these extra frames, she determined the amount of white space needed between the graphic and the text, thus creating the same text-wrap shape as in the sample brochure.

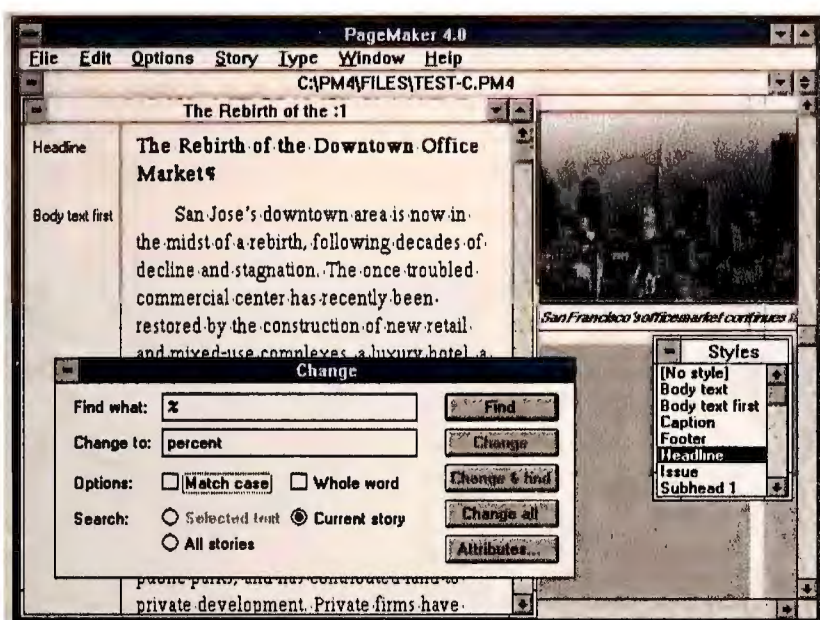


PageMaker's text-wrap feature (shown here) is better than Ventura's, which can't wrap text automatically around an irregularly shaped object.

Task 3:
Find and
Replace
Text
Task 4:
Add a
Graphic
With a
Caption



With this sample newsletter, Anne and Olav evaluated the talents of PageMaker and Ventura at multicolumn text and graphics. Tasks included resizing a photograph, adding a caption, and making global changes to the text.



With PageMaker's Story Editor, you can find and change selected text in a document without using a separate word processor.

Task 3: Find and Replace Text

To produce newsletters and other deadline-driven documents, you need a program that helps you make last-minute copy changes in a hurry. Unless you can accomplish the editing inside your publishing program, you must go to your word processor, make the changes, and then reopen the publication file—a time-consuming process.

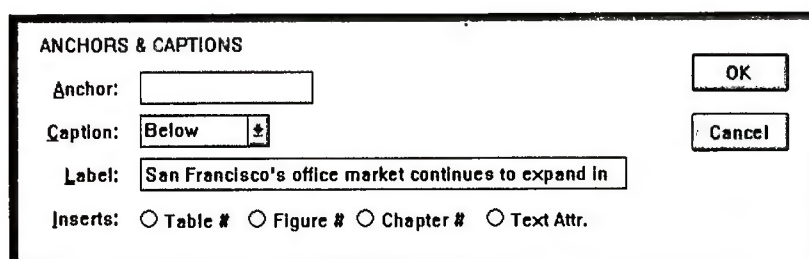
In this task, which involved changing every % sign in a newsletter article to the word *percent*, we learned that *Ventura*'s text editing capabilities pale in comparison to those of *PageMaker*'s Story Editor; the program's powerful new text editor. Anne chose to exit *Ventura*, used *WordPerfect* to make the global text changes, then reopened the edited file in her *Ventura* document. But Olav used the Story Editor's search-and-replace-text feature and changed the pesky % sign in a fraction of the time. This and other word processing features make *PageMaker* the better choice for documents that require global text editing—especially at the last minute.

Task 4: Add a Graphic With a Caption

Today, most newsletters present information graphically—in photos, illustrations, tables, or charts. A good desktop publishing program lets you easily size a graphic, *crop* (trim) its edges to show only the portion you want, and link a caption to the graphic so the two stay “glued” together in the layout.

With both *PageMaker* and *Ventura*, it's easy to size and crop a graphic. In *Ventura*, Anne drew a frame approximately the size necessary for the graphic, and when she inserted the photo, it conformed to the frame's dimensions. To crop the photo, she simply moved it around in the frame until the desired portion was showing. In *PageMaker*, Olav placed the graphic first, then sized it by snapping the photo's edges to vertical and horizontal *ruler guides* (nonprinting guidelines) that he had arranged to form the properly sized rectangle. He used the same cropping method as Anne.

Anne went one step further, however. She fine-tuned her layout by entering the graphic's exact height and width into a dialog box. Besides providing that extra precision, *Ventura* automatically links a caption to the graphic. Using a *Ventura* dialog box, Anne placed the automatic caption below the graphic (she could have placed it above the caption or on either side) and entered the caption words on a blank line. In *PageMaker*, Olav created the caption as a separate text box and had to link it to the graphic manually.



Unlike *PageMaker*, *Ventura* provides an option (shown here) that lets you attach caption text to any graphic in a document. Move the graphic, and the caption moves with it.

Task 5:
Add
Numbers
to
Headings

Task 6:
Create a
Table of
Contents
From
Headings

V-I. Our Complex World

Loren ipsum dolor sit amet, consectetur etu adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo.

Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu qui feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praedit pendent luptatum zzril delenit augue duis dolore te feugait nulla facilisi.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet etud dolore magna aliquam erat.

A. Pottery

Ut wisi enim ad minim etu ex veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis etu autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim adqua minim quis ut veniam, quis nostrud exerci tation ullamcorper suscipit lobortis.

Duis qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi. Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming option ipsum dolor sit amet.

1. Hydrogen

Duis autem vel eum iriure et dolor in hendrerit in vulputate velit esse molestie etu consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit duis te praesent luptatum zzril te et delenit augue duis dolore te feugait nulla facilisi. Ut lorem ipsum dolor sit amet, minim quis ut veniam.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet etu dolore magna aliquam erat volutpat. Ut wisi enim ad minim quis ut veniam, quis nostrud exerci tation ullamcorper ut laoreet dolore. Ut lorem ipsum dolor sit amet.

Our Complex World

Pottery

V-I

This sample technical manual tests each program's skill at long-document handling, including the ability to add section numbers to headings, update them after changes are made, and generate a table of contents. PageMaker's new long-document features are a vast improvement over earlier versions, but Ventura still handles this type of document better.

Task 5: Add Numbers to Headings

Whether you produce a 20-page or a 200-page manual, you'll usually have to number chapters, section headings, subheads, and figures. A desktop publishing program that automatically numbers these items is an invaluable time-saver, especially if you make changes and end up having to renumber everything.

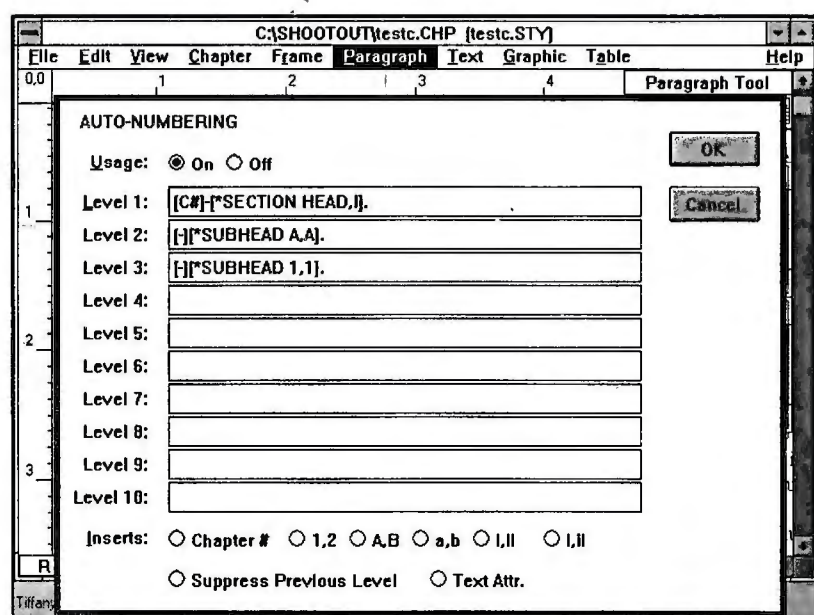
In this task, *Ventura* shines. When you first create a document, you choose a numbering scheme, such as the standard outline format of Roman numerals, letters, and numbers for different heading levels. From then on, *Ventura* does all the numbering for you automatically. In *PageMaker*, you have



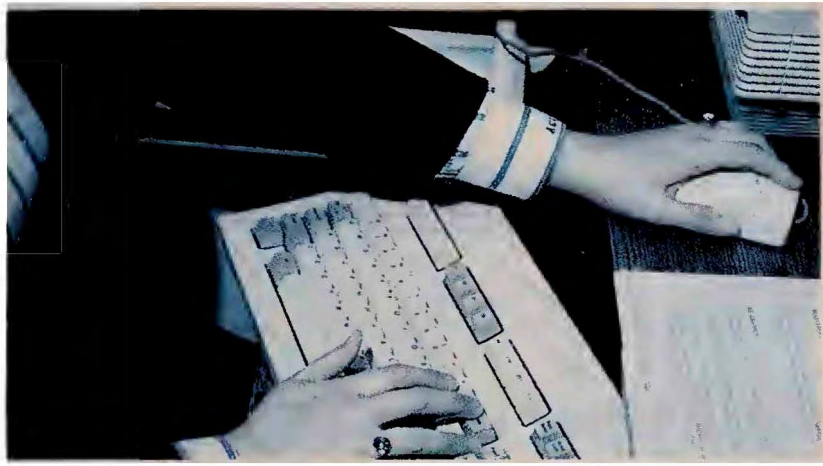
to search for each heading and enter the correct number manually.

Anne followed two steps in *Ventura* to number the manual's headings. The first was to assign a numbering scheme to the three heading levels. The second step was to align the section number ("V-I." on our sample page) next to the section heading ("Our Complex World")—necessary because *Ventura* automatically placed the number *above* the heading instead. Anne used several dialog boxes to align these two elements.

Olav used *PageMaker*'s Story Editor to search for each heading level and then entered the correct number in front of each heading. He suggested that alternatively you could export the text file to *Word for Windows* because that program numbers headings in the correct order. It's plain that for this task, *PageMaker* takes longer than *Ventura*, especially with particularly lengthy or complex documents.



Ventura automatically numbers every heading level in your document according to the format you choose.

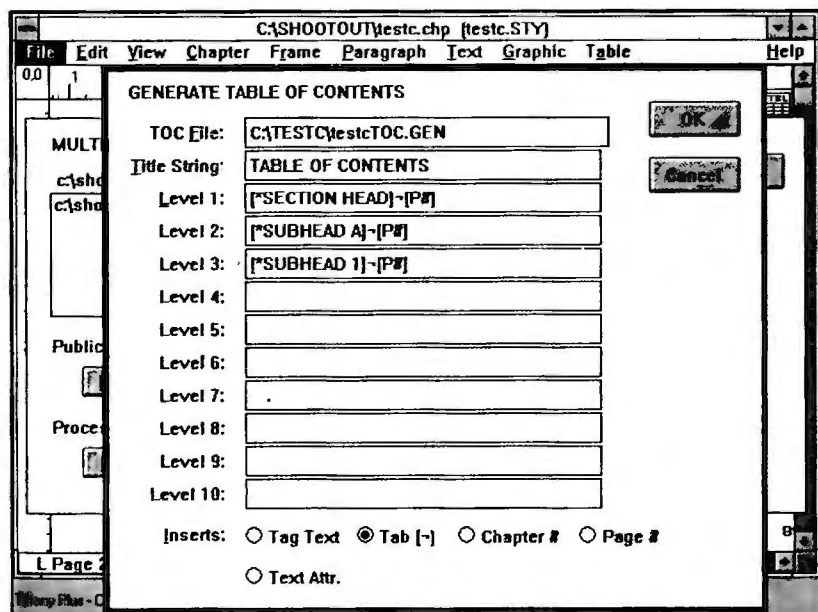


Task 6: Create a Table of Contents

One element that long documents and many business reports share is a table of contents (TOC), which both *PageMaker* and *Ventura* can automatically generate and format. To produce one with the proper page numbers, you must assign style tags to titles and subheads; the program then grabs these items and generates a TOC file that you can place on the page and format.

In selecting the tags to include in the TOC, Anne finished faster than Olav because *Ventura* lets you enter all the tag names on one form, while *PageMaker* has you use a dialog box for *each* TOC level. The remaining steps are the same in both programs: You pick a menu option to generate the TOC, and then you format the resulting text file.

Ventura's TOCs won't go any deeper than ten levels, while *PageMaker*'s TOCs can conceivably include text tied to every tag in a document. But unless your TOC requires extraordinary detail, *Ventura*'s single-form approach is faster and more flexible, especially for generating a separate list of all figures and tables. *PageMaker* can create a three-level index (compared with *Ventura*'s two levels), but only *Ventura* has automatic footnoting and cross-referencing within text—vital time-savers for lengthy documents.



With *Ventura*, you use a single form to list the tag names you want in a table of contents, including chapter numbers, text attributes (such as bold), and other formatting instructions.

THE PROOF'S IN THE PUBLISHING

As Anne and Olav have helped demonstrate, the old cliché about using *PageMaker* for design-intensive documents and *Ventura* for long documents still applies, but not categorically. *PageMaker*'s newfound capabilities—a high 999-page ceiling on document size, plus the ability to generate a table of contents, an index, and page numbers automatically—make it far more practical than it once was for big projects.

But with more automated features than *PageMaker*, *Ventura* still has the edge for manuals, technical papers, quarterly reports, and the like. Only *Ventura* automatically numbers chapters, headings, and figure captions and then rennumbers them if you move or delete a section or make other revisions. It also provides such labor-saving features as automatic footnoting, complex cross-referencing, and a built-in equation editor.

Now that you've had a close look at how these programs handle key tasks, we hope you've gained better insight into which one is right for you. For many jobs, either package will do handily, but if you want one program that lets you create the broadest possible range of business documents, choose *Ventura*. *PageMaker* is still the better choice for graphic artists, but *Ventura* is better for everyone else. ☺

Christine Whyte, formerly an editor for Publish, is now a freelance editor in San Francisco. Richard Jantz is a contributing editor for PC World.

Task Scorecard

	PageMaker 4.0	Ventura Publisher 3.0
1. Rotate text	✓	
2. Wrap text around graphic	✓	
3. Find and replace	✓	
4. Add a graphic with caption		✓
5. Add numbers to headings		✓
6. Create table of contents		✓

WHERE TO BUY

PageMaker 4.0 \$795; Aldus Information Center, 3441 MacArthur Blvd., Santa Ana, CA 92704; 800/333-2538, 206/628-2320 REQUIREMENTS: 2MB RAM, hard disk, Windows 3.0, graphics display, mouse; TECHNICAL SUPPORT: unlimited, toll number, M-F 7-5; OTHER SUPPORT: bimonthly magazine, CompuServe forum. **Reader service no. 703.**

Ventura Publisher 3.0, Windows Edition \$795; Ventura Software, Inc., 15175 Innovation Dr., San Diego, CA 92128; 800/822-8221, 619/673-7586 (fax). REQUIREMENTS: 2MB RAM, hard disk, Windows 3.0, graphics display, mouse; TECHNICAL SUPPORT: unlimited, toll number, M-F 9-5; OTHER SUPPORT: monthly magazine, CompuServe. **Reader service no. 704.**

An ideal system for growing companies...

runs over 5,000 applications, designed for

lets you manage all your information from

is easy to afford, easy to learn and easy to

makes your investment in PCs worth more

sets industry standards for quality and cus

lets you focus on your business instead of



all kinds of businesses

central place

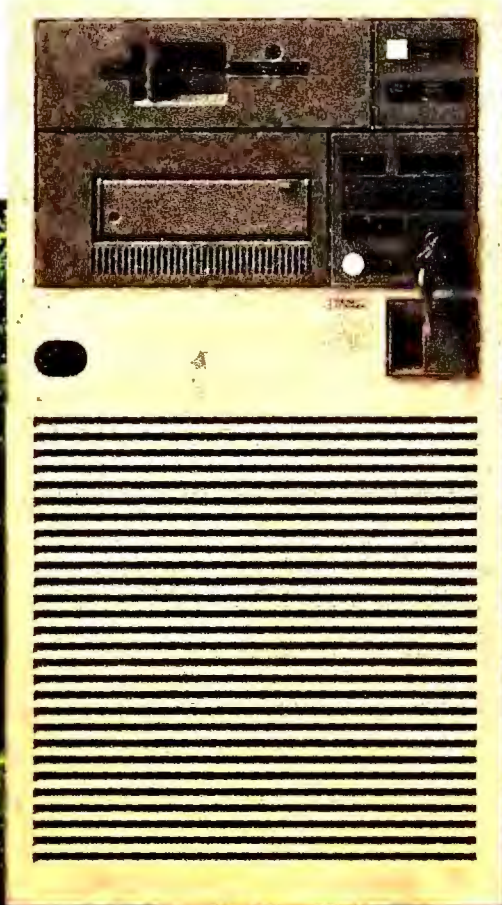
and

than ever

mer satisfaction

computer

...is an IBM AS/400.[®]



IBM[®]

*To learn more about
growing your business with
an IBM AS/400, call an IBM
marketing rep. Or, call us
for the 44-page IBM AS/400
Solutions Catalog.
1 800 365-4 IBM, ext. 11*



The AS/400 Model D10 is just over 2 ft. tall.

Recycle

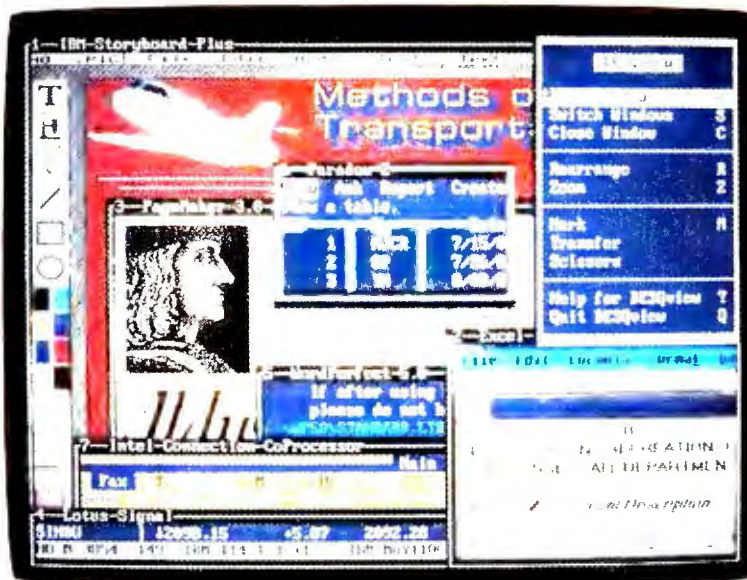
Everyone wants more productivity out of their computers.

But not everybody is willing to spend a fortune to get it. That's why Quarterdeck productivity software is outselling everyone else's—including Microsoft's.

DESQview Multitasks and Windows on Your PC

As early as 1982, computer enthusiasts found our products helped them set up their ideal working environment. Since then, step-by-step, we've improved DESQview into what some very knowledgeable people call "the best alternative to OS/2".

Today's DESQview allows you to multitask multiple programs in windows side by side—text programs; graphic programs. But best of all, you don't have to buy a lot of new hardware and software to use it. DESQview works with the PC and the programs you now own.



Over 1,000,000 users multitask their programs with DESQview.

QEMM Breaks the 640K Barrier

Break the 640K barrier in DOS—or in Windows 3.0—and give your DOS programs up to 130K more room within the first megabyte of memory, plus another 96K of video memory, in some instances.

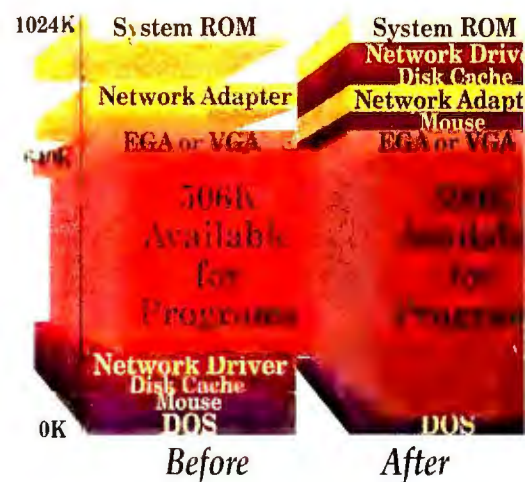
QEMM takes buffers, network drivers, TSRs and other memory-using utilities and moves them into idle areas between 640K and one megabyte.

It's not complicated. It's easy. Just type *Optimize* and QEMM does the rest.

QEMM 386 is included with DESQview 386 to create the optimum operating environment for productivity oriented users of 386, 386SX and i486 PCs.

QEMM 50/60 is designed to work in IBM® PS/2™ Model 50 and 60 PCs with specific IBM adapter boards.

QEMM is the #1 selling utility according to distribution sources. In fact, it was the number one selling



software package in the PC industry April, May and June 1990.



These are some of DESQview's most recent awards

These are some of QEMM's most recent awards

What Makes QEMM the Number One Selling Windows 3 Add-on?

More Memory.

If you're running Windows 3.0 you can't get enough. But no matter how much memory your computer has, 1MB, 2MB, 4MB, or more, you'll have more usable memory with QEMM.

"QEMM eases Windows' RAM limitations—QEMM brings significant improvements for Microsoft Windows 3.0 users suffering from limited space"

—David Alison, PC WEEK

Gain up to 120K or More of Additional RAM

The OPTIMIZE program (included FREE with every copy of QEMM) scans your computer for device drivers, pop-up programs and anything else that can be stored in "high" memory. Then OPTIMIZE automatically reconfigures your system to give you the maximum possible memory.

☐ Please send information on QEMM 5.1

☐ Please send information on your new DESQview 2.3 that works with Windows 3.0

Name _____ Title _____

Company _____ Phone _____

Address _____

City _____ State _____ Zip _____

#1

"When I ran OPTIMIZE...it attempted 9 million combinations before reporting the best configuration. My net gain was 140K of [increased] memory. Wow."

—Steve Bass, President
Pasadena IBM Users Group

"QEMM 5.1 is everything you might want in an advanced state-of-the-art memory manager—and more...it [is] unique in the market."

—Steve Gibson, InfoWorld

Stop Suffering from RAM CRAM with Windows 3.

Mail or FAX this card to us today to get a FREE booklet on QEMM and memory management. You'll also get a special offer that includes our no-questions-asked 60 day money back guarantee!



Quarterdeck Office Systems (213) 392-9851 Fax: (213) 399-3802

Please
place
postage
stamp
here

Quarterdeck Office Systems
150 Pico Boulevard
Santa Monica, CA 90405

"QEMM is the apex of memory programs, designed to extract every drop, every speck of unused memory on your [computer] and turn it into EMS memory—or, with very little effort, into conventional memory."

—Steve Bass, President
Pasadena IBM Users Group

your PC

Manifest Gives You In-Depth Knowledge of Your PC



Our newest utility is Quarterdeck Manifest, the best way to discover everything you ever wanted to know about your PC. Manifest shows you how memory is used, comparing memory speeds, and indicating how you can gain more room for your programs to work.

It can point you to as much as 130K additional RAM your programs can use. It shows you which memory areas are faster. It even helps you compare built-in memory board performance.

Manifest does for memory what PC Tools Deluxe does for disks. And it's easy to use.



Manifest has been quick to win recognition

GRAM Optimizes the Memory of 8088 and 80286 PCs

Once you know where you can move those memory-hogging utilities, GRAM lets you do it. It even works on 8088, 8086 and 80286 PCs with EMS 4.0 or EEMS memory boards.

GRAM and Manifest help you get every last 'K' out of the hardware you own.

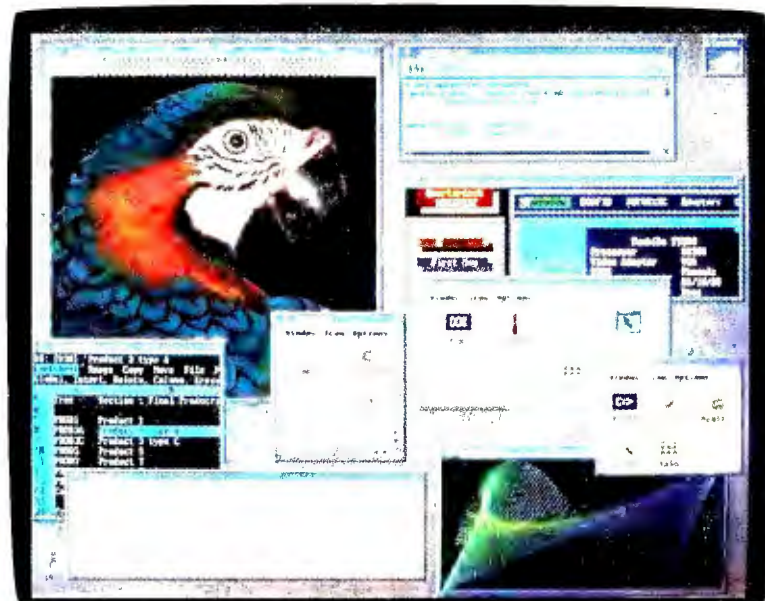
In fact, all our products are designed to give you more productivity out of the system you already have, whether 8088, 8086, 80286, 386SX, 386, or i486.

Quarterdeck Products for Everyday Heroes

Our mission is to protect your investment. Whether your PC is 9 years old or fresh out of the box, our products make it more versatile, more flexible; and help deliver performance dividends from your computer investment. Our products help fine-tune your PC which helps you do your work better, which makes you look good.

A Glimpse of the Future: DESQview/X

We're also looking ahead to the next wave of computer system development: enterprise computing. Our new



DESQview/X allows different computers with different operating systems to work together. Using the advanced X-windows environment, it lets users run programs on remote computers and watch them run in their PCs' windows. DESQview/X will be available later this year.

Quarterdeck products. The best way to get the most out of your PC today. And tomorrow.

Quarterdeck

150 Pico Blvd., Santa Monica, CA 90405 (213) 392-9851 Fax (213) 399-3802

MONITORS

JAMES FELICI AND SUSAN LUSTY

DESKTOP PUBLISHING



Cornerstone's portrait monitor and Radius's dual-page monitor both help increase productivity.

NOTHING MAKES A DESKTOP PUBLISHER MORE PRODUCTIVE THAN A JUMBO MONITOR THAT DISPLAYS TRUE-TO-LIFE PAGES. HERE'S HOW TO SELECT THE ONE THAT'S RIGHT FOR YOU.

If you spend at least half your time desktop publishing, an oversized high-resolution monitor can boost your productivity more than any single piece of hardware. With a clearer view of more of the page, you can vastly reduce the need to perform repetitive, time-consuming tasks like zooming, scrolling, and proof printing.

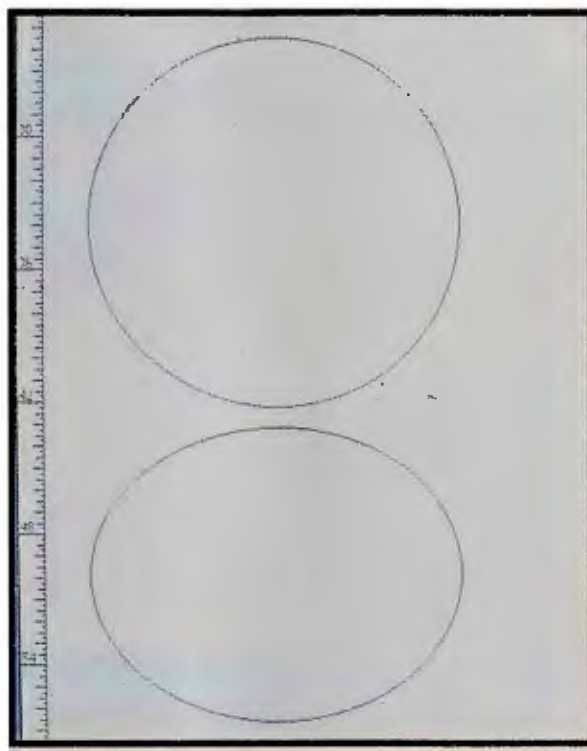
A quality monitor also lessens eyestrain and eye fatigue.

Because few desktop publishers can afford color publishing, this Buyers' Guide focuses on large monochrome monitors. When a big, sharp view of the page is paramount, why spend more on your display just to make windows look more colorful? Monochrome models may cost half as much as color units with the same resolution and generally deliver better speed.

We've divided the monitors in this guide into two types: 15-inch portrait oriented monitors, designed to let you view a single 8½-by-11-inch page; and 18-to-24-inch dual page units. Portrait monitors best suit desktop publishers who create heavily formatted reports or single-page newsletters, marketing brochures, and the like. These monitors go for relatively little, from less than \$900 to \$1400.

If you design publications for outside rather than in-house distribution, go ahead and pony up the dollars for a dual-page monitor. Anyone who works with facing pages will benefit from being able to see a two-page spread just as readers will see it. The extra screen area means that tool-

boxes, rulers, and scroll bars won't overlap the image and that there's ample "paste-board" room for *PageMaker* and *XPress*. You should expect



If a monitor doesn't use square pixels, the bit-mapped images can become distorted when rotated, like this circle.

It's clear from the 1990 bus that our international sales unrealistic. This has been more obvious by the impact national economic slowdown overall sales. While it is not sible to foresee these kinds economic trends, our own f should never be based on a

It's clear from the 1990 bus that our international sales unrealistic. This has been more obvious by the impact national economic slowdown overall sales. While it is not sible to foresee these kinds economic trends, our own f should never be based on a

Type should appear crisp and clear, without any fuzziness or halos around the letters. Look for a monitor that's easy on your eyes (left); staring at fuzzy text (right) will tire your eyes.

Flicker Test



To test for screen flicker, set a series of 1-point rules separated by 1-point white spaces, and check for vibrating lines.

DUAL-PAGE MONITORS

Manufacturer	Product	Price ¹	Actual image (inches) ²	Graphics coprocessor	RESOLUTION	
					Maximum resolution ⁵	Pixels per inch
CORNERSTONE TECHNOLOGY	DualPage 150	\$3395	19 x 13.8 x 10.2	N	2048 x 1664	150
	DualPage 120	\$2495	19 x 13.8 x 10.2	N	1600 x 1280	120
ELITE BUSINESS APPLICATIONS	Design View/19E	\$1695	19 x 14.5 x 11.75	Y	1280 x 1024	96
IBM	IBM PS/2 Display 8507	\$1329	19 x 14 x 10.5	Y	1024 x 768 ³	73
	IBM PS/2 Display 8508	\$1775	19 x 14 x 10.5	Y	1600 x 1200 ⁴	114
IMAGE SYSTEMS CORP.	M24LMAX	\$1995 ⁶	24 x 17.5 x 12.75	Y	2048 x 1536	150
MIRROR TECHNOLOGIES	PixelView PC/II	\$997	19.6 x 14.07 x 10.55	Y	2048 x 1024	91
	PixelView PC/IIH	\$1297	19.6 x 14.07 x 10.55	Y	2048 x 1024	91
	PixelView PC/IIIS	\$1797	19.6 x 14.07 x 10.55	Y	2048 x 1024	91
MONITERM CORP.	Viking 3/91 M	\$1490	19.6 x 14 x 10.5	Y	1280 x 960	91
	Viking 3/91 GS	\$2490	19.6 x 14 x 10.5	Y	1280 x 1024	91
	Viking 2400 M	\$2490	24 x 17.5 x 13.2	Y	1280 x 960	72
	Viking 2/91 M	\$1990	19.6 x 14 x 10.5	Y	1280 x 960	91
	Viking 2/115 M	\$2290	19.6 x 14 x 10.5	Y	1600 x 1200	115
NISSEI SANGYO AMERICA	SuperScript	\$2495	20 x 19.2 x 18.3	Y	1600 x 1280	110
PANASONIC COMMUNICATIONS & SYSTEMS	PanaPro M1900AT	\$2099	19 x 13.9 x 10.4	Y	1280 x 960	92
PLANAR SYSTEMS, INC.	WS-X/AT Workstation Monitor	\$3995	17.8 x 13.6 x 11.5	N	1024 x 768	75
RADIUS, INC.	TPD/19-MCA	\$2190	19 x 14.1 x 10.8	N	1280 x 960	90
	TPD/19-ISA	\$2190	19 x 14.1 x 10.8	N	1280 x 960	90
	TPD/21-ISA	\$2590	21 x 15.5 x 11.9	N	1280 x 960	82
	TPD/21-MCA	\$2590	21 x 15.5 x 11.9	N	1280 x 960	82
SAMPO AMERICA	OfficePro II Graphics System	\$1475	20 x 13.7 x 10.6	N	1280 x 960	92
	OfficePro Ilo Graphics System	\$3395	20 x 13.7 x 10.6	Y	1280 x 1024	92
SAMSUNG INFORMATION SYSTEMS AMERICA, INC.	PageMaster 2	\$1498	8.15 x 14.17 x 11.3	Y	1280 x 1024	90
SIGMA DESIGNS, INC.	L-View GSP	\$2695	19 x 14.1 x 10.2	Y	1664 x 1200	118
	L-View for PC	\$2495	19 x 14.1 x 10.2	N	1664 x 1200	118
	L-View for PC (monochrome)	\$2195	19 x 14.1 x 10.2	N	1664 x 1200	118
	L-View for PS/2	\$2495	19 x 14.1 x 10.2	N	1664 x 1200	118
	SilverView (monochrome)	\$2199	21 x 16 x 12	N	1152 x 870	72
	SilverView PS/2	\$2199	21 x 16 x 12	N	1152 x 870	72
	SilverView GS	\$2995	21 x 16 x 12	Y	1152 x 870	72
TAXAN AMERICA, INC.	CrystaView 1901	\$2195	19 x 13.7 x 10	Y	1280 x 960	96
VENTEK CORP.	AT 2000	\$2695	17 x 13.6 x 10.2	N	1280 x 960	94
	PS 2000	\$2495	17 x 13.6 x 10.2	N	1280 x 960	94
VERMONT MICROSYSTEMS, INC.	PageManager 12	\$1795	20 x 18 x 18	Y	1280 x 960	92
	PageManager/2-12-MCA	\$1795	20 x 18 x 18	Y	1280 x 960	92
WYSE TECHNOLOGY	WY-790N	\$1848 ¹¹	19 x 13.8 x 11	N	1280 x 1024	83

¹Price includes controller board.
²Depth by width by height.

³Highest resolution in noninterlaced mode is 640 x 480.
⁴Highest resolution in noninterlaced mode is 1360 x 1024.

⁵Horizontal by vertical.
⁶Listed in order of preference.

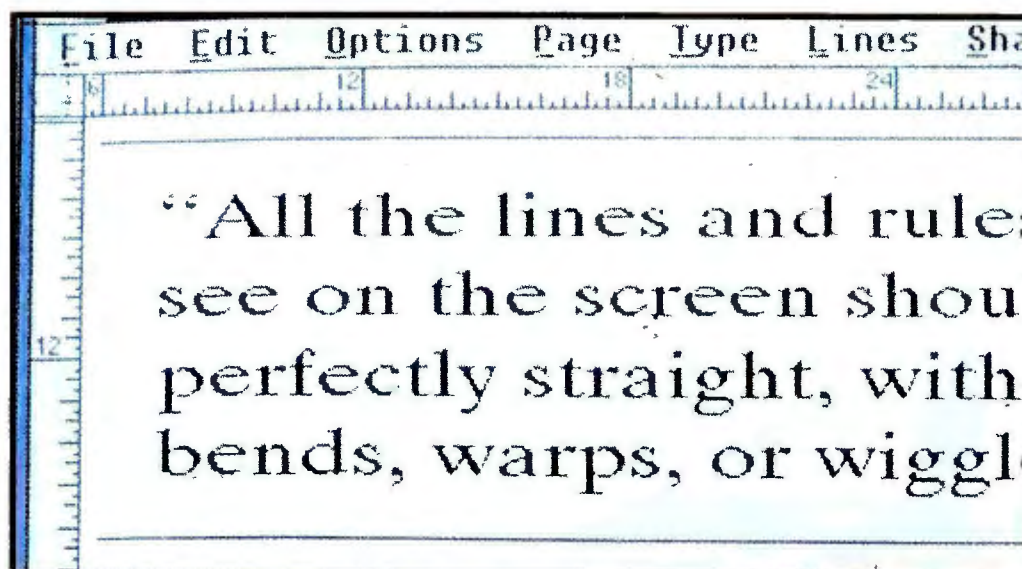
⁷Optional.
⁸Black-and-white only.

to pay about \$2000 for a dual-page unit.

Speed and Sharpness

All the monitors in our Buyers' Guide come with a special video board that determines speed, resolution, and other important attributes.

For top performance, look for a board that has a graphics coprocessor. Speed varies widely depending on the type of coprocessor and on several other factors. The best way to



All the lines and borders should be square, not warped and wobbly like you see here.

DISPLAY STANDARDS⁶

Maximum gray levels	Square pixels	Windows 3.0 driver	GEM driver	VGA	HGC	EGA	CGA	MDA	Non-interlaced	Refresh rate (Hz)	Nonglare screen	Warranty (years)	Reader service no.
4	Y	Y	N	N	Y	N	N	N	Y	77	Y ⁷	1	655
16	Y	Y	N	Y	Y	Y	Y	N	Y	75	Y ⁷	1	655
0 ⁸	N	Y	Y	N	Y	N	N	Y	Y	68	Y ⁷	3	656
64	Y	Y	Y	Y	N	N	N	N	N	43.5	Y	1	657
16	Y	Y	Y	Y	N	N	N	N	N	49	Y	1	657
256	Y	Y	Y	Y	Y	Y	Y	Y	Y	80	Y ⁷	1	658
2	Y	Y	Y	N	N	N	N	N	Y	77	Y	1	659
2	Y	Y	Y	N	Y	N	N	N	Y	66	Y	1	659
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	77	Y	1	659
0 ⁸	Y	Y	Y	N	Y	N	Y	Y	Y	75	Y ⁷	1	660
256	Y	Y	Y	Y	N	Y	Y	N	Y	75	Y ⁷	1	660
0 ⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	66	Y ⁷	1	660
0 ⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	66	Y ⁷	1	660
0 ⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	70	Y ⁷	1	660
256	Y	Y	Y	N	N	N	Y	N	Y	70	Y	1	661
2	Y	Y	Y	N	Y	N	N	N	Y	64	Y	1	662
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	60	Y	1	663
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	73	N	1	664
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	73	N	1	664
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	73	N	1	664
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	73	N	1	664
2	Y	Y	Y	N	Y	N	N	N	Y	64	Y	1	665
256	Y	Y	Y	Y	N	Y	Y	N	Y	70	N	1	665
4	Y	Y	Y	N	Y	N	N	Y	Y	63	Y	1	666
4	Y	Y	Y	N	Y	N	N	Y	Y	72	Y ⁷	1	667
4	Y	Y	Y	N	Y	N	N	Y	Y	72	Y ⁷	1	667
0 ⁸	Y	Y	Y	N	Y	N	N	Y	Y	72	Y ⁷	1	667
0 ⁸	Y	Y	Y	Y	N	Y	Y	N	Y	72	Y ⁷	1	667
0 ⁸	Y	Y	Y	N	Y	N	N	Y	Y	73	Y ⁷	1	667
0 ⁸	Y	Y	Y	Y	N	Y	Y	N	Y	73	Y ⁷	1	667
256	Y	Y	Y	N	Y	N	Y	Y	Y	73	Y ⁷	1	667
0 ⁸	N	Y	Y	N	Y	N	N	N	N ¹⁰	64	Y	1	668
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	63	Y	1	669
2	Y	Y	Y	Y	N	Y	Y	N	Y	63	Y	1	669
16	Y	Y	Y	N	N	N	Y	N	Y	66	Y	1	670
16	Y	Y	Y	N	N	N	Y	N	Y	66	Y	1	670
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	66	Y	1	671

⁶Price does not include controller board.

¹⁰Noninterlaced only with HGC and of 1280 x 960.

¹¹Price includes WY7500 cord.

For more information about all products in this table, circle reader service no. 907.

determine how fast the board will run is also the most obvious: Give it a real-world test with your desktop publishing program of choice.

Resolution, which determines the type size you can read and the amount of the page you'll be able to see, is another key point of comparison. It's usually described in terms of how many pixels (the dots composing the image) will fit on the screen. The greater the number of pixels,

the sharper the image.

If you're comparing monitors of different sizes and shapes, however, resolution measurements such as 1024 by 1280 start to lose their meaning. A more useful way to describe resolution is in pixels per inch (often referred to as dots per inch, or dpi); only this can tell you whether the resolution of one monitor is finer than that of another. We've included this specification in the Buyers' Guide tables.

Ideally, you should find a screen with square pixels, like those popularized by Apple's Macintosh and adopted in IBM's VGA display standard. Without square pixels, if you turn a font, circle, or other element sideways, that element may appear stretched or otherwise distorted.

Another issue to consider is gray-scale resolution. If you frequently drop scanned photographs into your documents, look for a monitor that displays

a variety of shades between black and white. Note, however, that prices for similar products rise quickly with the number of grays (256 is usually the maximum).

Compatibility Checklist

The maximum resolutions of the monitors in this guide do not match any of the common graphics standards. That means you can't be sure whether a monitor will run at maximum resolution with

Some call this mapping why Tucson didn't meet



For your free Harvard GeoGraphics demo disk, call 1-800-336-8360, ext. 703

Harvard is a registered trademark of Software Publishing Corporation. © 1991 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210.

We call it figuring out its quota.

We also call it Harvard® GeoGraphics.

It's a brand new presentation mapping program from Software Publishing Corporation.

That helps your audience get a clearer picture of what's being said. By letting you present facts and figures in a context they'll understand.

Namely, maps.

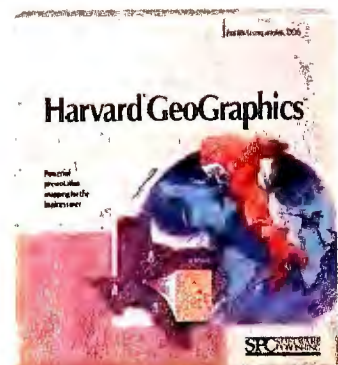
Thousands of them. Harvard GeoGraphics gives you 192 countries, 50 U.S. states, 3,141 U.S. counties and over 60,000 city locations.

Maps you can then custom-define, like we did with our Tucson example. You can also have the program color-code each map automatically by just typing in your data. Or even link your map to a spreadsheet or database so it always reflects the latest and greatest information.

Call for your free demo disk today.

The technique is called mapping. But we think you'll call it just plain smart.

SPC SOFTWARE
PUBLISHING
C O R P O R A T I O N





A Complete 486TM-33 MHz EISA System For Under \$4,000.



You are already familiar with MIS's great price on our fantastic 80386-33MHz system so, now, MIS remains on the forefront of leading edge technology with its 80486-33MHz EISA computer system!

And it's not just another 486TM! MIS incorporates the Micronics motherboard with high quality components to offer the maximum PC at an affordable price. The MIS 486TM-33 EISA supports 80486 CPU burst mode and EISA burst mode for maximum CPU performance and has up to 256K Cache buffer to satisfy DMA requirements on EISA architecture. It also supports up to 64MB of main memory on the motherboard.

MIS 486TM-33MHz EISA STANDARD

- 1MB 80NS SIMM
- INTEL[®] EISA CHIPSET / PHOENIX[®] EISA BIOS
- 64K EXTERNAL SRAM CACHE
- WEITEK[®] MATH CO-PROCESSOR SOCKET
- TEAC[®] 5.25" 1.2MB FLOPPY DRIVE
- TEAC[®] 3.5" 1.44MB FLOPPY DRIVE
- 43MB AT HARD DISK DRIVE
- 2 SERIAL, 1 PARALLEL AND 1 GAME PORTS
- MGP ADAPTER
- SAMSUNG[®] 12" AMBER 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

\$3,995

Performing with 32 bit I/O power, the MIS 486TM-33 EISA computer gives you RISC performance with ASIC architecture at a fraction of the cost. It is the ideal platform for UNIX/Xenix as well as high performance CAD/CAM applications.

486-25MHz EISA STANDARD System	\$3,595
486-33MHz ISA STANDARD System	\$2,995
486-25MHz ISA STANDARD System	\$2,595
386-33 MHz STANDARD System w/ 32K Cache	\$1,995
386-25MHz STANDARD System w/ 32K Cache	\$1,845
386-25MHz STANDARD System (Non-Cache)	\$1,595
386SX-20MHz STANDARD System (Non-Cache)	\$1,195
386SX-16MHz STANDARD System (Non-Cache)	\$1,145
286-12MHz STANDARD System	\$ 895

VGA (640x480) Upgrade	Add	\$ 360
P-VGA (1024x768) Upgrade	Add	\$ 450
80MB/105MB/212MB AT Hard Drive Upgrade	Add	\$245/329/745
158MB/380MB/676MB ESDI Hard Drive Upgrade	Add	\$745/1295/1895
RAM Upgrade	Add	\$ 80/M
64K Cache Upgrade (386-25/33 MHz)	Add	\$ 50
Vertical Case	Add	\$ 125
Mini Vertical Case	Add	\$ 50
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

Prices and terms are subject to change without notice. 30 days money back does not include shipping charge. CA residents add appropriate sales tax. No surcharge on credit card purchases. Personal and company checks require 2 wks clearance. All names mentioned are registered trademarks of their respective companies.

Circle 172 on reader service card



Introducing extra storage space for your brain.

Think for a moment about how much you have to remember. Places to be, people to see, things to do, important dates, important phone numbers.

Is your head spinning yet?

When you consider how much information we try to pack into our brains, you can see how easy it is to forget something. And chances are you now use all kinds of methods to remind yourself. You scribble down notes to yourself in a desktop schedule book. Or you use scrap paper. Or napkins from the place where you ate lunch.

Here are just a few of the features Reminders!™ offers you:

Alarms: No matter how far into the future you want to be reminded, you can set an alarm to do it.

Word Search: If you don't remember where you filed something, just type in a key word and Word Search will find it.

Calendar: Scroll through the calendar to any date and press a key. There's your schedule.

Phonebook: Plenty of room to store not only phone numbers, but anything else important enough to remember.

AutoDial: Reminders doesn't just remember phone numbers, it'll even dial them for you.

Category: Organize everything from personal tasks to maintenance schedules using separate categories.

Log: Reminders lets you create a permanent record of all your past tasks and events.

Print: Anything Reminders displays on your screen can also be printed out for convenience.

Options: The Options feature lets you access on-line help, create data file backups, and fine tune the program.

The problem is that it's just as easy to lose those notes as it is to make them.

Well, we've got a better way.

Introducing Reminders!™

Software that never forgets. So you never get in trouble.

Reminders makes even the most complex schedule incredibly simple. Because it lets you combine all your to-do lists, notepads and

phonebooks with your calendars and schedules. And it sets off alarms to keep you from forgetting anything.

Which also keeps you out of trouble.

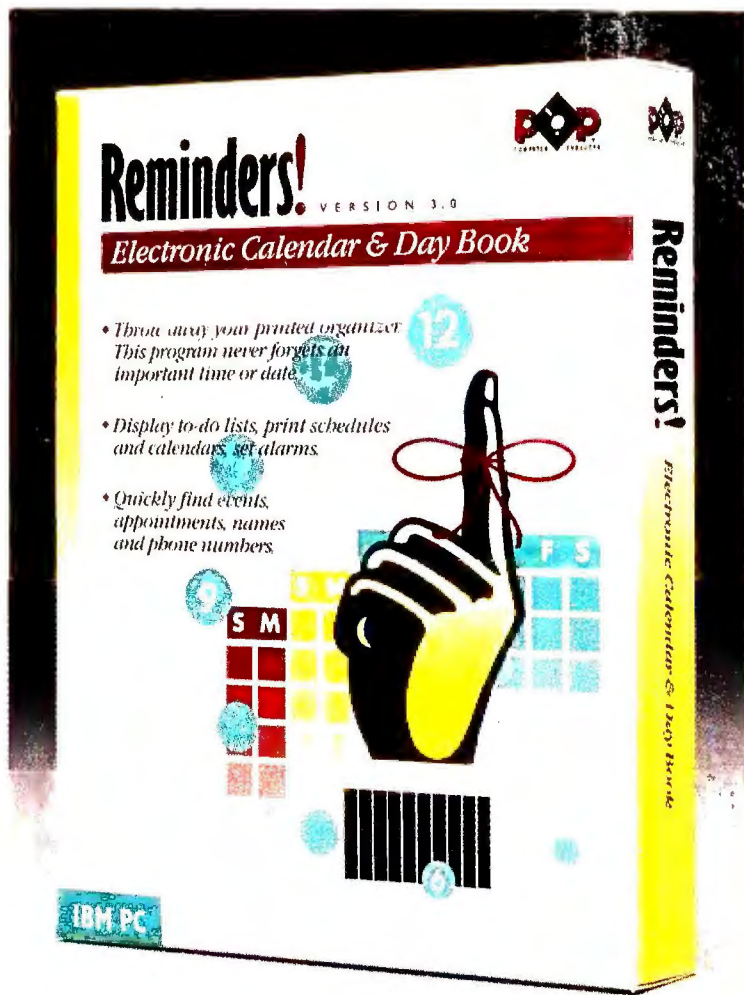
Reminders lets you organize and plan your calendar as far into the future

as you want to go. So you need never miss an important meeting, appointment, birthday, anniversary, or any of the countless items on everyone's personal and professional agenda. And to make absolutely certain you'll never forget anything you need to remember, Reminders lets you set alarms at any time, on any date to jog your memory.

Reminders lets you organize all your phone numbers, and gives you all the space you need to make notes, add names, or do anything important right in the program's phonebook. Reminders will even dial a phone number for you.

Reminders also makes your life easier by allowing you to organize your tasks into manageable groups with a feature called "Categories". The "Log" feature lets you keep permanent records of past tasks and events. And Reminders' "Print" feature allows you to make anything in the program portable. So you don't have to stay in your office to stay organized.

Reminders also includes features that insert regular events into your schedule automatically, word search capabilities, a "Memory Jogger" feature that carries any undone tasks over to the next day and a built-in alarm system that alerts you when you schedule an event that conflicts with something you already have planned.



And if you can't remember where you filed something, all you have to do is type in a key word or a few key words relevant to what you're looking for, and Reminders' "Word Search" feature will find the subject for you no matter where you filed it.

Reminders is a foolproof way to make sure nothing slips your mind. And despite mind-boggling number of tasks it does for you, Reminders is incredibly easy to use.

CALL OUR 24-HOUR TOLL FREE NUMBER

1-800-235-4767, ext. 306

Reminders is also incredibly easy to order. All you have to do is call us at any time of the day or night, 365 days a year. Reminders costs just \$99.95 (Visa and MasterCard are of course accepted), and it comes with a complete 60 day money-back guarantee.

Reminders. It lets you catch the things that would otherwise slip your mind.



Marketing Meets Desktop Publishing

When a New England health care consulting group needed an effective way to market its services, a regionally targeted, desktop published newsletter proved to be just the answer.



Alice LaPlante

How do you let potential customers know about new services without alienating them with slick advertising hype?

That was the issue facing Reynold Spadoni, manager of Ernst & Young's Health Care Consulting Group in Boston. The firm had dramatically expanded its consulting services to cover a range of health care management issues but found that many hospital executives were unaware of Ernst & Young's offerings and were turning to its competitors instead.

Ernst & Young had traditionally provided a variety of financial consulting services to hospitals and other medical institutions, everything from feasibility studies on upcoming legal and regulatory changes to advice on dealing efficiently with third-party health care providers. But over the past ten years, the firm expanded its focus. Consultants now assist clients in areas such as the design, maintenance, and installation of strategic computer systems, as well as with problems like how to improve the

Reynold Spadoni (right), Ernst & Young consultant and founding editor of the newsletter, says the publication has heightened client awareness of the firm's many services.

The Bottom Line

Problem

Ernst & Young's New England Health Care Consulting Group needed a low-key way of publicizing its many services and attracting new clients.

Solution

A regionally targeted newsletter written and designed by Ernst & Young consultants on hot topics in the health care industry.

Benefits

Greater exposure of consultants' expertise; increased client inquiries about Ernst & Young services.



By using a low-end desktop publishing package, Ernst & Young consultants can put out their newsletter without a huge investment in hardware or training.

efficiency of emergency room facilities.

"We wanted to spread the word," says Spadoni.

The vehicle for getting the word out had to meet two criteria: It needed to be geared toward the New England health care market, and it needed to be more informational than sales oriented.

"New Englanders think they are different from everyone else, and we wanted to cater to this way of thinking," says Spadoni, adding that unlike in other regions of the country, the health care industry in New England is very close knit. "Word-of-mouth marketing is therefore key to success in this market—much more than traditional advertising or marketing strategies," he explains.

Low-Key Approach

After brainstorming with colleagues, Spadoni decided on a quarterly newsletter—to be designed, written, and produced by Ernst & Young consultants familiar with hot topics in the health care industry. The strategy was to create a publication that would educate

New England hospital executives on critical health care management issues and at the same time market Ernst & Young's many services.

Newsletters are a favorite marketing tool of all the major health care consulting firms, which produce a variety of national publications for hospital executives. None of the national firms, however, offer regionally targeted newsletters. And most of the publications are simply advertising or promotional literature "disguised" as newsletters, says Spadoni—a ploy that isn't lost on Ernst & Young's highly educated clientele.

Ernst & Young has never set specific quotas for new business resulting from the newsletter—viewing the publication instead as a means of attracting clients indirectly, through greater exposure. Like many consulting firms, Ernst & Young has no sales force per se; each consultant is responsible for generating business and bringing in new clients. Spadoni says that giving consultants the opportunity to write articles in their area of expertise helps promote the firm's most valuable asset: its people.

And consultants who've written for the publication say the low-key approach has paid off.

"When I go out to client sites, the clients have the newsletter sitting on their desks, and they comment on the articles they've read in past issues," says consultant Ron Crandall, who recently took over as editor of the publication.

The Premier Issue

Called *New England Chief Executive*, the first newsletter was mailed in April 1990. The premier issue was eight pages long and included an interview with a leading hospital administrator, as well as advice on tax and financial planning. One article discussed how hospitals can maximize depreciation on capital assets for the greatest tax benefits; another offered tips on making financial projections in the face of state regulatory changes. Subsequent issues have included major features on "total quality management" theories and practice and on retirement communities or long-term care as a potential source of reve-

nue for New England hospitals and medical centers.

New England Chief Executive is mailed quarterly to 1000 top hospital executives in five New England states: Massachusetts, Vermont, Connecticut, New Hampshire, and Maine. It costs Ernst & Young \$1500 for printing and mailing.

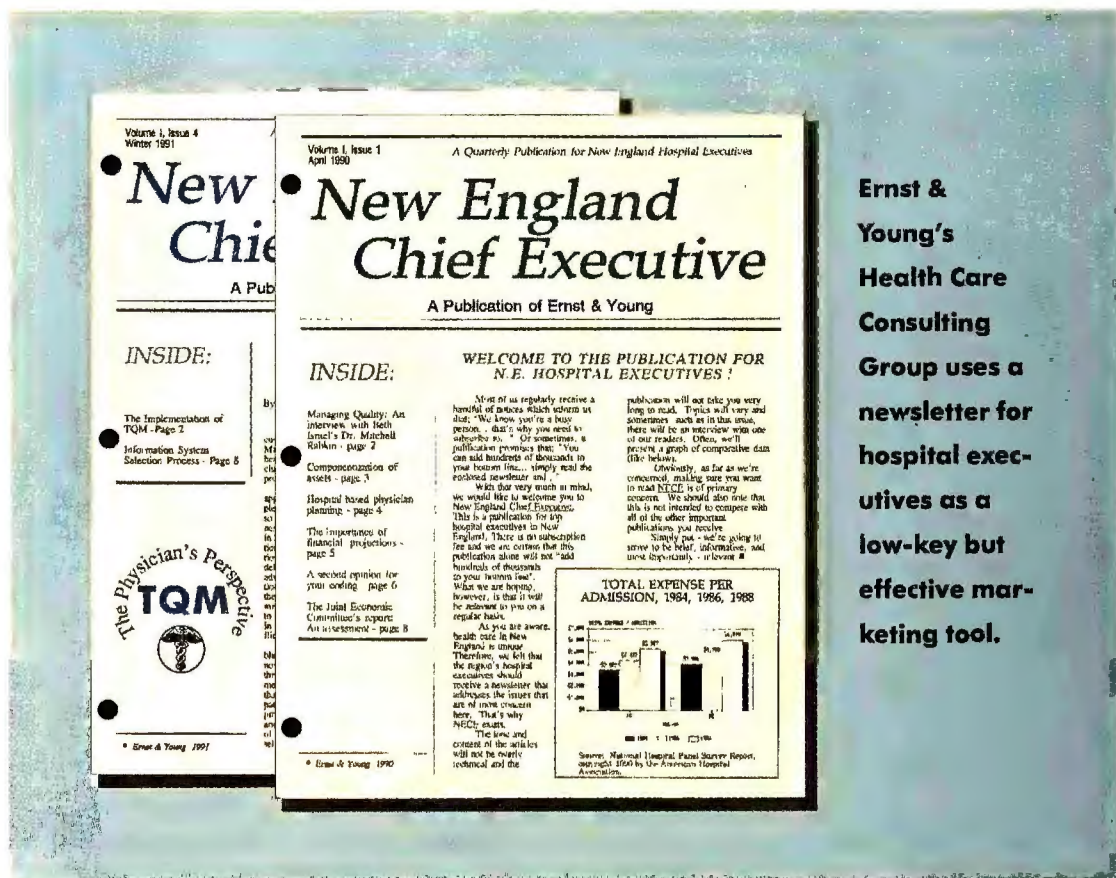
Spadoni, who had no graphics design or desktop publishing experience, was responsible for getting the newsletter project off the ground. After researching the alternatives, he decided almost immediately to go with an inexpensive, easy-to-use package: Power Up's *Express Publisher*.

The low-end approach made sense for two reasons, says Spadoni. While the project was still in the experimental phase, he didn't want to invest a lot of money in a high-end package. And perhaps more important, with no desktop publishing experience, he wanted something he could pick up easily and begin using productively after a minimum amount of training. "Until that point, I'd spent 90 percent of my time using 1-2-3 spreadsheets, and the whole graphics arena was a brand-new frontier for me," says Spadoni.

Turning Readers Into Clients

A note in each issue advises readers to direct requests for additional information to the newsletter editor. The editor then funnels questions about articles through Ernst & Young's preestablished contact-tracking system, which ensures that inquiries get forwarded to the appropriate partner in the appropriate regional office.

And a lot of inquiries have come in, says Spadoni. The cover story in the fall 1990 issue on the subject of continuing-care retirement communities (a service that many hospitals are considering) attracted a lot of attention. Several hospital executives called to request additional copies of the newsletter to distribute to their boards of directors. You can't buy that type of exposure.



Ernst & Young's Health Care Consulting Group uses a newsletter for hospital executives as a low-key but effective marketing tool.

Moving On: The Second Year

With a year and a half of experience under their belts, consultants at Ernst & Young are reevaluating their approach to newsletter design and content and looking for new ways to capitalize on this low-key approach to marketing.

Spadoni has handed the editorship over to two consultants. Crandall, who's written several articles, handles the editorial side, while Donna Schiavo is responsible for newsletter production and design. The position will be rotated among Ernst & Young consultants each year to keep the publication fresh and keep consultants from getting too bogged down by the added work load, explains Spadoni.

Several changes are in the works. The two new editors are trying out story ideas—and dropping stories that haven't generated much reader response. One idea that didn't work, for example, was in-depth interviews with regional hospital executives. "That wasn't as popular as it might have been," says Crandall, "so we're phasing it out. [Instead,] we'll be interviewing a range of hospital executives on a given topic—sort of an informal survey. This has a dual objective," he adds. "It gives us an

excuse to knock on doors."

But Ernst & Young isn't stopping at newsletters. "Now we see the newsletter as part of a larger strategy in which we produce a wide range of marketing literature that illustrates the kinds of services we provide," says Spadoni.

Schiavo, for example, is developing a series of newsletter inserts that will spotlight key Ernst & Young health care consultants and include photos and brief synopses of their specialties. The inserts will tell readers how to contact the featured consultants.

"The primary goals are to get the name of Ernst & Young consultants out and to highlight [our] broad spectrum of services," says Schiavo. She adds that the most successful articles—judging from reader calls and letters—are the ones in which Ernst & Young consultants provide concrete advice in their field of expertise.

"The newsletter has definitely made us more visible," says Crandall. "When I go out to a consulting site, clients mention it. I'd say it has more than fulfilled its purpose. Our job now is to take it even further." ■

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

Why FastData?

A personal computer is a large investment; before you choose, we want you to know what to expect when you purchase a FastData personal computer from FastMicro.

Superior Design.

You get more out of your FastData personal computer because we put more into it. We've been building PC's longer than most of the competition and we put that

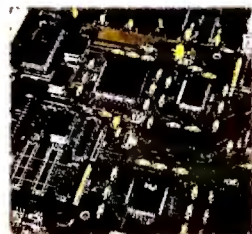
experience to work for you. We use proven designs that pass our stringent performance requirements and compatibility standards so it will be sure to pass yours.



Better Components.

The whole is only as good as the sum of its parts; and FastData systems use some of the best parts in the industry. For example, each FastData

system ships with a Keytronics keyboard; Keytronics costs a lot more than others, but the quality is worth it.



Our systems use exclusively Toshiba floppy drives, the industry leader. Standard equipment includes other quality components from Western Digital, Phoenix, Chips & Technologies, just to name a few.



Service.

All FastData personal computers come with a full

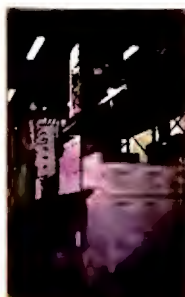
one year warranty, but that's just the start. In the unlikely event your computer is down, it is our goal to get back up and working as quickly as possible - and we back it up with action. Call us toll-free and we'll work with you to determine the problem; if a part breaks, we will send you the replacement part through our FastSHIP program - before the broken part is returned to us - and we'll pay the freight both ways. If our phone support or FastSHIP program can't solve

your problem, we will service it on-site to most U.S. locations or replace your computer at no charge. Now that's service.



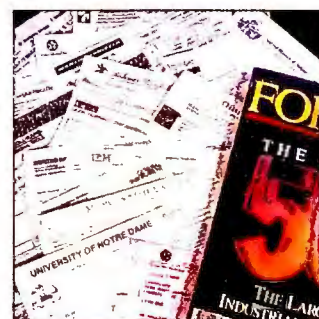
Selection.

Our face to face retail background has made us never forget that the customer comes first and that a personal computer is just part of a customer's overall needs. That's why FastMicro offers thousands of hardware and software products to enhance your new personal computer. In fact, our competition will probably tell you to call us when you need something to run on their personal computer.



Risk Free.

We pass the test for the choosiest of customers; in fact, FastMicro sells to over half of the Fortune 500 and Universities in 47 states (we're working on the rest). These people buy for a living and rely on us, you can too. You can do more than take our word on it - go ahead and purchase any FastData brand product from FastMicro and if you are not thoroughly satisfied after 30 days, you can return it for a full refund of the purchase price.



FastData 386 Systems



FastData 386/33 \$2399

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 100 megabyte 20 millisecond hard disk, 1024 by 768 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 warrantee 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.
- ✓ 100 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Full size (shown) or standard size chassis with keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 230 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 1mb Video Ram.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$99.
- ✓ FCC Class B approved.

386/33	80 IDE	100 IDE	200 IDE	330 ESDI
Mono	\$2,009	\$2,089	\$2,399	\$3,159
VGA White	\$2,109	\$2,189	\$2,499	\$3,259
VGA Color	\$2,259	\$2,339	\$2,649	\$3,409
VGA 1024	\$2,319	\$2,399	\$2,709	\$3,469



FastData 386/25 \$1999

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a full four megabytes of fast RAM, a quick 22 millisecond 65 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 512K VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of high speed RAM.
- ✓ 80 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. (For both add \$69)
- ✓ Standard chassis (shown on left) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 1mb Video Ram.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$99.
- ✓ FCC Class B approved.

386/25	40 IDE	80 IDE	100 IDE	200 IDE
Mono	\$1,539	\$1,689	\$1,769	\$2,079
VGA White	\$1,639	\$1,789	\$1,869	\$2,179
VGA Color	\$1,789	\$1,939	\$2,019	\$2,329
VGA 1024	\$1,849	\$1,999	\$2,079	\$2,389



FastData 486/25

Call about our hot 486, just \$3,099 with the same standard features as our 386-33 system. Includes a 128K two-stage cache and is expandable to 64mb of memory.

All FastData Systems Include:

- 30 day money- back guarantee
- Toll-free technical support for life
- One year warrantee with on-site service available to most U.S. locations

FastData SX Systems



\$1599 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 a second floppy drive in addition to the standard VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard and 40 megabyte hard drive. 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 80386-SX processor.
- ✓ 2 megabytes of high speed RAM
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) 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.
- ✓ Keytronics 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 \$99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

SX/20	40 IDE	80 IDE	100 IDE	200 IDE
Mono	\$1,289	\$1,439	\$1,519	\$1,829
VGA White	\$1,389	\$1,539	\$1,619	\$1,929
VGA Color	\$1,539	\$1,689	\$1,769	\$2,079
VGA 1024	\$1,599	\$1,749	\$1,829	\$2,139



\$1399 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 color 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 80386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. Both add \$69.
- ✓ Standard chassis with keylock, speed and reset buttons (mini desktop shown - add \$50).
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Keytronics 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 \$99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

386/SX	40 IDE	80 IDE	100 IDE	200 IDE
Mono	\$1,149	\$1,299	\$1,379	\$1,689
VGA White	\$1,249	\$1,399	\$1,479	\$1,789
VGA Color	\$1,399	\$1,549	\$1,629	\$1,939
VGA 1024	\$1,459	\$1,609	\$1,689	\$1,999

FAST MICRO

For information or to order call:
1-800-441-FAST

Hardware

DISK DRIVES

Colorado DJ-10 40-120mb Int. Tape	249
DJ-20 80-240mb Int. Tape	319
Conner (see IDE controllers below)	
CP3044 40mb IDE 28ms	269
CP3104 100mb IDE 25ms	499
CP3208 200mb IDE 25ms	849



Seagate 89mb AT Kit

\$399 IDE performance, big 89 megabyte capacity and Seagate quality make this kit a great buy. A 19ms access time and 5 mbps transfer rate assure great performance. Controller, cables and rails are included to make installation fast and easy.

Micropolis

MC1664 340mb ESDI 14ms	1295
MC1598 1.2gb SCSI 14ms	2895
NEC CDR-3501 Ext. CD-ROM w/interface	549

Plus Development

HardCard IIXL 50 - 52mb 9 ms 16bit	399
HardCard IIXL 105 - 105mb 9 ms 16bit	679
Impulse 42mb 12 ms 16bit IDE Kit	399
Impulse 105mb 9 ms 16bit IDE Kit	599

Toshiba 1.44mb Floppy Drive

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.



Seagate

30MB XT Kit ST238 w/ cont.	249
40MB AT ST251-1 MFM Drive	239
40MB AT ST157A 28ms IDE Drive	199
80MB AT ST296N SCSI Drive w/adaptor	349
89MB ST1102A 19ms IDE Drive	359
125MB ST1144A 19ms IDE Drive	469
210MB ST1239A 15ms IDE Drive	799
330MB ST2383E 16ms ESDI Drive	1289

Teac

1.2MB 5.25" Floppy	65
1.44MB 3.5" Floppy	65

Toshiba 100mb IDE Kit

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 and cables, 5.25" brackets and rails. Call our experts for all your drive needs. Model MK234FC.



Toshiba

360K 5.25" Floppy (Black)	69
1.2MB 5.25" Floppy	69
1.44MB 3.5" Floppy	69
65mb MK134 22ms RLL drive	279
100mb MK234FC IDE 3.5" drive	449

Western Digital

WD 16 bit IDE Host - with dual floppy controller	39
WD93044 40mb IDE 28ms	199
WDAC280 80mb IDE 28ms	339
WE1007V-SE2 ESDI AT 1:1 dual controller	149



Sun Moon Star CD-ROM Drive

\$549 Affordable CD-ROM technology is here! This player reads over 600mb from just one CD and can even play your favorite audio CDs. Using a high quality Hitachi mechanism, it comes with a cable, interface and 18 month warranty. Add an Illustrated Encyclopedia CD for \$49.



System Price	40mb	65mb	80mb	100mb
Monochrome	\$799	\$869	\$999	\$1,069
VGA Color	\$1,099	\$1,169	\$1,299	\$1,369
VGA VGA	\$1,199	\$1,269	\$1,399	\$1,469

FastData 286/12 \$799

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 Keytronics 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 hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$69)
- ✓ Standard chassis
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ 287XL coprocessor socket.
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, and two serial ports.
- ✓ Keytronics enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ Full documentation.
- ✓ FCC Class B approved.

BOARDS

Artisoft/Lantastic

Lantastic 2mbps Starter Kit - Two Station	369
Lantastic 2mbps Adaptor	169
Lantastic Ethernet Starter Kit - Two Station	499
Lantastic Ethernet Adaptor	239



ATI VGA Wonder + \$189

New and improved, the ATI VGA WONDER+ is faster than VRAM. It does interlaced and non-interlaced 1024x768 modes, is 100% register compatible, and comes with extensive software drivers. A free mouse is included as an added bonus. 512K version \$219.

ATI

2400 ETC Internal	Call
2400 ETC External	187
9600/E External MNP V.42bis	479
VGA Basic 16	75
VGA Wonder + 256K	189
VGA Wonder + 512K	229
Brown Wagh Sound Blaster	149

Everex

2400B Int Modem	99
EGA 480 Card	69
RAM3000 16 bit RAM card	75
RAM8000 16 bit RAM card	169

Hayes

JT FAX 4800B Internal	139
Personal Modem 2400 w/Prodigy	119
Hercules Graphic Card +	169

Intel

Classic 2400 Modem Int./Ext.	137/167
Satisfaxion Classic - Internal 9600	379
8087-2	115
287XL	199
387-DX25	479
387-SX16/20	319/349

Logitech

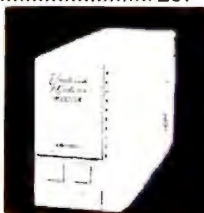
ScanMan Plus	165
Scanman 256	289

Orchid

ProDesigner II 512/1mb	279/329
Tiny Turbo 286	207
Tiny Turbo Xtra	267

Practical Modem 9600SA \$449

This external modem features V.42 and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. The PM9600SA is also V.32 TCM, V.32, V.22 compliant and comes with a five year guarantee.



Paradise

Basic VGA - 8 bit	109
VGA 1024 256K/512K	175/199

Practical Peripherals

2400B Int Modem	125
2400B Int with MNP	169
PM9600SA Ext. V.32/V.42bis	449

Prometheus

Promodem 2400B Internal	98
Promodem 2400G External	149

USRobotics

2400 Sportster Int/Ext.	119/147
2400 Sportster Int/Ext.	159/199
Courier HST 14,400 /Int.Ext.	539/579
Courier HST 14,400 Dual Standard Ext.	859

Video 7

VGA 1024i 256K	179
VGA 1024i 512K	209
V-RAM VGA 512K	299

ZOOM

HC2400 Internal	79
2400 V.42bis External Modem	169
9624 Send/Receive Internal Fax Modem	129

MONITORS

Mitsubishi 1410 EGA	325
Diamond Scan 1381	479
NEC	
Multisync 2a	469
Multisync GS 2a	199
Multisync 3d	629
Multisync 4d	Call
Panasonic C1381 VGA	439
Princeton	Call
Seiko CM1440/1450	519/659
Sony 1304 Multiscan	669
Zenith 1492	Call

FastData Products

FastData 16 Bit VGA

The FastData 16bit 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.

\$89
256K Vers.
\$119
512K Vers.



FastData 16bit 1mb VGA	159
FastData CGA Card	35
FastData MGP Card	29

FastData 2400 Baud Internal Modem

\$69 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 BitCom software.



9600B SendFax w/ 2400B Modem	99
MFM 16 Bit 1:1 Hard/Floppy Disk Cont.	59
Parallel/Dual Serial/Game Card	29
RLL 16bit 1:1 Hard/Floppy Disk Cont.	69
XT 1.44 Dual Floppy Controller	35

FastData Monitors

Your best value, we have a complete line made for us by leading manufacturers like Samsung & Hyundai. Like all FastData products, you have a full 30 day money back guarantee. Shown is the VGA Color for \$279.



FastData Monitors

12" Amber Monochrome	79
14" Amber Monochrome	109
14" White Monochrome	109
14" White VGA Monochrome	129
14" CGA Color .52 dot pitch	199
14" VGA Color .39 dot pitch	269
14" VGA Color .31 dot pitch	319
14" Super VGA 1024 x 768i .28 dp.	349

PRINTERS

Canon BJ10E	319
BJ300/BJ330	495/Call

Citizen GSX140

Loaded with features, this 24 pin printer is a hot seller! It comes with 6 resident fonts, paper parking, and Epson & IBM printing modes. It does up to 192 CPS and has a unique LCD control panel that lets you set everything without DIP switches. Upgrade to color anytime for just \$39.



Citizen

200GX	189
GSX140 / GSX145	285/395

Fujitsu DL3400

DL3400	359
--------	-----

NEC

P3200	269
P3300	369
P6200	469
P6300	629
OKIDATA Okilaser 400	669

NEC Silentwriter 2 Model 90 \$1595

PC Magazine's editor's choice! The new NEC model 90 comes with 2mb of memory, Postscript by Adobe with 35 fonts, and parallel, serial and Appletalk interfaces. All this and 6 ppm speed, an easy-to-use LCD operator panel and letter, legal, & envelope feed.



Panasonic

KXP1180	155
KXP1123	Call
KXP1624	429
KXP4420 Laser	829
KxP4450/4455 Lasers	Call
Seiko Smart Label Printer	167
Star	
NX1001	149
NX1500	299
Nx2410	219
XB2410 / 2415	429 / 569
Texas Instruments Microlaser PS17	1199
Microlaser PS35	1499

Software

DATABASE & FORMS

askSari 5.0	209
Avery List & Mail Plus	37
Clarion Personal Developer	45
Clarion Professional Developer	449
Clipper 5.0	489
DataEase	459

Personal R:Base \$89

Who's says powerful relational databases are expensive. Not with the new easy-to-use Personal R:Base. It has intuitive pull-down menus that let you query your data, build quick forms and reports automatically and even build applications without complex programming.

dBase III+	439
dBase IV	479
dBXL Diamond	129
Formbase	299
FormTool Gold	52
Formfiller	85
Foxbase Plus	177
FoxPro	417
Paradox 3.5	489
Per:Form Designer & Filler	95
Personal Rbase	89
Q & A	214
RapidFile	99
Rbase for DOS	447
Reflex	159

DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II	279
db Publisher Professional	389
GEM Desktop Pub.	159
Pagemaker 4.0	489

Corel Draw Version 2.0 \$359

Winner of all the top awards, Corel Draw gives you more for your money. It runs under Windows & includes incredible drawing and editing tools. Includes over 100 typefaces and 300 pieces of clipart. CorelTrace converts scanned art to smooth vector images in seconds. This is the most complete illustration package we've ever seen!

PFS:First Publisher	89
Printshop	33
Publisher's Paintbrush	149
Publish It!	135
Ventura Publisher Gold / Windows	539

FINANCIAL

ACCPAC BPI Value Pak	359
Bedford Integrated Acct.	119
DAC Accounting 4.1	79
DAC Bonus Pack 4.1	119
DAC Payroll 4.1	57
Dollars & Sense	98

Peachtree Complete III \$139

A super value! Includes General Ledger, Accts. Payable, Accts. Receivable/Invoicing, Purchase Order, Payroll, Inventory, Job Cost, Fixed Assets and more. Loaded with over 450 reports, automatic backup and helpful manuals.

Macintax 1040 for Windows	57
Managing Your Money	125
Money Matters	49
One Write Plus G/L, A/P & A/R	165
Peachtree Complete III	139
Peachtree with Data Query	209
Quicken	36
Taxview 1040 Prof. for Windows	299
Turbo Tax Personal 1040	39
Turbo Tax Professional	209
Wealth Builder	129

GRAPHICS

Autosketch 3.0	139
Corel Draw 2.0	359
Design CADD 3-D	185
DrawPerfect	265
Freelance Plus	307
Generic 3D Drafting	199
Generic Cadd Level 2 Starter Kit	95
Generic Cadd 5.0	279
Harvard Graphics	299
PC Paintbrush IV Plus	109
Perspective Jr.	69
PFS:First Graphics	89

GeoWorks Ensemble \$115

GeoWorks is the entry-level graphical environment that's received rave reviews. Includes GeoWrite word processor & desktop publisher, GeoDraw object-oriented drawing package, and GeoComm communications package. Also comes with GeoManager, GeoPlanner and GeoDex applications. Plus all programs operate with the same point & click simplicity (mouse required).



We Ship Air at Ground Rates.

INTEGRATED

First Choice	95
Framework XE	95
Geoworks Ensemble	115
LotusWorks	89
SmartWare II	417
Symphony 2.2	489
Works	89

MICE/INPUT

Keytronics KB101 Keyboard	59
Keytronics Professional Mouse	59
Logitech Mouseman Serial righthand	65
Logitech Mouseman Serial w/Windows	127
Logitech Mouseman Bus righthand	76



Logitech Mouseman Serial \$65

Logitech's MouseMan is the next step in mouse evolution. Specifically tailored in right or left hand versions, it provides maximum comfort and 400 DPI hardware resolution. Includes MouseWare utilities and Lifetime Warranty. Specify right or left, for PaintShow, add \$15.

Logitech Mouseman Cordless	129
Logitech Trackman Serial	75
Microsoft Serial or Bus Mouse only	83
Microsoft Serial or Bus w/ paint	95
Microsoft with Windows 3.0	147
Z-Nix Serial Mouse w/Windows 3.0	89

PROGRAMMING

Macro Assembler	89
Microsoft C Compiler	303
Borland C++	129
Turbo Pascal	90
Quick Basic	60
Quick C	60
Quick Pascal	60
Windows Developer's Kit	309

SPREADSHEETS

Allways	115
Excel for Windows	299
Lotus 1-2-3 version 2.2	325
Lotus 1-2-3 version 3.1	399

Excel 3.0 for Windows \$299

The best graphical spreadsheet now includes Toolbar, which puts frequently used commands a single mouse click away. New Q + E lets you access remote databases & BestFit automatically resizes columns to display longer cell widths. 3-D charts, clip art support, and button macros are included too! Command level on-screen help for transitional 1-2-3 users is included too.

Lucid 3-D	53
Quattro Pro 2.0 Competitive Upgrade	89
Supercalc 5D	289

WORD PROCESSORS

Facelift for WordPerfect	57
Grammatik IV	49
LetterPerfect	119
Multimate 4.0	267
Professional Write	149
Publisher's PowerPak for WordPerfect	45
Rightwriter	58

WordPerfect 5.1 \$239



WordPerfect is the #1 rated word processing software. Its got almost every feature imaginable and yet it is 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!

Sprint	117
Word	209
Word for Windows	309
Word Perfect 5.1	239
Word Perfect for Windows	Call
Word Perfect Add'l Station	153
Word Perfect Office	79
WordStar Professional	Call
Writer's Toolkit	79

Call On Non-Listed Items

WINDOWS SOFTWARE

Adobe Illustrator	279
Adobe Type Manager	59
Ami	115
Ami Professional	287
Asymetrix Toolbook	279
Bitstream Facelift	57
Corel Draw 2.0	359

Windows 3.0 \$89



Turn your 286 or above with 640K or more of memory into a powerful multitasking workstation that runs even non-Windows applications. Includes many integrated applications standard. Plus, if you buy Windows now from FastMicro, we'll throw in 10 of the best Windows shareware programs.

DBfast/Windows	239
Excel	309
Form Publisher	139
Grammatik IV for Windows	49
HDC First Apps or Windows Express	46
Micrographix Draw +	149
Micrographix Designer	449
MicroPhone II	199
Microsoft Mouse w/ Windows 3.0	147
Microsoft Office (Word/Excel/Powerpoint)	619
Microsoft Productivity Pack	39
Microsoft Windows Developer's Kit	309
Pagemaker 4.0	489
Per:Form Pro	289
Powerpoint for Windows	309
Project for Windows	429
Publisher's Powerpak for Windows	45
Windows 3.0	89
Windows Entertainment Pack	27
WingZ Spreadsheet	309
Word for Windows	299

Adobe Type Manager & Type Align \$109 for both

Adobe Type Manager for Windows brings scalable PostScript® fonts to your screen and non-Postscript dot matrix or laser printer. Includes Times, Helvetica, Courier and Symbol font families. New Adobe TypeAlign for Windows works with ATM to create curved, skewed and other special type effects which you can import into other Windows applications.



ENTERTAINMENT & EDUCATION

Bannermania	21
Carmen San Diego Deluxe Edition	45
F-19 Stealth Fighter	38
Hunt for Red October	19
King's Quest 5 (VGA Vers.)	38
Leisure Suit Larry II or III	35
Microsoft Flight Simulator	38
Aircraft & Scenery Designer	27
Microsoft Learning DOS	32
NFL Challenge	55
PC Globe or PC USA	35
Simcity	28
Tetris	19

Utility Software

DR DOS 5.0 \$129

PC Tools \$85

DESO \$39

Supra XT/486 Gold 2.0

FAST MICRO



Call Toll-Free: 1-800-441-3278



TERMS: No Charge for Visa or MasterCard. 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*. Compatibility is not guaranteed*. No returns on used items. * All opened returns are subject to 15% restocking fee*. DOA's repaired or replaced at our option. Call for return authorization (RA) number first. 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 added surcharges) from approved corporations only. AZ orders add 6.7% tax. * Excludes FastData products.

Mailing Address:
3655 E. LaSalle St., Phoenix, AZ. 85040
To place orders call: 800-441-3278
For customer service call: 602-437-0300

Express yourself with MoreFonts.

MoreFonts is the type-scaling solution with everything you need to add style and excitement to WordPerfect and Windows 3.0

MoreFonts enables WordPerfect and all Windows applications to print high-quality fonts at any size with your choice of special effects. Whether you own a laser, inkjet, or dot-matrix printer, you'll get crisp, legible text that will dramatically improve the appearance of your documents.

Easy to use

It's easy to look good with MoreFonts because there's nothing new to learn. MoreFonts installs automatically in minutes and then works within your application to give you thousands of wonderful font choices.

Fonts scaled "on-the-fly"

Select any size font you want from within your application and print. Your selections are scaled "on-the-fly" using a new technology that conserves disk-space and printer memory.

Supercharged printing

MoreFonts is the *fastest* type-scaling system available. Your documents will print in less time with MoreFonts than with any other font package.

More printer support

Enjoy laserjet power and quality with most dot-matrix or inkjet printers. Now everyone can enjoy the benefits of scalable type and special effects. And your documents will always look their best since MoreFonts supports the highest resolution of your printer.

More typeface support

When you're ready to expand your typeface library you can choose from our economical add-on type or you can choose from the industry standard PostScript Type 1 fonts.

Remarkable Value

MoreFonts saves you money by including the "extras" that everyone else charges for. MoreFonts gives you more typefaces, more special effects, more performance, and more support for both WordPerfect and Windows in the same package — for one low price.

25 Scalable Typefaces

You get 25 scalable typefaces of the highest quality as shown below. All typefaces can be combined with special effects and scaled to size "on-the-fly."

Geneva

Geneva Oblique

Geneva Bold

Geneva Bold Oblique

Tiempo Roman

Tiempo Italic

Tiempo Bold

Tiempo Bold Italic

Showtime

Burlesque

Pageant

Opera

Poster

Financial

Financial Oblique

Financial Bold

Financial Bold Obl.

Journal

Journal Oblique

Journal Bold

Journal Bold Obl.

Gourmand

Gourmand Italic

Gourmand Bold

Gourmand Bold Italic

You also get a utility that enables MoreFonts to use industry standard PostScript Type 1 fonts.

1000's of Effects

Combine your choice of patterns, outlines, shadows, and reverse effects with any size or style of typeface as shown in the sample output below.

— Patterns —

Foggy Pattern

Sunset Pattern

Radial Pattern

wood pattern

7 shades of gray

— Outlines —

Thin Outline

Thick Outline

Calligraphy Outline

Contour Outline

— Shadows —

3D Shadows

Drop Shadows

— Reverse —

ABCDabcd

ABCDabcd

ABCDabcd

... and many more!

Why settle for less? — Get MoreFonts today — only \$149.95

Distributed under Brown-Wagh Publishing © 1990 MicroLogic Software. All rights reserved.

Circle 177 on reader service card

MicroLogic Software

1351 Ocean Avenue • Emeryville, CA 94608

(415) 652-5464 • FAX (415) 652-7079

Button-Down Macros With Excel 3.0

Two of Excel 3.0's hottest features—the macro button and auto-open function—deliver on the promise of macros to make complex tasks simple.

Ralph Soucie

INSIDE HOW TO

223 **Word Processing**

Words Into Print

Whip unruly reports into shape with *WordPerfect* tabs.

229 **Spreadsheets**

Spreadsheets (A..Z)

Hints for handling large worksheets on screen.

235 **Data Management**

Data Basics

Set up a to-do list that fits the way you work.

241 **Publishing & Graphics**

The Art of Persuasion

Liven up drab documents with low-cost spot color.

247 **Windows**

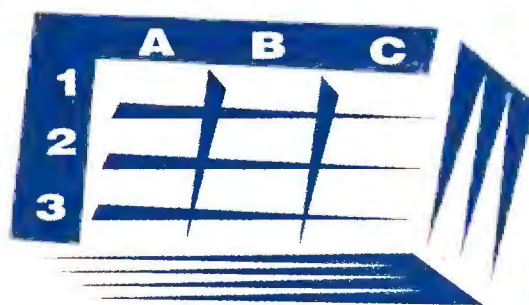
Windows Workshop

Surviving the dreaded Unrecoverable Application Error.

251 **Communications**

The Information Edge

The six most popular on-line PC software libraries.



Spreadsheets

Put to their best use, macros do more than save keystrokes. They allow managers to delegate time-consuming tasks to assistants with less technical expertise. But as you load your worksheets with more macros, you may reach a point of diminishing returns. Eventually your subordinates could get bogged down in a morass of cobbled-together macros, hot keys, and complicated instructions.

Version 3.0 of *Excel* includes two devices that simplify macros for non-technical users—the macro button and

auto-open feature. You can now create macro buttons in *Excel* worksheets—graphical objects that you link macros to. Auto-open loads macro sheets that are ready for execution. If you take advantage of these features, one of your assistants can run a macro simply by opening a worksheet and clicking the mouse pointer on the corresponding button.

We'll show you how to create a working macro button to consolidate data from four sample financial worksheets. The instructions assume some familiarity with *Excel* macros.

► **The Scenario**

Each month you receive financial reports in *Excel* worksheets from each of your company's four regions (East, West, North, and South). Consolidating the data from these reports is an ideal task to pass on to your assistant. The first step is to make a simple summary worksheet. The key element of the sum-

mary sheet is a macro that automatically opens all the regional worksheet files and calculates company totals for the month.

► Creating the Sample Data

To create the macro, you must first create some sample data for each region. Start by opening a brand-new worksheet. Enter the titles **Department** and **Sales** in cells A1 and B1, respectively. Label cells A3 through A6 with the following department names: **Furniture**, **Appliances**, **Audio**, and **Video**. Fill cells B3 through B6 with the sample sales figure of \$1000.

In cell B8, you need the total value of cells B3 through B7, and *Excel 3.0's* auto-sum button (designated by the Greek letter sigma [Σ] on the tool bar) is the simplest way to make the formula. Click on cell B8, then click on the auto-sum icon twice. The formula in the edit bar will read '=SUM(B3:B7)', and cell B8 should now display \$4000. Save the worksheet under the name EAST.XLS. Then use *File Save as* to save the file three more times under the file names NORTH.XLS, SOUTH.XLS, and WEST.XLS.

You now have four worksheets with the same format, each one corresponding to a sales region. To create the summary worksheet, you need five new columns. First, clear column B: Highlight it, press <Delete>, and select *OK*. Label cells B1 to F1 as **East**, **North**, **South**, **West**, and **Totals**, respectively. In the Totals column, click on cell F3, click on the auto-sum icon, use the mouse to highlight cells B3 to E3, and click on the auto-sum icon again. The formula should read '=SUM(B3:E3)'. Copy the SUM formula to F5:F6. To create totals for each column in row 8, select cell F8 and drag the pointer to cell B8 (not vice versa) so that F8 is still the active cell, double-click on the auto-sum icon to total column F, then press <Ctrl>-<Enter>.

Save the worksheet under the file name TOTSALLES.XLS, then close all other files.

```
Consolidate_Sales
=OPEN("EAST.XLS")
=SELECT("R3C2:R6C2")
=COPY()
=FILE.CLOSE()
=SELECT("R3C2:R6C2")
=PASTE()
=OPEN("NORTH.XLS")
=SELECT("R3C2:R6C2")
=COPY()
=FILE.CLOSE()
=SELECT("R3C3:R6C3")
=PASTE()
=OPEN("SOUTH.XLS")
=SELECT("R3C2:R6C2")
=COPY()
=FILE.CLOSE()
=SELECT("R3C4")
=PASTE()
=OPEN("WEST.XLS")
=SELECT("R3C2:R6C2")
=COPY()
=FILE.CLOSE()
=SELECT("R3C5:R6C5")
=PASTE()
=RETURN()
```

LISTING 1: This simple macro consolidates data from four worksheets. You don't need to type in every line—simply use the macro recorder and follow the steps in the text—but be sure to check each line for errors.

► Creating the Macro

You're now ready to create the consolidation macro shown in **LISTING 1**. You could key in these macro instructions yourself, but using the macro recorder is quicker.

1. From the Macro menu choose *Record*. This brings up the Record Macro dialog box.

2. Name the macro **Consolidate_sales**. Since you don't need to assign it a shortcut key, delete the one *Excel* offers.

3. For each of the files for the individual regions (East, North, South, and West) follow these steps: Open the file. Select the range B3:B6, and invoke the Edit Copy command. Close the file. Paste the data into row 3 of the appropriate column (B, C, D, or E) of TOTSALLES.XLS.

4. From the Macro menu choose *Stop Recorder*.

5. Use the Window menu or <Ctrl>-<F6> to bring up (activate) the macro sheet, and save it as UPDATE.XLM.

► Creating the Macro Button

Now it's time to assign the macro to a button that your assistant can easily activate from within the worksheet. First activate TOTSALLES.XLS and decide where you would like the button to appear (we'll put it to the right, in the vicinity of column H). To create the button, follow these steps:

1. Click the macro button icon on the tool bar. It's the next-to-last button on the right, just to the left of the camera icon.

2. Move the mouse pointer to the upper-left corner of cell H3.

3. Click and drag the mouse down and to the right to size the button. A rectangular area approximately the size of two or three cells works best. After you release the mouse button, a button icon labeled 'Button 1' appears on screen in the area you just defined. A dialog box labeled 'Assign to Object' also appears, listing the macro you just defined in the Assign Macro list box.

4. Double-click the Consolidate_sales macro entry in the list box.

5. Key in a meaningful name, such as **Update**, for the button.

6. Click on any part of the worksheet outside the button and save the file. Your screen should now resemble **SCREEN 1**.

Next, move the mouse pointer over the Update button. When the pointer changes to a pointing hand, it's a sign that clicking on the button will run the macro. (If you want to change the shape or location of the button or make any changes to its label, you can select the button by holding down <Ctrl> while clicking the mouse button.)

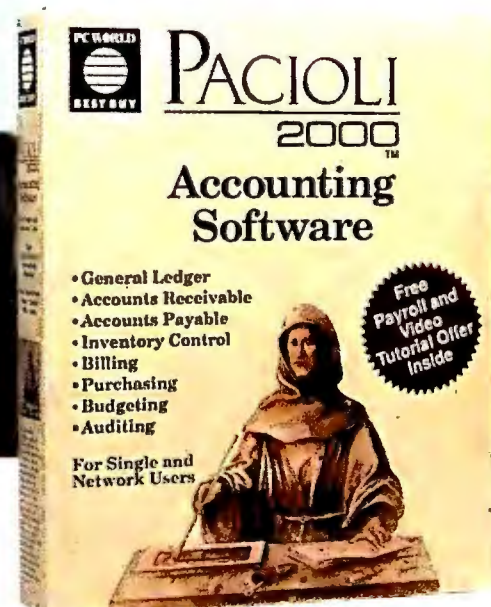
Close all files except for the macro sheet. Compare your recorded macro with **LISTING 1**, and make corrections if necessary. Then open TOTSALLES.XLS, clear the values in B3:F6, and click on the Update button. *Excel* fills in the regional sales figures.

'Pacioli 2000 gives us everything we need'

Roger Thurmond
President
Thurmond Air Quality Systems

Linda Ahl
Office Manager

\$49⁹⁵



Like more than 100,000 other satisfied customers, Linda and her boss Roger have discovered the many benefits of using our award winning Pacioli 2000 Accounting Software. "It really is easy to use and the customer service is tremendous," says Linda. Roger likes Pacioli 2000 because "...it offers everything we need and the cost was hard to believe." In fact, the *New York Times* states that Pacioli 2000 is "...the equal of other high end accounting programs in every way but cost."

PC WORLD BEST BUY Pacioli 2000 has been featured on *CNN's Headline News* and *Money Line*. It has also been honored by *PC World* as the "Best Buy" in 1990 and has received *Compute's CHOICE AWARD* for the "Best Financial Software of 1991." This system was designed by J. M. Hurtado, who started the accounting software revolution with *DacEasy™ Accounting* in 1985. Pacioli 2000 makes managing your business finances easier than you ever thought possible by fully integrating eight modules into one powerful system: General Ledger, Accounts Receivable, Accounts Payable, Inventory Control, Billing, Purchasing, Budgeting and Auditing.

It includes pull-down menus, full mouse support, context-sensitive help, automatic installation, and a file inquiry system that will let you make inquiries or create accounts "on-the-fly" ... features not usually found in the most expensive accounting packages.

PC Week called Pacioli 2000 "...the best software value of the year" and they are right. Pacioli 2000 is also fully net-

workable, which means one or any number of users can enjoy the same easy-to-use, powerful features with no additional fees. It is ready to perform as multi-user accounting software with file and record locking, multi-level password protection and more.

In addition to being easy to use, Pacioli 2000 is backed by a 90 day money-back guarantee when purchased directly from M-USA. If you are not completely satisfied, simply return the entire package and we will refund your purchase price (less shipping charges). You will also receive FREE technical support for 30 days. If you have any questions while using Pacioli 2000, the answers are as close as your telephone.

And now, there are two great offers included. When you send in your registration card, you can order our new Pacioli 2000 Payroll FREE. You can also order a FREE 2 hour instructional video to help you learn MS-DOS, Basic Accounting and Pacioli 2000. With each offer you pay only for shipping and handling.

The *Computer Buyer's Guide and Handbook* said in the January 1991 issue, "...Pacioli is one of the all-time great bargains in software." Because it gives them everything they need, Linda and Roger agree. Try it and you'll soon discover that Pacioli 2000 will meet your needs too.

Minimum Hardware Requirements: IBM or compatible computer with 500Kb of free memory available, hard disk, monochrome or color monitor, mouse optional, MS-DOS 2.1 or later for single users (3.1 or later for networks), 132 column dot matrix printer in compressed mode.

© Copyright 1991, M-USA Business Systems, Inc. Pacioli 2000 is a trademark of M-USA Business Systems, Inc. All others are trademarks or registered trademarks of their respective manufacturers.
All specifications and special offers subject to change without notice.

8 Modules Fully Integrated into One System

Easy to Install, Learn and Use

Network-Ready with No Additional Fees

30 Day Free Technical Support

90 Day Money-Back Guarantee

Offer for Free Pacioli 2000 Payroll

Offer for Free Instructional Video

M-USA

BUSINESS SYSTEMS, INC.

17440 North Dallas Parkway, Suite 207
Dallas, Texas 75287

\$49⁹⁵ suggested retail USA, plus shipping, handling and sales tax where applicable.

For more information call
1-214-931-2033.

To order in USA call
1-800-345-4243, Operator 246

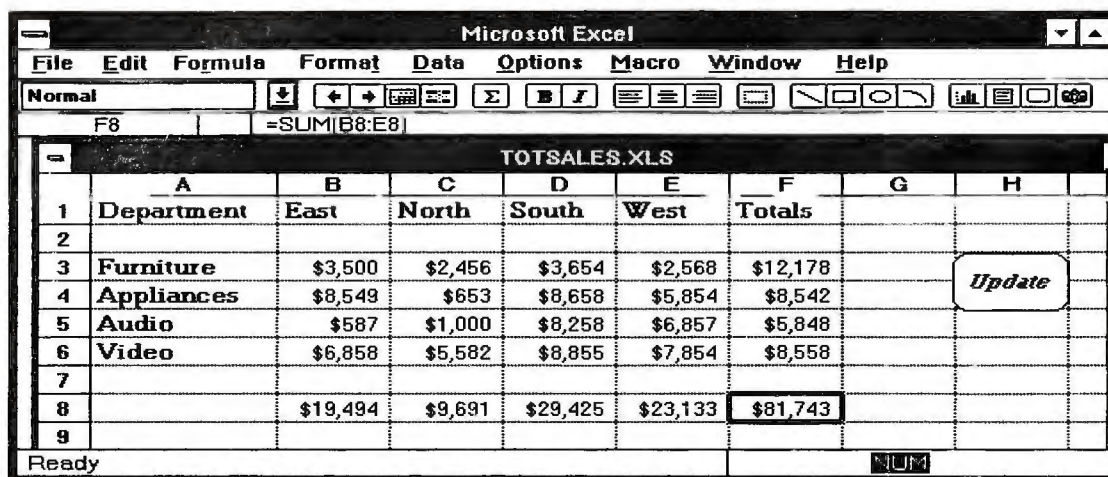
NEW!

Special Canadian Version of Pacioli 2000 Accounting Software, supporting GST and PST is now available.

\$99⁹⁵ Canadian dollars suggested retail (plus freight)

To order Canadian Version, call
1-800-668-0454, Operator 2460.
Free offers not available in Canada.

Circle 7 on reader service card



SCREEN 1: Excel 3.0 enables you to create graphical objects like the Update button shown here and to allocate macros to them. This feature makes running macros a snap and delegating complex operations to your nontechnical assistants a realistic option.

As with any item in a worksheet, deleting rows or columns around a macro button will change the button's location. You can also move macro buttons with the Cut and Copy commands in the Edit menu.

► Making Life Simpler for Your Assistants

There's one more step. As things stand, your assistant has to open both TOTSALLES.XLS and the macro sheet UPDATE.XLM before pressing the macro button marked 'Update'. That's no big strain. But since you'll be delegating more spreadsheet tasks to this person and therefore creating more macros, it's best to keep things as simple as possible.

You can reduce the start-up procedure to a single step with Excel's auto-open feature. Your able assistants already know that the end product will be a revised Excel document named TOTSALLES.XLS. When you use auto-open, they can simply open the TOTSALLES.XLS file to get started.

This involves making a *second* macro that will open UPDATE.XLM when you open the document. First, open a new macro sheet, and enter the following formulas in cells A1 through A5:

```
Update_start
=open("update.xlm")
=hide()
=activate("totsales.xls")
```

=return()

Next, select cell A1, and choose *Define name* from the Formula menu. Choose *Command*, then select *OK*. It isn't necessary to assign a shortcut key, so simply save the macro sheet as OPEN1.XLM. Open the TOTSALLES.XLS worksheet, and select *Formula Define name* to add the name *Auto_open*. Select the entire entry in the 'Refers To' text box, then activate OPEN1.XLM and select cell A1, and select *OK*. Delete the sales figures in columns B through E in the TOTSALLES.XLS worksheet.

Finally, close all files, saving any changes.

Test the auto-open macro by opening the TOTSALLES.XLS file. The macro opens the UPDATE.XLM macro sheet, which you can now run by clicking on the Update macro button.

Now you have something that goes beyond a mere macro. It's really a rudimentary application that runs when you open the data file. And, as you assign more macros to buttons, you can add them to the auto-open macro OPEN1.XLM. As your application becomes more sophisticated, you might want to add a number of capabilities to this macro—such as a reminder that will tell your assistants to ensure that the supporting worksheets are all up-to-date before proceeding.

Combining macro buttons with the auto-open feature can empower your assistants and allow everyone to work smarter. And it doesn't take much effort or expertise to get started. ☺

Contributing Editor Ralph Soucie is the author of Learn Microsoft Excel Now (Microsoft Press, Redmond, Washington, 1990).

POWER TIP NO. 183

Streamline Excel Macros With Subroutines

Often a macro must repeat the same series of commands over and over. It's easier and more efficient to make those commands a subroutine—a macro within a macro.

Here's a simple example. Suppose you want a macro to format several selected columns as percentages. First, use *File New Macro sheet*, and choose an out-of-the-way area—in this example we'll start at cell A100. To name the subroutine, enter *FormatPercent()* in cell A100, select *Formula Define name*, click on *Command*, and press <Enter>. Type *=select("c")* in cell A101 and *=format.number("0.00%")* in cell A102. End the subroutine by entering *=return()* in cell A103.

Now, wherever you want a macro to apply the percentage format to the current column in your worksheet, simply use the formula *=FormatPercent()* in that macro.

Ralph Soucie
Contributing Editor

The Ultimate Typist



T Y P I S T

The *Typist* works just like your very own personal assistant. One capable of typing 500 words per minute. That includes any text or numbers, no matter what style font, font size or column format.

With the *Typist* you can enter your data directly into any Macintosh® or PC compatible word processor, spreadsheet or database, just like you were typing it yourself, only faster.

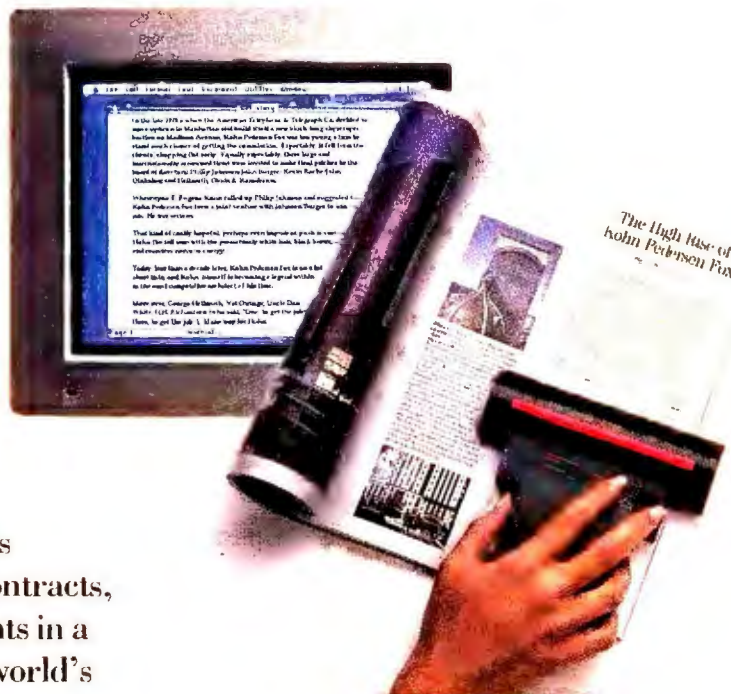
The *Typist* is more than other hand scanners, which are generally suited to scan graphic images, but limited when it comes to text. As the world's most personal scanner, the *Typist* is a sleek, ergonomically designed peripheral that requires no special training or expertise. Fully simulating your keyboard in every way, the *Typist* lets you scan up to 2 column inches per

second while staying fully aligned – even when you scan rows and columns sideways.

Think of the possibilities.

Use the *Typist* as your very own personal assistant. Enter rows and columns of numbers from business journals or periodicals, directly into your most critical documents – including spreadsheets. Develop business reports, presentations, legal contracts, or desktop published documents in a fraction of the time. With the world's most personal scanner you will immediately become more productive, whatever the assignment.

To learn more about the *Typist* and how it can be of assistance to you, contact one of Caere's authorized dealers. Caere, the Complete Recognition Company.



Caere Corporation
100 Cooper Court
Los Gatos, CA 95030
1-800-535-SCAN

CAERE®

All ®registermarks and ™trademarks are of their respective companies. ©1990 Caere Corporation.

Some days you have
all the time in the world.



When the pressure is on, pour on the speed. With Hewlett-Packard's new LaserJet III Si printer. A powerhouse that delivers at a throughput speed of 17 pages per minute.

With the LaserJet III Si, you're up to speed the moment you give the "print" command. HP's RISC-based formatter and the PCL5 printer language, with vector graphics and on-the-fly typeface scaling, yield fast

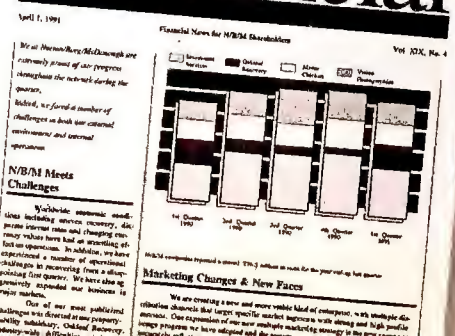
results. This printer also represents a new standard for I/O performance with optional Network Printer Interface cards for either Ethernet or Token Ring.

The LaserJet III Si is specifically designed for shared-use environments. Its high-volume paper handling features include two 500-sheet input trays and a monthly duty cycle of 50,000 pages. HP offers software-selectable language switching

between PCL5 and optional Adobe® PostScript®. For added versatility, your options include

Adobe and PostScript are registered trademarks of Adobe Systems Inc. in the U.S. and other countries.

The Financial



And some days you need the new 17ppm LaserJet IIISi.



an envelope feeder and two-sided printing.

Beyond speed and efficiency, the LaserJet IIISi delivers the sharpest 300 dpi print quality yet. In fact, HP's revolutionary combination of Resolution Enhancement technology and new microfine toner challenges the print quality of many 600 dpi printers.

The price of the new LaserJet IIISi, just \$5,495*, is as impressive

as the work load it handles. If you're ready to pick up the pace, call **1-800-752-0900, Ext. 2067** for more information on the fastest LaserJet printer and the name of your nearest authorized HP dealer.

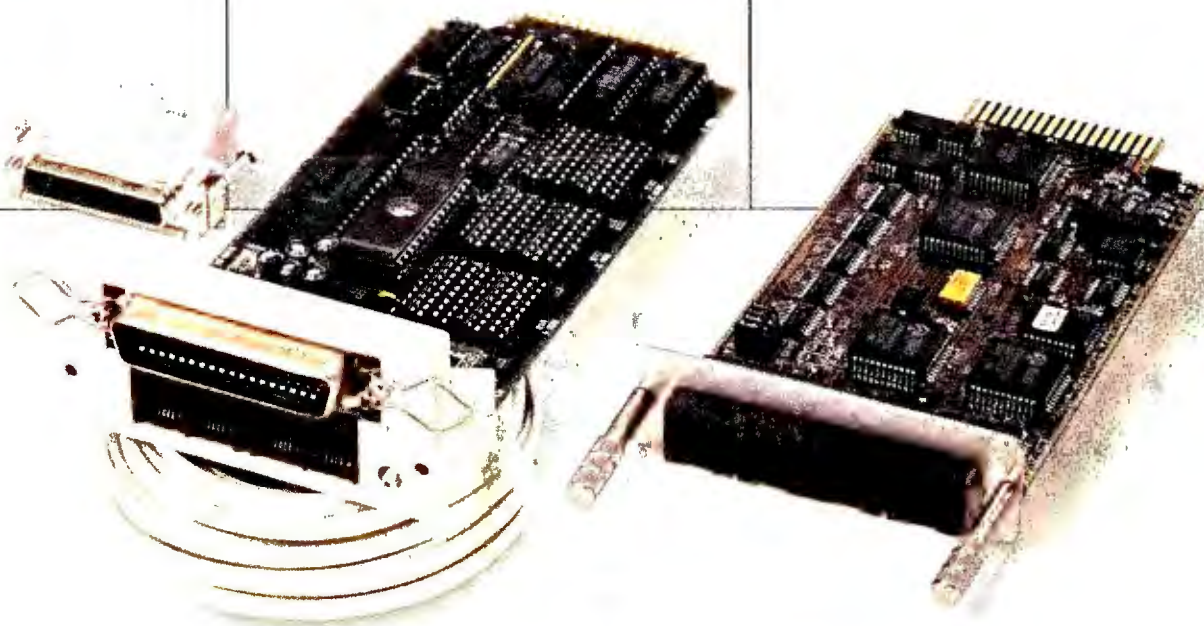


**HEWLETT
PACKARD**

Circle 114 on reader service card

There's more to comparing LaserJet printer sharing options than just the name

	Pacific Data Products Pacific Connect™	Hewlett-Packard HP ShareSpool®
Price	\$399	\$495
Upgradeable memory buffer	Yes	No
Cables and adapters included*	Yes	No
Centronics interface	Yes	No
Warranty	Lifetime	Two Years



Don't settle for less just to buy the HP name. For LaserJet printer sharing devices that offer you more features for less cost, choose **Pacific Connect** from Pacific Data Products. It's the low cost way to give up to five PC or four Macintosh users access to a LaserJet Series II, IID, III or IIID printer.

Completely transparent to users, Pacific Connect is easy to install and use. It even comes with four cables and five adapters. And to handle large print files or to spool documents sent simultaneously to the printer, its memory buffer is upgradeable from 256k to 1.25 MB.

To learn how you can get more for less, call your nearest dealer or contact Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, (619) 597-4665, Fax (619) 552-0889.



PACIFIC
DATA PRODUCTS

Pacific Connect includes two 25 ft. serial cables, two 50 ft. serial cables, two DB-25 to RJ-11 connectors, two DB-9 to RJ-11 connectors, one Mini Din to RJ-11 Macintosh adapter, and PostScript® and PCL printer drivers for use with PacificPage cartridges. Prices are suggested retail list price. Pacific Connect is a trademark of Pacific Data Products, Inc. ShareSpool is a registered trademark of Extended Systems, Inc. HP and LaserJet are registered trademarks of Hewlett-Packard Company. All other company and product names are trademarks of the company or manufacturer respectively. EUROPEAN HEADQUARTERS: Switzerland Tel (41) 22-412650, Fax (41) 22-410682. © 1991 Pacific Data Products, Inc.

Words Into Print



Word Processing

Tips for getting the most out of your word processor

This month: Master WordPerfect tabs, convert text from uppercase to lowercase in WordPerfect, and find files with Word 5.0's full-text search tools.

George Campbell

In the early days of PCs, you could line up text in columns just by pressing the <Space> bar a few times. But those days are gone. While your old daisy wheel printer spaced text evenly, today's printers use proportional spacing, so text aligned on screen may not line up on paper.

Whether you're creating a price list, as in **SCREEN 1**, or a short tabular list in a memo, your program's tab-setting feature will line the text up perfectly. Many word processors offer other options for aligning columns as well. Use your program's side-by-side-column feature for large blocks of text that take up a page or more. When you need lines and borders around data, use the table editor—if your program has one. But when you

simply want to line up a list or set up a short table, tabs are fast and easy.

Most programs, such as *WordPerfect*, alter tab settings by inserting a tab ruler in the document. Tabs set this way apply to all text below the ruler and stay in effect up to the point where you insert a new ruler. *Word*'s tabs, however, apply only to paragraphs you select before you set the tabs.

A Tab for All Seasons

Most word processors offer several tab types. Here's a quick rundown:

- Left-aligned tabs are usually the default. Use them for text that starts at the tab position and stretches to the right. Left tabs are commonly used for text tables.
- Right-aligned tabs let you align the right side of text, as in **SCREEN 1**. Right-aligned text works well in one- or two-column text tables, but it usually looks out of place if the table has more columns. In a two-column table, set a

right-aligned tab for the left column and a left-aligned tab for the right column, as shown in **SCREEN 1**. Right-aligned tabs are also ideal in headers or footers, especially on right-hand pages in facing-page layouts.

- Centered tabs work best for titles or headings above lists. The text stretches an equal distance to the left and right of the tab position.

- Decimal tabs are perfect for lining up prices or other decimal numbers. Characters stretch to the left, as with a right-aligned tab, until you press the period key. Characters after the period will stretch to the right of the tab position. You can also choose a different alignment character in most programs. Some word processors, like *WordStar*, that lack right-aligned tabs let you use decimal tabs instead. As long as you don't type a period, the effect is the same as that of a right-aligned tab.

- Most packages let you adorn tabs with leader dots that stretch from the

Stock No.	Description (See brochure for details)	Unit	Price/Unit (\$US)
50 224	Gadget all purpose	doz	23.95
56 325	Gadget special use	1	14.79

FORMAT TAB SET position: 5.3"
 alignment: Left(Center)Right Decimal Vertical leader: bar (Blank).
 Enter measurement Pg1 Co61 {} ? EX Microsoft Word

SCREEN 1: Setting a few tabs makes a complex document like this price list a breeze to read.

Word's vertical tab feature, which places a line to the left of each tab, makes it easy to create vertical rules. You use decimal tabs to line up numbers.

previous tab's text to the current tab's text. Use this feature to print a line of eye-leading dots when tabs are separated by more than a few inches, as in a table of contents.

In WordPerfect Alignment

Here's how you set tabs in *WordPerfect* 5.x. The steps are similar in other word processors.

First, place the cursor at the start of the text (or where the text *will* start) and press **<Shift>-<F8>It**. You'll see the tab-setting menu at the bottom of the screen. To clear old settings, press **<Home> <Home> <Cursor Left> <Ctrl>-<End>**.

Place the cursor on the ruler where you want a tab. By default, tab settings start at the left margin. Press **l** for a left-aligned tab, **c** for a centered tab, **r** to create a right-aligned tab, or **d** to set a decimal tab. To create leader dots for a tab, move the cursor to that tab, then press the period key. Leader dots automatically adjust for centered, right, and decimal tabs as you enter text.

The ruler is normally divided into

tenths of an inch. To specify a more precise location, from any point within the tab menu type in a measurement for the tab, then press **<Enter>**. *WordPerfect* will insert a left-aligned tab. To alter the tab's type, highlight the tab and press one of the other letters.

After setting the tabs, press **<F7>** twice to return to your document. The settings will apply up to the point in the document where you change them—if

When converting to lowercase, *WordPerfect* capitalizes the first letter of a sentence if a period appears before it. The pronoun *I* also stays capitalized, as do any single-letter abbreviations followed by periods.

you move the cursor back, above the new ruler, the old tabs will apply. To return to normal tab settings, press **<Shift>-<F8>It <Ctrl>-<End> 0,.5 <Enter> <F7> <F7>**. To alter the default half-inch placement, simply change the '.5' spacing in the command above.

To alter the settings, place the cursor on the line where you want the tab changes to start. Press **<Shift>-<F8>It**, then move the cursor to the tab you want to change. To delete a tab, press **<Delete>**. To alter a tab's type, press a new tab letter. To add or remove leader dots, press the period key. In version 5.1, you can even move tabs—just hold down **<Ctrl>** while you move the marker with the cursor keys.

You can change the alignment character for decimal tabs by pressing **<Shift>-<F8>od**. Type in a new alignment character; then press **<F7>**. If you want to see a tab ruler at the bottom of the screen as you work, press **<Ctrl>-<F3>w22 <Enter>**. (In version 5.0, replace 'w22' with w23.)

Finally, you can create a new default tab setup to use whenever you run *WordPerfect*. Start the program, and press **<Shift>-<F1>ic**. Press **<Shift>-<F8>It**, set your tabs, and press **<F7>** four times. From then on, *WordPerfect* will start up with the new settings. ☺

George Campbell is a contributing editor for PC World.

WORDPERFECT SHORTCUT

Case Shifting

WordPerfect 5.x has a little-known command that switches a block of text from uppercase to lowercase, or vice versa. First, mark the text as a block using **<Alt>-<F4>**. Then press **<Shift>-<F3>**, followed by **u** for uppercase or **l** for lowercase.

WORD SHORTCUT

Find That File

Word 5.0's Library Document-retrieval command will search through an entire directory of documents for text you specify, then let you load the document you want. This macro automates the process. Follow the steps below on a blank *Word* screen:

1. Press **<Shift>-<F3>** to begin recording.
2. Press **<Esc>ldq**, then press **<Cursor Down>** five times.
3. Press **<Shift>-<F3>** to end recording.
4. Type **FindText1.mac ^**, press an unused **<Ctrl>-key** combina-

tion such as **<Ctrl>-F**, then press **<Enter>e**.

5. Press **<Esc>tgs** to save the macro.

To use the macro, press **<Ctrl>-F** (or whatever combination you chose). Type the text you want to find, and press **<Enter>**. *Word* will search all documents in the current directory, then show you a list of files. To load a file, highlight it, then press **l <Enter>**.

Before

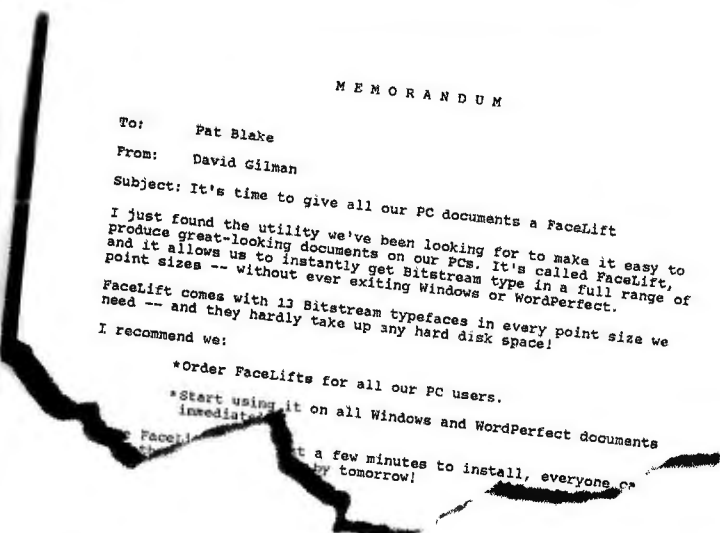


Until now, many desktop publishers found it too time-consuming to use the right typefaces and point sizes. Unfortunately, the end result was often too plain-looking for potential readers.

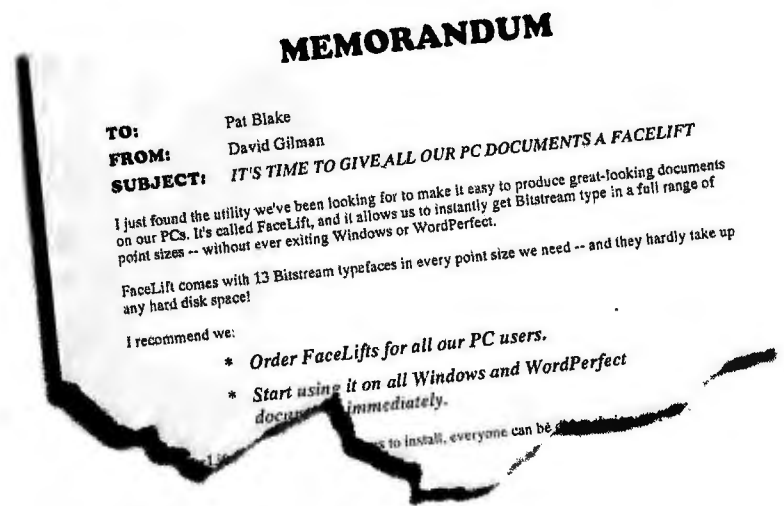
After



FaceLift will instantly give you faces and point sizes to create great-looking documents that make you look like a desktop publishing pro. FaceLift comes with 13 Bitstream typefaces.



This memo, using one face in one size, looks fairly decent. But why settle for "fairly decent" when FaceLift will instantly make your Windows or WordPerfect documents look "absolutely great!"



You'll install FaceLift in about 10 minutes. Then in seconds, get the typefaces and point sizes you need to make a perfect impression.

Bitstream introduces the Instant FaceLift for your Windows or WordPerfect documents.

Now make all your Windows™ or WordPerfect® documents great-looking in seconds with FaceLift.™

New FaceLift instantly gives you any size Bitstream® typeface—without exiting your software. And without consuming your hard disk space.

With FaceLift for Windows, instantly get Bitstream type in 2-127 point sizes. Get true WYSIWYG (what you see is what you get), to see what your masterpiece will look like before printing. Then print on any printer that works with Microsoft® Windows.

With FaceLift for WordPerfect 5.1 or 5.0, just press "Ctrl-F8" and get Bitstream type in 2-500 point sizes. (No bitmaps needed!) Print on Hewlett-Packard® LaserJet® printers, HP DeskJets® and today's popular dot matrix printers.

FaceLift comes with 13 top quality Bitstream scalable typefaces, including:

Swiss™ 721 Roman
Swiss 721 Italic
Swiss 721 Bold
Swiss 721 Bold Italic

Dutch™ 801 Roman
Dutch 801 Italic
Dutch 801 Bold
Dutch 801 Bold Italic

Monospace 821

Bitstream Cooper Black

Formal Script 421

Park Avenue™

Brush Script

FaceLift and 13 Bitstream scalable typefaces (with four headlines faces) cost only \$99 (suggested retail). For the best deal, add the Companion Value Pack with 24 more Bitstream typefaces for only \$199 (suggested retail).

For more information, see your local dealer, or call:

1-800-522-FONT, ext.1601



FaceLift for Windows



FaceLift for WordPerfect



START PACKING.

One extraordinary show. Hundreds of four-star exhibitors. Thousands of volume-buying attendees. A multitude of computer products and services. And an expanded Windows/PM Pavilion.

That's PC EXPO In New York.

So start packing. This is the one show you can't afford to miss.

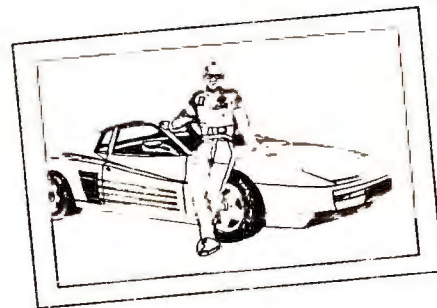


June 25-27, 1991 • Jacob K. Javits Convention Center
For additional show information call 800-444-EXPO.



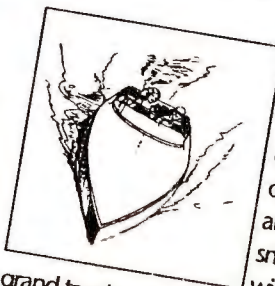
THE PRIVATE LIFE OF FRED B. DULL

Laura Lovely, up and coming starlet, is seen on the arm of Fred B. Dull at the Peacock Hilton in Las Vegas. Dull, the entrepreneurial paper clip king, flew in on his private Concorde with a 45-carat diamond ring for his birthday girl.



Winner at Le Mans, Fred B. Dull, known as a man who loves to live on the edge, receives yet another trophy to add to his collection. Purportedly bored by constant victory, Dull plans to take a year off by circumnavigating the globe in his 110-foot yacht, "The Dinghy."

Fred B. Dull scores again. Finding life too serene on his 150,000-acre Texas ranch last week, Dull imported the entire Argentine polo team for one afternoon of play. Dull reportedly found the day to be fairly amusing.



Fred B. Dull flips his cigarette boat, "Le Cool," into a double corkscrew somersault on Lake Washington and comes up smiling, going on to win his heat and the grand trophy. "This baby is really built," says Dull, as he quaffs Dom Perignon in the winner's circle.



How to improve your personal image.

Introducing the new TurboPS Personal Series laser printers.

Take it from Fred B. Dull. With NewGen™ TurboPS Personal Series printers, your documents will look amazingly crisp, clean and professional.

With our new line of personal PostScript®-compatible printers, you can greatly enhance images beyond your wildest imagination. The TurboPS/400p™ (400 dpi) and the TurboPS/300p™ (300 dpi), both offer the convenience and compactness of a personal printer. And proprietary features the competition can't touch.

Like Image Enhancement Technology (IET)™ standard on the TurboPS/400p, to smooth characters, lines and curves. And Automatic Recognition Technology (ART)™ that smartly selects

interfaces and emulations without operator intervention.

A second paper tray, memory cards, SCSI interface and other I/O expansions are among the options when you're ready to upgrade.

All this at a surprisingly low price.

To learn more, or for your nearest Authorized Dealer, contact NewGen today. The NewGen TurboPS Personal Series laser printers. If they can do this much for Fred B. Dull, just think what they can do for you.

End User Inquiries

Circle 158 on reader service card

For Dealer Inquiries

Dealer inquiries welcome.

Circle 159 on reader service card

NewGen Systems Corporation TM

17580 Newhope Street, Fountain Valley, CA 92708
Telephone (714) 436-5100 FAX (714) 641-2800

National Sales Office:
Telephone (612) 942-5665 FAX (612) 942-5923

Toll Free 1-(800)-879-4639



Resolution close up,
13 point Courier enlarged 500%.



300 dpi
TurboPS/300p



TurboPS/400p
with IET

NewGen, NewGen Systems Corporation, NewGen logo, TurboPS/300p, TurboPS/400p, Image Enhancement Technology (IET) and Automatic Recognition Technology (ART) are trademarks of NewGen Systems Corporation. TrueImage is a trademark of Microsoft Corp. PostScript is a registered trademark of Adobe Systems, Inc. NewGen's PostScript language interpreter is fully compatible with Adobe PostScript.

— When you just can't wait, JustWrite. —

IT WRITES SO FAST, IT'LL RATTLE YOUR WINDOWS.



Finally, a word processor that's as fast and efficient as you are. Introducing JustWrite™, the fastest, easiest word processor you can buy for Windows™ 3.0.

JustWrite is built for speed and efficiency, with all the features you need. Features like time-saving document templates, effortless mail merge, spell checker, and thesaurus. Plus a selection of easy-to-use advanced features, including a table editor, built-in outliner, DDE support, and integrated graphics to make impressive looking documents easier than ever.

And JustWrite's automatic file conversion lets you transparently import and export documents with Microsoft® Word, WordPerfect® and other popular word processors.

So stop wasting time with your old word processor, and start rattling Windows with JustWrite.

Just call for a free demo disk.

**SPECIAL
INTRO
OFFER:
GET
JUSTWRITE
FOR JUST**

\$79*

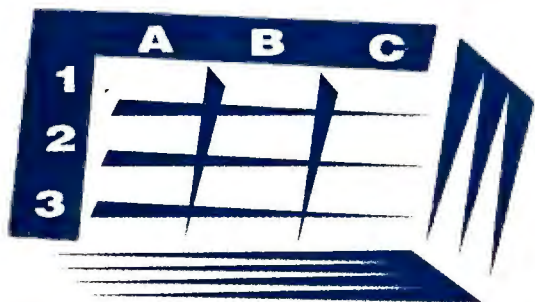
1-800-228-4122 Ext. 106-W

SYMANTEC.

*Call 1-800-228-4122 Ext. 106 (\$99 in Canada, call 1-800-465-2266) or see your local dealer. Limit one per customer. Offer expires 6/28/91. Limited to N. American customers only. Outside N. America call (408) 252-3570. ©1991 Symantec Corporation. JustWrite is a trademark of Symantec Corporation. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

Circle 271 on reader service card

Spreadsheets (A..Z)



Spreadsheets

Practical tips for building better worksheets

This month: the battle of the bloat—tips for handling large worksheets

Richard Scoville

As spreadsheets grow, they become awkward to view on screen, print, or simply navigate. April's *Spreadsheets (A..Z)* column demonstrated the fine points of printing big worksheets; this month, we provide some hints for organizing and viewing them on the screen. You can apply this month's tips to 1-2-3 version 2.x and 3.x and to all releases of *Quattro*.

The Diamondback

The first step in avoiding a sprawling spreadsheet is to divide it into discrete work areas and then arrange those zones into a diamondback pattern like the one shown in **FIGURE 1**. The diamondback pattern helps ensure that the areas of the worksheet do not interfere with one another when you insert or delete rows or columns and when you

adjust the widths of the columns.

Let's say you're using a spreadsheet to manage your small-business accounts receivable. Your work areas might include lists of clients and receivable items, and a report area from which to print invoices. In addition, you'll want a separate area for macros. In 1-2-3 release 2.x or any version of *Quattro*, you might use the layout pattern shown in **FIGURE 1**, allocating cells A1 to, say, H9 for macros, I10 to U26 for receivables, and so forth. In 1-2-3 release 3.x, you could insert a new worksheet for each

work area, using */Worksheet Insert Sheet After*. The diamondback pattern, however, is the most convenient alternative to complex multifile designs, particularly if your work requires that you exchange files between different program versions.

Using */Range Name Create* (in *Quattro*, */Edit Names Create*), identify the upper left corner cell of each work area with a descriptive "landmark" range name. Begin all landmark names with @—as in @CLIENTS, @MACROS, @RECEIVABLES, and so on—and

SPREADSHEET TOOLBOX

SQZing Your Files Down to Size

When it comes time to save those overweight 1-2-3 release 2.x worksheets on your already crowded hard disk, you'll find Symantec's *SQZ* is just the reducing program you need. Once enabled, this \$99 add-in automatically and unobtrusively compresses your worksheets as you save them, then decompresses them when you retrieve. When I tried *SQZ* with a few worksheets lying around my hard disk, the results were impressive. For instance, it reduced an 80K worksheet to 37K.

Amazingly, saving a worksheet with *SQZ* doesn't seem to take much longer than a regular save.

Also provided with *SQZ* are some useful utilities: an add-in that will automatically save your current worksheet at specified time intervals, an add-in that lets you back up and restore files

in the same format as DOS's regular backup program, and a command-line utility that compresses and decompresses worksheets in batch mode.

Yet another add-in maintains a transcript of every key you press during a worksheet session. The result is error-correction capability that far exceeds 1-2-3 release 2.2's Undo: By retrieving the worksheet as it was at the start of the session and replaying keystrokes, you can restore the worksheet to the way it was just before the big mistake.

If you work with big worksheets, and if your hard disk space is limited, *SQZ* is an invaluable tool.

SQZ \$99; Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 800/441-7234

Reader service no. 616

Mapping Out Your Worksheet

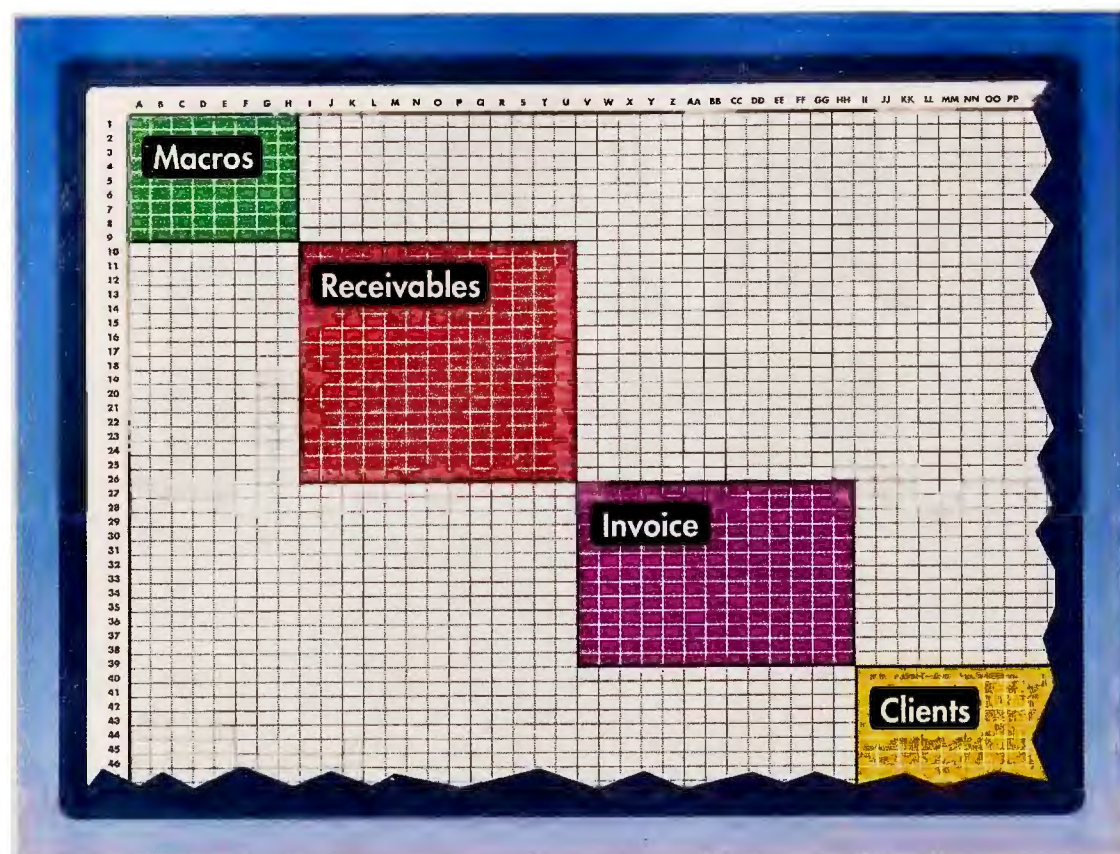


FIGURE 1: By mapping the zones of a big worksheet into a diamondback pattern, you ensure against accidentally removing information as you delete columns and rows in another section.

they will conveniently appear, in alphabetical order, at the top of the range name menu.

With this arrangement, you'll find that navigating even the largest worksheet is a snap: Press <F5>, then <F3>, and 1-2-3 will present you with a list of landmark range names. Select a landmark range name from the list, and press <Enter>.

Working With Windows

Comparing and editing widely separated areas of a worksheet is awkward if you can't view them together on the screen. Fortunately, there's a neat solution: split the screen into two windows. For a horizontal split, position the cell pointer where you want the screen to divide. In 1-2-3 you then select */Worksheet Windows Horizontal*, */Worksheet Windows Unsync* (in *Quattro*, select */Window Option Horizontal*, then */Window Option Unsync*). Press <F6> to switch windows, and use <F5> and <F3> to position each window on a different work area within the spreadsheet.

Lock Those Titles

In any spreadsheet larger than the screen, it is easy to get lost looking for a particular data value: As you hunt around, the identifying row and column labels slip out of view. In order to keep the labels visible at all times, you can lock the titles.

First, position the screen so that the required row and column labels are at the left and top of the screen, respectively. Then position the cell pointer on the first cell in the data area. In 1-2-3, select */Worksheet Titles Both*; in *Quattro*, */Window Options Locked titles Both*. Now, the label rows and columns won't slip out of sight.

With titles locked, when you press <Home>, the pointer returns not to cell A1, but to the top left corner of the visible range of the worksheet's data. You can't move with the cursor directly to cells in the titles zone. To edit a titles cell without turning locked titles off, press <F5>, use the cursor keys to move to the desired cell, and press <Enter>. To restore the screen, press <End> <Home> <Home>.

EXCEL SHORTCUT

Smart Consolidations

Ralph Soucie

With *Excel 3.0* you can quickly consolidate totals from widely separate sections of a large worksheet or from a group of worksheets. First, open the relevant worksheet(s) and select the range where you want to consolidate the totals. Choose *Data Consolidate*, which brings up the Consolidate dialog box.

Then, select the first range containing an amount to be aggregated, and click on the Add button in the dialog box. Repeat this process for all the relevant sections or files. Then click *OK* or press <Enter> to consolidate the totals.

You can streamline the selection process when you're consolidating data from multiple files. Use similar file names for the relevant files (let's say they all begin with SALES) and the same cell reference for data to consolidate, B4:B12 for example. Enter *SALES*.XLS!\$B\$4:\$B\$12* in the Reference text box, and *Excel* will include totals from all worksheets—even unopened ones—whose names begin with SALES.

As your spreadsheet skills and business needs grow, your worksheets inevitably become larger and more complex. By cultivating the practices outlined here, you can ensure that they remain easy to handle. ☺

Richard Scoville and Ralph Soucie are contributing editors for PC World.

NOW
OVER
43%
OFF!

Add PC World
To Your
Management
Reading List

ACT NOW!
Take advantage
of these Special
Savings and we'll
BILL YOU
LATER!

☒ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only \$19.97. That's over 43% off the annual cover price of \$35.40 and over 33% off the regular subscription rate of \$29.90—plus I receive FREE: PC World's PowerBase**.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

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. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4E690

FREE
PowerBase** Disk
—35 Tips, Macros
and Utilities

☒ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only \$19.97. That's over 43% off the annual cover price of \$35.40 and over 33% off the regular subscription rate of \$29.90—plus I receive FREE: PC World's PowerBase**.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

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. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4E690

FREE
PowerBase** Disk
—35 Tips, Macros
and Utilities

☒ YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only \$19.97. That's over 43% off the annual cover price of \$35.40 and over 33% off the regular subscription rate of \$29.90—plus I receive FREE: PC World's PowerBase**.

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

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. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4E690

FREE
PowerBase** Disk
—35 Tips, Macros
and Utilities



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



BUSINESS REPLY MAIL

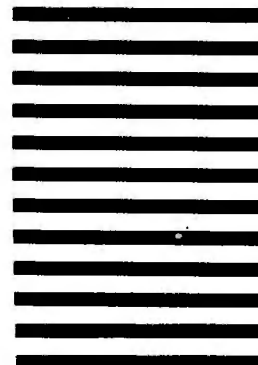
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



Let us pause in memory of those archetypes which, in the previous decade, were deemed the essence of cool.

The chi-chi sushi and designer linguini. The hand-made suit and the minute-made fortune. The art of arbitrage and the dabbling in debentures.

Down comes the curtain on the epoch

and, presto, a very different cast of symbols takes the stage. Not Wall Street but Main Street. Not the condo in Aspen but the tent-site in the Tetons. Not the Swiss bank but the piggy bank.

Enter the Leading Edge notebook computer, economical and efficient, the ideal instrument of its times.

One of an entire fam-

In the 90's
it's cool to be cheap,



which is why our
notebook computer
is so hot.

of our parent, Daewoo, the global techno-industrial giant. Weight is only 6.9 pounds. Battery life, 2 1/2 hours. Screen quality is top-of-the-line (VGA 640 x 480 resolution). As is a slew of other features, from the 84-key keyboard to the 5MB memory capacity and the built-in interfaces which let you connect networks, print-

ers, a monitor and external keyboard.

At Leading Edge, we see the 1990's as our brand's decade. Even more than the previous era, when we managed to attract a million or so users. Because we've always believed our customers should think it cool to be cheap. Call 1-800-874-3340 for the Leading Edge reseller located nearest you.

ily of sensible machines, from 286's to laptops to 386 powerhouses.

As the accompanying chart shows, Leading Edge has a lop-sided edge in notebook price/performance. An achievement directly attributable to the manufacturing knowhow



Leading Edge N3/SX
386SX, 16 MHz
1 MB memory, 20 MB hard drive
VGA with 32 shades of gray
6.9 lbs.
\$2,595

Toshiba T2000SX
386SX, 16 MHz
1 MB memory, 20 MB hard drive
VGA with 16 shades of gray
6.9 lbs.
\$4,999

Epson® NB3s
386SX, 16 MHz
1 MB memory, 20 MB hard drive
VGA with 16 shades of gray
5.8 lbs.
\$3,999

Leading Edge. The Leading  Brand In Price/Performance.

A subsidiary of Daewoo Corporation

© 1991 LEADING EDGE PRODUCTS, INC. A SUBSIDIARY OF DAEWOO CORP., 117 FLANDERS ROAD, WESTBOROUGH, MA 01581 (508) 836-4800. LEADING EDGE AND THE LEADING EDGE LOGO ARE REGISTERED TRADEMARKS OF LEADING EDGE PRODUCTS, INC. ALL OTHER BRAND AND PRODUCT NAMES ARE TRADEMARKS OR REGISTERED TRADEMARKS OF THEIR RESPECTIVE COMPANIES. PRICES AND SPECIFICATIONS CURRENT AS OF 4/15/91.

Circle 124 on reader service card

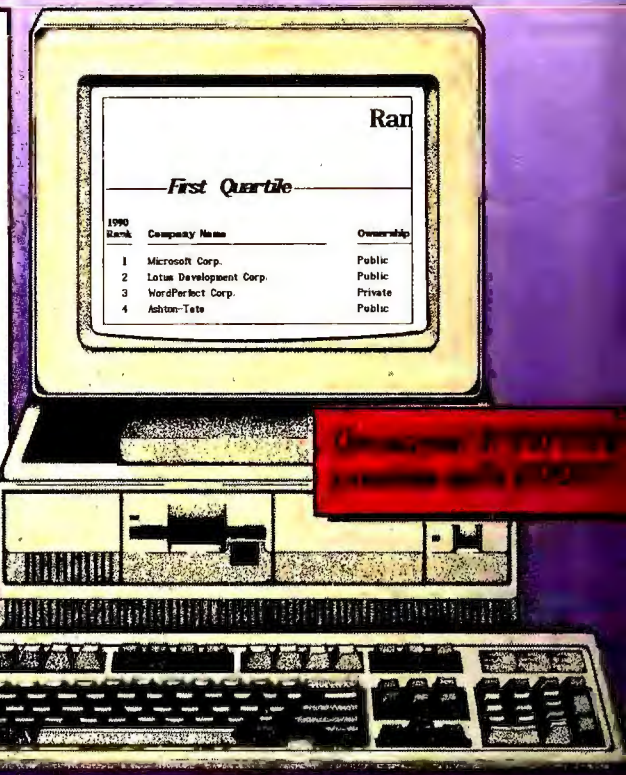
NEW! Version 4 of R&R for dBASE!

The 1990 Soft-letter 100
Ranked by 1989 Revenues within Quartiles

First Quartile

Rank	Company Name	Ownership	1989 Revenue	1988 Revenue	1987 Revenue	Number of Employees	Revenue per Employee	Product Categories	Development Platform	
1	Microsoft Corp.	Public	\$1,120,000,000	\$715,370,000	\$315	4799	\$119,756	25.5	1,2,3,4,7	
2	Lotus Development Corp.	Public	\$556,000,000	\$468,547,000	195	2804	\$198,147	16.5	1,2,7	
3	WordPerfect Corp.	Private	\$281,400,000	\$176,473,000	275	1413	\$174,566	19.1	1,2,3,4,5,6	
4	Ashton-Tate	Public	\$245,339,000	\$225,334,000	90	1450	\$169,199	19.1	1,2,3,4,5,6	
5	Amadeus	Public	\$177,000,000	\$117,302,000	316	896	\$197,545	19.8	1,2,3,4,5,6	
6	Adobe Systems	Public	\$131,215,000	\$83,483,000	456	390	\$331,174	49.4	1,2,3,4,5,6	
7	Lightbulb	Public	\$111,995,000	\$68,641,000	438	214	\$523,872	25.1	1,2,3,4,5,6	
8	Software Publishing Corp.	Public	\$102,400,000	\$82,375,000	340	336	\$304,955	19.2	1,2,3,4,5,6	
9	Richard International	Public	\$104,163,000	\$99,823,000	119	515	\$202,256	19.4	1,2,3,4,5,6	
10	Alcan Corp.	Public	\$87,833,000	\$79,054,000	116	515	\$175,006	19.2	1,2,3,4,5,6	
11	Sony Corp. Overseas	Private	\$83,000,000	\$60,900,000	285	1023	\$80,739	19.1	1,2,3,4,5,6	
12	Electronic Arts	Public	\$66,296,000	\$43,821,000	19	268	\$247,746	19.2	1,2,3,4,5,6	
13	Madagascar	Public	\$63,499,000	\$39,111,000	116	218	\$295,208	19.2	1,2,3,4,5,6	
14	Brady International	Private	\$51,028,000	\$41,712,000	130	240	\$212,608	19.1	1,2,3,4,5,6	
15	Transtek	Public	\$47,000,000	\$31,819,400	345	215	\$149,217	19.1	1,2,3,4,5,6	
16	Pharmacia Technology	Public	\$47,804,000	\$30,487,800	95	315	\$148,848	19.1	1,2,3,4,5,6	
17	Worldwide Information	Public	\$46,964,000	\$41,215,000	19	250	\$187,856	19.1	1,2,3,4,5,6	
18	Index Technology	Public	\$37,991,000	\$25,375,000	28	219	\$173,100	19.1	1,2,3,4,5,6	
19	Digital Research	Private	\$37,218,000	\$33,000,000	145	285	\$130,240	19.1	1,2,3,4,5,6	
20	Software Microsystems	Private	\$37,600,000	\$13,345,000	115	340	\$110,615	19.1	1,2,3,4,5,6	
21	Sony On-Line	Public	\$37,231,000	\$18,998,000	276	225	\$165,471	19.2	1,2,3,4,5,6	
22	Control Point Software	Private	\$37,000,000	\$17,717,000	316	175	\$211,888	19.1	1,2,3,4,5,6	
23	State of the Art	Private	\$35,718,000	\$13,948,000	410	133	\$268,578	19.1	1,2,3,4,5,6	
24	Pine Mountain Computing	Private	\$31,922,000	\$17,406,000	431	105	\$303,114	19.1	1,2,3,4,5,6	
25	Microspan Software	Private	\$31,000,000	\$17,000,000	476	300	\$133,333	19.1	1,2,3,4,5,6	
First Quartile Totals			468 public	\$3,886,243,889	\$2,499,233,889	Arg 246	1989	\$168,252	84% of total	Average of 2

Product categories: 1=General software 2=Consumer/retail 3=Education 4=Operating systems/instruments 5=CAD/graphics 6=Programming tools/language 7=Utilities/data conversion
Development platform: a=IBM 2=Windows 3=Macintosh 4=MS-DOS 5=Unix 6=Apple II 7=Commodore 8=Amiga 9=Atari 10=Other
© Copyright 1990 R&R Software. All rights reserved. This page contains proprietary research and may not be reproduced without permission.



R&R gives you ready-to-publish reports from dBASE® files, without programming.

Making good-looking reports has always been easy—even fun—with R&R's screen painter, Lotus-style menus, and standard-setting features!

For people who program and those who don't.

From columnar listings and mailing labels to pre-printed forms and form letters, R&R helps you create the professional-looking reports you want. Without writing a single line of code.

Developers get the power and flexibility to avoid report programming. Plus a royalty-free runtime to print reports from within applications.

People who don't program get the ease-of-use to do ad hoc custom reports on their own.

Great-looking reports. More power than ever. With these and other NEW Version 4 features.

- Exploit HP and PostScript® laser printing power. Print any fonts you have, anywhere you want them.
- ZOOM in on the fine print. Refine layout details with the help of on-screen WYSIWYG preview.
- Pre-process totals to print them in headings, compute %-of-totals, sort and query with totals, and more.
- Use dBASE III®, III Plus®, IV,™ Clipper®, Quicksilver®, dBase®, FoxBASE+,® FoxPro.™ Index support is built-in.

"The undisputed reporting champ of the dBASE world..."

PC World, July 1990

"The first time I used it, R&R paid for itself 10 times over." "I don't know what I'd do without R&R." "Best product I've ever purchased in my life!"

Unsolicited Comments of R&R Users

Join more than 90,000 others who already enjoy the time-saving features of R&R.

Order now! Only \$249. Call about upgrades.

30-day moneyback guarantee when purchased directly from Concentric.

Call 800-325-9035 to order, or for more information and dealer names.



The award-winning family of R&R Report Writers includes versions for dBASE, ORACLE® SQL, Novell NetWare SQL, XDB-SQL®, Lotus 1-2-3® and Symphony®.

Concentric Data Systems, Inc., 110 Turnpike Road, Westboro, MA 01581 508-366-1122, Fax 508-366-291

Circle 181 on reader service card

Temporaries Pretrained For Your Data Entry Formats.



Another First From Kelly.

If you have frequent, multiple or long-term requirements for data entry temporaries, our new Kelly® Customizer is ideal for meeting your needs.

By encrypting samples of your data entry screen and data entry forms on our proprietary Kelly Customizer training

software, we can now assign you Kelly temporaries pretrained to handle your specific data entry formats.

Your Kelly data entry temporaries arrive on the job ready to work, not just ready to learn.

Call your local Kelly office for details.

KELLY Temporary Services

The Kelly Girl® People - The First and The Best®

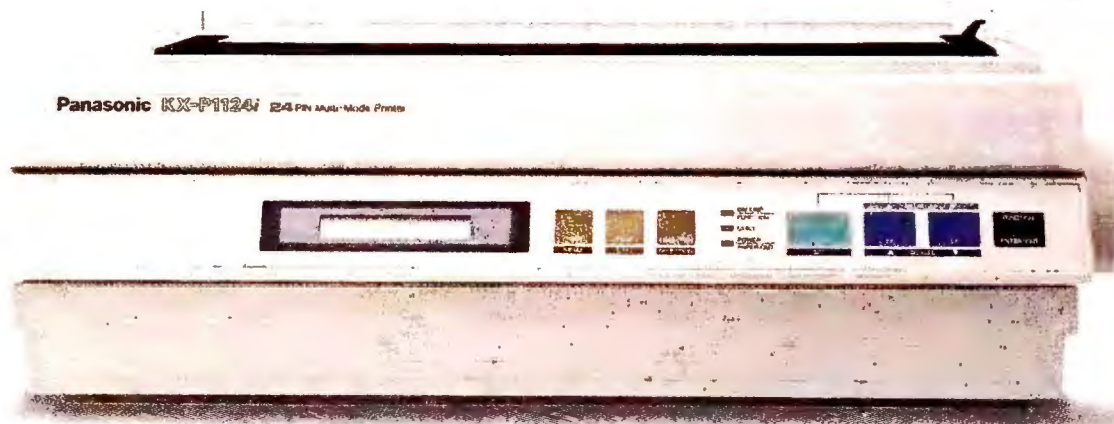
©1991 Kelly Services, Inc.

Circle 142 on reader service card

The industry's best-seller* just got better.



The Panasonic® 1124*i* is here.



The Panasonic KX-P1124 has probably won more awards than any other dot matrix 24-pin printer in history. The KX-P1124*i* represents a significant improvement.

It's simpler to operate. With a new LCD display on our EZ-Set™ operator panel, so you can not only see what you're doing...but how.

It's faster. In fact, at up to 300 cps in draft, it's faster than most of the other popular printers in its class.

It now has 11 built-in fonts, including a Super Letter Quality font, to give all your most important business correspondence a truly professional look.

It's easier to load. With front, bottom and rear paper paths made even more convenient by a new and simpler tractor feed. Yet with all this enhanced power and flexibility, the 1124*i* is still one of the most attractively-priced printers around.

That, too, is the Panasonic way. And the reason why our strongest impression is value. For further information on the KX-P1124*i*, and the name of the dealer nearest you, call **1-800-742-8086**.

* Based on US dollar market share of competitive models for the 12 months ending December, 1990, as reported by InfoCorp (1/91)

*Printers, Computers, Peripherals,
Copiers, Typewriters and Facsimiles*

Panasonic
Office Automation

*Engineered for the office.
Designed for people.*

Data Basics



Data Management

Tips and techniques for managing your data

This month: Creating a to-do list

Steve Cummings

A to-do list does just what the name implies: It gives you a place to list and sort—by priority—tasks that you must do. A number of programs offer this feature, from simple pop-up “ticklers,” to complex personal information managers that let you add comments and dates and view your tasks in various ways. But none of those programs offer the flexibility you’ll get from creating a customized to-do list in your own data management program, especially if you want to integrate your tasks with other types of data.

You probably already have data base files listing your customers, contacts, co-workers, and so on. If you keep your to-do list in the same program, you’ll be able to integrate that information into your task list without retyping or manually importing it. If you work in an R&D department, for instance, you could do a relational lookup—which searches through one file for a match to data in

another—on the personnel file to find technicians with the expertise needed for a task. Almost every data manager, even simple ones, can handle lookups.

A few provisos: A homegrown to-do list takes longer to set up and test than off-the-shelf software. And unless you’re a programmer with time to kill, your homegrown system will lack such niceties as an auto-dialer and a pop-up calendar—but you can fill those gaps with a TSR, *SideKick*, for instance.

What to Do

Before designing your to-do list’s data structure, take some time to think out exactly what kind of information you’ll need to include. Here are the basics:

- A task description field. Make this

no longer than 60 characters; any more will crowd the screen when displayed in a table view.

- Three date fields: the date you first record the task, the completion deadline, and the actual completion date. Depending on the need for precision, you may want time fields as well.

- A one-character priority field. When pressure rises and time is short, you’ll need to sort your list in order of importance. Use a simple 1 through 9 numbering scheme, with top-priority items labeled 1.

- A short classification field. Separating projects into categories, such as personal tasks, meetings, and correspondence, lets you examine similar kinds of tasks together. If your software

dBASE SHORTCUT

From a Table to a Form

Lincoln Spector

A Browse screen table view shows you many records at once, while an Edit screen form gives you a clearer view of one record. *dBASE III Plus* offers no way to toggle easily between these views, but you can create such a toggle by programming. Here’s how to do it with the least amount of code:

```
x = .F.
DO WHILE .NOT. x
    BROWSE
    EDIT
    @ 21,37 SAY "Exit? " GET x
    READ
ENDDO
RETURN
```

This example assumes that

your data file is already open. The program starts a loop that brings up the Browse screen (*dBASE*’s table view). Here, you can scroll through your data and even edit it. When you exit Browse by pressing <Esc> or <Ctrl>-W, the Edit screen appears, showing the record that was highlighted when you exited Browse.

When you exit the Edit screen with <Esc>, you’ll be asked if you want to exit the program. If you answer y or t, the loop finishes. If you answer n or f, it starts over, bringing you back to the Browse screen.

DEADLINE	P	C	DESCRIPTION
06-17-1991	1	A	Make slides for presentation to management group
06-18-1991	1	A	Finish draft of R&D budget
06-22-1991	1	C	Presentation to management group
06-25-1991	1	A	Compile stats on 3rd Q performance
07-01-1991	1	C	Meeting with County Planning Board
06-14-1991	2	C	Meet with Laura and Bill re: project schedule
06-17-1991	2	B	Call Microsoft tech support re: network connectivity
06-19-1991	2	D	Thank you letter to Holly Schwartz at ReedCo
06-20-1991	2	D	Write Larry Holst re: speaking invitation
06-18-1991	3	B	Call EneTech for quote on data analysis
06-21-1991	3	F	Make reservations for fall conference
06-23-1991	3	E	Purchase VGA board and monitor
06-18-1991	4	E	Reorganize reference files

BROWSE Record: 1

↑ ↓ Change Enter View Find Index MainMenu Options

A table view of a to-do list can show vital information for several tasks. By sorting on priority ('P'), 'Deadline,' and classification ('C'), you can see which tasks must get done first.

PARADOX SHORTCUT

Making a Form Your Own

Celeste Robinson

When you view data in *Paradox*, <F7> acts as a hot key for going between the table and form views. By default, the form displayed with the hot key is a simple vertical listing of your table's fields. But *Paradox* lets you redesign this form to make it easier to read; for instance, you can place City, State, and ZIP fields on a single line.

To change the form display, select *Forms Change* from the main menu. Enter the name of your table when prompted, and press <Enter> to select the highlighted 'F' from the list of forms that can be changed. (Other forms are listed by number; if the table has no other forms, only the 'F' will be displayed.)

Enter a description for the form, or press <Enter> to keep the default, Standard Form.

That boring, standard form now appears. Pressing <F10> brings up a menu of options for changing the look and, for that matter, the functionality of the form. For instance, you can use the *Area Move* command to move a field to another part of the screen, or the *Border Place* command to draw a box. Explore the menus to see what else is available. Once you're satisfied, press <F2> to save your work and exit. The next time you press <F7> from a table view, the current record will pop up in your new, improved form.

supports a multiple-choice field type that you fill in by selecting an option rather than by typing, use it here.

- A comments field. Leave yourself plenty of room for writing notes. If your program supports variable-length memo fields, use one. Otherwise, allow for about 300 characters.

- A relational key field. Relating tasks to another data file requires that the two files have at least one field in common. In the R&D example, both the to-do and personnel files need an Expertise field so your program can match people to jobs.

Personalizing Your List

Next, you can build upon this basic structure to customize the to-do list for your job's particular needs. If you organize small meetings, for instance, you may want five or six "people" fields to list co-workers. If your business takes you out of the office, you'll want a place to note hotel and room number, job site addresses, and critical phone numbers.

Because you'll want to display several records at the same time, design a table view that puts each record on its own line (see the screen). Since you can't fit all your fields into 80 columns (the width of your screen), put the most important fields—Deadline, Priority, Classification, and Description—on the left, where they're immediately visible. To view all of a task's fields simultaneously, set up your software so you can toggle to a one-record, full-screen form view.

Putting a to-do list together yourself requires more work than buying a shrink-wrapped program, but you'll realize a substantial payoff: a system that's customized for you and tightly integrated with the rest of your data. ☺

Steve Cummings is a contributing editor for PC World and the author of Understanding Quicken (Sybex, Alameda, California, 1990). Celeste Robinson is the author of The Best Book of Paradox (Howard W. Sams and Co., Carmel, Indiana, 1990). Lincoln Spector is a PC World assistant editor.

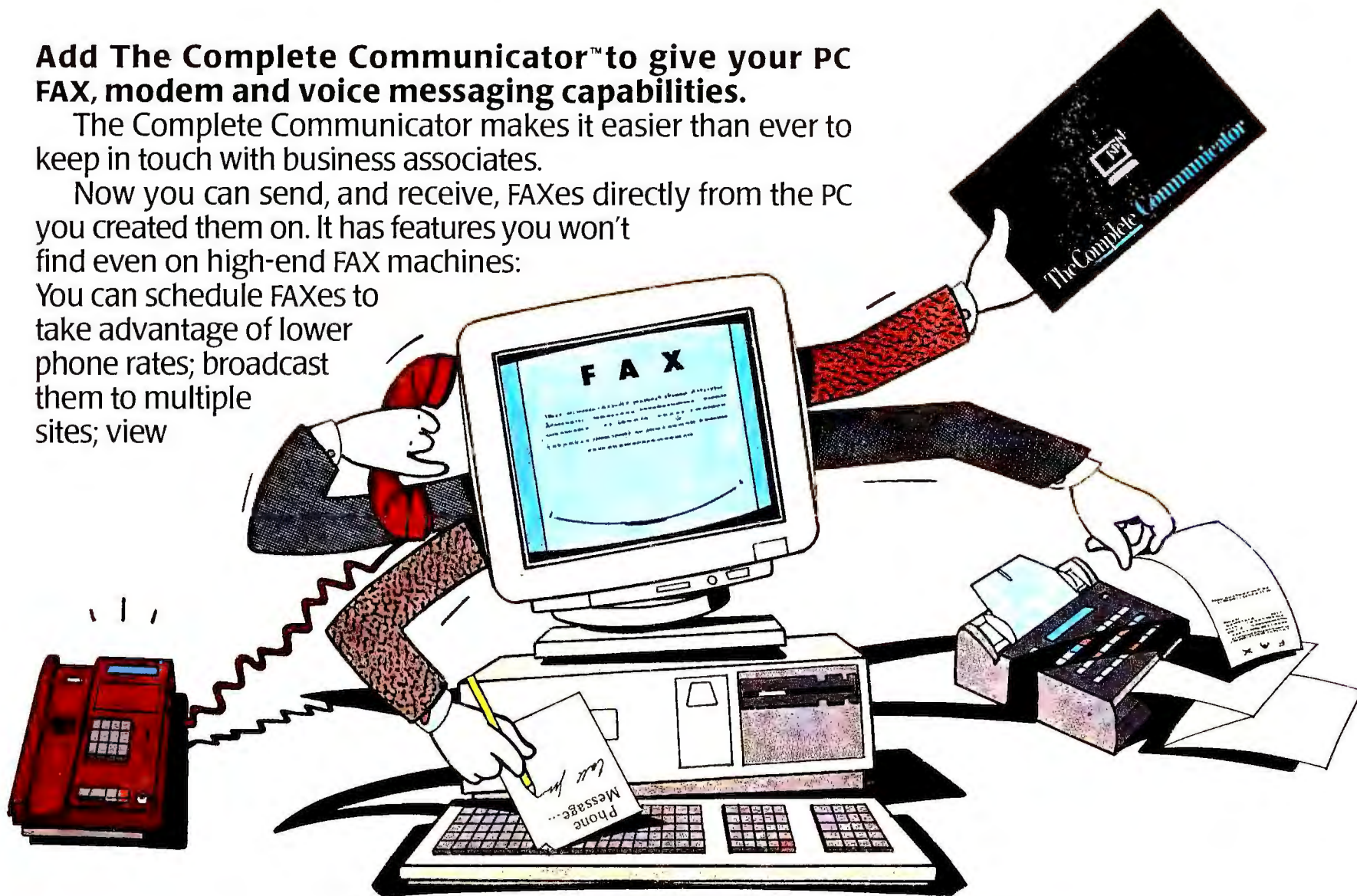
How To Teach Your PC New Tricks.

Add The Complete Communicator™ to give your PC FAX, modem and voice messaging capabilities.

The Complete Communicator makes it easier than ever to keep in touch with business associates.

Now you can send, and receive, FAXes directly from the PC you created them on. It has features you won't find even on high-end FAX machines:

You can schedule FAXes to take advantage of lower phone rates; broadcast them to multiple sites; view



incoming FAXes on screen; print them out on plain paper; even forward incoming messages to a nearby FAX machine when you're on the road.

The Complete Communicator makes it easy to present a professional image to customers. It plays your personalized greetings on up to 999 password protected mailboxes; lets you retrieve messages remotely; and can automatically transfer calls and forward messages.

When you want to share data or access on-line databases and services, the built-in Hayes compatible modem does it quickly and easily using all the leading communications packages.

There's even a port to add The Complete Page Scanner,™ the easy way to add and store images.

With all these features on one easy-to-install board, it's amazing how many new tricks your PC can learn.

For the name of a dealer near you, **call 1-800-229-1753, or FAX 408-434-9682.**



TheComplete PC

1983 Concourse Drive, San Jose, CA 95131

The Complete PC, The Complete Communicator and The Complete Page Scanner are trademarks of The Complete PC, Inc. All other names are trademarks of their respective corporations.

Circle 28 on reader service card

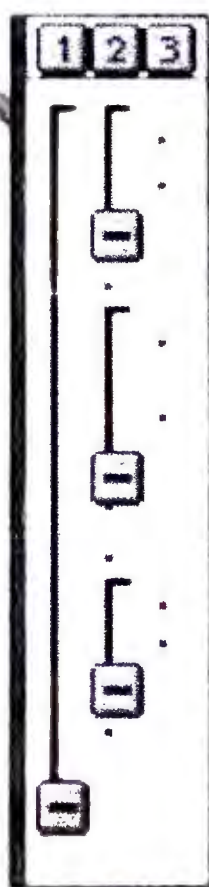
It took us thousands of steps what we wanted. Fortunately



One step outlining. Outline worksheets to see only the detail you need.

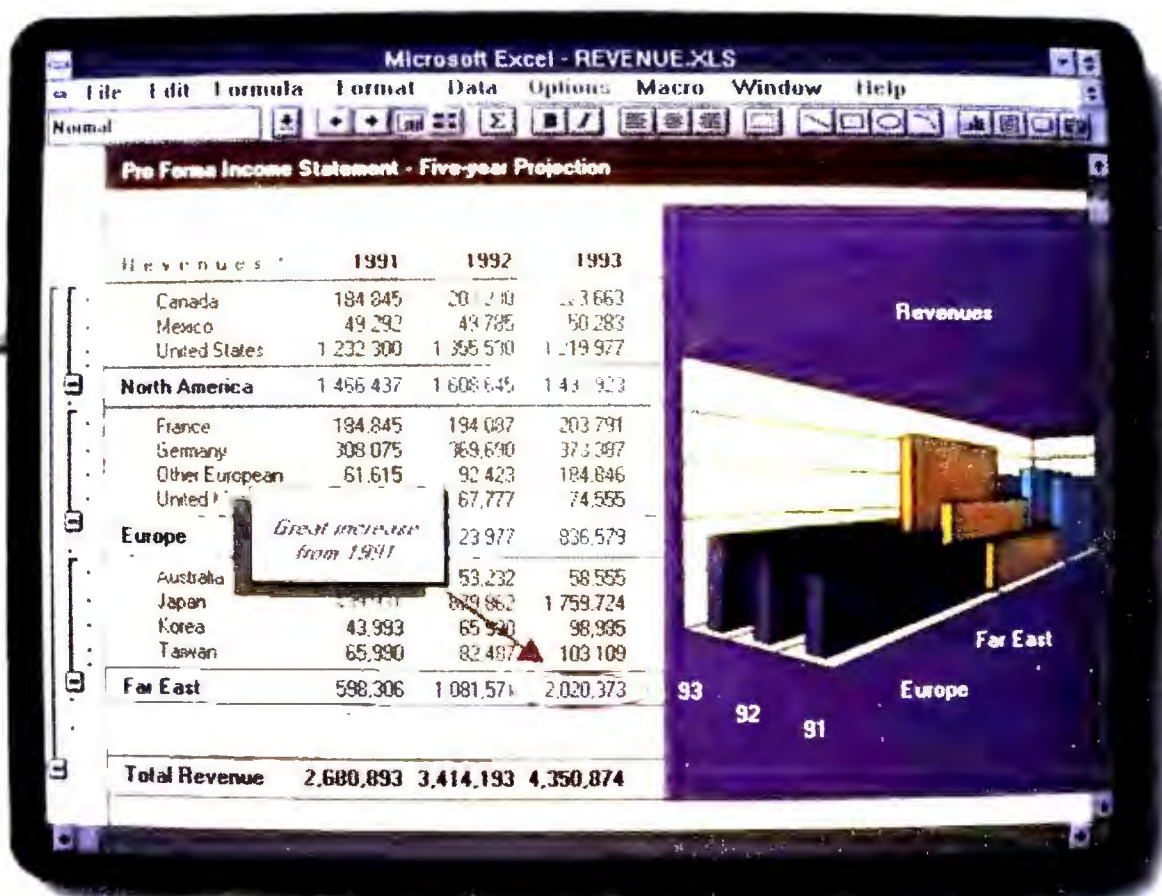
One step styles. Save and apply your own style. Mix up to 256 fonts, 16 of 16 million colors and 18 patterns.

One step formulas. Use Autosum™ to add a range of cells by double clicking.



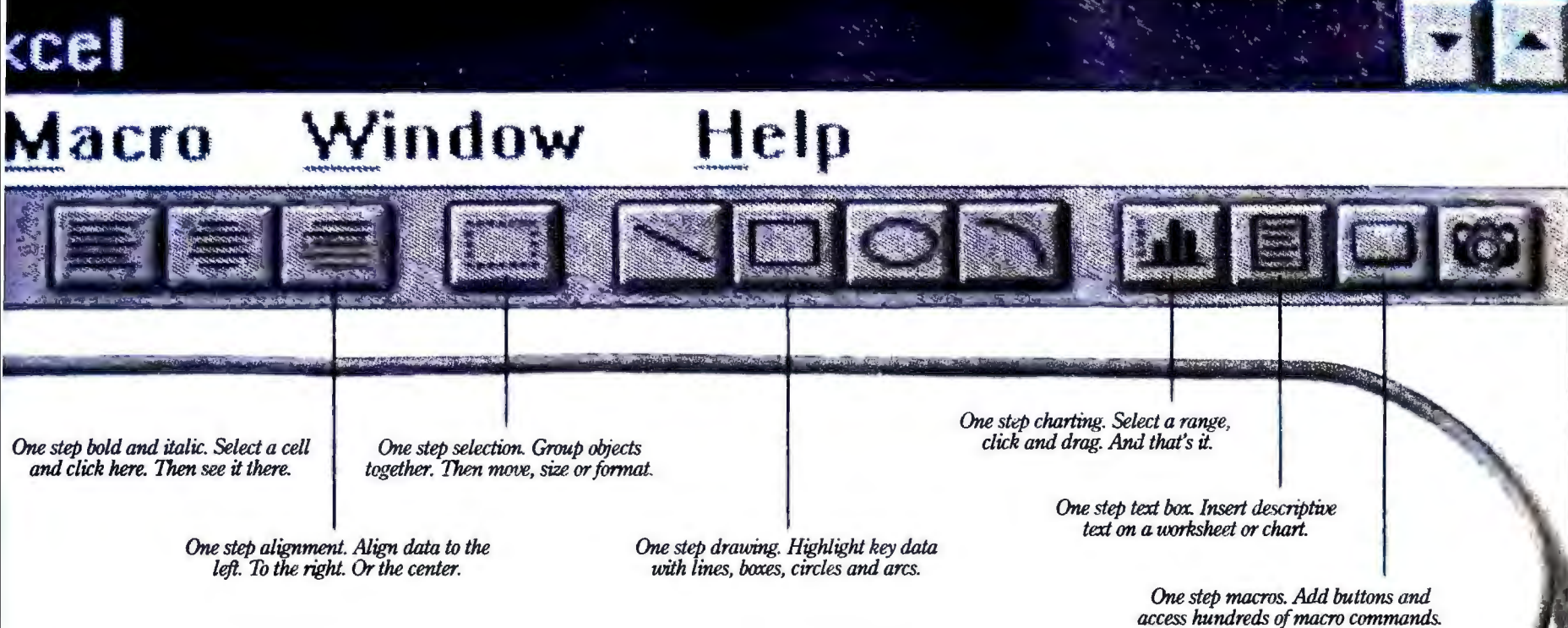
Our exclusive Outlining feature lets you expand and collapse your worksheet. So you're able to display and print only the data you need to view or share with others.

Eliminating the need to create separate documents for your boss and your boss's boss. Furthermore, if you don't select specific parameters, the program will automatically outline your worksheet. You can also combine virtually hundreds of worksheets through the consolidation feature. Regardless of format or structure.



Select a range of cells and transform them into a chart on a worksheet. With one simple click. Or why not create a 3-D chart. Then rotate it 360° How's that for a view? With new Microsoft Excel, you can choose from 68 different chart types, 24 of which are 3-D. Or even create your own. And because this is a graphical program, it's easy to combine text, data and graphics on a single page. Of course, it's WYSIWYG too. Which means you can actually see what you're working on.

o make this spreadsheet do ely it'll only take you one.



Introducing Microsoft Excel version 3.0.



Out of all the steps it took us to create the new Microsoft® Excel for Windows™, there were two in particular that had the most impact. The first was to listen to our users and to listen carefully. The second was to take that knowledge and implement it intelligently.

The result is outrageous power coupled with ease-of-use. It is this idea that drives all of our efforts. And has since we introduced the first graphical spreadsheet back in 1985.

A recent example of this is the Toolbar™. This addition lets you do everything from formatting, to formulas, to

outlining with one click of a button.

Best of all, it's really easy to make the move. Microsoft Excel comes with online help for 1-2-3® users. So you can learn by simply applying your existing knowledge.

Take the next step, call (800) 541-1261, Dept. P64, for the name of a dealer near you.

Microsoft®
Making it all make sense

“Click”



DOS

tap tap tap
tap tap tap
tap tap tap
tap tap tap
tap tap tap
tap tap tap

Direct Access[®]

tap

Finally, a menu program that does away with the old song and dance.

Still using a chorus-line of commands to get into the programs on your hard disk? You need Direct Access.

All you do is load it and forget it. Direct Access lines up every program on a menu and lets you create custom sub-menus for related programs and other applications.

It's simple.

And it's complete. With features like user-defined screen blanking, password protection, three-level virus detection, mouse support and a unique feature that automatically tracks all time spent on your programs. A network version is also available and you can even customize

the menu with your company logo.

The choice is easy. Keep tapping away with DOS commands. Or step right into your programs with Direct Access.

Call now for complete details, volume discounts and your nearest Direct Access dealer. For a limited time, get Pyro!™, The Entertaining Screen Saver for the PC, free! Just write "Pyro" on the Direct Access registration card before you return it.



PC Magazine's Editor's Choice

The Art of Persuasion



Publishing & Graphics

Expert advice for creating high-impact documents and presentations

This month: Add a splash of color to documents, and create a build series with Harvard data charts.

Richard Jantz

It's no secret that the easiest way to grab an audience's attention is by using color—and that the cost of printing full-color documents can quickly leave you in the red. But there's an easy cure to the color-printing blues. One of the most effective and economical ways to "colorize" a newsletter, brochure, or manual is to use *spot color*.

Full-color printing uses four inks—cyan (blue), magenta (red), yellow, and black—to produce the full range of colors required for continuous-tone images such as color photographs. Spot color requires only two color inks: one to print most of a document, and another to highlight items like page borders, rules, and boxes. Because spot color requires less ink and less work than full-color printing, it's much easier and cheaper.

To print spot-color documents, most businesses employ a professional print shop—not every quickie offset shop can handle the job. To specify which elements get which color, you can use your page layout package to print out separate black-and-white copies that correspond to each color, or you can simply bring your master pages to the printer and point. If you need just a handful of copies, it can be more economical to use an in-house color printer and a color copier.

Regardless of how you print your document, you must first develop a spot-color strategy—picking colors and de-

ciding how to use them. Here are some guidelines to help you get started.

- Don't use spot color haphazardly. Use it to organize pages and to guide the reader's eye toward important items.
- Use color consistently throughout a document, employing the same color or color tint for similar types of headings, rules, boxes, and so on.
- Choose bright colors for newsletters or fliers—such as the dollar-bill green used for the financial newsletter shown in **FIGURE 1**. Use more subdued colors like dark blue or maroon for business reports or proposals.
- If you're on a budget, choose stan-

Documents in Living Color

Money Tree

Business Advice From Tulpa Productions

June 1991

Mail-Order Magic

Today, you can buy practically anything by mail. From African violets to Zeiss binoculars, from Yves St. Laurent accouterments to Elvis Presley wallpaper—you name it and, chances are, there's a mail-order dealer who will send it to you. The mail-order universe is so vast, in fact, that it has become a \$100-billion-a-year industry, expanding at 14 to 18 percent annually.

One of the fastest-growing areas in mail order today is the booming microcomputer marketplace. Many of the magazines and newspapers that cater to computer users are loaded with mail-order advertisements for virtually everything a novice or veteran buyer could want, including computers, monitors, printers, modems, disk drives, diskettes, disk storage boxes, and an endless proliferation of software packages.

The Mail-Order Phenomenon

The main advantage of buying computer products through the mail is lower prices. Since many mail-order dealers pay less overhead than retailers and buy big quantities of computer merchandise at reduced prices, they can offer customers larger inventories at sizable discounts. Depending on whether a mail-order dealer sells hardware or software, it may sell products at 20 to 50 percent off the manufacturer's list price. Considering that today's average buyer spends \$6,000 during his first two years of involvement with computers, the mail-order option could produce very significant savings.

Mail-order dealers offer the additional advantage of saving you

(Continued on page 2)

INVESTMENT HELP

Turning Data Into Dollars

"Say, is this a game of chance?"
Cowboy
"Not the way I play it."
W. C. Fields
in *My Little Chickadee*

Like W. C. Fields' memorable card player Cuthbert Twillie, today's individual investment gamblers are learning a sure way to increase the odds in their favor. They're drawing upon the extra playing power of a pair that's tough to beat: microcomputers and investment decision software. Unlike Twillie's tricks, however, computerized investing is perfectly legal and the tools needed are even tax deductible.

Computer Basics

Although it isn't necessary to know all about computers in order to use investment software effectively, it may help you to know a little about a computer's basic components.

The system unit is the basic foundation, or main chassis, of the computer system. The other components include a keyboard, moni-

(Continued on page 3)

Mail-Order Sales Boom

(In Billions)

Year	1987	1988	1989	1990
Sales (\$B)	\$65	\$75	\$85	\$100

FIGURE 1: Using spot color in documents can be as effective as using full color—and much cheaper to print. This financial newsletter uses green for its logo, rules, and initial caps. A 50 percent green tint adds a third color, and a fourth color effect is created by using light-gray paper.

DESKTOP PRESENTATIONS TOOLBOX

3-D Charts on the Cheap

Need a fast and easy way to produce boffo charts? Order up Bloc Publishing's *3-D Charts To Go*. This \$99.95 *Windows 3.0* package helps turn plain spreadsheet data into three-dimensional pie, bar, area, and line graphs.

Creating charts is easy. Simply import a Lotus WKS file or enter data directly into *3-D Charts*' spreadsheet window, and select a chart style. You can rotate the chart and display it in a variety of views, print it, export it as a WMF file, or paste it into programs like *PageMaker*. You can also create a simple on-

screen slide show, but no custom drivers for 35mm slide printers are included.

Bloc's program lacks the range of chart styles, data manipulation features, and drawing tools found in high-priced presentation packages. But for adding pizzazz to a newsletter or desktop presentation, *3-D Charts To Go* is an excellent low-budget solution.

3-D Charts To Go \$99.95; Bloc Publishing, 800 S.W. 37th Ave. #765, Coral Gables, FL 33134; 305/445-0903

Reader service no. 617

NUTS & BOLTS

Building Dynamic Data Charts

A common way to present information using 35mm slides or overhead transparencies is via a *build series*, in which each successive image reveals a new line of text. But you can also use a build series to present data. The easiest way to produce a data-chart build is to create the final image first, then delete the bars or other graphic items one by one to create the preceding images. Here's how to create a data build series using *Harvard Graphics*. First, create a bar chart showing, say, quarterly profits. Then press <F8>, go to page 3 of the Bar/Line Titles & Options screen, and enter a

maximum value for the Y1 Axis that's slightly higher than your largest data value—for example, if your largest value is 95, enter 100. (This prevents *Harvard* from automatically resizing the chart when you delete data.)

Press <F8> to return to the Bar Chart Data screen, press <F3>, and save the chart as **SHOWBAR4**.

To create the preceding image, delete the data values for the fourth quarter—but don't delete the X-Axis Name. Save this chart as **SHOWBAR3**. Repeat this procedure to create the **SHOWBAR2** and **SHOWBAR1** charts, and your build series is complete.

dard colors rather than paying the printer to mix custom ones. At the print shop examine color samples printed on the paper stock you plan to use.

- Make sure graphic elements such as borders, rules, and boxes are large enough to carry the color. For example, it's hard to tell the difference between a black rule and a blue rule if the rule is less than 1 point thick.

- Use spot color for short, infrequent text items such as a logo, large initial capitals, subheads, and pull quotes. Headlines and body text usually work best in dark colors like black or navy blue, which provide contrast and are easy to read.

- When printing text against a spot-color background, use *reverse*, or uncolored, type. Because reverse type uses the color of the paper instead of a second ink (such as black), you avoid having colors overlap or misalign.

- If the same color elements appear regularly in every document—page borders, a masthead, or a logo, for example—you can save money by having them preprinted. Since the spot color is already on the page, you pay for only one color (such as black) each time you print a new document.

- For a nominal charge, you can add the effect of a third color to your document by using a tint of the spot color. For example, use a 25 percent tint of a dark color (use a higher percentage with lighter colors) to set off a boxed item such as a table of contents.

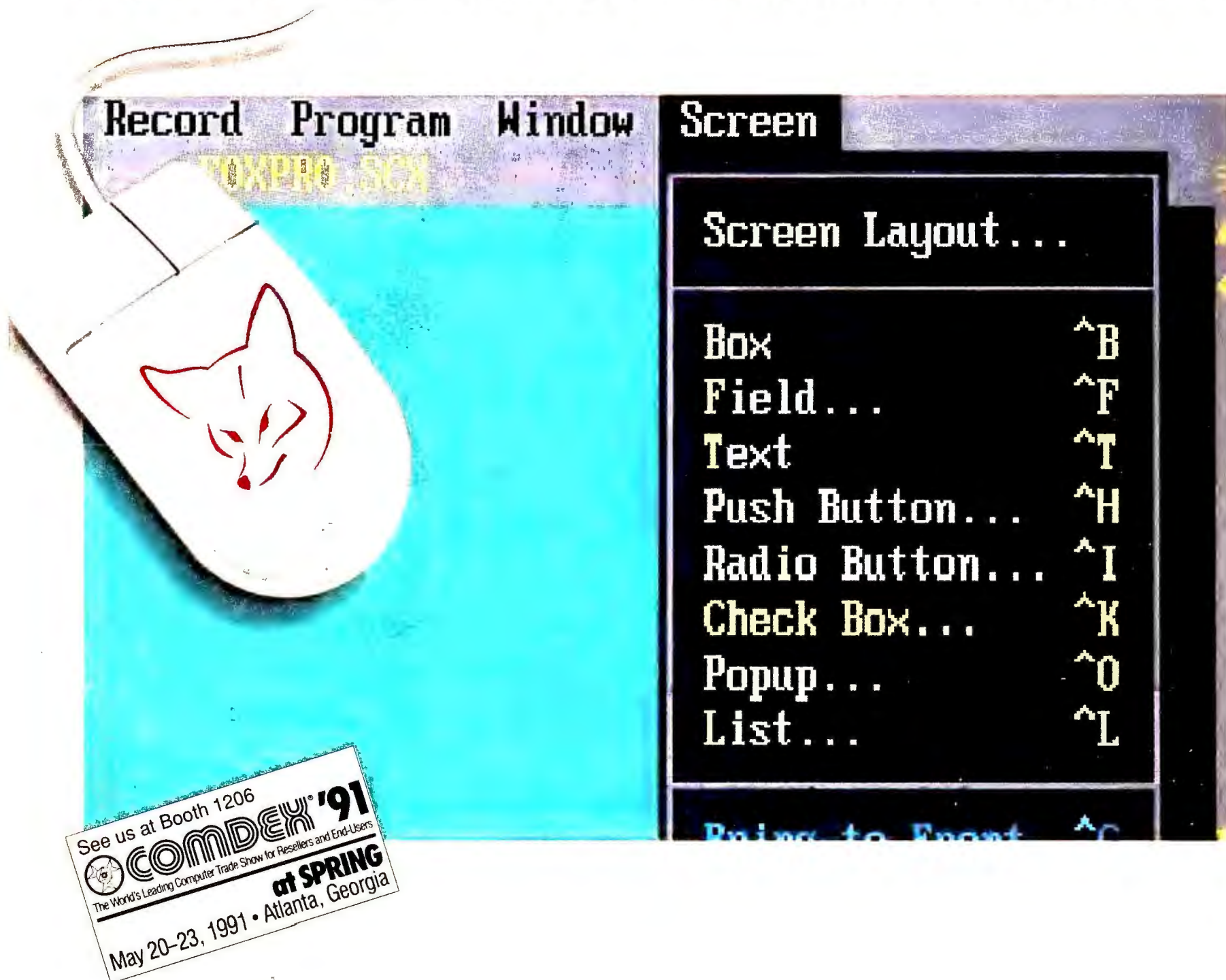
- Don't overdo it. For maximum impact, don't use spot color for more than 25 percent of the text and graphics on a page.

You can also add color to your document by using a shade of paper other than white. Just be sure to select a color that's appropriate for your message and contrasts well with the other colors in your document. ☺

PC World contributing editor Richard Jantz is the author of *Ventura for Windows 3.0* (John Wiley & Sons, New York, 1991).

**We are
about to
satisfy your
deepest
secret
desire...**

Introducing the DBMS runs like a mainframe



Admit it .

Don't you get just a twinge of envy when you see a Mac user having fun while getting the job done?

You're not alone.

Millions of users who needed the power of the PC but wanted the ease-of-use of a Graphic User Interface (GUI) just splurged on Windows and the expensive hardware needed to get the most out of it.

But you don't have to do that.

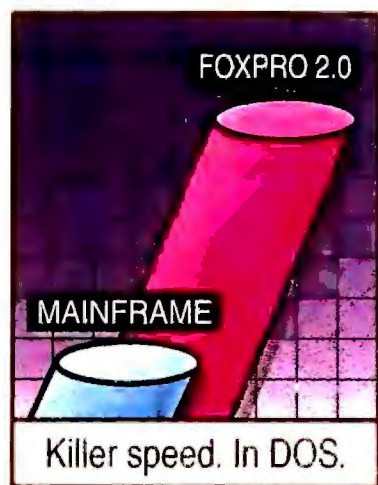
Because now there's FoxPro®2.0.

Why should the rich have all the fun.

FoxPro 2.0 gives you the ease-of-use of a Graphic User Interface on your character-based DOS PC.

Use pull-down menus to open multiple windows (in DOS) and see all the data you need to see at once. Build easy-to-use screens for entering and viewing data just by picking-and-clicking to place menus, buttons, checkboxes and scrolling lists anywhere you want them. Create sophisticated, elegant reports without the usual pain. Then assemble

that acts like a Mac and In DOS.



everything into your own custom applications.

Without writing a single line of programming code.

But that's only the tip of the iceberg.

Beneath its Mac-like interface, FoxPro delivers all the power and

technology needed for your database management systems in the 1990s.

Our new memory management techniques let you work with the memory you have now while speeding up your applications.

Our new compound indexes are less than a quarter the size of those in competitive products and far, far faster.

Our new Relational Query-By-Example (RQBE) is a simpler, interactive interface to the information you need.

Our new Rushmore™ query optimization† accesses that information two orders of magnitude or more faster‡ than ever before.

You'll like being able to seamlessly use the SQL SELECTs that RQBE creates in any of your applications. (And the new UPDATE, INSERT and CREATE TABLE commands, too.)

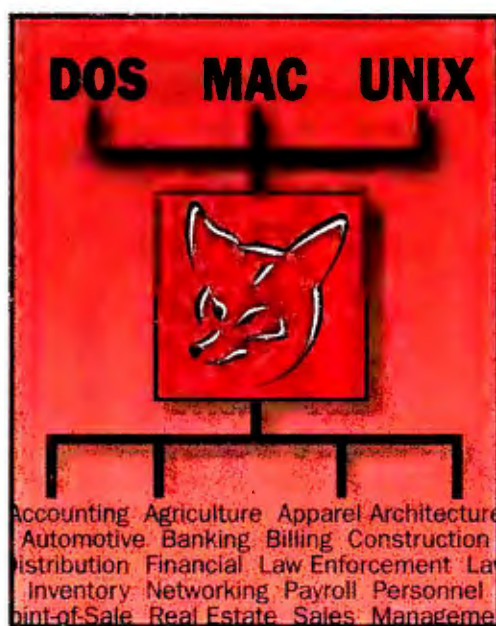
And you'll love the fact that to the rich development environment we've always had, we've added a project manager that keeps track of all the needed files and any changes, then automatically builds your application or .EXE files. An API that lets you dynamically link to libraries you write in C or assembler with a single FoxPro command. A BROWSE

FOR that's the basis for an entire application itself.

Fourth Generation Language (4GL) tools that make adding event-driven code to fully relational screens, menus, reports and labels a snap.

And we've made our networking even better than when NSTL said:* "... multiuser databases fall into two general performance categories: FoxPro/LAN and all the others ..."

There isn't a DBMS in existence with the power of FoxPro.



The bigger your business, the bigger your investment.

So we've maintained downward compatibility with your existing systems, and you can use FoxPro 2.0 to run your current dBASE (and Fox) applications on your present character-based DOS PCs.

While you develop better, faster database management systems using all the advanced power of FoxPro 2.0 to satisfy your future information processing needs.

To get the most out of your investments, call and ask about our Upgrade-Any-DBMS-for-\$195 offer.

Call now for your FREE demo disk.

FoxPro 2.0 runs on a 512K XT yet in extended mode uses every bit of power in a 386 or 486. To try it yourself, call Fox Software for a free copy of our fully-featured demo or the name of your nearest dealer.

You'll be amazed at what FoxPro 2.0 can do for you. In DOS.

Call 1-800-837-FOX2 today.

(Ask for Offer PCD-601)

FoxPro 2.0

The complete power trip.™

† Patent applied for. ‡ A PC and FoxPro beat a mainframe and DB2 with a million-record, 200 megabyte database! * Quote from Software Digest Ratings Report, Vol. 7, Issue 13 (Oct. 1990) refers to FoxPro 1.02. Software Digest is a registered trademark of NSTL, Inc. Upgrade price valid only in U.S.A. and Canada. FoxPro TM Fox Holdings Inc. © Fox Holdings Inc. 1991.

The Drudgery Of Image Processing Just Went Out The Window

Automatic Filters remove spots, sharpen resolution, adjust brightness and contrast, blend, and equalize scanned images.



Zoom In and Zoom Out in multiple levels while accessing all tools, retouching features, and special effects.

Special Effects let you tint, smudge, add patterns and gradient fills, create 3-D effects, style text, give images a mosaic look, simulate "motion blur," and more.



Create and edit images with up to 16.7 million colors or 256 shades of gray.

With Publisher's Paintbrush®—ZSoft's new, top-of-the-line image processing program, custom built for Windows™ 3.0. The program designed for professionals. Integrating ZSoft's award-winning paint tools, complete scanner control, plus the most powerful, sophisticated image processing capabilities available. All in one easy-to-use application.

Complete image control is yours: multiple level zooms let you move from precise editing...to larger than screen size images...while accessing all tools. Automatic filters amplify detail and save hours of retouching.



Gray scale calibration ensures realistic output. View multiple versions of images in multiple windows for easy comparison while retouching, cloning, and cutting-and-pasting. Extensive file support (PCX, TIF, GIF, BMP, EPS*, TGA and more) guarantees compatibility.

Enhance photos and create powerful visual effects for brochures, newsletters, presentations, and more. With Publisher's Paintbrush, creativity knows no limits. For more information about the image processing program for professionals, call us at (404) 428-0008.

© 1991 ZSoft Corporation

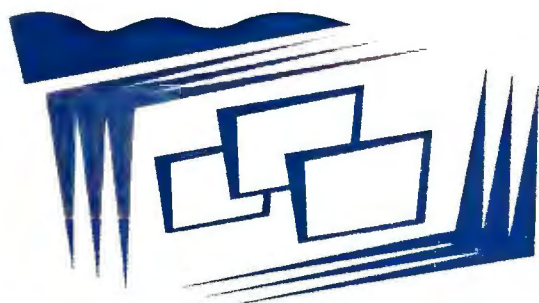
*EPS file support is write only. System Requirements: Microsoft Windows™ 3.0 or higher, Windows-capable computer with a hard disk, display adapter and drawing device. Publisher's Paintbrush is a registered trademark of ZSoft Corporation. Windows is a trademark of Microsoft Corporation. Photo licensed by The Roger Richman Agency, Inc., Beverly Hills, CA.

ZSoft
CORPORATION

To update, send \$75 (add \$4.90 shipping/handling) and your original Publisher's Paintbrush program disk to: ZSoft Update, Dept. WX, 450 Franklin Rd., Suite 100, Marietta, GA 30067. Specify 5.25" or 3.5" disk. GA residents add (9%) sales tax. Canadian customers add \$15.90 for air shipping. Outside N. America, add \$15.90 for surface shipping, \$24.90 via air. Payment in U.S. funds by check, money order, VISA, MC or AX. Upgrades from all ZSoft PAINT programs available; call for details. (404) 428-0008.

Circle 320 on reader service card

Windows Workshop



Windows

Practical advice on mastering Windows 3.0

This month: Surviving the dreaded UAE

Jesse Berst and Scott Dunn

America's three most feared phrases:

1. Greetings from the IRS! Our audit department has selected your return for...

2. I've looked over the X rays, and I'm afraid a root canal is in order.

3. UNRECOVERABLE APPLICATION ERROR Terminating current application.

This last message, of course, signals that your *Windows* application has just crashed. When you see the dreaded Unrecoverable Application Error (UAE) message, all you can do is click on 'OK', whereupon *Windows* closes the current application without letting you save your work.

But don't despair. Read on, and you'll discover why UAEs occur, what to do when they appear, and some preventive tips.

What Is a UAE?

One of *Windows*' jobs is to assign each application a specific segment of memory. UAEs occur when a program invades a memory location it shouldn't have access to and overwrites or tries to overwrite what's already there—data, another program, DOS, or even *Windows*. When an application oversteps its boundaries, *Windows* shuts it down and pops up a UAE message.

Keep in mind that a UAE probably

isn't caused by the application that crashes. Microsoft technical support estimates that 80 to 90 percent of UAEs can be traced to problems in your system's configuration. Common offenders include disk caches, TSRs (especially if loaded before *Windows*), old mouse drivers, display and printer drivers not certified for *Windows*, type managers, *Windows* 2.xx applications, and expansion boards that try to use the same memory *Windows* needs. In some

WINDOWS TOOLBOX

Zip Manager 3.01

A file compression program is a wonderfully handy tool. It can reduce the size of files (often by more than 50 percent) and let you store many individual files inside a single, compressed archive file. If you store a lot of scanned images or send even moderately large files via modem, a file compression utility is a must.

Unfortunately, the leading DOS compression utility, *PKZIP*, is a pain to use, thanks to a welter of arcane command line switches. But with the shareware *Zip Manager 3.01* from Moon Valley Software, you can put a friendly *Windows* face on the product and gain point-and-click access to advanced functions.

For example, you can add a new file to an existing archive, send extracted files to a special subdirectory, make self-extracting files, extract one or more

files from an archive, and view file names in an archive. *Zip Manager* is so easy to use, you could easily store all your worksheets in an archive file and simply extract the one you want to work on.

Zip Manager 3.01 has its faults. It's just a shell, so you must obtain the shareware *PKZIP* utilities first. And, as in most shareware programs, the documentation and help files aren't as good as they could be. But the upcoming version 4.0 should fix many of these flaws and add powerful new image compression capabilities as well. Until then, *Zip Manager 3.01* is still the fastest, easiest way to perform file compression under *Windows*.

Zip Manager 3.01 \$21.95 registration fee; Moon Valley Software, 107 E. Paradise Ln., Phoenix, AZ 85022; 602/375-9502

Reader service no. 621

Anatomy of a UAE



'Windows' job is part traffic cop—it assigns each application its own, inviolable chunk of memory. Unfortunately, a program sometimes crosses the double yellow line and tries to grab another program's RAM. The result? A UAE—a head-on crash that brings Windows to a halt.

cases, the problem is more fundamental: Your old 80286 or Bulgarian clone may not be supported by *Windows* at all.

Safe and Sane Response

When a UAE occurs, *Windows* closes the current application but stays active itself. The temptation is to keep on computing.

Don't. The only completely safe way to respond to a UAE is to exit *Windows* immediately, and press **<Ctrl>-<Alt>-<Delete>** or hit the reset button. This completely clears the PC's memory. If you don't clear memory, the results can be disastrous. The errant application may have mangled data, or worse, *Windows*, compromising all operations.

Preventing UAEs

If you get more than one or two UAE messages per week, take your system back to a simpler time. First, make

backup copies of AUTOEXEC.BAT and CONFIG.SYS. Then clean out everything in AUTOEXEC.BAT except PATH and PROMPT commands; strip out everything in CONFIG.SYS except FILES, BUFFERS, and DEVICE=HIMEM.SYS statements. You can also keep essentials like network and disk-partitioning drivers.

To isolate the problem, add the suspect elements back one at a time—use the computer for a week or two, and if the UAEs don't return, restore another element. Eventually, you'll discover the culprit.

In tracking the wild UAE, consider these other tips and caveats:

- Use the system vendor's version of DOS. Running another vendor's DOS can introduce subtle incompatibilities.
- If you want your hard disk partitions exceeding 32MB, use the latest version of DOS 4.xx. Third-party disk

partitioners can conflict with *Windows*.

- Avoid using third-party device drivers for displays, printers, and other peripherals unless these drivers are supported by Microsoft. Until you can isolate the source of the UAEs, use the drivers that ship with *Windows* or are part of Microsoft's Supplemental Driver Library. You can get the library disks by calling 800/426-9400.

- *Windows* sometimes uses memory addresses between 640K and 1MB, a location normally reserved for adapter boards. If an adapter doesn't properly identify which memory segment it is using, *Windows* could attempt to write over that segment. The solution? Exclude *Windows* from using memory addresses between 640K and 1MB.

Open *Windows*' SYSTEM.INI file and place the line `emmexclude=a000-efff` in the [386Enh] section. If the adapter's manual notes the exact memory segment the board uses, you can modify this statement to cordon off just that segment and reclaim the rest for *Windows*.

- If your PC is networked, make sure you're using the latest network shell. Most older shells aren't compatible with *Windows*. The latest NetWare shell at press time is 3.01e and is available from Novell's CompuServe forum. Type **GO NOVA**, and download the DSWIND.ZIP file.

- Some older 286s and cheap clones are not supported by *Windows* and will generate UAEs by the cartload. You may be able to cure the problem by upgrading the system's BIOS and keyboard controller ROM chips. Most system vendors sell these chips as a set.

- Microsoft confirms that *Word for Windows 1.1's WordPerfect 5.x* document converter has a bug that triggers a UAE. Until Microsoft provides an update, avoid this option. ☹

Jesse Berst is a contributing editor for PC World. He and Scott Dunn are coauthors of 101 Windows Tips (Peachpit Press, Berkeley, California, 1991).

A full-blown server-based network costs a bundle when done right. Add to this the cost of training and ongoing support (sometimes 2 to 3 times the original investment). Undaunted, businesses bite the bullet every day—effectively turning over their entire computer operations to a LAN expert forever. But many, in seeking a less costly alternative, fall into the trap of false economy.

We say “neither is necessary.” Why? How?

Systemizers®



Connectivity and networking solutions abound. And with them come traps of all kinds. Unless you're a teflon-coated decision maker (or a job hopper), the solution you choose today should remain appropriate tomorrow. Let's look at where you can go wrong—and right.

First, consider printer sharing boxes. They're a fine short-term solution when you have two or three computers occasionally needing access to a single printer. But, when applied to more extensive or demanding applications, they become a bottleneck that impedes and frustrates users. Wouldn't you call this a bottleneck: a printer sharing box—driven by a *single* microprocessor—receiving print data from *several* computers, while it is simultaneously supposed to send this data to *several* printers? No wonder the makers of these boxes publish performance tests with only *one* user printing! And when the box locks up (as all computer devices do), everyone loses their printing. When it breaks, *nobody* can print until the box is replaced. To add insult to injury, they are often quickly outgrown because they have a finite assortment of inputs and outputs.

If not printer sharing boxes, then consider networks (LANs). They're a *hot* item nowadays, particularly because LANs are one of the few sources of profit left for computer stores. Good networks are EXPENSIVE, and require expert support forever! Guess who benefits from that? If you buy a LAN, you will always be accountable to it, like a state and federal sales tax on every change or addition you make related to your computers.

Not that there aren't inexpensive networks available to snare the penny wise. Some are downright cheap. But, should you build your business around them? Cheapo networks teach harsh lessons in false economy.

You see, some low-cost LANs boast they occupy very little memory (RAM), yet to realistically accomplish what the LAN is supposed to do, it really uses as much or more RAM as any other LAN. The truth is: *all* LANs occupy a rather substantial amount of RAM, and you will likely find yourself either having to add RAM to your PCs (if you can)—along with memory management software, or dumping some of your other software overboard.

An even harsher lesson in false economy comes later, when you buy a multi-user software package (e.g. a database to be shared) and discover it is only guaranteed to be compatible with a server-based data-sharing LAN, usually Novell's®. Oops! Old LAN overboard!

Want to avoid such harsh lessons? Rule number one: if and when your company has some computer users who need a data-sharing network—so they can simultaneously access a shared database—get the best network and server money can buy. Buy a UPS, tape backup... the works. Make the commitment. It's a big step, but you'll regret anything less.

It's highly unlikely, however, that ALL your computer users need—or will ever need—access to a shared database. Most probably just need to share printers and other peripherals like plotters, modems and fax machines. Perhaps everyone would also like to exchange E-Mail and maybe even pass data files between PCs electronically.

Systemizers® are a connectivity solution that will provide these capabilities with none of the traps, drawbacks or excessive costs and commitments previously mentioned. There are five models to choose from, to fit any budget, application and performance requirement—including the powerful Systemizer Plus for CAD and DTP. And they're ALL compatible.

You can apply Systemizers on a global scale, then selectively employ a high-end server-based LAN solution for those users who absolutely need it. All users in the company—whether they're on a LAN, WAN, PBX, mainframe, or are independent—can be Systemized™, and they'll all benefit from it greatly. In fact, if users are Systemized, the investment required for any future data-sharing LAN will be significantly less. Plus, because Systemizers will be handling all print “traffic”, the data-sharing LAN will perform better and more reliably.

You owe it to yourself and your company to look further into Systemizing™. Find out why almost 100,000 users are now Systemized, most at some of the world's largest companies. With plenty of LANs, WANs, PBXs and mainframes at their disposal, why have so many huge companies made Systemizing their basic connectivity standard? Call or fax us, and we'll show and tell you.

 **CONNEXPERTS®**
...expertise in connectivity.

1-800-433-5373 Ext. 312 1-214-739-4200
FAX: 1-214-696-3925

Systemizer and CONNEXPERTS are registered trademarks, and Systemizing and Systemized are trademarks of Applied Creative Technology, Inc. All other trademarks shown are the property of their respective owners. ©1991 by Applied Creative Technology, Inc.

Circle 19 on reader service card

COMPLETE 386-SX

\$1499⁹⁸

ALL OF THE FEATURES YOU WANT

- Complete, ready-to-run Q-Tech® system that gives you more features than virtually any other PC in this price range
- 16 MHz 386-SX CPU with a Norton SI rating of 18.9. Runs at 2.37 MIPS
- 100% IBM compatible
- Super VGA 14" color monitor featuring sharp 800x600 resolution, plus 16-bit Super VGA video card
- 2 MB of RAM (expandable up to 8 MB on the system board)
- 41 MB, 17ms IDE hard drive
- High-density 3½" and 5¼" floppy drives
- Two serial ports, one parallel port
- Three 16-bit expansion slots
- Socket for 80387-SX math co-processor
- 101-key enhanced keyboard
- 165-watt power supply
- One year FREE on-site service
- MS-DOS 4.01
- To get this complete Q-Tech® system from Quill, call us and order item #176-DL-SX16-1



Q TECH COMPUTERS

are manufactured by

EVEREX
EVER for EXcellence®

SPECIAL OFFER TO FIRST 500 CUSTOMERS:
GET WINDOWS 3.0 AND A MOUSE FOR JUST \$99!

PLUS, QUILL'S "WE CARE" SERVICE

90-DAY NO-RISK GUARANTEE

We stand behind your satisfaction for three full months...you won't find a better guarantee anywhere else! With our 35 years of experience in the office products business, you know we mean what we say!

FREE TECHNICAL SUPPORT

Quill's Computer Products Specialists can offer knowledgeable, friendly telephone support for as long as you own your system. All you have to do is call.

EASY PAYMENT OPTIONS

You can charge your purchase today on Visa or MasterCard. Qualified businesses can also choose our convenient monthly payment plan or be billed on open account.



LARGE-VOLUME QUOTES

Buying several systems? We will give you a quote that beats our already-low price!

SPEEDY DELIVERY

We're committed to shipping your order within 24 hours after credit approval.

ONE-STOP SHOPPING

From XT's to the new 486, we have over 200 systems that can be configured to meet your needs. Plus, we carry a full selection of peripherals, as well as the supplies you use every day...at bargain prices.

CALL US TODAY

1-708-634-6650

QUILL®

P.O. Box 4700, Lincolnshire, IL 60197-4700

To request a catalog or for more information, please refer to ad #91176 when you call.

The Information Edge



Communications

On-line resources for business and professional users

This month: Tap into the best sources for business-related shareware and public-domain software, and get down to earth with geology data bases.

Judy Heim

When it comes to business software, you have two choices: You can buy a commercial package, or you can download shareware (or free public-domain software) that's often just as good.

The two primary sources for on-line software are services like CompuServe, and bulletin boards (BBS's) like Exec-PC. The services generally have bigger file collections, but you pay hourly connect charges. BBS's are free, or else they charge a one-time yearly fee, which still saves you money over the cost of a service if you spend a lot of time on line.

But library size and price aren't everything. The file collection's currency and character and the ease of searching and downloading are equally important. While some collections are stronger in one area, most libraries offer the same

(latest) versions of a given package. Exec-PC specializes in business applications, while GENie, from General Electric Information Services, is strong on graphics utilities. Exec-PC and Channel 1, a similar BBS, provide easier search tools than the big services.

Here are profiles of the six most popular on-line PC software collections, listed in order of claimed library size. Rest assured: All the services and BBS's listed screen their software scrupulously for computer viruses.

GENie is probably the best choice for now-and-then software searchers. This service is low priced, easy to use, and boasts the largest storehouse of PC programs—over 85,000 titles. You start by choosing a forum like Desktop Publishing or Investment, and a library within that forum, such as Printer Utilities. Then, when prompted, you enter a keyword to scan for. Alternatively, you can browse through descriptions of files, but since each description takes a screen, this method can be slow. Even if you don't browse, GENie can be sluggish, and it sometimes locks up after downloads. The service will have added 9600-bps support by the time you read this. GENie is \$6 per hour at night, \$18 per hour during the day, plus \$4.95 a month.

CompuServe Information Service (CIS) boasts the second largest PC file collection. Official guesstimates place it between 37,000 and 55,000 titles. Unfortunately, software is scattered among dozens of libraries, and while a menu-based search utility lets you hunt through 20 IBM forums by keyword and file name, you can't use wild cards (asking to see all programs that start with 'G' and end with '.COM', for instance). Nor does it search any other forums. You can browse through CIS too, but as with GENie it's time-consuming. CIS is also the priciest choice here: \$12.50 per hour

for 2400-bps access, \$22.50 for 9600-bps, plus network and account charges.

Exec-PC may be the "regular" downloader's best friend. This BBS includes a well-chosen collection of 35,000 PC titles you can search with matchless ease—and download at speeds up to 14,400 bps. To search for software, you can toggle between full-screen menus and prompts. You first choose the operating system and then employ Exec-PC's advanced browse facility, which lets you scan for dates, categories, and multiple keywords. You can review hundreds of programs in minutes. Downloading is equally easy, and you can use your MNP-5 modem. More good news: All you pay is \$20 for a three-month subscription, or \$60 per year.

Channel 1 is similar to Exec-PC in both the size of its software collection and its ease of use. This BBS's full-color,

ON-LINE TOOLBOX

Let Your Modem Do the Walking

If you dial a lot of phone numbers from your PC screen (clients listed in a data base, say), you should know about a \$10 auto-dialer called *Dialthat*. With this unobtrusive 1K TSR loaded in memory, simply hit <Alt>-D, cursor down to the number, and press <Enter>. When dialing is complete, pick up your telephone handset and press the <Space> bar to silence the modem.

Dialthat, Real Software, P.O. Box 1680, Soquel, CA 95073;
408/476-3550

Reader service no. 608

menu-driven interface is a pleasure. Software is tucked into 96 application categories. You can search one or more of these libraries by typing in keywords, or you can browse through a scrolling list of files. Channel 1 is slightly more expensive than Exec-PC: \$25 for two months, or \$85 a year. However, a free 90-day trial subscription is available. You can download at speeds up to 9600 bps, and MNP-5 is supported.

Delphi is the cheapest service listed here. Connection charges can run as low as \$1.20 per hour, even during the day. However, with only 10,000 programs, Delphi compares to CIS and

GENie like a bookmobile going up against the New York Public Library. Files are stored in conferences, as on GENie and CIS, and searching or browsing is easy, with menus at every bend—but you can search only by keyword, not by date. Connect speed is limited to 2400 bps.

Byte Information Exchange's high price, tricky menu, and very thin collection of business software make this service a dubious resource for pin-stripe file hunters. Byte estimates its file collection at 3000 to 4000 titles. To locate a file, you must make a series of arcane selections from the main menu.

As on the larger services, file descriptions are displayed one at a time, a tedious process. To download, you choose the protocol you want from a menu, but you're limited to 2400 bps. The cost is \$156 per year, plus from \$2 to \$6 per hour, depending on where you live.

One last tip for serious searchers. Four of these libraries support 9600 downloads. If you're on line several times a week hunting for business software, get a high-speed 9600-bps modem. It will pay for itself in no time. ☺

Judy Heim is a contributing editor for PC World.

THE PROFESSIONAL EDGE

Help for the On-Line Geologist

Whether your company plans to build an office tower over a landfill or needs the latest architectural designs for earthquake-proofing a computer room, you'll need to know the lay of the land. Dialog offers three geological data bases that give you everything from the latest seismic reports to information on dam designs suitable for local rock formations. Together, GeoRef, Geobase, and Geoarchive provide nearly 3 million citations drawn from roughly 15,000 scientific journals. Subjects include geology, climatology, ecology, and fossils. You can search by latitude and longitude as well as date and place of publication.

The American Geological Institute's huge GeoRef data base chronicles North American geological studies back to 1785; Geoarchive is its British equivalent. Geobase is a wide-ranging earth sciences data base that covers topics ranging from

Third World tectonics to transportation planning. All three are updated monthly. You can also find GeoRef on Orbit Search Services for about the same price—but you don't get access to the other two data bases.

You can search all three data bases as a group, using dozens of search criteria, but Dialog's hieroglyphic interface may put you between a rock and a hard place. Help is only a phone call away, but it's not toll free. Eighty percent of the entries are abstracts, the rest are citations, and most are in English.

At \$85 to \$99 per hour, plus a per-record access fee of 15 to 40 cents, a \$45 subscription charge, and \$35 per year for the account, these data bases are pricey, but if your business needs geological data, they're gems.

Dialog Information Services, Inc., 3460 Hillview Ave., Palo Alto, CA 94304; 800/334-2564
Reader service no. 607

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

WHERE TO BUY

Byte Information Exchange

One Phoenix Mill Ln.
Peterborough, NH 03458
800/227-2983, 800/225-4129 (modem)
Reader service no. 601

Channel 1

P.O. Box 338
Cambridge, MA 02238
617/354-2505, 617/354-8873 (modem)
Reader service no. 602

CompuServe

5000 Arlington Centre Blvd.
Columbus, OH 43220
800/848-8199, 614/457-0802
Reader service no. 603

Delphi

General Videotex Corp.
3 Blackstone St.
Cambridge, MA 02139
800/544-4005, 617/491-6642 (fax)
Reader service no. 604

Exec-PC

P.O. Box 57
Elm Grove, WI 53122
414/789-4200, 414/789-4210 (modem)
Reader service no. 605

GENie

General Electric Information Services
401 N. Washington St.
Rockville, MD 20850
800/638-9636, 800/638-8369 (modem:
type hhh at the DOS prompt, press
<Enter>, then type sign up)
Reader service no. 606

MANAGE the unmanageable

As an executive consultant with Data Systems Inc., Alexandria, Virginia, Jack Anderson was used to pressure, but at this time he was really in trouble...



InstaPlan has unparalleled ease of use and sophistication

The client needed a proposal for updating its outmoded daisy wheel based PC wordprocessing system. These studies normally take weeks or even months to complete. Interviews, document reviews, procedures analysis, communications studies and many other factors must all be taken into account. To make matters worse, not only did the client need it in a week, but the client was a friend, whose new job depended on Jack delivering the goods by Friday. Understandably, Jack was nervous.

With no room for error, Jack turned to the world wide leaders in full service project management, Micro Planning International. In addition to consulting and training services, MPI provides powerful but easy to use software for DOS, Windows and Macintosh computers, Jack chose InstaPlan (IP) and was up and running in minutes. He found its outline approach let him start with his broad objectives, working down into more detail as needed.

To hit this deadline, Jack was going to have to leverage client resources. InstaPlan's superb graphical reports (Gantt, PERT, and Resource Spreadsheet) allowed Jack to communicate quickly and effectively what was needed, when and by whom.

By Friday, the proposal was ready and accepted as the framework for the client's automation program. In Jack's own words, "I couldn't have done it without InstaPlan. Its unparalleled in ease of use and sophistication."

Full Service Project Management from



Micro Planning International
655 Redwood Highway, Suite 311
Mill Valley, CA 94941
(415) 389-1414

San Francisco • Boston • Los Angeles
Bristol • Washington D.C. • Sydney

Announcing InstaPlan 3.0!

The informed choice for Project Management
and Proposals just got better

Easiest to Use:

InstaPlan's easy outline approach works the way you think. Start with the broad objective and work down to the details as necessary. Proposals and plans can be laid out by novices in minutes.

"Learning to set up and edit a project is easier with InstaPlan than any other program"

Software Digest

Full featured:

With InstaPlan's full range of features, Why pay more?

*#1 Ease of Use
#1 Ease of Installation
#1 Overall value*

CORPORATE
PC WEEK
SATISFACTION POLL

	InstaPlan	Time Line®
Outline Approach	✓	✓
Resource Driven Scheduling	✓	✓
Multi-Project Analysis	✓	✓
Progress Tracking	✓	✓
What if (Undo/Redo)	✓	✓
Presentation Graphics		
- Gantt Charts	✓	✓
- PERT Charts	✓	✓
- Resources Histograms	✓	✓
- C/SSR Costing Charts	✓	No
Multiple Resource Calendars	✓	No
Plotter support*	✓	✓
WBS Codes*	✓	✓
File Locking on Networks*	✓	✓
Suggested Retail Price	\$249	\$695
EMS Version SR Price	\$549	\$695

* New in Version 3.0

PERSONAL
COMPUTER
EDITOR'S
CHOICE

INFO
WORLD
EXCELLENT
VALUE

PC WORLD
BEST BUY

PC
MAGAZINE
EDITORS'
CHOICE

Best Buy:

At \$249, InstaPlan is a fraction of the cost of equivalent project management software with comparable features. The EMS Version at \$549 is even better value for those with large projects (10,000+ tasks) or many independent projects to manage.

Special offer! Upgrade from Time Line® or Harvard™ PM for only \$79. Call for details!

PCW 6/91

InstaPlan (800) 852-7526
30 day money back guarantee.

- ☐ Send InstaPlan 3.0 \$249
- ☐ Send InstaPlan EMS \$549
- ☐ 5 1/4" disk
- ☐ 3 1/2" disk

Send info on:

- ☐ Version for Windows
- ☐ Consulting/Training

VISA/MC/AMEX/Checks
Add \$10 S & H: \$10 Canada: \$60 International:
CA/FL residents add 6% Sales Tax.

Card # _____ Expires: _____

Signature: _____

Name: _____

Company: _____

Address: _____ Phone: _____

City: _____ State: _____ Zip: _____

Recommended Configuration: IBM PC/XT/A T/PS 2 & Compatibles
640K RAM Hard Disk. Printers Supported: IBM ProPrinter &
Graphics Printer, Epson FX/MX/RX/LQ, Okidata Plug 'n Play 192/
3, 292/3, Toshiba 351, HP LaserJet+/Series II/III/III DeskJet,
ThinkJet, QuietJet. Plotters Supported: Hewlett Packard & Com.

Circle 171 on reader service card

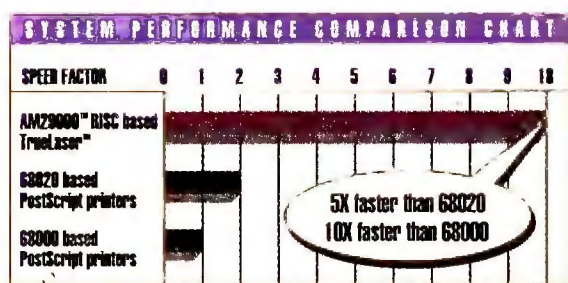
Microtek Introduces the TrueLaser Printer. Breakthrough Technology at a Breakthrough Price.



The New Price/Performance Printer Standard.

Microtek presents the TrueLaser™ printer. Powered by the AMD 29000, a 32-bit RISC processor that's five times faster than the 68020 found in most Postscript printers. And ten times faster than the 68000 found in PCL or PDL printers.

Right out of the box it gives you 2MB of mem-



ory. And it can be configured up to 6MB. It's both Adobe PostScript®™

and HP PCL compatible. Now that's unmatched power at an unmatched price.

The First Laser Printer with TrueImage and TrueType.

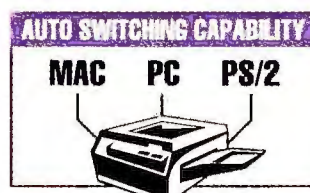
The TrueLaser printer is the first printer to ship with TrueImage technology. It includes a bundle of 35 resident TrueType fonts. You also have a printer that's ready for both Windows 3.1 and Macintosh System 7.0. You have absolutely WYSIWYG font display. Faster screen display. And faster printing. That's versatile enough to suit all types.



Microsoft TrueImage
Page Description Language

The Best of Both Worlds. Postscript and TrueImage.

In addition to TrueImage, the TrueLaser printer will also work with every member of your Adobe font library. It beautifully publishes Adobe



PostScript®,™ Type 1 and Type 3 fonts. It also accepts and prints documents from Macintosh, IBM PC and PS/2

machines via AppleTalk, Centronics and RS-232 interfaces. It's unique autoswitching capability makes the entire process transparent and invisible. It's perfect as both a stand alone printer or a shared network resource. So join the future without leaving the past.

All This for \$2695. Call Today.

At \$2695, you also receive a 1 year warranty with 6 month on-site service – a major breakthrough that you can't afford to miss.

Call 1-800-654-4160, or in California, 213-321-2121 for the name of the authorized Microtek dealer nearest you.

And get a first hand look at the only printer that does it all - for a lot less.



The TrueLaser printer comes from Microtek, the leader in innovative scanning products.

MICROTEK
Better Images Through Innovation.



User Group Tips

Helpful hints from members of the nation's user groups

ASCII for an Easy WordStar File Conversion

I often have to export a document from *WordStar Professional* version 5.5 or 6.0 so that my wife can work on it with *WordPerfect*. When there is no special formatting to consider, I find it quicker to save the file as an ASCII nondocument than to run it through a conversion program. Unfortunately, this method usually creates a mess of unwanted hard returns, one at the end of each line of text. To avoid the chore of deleting every hard return except those that end the paragraphs, open the file in *WordStar*'s document mode, type the dot command `.rm` at the top left margin, and press `<Enter>` to establish the widest possible right margin. Next, press `<Ctrl>-QU` to reformat the text into single-line paragraphs. Press `<Ctrl>-KT` to invoke the Save As command, and enter a new name for the conversion file. This saves the file and brings up the Opening Menu. Press `n<Enter>` to open your conversion file as a nondocument (you'll be automatically prompted with the file name). Delete any lines containing a dot command, and press `<Ctrl>-QU` again, this time to reformat the file as a nondocument. Press `<Ctrl>-KD` or `<F10>` to save the ASCII file. Now it's a snap to open and format the file with *WordPerfect* or any other word processor.

Steve Bass

Pasadena Users Group

Speed Up Your Modem's Dialing and Put Call Waiting on Hold

If your Hayes-compatible modem is a slow dialer on touch-tone lines, don't

just sit there drumming your fingers—change its poky ways. Get into terminal mode on your communications program, and simply enter `ats11=50`. Register S11 controls the dialing delay; if your modem supports register S11, setting it to 50 with an AT command gets the lead out of your dialing by cutting the usual default dialing delay almost in half.

If you have call waiting, you probably know that incoming calls can cause your modem to drop the line. In most areas, you can disable call waiting by pressing `*70` on your touch-tone phone—if you have a pulse-tone phone, dial 1170. Wait for a dial tone, and then dial out with your modem as you ordinarily would. When you hang up, call waiting will be automatically restored. If this sequence doesn't work in your area, contact your local phone company.

Joe Nuvolini

Colorado Springs Users Group

Expanding Compressed Files? Be Discrete!

If you ever need to download from an on-line BBS, you're bound to encounter compressed files, as they take up less space and provide for faster transmissions. ZIP and ARC formats are the most popular, and you can probably download the utilities that compress and decompress them from the same BBS where you find the compressed programs. Enter the name of the utility by itself at the DOS prompt in the utility's directory to get a screenful of information about syntax, parameters, and options. You should then be able to figure out how to decompress and compress files. But here's a word to the wise: Make sure you direct expansion files into a discrete, empty directory. A plethora of individual files can emerge from each ZIP or ARC file, and it can be a sticky cleanup job if they get mixed in

with other data or program files.

Dean Ewalt

Sarasota IBM PC User's Group

Don't Get Bugged by Spreadsheet Formulas

Have you ever typed out a long, involved formula, only to have the program beep and refuse to accept the input into a worksheet cell? And in your frustration, did you finally decide to clear the cell and start over from scratch? When you run into this kind of problem, save yourself some sweat by converting the formula to a label or text entry: Make sure you're in edit mode, take your cursor to the beginning of the entry, add a label or text prefix (usually an apostrophe), and press `<Enter>`. Then look your work over for errors like unmatched parentheses, a 9 where you wanted (, or misspelled range names. When you think the problem is corrected, convert the label back to a formula and see if the program accepts the input. If it doesn't, convert the formula back to a label and continue debugging. If the program does accept the formula, there's still no guarantee that it is logical and will work as desired, which brings up another point: Use sound formula-construction principles—break down your formula, and place various working components in different cells. That way you're less likely to run into problems.

Charles Switt

North Texas PC Users Group

Are you a user group member with a tip to share? Send it to User Group Tips, PC World, 501 Second St. #600, San Francisco, CA 94107; Compu-Serve 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax)—include your phone number. We pay \$50 and throw in a PC World T-shirt for each tip we use—and you get to see your name in PC World. ☺

worthwhile. For that reason, I created two *WordPerfect* macros, ALTU.WPM [see **FIGURE 3**] and ALTL.WPM, that give me one-keystroke case changes.

I also wanted these macros to be able to change the case of an entire block of text with the same keystroke. I included the statement '{STATE}&128~', which returns a value of true if block mode is on and a false if it isn't and tells the macros what I want them to do. When I press <Alt>-U in normal editing mode, ALTU.WPM capitalizes the letter at the cursor, but if I mark a block of text and then press <Alt>-U, the macro capitalizes every letter in the block.

Stephanie Wong
Salem, Oregon

Editor's note: To create the sample macro, enter *WordPerfect*, press <Home>, then <Shift>-<F10>. At the Define macro prompt, type *altu* and press <Enter>. At the Description prompt, type *Uppercase character or block*

```
(DISPLAY OFF)
(IF){STATE}&128~  (;)If a block is marked
(GO)convert~    (;)skip the next two lines
(END IF)
(Block){Right}  (;)Block single character

(LABEL)convert~  (;)Conversion subroutine
(Switch)U       (;)Convert block to uppercase
```

FIGURE 3: With one keystroke, this *WordPerfect* macro capitalizes a character or a block of text.

and press <Enter>. This will bring you to the macro editing screen, with the {DISPLAY OFF} command already in place.

You can't simply type the macro as it is shown in **FIGURE 3**. You must select the macro commands—{;}, {IF}, {STATE}, {GO}, {END IF}, and {LABEL}—from a menu that pops up when you press <Ctrl>-<Page Up>. You enter standard editing commands, like {Block}, {Right}, and {Switch}, with the same keys you'd use when editing—<Alt>-<F4>, <Cursor Right>, and

<Shift>-<F3>, respectively. Only the '&128~', the two 'convert~'s, and the 'U' can and must be typed by hand.

This macro changes lowercase letters to uppercase. To go the other way, create an almost identical macro called ALTL.WPM. The last line of this macro should be {Switch}L instead of '{Switch}U'.

Getting the Year by Default

As a follow-up to "Easy Date-Entry Macro for 1-2-3," in January's *User* (continues)

Give Us Your Toughest Peripheral Sharing Problem

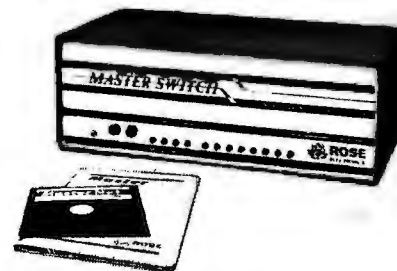
...or your simplest! Master Switch, the intelligent data switch from Rose Electronics, can handle it. The Master Switch series is so versatile and sophisticated, peripheral sharing becomes easy.

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.

NSTL**Software
Digest****RATINGS
REPORT****PC Digest
RATINGS REPORT****LAN REPORTER.****FAX THIS AD TODAY**

ISSUE STACKS



Here's your chance to order single issues of *Software Digest*, *PC Digest* or *LAN Reporter*, published by **NSTL**, the industry's leading independent testing and ratings organization. Now you can put the **NSTL** technical staff to work for you.

Software Digest Ratings Report

The definitive, ongoing source for objective, comparative and reliable evaluation of PC business applications.

- ___ Project Management
- ___ Advanced Word Processing
- ___ Business Graphics
- ___ Free-Form Graphics
- ___ Advanced Communications
- ___ Multiuser Databases
- ___ Spreadsheet Programs with Graphical Interfaces
- ___ HyperCard Programs
- ___ Advanced Spreadsheets
- ___ SQL Front Ends
- ___ Disk Optimizers

PC Digest: Microsystems Reporter and Peripherals Reporter

Unbiased, comprehensive evaluations of the latest microcomputer systems and peripherals available today.

- ___ Microsystems Handbook
- ___ 386, 25-MHz Portables
- ___ Notebook Systems
- ___ 386 Portables
- ___ 386SX Laptops
- ___ 486, 33-MHz Desktops
- ___ 486, 33-MHz Towers
- ___ PostScript Printers
- ___ Erasable Optical Disk Drives
- ___ 9600 V.42 bis Modems
- ___ High-Resolution VGA Adapters
- ___ PCL Laser Printers
- ___ DAT Backup Devices
- ___ Mouse Input Devices
- ___ Hard Disk Controllers

LAN Reporter


Straightforward test results of the networking hardware and software you need to tie all your computer equipment together.

- ___ LAN Operating Systems
- ___ Ethernet Network Adapters
- ___ Multisegment LAN Operating Systems
- ___ 486 Servers
- ___ Arcnet Network Adapters
- ___ Entry-Level LAN Operating Systems
- ___ Bridges
- ___ E-Mail
- ___ Network Monitors

NSTL NATIONAL SOFTWARE
TESTING LABORATORIES

A Division of Datapro Research Group.
Plymouth Meeting, PA 19462
(215) 941-9600

3 Easy Ways To Order

1. Copy this page and FAX to
(215) 941-9950
2. Tear out and mail this ad to
NSTL, Box 1000
Plymouth Meeting, PA 19462
3. Call toll-free
1-800-223-7093. 
Have your credit card handy
when placing a telephone
order.

YES! Rush me the Ratings Reports I have selected at the low cost of \$45 for each report. Satisfaction guaranteed.

- ☐ Check enclosed for \$ _____ (number of reports X \$45 each)
- ☐ Charge my credit card \$ _____ (number of reports X \$45 each)
- ☐ Mastercard ☐ Visa ☐ American Express

Account No _____ Expiration Date _____

Signature _____

Name _____

Title _____ Company _____

Address _____

City _____ State _____ Zip _____

Phone (_____) _____
(needed for quick order processing)

Offer valid in US only. Prices subject to change without notice. All issues will be shipped as available.

PC World CH17H1

Circle 196 on reader service card

NOW AVAILABLE . . .

THE PC WORLD INSTANT REFERENCE CARD PORTFOLIO

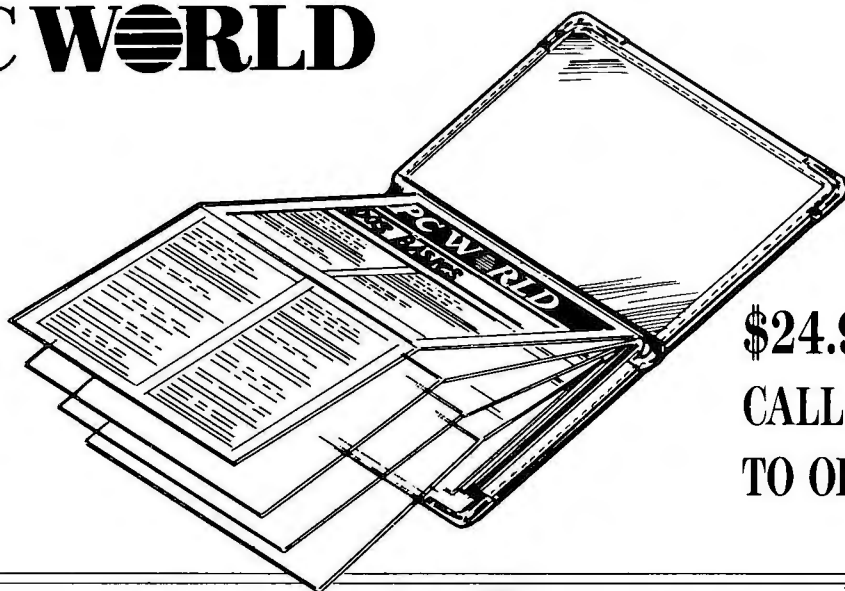
.....



Surprise! Did you know that right now you get a free information-packed reference card in every issue of *PC World*? Tear out and save the guide for quick answers to common questions about DOS, 1-2-3, WordPerfect, dBase III Plus, Windows 3.0, and all the other applications you use daily. As the months go by, you'll be building a reference library that could save you precious minutes when you're under fire.

But information is only useful if you can get your hands on it when you need it, right? Custom-designed to keep your cards clean, neatly organized, and accessible, *PC World's* Instant Reference Portfolio holds a year's worth of cards in individual clear-plastic sleeves. Each card and sleeve folds in half, keeping the portfolio a trim, easy-to-carry 10" x 6" size. The portfolio comes with a scratchpad so there's plenty of space for your own notes and reminders. This could become the most valuable item on your desktop—after your PC, of course.

PC WORLD



\$24.95 SHIPPING INCLUDED.
CALL 1-800-395-5763
TO ORDER TODAY!

Group Tips, I'd like to share a 1-2-3 date-entry macro I've used for years. You don't have to type in a year when you enter a date with this macro—it reads a default year from another cell.

To create the macro, enter the labels in **FIGURE 4** into three columns, typing the four apostrophes where indicated (they won't appear in the cells). With the pointer on the cell containing \D, use the */Range Name Labels Right* command to name the macro.

Before using the macro, enter the default year (e.g., 1991) in cell G1. Then, with the pointer on an appropriate cell, press <Alt>-D, enter the desired month, press <Enter>, type in the desired day, and press <Enter> again. For example, assuming your default year is 1991, pressing <Alt>-D6<Enter>16<Enter> would enter a date of June 16, 1991. To enter a year other than the default, press <Alt>-D, backspace three characters, and type the new year and a comma before entering the month number.

	A	B	C
1	'\D	'@DATE(	Date Macro
2		@STRING(G1-1900,0)	Semiautomatic year entry
3		',{?},{?})~	User enters month #, day #
4		'/RFD1~	Format date

FIGURE 4: This 1-2-3 macro simplifies the entering of dates by automatically providing the year.

If you prefer to use the current year as your default, replace the macro's second line with @string(@year(@now),0), and change the comment to **Fully automatic year entry**. You won't need to put a year in G1, and you can still backspace to enter a different year number.

H. H. Michael Juhl

Montreal, Quebec, Canada

An Executable's Extension

I've made a few mistakes in my day and thought you might appreciate a bit of insight about a February *Star-Dot-Star* item ["A Is for Action"] that commits a mistake in the interest of caution. Your editor's note warns readers never to re-

name a COM file extension to EXE or vice versa, intimating some foul result.

Actually, from DOS's point of view, it makes no difference whether an executable file's extension is COM or EXE. To see what kind of program it is dealing with, DOS looks not at the extension, but at the first few bytes of the program file. Having a file with the correct EXE or COM extension is merely for human convenience.

D. J. R. Dilworth

Carmel, California

Editor's note: It's true, and the mistake is ours. Changing a program file's ex- (continues)

Good Things Come To Those Who Register Their ACCPAC.

New ACCPAC® Plus Accounts Receivable 6.0 Is Now Available.

If you haven't registered your ACCPAC, do it now.

Call 1-800-531-5236 your receivables management.

So you can spend less time on tedious

accounting chores and more time building your business. Call and register your ACCPAC today. It may be the best decision you make all year. Do it now before you forget.

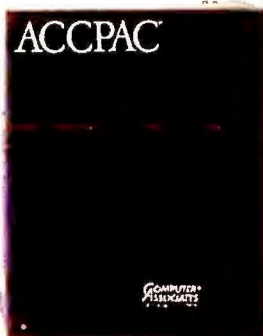
And good things will follow shortly thereafter.



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

By registering, you'll get complete information on the accounts receivable upgrade that will change your life.

It can improve your cash flow, your profits, your reporting, your customer statistics as well as customer relations, and virtually every other aspect of



PC WORLD

Save Your Copies of PC WORLD

Now there's an easy way to keep copies of *PC World* readily available for future reference. *PC World's* sturdy and practical file cases are designed to keep your copies in top condition and at your fingertips. Each file case holds up to six valuable issues of *PC World*. Start organizing your reference library today for only \$7.95 for one file, \$14.95 for two files, or \$27.95 for four files (PA residents add 6% sales tax). Please add \$1 per case for shipping and handling. Enclose your check made payable to Jesse Jones Industries and send to:

Jesse Jones Industries
Dept PCW
499 East Erie Avenue
Philadelphia, PA 19134

Or call toll-free 7 days, 24 hours 1-800-825-6690. Charge orders (minimum \$15) accepted. Please note that delivery cannot be made to P.O. Boxes. Please allow 4-6 weeks for delivery.

PC WORLD

tension from COM to EXE or vice versa will not confuse DOS. It may, however, confuse any technically minded person working on your system. As we stated in February, however, some programs work properly only with the original file names.

Karl Koessel is the technical editor for PC World.

Have a macro, batch file, short program, or general tip you're proud of? Star-Dot-Star pays \$25 to \$200 per 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). We cannot acknowledge submitted materials. ☺

POWER TIP NO. 184

Ranking Values With Excel

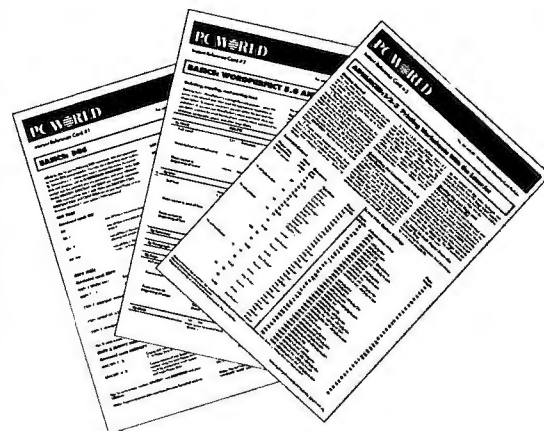
Excel's powerful array feature lets you create a formula to compute ranks, and the ranks will adjust automatically if your numbers change. If the values to be ranked are in A1:A10, for example, type the following formula in cell B1:

=SUM(IF(A1>\$A\$1:\$A\$10,1))+1

Press <Shift>-<Ctrl>-<Enter> to make this an array formula, indicated by surrounding curly braces. If braces do not appear, press <F2> and try again. Copy the formula to B2:B10, and the ranks will be calculated. With large ranges, however, recalculating these formulas can take a while, so you'll be wise to switch to manual recalc mode.

John Walkenbach
San Diego, California

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!

BASICS: PAGEMAKER 4.0

What to do: You can begin most *PageMaker* tasks by clicking the left mouse button. However, all menu names and options have one letter underlined (bold here) that you use to select the option with the keyboard. Clicking **OK** or pressing **<Enter>** completes many tasks.

USING THE MENU

Task	Mouse	Keyboard
Open menu	Click on menu	<Alt> or <F10> , type underlined menu letter
Select option	Click on option	Type underlined letter
Open another menu	Click on menu	<Cursor Left> or <Cursor Right>
Close menu	Click away from menu	<Esc> twice

GETTING STARTED

Before creating a new publication, select the target printer and unit of measurement as shown below. Then create a new publication and set the margins, page specifications, default type specifications, and guidelines.

Select printer	File T arget printer, select desired printer
Select unit of measurement	Edit P references, set measuring system and vertical ruler
Create new publication	File N ew, set page specifications and margins

Select type specifications	Type T ype specs; set font, size, leading, style
Add column guidelines	Options C olumn guides; type number, spacing
Add ruler guidelines	Drog new guides from rulers
Adjust guidelines	Drag guides where desired
Remove ruler guidelines	Drog ruler guides off publication
Save publication	File S ave or <Ctrl>-S , type name
Print publication	File P rint or <Ctrl>-P , enter options
Close publication	File C lose
Leave <i>PageMaker</i>	File E xit or <Ctrl>-Q
Open Help index	Help I ndex or <F1>
Get context-sensitive help	<Shift>-<F1> , click on object if necessary

ADDING TEXT AND GRAPHICS

To select tools for dealing with text or graphics, click on the appropriate icon in the toolbox or use the keyboard shortcuts below.

Enter text	Select tool or <Shift>-<F4> , click on starting location, type text
Draw rectangle or square	Select tool or <Shift>-<F5> , click on starting location, draw rectangle (for a square, hold down <Shift> while drawing)
Draw oval or circle	Select tool or <Shift>-<F7> , click on starting location, draw oval (for a circle, hold down <Shift> while drawing)
Draw diagonal line	Select tool or <Shift>-<F2> , click on starting location, draw line (for a 45-degree angle, hold down <Shift> while drawing)
Draw perpendicular line	Select tool or <Shift>-<F3> , click on starting location, draw line
Import text or graphics	File P lace, select file, OK , click on starting location
Continue flowing text	Select pointer tool or <F9> , click on text, click on bottom handle, click on location
Flow text around graphic	Select pointer tool or <F9> , click on graphic, E lement T ext w rap, click on middle wrap option and OK , flow text
Flow text over columns	Options A utoflow, flow text either as initial import or as continuation

ADDING TEXT AND GRAPHICS (continued)

Size graphic	Select pointer tool or <F9> , click on graphic, drag one of the corner or side handles as desired
Crap graphic	Select tool or <F8> , click on graphic, drag one of the corner or side handles as desired

Tip: As a rule, place graphics, then flow text around them.

Note: Use guidelines to align text and graphics. "Snap to guides" provides a magnetlike attraction to guidelines. "Snap to rulers" provides a similar attraction to ruler marks.

Toggle Snap to guides	Options S nap to guides or <Ctrl>-U
Toggle Snap to rulers	Options S nap to rulers or <Ctrl>-<Shift>-Y

GETTING AROUND

The easiest way to get around is to click the mouse where you want to go. *PageMaker* also has keyboard commands for this purpose.

Go to beginning of line	<Home>
Go to beginning of paragraph	<Ctrl>-<Cursor Up>
Go to beginning of sentence	<Ctrl>-<Home>
Go to beginning of story	<Ctrl>-<Page Up>
Go down a line	<Cursor Down>
Go down a screen	<Page Down>
Go to end of line	<End>
Go to end of sentence	<Ctrl>-<End>
Go to end of story	<Ctrl>-<Page Down>
Go to page 5	<Ctrl>-G5
Go left a character	<Cursor Left>
Go left a word	<Ctrl>-<Cursor Left>
Go to next page	<F12>
Go to next paragraph	<Ctrl>-<Cursor Down>
Go to previous page	<F11>
Go right a character	<Cursor Right>
Go right a word	<Ctrl>-<Cursor Right>
Go up a line	<Cursor Up>
Go up a screen	<Page Up>

CHANGING THE VIEW

You can change the view using the Page menu, the mouse, or keyboard shortcuts. The independent mouse commands use the *right* mouse button. Page menu commands are shown if no mouse shortcut exists.

View actual size (100%)	Click right button or <Ctrl>-1
Fit in window	Click right button or <Ctrl>-W
View 25% of actual	Page 25% size or <Ctrl>-0
View 50% of actual	Page 50% size or <Ctrl>-5
View 75% of actual	Page 75% size or <Ctrl>-7
View 200% of actual	Hold <Shift> and click right button or <Ctrl>-2
View 400% of actual	Page 400% size or <Ctrl>-4

Turning Screen Objects On and Off

Toggle Color palette	Window C olor palette or <Ctrl>-K
Toggle rulers	Options R ulers or <Ctrl>-R
Toggle scroll bars	Window S croll bars
Toggle Style palette	Window S tyl palette or <Ctrl>-Y
Toggle Toolbox	Window T oolbox or <Ctrl>-6
Toggle all guides	Options G uides or <Ctrl>-J

ADVANCED: PAGEMAKER 4.0

MANIPULATING TEXT AND GRAPHICS

Before you can manipulate a block of text or a graphic, you must first select it by clicking on it with the pointer tool. To select several objects, hold down **<Shift>** while clicking on them, or drag a box around the objects ("rubber bonding"). To select all the objects on a page, choose **Edit Select all** or press **<Ctrl>-A**.

Note: Text and graphics in the same place on a page are in layers. When you click on an object, you may not get what you want because it is under another layer. You can move a layer with one of two PageMaker commands.

Move top layer to bottom Element **Send to back** or **<Ctrl>-B**
Move bottom layer to top Element **Bring to front** or **<Ctrl>-F**

Rearranging Objects

Copy to clipboard Edit **Copy** or **<Ctrl>-C** or **<Ctrl>-<Insert>**
Cut (remove) to clipboard Edit **Cut** or **<Ctrl>-X** or **<Shift>-<Delete>**
Delete permanently Edit **Clear** or **<Delete>**
Move Drag object with mouse or use **Cut and Paste**
Paste from clipboard Edit **Paste** or **<Insert>** or **<Ctrl>-V** or **<Shift>-<Insert>**
Undo last action Edit **Undo** or **<Ctrl>-Z** or **<Alt>-<Backspace>**

Changing Objects

Change contrast Element **Image control**, select settings

Change line width Element **Line**, select width and style
Change rounded corners Element **Rounded corners**, select style
Change shading or fill Element **Fill**, select pattern or degree
Change colors Element **Define colors**, select color and edit
Rotate text block Element **Text rotation**, select degree of rotation
Add page(s) Page **Insert pages**, enter number and location
Delete page(s) Page **Remove pages**, enter page number(s)

Selecting Text

Select the text tool, and highlight text by dragging over it. To select all the text in a story, choose **Edit Select all** or press **<Ctrl>-A** while the text tool is active. Portions of text can also be selected using the keyboard.

Select character left **<Shift>-<Cursor Left>**
Select character right **<Shift>-<Cursor Right>**
Select line above **<Shift>-<Cursor Up>**
Select line below **<Shift>-<Cursor Down>**
Select to line beginning **<Shift>-<Home>**
Select to line end **<Shift>-<Enter>**
Select paragraph Triple-click on it
Select to paragraph beginning **<Ctrl>-<Shift>-<Cursor Up>**
Select to paragraph end **<Ctrl>-<Shift>-<Cursor Down>**
Select to sentence beginning **<Ctrl>-<Shift>-<Home>**
Select to sentence end **<Ctrl>-<Shift>-<End>**
Select to story beginning **<Ctrl>-<Shift>-<Page Up>**
Select to story end **<Ctrl>-<Shift>-<Page Down>**
Select word Double-click on it
Select word left **<Ctrl>-<Shift>-<Cursor Left>**
Select word right **<Ctrl>-<Shift>-<Cursor Right>**

Formatting Text

Center text Type **Alignment Center** or **<Ctrl>-<Shift>-C**
Left-align text Type **Alignment Left** or **<Ctrl>-<Shift>-L**
Right-align text Type **Alignment Right** or **<Ctrl>-<Shift>-R**
Justify text Type **Alignment Justify** or **<Ctrl>-<Shift>-J**
Force text to fill line Type **Alignment Force justify** or **<Ctrl>-<Shift>-F**

Formatting Text (continued)

Bold text Type **Type style Bold** or **<F6>** or **<Ctrl>-<Shift>-B**
Italic text Type **Type style Italic** or **<F7>** or **<Ctrl>-<Shift>-I**
Normal text Type **Type style Normal** or **<F5>** or **<Ctrl>-<Shift>-<Space>**
Reverse text Type **Type style Reverse** or **<Ctrl>-<Shift>-V**
Strike-through text Type **Type style Strikethru** or **<Ctrl>-<Shift>-S**
Underline text Type **Type style Underline** or **<F9>** or **<Ctrl>-<Shift>-U**
All capital text Type **Type specs Case All caps**
Small capital text Type **Type specs Case Small caps** or **<Ctrl>-<Shift>-H**
Subscript text Type **Type specs Position Subscript** or **<Ctrl>-**
Superscript text Type **Type specs Position Superscript** or **<Ctrl>-<Shift>-^**
Select typeface or font Type **Font**, select typeface
Select type size Type **Size**, select size or select **Other** and size
Next larger standard size **<F4>** or **<Ctrl>->**
Next smaller standard size **<F3>** or **<Ctrl>-<**
Set line spacing or leading Type **Leading**, select size or select **Other** and point size or **<Ctrl>-<Shift>-A** for auto (120%) leading

Set character width Type **Set width**, select width or select **Other** and type width or **<Ctrl>-<Shift>-X** for normal (100%) width
Set character spacing Type **Trock**, select type or **<Ctrl>-<Shift>-Q** for no track
Manual kern apart **<Ctrl>-<Shift>-<Backspace>**
Manual kern together **<Ctrl>-<Backspace>**
Remove manual kerning **<Ctrl>-<Shift>-0**
Set hyphenation specs Type **Hyphenation** or **<Ctrl>-H**, enter specs
Set paragraph specs Type **Paragraph** or **<Ctrl>-M**, enter specs
Set tabs Type **Indent/tabs** or **<Ctrl>-I**, select style, location, and leader
Define styles Type **Define styles**, enter new style and set character, paragraph, and tab formatting
Select styles Type **Style**, select style

USING THE STORY EDITOR

First, click in the text to be edited.

Enter story editor Edit **Edit story** or **<Ctrl>-E**
Check spelling Edit **Spelling** or **<Ctrl>-L**, select search options, and select **Start**. For unrecognized words, select or type the correct word and click **Replace** (or click **Ignore**)
Search for word or phrase Edit **Find** or **<Ctrl>-8**, type text to find, select options, and click on **Find**. To base the search on text format rather than content, click on **Attributes**
Continue search Edit **Find next** or **<Ctrl>-<Shift>-9**
Replace words or phrases Edit **Change** or **<Ctrl>-9**, type text to find and change, then select options. Click on either **Find** or **Change all**. To change text format rather than content, click on **Attributes**
Display special characters Options **Display ¶**
Import text into story editor Story **Import**, select file
Return to layout view Edit **Edit layout** or **<Ctrl>-E**
Leave story editor Story **Close story** or **<Ctrl>-<Shift>-E**

Fold
Here

Fold
Here

DEVELOPER'S TOOLBOX

Turbo Pascal for Windows: Out With the Old, In With the New

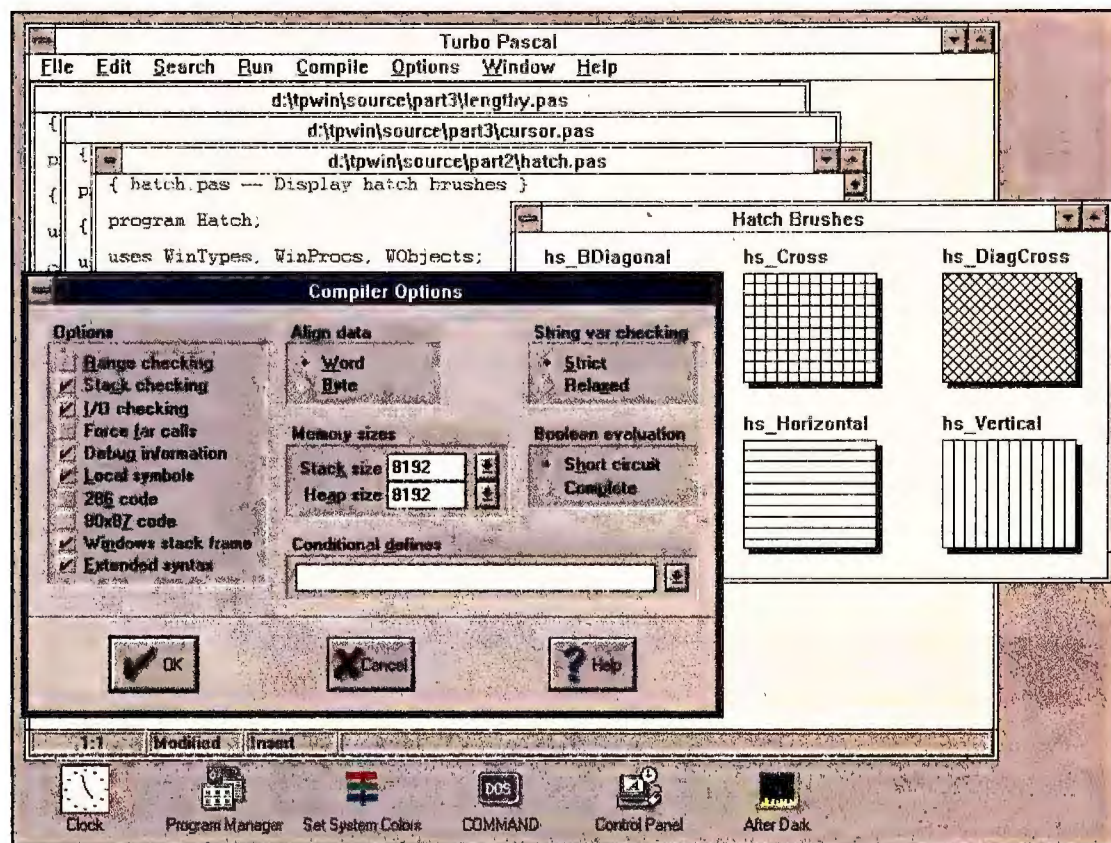
Tom Swan

My search for an easy-to-use *Windows* development system may be over. From the looks of a prerelease copy of Borland's *Turbo Pascal for Windows 1.0*, it's time to bury the notion that *Windows* programming requires months of study, an armload of 800-page books, years of experience with C, and intimate knowledge of the *Microsoft Windows Software Development Kit*.

A key *TPW* feature, the Object *Windows* Library, or OWL, slices through that complexity like a taut wire cuts cheese. Similar in design to Turbo Vision—*Turbo Pascal 6.0*'s DOS counterpart—OWL is a high-powered, object-oriented tool set that provides a fresh interface to *Windows*' hundreds of functions.

You can write conventional *Windows* code with *TPW*, but once you start using OWL, you'll want to kiss convention good-bye. For instance, instead of writing a classic message loop to handle events such as mouse clicks, I just add a method to an OWL object. When someone clicks the mouse, OWL calls my method—a simple plan that merges *Windows* and OOP (object-oriented-programming) techniques without sacrificing performance.

Several utilities are bundled with *TPW*. For designing resources, there's the *Whitewater Resource Toolkit*, an all-in-one tool for creating hot-key accelerators, bit maps, cursors, dialogs, icons, menus, and strings. You can also create resources from text scripts compiled by Microsoft's Resource Compiler, licensed by Borland. For debugging, *TPW* offers Turbo Debugger for *Windows*, a special version of Borland's popular debugger. Unfortunately, the debugger runs full-screen, not in a window, and runs only on systems using standard *Windows* video drivers. Still,



Turbo Pascal for Windows, with its Object *Windows* Library and bundled Whitewater Resource Toolkit, eliminates the need for traditional, hard-to-learn, C-based *Windows* programming tools.

TDW is essential for investigating hard-to-find bugs and sifting through *Windows* messages.

TPW provides complete access to *Windows*' extensive API. *TPW* fully supports Multiple Document Interface (MDI) applications, Dynamic Link Libraries (DLLs), and Dynamic Data Exchange (DDE) facilities. However, implementing these demanding features required Borland to modify its Pascal language, making *TPW* incompatible with the DOS *Turbo Pascal* compiler. For instance, *TPW* includes a Strings unit for working with null-terminated strings. Objects support dynamic methods that can be linked to *Windows* messages. And for DOS compatibility, WinCrt and WinDOS are included; they're similar but not identical to the Dos and Crt units in *Turbo Pascal 6.0*. So don't throw away your DOS compiler; *TPW* is *Turbo Pascal*, but it's geared strictly to *Windows*.

A large-memory command-line com-

piler, reportedly in the works for a future release, would be welcome. The supplied command-line compiler is a DOS program and is therefore subject to DOS's 640K RAM barrier—a limit not imposed by the integrated *TPW* compiler and editor.

In my opinion, *Turbo Pascal for Windows* is the best-designed, best-conceived, and best-executed *Windows* development system ever produced. Unless something better comes along, I'll use *TPW* for all my *Windows* tasks. ☐

Tom Swan is the author of Mastering Turbo Pascal 5.5 (1990) and other books published by Howard W. Sams, Carmel, Indiana.

WHERE TO BUY

Turbo Pascal for Windows 1.0

Borland Int'l
P.O. Box 660001
Scotts Valley, CA 95067-0001
800/331-0877
List price: \$249.95
Reader service no. 701

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

■ Accessory Boards	267
■ Bios Chip	267
■ CD ROM	267
■ Communications/Modems	267-268
■ Computer/Systems	269
■ Expansion Units	269
■ Laptops	269
■ Peripherals	269-270
■ Plotters	270
■ Tape Back-Ups	270

■ Inventory Control/Management	277
■ Languages	277
■ Laser Fonts	277
■ Mailing Programs	277-278
■ Maintenance Management	278
■ Medical	278
■ Music	278
■ Networking	278
■ Point of Sale	278
■ Public Domain/Shareware	279
■ Real Estate	279
■ Security	279
■ Statistics	279-280
■ Surveys	280
■ Training	280
■ Utilities	280

MISCELLANEOUS

■ Accessories	270-271
■ Bar Coding	271-272
■ Business Opportunities	272
■ Catalogs	272
■ Computer Insurance	272
■ Data/Disk Conversion	273
■ Data Recovery	273
■ Disk Copy Service	273
■ Disks	273
■ Slides	273
■ Supplies	273-274

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 \$560 per issue for a total of \$1,680. 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

SOFTWARE

■ Accounting	274
■ Business Applications	274-275
■ Church Applications	275
■ Communications	275
■ Data Entry	275-276
■ Desktop Publishing	276
■ Educational	276
■ Entertainment/Games	276
■ Financial	276
■ Flow Charting	277
■ Genealogy	277
■ Graphics	277
■ Health	277

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

HARDWARE Accessory Boards

BLAST YOUR MESSAGE THRU POWER LINE

VOICE MAIL CALL PROCESSING TELEMARKETING

Let Powerline transform your PC/XT/AT/386 into a multi-line voice processing command center. Have your computer intelligently process your sales, inquiries and messages. Complete package.

Single Line (Bigmouth) \$295.00
Multi-Line \$895.00

(Developer/OEM packages available)
VISA • MC • AMEX • COD

Call: (415) 522-3800
FAX: (415) 522-5556

TALKING TECHNOLOGY, INC.
1125 ATLANTIC AVENUE, ALAMEDA, CA 94501

©1990 TALKING TECHNOLOGY, INC.

CIRCLE 521 ON READER SERVICE CARD

Bios Chip

AWARD BIOS ROM UPGRADES

Upgrade your IBM XT, AT or Compatible with a new AWARD BIOS ROM. Add high density floppies, 101 keyboards, etc.

Call for FREE Catalog.

KOMPUTERWERK
851 Parkview Blvd.,
Pittsburgh, PA 15215
Orders (800) 423-3400
Tech. (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

CD Rom

CD-ROM

BUREAU OF ELECTRONIC PUBLISHING

Countries of the World
The full text of over 100 study books including business statistics, maps, flags, national anthems (sound), & more, the ultimate international reference! \$495

Pioneer Six Pack Bundle
Get 6 great discs: • U.S. History • Countries of the World • Birds of America • Sherlock Holmes • Shakespeare • Software Potpourri Only \$389
6 Pack and Minichanger ALL FOR ONLY \$1489

CD-ROM BUNDLE
Get a CD-ROM Drive and any 5 of these discs:
• Microsoft Bookshelf • U.S. History on CD-ROM • Illustrated Encyclopedia • CIA World Fact Book • Golden Immortal • Between Heaven & Hell II • Shakespeare • Sherlock Holmes • Software Potpourri/Bible ALL FOR ONLY \$597

CD-ROM Drives
NEC CDR-36, 73, or 83 newest models from 489
Chinon, Hitachi, Denon, Philips & Sony in-stock

CD-ROM Titles
Between Heaven & Hell II practical/perverse 99
McGraw-Hill Ref. set 100,000 terms 245
Grollier's Encyclopedia 20 vol. PC & Mac 289
U.S. History on CD-ROM 107 books & images 395
Speed Dial Entire U.S. Yellow Pages 399

MORE! Over 300 different titles
Money back guarantee. Free tech support
GUARANTEED LOWEST PRICES

Bureau of Electronic Publishing, Inc.
Dept A • 141 New Road, Parsippany, NJ 07054
Fax # 201-806-2676

Call: 1-800-828-4766 orders only
201-808-2700 information

CIRCLE 540 ON READER SERVICE CARD

ROM BIOS UPGRADES

For Your IBM or Compatible — A New BIOS Upgrade Will
• Support Windows 3.0 • Support 360K, 720K, 1.2 MB & 144 MB Floppy Drives • User defined hard drive types • Supports VGA • Novell & Netware compatible • Expanded hard drive table • Enhanced 101/102 keyboard • 100% IBM compatible • Complete documentation • Latest version • Complete set up in ROM

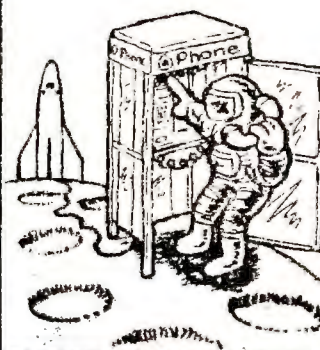
Dealer/Distributor Inquiries Welcome
Authorized Award Software, Inc. Dist.
1-800-800-BIOS
800-500-2467 508-686-6468 Fax: 508-683-1636

UNICORE SOFTWARE
599 CANAL STREET, LAWRENCE, MA 01840

CIRCLE 467 ON READER SERVICE CARD

Communications/ Modems

PhoneBoot™ by cybex



Far away and your computer is off! PhoneBoot lets you "be there" . . . all you need is a PhoneBoot and modem to power up your computer system.

- 8 ring pickup lets you share a voice line
- Built-in hardware security code
- Six outlets, 10 Amp capacity
- Surge protection for both AC and Telephone line

Only \$395, includes utility diskette with examples for loading software packages.

CYBEX CORPORATION
2800 H. Bob Wallace Avenue
Huntsville, AL 35805
(205) 534 0011

CIRCLE 469 ON READER SERVICE CARD

FAX+MODEM

Send and Receive

1 Year Warranty
30 Day Guarantee

- Send and Receive
- Hayes Compatible
- 2400 Baud Modem / 9600 Baud Fax
- Fax and Modem Software Included
- Background Operation
- Pull Down Menu and Mouse Support
- IBM Compatible (640k and HD needed)
- Automatic Fax Scheduling
- and Much Much More!!!

1-800-800-1114 or fax **(818)368-6730**

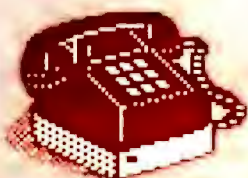
CIRCLE 542 ON READER SERVICE CARD

BUY WITH CONFIDENCE

CATALOG
SHOP PC WORLD

Q: Where does the small software developer or PC product manufacturer find new customers?

A: The PC WORLD Catalog.



Call Sandie Wade
PC World Catalog Manager
1-800-435-7766
1-800-435-7760 (in CA)

Shop The PC World Catalog for fast solutions to your PC needs.

IBM - APPLE COMPUTER SOFTWARE - ACCESSORIES

SOFTWARE

ACCOUNTING

Accpac BPI Giv Acca v3.0 \$236
Accpac BPI Invt Ctrl v3.0 \$237
Accpac BPI Network \$238
Accpac BPI Payroll v3.0 \$237
Accpac BPI Easy Giv Acca \$355
Accpac BPI Easy Payroll \$355
Accpac BPI Plus GL \$482
Bedford Accounting \$129
Check It \$78
DACC Easy \$79
DACC Easy Bonus pack v4.1 \$165
DACC Payroll v4.1 \$54
Dollars & Sense (3.1) w/Forecast \$94
GREAT AMERICAN One Write Plus v2.05 \$87
Accounts Payable \$129
Accounts Receivable \$129
Payroll \$129
Time Slips III v3.4 \$179
One Write \$158
JK Lasser Income Tax \$43
Money Matters v1.0 \$58
Peachtree III w/Data Query \$141
Peachtree Dble Bonus Bndt \$210
Profitwise Bus. 10 pak \$138
Profitwise/Solomon report & graph \$108
Quicken v4.0 \$36
Tobias Managing your Money (5.0) \$108
Tobias Tax Cut \$44
Tobias Managing Your S Turbo Tax v9.0 \$48
Wealth Builder \$131
Turbo Tax Professional \$158
Time Slips III \$158

PRJCT MGMT

Harvard Project Manager III \$394
Microsoft Project 4.0 \$323
MS Multiplan \$128
Org & Advanced \$52
Super Project Expert v1.1 \$420
Timeline v4.0 \$356
VP Planner 3D \$132
Timeline Graphics \$114
MICE & ACCES. Kensington Expert Mice PS/2 \$103
Logi Mouse Hi-res XT/AT \$75
Masterpiece \$86
Masterpiece Plus \$92
MS Bus/Senior Mouse \$96
w/Windows \$144
Omni Mouse II Bus w/Print \$54
Omni Mouse II Serial w/Print \$37
MS Business 5 Pack \$395
PC Track Ball Serial \$87
Summa Sketch II 12x12 \$30
Summa Sketch II 12x18 Pro \$569
Trakman Bus/Senior \$81
White Mouse Bus/Senior \$94

INTEGRATIVE

Envision (QA) \$408
Framework III \$434
MS Works \$91
PFS: First Choice \$93
Smartware II w/Spell checker \$426

SONY DISKS

3.5" DS/DD 100 \$98
3.5" High Density 100 \$164
5.25" DS/DD 100 \$58
5.25" High Density 100 \$98

WORD PROC.

AMI \$117
AMI Professional v1.2 \$178
MS Word v5.0 \$211
MS Word Companion \$28
MS Word for Windows v1.1 \$298
Upgrade \$138
PFS: Professional Write v2.2 \$149
Volkswriter 4 \$109
Volkswriter Deluxe Plus \$78
Word Perfect 5.1 \$244
Word Perfect Library \$68
Word Perfect Office 5 pak \$295
Wordstar 2000 Plus v3.5 \$207
XyWrite III Plus \$207

XENIX

MS Word Xenix \$600
MS Multiplan Xenix \$388
SCO FoxBase \$664
SCO Lynx \$438
SCO Viper/386 v1.2 \$495
SCO Xenix 386 ver 2.3.1 \$458
SCO Xenix 286 ver 2.3.2 \$414
SCO Xenix 386 Complete \$1008
SCO Xenix 286 Complete \$898
WordPerfect Xenix v5.0 \$488

COMMUNICAT.

Carbon Copy Plus 5.2 \$114
CompuServe Membership kit \$10
Crosstalk XVI \$102
Crosstalk Windows \$122
Crosstalk Mark IV v2.0 \$158
Direct Access v5.0 \$122
Fastwire II \$69
Laplink III v3.0 \$69
Mirror II \$69
PC Anywhere IV \$98
Procom Plus \$47
Remote 2 \$102
Smartcom II v1.2 \$135
Smartcom 320 \$102
Close-up \$150
ColSession \$142
Relay Gold v4.0 \$154

LAN & NETWK

Accpac BPI Network \$428
DataBase LAN 3 pak \$538
DataBase IV LAN \$538
FoxBase LAN \$624
MS Excel Network node \$151
MS Word Network node \$118
Novell Network ELS 1.2 01A \$506
Novell Network ELS II \$1245
Paradox Network \$626
PFS Professional LAN \$286
O & A Network Pak (8 user) \$251
R Base for DOS 1.6 Network \$654
Superbase 3 LAN \$298
Ventura Publisher Network \$758
Word Perfect additional user \$162
Xtree Networking \$208

OCR

Complete Hand Scan 400 \$174
Complete Full Page OCR/PP \$268
CAT Reader 1/2 page \$139
CAT Reader Full Page \$224
DFI OCR \$64
DFI OCR Deluxe \$147

UTILITIES

Avery List & Mail \$35
1 Dr Plus v3.5 \$44
386 to the Max v5.0 \$71
Above Disk v4.0 \$56
Backup Pro \$57
Brooklyn Bridge v3.0 \$33
Carouse \$48
Copy II PC v5.2 \$22
Desoview \$68
Desoview 386 v2.3 \$115
Direct Access v5.0 \$58
Fastback Plus v2.1 \$51
Formworks w/1st & file \$63
Headroom \$67
Laplink III v3.0 \$83
Lotus Magellan v2.0 \$102
Mace Utilities v5.0 \$59
MS Windows v3.0 \$82
Move Em \$49
Norton Commander 3.0 \$96

CAD & ENG.

Auto Sketch v3.0 \$139
Design CAD 2D v4.2 \$143
Design CAD 3D v3.1 \$187
Generic CAD v5.0 \$215
Generic CAD 3D drafting \$174
Main CAD \$272

DATA BASE

Clanon Pro Developer \$461
Data Perfect 2.1 \$255
Clipper v5.0 \$488
dBase IV v1.1 \$467
dBase IV Developers Edition \$450
DB Publisher Pro \$389
DB Publisher Report Maker \$166
Foxbase 386 v2.1 \$289
Foxbase Plus \$178
Foxbase Pro v1.0 \$453
Lotus Agenda 1.01 \$279
Paradox v3.5 \$479
Paradox 386 v2.0 \$595
PFS Prof File v2.0 \$169
Q&A Database v3.0 \$214
R-Base for DOS \$497
Revelation Advance v2.0 \$507
Revelation Advance Runtime \$125
DEKL Diamond 1.3 \$130
Rapid File 1.2 \$118
R&R Report Writer v3.3 \$100

LANGUAGES

MS Basic Pro develop sstm \$298
MS Fortran Compiler v5.0 \$298
MS Quick Pascal v1.0 \$65
Turbo Basic 1.1 \$182
Turbo C 2.0 \$182
Turbo C Pro \$158
Turbo Pascal 5.5 Pro Pak \$194
Microsoft Pascal \$307
Micro Windows Dev \$130
Turbo Power Tools Plus \$96
Turbo Prolog 2.0 \$100

GRAPHICS

Colony (VGA Paint) v1.3 \$94
Corel Draw \$354
Deluxe Paint II Enhanced \$75
Designer v3.1 \$424
Frital Publishers Power Pack \$132
Flowcharting III \$132
Form Tools v3.0 \$54
Form Works w/1st & file \$63
Graphic in the Box Executive \$159
Harvard Graphics v2.3 \$299
Harvard Graphics Draw Ptnr Impress \$65
Lotus Freelance Plus v3.0 \$321
PC Paintbrush (for Windows) \$78
PC Paintbrush IV+ \$104
PFS First Publisher Art Gilly \$74
Pizzaz \$42
VPi Graf \$58
PrintMaster Plus \$33

SPRDSHEETS

Excel \$245
Lotus 123 ver 2.2 \$328
Lotus 123 ver 3.1 \$403
Lucid 3D v2.0 \$54
Multigrid 4.01 \$61
Plan Perfect v5.1 \$279
Quattro \$85
Quattro Pro v2.0 \$295
SuperCalc 5 \$287
VP Planner \$244
SuperCalc V LAN \$298
VP Planner 3D \$132

Memory

MEMORY

TOSHIBA

T1000 768K \$259
T1000 SE/XE/LE 2MB \$269
T1000 LE 2000SX 4MB \$539
T1200 2MB \$155
T1200 SX 1MB \$159
T1600 3100/3200/ \$155
T5200 2MB \$155
T3100SX/3200SX 2MB \$155/\$359
T3100SX 3200SX 4MB \$359
T3200 3MB \$279
T5100 2MB \$155
T5200 T6500 2MB \$155
T5200 T6500 8MB \$849

IBM PS/2

Modl PS/1 512K/2MB \$89/399
Modl 30 Expansion Board \$45/139
512 Ki/2MB kit \$75/225
Modl 70 1MB, 55SX, 65SX 1MB/2MB \$75/\$139
Modl 55SX/65SX/34F3077/34F3011 4MB \$399
Modl 70 A-21 2MB \$149
Modl 80-A21/A31 4MB \$649
Modl 80 141 1MB \$199
Modl 80 111/211 2MB \$299
Modl 50/55/60/65SX 2-8MB w/2MB \$399
2-16MB w/2MB \$689
All modls 70 & 80 2-8MB w/2MB \$499
2-14MB w/2MB \$539

NEC

ProSpeed 286/386SX-15 1MB/4MB \$199/479
ProSpeed 386 2MB \$269
ProSpeed 386 8MB \$879

AST

Premium 386C/386-16E 1MB/4MB kits \$85/299
Premium 386-20 1MB/4MB kits \$99/319
Premium 386SX-16/25/33 & Cupid Card 1MB \$79
Premium 486 4MB \$219
Premium II 386SX-20/16 1MB/4MB \$109/569

HEWLETT PACKRD

Vectra OS-20PC/RS-25PC/20C 1MB/4MB \$79/275
Vectra 486 PC/386-25 PC 1MB/4MB \$89/419
Vectra 386 25 PC 2MB kit \$159

SHARP

SHARP 6220 1MB/2MB \$179/498
SH5541 1MB \$499

PANASONIC

P4420 Laser 1MB \$210
P4420 Laser 2MB \$279
P4450 Laser 1MB \$199
P4450 Laser 2MB \$249

EPSON

LP 6000 Laser 1w \$199
LP 6000 Laser 2w \$225

ZENITH

SuperSport 1MB/4MB \$179/Call
SuperSport 286 2MB \$229
SuperSport 386 2MB A/B \$229
386-20/25/33 1MB/2MB \$145/249
4MB \$649
386SX 2MB \$199

COMPAQ

SLT 1MB \$189
LTE 286 1MB \$129
LTE 286 2MB \$169
LTE 286 8MB \$749
SLT 286 1MB/4MB \$155/549
SLT 386 1MB/2MB \$155/279
DeskPro 386-20/20E/25/28E 1MB/4MB \$119/319
DeskPro 386SX/16 \$119/319
DeskPro 286/386/386SX/386 20 1MB/2MB \$79/149

SIMMS

4MB/9-80 \$299
1MB/9-80 \$56
1MB/9-80 \$58
1MB/9-80 \$60
256Kx1-80 \$17
256Kx1-80 \$18
256Kx1-80 \$20

DRAMs

1MBx1-10 \$5.50
1MBx1-80 \$6.00
1MBx1-70 \$6.50
1MBx1-70 \$1.90
256Kx1-80 \$2.00
256Kx1-70 \$2.50

LASER

HP LaserJet

HP IIiD 1MB/2MB \$89/149
HP IIp/IIIiD 1MB 2MB \$89/149
4MB \$269

PANASONIC

44501 & 4420 1MB/2MB \$159/199
Laser 4019/4019S 1MB \$169
2MB/3.5MB \$219/299

CANNON

LBP 818/818R/818T 2MB \$169

EPSON

EPL 6000 1MB/2MB \$199/225

MATH COs

386SX \$Call
80287-8 \$125
80287-10 \$195
80287-12 \$204
80287-16 \$269
80287-20 \$295
80287-25 \$389
80287-32 \$455

COMPUTER BAZAAR 800-383-3199

orders only

714-898-8626

customer service/foreign orders

FAX: 714-891-1202

M-F: 6a.m.-6p.m. Sat/Sun 7a.m.-6p.m.

OUR 9TH YEAR

\$37/mo

LAPTOPS

& NOTEBOOK COMPUTERS

TOSHIBA

T1000 SE Notebook \$Call
T1000 LE \$1398
T1000 LE \$Call
T1200 HB 20MB \$1498
T1200 XE 20/40MB \$58 mo
T2000SX \$Call
T3100 E 286 40MB \$2649
T3100 SX 40MB 80MB \$3749/4099
T3200 SX 40MB/120MB \$3785/4299
T5200 386 100/200MB \$Call
T5200 COLOR 100/200MB \$Call

A.E.G. OLYMPIA

LT 386SX 40MB VGA \$Call \$89 mo

ACER

LX1100 386 40MB \$2649

LEADING EDGE

386SX 40MB VGA \$1899

EVEREX

Tempo LX Notebook \$Call
386SX 20MB, 7lbs. \$59 mo

SANYO

MBC-17NB 286 20MB \$Call \$56 mo
MBC 18NB 386SX 16 \$Call

AST

Premium Exec 386SX 20MB \$2429
Premium Exec 286 12 80MB \$2999
Premium Exec 286 12 20MB \$1998

BONDWELL

B200 \$699
B310 286 20MB \$999
B310 286 40MB \$1099
B310 P 286 40MB \$1299
B310 U 286 80MB VGA 7.5lbs. \$1299
B310 SX 80MB VGA Notebook \$1299

FORA

386SX 40MB VGA \$2395 \$63 mo
386SX 100/200MB VGA \$2799 3098
LP 286B 16 Mhz 40MB \$1199
LP 286C 16 Mhz 40MB \$1499
LP 286L 12 Mhz 20MB \$1199
LP 28L 12 Mhz 40MB \$1299

PACKARD BELL

286-VGA20 \$1995 \$53 mo
286 Notebook 20MB \$1995

SAMSUNG

GS 3600 VGA 40mb LCD \$1798 \$66 mo
GS 5200 286 30MB \$1449 \$53 mo
NoteMaster 386S \$Call
MAXAR 286-20 Notebook \$Call
Clone Notebook-American Systems \$1598
286 20MB VGA 7lbs \$1598
386SX 16 20MB VGA \$1898 \$69 mo
POOET PC8088 less than 1 lb

DESKTOPS

486-25Mhz \$3599
4MB RAM, 100MB VGA \$97/mo

Goldstar 386-20 128MB VGA \$1699

386-33- 40MB VGA \$1895
386SX Goldstar \$25/mo
\$999

TANDON

PC 386SX 16 110MB \$1999
PC 386SX 20 110MB \$2199
PC 386SX 20 200MB \$2679
PC 386 25 110MB \$2999
PC 386 25 330MB \$4199
PC 386 33 110MB \$3358
PC 386 33 330MB \$4499
PC 486 25 110MB \$3599

EPSON LAPTOPS

386SX 20MB rmvble HB3159 \$85 mo
386SX 40MB rmvble HB3299 \$89 mo
386SX Notebook \$Call

GOLDSTAR

GS520 386SX VGA 40MB \$1998
GS620 386SX 20 Mhz 40MB Note&Call

HYUNDAI

LT4-286 20MB VGA \$50 mo
LT5-386SX 20MB \$64 mo
NB-286 20MB \$71 mo

ALR

ALR 386SX 20MB Notebook \$2498
ALR 386SX 40MB Notebook \$2869

TANDON

LT286 20MB VGA \$Call \$2 mo
LT286 40MB VGA \$2089
LT386SX 40MB VGA \$2495 \$63 mo

PANASONIC

CF150 B \$599 \$24 mo
CF 170 XT 20MB \$1398 \$39 mo
CF 270 286 VGA \$1898 \$55 mo

ALTIMA

NSX-386 SX 20MB VGA Notebk \$Call
Alt-III 386SX 40/120MB VGA \$97 mo
Alt-II 286 40MB VGA \$73 mo

MITSUBA

XT Notebook \$998 \$28 mo
286 Notebook \$Call \$58 mo
386SX Notebook \$Call \$68 mo

Audiovox

Audiovox 1000 \$359
Avox 3000 w/cutter \$499
AF2000 110/220v \$549
MITSUBISHI Access \$Call
Portable fax F10 \$869
Guiss 110/220v \$499

100% FINANCING

No money down OAC

COMPUTER BAZAAR

Div. of Telephone Product Center

12603 Hoover St.

Garden Grove, CA 92641



FAX CARDS

Everex 2496 \$268/328
Hayes JT 9600 \$459
9600 FAX + 2400 \$299
Modem \$299
Complete PC 9600 \$347
9600 Fax/modem \$184
Intel Sans faxton \$399
Fax 770 \$3399
Fax 850 \$2849

FAX \$15/mo

MODEMS

2400 int \$69
2400 ext \$89
9600 int v.32 \$398
9600 ext v.32 \$336
Anchor 2400 lte \$621/16
2400 MNP lte \$155/225
9600 v32 MNP lte \$745
Everex 2400 MNP \$175
2400 MNP lte \$194
Laptop modems \$Call
Fax phone 15 \$419
Fax phone 20 \$569

MURATA

M900 \$395
M1100 \$499
M1850 \$698
F25 \$769
F37 \$849
F40 \$1110
F45 \$1299
Samsung 1010 \$399
Samsung 1100 \$409

PANASONIC

KXF 50 \$Call

SHARP

FO 215 \$499
FO 230 \$599
FO 333 \$699
FO 510 \$759
FO 550 \$1199
FO 750 \$1499
FO 800 \$1695
FO 9200 \$2499
FO 334 \$Call

TOSHIBA

T3450 \$619
T3750 \$699

RICOH

RF810 \$399
RF860 \$625
RF910 \$499
RF920 \$699
Ricoh PF-1 \$949
Fax 15 \$665
Fax 80 \$1199
Fax 85 \$1299

PANASONIC

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Computer Systems

Tandy Computers

Nationwide Sales - Guaranteed Best Prices

The Canfield Company

1-800-633-0197

400 Pennsylvania
Holtan, KS 66436

A Radio Shack® Dealer

1-913-364-2171
FAX 913-364-4311

CIRCLE 541 ON READER SERVICE CARD

COMPUTERS

BEST PRICE. BEST SERVICE. BEST QUALITY

386SX16 286-12

40MB VGA color 40MB VGA color
\$1275 \$995

NAME BRANDS FOR LESS Call for Items Not Listed

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 (408)727-6276 CA
(408)727-7307 FAX

3000 Scott Blvd Suite 203 Santa Clara Ca 95054

CIRCLE 423 ON READER SERVICE CARD

LAPTOPS

800-741-LAPS

TOSHIBA	COMPAQ
ALTIMA	SHARP
EPSON	T.I.

Much More...

We carry a full line of Modems,
Memory Upgrades, Exp. Chasis, Etc...

LAPTOP CITY

3399 N.W. 72 AVE. #106
MIAMI, FL 33122

CIRCLE 421 ON READER SERVICE CARD

COMPUStOR

914-779-6434

A Division of Art Imaging Services, Inc.

Call now for your FREE
computer consultation.

80286	from: \$399.00
80386SX	\$599.00
80386	\$999.00

CIRCLE 489 ON READER SERVICE CARD

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. Avge. re-inkings per cartridge: 60-100.

Universal MacInker (spec. cartridge or spool) \$75.00. Epson or Imagewr. \$45.00. 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

Major credit cards accepted POs
from National Accounts accepted
Shipping \$5.00. cod add \$3.30

tel. (503)626-2291
fax (503)643-5379

CIRCLE 483 ON READER SERVICE CARD

Expansion Units

INTEL

8087	82.
8087-2	122.
8087-1	151.
80387DX-16	290.
80387DX-20	350.
80387DX-25	421.
80387DX-33	515.
80287XL/XLT	185.
80387SX-16	285.
80387SX-20	299.

WEITEK

3167-20	339.
3167-25	499.
3167-33	669.
4167-25	739.
4167-33	949.

COPROCESSOR SPECIALIST

Advanced Micro
Devices

Coprocessor
80C287-10
With Manual & Disk



\$95.

CYRIX

X83D87-16	249.
X83D87-20	289.
X83D87-25	349.
X83D87-33	429.
X83S87-16	229.
X83S87-20	249.

IIT

2C87-8	99.
2C87-10	119.
2C87-12.5	129.
2C87-20	139.
3C87-16	230.
3C87-20	260.
3C87-25	339.
3C87-33	379.
3C87SX-16	230.
3C87SX-20	259.

ANN&ANTHONY(DAI)
2464 El Camino Real Suite 420 Santa Clara, CA 95051
Tel (408) 988-5083 Fax (408) 988-3986

CIRCLE 504 ON READER SERVICE CARD

9-Track Tape Subsystem

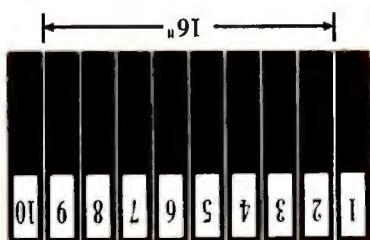


Now you can exchange data files between your IBM PC/XT/AT and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10 1/2" streaming tape drive, tape coupler card, cables and software.

QUALSTAR®

9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD



He munched his way through
16 inches. Because, as you
obviously figured out by now,
the cover of Volume I is
on the right, while the back of
Volume X is on the left

WYSE

Program
Cerebral Aerobics

WYSE

Answer To

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

ANNOUNCING: AN ADVANCE IN 9-TRACK OF VERY SMALL PROPORTIONS:



Overland Data's OD3210, the smallest autoloading 9-track tape drive in the world.

While everyone else is downsizing and simplifying computers and peripherals, 9-track tape drive manufacturers have somehow managed to buck this trend with drives that are huge and heavy or awkwardly manual loading.

Too bad for them. Introducing the OD3210, designed and built by Overland Data to bring 9-track into the modern office. It's incredibly compact. Portable. Whisper quiet. Uses only 45 watts. And it's extremely reliable. No other drive has fewer moving parts. Best of all, it's surprisingly affordable.

The OD3210 comes with a two year warranty, expert toll-free support, and the ODI Special Service Program. So call us. And find out why some of the best advances are the smallest ones.

1-800-PC9-TRAK
(1-800-729-8725)

Bus. Phone: 1-619-571-5535 • FAX: 1-619-571-0982

See us @ COMDEX
West Hall #4128

OVERLAND DATA
San Diego, CA

CIRCLE 531 ON READER SERVICE CARD

Tape Back-Ups

9-Track Tape For Your IBM PC/XT/AT/PS-2™



Read 1600 or 6250 bpi 9-track tapes from a micro, mini or mainframe in EBCDIC or ASCII as mirror image or by individual files.

Use the 2000 PC™ for disk backup, data interchange or archival storage. PC/XT/AT/PS-2 are trademarks of IBM. 2000 PC is a trademark of Digi-Data.



DIGI-DATA CORPORATION
8580 Dorsey Run Road
Jessup, MD 20794-9990
(800) 782-6395
FAX (301) 498-0771
... First In Value

CIRCLE 428 ON READER SERVICE CARD

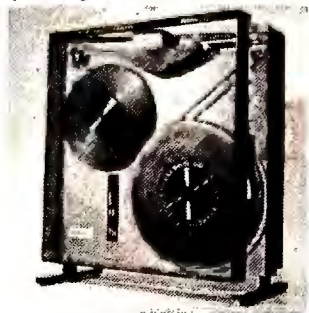
**Where Does
the
Small
Software
Developer
or
PC Product
Manufacturer
Find New
Customers?**

CATALOG

**YOUR KEY
TO
ADVERTISING
SUCCESS.**

THE TRUE 100 IPS 9 TRACK TAPE SUBSYSTEM for IBM PC/AT/386

operating at 800*/1600/3200. - BPI



You don't have to sacrifice these features:
100 IPS speed ...doubles your throughput
Protects tape from dust while running*

Full 1 year Warranty

Tension control to insure IBM interchange
Popular interfaces and mountings

SHOWN W/OPTIONAL PROTECTIVE DUST COVER
AKSystems Inc. *OPTIONAL

20741 Marilla St. Chatsworth CA 91311
TEL: 818/709-8100 FAX: 818/407-5889

CIRCLE 584 ON READER SERVICE CARD

Plotters

Affordable, Large Format Plotters

Now, you don't need a big budget to get quality and performance from your plotter. That's why Zetron's large format plotters are becoming so popular.

Our D size starts at \$1695 and our A-E model is only \$2995 direct from Zetron.

Call us today for a free sample plot and info about our money back guarantee. 40491 Encyclopedia Circle, Fremont, CA 94536. In CA (415) 490-8380 FAX: (415) 490-3906

No Risk
Money Back
Guarantee

\$1695. - \$2995.
Factory Direct Pricing

(800) 727-8380

CIRCLE 532 ON READER SERVICE CARD

MISCELLANEOUS/ Accessories

FREE CATALOG

COMPUTER SECURITY PRODUCTS

• Theft Protection • Unauthorized Access/Use Control • Software Security

1-800-766-LOCK

DOSS INDUSTRIES
1224 Mariposa St. SF CA 94107

FREE CATALOG

A FULL LINE OF COMPUTER SUPPLIES, SOFTWARE, MEDIA, HARDWARE, CABLES, ACCESSORIES & MORE BULK DISKS, WARRANTY, 25 MIN, SHIPPING EXTRA

5.25" DS/DD 25¢
5.25" DS/HD 45¢
3.5" DS/DD 45¢
3.5" DS/HD 99¢

CAAN Computer Supplies

186 B East Sunnyoaks, Campbell, CA 95008

Call 800-523-1238

8 AM - 5 PM, Mon-Fri, California Time

CIRCLE 431 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

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: 602 634-4620

Hoo Leon CORPORATION P.O. B. 230, Dept. PCWD
Cornville, AZ 85325

CIRCLE 518 ON READER SERVICE CARD

Bar Coding

TKS Builds a Better Bar Code Reader!

- Excellent first read rate
- Works with any program — no software required
- Plastic wand is rugged, lightweight and comfortable, even after hours of use (stainless steel wand also available)
- Durable extruded aluminum case
- Reads all major bar code types
- 30-day money-back guarantee

EZBarcode PC-WEDGE II

- Free bar code printing utility included
- Complete with wand it's

only
\$289!

RS-232 version . . . \$319
Macintosh version . . . \$309
Stainless steel wand . . . add \$60
Mag stripe option . . . add \$100

Portable Hand held Data Collection Terminals

- Easy-to-use application generated software included free
- PHT-34: Alphanumeric keypad, bar code wand, 128K memory . . . \$1095
- PHT-60: Graphics touch-sensor LCD display, programmable function keys, bar code wand, RAM card port, 256K memory . . . \$1795

Bar Code Printing Programs . . . \$149 each

Print Code 39, UPC, EAN, 2 of 5 on dot matrix or Laser Jet printers

- EZBarcode II - Keyboard or text file input, incrementing, on-line help
- dBARCODE - Prints bar codes from within dBASE
- EZRes - Memory resident bar code printing program

TimeKeeping Systems, Inc.

1306-W East 55th Street • Cleveland, Ohio 44103 • Phone: (216) 361-9995 • Fax: (216) 361-0030

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

Mag-Tek Magnetic Stripe Card Readers

- Attaches to a computer keyboard or to any flat surface
- LED light provides continuous reader status
- Works with Mag-Tek Encrypting and Non-Encrypting PINPads
- For use with AT/XT and PS/2 model computers
- RS-232 and PC Keyboard Wedge versions available



RS-232 Reader

Interfaces easily with a host computer or ASCII terminal via the RS-232 serial port.

User can set parameters such as mode of operation (buffered or unbuffered) baud rate, etc. via the switch block settings.

Mag-Wedge Reader

Connects between the PC and PC keyboard. Transmits magnetic stripe card data to the PC as if it were key entered.

MAGTEK

20725 South Annalee Ave.
Carson, CA 90746
Phone: (213) 631-8602
Fax: (213) 631-3956

CIRCLE 437 ON READER SERVICE CARD

FREE GLOBAL CATALOG

148 page guide to computer furniture, supplies and accessories

Dial Toll-Free 1-800-8-GLOBAL

GLOBAL
COMPUTER SUPPLIES
11 Harbor Park Dr.
Port Washington, N.Y. 11050

CIRCLE 508 ON READER SERVICE CARD

BUY WITH CONFIDENCE

CATALOG

SHOP PC WORLD

BAR CODE & MAGNETIC STRIPE READERS for the IBM PC & PS/2

Simple & quick installation
No additional software or port
Metal wand & case

Also available:

- SmartCard encoder/reader
- Bar code printing software
- Magnetic stripe encoders
- Units for other computers & terminals

TPS ELECTRONICS

4047 Transport Street
Palo Alto, CA 94303
Telephone: 415-856-6833
1-800-526-5920
Telex: (Graphnet) 371-9097 TPS PLA
FAX: 415-856-3843

CIRCLE 522 ON READER SERVICE CARD

VARIANT MICROSYSTEMS 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, Kimtron terminals
- Autodiscriminate between codes 3 of 9, UPC, EAN, 12 OF 5, Codebar, Code 128
- Interface with wands, 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

VARIANT MICROSYSTEMS
3140 De La Cruz Blvd.,
Suite 200
Santa Clara, CA 95054
Phone: (408) 980-1880
Fax: (415) 623 1372



CIRCLE 468 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

LABELING SOFTWARE

LABELS

BIG TEXT
UPC, MSI, 2of5, 128, Code 39
FLEXIBLE FORMAT/SIZE
13 TEXT SIZES, 18 MAG SIZES

Logos/Symbols



- 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, 64K memory
- Bar code or keyed input
- Codabar, 2of5, UPC/EAN, Code 39
- Easily programmable prompts
- Uploads via RS-232 or keyboard
- Doubles as non-portable reader
- Wand or laser input
- Complete with wand — \$849



Bar Code Readers

for PC, XT, AT, PS/2, Mac
and all RS-232 Terminals

- Attaches as 2nd keyboard
- No software changes
- 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
417 Ingalls Street
Santa Cruz, CA 95060

408-458-9938
800-345-4220

BAR CODE READERS

AMERICAN MICROSYSTEMS
2190 A Regal Pkwy. • Euless, 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

Business Opportunities

Software Dealers Wanted

Perfect Care program needs dealers. We teach how to sell, install & support our medical billing sys. to MDs...a profitable high growth service industry. We offer:

- Training & continuous support
- 7 yrs of medical computer exp.
- Protected territories nationwide.

Ted Itzkowitz

STI Computer Services, Inc.
251 W. DeKalb Pike-Concord 107
King of Prussia, PA 19406
215/768-9030

Own a Billing Service!

Great part time PC based business. Provide invoicing and accounts receivable services to small businesses. \$500-\$5000 income monthly. \$249 for complete set-up incl; Software, proven marketing plan, promotional materials, and ongoing support.

Bluejay Systems

Call (508) 531-5256.
41 Driscoll St.
Peabody, MA 01960

FREE Computer Catalog

OVER 4000 SOFTWARE, HARDWARE, ACCESSORIES AT DEEP DISCOUNTS.

JOIN OUR FREQUENT BUYERS PROGRAM AND WIN FREE GIFTS. ASK US ABOUT OUR LOWEST PRICE AND MONEY BACK GUARANTEES. AD # A06C

the **computermill**

1.800.800.5592

FAX 415.623.7403
9 AM - 6 PM, MON - FRI, PST

CIRCLE 499 ON READER SERVICE CARD

Computer Insurance

SAFWARE

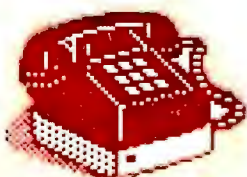
Insure your computer. Safware provides full replacement of hardware, media & purchased software. As little as \$49 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST (Sat 9 to 5)

Safware, The Insurance Agency
2929 N. High St., PO Box 02211
Columbus, OH 43202
800/848-3469, 614/262-0559

Catalogs

CALL TODAY!

Duane Hampson
East Coast Representative
1-800-435-7766



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

PLACE YOUR AD IN
The PC World
Catalog TODAY.

800-435-7766
In CA: 800-435-7760

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

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

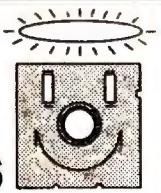
Ralph Garner Associates, Inc.
99 Madison Avenue, New York, NY 10016
Professional services since 1967

CIRCLE 408 ON READER SERVICE CARD

SCANNING any font or typestyle disk or tape CONVERSION DUPLICATION any size, any quantity

- Data Entry
- Custom Programming
- Data Management
- Bar Code Conversion

(708) 858-4566



We perform miracles!

MEDIA CONVERSION CORP.

Free Tests and Quotations—24 Hour Turn-Time



CIRCLE 462 ON READER SERVICE CARD

TAPE/DISK CONVERSIONS



Conversion services to or from over 2000 computer systems:

- Magtapes • Mini Computers
- Micro Computers • Typesetters
- Word Processors

CALL THE INDUSTRY LEADERS

**PIVAR
COMPUTING SERVICES, Inc.**

800-CONVERT

165 Arlington Heights Rd #W
Buffalo Grove, IL 60089

DUPLICATION FROM \$.59 HIGHEST QUALITY MEDIA

MSDOS duplication from \$.59(5.25") and \$.89(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

Slides

Slides overheads

Over a hundred PC & Mac programs supported. Slides from word processing, graphics and presentation programs. From \$3.00/slide. Fast service.

Elegant Graphic Slide Service

(707) 795-3272

FAX (707) 795-3286

CIRCLE 489 ON READER SERVICE CARD

Data Recovery

ONTRACK DATA RECOVERY

The Data Recovery Professionals

Ontrack Data Recovery specializes in recapturing data from any microcomputer hard drive or floppy diskette.

- 95% Success Rate • Fast Turn Around
- Priority service available • Expertise with Novell, DOS, Macintosh, OS/2, Unix, Xenix, Bernoulli, Sun and more!

Find out why we are the leaders in data recovery - call an Ontrack Data Recovery representative today for more information.

1-800-872-2599

International: 612-937-5161 • FAX: 612-937-5750

CIRCLE 464 ON READER SERVICE CARD

Supplies

Computer RIST REST™

Have you "had it" with tired, aching hands, fingers or wrists from key-boarding? Avoid possible Carpal Tunnel Syndrome (CTP). Order RIST-REST™ for ONLY \$12.95 plus S/H\$1.50. An unbeatable price for a top quality product. Dealer inquiries invited. Call TODAY for additional details or to place your order.

SANTIMAN ENTERPRISES

P.O. Box 903433

Palmdale, CA 93590

800-835-8688 or 805-266-0642

Disk Copy Service

Disks

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

MIRROR IMAGES WIBBOW IMAGES

DISKETTE DUPLICATION

Superior duplication...

Your reputation depends on it.
Our reputation assures you of it.

FORMATTED DISKETTES BASF, VERBATIM, SONY

WITH FORMAT	QTY 250 MIX & MATCH	WITHOUT FORMAT
\$.44	5.25" DS/DD	\$.39
\$.69	5.25" DS/HD	\$.59
\$.65	3.50" DS/DD	\$.56
\$1.19	3.50" DS/HD	\$1.09

- **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

Computer Business Forms

Software Compatible & Custom Designed Forms for all industries.

- Invoices
 - Statements
 - A/P & P/R Checks & More....!
- Call: Tom MacDonald 617-246-4888 or Mail/Fax a sample for a free quote. Please include number of parts and quantities when faxing.

FAX# 617-246-1564

STANDARD OFFICE SYSTEMS

384 LOWELL STREET

P.O. BOX 4035

WAKEFIELD, MA 01880

**BUY WITH
CONFIDENCE!**

CATALOG

CIRCLE 439 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

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

WILLOW

CIRCLE 535 ON READER SERVICE CARD

U.S. Cartridge Service
NOT A GOVERNMENT AGENCY

TONER CARTRIDGES.
REMANUFACTURED

for laser printers
and PC Copiers

2 DAY DELIVERY
AVAILABLE

20% MORE TONER
100% GUARANTEED
24hr TURNAROUND
WE BUY EMPTIES!!!

\$29.95

92 RANDOLPH AVE.
SO. SAN FRANCISCO, CA 94080

1-800-553-4345

CIRCLE 466 ON READER SERVICE CARD

SOFTWARE/Accounting

\$45 — Complete Accounting Software

PACIOLI 2000* CONTAINS:

- Billing, A/R, Inventory, A/P, G/L, Purchasing, Budgeting, Auditing — All Integrated
- **FREE** UNLIMITED CUSTOMER SUPPORT.
- **FREE** 2 HOUR TRAINING VIDEOTAPE.
- Use as single-user or multi-user system (network ready)

"The equal of other high end accounting programs in every way but cost!"
New York Times, July 1, 1990

VISA/MC Orders only: 800-243-1515 Ext. 800 MG Questions: 214 931-2033
Or: Check/MO -- Add \$6 shipping to S Software, 2880 Bergey Road, Dept 800 MG Hatfield, PA 19440

CIRCLE 435 ON READER SERVICE CARD

**BUY
WITH
CONFIDENCE**

CATALOG

**SHOP
PC WORLD**

dBASE Business Tools

- General Ledger
 - Accounts Payable
 - dInvoicer & A/R
 - Sales Analysis
 - Order Entry
 - Purchasing/Invnty
 - Payroll
 - Lazy-Forms
 - Job Costing
 - Job Estimating
 - Bill of Materials
- \$99 ea. incl. Source Code M/C-AMEX-
Visa-Check-COD
Datamar Systems
8586 Miramar Place
San Diego, CA 92121
800/223-9963, 619/452-0044

DATASMITH Payroll

Twelve years in the field. Ready for the 90's with Split SS/Medicare, new W-2's. Pension/cafeteria plans, magnetic filing, multi-states, multi-companies. Exempt/deferred payments, imputed pay, allocated tips, non-cash items. Easy corrections! Optional Direct Deposit, Benefit Accrual, IMPORT/EXPORT, more. Order demo today!

Datasmith, Inc.

10020 Fontana Lane
Overland Park, KS 66207
913/381-9118

MIP Fund Accounting

MIP means Fund Accounting. A system designed for not-for-profits.

- * General Ledger
- * Budget Reporting
- * Accounts Payable
- * A/R & Billing
- * Encumbrance/P.O.
- * Interface
- * Payroll
- * Fixed Assets
- * Training & Demo

Call 800-647-3863 for your Fund Accounting needs.

MIP Fund Accounting
505 East Huntland Dr. Suite 340
Austin, TX 78752-3714
800-647-3863, 512-454-5004

ProTime

Track billable time, invoice clients for products and services, account for transactions and more! Perfect for consultants, contractors, attorneys, doctors and others.

\$179

**info
DESIGN**

(503)644-2427 • FAX (503)626-3345

CIRCLE 460 ON READER SERVICE CARD

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-solor 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
804-528-6600 Fax 528-4668

CIRCLE 470 ON READER SERVICE CARD

Business Applications

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

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

CHECKUS OUT

AT COUGAR MOUNTAIN SOFTWARE,
WE OFFER ONLY THE BEST IN
ACCOUNTING SOFTWARE.

- Field tested for over 8 years

General Ledger, Accounts Payable, Accounts Receivable,
Payroll, Check Reconciliation, Inventory, Order Entry/Invoicing,
Purchase Order Tracking, Lynx (ASCII File Converter)

SINGLE USERS

\$199.50

+ 15.50 shipping & handling

LAN VERSION

\$999.50

+ 15.50 shipping & handling

**COUGAR
MOUNTAIN**
S.O.F.T.W.A.R.E.

2000 Kipling Ave. Bldg. 2000, Suite 101, 97005-3444

1-800-388-3038

CIRCLE 553 ON READER SERVICE CARD

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

High-end groupware.

At \$395 for up to 20 users,* and \$895 for more, **Office-Minder™** offers you the lowest-cost-per-user in the industry.

Yet OfficeMinder offers you more practical office capabilities, E-mail, Bulletin board, Address management, Schedule and Project management, To-Do lists, Person-In/Out board and much more.

OfficeMinder includes On-line help, Mouse support, Alarms, Dialer, mail Binders with folders and MHS compatibility.

Using less than 5k of RAM, one of the smallest groupware TSRs available.

Call 1-800-437-4492 today for a brochure and a **FREE** demo package. 30-day money back guarantee.

*Limited-time offer
\$395.
Regular price \$495

csi

Century Software Incorporated
Woodridge Technology Park
310 N. Wilson Ave.
Hartford, Wisconsin 53027
414-673-4424 • FAX: 414-673-5112

Low-end price.

CIRCLE 485 ON READER SERVICE CARD

Church Applications

Church Mgm't Systems

Easy-to-use, flexible & integrated. Network version available. Local representatives & toll-free support back a comprehensive line of Church & School products. 1200+ satisfied Church, School & Government users. Write or call,
The Software Library
3300 Bass Lake Rd.
Brooklyn Center, MN 55429
800/247-8044, 612/566-4212

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



This 4½ Hour VHS Video Tape Course –

“How To Install A NOVELL® Network”

Will teach you in plain English all the basics required to install a Novell Network. Topics include: Network Boards, Cabling, File Servers, Hard Drives, Disk & Diskless Workstations, Software Installation, Network Management, Multi-User Applications, etc.

For Orders Call 1-800-654-1138

Tech-support
818-905-1262

FAX 818-905-1292

Introductory Price

\$69⁹⁵ Plus \$5 Shipping & Handling



Vogue Video Productions

16250 Ventura Blvd., #202, Encino, CA 91436



CIRCLE 513 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
(818) 888-1800

“church office computing has come of age.”
Neil Houk, Church Bytes
October 1988

CIRCLE 562 ON READER SERVICE CARD

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



FREE DEMO DISK AVAILABLE!



SOUTHERN COMPUTER SYSTEMS, INC.
209 251-2915 • FAX (205) 322-4851
In Europe: SCS Europe, Ltd. 0753-36550 • FAX 0753 36765

Communications

\$97 Protocol Analyzer

AsyncPro turns PC/AT into a RS232 Async. protocol analyzer without spending thousands of dollars.

- 110 to 19.2K, DTR/RTS controls
- ASCII/HEX display & print formats
- ASCII/Binary capture modes
- 28K Buffer, search/save/retrieve
- PC/AT/386, 256K, COM1/2, DOS 3.x. AsyncPro ver 1.1 \$99

Ai Engineering
47000 Warm Springs Blvd, Suite 158
Fremont, CA 94539
415-770-8598

Data Entry

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

THE DATA ENTRY EMULATOR™

HEADS-DOWN data entry and TWO-PASS verification. Fast and powerful, of course, but more importantly, *extremely easy to use.* Paint the screen formatting in minutes. On-line help text, edit language, batch control.

PC from \$395
Also for LAN's,
IBM AS/400™,
IBM S/36

FREE trial

206/776-6443
800/356-0203



COMPUTER KEYES
21929 Makah Rd
Woodway, WA 98020

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

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

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

Entertainment/ Games

Adult 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 Adults Only \$13.95

Hi-res VGA animation. Just like the movies!!!

Vol. 5 Adult 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 full. Vol. 12 available in only HD disks.

Get more great software for less. Guaranteed. Fast service. Order today. Include \$3 S&H. Must state age 21 or over. Send check or MO to:
CJCware
For free catalog call Dept. CW, P.O. Box 36
(309)452-7760. Normal, IL 61761

CIRCLE 496 ON READER SERVICE CARD

THE LOTTO EDGE 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

Desktop Publishing

WordProofer™

Replace proofreading or document comparators with the faster, more accurate technique of two-pass proofing. Easier to learn and use than any word processor or desktop publishing program. Key, edit, or proof any file on your PC, then import to your application.

Single copy \$295
Multicopy discounts
Network version
Free tech support



COMPUTER KEYES
21929 Makah Rd.
Woodway, WA 98020
206/776-6443
800/356-0203

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

"[NEMESIS Go Junior] Best introduction to Go yet developed."

Toyogo, Inc.

P.O. Box 25460-W,
Honolulu, HI 96825-0460

(800) TOYOGO-9
(808) 396-5526 \$35 Go Junior \$79 Go Master \$169 NEMESIS Deluxe + \$6.50 S&H

CIRCLE 565 ON READER SERVICE CARD

Win-XXX

WINDOWS 3.0 VIEWER INCLUDED READY TO USE WINDOWS BACKGROUNDS

Standard Windows VGA uses 16 Colors
some SVGA drivers use 256 Colors

#601 16 color \$14.88 256 color \$19.88
#602 16 color \$14.88 256 color \$19.88
#603 16 color \$14.88 256 color \$19.88
#105 .. Includes all three disks (601, 602 & 603)
16 color \$37.88 256 color \$49.88

Add \$1 for each 3.5" disks - Please include \$3 S&H - FL add 6%

Send check or money order to:

STARWARE PUBLISHING CORP
P.O. Box 340203 - DEPT. 13
BOCA RATON, FL 33434
Must state age 21

CIRCLE 550 ON READER SERVICE CARD

Educational

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
(614) 294-3535

CIRCLE 447 ON READER SERVICE CARD



Adult Software

Must State
Age Over 21

Disk #1 — An unbelievable visual encounter — MUST SEE!!

Disk #2 — NEW! 3 encounter games for friends and lovers guaranteed to shed both clothes and inhibitions.

Disk #3 — An anatomical arcade game with unusual ammunition.

Disk #4 — 2 more incredible visual encounters — impress your friends.

Disk #5 — Create your own fantasies about friends and lovers.

Disk #6 — NEW! View, print, or edit ten sizzling pictures including celebrities.

\$7 each, any 3 for \$17, or all 6 for \$32.
for IBM & compat. CGA, EGA or VGA graphics req'd.

ADD \$3 S/H • 3.5" OR FOREIGN ORDERS ADD \$2 PER DISK • IN PA ADD TAX.
VISA/MC Orders only 800-243-1515 Ext. 600 BL

24HRS./7 DAYS • Or check/MO to: SeXXy Software, 2880 Bergey Rd. Dept. 600BL, Hatfield, PA 19440

THE BEST IN ADULT SOFTWARE FOR LESS!!
SADDAM HUSSEIN TARGET GAME — Only \$15.00

Shoot Patriot Missiles at Actual Pictures of him as he yells at you! TRUE SOUND — As seen on TV News — CGA & VGA included. Shipped FREE to Desert Storm Military!

CIRCLE 523 ON READER SERVICE CARD

CONNOISSEUR COLLECTION ALL NEW! In 256 Color VGA!!

Disk #CC1 — ★ YOU BE THE STAR ★

The FIRST CUSTOMIZABLE movie allows you to write the dialog and the title. You can star with the partner of your choice. Incredible scenes display with your dialog. ONLY AVAILABLE FROM US!

Disk #CC2 — THE FIRST SOUND MOVIE!

The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!

Disk #CC3 — THE BEST MOVIE!

The best computer movie available. Only for the serious collector. 256 stunning VGA colors.

1 Movie \$29, 2 Movies \$49, 3 Movies \$65
All CC Disks Require VGA monitor and hard disk — over 1 MB of action.

Financial

Loan Amortization Software

A favorite of banks
& atty's worldwide!
Over 5000 sold!

- ✓ Easy Amortization Schedules
- ✓ Replace Financial Calculators

- ✓ Change variables instantly

- ✓ Creative Financing
- ✓ Fixed or Adjustable
- ✓ APR to US Reg. Z
- ✓ Bi-weekly & more
- ✓ Prepaid Int.
- ✓ Points & Fees
- ✓ PMI Charges
- ✓ Irregular Pymt's
- ✓ Auto. Extra Pymt's
- ✓ Fixed Principal Pymt's
- ✓ Balloon Pymt.
- ✓ Negative Amortization
- ✓ Fiscal / Calendar Year
- ✓ 360, 365, 360/365 Int.
- ✓ Solve for an Unknown
- ✓ Yield & Loan Price
- ✓ Store loan to disk
- ✓ Report titles
- ✓ Report comments
- ✓ Calendar or Fiscal Yr
- ✓ No Spreadsheet requ.
- ✓ Editing of data entered
- ✓ Context help screens
- ✓ 18 Digit Accuracy

Exec-Amort™ \$149.95

*Mini-Amort™ \$79.95

5 user Network Version: \$450.00

Order Today Call 800/858-8448

Fax Orders Call 313/791-3010

Phone (313) 791-0770

Electronics,

36380 Garfield, Suite 1

Fraser, MI 48026 USA

Demo Disk \$5 Each, VISA, MC, AMEX, Discover

Ground Ship \$5, Air \$13, COD's add \$3.75

International add \$15 (Excludes APR, Pts & Fees)

CIRCLE 526 ON READER SERVICE CARD

CATALOG

PC WORLD

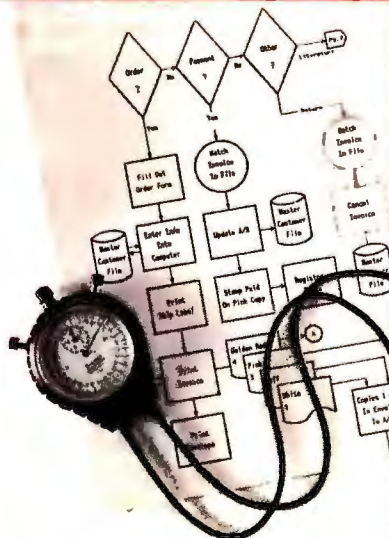
Shop The PC World Catalog for fast solutions to your PC needs.

Flow Charting

Genealogy

Inventory Control/ Management

BY HAND. OR BY NOON.



Announcing Flow Charting™ 3: Powerful new features— for greater speed, flexibility, and ease-of-use!

- Single-page, multi-page or canvas charts—portrait or landscape
- Custom fonts support high resolution laser and 24-pin dot matrix printers
- 35 standard shapes, 10 text fonts
- Suggested retail price: only \$250

PATTON & PATTON
Software Corporation

Excellence in charting the flow of ideas!

See your dealer today! Or, for a "live,"
interactive demo disk, call:
800-525-0082, ext. PW40.

International: 408-778-6557, ext. PW40.
485 Cochrane Circle, Morgan Hill, CA 95037-9932

CIRCLE 529 ON READER SERVICE CARD

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

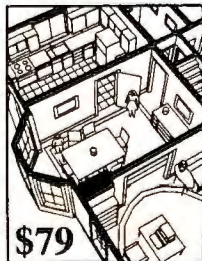
Lexington, MA 02173

800/637-ROOT, 617/641-2930

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



\$79

Easy 3D Design

Create scale drawings and 3D renderings quickly and easily. With ROOMER2 you can plan your home, small office or stage set for just \$79. For larger projects ROOMER3 is the package to use. Homes, offices, libraries - nearly any interior space can be designed for just \$395. Get our brochure!
Phone (814) 226-5600 FAX (814) 226-5551
Hufnagel Software, Box 747, Clarion PA 16214

CIRCLE 477 ON READER SERVICE CARD

POINT OF SALE INVENTORY

Inventory Control is....
MONEY IN THE BANK
\$189 - \$489
FREE demo



Maintains Inventory
Writes Invoices
Uses Cash Drawer, Receipt Printer, Barcode Scanners
50 different programs
Receivables & Gen. Ledger

Freeman Software - Garland, Texas
800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

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

Laser Fonts

\$1.50 FONTS

HP compatible soft fonts for your laser printer. Dozens of type styles, logos, digitized images & custom fonts available.

- Fixed & Proportional
- Portrait & Landscape
- Regular-Bold-Italic-Italic Bold
- Point sizes-6 to 108

For FREE catalog, contact:

EAGLE SYSTEMS

PO Box 502

Moorpark, CA 93021

805/529-6992

Mailing Programs

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

Health

Languages

Eat Healthier- Get FIT !!



Top-Rated software has best data available for 2400 foods, 30 nutrients. Plan diets, menus, recipes; shows nutrient excess, deficiency, ratios, graphs. Used by thousands: USDA, fitness colleges, hospitals, & home-users
Send Now: FREE Demo Disk !!

ESHA
RESEARCH

PO Box 13028-B
Salem, OR 97309
Ph: (503) 585-6242

CIRCLE 573 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

Mail Call® Mailing Data Base

Create a valuable data base of your customers, vendors, personnel or other aspects of your organization for quick sorting, editing or printing lists/labels.

\$129

info
DESIGN

(503)644-2427 • FAX (503)626-3345

CIRCLE 463 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

ARC TANGENT PROFESSIONAL MAIL

\$695

The most advanced, professional-level mailing list management system available for IBM and compatible microcomputers. Call (805) 965-7277 for free brochure.

- Unlimited number of names and addresses
- Sophisticated merge/purge duplicate detection
- Complete postal presorting and barcoding
- Custom letters, labels, reports
- Convert data from dBase, ASCII, other formats

Arc Tangent, Inc.
121 Gray Avenue
Santa Barbara,
CA 93101-1831
(805) 965-7277

CIRCLE 419 ON READER SERVICE CARD

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 W691
Evanston, IL 60202
800/782-8278, 708/869-3434

Mail Order Made Easy!

"Mail Order Master" Software contains all the routines you need to run your Home Mail Order Business. Easy to use features include Powerful Database, Invoicing, Inventory Control, UPS Manifesting, Daily Sales Report, Product Sales Report, Statements, Credit Card Voucher Printout, Bulk Mail Sort plus lots more. IBM compatible. Priced at \$399.00 Hands-On Demo \$15.00 The Marshall Weiner Corp.
1700 Catalina Ave.
Seal Beach, CA 90740
800/874-4656 USA & Canada

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 elctrnc 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

Medical/Dental Systems

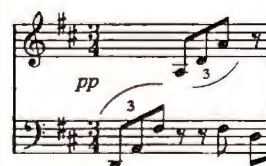
Fifteen years of the latest technology. Practice management systems with paper and electronic claims, Superbill, patient ledgers, practice analysis, financial histories, appointments, diagnostic data base and much more. Systems from \$200 to \$3,000. Call, FAX or Write for FREE information reports.

CMA Micro Computer

55888 Yucca Trail, P.O. Box 2080
Yucca Valley, CA 92286-2080
Call: 619-365-9718, FAX: 619-228-1567

Music

Beautiful



ACTUAL OUTPUT (Reduced)

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 Donivan Rd, Brushton, New York 12916
BBS (518) 358-3352 (SHIPPING \$5.00 US, NY + 7% TAX)

only...
\$99.95

CIRCLE 500 ON READER SERVICE CARD

\$19.95 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
Pelham, New York 10803
(914) 738-4500 Fax: (914) 738-6946

Orders/Free Catalog: 1-800-233-9377

CIRCLE 476 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.

SONGWRIGHT SOFTWARE

7 Loudoun Street, S.E., Ste. 5B
Leesburg, VA 22075
1-800-877-8070

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

Point of Sale

Attention RETAILERS

POS with FULL FEATURED ACCOUNTING: Do all your accounting at the sales counter! Sales are posted to all accounting modules. GL, AR, AP, Payroll, and Inventory have been integrated into one outstanding program. Accommodates Cash Drawers, Receipt Printers, Bar Code readers, and LANs. \$1,299. SOURCE CODE AVAILABLE Xitech, Inc.

P.O. Box 1211
Monument, CO 80132
(719) 481-4900

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

Shop *The PC World Catalog* for fast solutions to your PC needs.

Public Domain/
Shareware

Real Estate

Security

FREE - 15 DISKS FULL OF SOFTWARE

TRY US! Get 15/5.25" or 6/3.5" disks full of our bestselling NO VIRUS software for IBM®/clones. Desktop publishing, Business, Education, Utilities, Games, Finance and Clip Art.

PAY ONLY \$5.00 SHIPPING/HANDLING

CREDIT CARDS ONLY • SATISFACTION GUARANTEED

SMC SOFTWARE PUBLISHERS

619 931-8111

CIRCLE 487 ON READER SERVICE CARD

PC WORLD

WE DEFY YOU

**TO FIND
ANOTHER
PUBLICATION
READ BY THE**

**FINAL
DECISION-
MAKERS**

**FOR
NEARLY
5 MILLION
BUSINESS PCs**

CATALOG

 **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

**ELECTRA BYTES
"Best of Shareware"**

Catalog on disk 2.99 + S&H
refunded with first order.
Windows shareware a
specialty. (Approx.
600 windows
programs available)

**Phone 1-800-HOT-BYTES
P.O. Box 801
Brewer, ME 04412**

CIRCLE 474 ON READER SERVICE CARD

• Property Mgt Plus/91 •

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! Special pricing from \$575.

Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
213/372-9419 or 801/649-6149

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

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

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



**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
- **EVERTRAK** Software Security
- **EVERKEY** Hardware "Key" Software Security

For IBM and Compatibles.
30 day money back guarantee.
Free info and demo disk available.

 **Az-Tech Software, Inc.**
305 East Franklin
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 593 ON READER SERVICE CARD

Statistics

Spreadsheet Statistics

Comprehensive statistics and forecasting modules for analyzing LOTUS worksheets. Low cost \$25 each. Convenient. Easy to use. Includes tutorial. Ideal for vertical markets. Basic and advanced statistics with graphics. Guaranteed best buy. Compare. Nothing else comes close. Free brochure.
StatPac Inc.
6500 Nicollet Ave. S.
Minneapolis, MN 55423
(612) 866-9022

Power Designed to Fit Your Needs

MINITAB is the easy-to-use statistical package that lets you master a broad range of functions within one hour.

- Basic Statistics
 - Regression
 - Control Charts for SPC
 - Hi-Res Graphics
 - Time Series
 - ANOVA and ANCOVA
- ...and more

CALL 800-448-3555

MINITAB
STATISTICAL SOFTWARE
Minitab Inc.

3081 Enterprise Drive / State College, PA 16801

CIRCLE 566 ON READER SERVICE CARD

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

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

Surveys

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 option available.

Creative Research Systems
15 Lone Oak Ctr., Dept. W
Petaluma, CA 94952
707/765-1001

Training



MULTIMEDIA TRAINING SERIES

Our Video Training packages provide step-by-step instruction on popular software programs for IBM & Macintosh Computers

Lotus 3.1 Video Series \$395.00
(3 VHS Tapes; 3 Workbooks; 3 hrs 42 min)

Paradox Video Series \$195.00
(2 VHS Tapes; 1 Workbook; 3 hrs 40 min)

HALVERSON ASSOCIATES, INC.
1313 Newburgh Rd. • Westland, MI 48185
(313) 729-0325 • (313) 729-2424 FAX

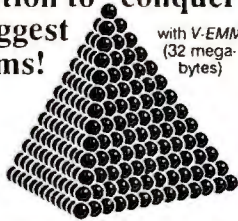
FOR COMPLETE LISTING OF VIDEO TRAINING PRODUCTS **1-800-537-1641**

CIRCLE 520 ON READER SERVICE CARD

Utilities

Ammunition to conquer your biggest problems!

without V-EMM
(640 kilobytes)



with V-EMM
(32 megabytes)

- The Virtual Expanded Memory Manager provides your EMS applications with up to thirty-two megabytes of LIM EMS 4.0 expanded memory
- It turns PC/AT or PS/2 extended memory into expanded memory
- It turns hard disk storage into expanded memory
- It's compatible with most EMS applications, including 1-2-3
- Only \$89.95. 30-day money-back guarantee.



V-EMM™

Fort's Software
P. O. Box 1295
Loveland, CO 80539
(303) 663-5629

CIRCLE 551 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
702/588-3737

COPYWRITE

CopyWrite
Removes
Copy Protection.
No more diskettes, manuals or code wheels. \$75. U.S.
1000's of products copied.
Quaid Software Limited
45 Charles St. E. 3rd Fl. Dept. W
Toronto, Ontario M4Y 1S2
416/961-8243, FAX 416/961-6448

BREAK 640K!

Out of memory? VRAM™ (\$49+4sh) creates 32M of memory by turning disk space or extended memory into expanded! VRAM/plus (8 utilities/\$99+5sh): HRAM creates 944K of DOS memory, min-mem frees memory used by TSRs, Diskpack backs up 10M to 2 disks, COMx connects PCs (w/32ft cable), and more. 30-day grt.

Biologic
7950 Blue Gray Circle
Manassas, VA 22110-2829
703-368-2949 (703-361-8251 fax)

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 AM and 8 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PC WORLD

FREE PRODUCT INFORMATION

PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME _____		
COMPANY _____		
ADDRESS _____		
CITY _____	STATE _____	ZIP (required) _____
TITLE _____		PHONE () _____

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

June 1991

Expires 10/17/91

S1

Free Product
Information

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Free Product Information

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871



FREE PRODUCT INFORMATION
PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP (required) _____

TITLE _____ PHONE () _____

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to PC WORLD. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

ADVERTISING SALES

Richard J. Marino
Associate Publisher
Sales, Marketing, & Research

Asst. to the Associate Publisher
Colette Cornish

Eastern Advertising Director
Jeff Edman (201/587-0090)

Western Advertising Director
Sharon Van Leuven (415/243-0500)

Eastern Advertising Manager
Bob Ostrow (508/820-0440)

Mid-Atlantic/Manhattan
John Grogan, Northeast Account
Manager (201/587-0090)

Midwest/Chicago
Mark Taussig, Midwest Account
Manager (708/827-4477)

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, 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)

Circulation

Vice President, Circulation
Heather Martin
Asst. to the Vice President
Anna Mercaldi

List Acquisition Manager
Francesca Davies
Circulation Promotion Manager
Ellen DiMatteo
Circulation Business Manager
Noël White
Renewal/Billing Coordinator
Jennifer Paday
Circulation Assistants
David Cobb, Jane Kratochvil
Subscriber Service
Roe Anne Prince

Single Copy Sales Director
George Clark
Single Copy Sales Rep.
Martin Garchar

Marketing & Research
Director of Marketing Communications
Jay McSherry
Product Marketing Manager
Nola Armijo
Research Manager
Bill Segovia
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
Amy Marks

ADVERTISER INDEX A TO Z

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
3 Acer America Corp.	53
20 Advanced Computer Products	298
4 Advanced Micro Devices.	297
11 Advanced Vision Research	148
— Aldus.	34-35, 154
45 American Power Conversion.	40
306 American Small Business Computers.	256
— Anthro Corp.	22
8 Arlington Computer Products.	301
18 Artisoft.	14
9 Ashton Tate.	38-39
15 Ashton Tate.	144-145
43 ASP Computer Products.	32
10 AST Research.	33
14 Austin Computer Systems.	12-13
25 Bitstream.	225
1 Blackship Computer.	28
177 Brown Wagh Publishing.	214
215 Buffalo Products.	63
24 Bulldog Computer Products.	289
17 Caere Corp.	36
21 Caere Corp.	219
36 Clarion Software.	31
28 The Complete PC.	237
— CompuAdd Corp.	115-118
29 Computer Associates.	56
42 Computer Associates.	168
34 Computer Associates.	261
200 Computer Discount Warehouse.	294-295
181 Concentric Data Systems.	232
19 CONNEXperts.	249
48 Corel Systems.	100
53 CTX International.	29
— Curtis Manufacturing.	7
94 DacEasy, Inc.	88
— Damark International.	288
62 DCA.	10
74 Dell Computer Corp.	C5-C8
93 Evolution Computing.	164
100 Fast Micro.	209-213
235 Fifth Generation Systems.	51

Reader Service Number	Page Number
71 Fifth Generation Systems.	107,109
81 Fifth Generation Systems.	240
78 First Source International.	303
76 Fox Software.	243-245
60 Funk Software.	50
— Gateway 2000.	17-20
— Genstar Rental Electronics.	47
79 Haventree Software.	46
104 Hayes Microcomputers.	86-87
— Hewlett Packard.	55
114 Hewlett Packard.	220-221
— IBM Corp.	8-9
— IBM Corp.	82-83
108 IBM Corp.	147
— IBM Corp.	196-197
112 Intel Corp.	103,105
142 Kelly Temporary Services.	233
41 Kenosha Computer.	300
— L A Trade.	290
123 Laser Press & Graphics.	293
124 Leading Edge, Inc.	231
128 Liberty Systems.	6
— Lotus Development Corp.	170-173, 175
324 Lotus Word Processing Division.	177
168 MicroBiz Corp.	305
— Micrografx.	78, 81
177 MicroLogic Software.	214
171 Micro Planning International.	253
165 MicroProse.	96
— Microsoft.	48-49, 113, 238-239
157 MicroTac Software.	50
164 Microtek, Inc.	254
176 Minuteman Computer.	296
172 MIS Computer Systems.	205A
174 Montgomery Grant.	288
7 M-USA Business Systems.	217
193 Nantucket Corp.	163
119 NBI.	54
187 NEC Technologies.	C2-P1
158 NewGen Systems.	227
159 NewGen Systems.	227
190 NSI Computer Products.	304
196 NSTL.	259
197 Okidata.	58-59
209 One Stop Micro.	292
— Pacific Data Products.	222
214 Panasonic.	44
231 Panasonic.	234

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, Informática; 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, MikroDatorn, PC/Nyheter, 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, InCider/A+, InfoWorld, International Custom Publishing, Macworld, Network World, PCGames, PC World, Portable Computing, Publish, Run, Sun Tech Journal; USSR's Manager, Network, PC Express, PC World USSR; VENEZUELA's Computerworld Venezuela, Micro Computerworld; WEST GERMANY's Amiga Welt, Computerwoche, Information Management, Macwelt, PC Welt, PC Woche.

Reader Service Number	Page Number
220 Paradise Computer Products ..	291
— PC Connection	90-95
144 Peachtree Software	42-43
216 Pilot Executive Software.....	26
204 Pinnacle Micro	151
221 Polaroid	187
718 Pop Computer Products.....	205B
244 Precision, Inc.	84
— Quarterdeck Office Systems.....	197A-197B
— Quill Corp.....	250
229 Reasonable Solutions.....	299
— Reference Software, Int. ..	152-153
239 Rose Electronics	258
265 Samsung	167
31 Secure-It.....	52
— Software Publishing Corp.....	204-205
272 Symantec.....	67
271 Symantec.....	228
275 Tandon Computer.....	4-5
178 Telemart.....	302
264 Texas Instruments	60
296 Texas Instruments	111
259 Tiger Software.....	120-135
257 Toshiba	23-25
325 Western Telematic.....	65
— Wordperfect Corp.....	30
322 Wyse Technology	188-189
— Zeos International, Ltd.....	69-76
320 ZSoft Corp.....	246

ADVERTISER INDEX BY PRODUCT CATEGORY

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
HARDWARE	
Boards/Cards/Chips	
4 Advanced Micro Devices.....	297
28 The Complete PC	237
Communications	
28 The Complete PC	237
104 Hayes Microcomputers	86-87
Computers	
3 Acer America Corp.	53
10 AST Research	33
14 Austin Computer Systems... 12-13	
1 Blackship Computer	28
— CompuAdd Corp.	115-118
74 Dell Computer Corp.	C5-C8
100 Fast Micro	209-213
— Gateway 2000	17-20
— Genstar Rental Electronics	47
— IBM Corp.....	196-197

Reader Service Number	Page Number
112 Intel Corp.....	103,105
124 Leading Edge, Inc.	231
168 MicroBiz Corp.	305
172 MIS Computer Systems.....	205A
174 Montgomery Grant	288
— Quill Corp.....	250
275 Tandon Computer.....	4-5
264 Texas Instruments	60
322 Wyse Technology	188-189
— Zeos International, Ltd.....	69-76
Connectivity	
43 ASP Computer Products	32
19 CONNEXperts	249
235 Fifth Generation Software	51
— Pacific Data Products	222
239 Rose Electronics	258
325 Western Telematic.....	65
Desktop Publishing	
123 Laser Press & Graphics.....	293
221 Polaroid	187
Laptop/Notebook	
— IBM Corp.	82-83
264 Texas Instruments	60
257 Toshiba	23-25
Local Area Networks	
18 Artisoft	14
215 Buffalo Products	63
19 CONNEXperts	249
235 Fifth Generation Systems.....	51
239 Rose Electronics	258
Monitors	
53 CTX International.....	29
187 NEC Technologies	C2-P1
214 Panasonic.....	44
265 Samsung	167
Power/Protection	
45 American Power Conversion....	40
Printers/Plotters	
114 Hewlett Packard.....	220-221
164 Microtek, Inc.	254
158 NewGen Systems	227
159 NewGen Systems	227
197 Okidata.....	58-59
231 Panasonic.....	234
296 Texas Instruments	111
Scanners/Digitizers	
11 Advanced Vision Research	148
21 Caere Corp.	219
221 Polaroid	187
Storage Devices	
128 Liberty Systems	6
204 Pinnacle Micro	151
Systems	
— IBM Corp.	8-9
SOFTWARE	
Accounting/Financial	
29 Computer Associates	56
42 Computer Associates	168

Reader Service Number	Page Number
34 Computer Associates	261
94 DacEasy, Inc.....	88
7 M-USA Business Systems	217
144 Peachtree Software	42-43
CAD/CAM	
306 American Small Business Computers.....	256
93 Evolution Computing.....	164
Communications	
62 DCA.....	10
Database Management	
15 Ashton Tate	144-145
36 Clarion Software.....	31
76 Fox Software	243-245
193 Nantucket Corp.	163
244 Precision, Inc.	84
Desktop Mapping	
— Software Publishing Corp.....	204-205
Desktop Publishing	
— Aldus	154
25 Bitstream.....	225
48 Corel Systems	100
320 ZSoft Corp.	246
Entertainment	
165 MicroProse	96
Fontware	
25 Bitstream.....	225
177 Brown Wagh Publishing	214
177 MicroLogic Software	214
Graphics	
306 American Small Business Computers.....	256
9 Ashton Tate	38-39
48 Corel Systems	100
108 IBM Corp.	147
— Lotus Development Corp.. 172-173	
— Micrografx.....	78, 81
— Wordperfect Corp.....	30
Integrated Software	
— Hewlett Packard	55
Local Area Network	
62 DCA.....	10
Management	
216 Pilot Executive Software.....	26
Operating Systems	
— Hewlett Packard	55
Optical Character Recognition	
11 Advanced Vision Research	148
17 Caere Corp.	36
Other	
— Lotus Development Corp.....	175
Presentation Graphics	
— Aldus.....	34-35
Project Management	
79 Haventree Software	46
171 Micro Planning International..	253
272 Symantec.....	67
Scheduling Software	
218 Pop Computer Products.....	205B

Reader Service Number	Page Number
Shareware	
229 Reasonable Solutions.....	299
Spreadsheets/Templates/Forms	
— Lotus Development Corp.. 170-171	
— Microsoft.....	238-239
Utilities	
181 Concentric Data Systems	232
71 Fifth Generation Systems	107,109
81 Fifth Generation Systems.....	240
60 Funk Software.....	50
Windows	
324 Lotus Word Processing Division	177
— Micrografx	78,81
— Microsoft	48-49
— Microsoft	113
144 Peachtree Software	42-43
244 Precision, Inc.	84
— Quarterdeck Office Systems 197A-197B	
Word Processing/Aids	
324 Lotus Word Processing Division 177	
— Microsoft	113
157 MicroTac Software	50
119 NBI	54
— Reference Software, Int. .. 152-153	
271 Symantec.....	228
MISCELLANEOUS	
Computer Accessories	
— Anthro Corp.....	22
— Curtis Manufacturing.....	7
Mail Order	
20 Advanced Computer Products.....	298
8 Arlington Computer Products.....	301
14 Austin Computer Systems... 12-13	
24 Bulldog Computer Products... 289	
200 Computer Discount Warehouse.....	294-295
— Damark International.....	288
78 First Source International	303
— Gateway 2000	17-20
41 Kenosha Computer	300
— L A Trade	290
123 Laser Press & Graphics.....	293
168 MicroBiz Corp.	305
176 Minuteman Computer.....	296
174 Montgomery Grant	288
190 NSI Computer Products.....	304
209 One Stop Micro	292
220 Paradise Computer Products ..	291
— PC Connection	90-95
— Quill Corp.....	250
229 Reasonable Solutions.....	299
178 Telemart.....	302
259 Tiger Software	120-135
— Zeos International, Ltd.....	69-76

Reader Service Number	Page Number
Other	
— Genstar Rental Electronics	47
142 Kelly Temporary Services	233
Periodicals	
196 NSTL.....	259
Security	
31 Secure-It	52

PRODUCTS FEATURED IN EDITORIAL

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
Accounting	
695 CheckFree 3.0, CheckFree	119
691 RealWorld Practical Accounting System, RealWorld	112
Add-On Board	
685 MicroPac 452, Monolithic Systems	110
Backup Software	
686 Central Point Backup 7.0, Central Point Software.....	112
Communications	
620 pcAnywhere IV, DMA.....	306
679 Relay Gold 5.0 for Windows, Microcom.....	106
Computer System	
622 Acer 1120/SX, Acer America	138
623 AGI Model 3000B, AGI Computer.....	138
624 ALR BusinessVEISA 32CSX, Advanced Logic Research.....	138
770 ALR PowerFlex 20CSX, Advanced Logic Research	149
771 Arche Triumph 386SX/20, Arche Technologies.....	149
772 AST Premium II 386SX/20, AST Research.....	149
773 AT&T 6386SX/EL20 WGS, AT&T.....	149
774 Austin 386SX/20, Austin Computer.....	149
775 Compaq Deskpro 386s/20, Compaq Computer	149
625 CompuAdd 320sc, CompuAdd.....	141
776 Dell 320LX, Dell Computer ...	149
777 Eltech Model 2200, Eltech Research	149
778 Epson Equity 386SX/20, Epson America	149
779 Everex Step 386SX/20, Everex Systems	149
780 FastMicro FastData SX/20, FastMicro	149
781 Gateway 2000 386SX/20 Cache, Gateway 2000.....	149
782 Grid 386isx-20, Grid Systems	149
783 Hyundai Super-386STc, Hyundai Electronics America	149

Reader Service Number	Page Number
784 Leading Edge D3/SX20c, Leading Edge.....	149
626 Mitac MPC-2386e, American Mitac	141
785 NCR PC386sx20, NCR.....	149
786 NEC PowerMate SX/20, NEC Technologies.....	149
787 Northgate SlimLine 386/SX 20, Northgate Computer Systems	149
788 Packard Bell Legend 520SX, Packard Bell	149
627 Tandon SL 320SX, Tandon....	141
678 Tandy 1000 RLX, Tandy.....	102
628 Tandy 4020SX, Tandy.....	142
629 Twinhead Superset 590/20, Twinhead.....	146
630 Wyse Decision 386sx/20, Wyse.....	150
789 Zenith Data Systems 386SX/20, Zenith Data Systems.....	149
631 Zeos 386SX-20, Zeos Int'l....	150
Data Base Management	
684 Oracle Card for Windows, Oracle.....	110
698 PC File 6.0, Buttonware	119
696 R:base 3.1A, Microrim	119
Desktop Publishing	
703 PageMaker 4.0, Aldus	190
704 Ventura Publisher 3.0, Windows Edition; Ventura Software	190
Development Tool	
694 Thinx 1.1, Bell Atlantic.....	119
Disk Drive	
700 Compaq Intelligent Array Expansion System, Compaq Computer.....	119
Display	
669 AT 2000, PS 2000; Ventek.....	200
668 CrystalView 1901, Taxan America	200

Reader Service Number	Page Number
656 Design View/19E, Elite Business Applications.....	200
655 DualPage 120, 150; Cornerstone Technology.....	200
657 IBM PS/2 Display 8507, 8508; IBM	200
667 L-View GSP L-View for PC, L-View for PS/2, SilverView, SilverView GS, SilverView PS/2; Sigma Designs.....	200
658 M24LMAX, Image Systems....	200
675 MultiSync 4Ds, 3Ds; NEC Technologies.....	101
646 MultiView, MultiView II; Princeton Publishing Labs.....	202
665 OfficePro II Graphics System, IIA Graphics System; Sampo America	200
670 PageManager 12, PageManager/2-12-MCA; Vermont Microsystems	200
666 PageMaster 2, Samsung Information Systems.....	200
648 PageView for the PC, PageView PS/2; Sigma Designs.....	202
662 PanaPro M1900AT, Panasonic Communications & Systems....	200
659 PixelView PC/II, PC/IIIS, PC/IIH; Mirror Technologies	200
647 QM885, Qume	202
645 SinglePage XL, Cornerstone Technology.....	202
661 SuperScript, Nissei Sangyo America	200
649 Tatung MM-1580, Tatung Company of America.....	202
664 TPD/19-ISA, TPD/19-MCA, TPD/21-ISA, TPD/21-MCA; Radius	200
660 Viking 2/91 M, 2/115 M, 3/91 GS, 3/91M, 2400 M; Moniterm	200
663 WS-XT/AT Workstation, Planar Systems	200
671 WY-790N, Wyse Technology ..	200

Reader Service Number	Page Number
Financial	
687 Finance10, Financial Software.....	102
Font	
683 The Complete Font Cartridge Library, Pacific Data Products.....	104
Graphics	
705 Harvard Graphics 3.0, Software Publishing	89
617 3-D Charts to Go, Bloc Publishing	242
Groupware	
682 Lotus Notes 2.0, Lotus Development	108
LAN Operating System	
676 LANstep, Hayes Microcomputer Products.....	114
677 NetWare 386 3.11, Novell	106
Modem	
618 Courier V32bis, U.S. Robotics.....	306
619 Intel 9600EX, Intel PCED	306
Other Peripherals	
728 Colorfast, GCC Technologies.....	184
731 Digital Palette CI-5000, Polaroid	184
729 LFR, Lasergraphics	184
732 Montage FR1, Screen Star; Presentation Technologies.....	184
727 ProColor Film Recorder, Agfa Compugraphic	184
730 Rubens/XLT FR-900, NISE... 184	
Plotter	
733 Artisan Plus, CalComp	184
740 DPX-2500, DXY-1300, GRX-300AR, SketchMate; Roland Digital Group.....	184
738 F-920A, iP530A, iP530AL; Mutoh America.....	184

PRESERVATION PLAN ON IT

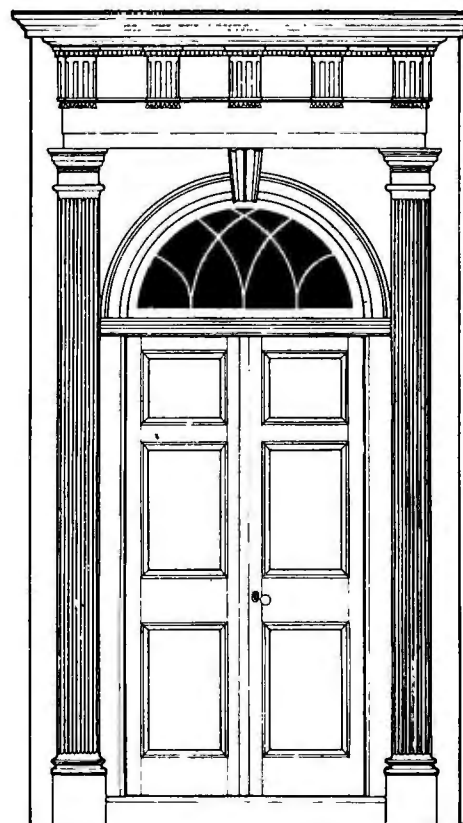
Planning on restoring a house, saving a landmark, reviving your neighborhood?

Gain a wealth of experience and help preserve our historic and architectural heritage. Join the National Trust for Historic Preservation.

Make preservation a blueprint for the future.

Write:

**National Trust for Historic Preservation
Department PA
1785 Massachusetts Ave., N.W.
Washington, D.C. 20036**



Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number
739	G1022, G1824-C, G1835-C; Océ Graphic USA..... 184	744	GSX-140, GSX-145, HSP-500, HSP 550, 200GX; Citizen America .. 182	Scanner			
735	HI DMP-52, DMP-52 MP, DMP-61, DMP-62, Image Maker; Houston Instrument 184	758	G370-10, G650-10; Mitsubishi Electronics America 182	707	A4Color Scanner, A4TECH ... 180	724	Scanmaster 35 Plus, Howtek .. 180
734	HP ColorPro, HP DraftPro, HP DraftPro DXL, HP 7475A, HP 7550 Plus; Hewlett-Packard ... 184	702	HP LaserJet IIIP, Hewlett-Packard 99	713	AVR 3000/CL Plus, AVR. 180	721	UC300, UMAX Technologies .. 180
736	Ioline LP3500, LP3700, LP4000, Signature 5000; Ioline 184	753	HP PaintJet, HP PaintJet XL; Hewlett-Packard 182	708	CHS-4000 Color Handy Scanner, DFL 180	Spreadsheet	
737	JDL AutoPlotter XP, OmniPlotter; Japan Digital Laboratory 184	681	IBM Proprinter 24P, IBM Information Products 114	723	CIS-3515 Professional, BarneyScan 180	706	1-2-3 for DOS release 2.3, Lotus Development 79
742	ZETA 600, 650, 675, 912is, 924is; ZETA Graphics 184	754	JX-730, Sharp Electronics 182	712	Clearscan Color, NCL America Computer Products 180	707	Quattro Pro 3.0, Borland Int'l .. 85
Printer		751	LJ 252, Digital Equipment.... 182	710	ColorArtist, Marstek. 180	Spreadsheet Utility	
743	ALQ224/gx, Alps America 182	749	Microline 393c+, Okidata.... 182	714	DS-3000 Color Scanner, Chinon America 180	616	SQZ, Symantec 229
756	ColorMaster, Plus 6603, Plus 6613; CalComp 182	750	NX-1620 Rainbow, NX-2420 Rainbow; Star Micronics America 182	715	Epson ES-300C, Epson America 180	Statistics	
759	Colormate PS Model 40, Model 80; NEC Technologies. 182	680	Panasonic KX-P1124i, Panasonic Communications & Systems... 114	709	GS-C105 Plus, KYE Int'l 180	690	QCStat, Sample, Systat 5.0; Systat. 104
763	ColorPoint PS Model 4, Model 14; Seiko Instruments USA 182	764	Phaser II PX, SX; Tektronix .. 182	720	JX-100, JX-300, JX-450; Sharp Electronics 180	Utility	
755	Colorquick, Tektronix 182	748	Pinwriter P6200/6300, P9300; NEC Technologies. 182	726	LS-3500 Film Scanner; Nikon 180	699	Calendar Creator Plus 4.0, Power Up Software. 119
762	ColorScript 100 Model 10, QMS. 182	745	ProWriter C-610C+, C-715A; C-Tech Electronics 182	718	NISCAN Spectra for the PC, Nisca 180	621	Zip Manager 3.01, Moon Valley Software. 247
752	Diconix Color 4, Eastman Kodak 182	757	Spectra-Star 410, 420, 430; General Parametrics 182	722	Omnimedia 3cx, XRS 180	Word Processing	
761	EPL-8543, Panasonic Communications & Systems... 182	747	3410XCQ, Genicom 182	711	Pagebrush/Color/PC, Mouse Systems 180	609	Ami Pro 1.2, Lotus Development 157
746	Epson LQ-860, LQ-2550; Epson America 182	765	Versacolor; Xerox Engineering Systems 182	716	Personal Color Scanner; Howtek 180	610	Legacy 1.1, NBI 157
760	G5241-PS, Océ Graphic USA .. 182	750	XB-2410 Multi-Font, XB-2415 Multi-Font, XR-1000 Multi-Font, XR-1500 Multi-Font; Star Micronics America 182	719	ProScan PS-3000, Our Business Machines 180	611	Microsoft Word 5.5, Microsoft 160

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 and 8:00 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PCWORLD



PC WORLD MAIL ORDER Shopping Guide

*Buy with
Convenience*

*Buy with
Confidence*



If You're Not Buying From **Bulldog** — You're Barking Up The Wrong Tree!

BULLDOG SYSTEMS

86 12 MHZ 1 mg Ram, 1.2 floppy, dos 3.3	\$499
86 SX 16 MHZ 1 mg Ram, 1.2, VGA card, dos 4.01	849
86 25 MHZ 1 mg Ram, 1.2 floppy	1169
86-25 CACHE 4 mg Ram, 1.2 floppy	1525
86-33 CACHE 4 mg Ram, 1.2 floppy	1975
86-25 CACHE 4 mg Ram, 1.2 floppy	3199

REE shipping on all **BULLDOG** systems prepaid
with a Cashiers Check, Money Order or Bank Wire!

LEADING EDGE SYSTEMS

33/SX — 80386SX/16 MHZ, 1 mg Ram, 1.2, 52 mg hard drive, VGA video controller	1349
32/LPS — 80286/12 MHZ, 1 mg Ram, 1.44, 40 mg hard drive, VGA on motherboard	869

FAST SYSTEMS

AST Premium 286 Model 70	1075
AST Premium 386 Model 300C	2879

MEGAVA SYSTEMS

86/12 — 1 meg, 3 1/2" 1.44, 5 1/4" 1.2, 40 mg hard drive, VGA card, dos	895
86/SX — 1 meg, 3 1/2" 1.44, 5 1/4" 1.2, 80 mg hard drive, VGA card, dos, bundled w/Lotus Works, Publish It! and System Utilities	1325

LAPTOPS

You can take these lightly!	
Leading Edge DLT/386 Plus — 80386SX—16 MHZ 2 mg Ram, 1.44, 40 mg hard drive, Supertwist LCD screen	1995
Panasonic CF170 Notebook	1389
Panasonic CF270 Notebook	1869
Atari Portfolio Palmtop	249

Call for Pricing on Toshiba Laptops!

MACINTOSH CORNER

Adobe Illustrator	345
Aldus Pagemaker V4.0	495
Color Set	205
Filemaker Pro	205
Foxbase + V2.0	299
Mac Draft/Mac Draw	175/250
Mac Write II	122
Microsoft Excel/Microsoft Word	250/250
ORG Plus	125
Studio 32	492
Swivel 3D V1.2	320
WordPerfect V1.03	220
Datashow 480	1245
Mac Sync	425
mpulse 42/84	335/495
mpulse 168	799
Epson ES300C Color Scanner w/Macintosh Interface	1599

PRINTERS

EPSON	
LX 810	\$173
FX 850/1050	289/399
LQ 510/850	259/435
LQ 1010/1050	369/569
LQ 2550	849
EPL 7000	799
LQ 860	549
Epson ES300C Color Scanner w/ES300 Dos Interface	1450
DICONIX	
Diconix 150+	345
SEIKO	
Smart Label	189
OKIDATA	
172	199
182 Turbo	229
320/321	319/449
380	285
390 Plus/391 Plus	449/605
393 Plus/393 Color Plus	955/1069
OKI LASER	
840/820	2039/1359
800/400	1020/655
TOSHIBA	
Express 420/440	319/449
NEC	
P3200/P3300	295/419
P9300	969
2000 XE	249
6200/6300	479/639
Silent Writer II-90	1659
PANASONIC	
1124/1180	279/149
1191	229
1624/1695	359/389
4420	779
4450i/4455	1199/1999
HEWLETT-PACKARD	
Laser Series III	1599
Laser III D	2599
Laser II P	899
Desk Jet 500	525
LASER ACCESSORIES	
Pacific Data 1 mb/2mb	109/149
Pacific Data 25-N-1	259
Pacific Bar Code	315
Pacific Outlines	189
Pacific Page PE	339
Plotter in a Cartridge	229
Headlines in a Cartridge	199
Pacific Print	219
Pacific Connect 256K	249
Complete Font Library	249
Super Set Plus 425	265
CANON	
LB P4	955
LBP 8 III	1799
BJ 10E	339

MODEMS & FAX

The Great Communicators!	
Adtech Micro Systems	
Datafax MNP 9600 bps send/rec. w/2400 bps Internal MNP5 Modem	199
Externally Yours MNP	235
Smart Connect 24i MNP	75
Teleshare Fax Switch	\$129
Everex 1200 int.	69
Everex 2400 int./ext.	85/169
Everex 2400 ext. w/mnp	199
Hayes 1200B/2400B w/Smartcom II	199/169
Hayes 1200/2400	279/329
Megahertz 24 for Zenith/Toshiba	139/149
Practical Per. 2400 int.	127
Practical Per Pocket Modem	105
US Robotics 2400/9600	139/575
ViVa 24 int./ext.	79/110
Cardinal 2450 int. w/Flashlink	79
Cardinal 2400 ext.	99
Cardinal 2450 int. w/MNP	129
Cardinal 2400 ext. w/MNP	139
Cardinal 2250 F. Sendfax	110
Cardinal 9650 V. 32 int. w/MNP	459
Oki Fax	Call!
Toshiba 3450/3750	610/679
Toshiba 4400	487
Epson 3000	625
Everex 24/96 int./ext.	\$249/319
Complete Fax/Complete Fax 9600	149/299
Complete Communication	419
Fax 9600 Bundle w/Full Page Scanner	719
Complete Answering Machine	239
Complete Fax Portable	299

GRAPHIC CARDS

Boca Basic VGA	\$69
Boca Super VGA	135
DFI Mono/Color	39
Everex Micro Enhancer	59
Everex Viewpoint VGA 256/512	142/179
Genoa Super Hi Res.	145
Genoa 6300/Genoa 6400	199/239
Hercules Graphics Card	179
Hercules InColor	145
Hercules VGA	119
Orchid Pro Designer/e	189
Orchid Pro Designer II w/512K	279
Paradise VGA Plus	135
Paradise VGA Plus 16	169
Paradise 1024 w/512K	229
Vega VGA	139
V Ram II w/512K	349
Video 7 VGA 1024i 256K/512K	169/219
ATI VGA w/256K/512K	209/259
NEC Graphics Engine 256K	899
Cardinal VGA 100/200	79/89
Cardinal VGA 300/400	99
Cardinal VGA 500/600	125/129
Cardinal VGA 700 w/512K	139

TAPE DRIVES

Everex Excel 60F	245
Everex 60 mb int./ext. Teac	595/699
Everex 60 mb int./ext. Wangtech	679/789
Archive 40 mb int./ext.	249/409
Archives FT 60 int. or ext. w/card.	589
COLORADO MEMORY SYSTEMS	Call!

NETWORK

Call for the best pricing on all your networking needs!	
Advanced Network	1959
ARC Net PC 130/130E	99/129
ARC Net Active Hub/Passive Hub	289/79
ARC Net PC 500FS/500WS	305/235
Lantastic 2mb Starter Kit/Adapter	349/145
Lantastic 10mb Ethernet Starter Kit/Adapter	519/249
Level I/Level II	439/1059
NE1000/NE2000	155/189
SFT	2879
Western Digital Ethernet Plus	179
Gateway, 3 Com, Thomas Conrad and Western Digital	Call for Price!

DRIVES

Conner 40/110	249/495
Seagate 20mb w/contr. ST225	239
Seagate 30mb w/contr. ST238	249
Seagate 40mb for AT ST251-1	249
Seagate 80mb ST 4096	469
Ext. Drives for PS/2 360/1.2	169/199
Toshiba 3-1/2" 1.44mb int.	79
Toshiba 5-1/4" 360K int.	75
Toshiba 5-1/4" 1.2mb int.	79
Bernoulli Box II 5-1/4" 20mb int.	1009
20mb ext. w/card	1309
dual 20 mb ext. w/card	1979
44mb internal w/card	1099
Plus Hard Card 20/40	489/549
Plus Hard Card II 80	595
Plus Hard Card 50XL/105XL	389/675
Western Digital IDE 40	239
Maxtor 40 meg IDE	249
SDC High Speed Caching Disk Controllers:	
SCSI w/ok / IDE w/ok	509
ESDI w/ok	539

NICE & MISC.

Keycat II - 101 Keyboard w/Trackball	89
Microsoft Mouse w/windows 3.0	159
Microsoft Mouse w/PC Paintbrush	109
Mousesystems Mouse	89
Logitech Scan Man/Scan Man 256	179/295
Logitech Mouse Man Serial/Bus	69/79
Logitech Track Man Serial/Bus	79/85
Summasketch 12x12/12x18	339/579
The Wave Keyboard	69
Marstek 105 w/Paintbrush and OCR	169
Marstek 800 w/Paintbrush and OCR	209
Marstek 800 for Windows	229
Marstek Color Artist	499
Epson ES 300 C Color Scanner	1450
PC Mouse III	79
White Mouse Serial/Bus	55/65
Omni Mouse II Serial/Bus	39/55
PC Trackball Serial/Bus	49/65
MSC Color Hand Scanner	535
Dest Personal Scanner	695
Sun Moon Star CD Rom	819

SOFTWARE

Aldus PageMaker	\$495
Carbon Copy	110
Clarion ProDeveloper	449
Clipper 5.0	499
Corel Draw	385
Dbase IV	489
Enable O/A	415
Finesse V3.1	110
Foxbase	195
Freelance Plus	325
Framework III	455
Harvard Graphics	299
IBM DisplayWrite V	229
Lotus 2.01/2.2/3.1	299/345/399
Lotus Symphony	489
Manager's Organizer	149
Microsoft Word	219
Microsoft Word for Windows	319
Microsoft Excel	299
Multimate 4.0	249
Peachtree III Complete	139
Paradox V3.5	489
Procom Plus	64
Q & A	225
Quatro Pro	315
Rbase V3.1	485
Super Calc V	299
Ventura Desktop Publ.	529
Word Perfect 5.1	249
WordStar 5.5/6.0	179/199
WordStar 2000 +	279
WordStar Legacy	249
WordStar Laptop	149
Peachtree Double Bonus	219
Microsoft Windows 3.0	109

Lots of other software available and all the prices are byte size!

MULTI FUNCTION BOARDS

AST 286 6 Pack w/OK/w/1mb	105/169
AST 6 Pack Plus w/384K	145
AST 5251-11 Enhanced	499
AST Rampage 286	319
Everex Mini Magic w/o K	75
Intel Above Board w/512K	345
Intel Above Board PS w/512K	375
Intel Inboard 386 w/adapter	985
Intel Inboard 386 for PC w/1 mb	510
Intel Above Board II Plus	299
Intel Above Board +8 w/2mb	499
Intel Satisfaction	419
Irma Board III	415
Logical Connection 256/512K	369/445
Orchid Ramquest 16/32 w/o K	289
Orchid Ramquest 8-16 w/1 meg	129
Orchid Tiny Turbo 286	205
Orchid Tiny Turbo Extra	249
Orchid Tiny Turbo AT	359
Expanz	159

MATH CO-PROCESSORS

INTEL			
8087-3	79	387-25	505
8087-2	129	387-33	579
387-16	319	387-SX	319
387-20	405	287 XL/XLT	205
CYRIX			
387-16	275	387-33	476
387-20	309	387-SX16	245
387-25	390	387-SX20	259
1mb Simm 80NS			
256K Simm 80NS			
Simm, Dram and Sipp			
Call			
ULSI			
387SX-16/20/25	235/259/299	387-25	359
387-16/20	249/285	387-33	419

MONITORS

Get The Picture!	
NEC	
MULTISYNC	
2A/3D	499/659
4D/5D	989/2350
PANASONIC	
1381/1391	389/499
SAMSUNG	
Flat White ML 4571	135
14" VGA Color CVJ 4891	335
MAGNAVOX	
9CM082	335
LEADING EDGE	
31 VGA Color	309
CTX	
28 Super VGA Color (#5468)	
1024 x 768	359

All prices are cash prices! Retail outlet may have slightly higher prices.

SALES HOT LINE
1.800.438.6039

Shipping Information and
International Despatch: 1.404.260.7364
FAX: 1.404.260.7258

WE ACCEPT



BULLDOG
COMPUTER PRODUCTS

400 Industrial Park Drive
Ft. Worth, Georgia 30809
HOURS: Monday thru Friday 8:30 a.m. to 7:30 p.m.
Saturday 9:00 a.m. to 4:00 p.m.

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** ★★

IBM 6450604 • 2Meg • **113.00**
Compaq 113634-001 386s • 4Meg Bd. • **295.00**
Compaq 113132-001 • 4Meg Mod. • **219.00**
Intel 80387-16 • Co-Processor • **239.00**
Boca AT Plus with 2Meg • **209.00**

LASER PRINTER MEMORY
See Below!

Individual D-RAM Chips

	MEMORY FOR IBM & APPLE				
	60NS	70NS	80NS	100NS	150NS
1Meg x 1	5.90	5.40	5.20	4.95	4.90
4Meg x 1	—	—	39.00	—	—
1Meg x 4	—	—	59.00	—	—
1Meg x 4 (Zip Pack)	—	—	39.00	—	—
256 x 4	6.00	5.90	5.80	5.60	5.50
256 x 1	3.00	2.80	2.20	1.90	1.80
64 x 4	—	—	3.25	3.00	—
64 x 1	—	—	—	1.50	1.40

SIMM MODULES (Add \$5⁰⁰ for SIPP)

	60NS	70NS	80NS	100NS	120NS	150NS
1Meg x 9 (IBM)	60.00	54.00	52.00	51.00	50.00	—
1Meg x 8 (Apple)	58.00	52.00	50.00	49.00	48.00	—
4Meg x 9 (IBM)	—	—	229.00	—	—	—
256 x 9 (IBM)	23.00	21.00	18.00	17.00	16.00	15.00

INTEL Math Chips

8087	75.00	80287-XLT	209.00
8087-2	104.00	(50% faster)	—
8087-1	159.00	80387-16	239.00
80287-6	89.00	80387-16SX	299.00
80287-8	125.00	80387-20	355.00
80C287A	219.00	80387-20SX	379.00
80287-10	149.00	80387-25	455.00
80287-XL (50% faster)	205.00	80387-33	555.00

IIT ADVANCED MATH CO-PROCESSOR

• 2-3 times faster than Intel • Plug & object code compat. w/Intel.
• **5 Year Warranty**
2C87-8MHz — 129.00 2C87-12.5MHz — 179.00
2C87-10MHz — 155.00 2C87-20MHz — 249.00

CYRIX FASMATH PROCESSOR

• Programs executed up to 3X faster • Plug & object code compat. w/Intel
• **PC Week** rated it #1 over all math chips
• **5 Year Warranty**
83D87-16MHz — 270.00 83D87-33MHz — 469.00
83D87-20MHz — 299.00 83S87-16SX Ver. — 265.00
83D87-25MHz — 379.00 83S87-20SX Ver. — 290.00

AST MEMORY MODULES

MODEL#	AMT. UPGRADED	AST PART#	PRICE
Premium 386/25, 16 SX	1Meg	500718-001	69.00
Premium 386/33	1Meg	500718-002	75.00
Premium 486/25T, 25TE,	1Meg	500780-003 WP8	89.00
25, 25E, 33T	4Meg	500780-004 WP8	365.00
	8Meg	500780-001 WPB	695.00

ZENITH MEMORY UPGRADES

MODEL#	AMT. UPGRADED	ZENITH PART#	PRICE
Z386/33	1Meg	ZA3800ME	105.00
	2Meg	ZA3800MG	169.00
Z386/25,20	1Meg	ZA3600ME	105.00
	2Meg	ZA3800MG	169.00
	4Meg	ZA3800MK	349.00
Z248, Z286LP Z386SX	2Meg	Z-605-1 modules	199.00
Turbo Sport 386, 386E	1Meg	ZA3034ME	249.00

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 OOS, OS/2, LIM/EMS & EEMS
Versatile Split Memory Addressing
Operates with CPU Speeds to 33 MHz
Supports Oesquiv, Multitask operations
OK — \$119.00 2 Meg — \$209.00
4 Meg — \$299.00 8 Meg — \$485.00
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 8D.	119.00
6450375 (1Meg)	80-041	69.00
6450379 (2Meg)	80-111, 311	159.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	309.00
6450603 (1Meg)	50Z, 55SX, 70-E61, 0-61, 70-121, P-70	72.00
6450604 (2Meg)	50Z, 55SX, 55LS, 70-E61, 0-61, 70-121, P-70	113.00
6450605 (1-32Meg)	603, 604, 30F2933, 8Meg. Mod.	309.00
	Module for our 605 EXP. BD "It Works"	695.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	123.00
78X8955 (128K)	25	35.00
30F2933 (4Meg)	65SX, 55SX, MTHR BD., 34F3077, 3453011, 605 EXP. BD.	309.00
1383679 (512K)	P/S1	65.00
(2Meg)	P/S1	179.00
6450092 (2Meg)	90, 95, P-75	169.00
6450128 (4Meg)	90, 95, P-75	429.00

Other PS/2 models not shown please call for quote
Please call for any questions on these SIMM Modules

COMPAQ MEMORY MODULES

MODEL#	AMT. UPGRADED	CMPO PART#	PRICE
System Pro	2Meg Module	115144-001	129.00
	8Meg Module	116561-001	879.00
	32Meg Module	116568-001	4800.00
DeskPro 486/25	2Meg Module	115144-001	129.00
	8Meg Module	116561-001	879.00
DeskPro 386/33	2Meg Module	115144-001	129.00
Sys. Pro, DP 386/33,	Expansion 8d	116569-001	499.00
DP 486/25	1Meg Module	113131-001	69.00
DeskPro 386/25	4Meg Module	113132-001	219.00
	1Meg Module	113131-001	69.00
DeskPro 386/20	4Meg Module	113132-001	219.00
	1Meg Exp 8d	113633-001	149.00
DeskPro 386S	4Meg Exp 8d	113634-001	295.00
	1Meg Module	113646-001	85.00
	4Meg Module	112534-001	239.00
DeskPro 386/20E	1Meg Exp 8d	113644-001	149.00
DeskPro 386/25E	4Meg Exp 8d	113645-001	295.00
	1Meg Module	113131-001	69.00
	4Meg Module	113132-001	219.00
DeskPro 286N	1Meg Module	118688-001	99.00
	4Meg Module	118690-001	395.00
DeskPro 386N	1Meg Module	118688-001	99.00
	2Meg Module	118689-001	149.00
	4Meg Module	118690-001	395.00
DeskPro 386/16	1Meg Kit	108071-001	129.00
	4Meg Kit	108072-001	349.00
	1-2Meg Exp 8d	108069-001	309.00
	4-8Meg Exp 8d	108070-001	829.00
DeskPro 286E	1Meg Module	113131-001	69.00
	4Meg Module	113132-001	219.00
DeskPro 286	512K Kit	113012-001	79.00

**MEMORY UPGRADES FOR
COMPAQ PORTABLES
AND LAPTOPS**

Portable 386	1Meg Kit	107651-001	159.00
	4Meg Exp 8d	107653-001	699.00
	4Meg Daght. 8d	107654-001	699.00
Portable III	2Meg Kit	107332-001	129.00
Compaq SLT/286	1Meg Module	110235-001	149.00
	4Meg Module	110237-001	599.00
Compaq SLT/386	1Meg Module	118303-001	209.00
	2Meg Module	118304-001	389.00
	4Meg Module	118305-001	679.00
Compaq Lte 286	1Meg 8d	117081-001	109.00
	2Meg 8d	117081-002	179.00
Compaq Lte 386S20	4Meg Module	121125-002	939.00

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.



20950 S. Normandie, Unit M • Torrance, CA 90502

LAPTOP SPECIALS

Toshiba 2000SX	AST Premium Exec.	Compaq LTE 386S20
4Meg	386SX20 — 4Meg	4Meg
549.00	549.00	939.00

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	AMT UPGRADED	TOSHIBA PART #	L.A. TRADE'S COMPT. PRICE
T1000SE/XE/LE	1Meg	PC14-PA8311U	139.00
	2Meg	PC14-PA8312U	219.00
T1200XE	2Meg	PC13-PA8306U	139.00
T1600	2Meg	PC8-PA8302U	139.00
T2000SX	1Meg	PC14-PA8316U	159.00
	2Meg	PC14-PA8317U	249.00
T2000SX/T1000LE	4Meg	PC14-PA8314U	549.00
	8Meg	PC14-PA8315U	795.00
T3100E	2Meg	PC9-PA8340UT	139.00
T3100SX	2Meg	PC15-PA8308U	139.00
	4Meg	PC15-PA8310U	319.00
T3200	3Meg	PC6-PA7137U	229.00
T3200SX	2Meg	PC12-PA8307U	139.00
	4Meg	PC12-PA8309U	319.00
T3200SXC	2Meg	PC19-PA8318U	159.00
	4Meg	PC19-PA8319U	339.00
T5100	2Meg	PC7-PA8301U	139.00
T5200, 5200C	2Meg	PC10-PA8304U	139.00
	8Meg	PC10-PA8313U	839.00
T8500	2Meg	PC10-PA8304U	139.00
	8Meg	PC10-PA8313U	839.00

BRANDNAME LAPTOP MEMORY

Zenith Supersport 286	1Meg	ZA-180-66	129.00
NEC Prospeed 286	1Meg	PC21-21	179.00
NEC Prospeed 286	4Meg	PC21-22	549.00
NEC Prospeed 386	2Meg	PC31-21	239.00
NEC Prospeed 386	8Meg	PC31-22	899.00
Sharp PC-6220	1Meg	CE 6218	179.00
TI Travelmate 2000	1Meg	2568034-0001	169.00
Zenith Super Sport —			
286, 286E	1Meg	ZA-180-66	129.00
286E, SX	2Meg	ZA-180-64	209.00
SX Alpha	2Meg	ZA-180-86	209.00
Everex Tempo LX	2Meg	PCA 00053-00	199.00
AST Notebook	1Meg	500814-001	139.00
AST Notebook	4Meg	500814-003	399.00
AST Premium Exec		386SX20	549.00

LASER PRINTER MEMORY UPGRADES

	HP Laser Jet	PAN	PAN	Epson 6000,	OKI
	II, IID	III, IIID, IIP	4420/4450I	4450	Action, Tosh. 400
1Meg	89.00	92.00	119.00	179.00	129.00
2Meg	120.00	129.00	169.00	—	189.00
4Meg	199.00	209.00	279.00	—	299.00

Other Laser Memory Available: QMS, TI, Konica

IBM LASER PRINTER, Model 4019

1Meg: 1039136	\$99	2Meg: 1039137	\$145
3.5Meg: 1038675			\$229

H.P. COMPATIBLE FONT CARTRIDGE

Turbo 25 contains every English language font in Pacific Data's current
25 CARTRIDGES IN ONE!™ Cartridge, plus 2 Headline Fonts with 6 additional
U.S. Fonts — Made by UDP Data Products 139.00
TurboScript™ gives you 47 scalable fonts in any point size. 12 more than
Pacific Data or HP Adobe Postscript, supports the very latest Adobe Type
1 Font Formats — Made by UDP Data Products 289.00

NO SURCHARGE FOR MASTERCARD, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000, GOVERNMENT & INSTITUTIONS. Price & availability subject to change. California orders add 7% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee. (Memory chips not installed in boards.) We accept international orders shipped via UPS Air, APO, FPO orders welcome. All credit card charges verified for fraudulent use. **SORRY, NO REFUNDS AFTER 30 DAYS — EXCHANGES ONLY.** We accept MC, VISA, Discover, AE prepaid orders, purchase orders, wire transfer COD (cashiers check) orders, cash & cashiers checks

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
USING OK — \$239.00 2 Meg — \$359.00
1 MEG x 9-10 4 Meg — \$469.00 8 Meg — \$677.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC, XT, 64K 129.00 — with 384K 159.00

213-782-2880
FAX: 213-782-0240

CALL
TOLL FREE

1-800-433-3726
(US and Canada)

ESTAB. Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
1985 Sat. 10:00 a.m. to 12:00 noon

Paradise

ORDER TOLL FREE: U.S. & Canada - 1 800 348-4PCP (4727)

Japan - 0031-11-1865

In Hawaii Australia - 0014-800-126-943

(808) 875-1100 FAX - 1 (808) 875-0061

Shipping & Technical Assistance - 1 (808) 875-1108

COMPUTERS

IBM PS/2

Laptop	Call
PS/2 Mod 30-286 30 Mb	1685
PS/2 Mod 50Z 30Mb/60 Mb	1650/1790
PS/2 Mod 55SX 30/60 Mb	2415/2600
PS/2 Mod 65SX 60/120 Mb	3550/3725
PS/2 Mod 70 60/120/21	2915/3786/4800
PS/2 Mod 90/95-486	Call
PS/2 Mod 75	Call

COMPAQ

LTE 286 20/40 Mb	2420/2750
LTE 386 SX 30/60	4575/4924
SLT 386 60 Mb	4722
DPro 386S 20 Mod 1/40 Mb	1990/2259
DPro 386E 40/110 Mb	3485/3756
DPro 386/25E (All Models)	Call
DPro 386/33 84 Mb	7299

TEXAS INSTRUMENTS

TI Travelmate 2000/3000	Call
-------------------------	------

AST

Executive 286/386	2125/2582
Premium 286 512k	1047
Premium 386 16/25/33	Call
Premium 486	Call

TOSHIBA

T1000 SE/XE/LE	956/1376/1599
T1200 XE 20/40 Mb	1970/Call
T2000 SX 20/40 Mb	Call
T3100 SX 40/80 Mb	3744/4241
T3200 SX 40/120 Mb	3866/Call
T3200 SX Color	6395
T5200 40/100/200/Color	4488/4865/5302/5924

DFI

286-12 Mhz	539
386-16 Mhz	839
386 SX-20 Mhz	965
386-25 Mhz	1215
386-33 Mhz	1590
486-25 Mhz	3039

1-year on-site warranty

Call for Custom Configurations

PANASONIC

170/270	1439/1939
---------	-----------

MONITORS & TERMINALS

MONO/COLOR

IBM 8503/8512	227/459
Samsung 12"/14" Amber	85/115
Samsung RGB	200

VGA/EGA MONITORS

IBM 8506/07/08	899/629/928
IBM 8513/14/15	525/1150/719
Magnavox VGA	259
Mitsubishi EGA	329
Mitsubishi 1381/HL6915	485/1950

NEC 2A/3D	460/639
NEC 4D/5D	969/2369
Packard Bell 8531/8541	275/290
Panasonic 1381/1391	429/499
Samsung VGA/4581/4592	344/430/309
Sony CPD 1304	660
Zenith 1492	595

VIDEO BOARDS

ATI VGA Wonder 256/512+	199/240
Everex EGA	89
Hercules GB 1024/1024+2	659/959
NEC Graphics Engine	Call
Orchid ProDesigner II 1 Mb	339
Paradise VGA/+16	122/145
Paradise VGA 1024	175/219
Color/Mono/w Parallel Card	45
VGA 1024 256/512	124/149

PRINTERS

CANON	
BJ10E	299

CITIZEN

120D/GSX140/GSX145	135/295/399
HSP500/550	301/421

DICONIX 150

P/S	343/347
-----	---------

EPSON

LX 810	173	LQ 1010	369
FX 850	289	LQ 1050	579
FX 1050	399	LQ 2550	849
LQ 510	259	EPL 7000	Call
LQ 850	435	EPL 7500	Call
LQ 860	549		

HEWLETT-PACKARD

LaserJet 3/3D	1569/2499
LaserJet 3SI	3750
LaserJet 2P	879
DeskJet 500	489
ScanJet +	1069
PaintJet XL	955/1680

FONTS & MEMORY

Pacific Data 25-1	278
Pacific Data 1/2/4 Mb	129/169/265
Pacific Connect Laser Share	299
Pacific Page PE	349
Pacific Data Plotter in a Ctg	239
LaserJet Memory 1/2/4 Mb	119/159/245
Compaq 1/4 Mb Modules	118/383
IBM/Toshiba Memory	Call
CPI Jet Page/Superset 425+	299/259

IBM

4019 E/4019 Laser	1026/1595
Printer XL24E/X24E	765/595

NEC

P-3200	27
6200/6300	476/645
Silent Writer 290	2450

Quality at the best prices under the sun.



Specializing in International Orders

Silent Writer 2 Mod 90	1595
------------------------	------

OKIDATA

ML 182	228
ML 320/321	324/451
ML 380	289
ML 390+/391+	449/613
ML 393+/393+ color	968/1055
Okilaser 400/800	639/965
Okilaser 820/840	1276/1949

PANASONIC

1123	Call
1124/1124i	269/329
1624/1654/1695	379/619/410
1180/1191	149/239
4420/4450/4455	869/1244/2099

TERMINALS

Wyse 50/60	375/300
Wyse 30/85	310/339
Wyse 150/185	289/379

SOFTWARE

Aldus Pagemaker 4.0	499
Ashton Tate dBase III+/TV	389/479
Borland Quattro Pro.2.0	295
Carbon Copy	105
Clarion Prof. Developer	450
Compaq/IBM DOS	Call
Harvard Graphics 2.3	289
IBM Displaywrite 5.0	249
Lotus 1-2-3 2.2/3.1	349/399
Microsoft All Titles-Lowest Price	
Microsoft Windows 3.0	93
Norton Adv Util 5.0	110
Procomm Plus	62
Quicken 4.0	39
Ventura Publisher V 3.0	479
WordPerfect 5.1	245

400 Additional Titles In Stock

PLOTTERS AND DIGITIZERS

HEWLETT-PACKARD

7475A/7550A	1349/2645
7570A/7575A	2699/3500
7576EXL	4599

SUMMAGRAPHICS

Summasketch 2 12X12/12X18	335/565
---------------------------	---------

CALCOMP

1023/25	3250/4030
12X12/12X18	275/497

MULTIFUNCTION BOARDS/CARDS/CHIPS

IBM 5250 Emulation	675
AST 5251 Emulation	499
AST 6-Pack w/384 k	145
Intel AboveBoard Plus	329
Intel InBoard PC	492
Cyrix Fasmath	Call
80287-XL	189

80387-SX/16/20/25/33	290/320/378/462/562
----------------------	---------------------

MODEMS & COMMUNICATIONS

ATI 9600 ETC	484
CPI 2400 Internal	79
CPI 2400 Ext Fax	123
CPI 2400 Ext MNP	154
Everex 2400i/2400 MNP	99/164
Hayes 2400/2400B	319/218
Hayes Ultra 96	785
Pocket Modem	99
Intel 2400/9600	217/499
MegaHertz Laptop Modems	Call
Practical Perif. 2400/9600	132/485
US Robotics IIST/Dual	585/809

FAX MACHINES

Sharp FO 216/240/334	538/649/699
Intel Satisfaction	385
JT Fax 9600 B	339

MICE

DFI 200/400	32/42
Logitech C9/Bus/PS2	82
Logitech Mouseman	72
Logitech ScanmanPC/PS2	169/240
Microsoft Mice/+Windows 3.0	103/145

DRIVES & TAPES

Colorado DJ10	239
Conner 40/100	299/499
ST 225/238	189/192
ST 157A/251-1	229/239
ST 1126A/1144A/1239A	449/630/795
ST 4096/4182E	530/925
Plus II XL50/105	388/638
Mountain	Call
Toshiba External 3.5/5.25"	Lowest
Panasonic LF5010 Worm	2215
Procom Ext 5.25	199
Procom Ext PS2 Hard Drives	Call
Procom Laptop Floppy	Call

NETWORK

Call us For The Best Prices Anywhere

MISC & ACCESSORIES

Keytronics KB101+	89
Kensington Masterpiece/Plus	85/95
AB Switch Box	27
TrippLite 450/1200/2000	296/618/1175
4 outlet surge	39

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 890553 Dallas, TX 75389-0553

Circle 220 on reader service card



1 STOP MICRO



WE'LL MEET OR BEAT ANY ADVERTISED PRICE!

60 Day Money Back Guarantee • 2 Year Parts & Labor • Free Shipping To/From On Any Product Serviced By Us

HARD DRIVES

Seagate

Model Name	Description	
ST151 (MFM)	40MB 24ms 3.5"	\$ 298
ST157R-1 (RLL)	49MB 28ms 3.5"	238
ST251-1 (MFM)	42MB 28mshh	228
ST4096 (MFM)	80MB 28msfh	528
ST4144R (RLL)	122MB 28msfh	558
ST157A (IDE)	44MB 28ms 3.5"	218
ST1102A (IDE)	84MB 20mshh	428
ST1144A (IDE)	125MB 20mshh	488
ST1162A (IDE)	143MB 15ms 3.5"	658
ST1239A (IDE)	211MB 15ms 3.5"	798
ST2274A (IDE)	193MB 16mshh	1,198
ST2383A (IDE)	338MB 16mshh	1,300
ST2106E (ESDI)	94MB 18mshh	618
ST2182E (ESDI)	160MB 15mshh	978
ST2383E (ESDI)	337MB 15mshh	1,318
ST4182E (ESDI)	160MB 16.5msfh	848
ST4383E (ESDI)	328MB 18msfh	1,308
ST4442E (ESDI)	373MB 16msfh	1,439
ST4766E (ESDI)	660MB 15.5msfh	1,898

Conner

CP3024 (IDE)	21MB 27ms 3.5"	\$ 264
CP3000 (IDE)	42MB 28ms 3.5"	254
CP3044 (IDE)	42MB 25ms 3.5"	274
CP3184 (IDE)	84MB 25ms 3.5"	438
CP3104 (IDE)	104MB 25ms 3.5"	498
CP30104 (IDE)	120MB 17ms 3.5"	568
CP3204 (IDE)	209MB 16ms 3.5"	784

Maxtor

XT4170E (ESDI)	157MB 14msfh	\$ 875
XT4230E (ESDI)	203MB 16msfh	1,149
XT4380E (ESDI)	338MB 16msfh	1,260
XT8380E (ESDI)	360MB 14msfh	1,285
XT8760E (ESDI)	676MB 16msfh	1,885
8051A (IDE)	42MB 28ms 3.5"	299
7040A (IDE)	42MB 19ms 3.5"	319
7080A (IDE)	81MB 19ms 3.5"	419
LXT200A (IDE)	207MB 15ms 3.5"	839

FLOPPY DRIVES

TEAC

1.44MB 3.5" w/kit	\$ 69
1.2MB 5.25"	69
360K 5.25"	59

POWER SUPPLIES

Super quiet! Super cool!

Desktop	
150/165 Watt XT	\$ 38
200 Watt AT	Fits Baby AT 48
230 Watt AT	Fits Full Size 55

Tower	
230 Watt AT	Fits Full Size \$ 55
230 Watt XT/AT	Fits Mini Tower 55

KEYBOARDS/MICE

2001 101-Key Enhanced Click Style w/Cover	\$ 55
Logitech C9 Serial/Bus Mouse	69/79
Genius Serial Mouse	23

12MHz 286VGA

Desktop 4 Bay Case 14" 640x480 Color Monitor
1 MB RAM 1 Parallel & 2 Serial Ports
1.2MB 5.25" Drive 101 Key Keyboard
40MB 17msec IDE Drive
16 Bit VGA (Upgradable to 512K)

\$ 940

20MHz 386SX VGA

Desktop 4 Bay Case 14" 1024x768 Color Monitor
2 MB RAM 1 Parallel & 2 Serial Ports
1.2MB 5.25" Drive 101 Key Keyboard
40MB 17msec IDE Drive
16 Bit VGA w/512K

\$1,700

16MHz 386SX VGA

Desktop 4 Bay Case 14" 640x480 Color Monitor
2 MB RAM 1 Parallel & 2 Serial Ports
1.2MB 5.25" Drive 101 Key Keyboard
40MB 17msec IDE Drive
16 Bit VGA (Upgradable to 512K)

\$1,500

33MHz 386VGA

Desktop 4 Bay Case 14" 1024x768 Color Monitor
2 MB RAM 1 Parallel & 2 Serial Ports
1.2MB 5.25" Drive 101 Key Keyboard
40MB 17msec IDE Drive
16 Bit VGA w/512K

\$2,495

VIDEO GRAPHICS

Video Boards Priced Fully Populated!

MONO	Monographics w/PrinterPort	\$ 29
MONO/CGA	Monographics and CGA on w/PrinterPort	29
VGA	AT/XT 256Kbw/Software	79
SVGA 512k	AT/XT 16-bit VGA Card! 100% VGA Compatible 1024x768x16/640x480x256	89
SVGA 1Mb	AT/XT 1Mb VGA Card! 1024x768 256 Colors, Interlaced or Non-Interlaced in all resolutions!	149

MONITORS

NEC

Multisync 2A VGA	\$ 460
Multisync 3D VGA	480
Multisync 4D VGA	995
Multisync 5D VGA	2,260

Samsung

MA-2565 12" Mono TTL	\$ 75
CJ-4681 14" Color VGA 0.31mm	345
MZ-4571 14" Mono White TTL	145
ML-4571 14" Mono White VGA	175

Sony

CPD1320	\$ 465
CPD1302	590
CPD1304	625
GVM2000	1,455

DISK CONTROLLERS

Western Digital

1006VSR2 (RLL) AT - 1:1 - 2 Hard/2 Floppy	\$ 99
1006VMM2 (MFM) AT - 1:1 - 2 Hard/2 Floppy	75
XTGEN 2Plus (MFM) XT Card - Up to 2 Hard Disks	40
1004A27X (RLL) XT Card - Up to 2 Hard Disks	49

IDE Disk Controllers

2 Hard/2 Floppy	\$ 28
2 Hard/4 Floppy	38
2 Hard/2 Floppy w/1 Parallel, 2 Serial, and 1 Game!	48

Floppy Controllers

XT/AT High Density	Up to 4 Hi-Density Floppies! 33
XT/AT High Density	Up to 2 Hi-Density Floppies! 29

PRINTERS

Hewlett Packard

Wematch any price!

Laser Series III	CALL
Laser III D	CALL
Laser II P	CALL
DeskJet 500	CALL

Citizen

1200/1800	CALL
GSX-140/200GX	CALL
HSP-500/550	CALL
GSX145	CALL

LAPTOPS

Toshiba

1000	\$ 675
1000SE	CALL
1000XE	CALL
1200HB	CALL
1200XE	CALL
1600/20/40	CALL
3100SX40/80	CALL
3100E40	CALL
3200/3200SX	CALL
520040/100	CALL

MOTHERBOARDS

Memory and CPU sold separately.

386-33Mhz Cache	32-bit Power w/64K Cache!
Full size board expandable to 16 Megabytes of Memory!	\$ 439
386-25Mhz Cache	32-bit Power w/64K Cache!
Baby sized motherboard expandable to 8 Meg	359
386-25Mhz	Baby sized 32-bit board! Up to 8 Megas on Board 244
386SX-16Mhz	Up to 8 Meg - Baby sized 350
286-12Mhz Baby AT	Baby sized - Up to 4 Meg 108
8088-10Mhz Baby XT	Up to 640K - 8 Slots 53
BareBone Special ADD \$100 for Desktop Case w/ 200W Power Supply!	

CASES

Desktop Cases

Baby Size AT	High quality! 5-Bay Case \$ 50
Full Size AT	5-Bay Case 52

Tower Cases

Mini-Tower	w/200WPS 295
Full-Tower	2/230WPS and Digital Readout! 195

MULTI I/O

AT Card	2 Serial, 1 Parallel, 1 Game \$ 20
XT Card	1 Serial, 1 Parallel, 1 Game, Clock, Calendar, and Battery 27
XT Plus	1 Serial Port, 1 Parallel Port, 1 Game Port, Clock and Calendar, w/Battery. Built in Hi-Density FDC does 2 Floppies (Any Combo!) 32
Modem	External 2400 Baud 79

TERMS AND CONDITIONS: NO SURCHARGE FOR MC OR VISA. TERMS: MC - VISA - COD CASH - AMEX ADD 4% PURCHASE ORDERS FROM QUALIFIED FIRMS, 20% RESTOCKING FEE ON NON-DEFECTIVE RETURNS. PRICES SUBJECT TO CHANGE.



CALL NOW!
1-800-876-1786

Circle 209 on reader service card

(818) 782-669
Fax (818) 782-320
Store Hours: Monday to Friday
7:30—5:00 Pacific Standard Time

Order Toll Free (USA/Canada)
(800) 628-4517

International Orders
(301) 899-1118

24-HR Worldwide FAX Orders
(301) 899-1888

LPG

& GRAPHICS

**The
Desktop
Publishing
Experts**

The Nation's Largest Dealer of Desktop Publishing & Multimedia Products ... Hours: M-F: 8:30 - 5 pm Eastern Time, 24-hr FAX Order Line

Desktop Publishing s/w

Page Layout & Composition	MAC	\$315
Aldus PrePrint	MAC	685
FrameMaker	MAC	CALL
PageMaker v4.0	PC	485
PageMaker v4.0	MAC	478
Quark Xpress	PC	508
Ventura Publisher Gold v3.0	MAC	485
Ventura Publisher Gold for Macintosh	MAC	485
Illustration & Graphics		
Adobe Illustrator v3.0 w/ATM	MAC	\$338
Arts & Letters Graphics Editor	PC	422
Corel Draw! v2.0	PC	378
Freehand v3.0 by Aldus	MAC	385
Micrografx Designer	PC	445

Presentation Software

Aldus Persuasion	MAC	\$315
Aldus Persuasion for Windows	PC	CALL
Freelance Plus by Lotus	PC	339
Harvard Graphics	PC	308
PowerPoint for Windows	PC	329
Powerpoint	MAC	245

Fonts & Font Utilities

ADOBE PostScript Fonts for PC & MAC

The LPG Guarantee: We will beat any published price on Adobe PostScript fonts. LPG is an authorized Adobe dealer. ***CALL**

Adobe Type Manager	MAC/PC	\$58
Adobe Type Reunion	MAC	38
Adobe Type Align	MAC/PC	57
FontSpace (bitmap font compression)	PC	58
Publisher's Typefoundry by Z-Soft	PC	315
Soft Type by Z-Soft	PC	118

Multimedia & "Print-to-Video"

Authoring Software		
ASK-ME System 2000 by ICS	PC	\$375
IBM Storyboard Live v1.1	PC	295
Macromind Director 2.0	MAC	579
MediaMaker by Macromind	MAC	469
Computer Animation & Modeling		
Autodesk Animator	PC	\$239
Grasp 4.0	PC	209
FilmMaker by Paracomp	MAC	459
Swivel 3D Professional	MAC	429
Computer Sound Recording & Audio Editing		
Sound Blaster audio card	PC	\$175
Sound Blaster MIDI Bundle	PC	109
Sound Blaster Voice Editor	PC	69

Canon

XAPSHOT Still Video Computer Imaging Kit

Canon's XapShot still video camera lets you photograph anything and immediately transfer the image to a TV or into your computer. Use it to add pictures to your DTP and multimedia productions. It's as simple as any 35mm auto-exposure camera. Images of the Future. The computer imaging kit comes with camera, accessory kit & frame grabber—everything you need. Let's you get CREATIVE !!!

XAPSHDT Color Imaging Kit for PC or MAC \$899
XAPSHDT Lens attachments, disks, batteries CALL
RC-470, FV-540, RV-301, RP-420 & other units .. CALL

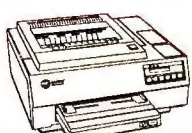
AUTHORIZED CANON DEALER

NTSC Frame Grabbers / NTSC Digitizers		
Computer Eyes Color Professional	MAC / PC	\$379
Jovian SuperVIA (color video digitizer)	PC	655
Mass Microsystems QuickImage 24	MAC	739
VIDED LINK: Framebuffer	PC	499
Willow Publisher's Color	PC	CALL
NTSC Encoders / NTSC Genlock w/VGA Signals		
Willow VGA-TV GE/D (w/ Video Titler)	PC	\$645
Willow VIN Plus (external NTSC encoder)	PC	379
Video Titling Software - NTSC Broadcast-Quality Titling		
Video Titler by Entropy Engineering	PC	\$375

Hercules Graphics Station

High Definition Graphics and Life-Like Color
Get the best 24-bit PC color video card. 16.7 million colors with resolution up to 1024 x 768. Uses the TI 34010 60MHz graphics co-processor. Comes w/ Windows 3.0 driver, 1-MB VRAM, 2-year warranty.
1-MB version \$675 3-MB version \$985

NewGen Turbo PS/480 800 dpi PostScript Laser



Nearly four times the resolution & up to 15 times faster than 300-dpi PostScript printers. Comes standard with parallel, serial & Appletalk interfaces, 35 PostScript fonts & 5-MB RAM memory. Just plug it in & it's ready to work.

NewGen Turbo PS/480 \$4895
Upgrades & other NewGen printers CALL

TEXAS INSTRUMENTS microLaser

microLaser PS-17 / PS-35	\$1395 / 1595
microLaser XL PS-17 (16-ppm)	2795
microLaser XL PS-35 (16-ppm)	2995
1-MB SIMM memory upgrade	159

EPSON ES-300C Scanner

24-bit, 16.7 million color scanner, one-pass scanning, 60-600 dpi resolution, 256-grayscale. Comes with scanner and interface. PC version is bundled with Picture Publisher Plus, Image-In Scan, Paint & Plus modules, HALOScan Color, and ColorLab ES-300C software. The MAC version is bundled w/ ColorStudio, ImageStudio & SCAND/DA.

EPSON ES-300C Color Scanner \$1759

Scanning Software & OCR

DCR (Dipical Character Recognition)		
Calera WordScan / WordScan Plus	PC	CALL
DmniPage MAC	MAC	475
OmniPage Professional 386 (NEW!!!)	PC	685
Scanner Software for Image Manipulation		
Adobe PhotoShop	MAC	\$489
Gray F/X by Xerox-Datascopy	PC	295
IMAGE-IN (MS Windows 3.0 Ready)	PC	675
Picture Publisher Plus (color image ed)	PC	425

Picture Publisher from ZSoft. In a class by itself! Displays full color and 256 grayscale in Windows. Best of the Best! Call for price.

ProScan PS-3000 24-bit color scanner

300-dpi resolution, 16.7 million colors, 256 grayscale, one-pass scanning. Comes w/ scanner, interface & Picture Publisher Plus software for PC.

PS-3000	\$995
PS-3000 w/WordScan OCR	1295

MICROTEK Color Scanners

MSF-300Z is bundled w/ PhotoStyler **\$1689**
MSF-300ZS is bundled w/ Photosho8

NEW from Microtek... *CALL
ScanMaker-1850 35-mm slide scanner

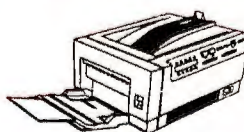
Free with your order ...

The Desktop Set for Windows

To qualify, your invoice must total \$500 or more. One per customer. Valid only while supplies last. \$149 retail value! Please mention this advertisement when ordering.

QMS

PostScript Laser Printers for PC & Macintosh

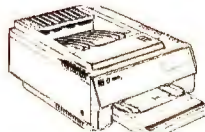


QMS-PS 410

BEST OF 1990 — PC Magazine
1990 Eddy Award — MacUser

- Genuine Adobe® PostScript, 300-dpi
- Emulation Sensing Processor
- 68020 16-MHz processor, 4-ppm
- 45 PostScript fonts built in
- 2-MB RAM standard. Upgradable to 4-MB
- ATM built in for enhanced resolution
- Connectable to 3 computers simultaneously

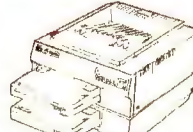
PS-410 \$1985



QMS-PS 815

- Genuine Adobe® PostScript, 300-dpi
- Emulation Sensing Processor
- 68020 16-MHz processor, 8-ppm
- 45 PostScript fonts built in
- 2-MB RAM standard. Upgradable to 8-MB
- ATM built in for enhanced resolution
- 200 sheet letter tray standard. Legal, and envelope trays available.
- Can receive data from three computers simultaneously for printer sharing.

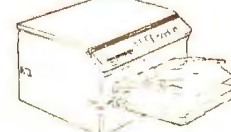
PS-815 \$3799



QMS-PS 825

- Genuine Adobe® PostScript, 300-dpi
- Emulation Sensing Processor
- 68020 20-MHz processor, 8-ppm
- 45 PostScript fonts built in
- 2-MB RAM standard. Upgradable to 8-MB
- ATM built in for enhanced resolution
- Dual 200 sheet letter tray standard. Legal, and envelope trays available.
- Can receive data from three computers simultaneously for printer sharing.

PS-825 \$4699



ColorScript 100 Model 10

- Genuine Adobe® PostScript, 300-dpi
- Pantone Color Certified - full color
- 68020 16-MHz processor
- 35 PostScript fonts built in
- 5-MB RAM standard. Upgradable to 8-MB
- Parallel, serial & Appletalk interfaces

Free with your ColorScript order... 2 free 4-color ink sheet rolls. A \$210 retail value. Please mention this ad. While supplies last.

ColorScript .. \$6599

TRUEPOINT

TruePoint from DP-TEK turns a Canon LBP-4 or HP LaserJet into a true 600 x 600 dpi PostScript-compatible laser! Halftones, line-art and type look photo-typeset. Simple to install. Fully compatible with all PostScript and EPS software.



***CALL**

Video Monitors

MONITERM

Viking/3, full-page monitors for MAC & PC	
Viking 3/91M 20" monitor & controller	CALL
Viking 3/2400M 24" monitor & controller	CALL
Viking 3/72GS 20" grayscale monitor & controller	CALL

NEC

NEC 3D 14" 1024 x 768 color monitor	\$649
NEC 4D 16" 1024 x 768 color monitor	999
NEC 5D 20" 1024 x 768 color monitor	CALL
Multisync Graphics Engine-256 video board	B99

SONY

Sony Trinitron Hi-Res Color Monitors are the sharpest and brightest picture monitors available. Treat yourself to the best. Trinitron monitor aperture size is .25mm. Available for MAC & PC systems. The CPD-1302 can scan at NTSC rates for multimedia uses.

CPD-1302 13" 1024 x 768 color interlaced	\$579
CPD-1304C 13" 1024 x 768 color non-interlaced	699
GVM-2000 21" Multimedia monitor w/ S-Video, A/V and RGB inputs, resolution up to 800 x 600	1999

NEC Silentwriter2 PostScript Laser Printers



- 35 Adobe fonts
- 2-MB RAM memory
- 6-ppm on Model 90
- 12-ppm on Model 990
- Serial, parallel, Appletalk

NEC 90	\$1595
NEC 990	CALL



Printer Upgrades & Supplies

PostScript for your HP LaserJet

Adobe PostScript Cartridge for HP LJ II	\$295
PostScript P.E. v4.0 cartridge for PC & MAC	CALL

HP LaserJet Memory - 5 yr Warranty

1-MB board, upgradable to 2 or 4-MB	\$109
2-MB board, upgradable to 4-MB	179
4-MB board	249

QMS-PS-410 Printer Memory Upgrades

1-MB memory board	\$249
2-MB memory board	329
4-MB memory board	469

Toner Cartridges & Paper Trays

We carry toner, DPC drums, and paper trays for NEC, NewGen, Dkidata, QMS, Texas Instruments, and other laser printers. Call for prices. Toners and other consumables are factory fresh, new, and guaranteed. Accept only the best from LPG

ORDERING INFORMATION

Phone Orders (U.S. & Canada) (800) 628-4517
Phone Orders (International) (301) 899-1118
FAX Orders (24-hr service) (301) 899-1888
Customer Service (301) 899-1118

- > Purchase orders accepted. Call for approval.
- > COD's accepted with certified or cashier's check.
- > No surcharge applied when using your credit card.
- > Your credit card is not charged until we ship.

Mailing address: **Laser Press & Graphics, 4888 Slamp Road, Marlow Heights, MD 20748**
Make checks payable to: **Laser Press & Graphics**. Returns require RMA, call for authorization. We do not guarantee compatibility. We reserve the right to charge a 15% restocking fee. Returns must be in resellable condition. Software is not returnable if opened due to copyright laws.

International Orders our specialty. We use DHL International Air Service



TEXAS INSTRUMENTS

TravelMate 3000 Notebook-Size Portable Computer

Features: • 80386SX 20 MHz Processor
• VGA Display • 8.5" x 11" x 1.8" • Internal
3.5" Floppy Drive • Limited 1 Year Warranty
• Weighs Only 5.7 Pounds

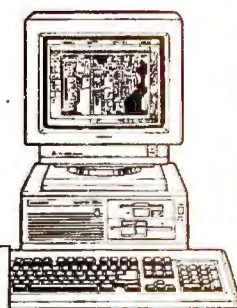
20 MB.....	\$3457.60	40 MB.....	\$3658.60
30 MB.....	\$3534.15	60 MB.....	\$4015.67

WHY PAY RETAIL?

**CDW™ Sells
For Less**
AND SERVICES YOU BETTER

MAXSTATION 386SX Today's Best Computer Value

Features: 80386SX Microprocessor, 16 MHz • 1 MB RAM • 5 Slots 4-16 bit,
1-8 bit • One Parallel Port, One Mouse Port,
One Serial Port • MS-DOS™ 4.01
• Alphaworks integrated productivity
package version 2.0 • 1 Year Limited
Warranty on Parts and Labor • 16 Bit VGA
Card • 80 Meg Hard Drive • 3.5 & 5.25
Floppy Drive



CDW™ Price
\$1289.46

MAGNAVOX

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

NETWORKING PRODUCTS

NOVELL

ETHERNET Interface Connector (NE1000).....	\$158.44
ETHERNET For PS/2 (NE/2).....	251.72
ETHERNET Board (NE2000).....	187.06
ETHERNET Eisa (NE3200).....	756.18

3Com®

3COM 3C503 TP 10 Base T.....	\$293.41
3COM 3C507 Ethernet Card.....	294.37
3COM 3C503 Etherlink.....	199.70
3COM 3C505B Ethernet Plus.....	583.81
3COM 3C523 MCA Ethernet.....	280.46
3COM Ethernet Repeater.....	848.31
3COM 3C501 Ethernet Board.....	322.73

THOMAS-CONRAD CORPORATION

6142 Arcnet 8-Bit.....	\$93.09
6045 Arcnet 16-Bit.....	205.23
6142 TP+ Arcnet.....	103.53
6046 PS/2 Board Arcnet.....	228.16
6150-10 8 Port Smart Hub.....	509.65
6150-11 16 Port Smart Hub.....	691.01
6045 Twisted Pair Plus Ethernet.....	229.07
6046 Twisted Pair PS/2 Plus Ethernet.....	245.11
4045 16/4 Token Ring XT/AT.....	510.23

SMC® ACCESSORIES

3508TP Concentrator AUI.....	\$747.73
3508TP Concentrator BNC.....	897.73
3508TP Concentrator TP.....	727.27
Active Hub 8 Port Twisted Pair.....	365.91

SMC INTERFACE CARDS

3008 Coax 8-Bit Ethernet.....	\$174.62
3016 Coax 16-Bit Ethernet.....	184.88
PC 500FS Coax Arcnet File Server 16-Bit.....	279.31
PC 500WS Coax Arcnet Workstation 16-Bit.....	169.41
PC 550FS TP Arcnet File Server 16-Bit.....	304.60
PC 550WS TP Arcnet Workstation 16-Bit.....	187.21
Eisa 3200 Arcnet Twisted Pair.....	736.08
Eisa 3200 Arcnet Coax.....	718.18

WESTERN DIGITAL

WD 16-Bit 10 Base T Ethernet.....	\$205.44
WD MCA PS/2 10 Base T Ethernet.....	224.42
WD 8-Bit 10 Base T Ethernet.....	199.60
WD Ethernet Plus/A PS/2 Coax.....	247.13
WD Elite 16-Bit Ethernet Plus Coax.....	173.84
WD Elite 8-Bit Ethernet Plus Coax.....	147.06

XIRCOM

Arcnet Pocket Adaptor Coax.....	\$239.20
Arcnet Pocket Adaptor RJ45.....	239.77
Arcnet Pocket Adaptor Thin Coax.....	362.50
Arcnet Pocket Adaptor 10 Base T.....	373.86

ARTISOFT

E143 Ethernet Adaptor Kit.....	\$211.18
LANTastic Ethernet Starter Kit.....	477.27
LANTastic 2Mbps Starter Kit.....	339.53
LANTastic 2Mbps Adaptor.....	140.59

PRACTICAL PERIPHERALS

PRACTICAL PERIPH. P/NET Server.....	1044.50
PRACTICAL PERIPH. P/POD.....	119.10

NETWORKING SOFTWARE



WordPerfect CORPORATION

ASHTON TATE dBase IV LAN Pak.....	\$626.37
BORLAND Paradox Network 5 User.....	614.40
BORLAND Ouattro Pro Network Node.....	193.18
BRIGHTWORKS PS Print.....	243.68
CC Mail Products.....	CALL
DELTA TECH Direct Net Menu.....	149.22
HARVARD GRAPHICS LAN Pak.....	CALL
LOTUS 1-2-3 2.2 Server.....	486.66
LOTUS 1-2-3 2.2 Network Node.....	282.88
LOTUS 1-2-3 3.0 Server.....	563.33
LOTUS 1-2-3 3.0 Network Node.....	349.50
LOTUS Freelance+ Server.....	456.93
LOTUS Symphony Server.....	599.13
MICROIM Rbase V3.1 LAN 6 Users.....	589.00
MICROSOFT Word 5.5 Network Node.....	185.39
MICROSOFT Excel Network Nodes.....	255.60
NANTUCKET Clipper V5.0.....	485.50
NORTON LAMBERT PRODUCTS.....	CALL
NOVELL Network Access Server.....	CALL
ONTRACK Disk Manager For Novell.....	98.65
SOFTWARE PUB. Professional LAN Pak.....	309.13
WORD PERFECT 5.1 Network Node.....	164.11
WORD PERFECT Office File Server V3.0.....	96.31
WORD PERFECT Plan Perfect Server.....	269.21
WORD PERFECT Plan Perfect Add. Modules.....	109.75
WORD PERFECT Office Add. Stations 5PK.....	298.55
WORD PERFECT Draw Perfect Server.....	269.53
WORD PERFECT Draw Perfect Add. Station.....	165.93
XTREE Network.....	209.96

TAPE & FLOPPY DRIVES

IRWIN

IRWIN SX 40-120 MB Internal.....	\$262.40
IRWIN SXE 40-120 MB External.....	349.22
IRWIN 80 SX 80-250 MB Internal.....	374.18
IRWIN 80 SXE 80-250 MB External.....	489.63
IRWIN 2120 120MB Internal.....	507.53
IRWIN 445A 40MB External.....	449.60
IRWIN 485A 80MB External.....	533.70
IRWIN 6151I 250MB Internal.....	879.33
IRWIN 6451E 250MB External.....	1069.77
IRWIN 785SP 80MB External.....	559.79

Call For Controllers, Accessory Kits and Tapes.



Mountain

MOUNTAIN 300MB External Filesafe.....	\$2498.19
MOUNTAIN 2.2 Gigabyte Ext. Tape Drive.....	4427.60
MOUNTAIN 80MB External Backup.....	609.22
MOUNTAIN 80MB Internal Backup.....	484.33
MOUNTAIN 1.2 Gigabyte External Filesafe.....	CALL
MOUNTAIN 40MB Internal Tape Drive.....	249.80
MOUNTAIN 40MB External Tape Drive.....	448.88
MOUNTAIN 250MB Internal Filesafe.....	CALL
MOUNTAIN 250MB External Filesafe.....	CALL

Call For PS/2 Drives, Controllers, Accessory
Kits and Tapes

Manufacturers Genuine Ribbons

Starting at \$1.99

EPSON, OKIDATA, IBM, NEC, PANASONIC & More

PLOTTERS, DIGITIZERS & SCANNERS

CalComp

1023.....	CALL	12 x 12 w/16 But.....	CALL
1025.....	CALL	12 x 18 w/16 But.....	CALL

KURTA

1212IS1.....	\$396.59	12 x 17.....	\$598.35
--------------	----------	--------------	----------

Summagraphics

Summagraphics Summa II 12 x 12.....	\$327.00
Summagraphics Summa II 12 x 18.....	549.00
PANASONIC FX-RS307U 600x600 Scanner.....	945.20
COMPLETE PC Full Page Scanner.....	533.30
EPSON ES300C Color Scanner.....	1199.00

HOUSTON INSTRUMENT

DMP-61.....	\$2610.66	DMP-62.....	\$3457.55
DMP-61DL.....	3194.45	DMP-62DL.....	4178.22

HEWLETT PACKARD

HP7575A.....	\$3388.70
HP7475A.....	1199.00
HP7550A.....	2695.56
HP7570A.....	2729.30
HP7576-EXL.....	4456.04
HP SCANJET +.....	1073.62

CAD MONITORS & CARDS

MITSUBISHI HL6915ATKL.....	\$1959.77
SIGMA Laserview 19" Full Page.....	1619.18
NEC Graphics Engine 256/16.....	892.04 / 599.36
MITSUBISHI HL6935 ATKL 19".....	1798.91
HERCULES GB1024 Graphics Station.....	653.40

FAX & ACCESSORIES

A-B Switching Box /AB X Box.....	\$28.00 / 34.95
BROWN-WAGH Sound Blaster.....	155.95
CH PRODUCTS PS/2 Gamecard III.....	47.25
CH PRODUCTS XT/AT Gamecard III w/Y Cable.....	36.50
CH PRODUCTS Flight Stick.....	47.00
CH PRODUCTS Roller Mouse.....	85.40
CH PRODUCTS Mach III Joystick.....	31.20
COMPLETE PC Communicator.....	409.56
COMPLETE PC Portable Fax.....	307.67
Electronic 4-Way Switchbox Parallel.....	89.50
Electronic 4 to 2 Parallel Box.....	109.50
5TH GEN. Logical Connection 256K/512K.....	CALL / 438.59
INTELLICOM Long Link.....	117.70
KENSINGTON Masterpiece/Plus.....	84.70 / 97.64
KEYTRONICS 5151 IBM or AT & T.....	126.70
KEYTRONICS 101.....	89.50
PRACTICAL PERIPH. 32K Inline Parallel Buffer.....	123.60
PRACTICAL PERIPH. P/LINK Parallel Extender.....	99.50
ROLAND Sound Card /ASYS.....	388.63
SOTA 286I-12 Accelerator.....	260.45
SOTA 386I-16 Accelerator.....	465.70
WESTERN DIGITAL 1:1 1006 MM1.....	79.00
WESTERN DIGITAL 1:1 1006 MM2.....	89.00
XT Power Supply 165 Watt.....	59.00
CompleteFax 9600.....	399.50
SHARP FO-240.....	629.35
JT-Fax 9600.....	527.65
SHARP FO-334.....	735.56

SURGE SUPPRESSORS

CURTIS Ruby Plus.....	\$57.60
DATASHIELD S100.....	59.55
DATASHIELD S85.....	53.95
KENSINGTON MP+.....	96.00
KENSINGTON Remote.....	98.75
TRIPLITE Isobar 4 Outlet.....	44.25
TRIPLITE Isobar 6 Outlet.....	49.10

Call For Current Pricing On Market Fluctuating Products

Memory

256K DRAMS, 1MB DRAMS, 256K Simms, 1MB Simms

Diskettes - Sony, 3M, Maxell, Verbatim

Tape & Removable Cartridges

3M, Sony, Iomega

ACT Software 2.0.....	\$219.18
ALPHA FOUR 1:1 Relational Database.....	299.50
ASHTON TATE dBase IV.....	479.77
AUTODESK Autosketch.....	147.50
AUTODESK Animator.....	277.48
BANNER BLUE Org. Plus Advanced.....	62.30
BORLAND Reflex.....	157.95
BORLAND Sidekick V2.0.....	59.00
BORLAND Turbo C++.....	65.00
BORLAND Turbo Pascal.....	134.20
BORLAND C++ V2.0.....	308.88
BORLAND Paradox V3.5.....	479.00
BORLAND Ouattro Pro 2.0.....	299.22
BRODERBUND Print Shop.....	36.50
CENTRAL POINT PC Tools V6.0.....	82.95
CHIPSOFT TURBO TAX 1040.....	43.85
CHIPSOFT TURBO TAX PRO.....	218.50
CLARION Professional Developer.....	448.54
COMPUTER ASSOC. Super Project Expert.....	413.30
COMPUTER SUPPORT Arts & Letters.....	439.12
CUSTOM Freedom of the Press Postscript.....	241.44
DAC Easy Accounting 4.1.....	85.33
DAC Easy Bonus 4.0.....	169.31
DATEASE File Management.....	455.10
FIFTH GENERATION Mace Util. 1990.....	89.80
FIFTH GENERATION Fastback Plus.....	109.70
FIFTH GENERATIONS Direct Access.....	58.69
FORM TOOL 3.0.....	57.90
FOXBASE Foxpro.....	439.09
GIBSON Spinwrite 2.0 V1.1.....	63.95
IBM Displaywrite 5.0.....	235.50
INTEL C Code Builder.....	CALL
INTUIT Quicken.....	39.70
LAN Spool / LAN Space.....	265.10 / 319.00
LOTUS 1-2-3 5/25" / 3.5" V2.2.....	334.27
LOTUS 1-2-3 V3.1.....	399.66
LOTUS Agenda V2.0.....	277.50
LOTUS Freelance Plus.....	322.25
LOTUS Magellan.....	99.85
LOTUS Manuscript.....	327.79
LOTUS Symphony.....	479.73
MICROIM Rbase For DOS.....	465.50
MICROCOM Carbon Copy.....	109.37
MICROSOFT C Compiler 6.0.....	302.40
MICROSOFT Flight Simulator 4.0.....	39.50
MICROSOFT Fortran Compiler 5.0.....	282.43
MICROSOFT Quick Basic Compiler 4.5.....	64.75
MICROSOFT Word V5.5.....	208.77
NANTUCKET Clipper V5.0.....	485.50
NORTON Advanced Utilities V5.0.....	109.90
POWER UP! Calendar Creator Plus.....	36.66
PROCOM Plus.....	63.87
QUARTERDECK Desqview 386 V5.0.....	123.86
QUARTERDECK OEMM 386 Manager.....	59.00
QUARTERDECK QRam & Manifest for PS/2.....	46.20
QUARTERDECK Desqview.....	72.10
QUALITAS 386 Max 5.0.....	73.20
REFERENCE Grammatik 4 V1.1.....	49.20
SOFTLOGIC Software Carousel.....	49.75
SOFTWARE PUB. PFS: Write.....	154.30
SOFTWARE PUB. First Choice w/Prodigy.....	84.75
SYMANTEC O&A.....	227.60
SOFTWARE PUB. Harvard Graphics V2.3.....	304.21
TOBIAS Managing Your Money.....	132.48
TRAVELING SOFTWARE Laplink III.....	87.58
TRAVELING SOFTWARE Battery Watch.....	33.50
TRAVELING SOFTWARE Desklink.....	97.60
WORDPERFECT 5.1 5.25" or 3.5".....	249.39
XEROX Ventura Software Version 3.0.....	517.22
XEROX Form Base 1.1.....	303.37
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 PCW241

**FREE TECHNICAL
SUPPORT FOR CDW™
CUSTOMERS.**

(800) 359-4CDW
WE SELL NAME BRANDS FOR LESS!

**ALWAYS WORKING TO
KEEP YOUR COMPUTING
ONE STEP AHEAD.**



COMPUTER DISCOUNT WAREHOUSE™

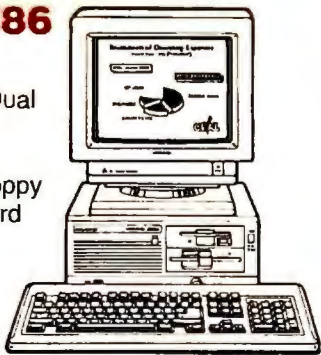


MaxStation 286 Personal Computer

- 80286 Processor with Dual Speeds (12.5 & 8MHz)
- 1 MB RAM Standard
- One 5.25", One 3.5" Floppy
- Internal 40MB 28ms Hard Disk Drive
- 16-bit VGA Video with 256K RAM

\$899.60

MAGNAVOX



WHY PAY RETAIL?

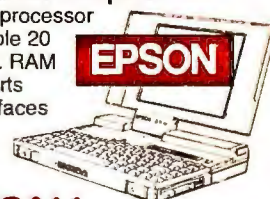
CDW™ Sells For Less

AND SERVICES YOU BETTER

CDW: RATED #1 IN AN INDEPENDENT SURVEY OF READERS BY PC MAGAZINE

EPSON NB3s 386SX Notebook Computer

- Powerful 80386SX, 16MHz Microprocessor with 0 Wait States • Opt. Removable 20 MB or 40 MB Drive Module • Std. RAM of 1 MB, Exp. Up to 5 MB • Supports Sophisticated Graphical User Interfaces Like Microsoft® Windows®, MS-DOS® 4.01 • Removable Battery, Plus an AC Adaptor Std.



• One Year Limited Warranty Epson NB3s 386SX..... **CALL**

20 MB (2.5") Removable HDD..... **CALL**

40 MB (2.5") Removable HDD..... **CALL**

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

COMPUTERS

MAGNAVOX

MAX STATION 286 40MB VGA Interface.....\$899.60
MAX STATION 386SX 80MB VGA Interface.....1289.46

PACKARD BELL

Packard Bell 286 NOTEBOOK.....\$1795.44
FORCE 1, 286/12, 40 Meg, 1 MB VGA Adapt.....986.27
FORCE 1, 1 Dr., 286/12, 1 MB.....679.00
FORCE 386SX, 16 MHz, 124 MB, VGA 2MB.....1574.71
FORCE 386SX, 40 MB, VGA Interface.....1165.77
FORCE 1 286/12 2 Drives 84 MB HD VGA Int.....1199.63
FORCE SX, 84 MB, VGA Interface.....1397.00
PB 386/33 2 MB, 3.5" & 5.25" Drives.....1879.60

Panasonic

CF170 XT 10MHz 20MB Notebook Laptop.....CALL
CF 270 286 16MHz 20MB VGA Notebook.....CALL

IBM

PS/2 30286 30MB \$1645.89 PS/2 65SX 60MB \$3139.82
PS/2 502 30MB.....1839.21 PS/2 70E 60MB.....2927.79
PS/2 55SX 30MB.....2124.00 PS/2 55SX 60MB.....2337.00

COMPAQ

LTE 286 Mdl. 20.....\$2369.00 DP386/20E Mdl 1 \$2339.46
LTE 386 30/60 MB.....CALL DP386/25E Mdl.1.....3648.32
LTE 286 Mdl.40.....2699.20 CPQ-386/33 L.....CALL
DP386/20 Mdl.1.....1926.20 SLT 386/20 Mdl.60 4680.26

SAMSUNG

S-3000VE, 4.77/10 MHz.....\$349.50
SD700SX 2MB RAM, 16 MHz, 388 SX.....897.21
SD-630 286 12MHz 640K.....528.00

TEXAS INSTRUMENTS

TEXAS INSTR. TRAVELMATE 2000.....\$1945.11
TEXAS INSTR. TRAVELMATE 3000.....CALL

HP, IBM & COMPAQ MEMORY

1MB Module CPO - 386, 386S, 20E/25E.....\$105.23
2MB Memory Board CPO LTE 286.....195.00
4MB Memory Module LTE 386.....CALL
8MB Memory Mod CPO Deskpro/System Pro.....CALL
4MB Module CPO - 386, 386S, 20E/25E.....350.00
4MB CPO Exp. Bd. - 386S, 20E/25E.....385.00
1 MB AST Cupid Simms.....CALL
4 MB AST Cupid Simms.....CALL
AST Exec 386SX 4 MB Module.....CALL
2MB Upgrade HP LaserJet II / III.....189.00
1MB Upgrade HP LaserJet IIP / III.....112.00
2MB Upgrade HP LaserJet IIP / III.....189.00
4MB Upgrade HP LaserJet II / III.....352.00
IBM Personal System II Memory.....CALL
2MB Memory Module IBM PS/2 Mod 70/50Z.....160.00
1MB OKI Laser 400.....159.00
2MB Upgrade Toshiba 5200.....179.12
1MB Upgrade Toshiba 1200XE.....179.12
1MB Upgrade Toshiba 3100SX.....179.12
Toshiba Laptop Memory.....CALL

WYSE TERMINALS

WYSE 50/60 Amber or Green.....\$349.11 / 286.95
WYSE 85 / 30 Amber or Green.....359.00 / 278.89
WYSE 185 VT320 Amber, Green or White.....359.60
WYSE 150 Amber, Green or White.....265.56

CD-ROM & WORM DRIVES

HITACHI 3600/3650.....\$456.81 / 530.68
NEC External / Portable.....516.85 / 329.55
NEC Portable CD w/Software Bundle.....549.00
PANASONIC LF5010 WORM.....2089.91
HITACHI 1700S External.....467.42
TOSHIBA CD-ROM External.....567.05

MATH COPROCESSORS

INTEL 80387-2 \$115.90 INTEL 80387-SX \$294.82
INTEL 287-XLT.....193.55 INTEL 387SX20.....312.24
INTEL 80287-XL.....189.50 INTEL 80387-25.....449.00
INTEL 80387-20.....359.65 INTEL 80387-33.....548.20
CYRIX FasMath 16 MHz/20 MHz.....286.90/298.28
CYRIX FasMath 25 MHz/33 MHz.....389.29/465.70

DOT MATRIX & LASER PRINTERS

EPSON

LX810.....\$169.00 LO510.....\$249.00
LO850.....429.00 FX850.....287.00
LO1050.....569.00 LO2550.....849.00
FX1050.....399.00 EPL 7000 Laser.....799.00
LO1010.....368.00 EPL 7500 Laser PS.....CALL
LQ200.....225.00

CDW™ stocks all cut sheet feeders and ribbons.

NEC

Silentwriter 90.....\$1585.50 P6300 New Model.....\$619.90
P6200 24-pin.....465.70 P3200 24-pin.....269.22
P3300 24-pin.....378.33 P9300.....885.50

DIICONIX by KODAK

150 Parallel / 150 Serial.....\$329.07 / 339.07

OKIDATA

ML182 Turbo.....\$229.48 ML390+.....\$439.22
OKILASER 400.....627.08 ML391+.....596.41
OKILASER 800.....939.66 ML380.....285.39
OKILASER 820.....1266.30 ML393+.....929.90
OKILASER 840.....1896.67 ML393+ Color.....999.50
ML320.....314.68 ML321.....438.44

Panasonic

1124 I.....\$279.69 1624.....\$359.39
1123.....229.00 1180/1654.....149.99/CALL
4420 Laser Printer.....789.50

HEWLETT PACKARD

H-P LaserJet Model IIID.....CALL
H-P Deskjet 500/H-P LaserJet IIP.....\$485.50/849.00
H-P LaserJet III.....CALL H-P Laser III SL.....CALL
H-P Paintjet.....958.85 H-P Paintjet XL.....1685.78

PACIFIC DATA 25 in 1 Cart. LAS3.....\$265.91
PACIFIC DATA Page Postscript 4 HP LAS3.....349.44
PACIFIC DATA Connect 169 256K.....272.79
PACIFIC DATA 1 MB Upgrade for LaserJet II.....169.00
PACIFIC DATA 1 MB for 2P / III.....CALL
POSTSCRIPT CART. W/2MB HP LAS2.....339.00
CPI JETMEMORY 1MB for HP/II/III Postscript.....129.60
CPI JETPAGE for HP/II/III Postscript.....208.72
CPI SUPERSET+ 425 Fonts for all HP Lasers.....209.67

PRINTERS

CANON BJ10E Bubble Jet.....\$323.68
CITIZEN GSX 140.....295.55
CITIZEN GSX 200.....CALL

BOARD PRODUCTS

AST SixPack 286 OK.....\$96.60
INTEL Above Board Plus 8 w/2 MB.....479.66
INTEL Above Board Plus 512K.....325.66
INTEL Inboard 386/PC.....469.60
INTEL SatisFAXtion Fax Board.....374.50

DRIVES, TAPES & CARDS

CONNER 42 MB / 104 MB.....\$295.40 / 498.24
CONNER 84 MB / 204 MB.....399.20 / 839.00
IOMEGA B144/B44 Trans.....816.85 / 889.73
PLUS Hardcard IIXL 105MB.....658.46
PLUS II 80 Meg Hard Card.....647.77
PLUS Hardcard IIXL 50 MB.....389.80
SYSGEN 5.25" 3.5" External Floppy.....209.25
PACIFIC RIM 5.25" External Floppy for Laptops.....185.56
TOSHIBA 106MB IDE AT Hard Drive.....499.50

Seagate

ST225 20 MB.....\$182.35 SEAGATE 4096 80.....\$479.74
ST238 30 MB.....198.82 SEAGATE ST-251-1.....243.10
ST4383E 329 MB 1392.94 ST1126A 111 MB.....545.32
ST4182E 160 MB.....874.44 ST1162A 143 MB.....668.13
1102A 84 MB.....368.00 ST157A 44 MB 3.5.....209.17
ST1144A 120MB IDE.....459.10

MICROPOLIS

1654-7 182MB HH.....\$794.30 1684-7 340 MB.....\$1323.52
1664-7 345MB HH.1243.65 1558 338 MB ESDI 1298.50

MODEMS & COMMUNICATIONS

intel

2400 Internal.....\$139.75 2400 External.....\$167.94
2400B MNP.....193.72 2400 External MNP.....217.11
9600 External.....495.40 PS/2 Internal 2400.....223.22

PRACTICAL PERIPHERALS

2400MNP Int.....\$169.11 2400 Int.....\$128.88
V.42BIS.....199.50 2400SA.....167.97
9600 V.32/42BIS.....447.67 Pocket 2400.....99.50

HAYES

2400 External.....\$325.84 2400B Internal.....\$224.45
ULTRA 9600 Ext.....765.55 2400 PS/2.....334.40

Robotics

Courier 2400.....\$279.60 V.32 9600E.....573.03
Dual 14,400 HST.....809.65 14,400 HST.....569.00

MEGAHERTZ CORPORATION

2400 for TOSHIBA 139.33 2400 for COMPAQ LTE.....\$139.00
CPI VIVA 2400 Internal.....85.40
CPI VIVA 2400 External Faxsend Modem.....112.50
CPI VIVA 2400 External Hardware MNP.....149.73

COMMUNICATIONS PRODUCTS

AST RESEARCH INC.

AST 5251-11 + Enhanced Local.....\$497.75
AST 5251-11 + PS/2 MCA Local.....497.75
AST 5251-12 Remote.....462.84
DIGIBOARD PC/8i Intelligent 8 Serial.....799.60
DIGIBOARD PC/16i Intelligent 16 Serial.....1172.34
DIGIBOARD PC/4 4 Serial Ports.....286.10
DIGIBOARD PC/8 8 Serial Ports.....424.73
DIGIBOARD PS/2 Multi Serial Boards.....CALL
EVEREX 2400 Internal Modem.....109.75
EVEREX 2400 External Modem.....165.36
EVEREX 2400 External MNP w/Sft.....189.88
EVEREX 2400 MNP Internal.....145.34
IRMA Workstations for Windows.....355.68
IRMA III 3270 PS/2 MCA Board.....412.35
IRMA III 3270 XT/AT.....409.60
IRMA SNA Remote Board.....539.32
WORLD PORT 2400 Modem.....247.12
WORLD PORT Modem/Fax Ext.....474.55
MULTITECH MODEMS.....CALL

BATTERY BACKUP AND UPS

AMERICAN

AME-1200VX.....\$735.95 AME-520ES.....\$321.83
AME-360SX.....206.89 AME-800RT.....552.50
AME-450AT.....261.79 AME-600LS.....449.19
AME Smart 400 UPS.....312.64

Durant Technologies, Inc.

BPS-300.....\$219.55 BPS-550.....\$356.55
BPS-800.....533.30 BPS-1200.....706.66

INTEC

BC-450.....\$298.50 4 Outlet.....\$44.25
BC-1200.....620.22 LC-1200.....139.77
BC-2000.....1179.80 LC-1800.....189.77

MICE

Super Mouse II w/Windows.....\$87.83
LOGITECH C9 Serial / PS/2.....69.00
LOGITECH Mouseman RightHand.....74.50
LOGITECH ScanMan PC/Scanman PS/2.....177.89/214.50
LOGITECH Trackman Serial.....82.93
MICROSOFT Mouse (Bus Version).....103.53
MICROSOFT Mouse (Serial Version).....103.53
MICROSOFT Mouse w/Windows 3.0.....147.50

WINDOWS SOFTWARE

MICROSOFT Windows 3.0.....\$93.79
ADOBE Illustrator for Windows 3.0.....278.88
ALDUS Pagemaker 4.0 for Windows 3.0.....496.62
ASYMETRIX Toolbook.....279.00
BITSTREAM Facelift for Windows.....59.50
BLYTH Omniss 5 for Windows.....592.33
BUMBLEBEE DB Fast for Windows.....188.75
CAERE Omnipage 386.....425.55
CAERE Omnipage Professional.....619.24
CALERA Wordscan + for Windows.....659.67
COREL SYSTEMS Corel Draw.....365.55
CROSSTALK X-Port for Windows 3.0.....119.85
DELRINA Per: Form Pro for Windows 3.0.....268.53
DELRINA Per: Form Pro Filler for Windows.....122.22
DMP PC Anywhere IV.....98.85
HDC First Apps for Windows 3.0.....48.31
HDC Windows Express.....48.31
IBM Current for Windows.....217.73
INFORMIX Wingz for Windows.....307.70
MICROGRAFX Designer 3.1 for Windows.....458.95
MICROGRAFX X-Port for Windows 3.0.....134.42
MICROGRAFX Draw for Windows 3.0.....148.88
MICROGRAFX Charisma.....319.23
MICROSOFT Excel for Windows V3.0.....297.09
MICROSOFT Powerpoint for Windows 3.0.....297.65
MICROSOFT Productivity Pack for Windows.....39.20
MICROSOFT Project for Windows 3.0.....419.77
MICROSOFT Windows 3.0 Developers Kit.....297.20
MICROSOFT Word for Windows 3.0.....297.89
PRECISION SFT. Superbase 4 for Windows.....419.33
REFERENCE Grammatik for Windows.....49.20
SAMNA AMI for Windows 3.0.....121.59
SAMNA AMI Professional for Windows 3.0.....297.75
XEROX Ventura Gold for Windows 3.0.....517.22
XEROX Formbase for Windows.....298.33
ZSOFT Soft Type Fonts.....108.86

MONO & COLOR MONITORS

CDW™ Color / Mono Cards w/P.....59.00
SAMSUNG 12" Amber.....84.10
SAMSUNG 14" Amber.....99.35
SAMSUNG 14" White.....104.30
SAMSUNG RGB Color.....209.36

VGA & EGA PRODUCTS

VGA & EGA MONITORS

MAGNAVOX Super VGA 28mm 6CM320.....339.40
MAGNAVOX CM9032 42mm VGA Color.....249.50
MAGNAVOX 7BM749 Mono 14" VGA.....119.50
MITSUBISHI 1381 Diamond Scan.....499.80
NEC Multisync 4D/5D.....971.91 / 2269.43
NEC Multisync 2A / Multisync 3D.....465.85 / 609.67
PACKARD BELL 8539 VGA 39mm.....274.57
PACKARD BELL 8529 31mm.....297.98
PANASONIC C1381 1024X768 14".....379.28
PACKARD BELL 8510 1024X768.....335.56
PGS Ultrasyne 14 / 16.....499.66 / 859.77
SAMSUNG VGA 31mm CVJ 4891.....319.50
SAMSUNG CSA 7571 17".....880.89
SONY 1320 / 1304.....429.50 / 648.35
ZENITH Z-1492.....594.80

VGA & EGA DISPLAY CARDS

ATI VGA Wonder + 256 / 512.....\$187.98/ 221.50
ATI Basic 16 VGA.....85.39
ATI 8514 Ultra 1 MB.....545.34
PARADISE 1024i 256K / 512K.....183.91 / 220.15
PARADISE VGA / VGA + 16.....126.43 / 149.42
ORCHID Prodesigner II 512K.....268.18
ORCHID Prodesigner II 1MB.....324.50
VIDEO 7 1024i 512K.....216.37
VIDEO 7 VGA Vega.....139.42
VIDEO 7 VRAM II VGA 1 MB.....469.50
VIDEO 7 VGA 16.....109.20
VIDEO 7 VRAM II 512K.....359.50

MOST ORDERS RECEIVED BY 5:00 P.M. C.D.T. SHIP SAME DAY

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!

CDW™ EXTENDED HOURS

Sales 7:30-7:30 CST Mon-Fri.
9:00-3:30 CST Sat.
Tech Support 9:00-5:00 CST Mon-Fri.



(800) 359-4CDW

In Illinois

FAX

(708) 498-1426 (708) 291-1737

Credit card charges are not submitted until time of shipment.

Apply for the CDW™ Credit Card



High Volume Bids Invited



Prices listed are not submitted until time of shipment. Shipping and handling additional. On all hard drive orders under \$200.00 please add \$5.00 handling fee. Non-defective returns subject to restocking fee. All prices reflect 3% discount for cash. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. * Registered trademarks of IBM and COMPAQ

Circle 200 on reader service card

ORDER
Toll-Free
1-800
688-6468



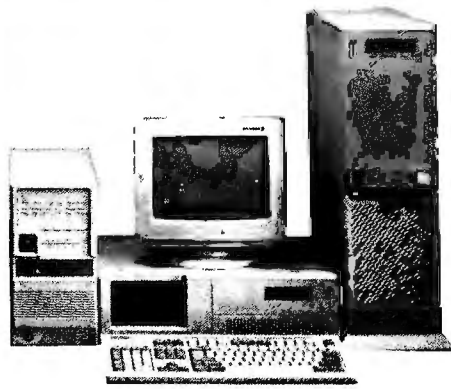
MINUTEMAN
COMPUTERS

90 Day Money Back Guarantee
2 Year Parts/Labor
We Pay Shipping On All Systems
Repaired By Us In-House

286-12/16 MHz

- 1MB RAM
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 42MB hard drive
- 16 bit VGA card
- 14" VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

12MHz \$ **995**
16MHz **1,105**



386-25e MHz

- 4MB RAM - 64KB cache
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 125MB 19ms hard drive
- 16 bit VGA card w/ 512KB
- 14" Super VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$2,095

386-16sx MHz

- 1MB RAM
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 42MB hard drive
- 16 bit VGA card
- 14" VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$1,425

386-25 MHz

- 1MB RAM
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 80MB hard drive
- 16 bit VGA card
- 14" VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$1,799

386-33 MHz

- 4MB RAM - 64KB cache
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 125MB 19ms hard drive
- 16 bit VGA card w/ 512KB
- 14" Super VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$2,325

Drives

Seagate

MODEL	MB	SPEED	TYPE	
ST251-1	40MB	28ms	MFM	.... \$ 230
ST157A	40MB	28ms	IDE	..... 220
ST1102A	89MB	19ms	IDE	..... 430
ST1126A	111MB	25ms	IDE	..... 599
ST1144A	125MB	20ms	IDE	..... 509
ST1162A	143MB	15ms	IDE	..... 670
ST1239A	210MB	15ms	IDE	..... CALL
ST2383A	338MB	16ms	IDE	..... 1,325

Conner

MODEL	MB	SPEED	TYPE	
CP3044	40MB	25ms	IDE	..... \$ 285
CP3184	80MB	28ms	IDE	..... 445
CP3104	100MB	25ms	IDE	..... 499
CP3204	200MB	19ms	IDE	..... 799

Micropolis

MODEL	MB	SPEED	TYPE	
1558	350MB	18ms	ESDI	\$ 1,685
1335	159MB	25ms	ESDI	.... 1,185

TEAC

360K 5.25"	.....	\$ 70
720K 3.5" Kit	.....	60
1.2MB 5.25"	.....	70
1.44MB 3.5" Kit	.....	60

486-25 MHz

- 4MB RAM - 128KB cache
- Choice of cases
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 200MB 16ms hard drive
- 16 bit VGA card w/ 512KB
- 14" Super VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$3,825

Monitors

NEC

Multisync 2A	.....	\$ 465
Multisync 3D	.....	482
Multisync 4D	.....	994
Multisync 5D	.....	2275

Sony

1304	CALL
------	-------	------

Aamazing

12" Amber	.....	\$ 78
VGA 39	.....	284
VGA 28	.....	302

Printers

Hewlett Packard

Laser Series III	.....	CALL
Laser III D	.....	CALL
Laser II P	.....	CALL
Desk Jet 500	.....	CALL

Panasonic

1124/1180	.....	\$ 285/18
1191	.....	22
1624/1695	.....	275/39
4420	.....	CALL
4450i/4455	.....	CALL

Epson

LQ 810	.... 200 cps, 30 nlq	..... \$ 17
FX 850	.... 264 cps, 54 nlq	..... 28
FX 1050	.. 264 cps, 54 nlq	..... 39
LQ 510	.... 225 cps, 75 nlq	..... 25
LQ 850	.... 330 cps, 88 nlq	..... 44
LQ 860	.... Color	..... 54
LQ 950	.... 330 cps, 88 nlq	..... 43
LQ 1010	.. 225 cps, 75 nlq	..... 36
LQ 1050	.. 330 cps, 88 nlq	..... 57
LQ 2550	.. 400 cps, 108 nlq	..... 85

Okidata

ML320	.....	\$ 31
ML321	.....	43
ML390	.....	44
ML380	.....	28
ML391	.....	62
ML393	.....	92

We accept VISA, Mastercard,
COD on purchase orders.
Dealer accounts welcome.
No surcharge on
VISA/Mastercard.



At Minuteman Computers, we offer a knowledgeable
sales staff, expert technical support, and prompt delivery!

1-800-688-6468
Circle 176 on reader service card

Hours M-F 8:00-5:00
(714) 646-9811
Fax (714) 646-9811
887 19TH ST, UNIT
COSTA MESA, CA 92626

SPEED GUARANTEED



**Here's a chance to buy our \$99 Math Coprocessor
at no risk whatsoever! It's fully guaranteed
to at least double the math performance of your software.**

If you want to unlock the full power of your PC, pick up the phone and order an AMD 80C287 math coprocessor. Without it, your PC just isn't really complete. You see, our math coprocessor can *dramatically* increase the performance of 1-2-3,® dBASE,® Excel, and hundreds of our other favorite business applications! It actually runs calculations *up to ten times faster* than your PC can *without* a math coprocessor. Which means your graphs will draw incredibly fast and your spreadsheets will recalculate at truly blazing speeds. (And that's just for starters!)

High speed at a low price.

Don't think you have to pay over \$200 for a math coprocessor. Now you can get ours for just \$99 when you order direct from AMD! The AMD 80C287 is fully compatible with your 80286-based PC and the hundreds of commercially available software packages written for it. Our coprocessor is also compatible with the Intel NMOS 80287.

Installation is a snap.

The AMD 80C287 plugs easily into a socket that's already inside your 80286-based PC. In fact, you can be up and running in just five minutes. Simply plug the chip into the socket and watch the dazzling improvement in performance! The AMD 80C287 comes with easy-to-follow installation instructions, a free utilities disk (which includes diagnostics and test software), and free color computer games.

Advanced Micro Devices, Inc.

3600 Capital of Texas Hwy N., Suite 400
Ft. Worth, TX 78759-9797

Volume or dealer inquiries welcome. 1-2-3 is a registered trademark of Lotus Development Corporation. dBASE is a trademark of Ashton-Tate Corporation. Intel is a registered trademark of Intel Corporation.

Circle 4 on reader service card

Our Triple Guarantee

Guarantee #1: If the AMD 80C287 doesn't do everything we promise, or if you are unsatisfied for any reason, return the product within 30 days of purchase and AMD will happily refund your money.

Guarantee #2: If your AMD 80C287 Math Coprocessor ever fails to perform for any reason, AMD will replace it free of charge, no questions asked. Limited to two lifetime replacements per person.

Guarantee #3: AMD guarantees that the AMD 80C287 is fully compatible with your 80286-based hardware and software. If you have any compatibility problems with the AMD 80C287 during the first year, return the product and we will gladly refund the purchase price.



To Order Call Now

1-800-888-5590 ext. 3100

Outside of USA call (512) 345-1728



Yes. I want to double or triple the calculation speed of software running on my 80286-based PC. Send me an AMD 80C287 Math Coprocessor, risk free, for only \$99 plus tax, shipping and handling. I understand that I can return the AMD 80C287 for a full refund within the first 30 days if I am not completely satisfied.

Want more information? Call for a free demo disk and literature.

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

Visa/MC# _____

Type of PC _____



**Advanced
Micro
Devices**

Math Coprocessor

High speed, low price, fully guaranteed!

Now you can afford the performance benefits of a coprocessor without the \$200 plus costs of yesterday...thanks to AMD! Fully compatible, just install in your waiting coprocessor socket and speed up hundreds of popular software applications.



TouchStone
Software Corporation
Special Bundle Deal

\$125. for both!
**Checkit V2.1 and
AMD 80C287**

Top-selling diagnostic software will help you find and repair system problems on your PC. Limited to the first 1500 responses. With Checkit V3.0...\$179.

\$99.

AMD 80C287
Math Coprocessor

order yours today...

800-366-3227

No-Risk Triple Guarantee



ACP Expansion Memory New Price Reductions!



MEMORY CHIPS

1Mb x 1	80ns/100ns	57 ⁹⁵ /4 ⁹⁵
256K x 1	80ns/100ns	17 ⁹⁵ /14 ⁹⁵
256K x 4	80ns/100ns	55 ⁹⁵ /54 ⁹⁵
64K x 1	100ns/120ns	14 ⁹⁵ /11 ⁹⁵
64K x 4	80ns/120ns	29 ⁹⁵ /22 ⁹⁵

MEMORY!

SIMM MODULES

1Mb x 9	70ns/100ns	59 ⁹⁵ /49 ⁹⁵
256K x 9	80ns/100ns	19 ⁹⁵ /14 ⁹⁵

SIPP MODULES

1Mb x 9	70ns/80ns	64 ⁹⁵ /59 ⁹⁵
256K x 9	80ns/100ns	24 ⁹⁵ /19 ⁹⁵

IBM MEMORY MODULES

30/286	512K/2Mb	53 ⁹⁵ /138 ⁹⁵
50z, 55SX, & 60, 65	4Mb Module	393 ⁹⁵
70, 80	2Mb/4Mb	138 ⁹⁵ /379 ⁹⁵
	2-8Mb Board	394 ⁹⁵
90, 95	2Mb/4Mb	179 ⁹⁵ /349 ⁹⁵
Laser 4019	1/3, 5Mb	110 ⁹⁵ /328 ⁹⁵

COMPAQ MODULES

SLT 286	1Mb Board	149 ⁹⁵
LTE 286	1Mb Board	109 ⁹⁵
	2Mb Board	174 ⁹⁵
386/20e/25e & 386S	1-13Mb Board	149 ⁹⁵
	4-16Mb Board	358 ⁹⁵
	1/4Mb	298 ⁹⁵ /105 ⁹⁵
386/20, 25	1/4Mb	298 ⁹⁵ /105 ⁹⁵
286N, 386N	1/2Mb	88 ⁹⁵ /159 ⁹⁵
& 386S/20	4Mb Module	399 ⁹⁵
386/33	2Mb Module	199 ⁹⁵
& 486/25	8Mb Module	999 ⁹⁵
& SysPro	32Mb Module	549 ⁹⁵

AST MODULES

286, 386	2Mb Kit	169 ⁹⁵
386/16, 20, 20C	1/4Mb	119 ⁹⁵ /299 ⁹⁵
386/25, 33, SX	1Mb Module	89 ⁹⁵
386/486	1-16Mb Board	499 ⁹⁵

TOSHIBA MODULES

T1000SE, XE	1/2Mb	188 ⁹⁵ /288 ⁹⁵
T1200XE	2Mb Card	179 ⁹⁵
T2000SX	1/2Mb	188 ⁹⁵ /288 ⁹⁵
	4Mb Card	688 ⁹⁵
T1000LE	4Mb Card	688 ⁹⁵
T3100SX	2/4Mb	158 ⁹⁵ /398 ⁹⁵
T3100SX	2/4Mb	158 ⁹⁵ /398 ⁹⁵
T5200, 8500	2/8Mb	158 ⁹⁵ /998 ⁹⁵

AMD COPROCESSORS

80C287-10/12	10/12MHz	99/139
80C287-16	16MHz	159

CYRIX COPROCESSORS

83087-20/25	20/25MHz	298/369
83087-33/40	33/40MHz	448/499
83SX87-16/20	16/20MHz	239/259

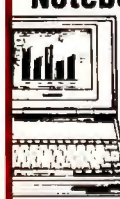
INTEL COPROCESSORS

8087-1/8087-2	10/8MHz	149/99
80287XL/XLT all speeds		198
80387SX-16/20		298/318
80387DX-20/25/33		368/468/548

WEITEK COPROCESSORS

mW3167-20/25/33		359/478/539
mW4167-25/33		598/749

Notebook Price War!



**Samsung
NoteMaster
386S/16**

- 386SX-16MHz CPU
- 1Mb/1.44Mb FDD
- VGA

**20Mb
HDD!**

\$2395.

APPLE MEMORY

Mac Classic	1Mb Board	89 ⁹⁵
	2Mb Kit	119 ⁹⁵
Mac IIfx	4/16Mb	258 ⁹⁵ /1049
Mac IIsi	2/8Mb	188 ⁹⁵ /669 ⁹⁵
Mac Portable	4Mb Board	998 ⁹⁵

LASER PRINTER MEMORY

II, IIO	0/1Mb Board	49 ⁹⁵ /98 ⁹⁵
	2/4Mb Board	148 ⁹⁵ /258 ⁹⁵
III, IIID, IIP	0/1Mb Board	59 ⁹⁵ /98 ⁹⁵
	2/4Mb Board	148 ⁹⁵ /258 ⁹⁵
EPL6000/TEC	0/4Mb	69 ⁹⁵ /319 ⁹⁵
KXP4420/50	0/4Mb	69 ⁹⁵ /319 ⁹⁵
TI Micro/LS	0/4Mb	69 ⁹⁵ /319 ⁹⁵
OkiLaser	0/4Mb	99 ⁹⁵ /449 ⁹⁵

AST MEMORY BOARDS

Rampage+ 286	with 512K	383
SixPak 286	with OK	99

BOCA MEMORY BOARDS

BocaRAM/ATPlus (0-8Mb SIMM's)	129
BocaRAM/ATPlus I/O (0-8Mb)	129

DFI MEMORY BOARDS

2000A (EMS/EEMS AT, OK to 2Mb)	99
MegaIith (EMS/EEMS AT, OK-4Mb)	119

Intel MEMORY BOARDS

AboveBoard Plus 8 (2-8Mb)	579
AboveBoard Plus 8 I/O (2-8Mb)	619

MOTHERBOARDS

ACP 286-12/16 (mini 1/2 size)	99 ⁹⁵ /125 ⁹⁵
ACP 386SX-16/20	399/449
Mylex 386-25 (MTI386/25 w/64K)	899
Mylex 386-33 (MXA386/33 w/64K)	1099
Mylex 386SX-16 16MHz	429
Mylex 486-25 (MAE486/25 EISA)	1999
Mylex 486-33 (MAE486/33 EISA)	2699

FAX BOARDS

Complete 4800/9600	149 ⁹⁵ /309 ⁹⁵
Complete Communicator	399 ⁹⁵
Freecom 9600 Fax Card	168 ⁹⁵
Intel® SatisFAXtion Card	379
Everex Modem/FAX pocket	Call

MODEMS

Practical Pocket 2400	99 ⁹⁵
Hayes Pocket 2400	149 ⁹⁵
Practical 9600SA external	499 ⁹⁵

CONNER HARD DRIVES

CPE3000	42Mb IDE	239 ⁹⁵
CPE3184	42Mb IDE	479 ⁹⁵
CPE3104	104Mb IDE	449 ⁹⁵
CPE3204	208Mb IDE	799 ⁹⁵

MAXTOR HARD DRIVES

M7040A	40Mb IDE 1"high	249 ⁹⁵
M7080A	80Mb IDE 1"high	339 ⁹⁵
LXT213A	213Mb IDE	799 ⁹⁵
XT4170E	158Mb ESDI	849 ⁹⁵
XT4380E	338Mb ESDI	1399 ⁹⁵
XT8760E	676Mb ESDI	1799 ⁹⁵

SEAGATE HARD DRIVES

ST157A	45Mb IDE	199 ⁹⁵
ST1102A	89Mb IDE	349 ⁹⁵
ST1144A	125Mb IDE	469 ⁹⁵
ST2383A	338Mb IDE	1199 ⁹⁵
ST251-1	40Mb MFM	239 ⁹⁵
ST4096	80Mb MFM	539 ⁹⁵

SOFTWARE

MS DOS v3.3 or v4.01	67 ⁹⁵
MS DOS v5.0	Call
PC DOS v4.01	125 ⁹⁵
Adobe TypeManager Windows	59 ⁹⁵
Pagemaker v3.01 Windows	489 ⁹⁵
Ashton Tate dBase IV v1.1	478 ⁹⁵
Borland Paradox 3.0/3.5	449 ⁹⁵ /499 ⁹⁵
Corel Draw 2.0 Windows	388 ⁹⁵
PerFORMPRO 1.0 Windows	269 ⁹⁵
Direct Access v5.0	64 ⁹⁵
Intuit Quicken v3.0	36 ⁹⁵
Artisoft "Lantastic"	Call
Lotus 1-2-3 v2.2	333 ⁹⁵
Lotus 1-2-3 Rel.3.1	399 ⁹⁵
Lotus Freelance Plus	349 ⁹⁵
Microsoft Excel for Windows	298 ⁹⁵
Office for Windows bundle	699 ⁹⁵
MS Windows Powerpoint v1.0	325 ⁹⁵
MS Productivity Pack Windows	45 ⁹⁵
MS Project v1.0 for Windows	469 ⁹⁵
Microsoft Windows 3.0	89 ⁹⁵
Microsoft Word for Windows	298 ⁹⁵
Symantec Q & A v3.0	226
SPC Harvard Graphics v2.3	299 ⁹⁵
WordPerfect v5.1	249 ⁹⁵
Xerox Ventura for Windows	549 ⁹⁵

DFI
Low Cost
386SX
System
\$699.

- 1.2Mb floppies
- IDE/6 slots
- Small Footprint

1Mb RAM-200 Watt!

\$1,000,000

SAMSUNG
Liquidation!



All fully warrantied,
remanufactured like
new and direct from
Samsung factory!

S3000 PC-XT comp.	299
S550 PC-AT comp.	449
SD630 286/640K/12MHz	488
PC Terminal 286/640K	379
S0700 386/640K/16MHz	699
S800 20MHz/386/512K	1099
S386AE 80386DX/4Mb	1299
S5200 Laptop AT/32Mb	1399

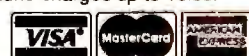
While Supply Lasts!

Advanced Computer Products, inc.

1310 E. Edinger, Santa Ana, CA 92705 • FAX 714-558-1603 • Customer Service 714-558-1356 • Sales 714-558-8813

We accept MC/VISA/AMEX, no surcharge for credit cards. Your card not charged until we ship. 100% guarantee, defective software replaced immediately, defective hardware repaired or replaced at our discretion. Items subject to availability, prices subject to change without notice. FedEx shipping available for only \$6.95 plus normal ground charges up to 15lbs.

call your order toll-free 800-FONE-ACP



Circle 20 on reader service card

If You Like Our Prices... You'll Love Our Guarantee!

If for Any Reason You're Not Satisfied with Our Product, Return It . . . Anytime, for a Full Refund!

BUSINESS/HOME

- ☐ **Am-Tax 1990 (3990)**—Prepare & print your 1990 taxes! 1040 & all schedules A-SE!
- ☐ **Amortization Table 3.5 (1115)**—Handles all types.
- ☐ **Express Check 4.07 (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 Legal Advisor 6.1 (3 disks) (3290)**—Over 150 legal forms for almost everything including wills and living trusts.
- ☐ **Names & Dates 4.01 (2 disks) (3140)**—Great personal information manager! Keeps track of anything and everything.
- ☐ **Takin' Care of Business (8 disks) (1230)**—Easy to use and loaded with features. General Ledger, Accounts Receivable/Payable, invoicing, check printing and much more. Professional accounting for non-accountants. (HD)
- ☐ **PC-Write 3.03 (3 disks) (3820)**—Easy to use word processor that is loaded with features including spell checker.

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, Ventura Publisher, Windows or programs that can read PCX files.

- ☐ **Accent/Dingbats (2617)**
- ☐ **Birds (2 disks) (2620)**
- ☐ **Business (2 disks) (2630)**
- ☐ **Butterflies (2695)**
- ☐ **Church (4 disks) (2550)**
- ☐ **Education (2 disks) (2640)**
- ☐ **Family (3 disks) (2650)**
- ☐ **Food (2 disks) (2660)**
- ☐ **Headlines (2 disks) (2670)**
- ☐ **Holidays (2616)**
- ☐ **Houses (3 disks) (2680)**
- ☐ **Kids/Caricatures (2 disks) (2820)**
- ☐ **Ladies (2 disks) (2690)**
- ☐ **Men (2 disks) (2750)**
- ☐ **Misc. (4 disks) (2760)**
- ☐ **Sports (2 disks) (2790)**
- ☐ **Teddy Bears (2 disks) (2830)**
- ☐ **Wedding (3 disks) (2850)**

EDUCATION

- ☐ **Amy's First Primer (1717)**—Six different learning programs for children ages 4-8. (CGA)
- ☐ **The DOS Learning System (1417)**—Learn how to use DOS with this great program. Covers all versions of DOS 2.0-4.01.
- ☐ **Funnels & Buckets (1727)**—Teach children basic math skills!
- ☐ **Lotus Learning System (2 disks) (1420)**—Learn Lotus 2.0 easily and quickly.
- ☐ **Play 'n' Learn 2.50 (1735)**—A collection of six programs for children 18 months to 4 years. (CGA)
- ☐ **Typing Teacher (1425)**—Five great programs designed to improve the speed and accuracy of your typing!
- ☐ **World 2.99 (1849)**—The ultimate globe! Learn about cities, countries with this computerized globe. (CGA)
- ☐ **Tutor DOS (4 disks) (1450)**—The ultimate DOS tutorial. Everything you wanted to know about DOS and more! (HD)

GAMES

- ☐ **Arcade Games 1 (1811)**—Pac-man (3 versions!), Hopper, Space Invaders, Fuslon (Tetris variation), etc. (CGA)
- ☐ **Arcade Games 2 (1812)**—Double Blocks (another Tetris variation), Q-Bert, Breakout, Beast and others. (CGA)
- ☐ **Ed's Chess 1.99 (2425)**—The best chess game available anywhere. (It beat Chessmaster 2000.)
- ☐ **Kids' Games (2317)**—Fun for the under-12 set.
- ☐ **Strategy Games (2461)**—Risk, Othello, Chess, Nyet (Tetris clone), and others. (CGA)

MISCELLANEOUS

- ☐ **Automenu 4.7 (3515)**—Latest version of the most popular menuing program of all time!
- ☐ **Banner & Sign Makers (3215)**—Make banners or signs for any occasion. Works with any printer.
- ☐ **Best DOS Utilities (2 disks) (3520)**—Essential utilities for DOS. Screen blankers, file finders, numerous other handy utilities that will save you time. Very easy to use!
- ☐ **Brother's Keeper 4.5 (3 disks) (3120)**—Excellent, full-featured genealogy program that's easy to use.
- ☐ **Mealmaster 6.14 (2 disks) (3160)**—A complete recipe filer. Comes with over 450 recipes to start you off.
- ☐ **Mr. Label 5.0 (3235)**—Powerful & versatile label maker.
- ☐ **Online Bible 5.0 (14 disks) (3170)**—Complete KJV Bible. Includes Greek/Hebrew Lexicon & Cross Reference. (HD)
- ☐ **PC-Key-Draw 3.75 (4 disks) (2780)**—An exceptionally powerful graphics program. Comes with a large collection of ready-made graphics. (CGA) (HD)
- ☐ **Pianoman 4.0 (3147)**—Create and play music on your PC!
- ☐ **Vaccines and Virus Killers Ver. 75 (2 disks) (3510)**—Protect your system from viruses! This set will find (and destroy!) over 200 viruses and 400+ virus strains.

WORDPERFECT 5.0/5.1

- ☐ **WordPerfect 5.0/5.1 Art & Graphics Vol. 1 (2 disks) (3710)**—Over 100 graphics for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.0/5.1 Art & Graphics Vol. 2 (2 disks) (3770)**—Over 100 additional graphics for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.0/5.1 Art & Graphics Vol. 3 (2 disks) (3780)**—Over 100 more graphics for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.0/5.1 Tools (2 disks) (3750)**—17+ great utilities for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.1 Learning System (3 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 (2 disks) (3760)**—Create clip art & graphics for WordPerfect 5.0/5.1. (CGA) (HD)

Free catalog of over 200 programs
with every order or by request.

Shareware programs require separate payment to the authors if found useful.

WINDOWS 3.0

Note. These disks require Windows 3.0.

- ☐ **Active Life/Organize (4536)**—Two "Personal Information Managers" that will keep track of important information.
- ☐ **Almanac (4535)**—The ultimate calendar for Windows!
- ☐ **ATM Fonts for Windows Vol. 1 (4 disks) (4710)**—20+ fonts for Adobe Type Manager. Will work with all Windows applications. (Requires Adobe Type Manager.)
- ☐ **ATM Fonts for Windows Vol. 2 (4 disks) (4720)**—20+ additional fonts for Adobe Type Manager.
- ☐ **Checkbook Managers for Windows (4559)**—Two great programs to manage your checkbook.
- ☐ **Chess for Windows (4639)**—Play the great game of chess.
- ☐ **Command Post 7.0M (4537)**—Great file manager and menu system that is customizable to your needs & preferences.
- ☐ **Fractals & Mandelbrot 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 & more.
- ☐ **Hyperdisk 4.11 (4539)**—Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- ☐ **Icons & Icon Editors (4 disks) (4560)**—Over 2500 icons and 3 icon editors, so you can create your own! Also includes 2 icon viewers and an icon manager.
- ☐ **PC Project 3.0 for Windows (4625)**—A very nice project manager for Windows.
- ☐ **Quotes for Windows (4596)**—3 great programs that will give you quotes for the day.
- ☐ **Screen Savers for Windows (4615)**—Five different screen savers for Windows!
- ☐ **Toolbook Programs Vol. 1 (2 disks) (4540)**—Applications and utilities for the Windows Toolbook.
- ☐ **Toolbook Programs Vol. 2 (2 disks) (4670)**—More applications & utilities for the Windows Toolbook.
- ☐ **Toolbook Games (4675)**—A collection of games for the Windows Toolbook.
- ☐ **Toolbook Tutor (2 disks) (4610)**—Learn how to use the Windows Toolbook.
- ☐ **Utilities for Windows (4 disks) (4510)**—40+ utilities that will help you get the most out of Windows, as well as making Windows easier to use!
- ☐ **Wallpaper for Windows Vol. 1 (4 disks) (4520)**—If you want a different background with Windows, this set offers over 75 different backgrounds.
- ☐ **Wallpaper for Windows Vol. 2 (4 disks) (4620)**—75+ additional backgrounds for Windows.
- ☐ **Wallpaper for Windows Vol. 3 (4 disks) (4630)**—75+ additional backgrounds for Windows.
- ☐ **XVT Draw (4549)**—Great drawing program.

(CGA) Requires Color Graphic Adapter (HD) Requires Hard Disk

Unconditional Money-Back Guarantee!

\$1.75
per disk
10 disks or more
or
2.25
per disk
1-9 disks

Order Toll Free
1-800-876-3475

Information: 503-776-5777
Fax: 503-773-7803

Name _____
Business/Company (if applicable) _____
Address _____
City/State/Zip _____
Phone _____

Method of Payment: ☐ Check/Money Order ☐ Visa/MasterCard ☐ COD
All checks must be payable in US funds. We cannot accept Eurocheques.

Disk size: ☐ 5 1/4" ☐ 3 1/2" (add \$1 per disk if you require 3 1/2")

No. Disks _____ x \$ _____ = \$ _____

☒ Shipping \$ **\$4.00**

☐ Federal Express, Overnight (add \$7) \$ _____

☐ Federal 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 6/91

KENOSHA

EPSON PRINTERS

LX 810 — 200 cps, 30 niq.....	\$173
FX 850 — 264 cps, 54 niq.....	\$289
FX 1050 — 264 cps, 54 niq.....	\$399
LQ 200 —	\$239
LQ 510 — 225 cps, 75 niq	\$245
LQ 850 — 330 cps, 88 niq	\$435
LQ 860 — Color	\$549
LQ 1010 — 225 cps, 75 niq	\$369
LQ 1050 — 330 cps, 88 niq	\$569
LQ 2550 — 400 cps, 108 niq	\$849
EPL7000 — Laser Printer	\$799
CALL FOR OPTIONS AND RIBBONS	

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN

1-800-255-2989

Shipping, customer service &
technical assistance call
414-697-9595

Fax 414-697-0620



AST COMPUTERS

AST Premium Exec Notebook .CALL	
386 BRAVO 5V — w/40 MB, & VGA card	\$1799
386 PREMIUM II SX — 20 Mhz w/40 MB & VGA Card	\$2099
386-33 CLEM MOD 5 w/100 MB & VGA card	\$4229
486-25 BRAVO MOD 5 w/100 MB & VGA card	\$3949
All other models & configurations—Call	

COMPAQ

286N w/40MB	\$1599
286N w/100MB	\$1999
386S w/40MB	\$2099
386S w/110MB	\$2399
386E w/40MB	\$2795
386E w/110MB	\$2999
386 25E w/100MB	\$4299
486 All Models	CALL
SLT 286 Laptop	CALL
SLT 386 Laptop	CALL
Compaq LTE	CALL
Compaq LTE 286	\$2499
Compaq LTE 386	CALL

FOR ALL YOUR LASER PRINTER NEEDS

HEWLETT-PACKARD

LaserJet IIIP w/toner ..CALL	LaserJet III w/toner ...CALL
LaserJet IIP w/toner ....\$869	DeskJet Plus 500
25-in-1 Font	1 MB Upgrade
172 fonts & symbol sets	2 MB Upgrade
Pacific Page	4 MB Upgrade
PostScript® language emulation in a cartridge	Pacific Type
Complete Font Library ..\$259	40 additional scaleable fonts for Laser Jet III
51 scaleable fonts for Laser Jet III	Pacific Page XL
Plotter in a Cartridge ...\$229	Includes Intel's 960 Micro- processor and 2 MG Memory.
Plotter emulation for the Laser Jet Series II™	Up to 8 times faster than competing products.

NETWORKING

Advanced Network 2.15	\$2099
SFT Network 2.15	\$2899
Entry Level 286 Starter Kit 4-Wet ..	\$489
Entry Level 286 Starter Kit 8-Wet ..	\$1199
NE 1000	\$179
NE2000	\$169
ARCNET PC 130	\$99
ARCNET PC 130E	\$129
ARCNET Active Hub/Passive Hub ..	\$289/79
ARCNET PC 500FS	\$305
ARCNET PC 500WS	\$235
Thomas Conrad 6142 8-bit	\$119
Thomas Conrad 6045 16-bit	\$259

LANTASTIC

2MB Starter Kit/Adapter	\$379/279
10MB Ethernet Starter Kit	\$519
Adapter	\$245
Accessories	Call

PANASONIC

1123/1124	\$229/259
1180/1191	\$149/219
1624/1654	\$349/519
4420/4450I	\$789/1199
4455 Postscript Laser	\$1999
1mg. Upgrade for 4420 & 4450I ..	\$139
C1381 1024 x 768 VGA Monitor ..	\$379
C1391 Multisync	\$499
CF170 Notebook	Call
CF270 Notebook	Call

LAPTOPS TOSHIBA

T1000SE	CALL
T2000	CALL
3100SX/3200SX	CALL
5200 40/100	CALL
All Other Models	CALL

NOTEBOOKS

AST Premium Exec	CALL
Panasonic CF170	CALL
Panasonic CF270	CALL
Epson 386SX Notebook	CALL

LAPTOP MEMORY

1 MB Compaq LTE 286	CALL
2 MB Compaq LTE 286	CALL
1 MB Compaq SLT 286	CALL
2 MB Toshiba T1600	CALL
2 MB Toshiba T3200SX	CALL
2 MB Toshiba 5100	CALL
2 MB Toshiba 5200	CALL
All other models	CALL



LAPTOP MODEMS

All models 2400 Baud

Toshiba 2400 Internal	\$139
Zenith, Compaq, NEC, Sharp, Epson and other models	CALL

PRINTERS

OKIDATA

ML320 ... \$319	ML380 ... \$289
ML321 ... \$439	ML391 ... \$599
ML390 ... \$439	ML393 ... \$919
All Okidata Lasers CALL	

HARD DISKS

SEAGATE

20MB w/contr. ST225	\$239
30MB w/contr. ST238	\$259
40MB for AT ST251-1	\$259
40MB 157A Kit	\$259
80MB for AT ST296N Kit	\$379
71MB IDE	\$549
138MB ESDI-SG1156E	\$899

PLUS HARD CARDS

20MB/40MB	\$489/\$549
80MB	\$589
Other models	CALL

CONNER

40MB/100MB	\$259/\$459
------------------	-------------

TAPE BACK UP

Maynard 60MB External	\$829
Mountain 40MB Internal	\$299
Mountain 40MB External	\$559
All other models	CALL

MONITORS

Mitsubishi EGA	\$339
Mitsubishi Diamondscan	\$489
Mitsubishi HL 6605 16"	\$1049
Mitsubishi HL 6935 20"	\$1799
NEC Multisync IIA	\$469
NEC Multisync IIID	\$599
NEC Multisync IVD	\$979
NEC Multisync VD	\$2099
Panasonic C1381 1024x768	\$379
Panasonic C1391 1024x768	\$499
All Goldstar Monitors	CALL

Prices and
availability
subject to
change

CMS ENHANCEMENTS

Int. and ext. hard drive kits AT and XT compatible	from \$249
PS/2 internal hard drive kits	
20MB and up	from \$329
PS/2 external hard drive	
90MB and up	from \$1049
External floppy drives for PS/2	
AT, XT and laptop	from \$179
Laptop hard drive for Tandy, NEC, Toshiba, Zenith, Compaq	CALL
Fax Modem and Pocket Fax	CALL

GRAPHICS CARDS

ATI Basic 16	\$89
ATI Wonder Plus VGA	\$199
Everex Viewpoint VGA	\$179
Everex VGA VRAM	CALL
NEC Graphic Engine	\$899
Orchid Pro Designer II	\$279
Orchid Pro VGA w/512K	\$289
Paradise VGA 1024	\$189
Paradise VGA Plus	\$139
Paradise VGA Plus 16	\$179
STB Power 1MG	\$249
Vega VRAM VGA w/512K	\$419

LOGITECH

Trackman Stationery Mouse	\$89
Scanman 400 DPI Scanner	\$169
High Resolution C9 Mouse	\$69
Finesse Desktop Pub. Software	\$95

DIGITIZERS

Summasketch 12x12	\$319
Summasketch 12x18	\$529

FAX MACHINES

Sharp FO-216	\$579
Sharp FO-240	\$689
Sharp FO-334	\$789
Sharp FO-120	\$479

intel CHIPS



Intel Snap-In 386	\$369
80287-XL	\$189
80387-16MHz/SX	\$319/\$299
80387-20MHz	\$359
80387-25MHz	\$439
80387-33MHz	\$549
Intel 9600 Modem	\$479
Multifunction Boards	CALL
Satisfaction (Fax Modem)	\$369

MEMORY UPGRADES

COMPAQ MEMORY

386 1MB/4MB MODULES	\$149/\$349
386 1MB/4MB BOARDS	\$199/\$399
SLT 286 1MB	\$199
LTE 286 2MB	\$195
Other Models	Call

IBM UPGRADES

2 MB Kit 30-286	\$189
2-8 MB BD w/2MB 50,60,70 & 80 ..	\$449
All Others	Call

CHIPS & LASER UPGRADES

All Simm & Drums	Call
Panasonic 1MB/2MB	\$139/\$189
OKi LASER 400 1MB/2MB	\$139/\$189
IBM 1MB/2MB	\$135/\$185
Epson EPL 6&7000 Series	\$Call
TI Micromaster	\$149

MODEMS

Everex 2400 int/ext	\$89/155
Hayes 2400 ext.	\$339
Hayes 2400 B w/software	\$275
Hayes V Series int	\$549
Intel 9600 ext	\$479
Practical Perp. Pocket Modem	\$109
US Robotics 2400 int/ext	\$129/149
US Robotics 2400 Courier	\$279
US Robotics 14.4 int/ext	\$549/579
US Robotics V-32 int/ext	\$549/599
US Robotics Dual Std.	Call

No charge for MasterCard or Visa; American Express add 5%. We will ship COD on a cash or cashier's check basis only. Shipping & handling 3% — \$6 minimum; AK and HI slightly higher. 15% restocking charge on returned items. Purchase orders accepted from Fortune 1000, Government institutions, schools and universities. 2% shipping discount available on orders over \$2000 if prepaid by check.

**KENOSHA
COMPUTER CENTER**
2133 91st St.
Kenosha, WI 53140

COMPUTER CENTER

Circle 41 on reader service card

PC Magazine says "... Arlington offers worry-free mail order purchasing at reasonable rates!"

HEWLETT-PACKARD

Laserjet III w/Toner	\$1559
Laserjet IIP w/Toner	\$869
Deskjet 500	\$499
Laserjet IIID	\$2575
1MG Upgrade	\$109
2MG Upgrade	\$149
4MG Upgrade	\$269
Pacific Page/XL	\$329/\$699
Pacific CFL	\$259
Pacific Data 25 in 1 Font ..	\$249

EPSON PRINTERS

LX810	\$173	LQ510 ...	\$245	LQ1050 ..	\$569
FX850	\$289	LQ850 ...	\$435	LQ2550 ..	\$849
FX1050 ...	\$399	LQ860 ...	\$549	EPL7000 ..	\$799
LQ200 ...	\$239	LQ1010 ..	\$369	EPL7500 ..	\$1979

OKIDATA PRINTERS

ML320 ...	\$319	ML390 ...	\$439	OLC 400 ..	\$629
ML321 ...	\$439	ML391 ...	\$599	OLC 800 ..	\$949
ML380 ...	\$289	ML393 ...	\$919	OLC 820 ..	\$1249

PANASONIC

1123	\$229	1654	\$519
1124	\$259	1695	\$389
1180	\$149	4420	\$789
1191	\$219	4450I ...	\$1199
1624	\$359	4455	\$1999
4420/4450I 2MG Memory ..	\$179		

CITIZEN

120D	\$129	GSX200 ..	\$169
GSX140 ..	\$279	HSP500 ..	\$309

ARLINGTON COMPUTERS

386 SX-16, 1MG, 40 MG,
VGA Mono Monitor**\$1049**

386-25, 2MG, 1.2 Floppy, 40 MG,
VGA Mono Monitor**\$1399**

386-33W/64K Cache, 4MG, 100
MG, VGA Mono Monitor**\$2099**

PANASONIC

FX1925-386SX, 40MG, VGA
color monitor CALL
CF170 Notebook 6.1 lbs., 10
MHz, 20MB CALL
CF270 Notebook, 16 MHz,
20MG, VGA CALL

GOLDSTAR

286, 12 MHz, 1 MG Memory,
40MG, VGA Monitor \$999
386SX, 16 MHz, 1MG, 40MG,
VGA Monitor \$1249
386SX, 20 MHz, 1MG, 40MG,
VGA Monitor \$1399
386 Tower, 33 MHz,
4 MG Memory \$2499
Laptop - 386SX, 40 MG,
VGA \$1999

IBM PS II

Model 30, 286, 40 MB,
w/Monitor \$1799
Model 55SX, w/60 MB
w/Monitor \$2599
Model 70, w/60 MB
and Monitor \$3099
Model 70, w/121 MB
and Monitor \$3799
Model 70-A21, w/121 MB
and Monitor \$4999
6 Month Warranty

COMPAQ

Model 386S w/40 MB .. \$1999
Model 386E w/40 MB .. \$2695
Model 386E w/100 MB .. \$2899
Model 386 25E
w/100 MB \$4299
Model 386-33 w/84 MB .. \$6999
LTE 20 \$1899
LTE 286 20/40 ... \$2499/\$2849
SLT 386-60MB \$4999
6 Month Warranty

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	\$169
AST 6 Pack 286	\$189
AST Rampage Plus	\$339
AST Rampage Plus 2 MG	\$449
Irma Board III	\$399
AST 5251-II Plus	\$479

INTEL

Intel Above Board+	\$329
Intel Plus 8 w/2 MG	\$469
Intel 386 PC w/1 MG	\$459
Intel Satisfaxion	\$369
Intel Snap-In 386	\$369

SCAN. & DIGIT.

Panasonic FXRS 3070U ..	\$949
Summasketch 12x12	\$319
Summasketch 12x18	\$539
Panafax PD-2300	\$539

DRIVES & TAPES

Ext. 5 1/4" for PSII	\$159
Ext. 1.2 for PSII	\$179
Toshiba 3 1/2" 720K	\$69
Toshiba 3 1/2" 1.44	\$79
Colorado Jumbo 40	\$259
Everex 40 MB Tape	\$239
Everex 60 MB Tape	\$599

SEAGATE HARD DISKS

48 MB 3 1/2" (157N-Kit)	\$279
40 MB (157A)	\$199
40 MB for AT (ST251-1) ..	\$249
80 MB for AT (4096)	\$549
80 MG 296 Kit	\$369
111 MB 1126A	\$549

IOMEGA

20 MB Int. w/boot card ..	\$999
44 MB Int. w/boot card ..	\$1125

PLUS

Hard Card 20 MB	\$489
Hard Card 40 MB	\$549
Hard Card 80 MB	\$489
Hard Card 105 MB	\$659

CONNOR HARD DRIVES

40 MB	\$249
100 MB/200MB	\$439/\$759

MODEMS

Hayes 1200/2400 Ext	\$279/329
V-Series 9600 Int.	\$549
Intel 2400	\$139
Intel 2400 Ext.	\$159
Intel 2400 Ext. MMP	\$209
Intel 9600	\$479
Megahertz 2400 Toshiba	\$129
2400 Cpq LTE	\$129
Everex 2400	\$89
Everex 2400 External	\$169
US Robotics 9600	\$579

CHIPS

256K/1 MG Chips . each	\$4/\$7
256K/1MB Simms	\$30/\$59
Compaq 386 1 MB	\$149
Compaq 386 4 MB	\$349
Compaq 386 2 MB-33 ...	\$179
Compaq SLT 2 MB	\$249
Compaq LTE 2MB	\$179
Compaq Port 2MB	\$275
IBM 2-8 MG Board	\$379
IBM 30-286 512K	\$79
IBM 70 & 80 2 MB	\$159
Toshiba Port 2MB	\$169



Intel 8087-3	\$89
Intel 8087-2	\$119
80287-10XL	\$179
80287 XLT	\$189
80387-16/80387-SX ..	\$309/\$279
80387 SX-20	\$299
80387-20	\$349
80387-25/80387-33 ..	\$439/\$539

NETWORKING

Advanced Network 2.15	\$2099
SFT Network 2.15	\$2899
ELS Level I 4 User	\$489
ELS Level II 8 User	\$1199
NE1000 Ethernet	\$169
NE2000	\$189
Ethercard +/-16	\$149/\$179

SOFTWARE

D Base IV	\$479
Harvard Graphics	\$289
IBM Displaywrite V	\$239
Lotus 123 2.2/3.1 ...	\$329/\$379
Microsoft Mouse	\$99
Microsoft Excel	\$299
Microsoft Windows 3.0 ...	\$99
Microsoft Word	\$219
Multimate Version IV	\$239
R Base for DOS	\$439
Symphony	\$459
Ventura Desktop Publ. ...	\$519
Word Perfect 5.1	\$249

VIDEO BOARDS

ATI 16 Basic	\$89
ATI VGA Wonder	\$199
ATI VGA Wonder 512 ...	\$219
Goldstar VGA	\$69
Genoa 6300/6400 ..	\$169/\$219
Hercules Station	\$649
NEC Grph Engine 256 ...	\$899
Orchid Pro II	\$279
Paradise VGA	\$139
Paradise +16	\$179
Paradise VGA 1024	\$189
STB Power IMG	\$249

MONITORS

MITSUBISHI

EGA	\$339
Diamond Scan	\$489
HL6605 16"	\$1049
HL6905 20"	\$1799
3950 ADK	\$1649

NEC

Multisync IIA	\$469
Multisync IIID	\$599
Multisync IVD	\$979
Multisync VD	\$2275

PANASONIC

1381 VGA 1024x768	\$379
1391 VGA 1024x768	\$499

GOLDSTAR

Color/EGA	\$199/\$269
VGA 1425+	\$279
VGA 1430	\$299

**Arlington
Computer
Products, inc.**

Defective software will be replaced with the same item only. We cannot guarantee compatibility. Returned shipments are subject to a restocking fee. Prices and availability subject to change without notice.

HOURS C.S.T.
8 am - 6:30 pm - Mon-Fri.
9 am - 2 pm - Sat.

1970 CARBOY
MT. PROSPECT, IL 60056

FOR ORDERS & SYSTEMS QUOTES: **800-548-5105**



CUSTOMER SERVICE AND IN ILLINOIS **708-228-6333**

SHIPPING **708-228-9748**

TECHNICAL ASSISTANCE **708-228-1470**

FAX **708-228-0516**

No surcharge for MasterCard or Visa.

Decade of Experience Delivers...



SHIPPING
MOST ORDERS SHIPPED
IN 24 HOURS



PRICE
A DECADE OF THE
LOWEST PRICES



CONFIDENCE
WE DO NOT CHARGE YOUR CREDIT CARD
UNTIL YOUR ORDER IS SHIPPED



CONVENIENCE
EXTENDED HOURS LATE NIGHTS,
SATURDAYS AND SUNDAYS

**Increase Office
Performance!**

**Expand Your
Business!**

**Your In-House
Print Shop!**

**Connect Your
Office!**

**Produce
Results!**

COMPUTERS/ PERIPHERALS

DESKTOP

ALR	
Business Veisa 386/33 #101	\$1619
Power Flex 286/40MG	1029
AST	
All Models	Call

LAPTOP

Epson	
Equity Portabla LT-286e	\$2220
Equity Portabla LT-386sx	2939
Goldstar	
GS520 386SX 16mbz 40MB	1989
Leading Edge LT386SX +	1859
Sharp PC-5541	3069
Toshiba	
T-1000 SE	995
T-1000 XE	1255
T-1200 XE	2109
Other Models	Call
Laplink Release III	85

DISK DRIVES

Omega (Bernoulli)	
Beta 88 MG Dual 44	\$1875
Beta 44 MG Insider	795
Mextor 7040 40MG IDE w/CNT	295
Seagate ST1239A 211 MG	759

UTILITIES

Fastback Plus	\$109
PC Tools Deluxe 6.0	85
Norton Utilities	112
Headroom	67
Netroom	47
Qemm 386	59
Direct Access	59

CD ROM

NEC CDR-83 XT/AT w/Interface	\$635
Toshiba CD ROM RDR w/SCSI EXT	705

ACCESSORIES

Logical Connection 512K	\$422
Masterpiece	82
Masterpiece Plus	95
Masterpiece Remote	102
Summasketch 12x12 II	336
Summasketch 12x18 Pro II	
4 Button	582
Summasketch 12x18 Pro II	
16 Button	599

OPERATING ENVIRONMENTS

Carousal v5.0	\$48
Desqview 386 v2.3	129
MS Windows Ver. 3.0	91

MODEMS

Everax	
Evercom 24 INT	\$105
Practical Peripheral	
2400 B	125
Prometheus	
2400 B w/Software	99

CO-PROCESSORS

Intel	
80287-XL	\$189
80387 SX 16	235
80387 DX 20	375

PRINTERS

Citizen GSX 140/80	\$319
Hewlett Packard Laser Jet III	1725
IBM Pro Printer II XL	345
Okidata OL-400	635
Panasonic 1124i	289
Seiko Smart Label Printer	165

OCR/SCANNERS

Complete Full Page	\$529
DFI Scanner HS-3000+	149
Logitech Scanman 256	282

SOFTWARE

CAT Reader Pro Full Page	\$229
Complete OCR/FP	289
DFI OCR Deluxe	125

MONITORS

Aamazing 14" MM1488	\$139
Mitsubishi XC 1429 C VGA	305
NEC Multisync 2A	469

MICE

Logitech Serial Mouse	
New Hi-Ras XT/AT	\$58
Logitech Trackman Serial	75
MS Bus or Serial w/Windows 3.0	145
Microspeed PC Trac Sar or PS/2	70

BOARDS/CARDS

SOUND BOARDS

Creative Labs	
Sound Blaster	\$149

HARD CARDS

Plus Development	
II XL50 MG	\$375
II XL105 MG	645
II 80 Meg	489

FAX BOARDS

Complete	
9600	\$289
Communicator	409
Everfax 24/96 INT	255

BOARDS

ATI VGA Wonder + 256K w/Mouse	\$199
Everex RAM 3000 Deluxe	79
Paradise VGA + 16	129

DESKTOP PUBLISHING

WINDOWS

Ami Professional	\$289
Grammatik for Windows	56
Ventura Publisher Gold/Windows	530

PRESENTATION GRAPHICS

Harvard Graphics	\$295
Drefix Ultra v4.0	232
Lotus Freelance Plus	311

PROFESSIONAL DESKTOP PUBLISHING

AMI Pro	\$289
Pagemaker 3.01	489

**For Your Office
On The
Go...**

NOTEBOOKS

ALR Venture16	
386SX 16 mhz 20MB	\$2469
Altima NSX386SX 20MB	2545
Epson NB3-S 20mb	2799
Epson NB3-S 40mb	3069

Everex Tempo XL 20mb	2099
Packard Bell	
PB286 NB 12 mhz 20 MB	1989
Panasonic CF-150 B	739
Panasonic CF-170	1495

LAN & NETWORKING

SOFTWARE

ACCPAC BPI Network	\$229
Harvard Graphics LAN Server	564
Novell	
Adv NW/286	1953
ELS I	508
ELS II	1149
Paradox 3.5 LAN	625
PC Anywhere IV LAN	269
Q & A Network Pack	252
R-Base LAN 3.1	579

HARDWARE

Anthem	
NE1000	\$155
NE2000	185
Artisoft	
Latantac 2MBPS Starter	401
Latantac EtherNet Starter	505

BUSINESS PRODUCTIVITY

ACCOUNTING

ACCPAC RPI	
AP, AR, GA, INV. Payroll	\$229
DAC Easy Bonus Pack 4.1	124
DAC Easy Payroll 4.1	53
Peachtree III w/Data Query	210

INTEGRATED SOFTWARE

MS Works	\$32
PFS First Choice	65

PROJECT MANAGEMENT

Lotus Agenda Ver. 2.0	\$275
Drg + Advanced	59
Timeline 4.0	439

COMMUNICATIONS

Carbon Copy Plus	\$110
Procom Plus	63
Prodigy Start-Up Kit 3.1	25

PROGRAMMING & LANGUAGES

MS C Compiler	\$299
MS Quick Basic	61
Turbo C++	67
Turbo Pascal Pro 6.0	189

CAD & ENGINEERING

Auto Sketch 3.0	\$141
Design CAD 3-D	188
Generic CAD 5.0	282

FORM PROCESSING

Form Filler 3.0	\$79
Formtool Gold 3.0	53
Formworks w/Fill & File	82

SPREADSHEET

Lotus 1-2-3 Ver. 2.2	\$330
Lotus 1-2-3 Ver. 3.1	409
Quattro Pro	310
Supercalc 5	99

TIME MANAGEMENT

Calendar Creator Plus	\$39
Top Priority	53
Working Hours	53

DATA BASE MANAGEMENT

Clarion Pro Developer	\$451
FoxPro Single User	429
Q&A	217
R&R Relational Report Writer Dual	145

WORD PROCESSING

LetterPerfect	\$129
PFS Professional Write 2.2	142
WordPerfect 5.1	246

TAPE BACKUP

Colorado Memory System	
Jumbo 40/80 EXT	\$375
Jumbo 40/80 INT	239

DISKETTES AND TAPES

Irwin	
All Models	Call
Sony	
5.25 D/S D/D Disks (100)	\$50

BEST SELECTION

**We have the product
you want.**

WE ACCEPT INTERNATIONAL ORDERS AND CORPORATE PURCHASE ORDERS

**TEXAS
INSTRUMENTS**



The new 20 MHz 386X TM 3000 is
just 8.5" x 11", a mere 1.8" thin and
weighs an easy-to-carry 5.7 lbs.
(including battery)!

\$3269

**Telemart
Carries
Much More
Than Our Ad
Can Hold!
If You Don't
See What
You're
Looking For,
Call Us!**

CORELDRAW!



"The World's Finest
PC Illustration
Software"
(New Version)

\$365

1-800-634-9270

**VARs/Dealers 1-800-537-6753 • NATIONAL ACCTS 1-800-752-0561
NOW ACCEPTING INTERNATIONAL ORDERS • Call our FAX (602) 944-1510**

• No Charge for VISA and MASTERCARD.
• We Do Not Charge Your Card Until Your
Order is Shipped.
• You Pay The Ground Shipping
1-10 # \$8.00; 11-20 # \$12.00
(Except Alaska & Hawaii).
• We Pay the Air Difference.
• Free Air Applies ONLY to
Domestic Orders Over \$100.

• All products including O.D.A.'s
carry only manufacturer's warranties.
We do not honor guarantees, rebates,
trial period privileges or promotional
programs offered by manufacturers.
• No returns on used or misordered product.
• We do not guarantee machine compatibility.
• Machine compatibility disclaimer does not
apply to MIT Systems.

• International Orders Add 5%.
• Call Before Submitting P.O.'s. Ask for
National Accounts.
• Personal & company checks will delay shipping
3 weeks. Prices, terms, availability & specifications
are subject to change without notice.
• Add 5% for C.O.D., A.P.O. & F.P.O. Orders.

• Mailing Address:
telemart
8804 N. 23rd Ave., Phoenix, AZ 85021.
• In Arizona Call (602) 944-0402.
• Order Line Hours: Mon-Fri 8am-10pm,
Sat 8am-5pm, Sun 10am-3pm.
• Order Processing: (602) 944-1037
10am-3pm Mon.-Fri.

• Money Back Guarantee
Software ONLY.
30 Days from date of invoice period.
Refund ONLY on product price.
Product must be in resellable condition.
Call for return authorization number.
Must be in original packaging.
Software is the latest available version.

telemart
Where smart buyers find smart buys.

Circle 178 on reader service card

MEMORY!

FIRST SOURCE
INTERNATIONAL, INC.

"The Only Source for Computer Memory!"

WE ACCEPT INTERNATIONAL ORDERS AND PO's!

3 DAY INTERNATIONAL DELIVERY VIA FEDERAL EXPRESS, UPS OR DHL!

- ✓ ALL USER INSTALLABLE
- ✓ QUALITY PRODUCTS
- ✓ GREAT PRICES
- ✓ SUPERIOR SERVICE

- ✓ UNLIMITED SELECTION
- ✓ EXCEPTIONAL WARRANTY
- ✓ FREE TECHNICAL SUPPORT
- ✓ FLEXIBLE PAYMENT OPTIONS



Your choice of quality memory products manufactured by:

Kingston
TECHNOLOGY CORPORATION

PARAGON
MEMORY CORPORATION



BRAND NEW!

IBM MEMORY

Model PS/1		
512K Kit	1057035	\$79.00
2MB	IBM PN N/A	\$219.00
Models 30-286, Exp. Board 1497259		
512K Kit	30F534B	\$39.00
2MB Kit	30F5360	\$129.00
Models 70-E61/121, 50Z, 55SX, 65SX		
1MB	6450603	\$79.00
2MB	6450604	\$139.00
Models 55SX, 65SX, 34F3077 & 34F3011		
4MB	34F2933	\$339.00
Model 70-A21		
2MB	6450608	\$149.00
Model 80-141		
1MB	6450375	\$99.00
Models 80-111/311		
2MB	6450379	\$159.00
Models 80-A21/A31		
4MB	6451060	\$289.00
Models 90, 95 and P75		
1MB	6450902	\$199.00
4MB	6450128	\$429.00
Expansion boards for all models 50 and 60		
2-8MB w/2M	1497259	\$399.00
2-16MB w/2M	6450609	\$429.00
Expansion boards for all models 70 and 80		
2-14MB w/2M	34F3077	\$409.00
4-16MB w/4M	34F3011	\$559.00

COMPAQ MEMORY

DeskPro 286-E, 386-20/20E/25		
1MB	113131-001	\$109.00
4MB	113132-001	\$289.00
DeskPro 386S/16		
1MB	113646-001	\$119.00
4MB	112534-001	\$319.00
DeskPro 286N, 386N, 386SX and 20		
1MB	11B68B-001	\$89.00
4MB	11B690-001	\$399.00
DeskPro 386N, 386SX and 20		
2MB	11B689-001	\$149.00
DeskPro 386-33, 486-33 & SystemPro		
2MB	115144-001	\$149.00
BMB	116561-001	\$959.00
DeskPro 386-20e and 25e		
1MB Board	113644-001	\$179.00
4MB Board	113645-001	\$359.00
DeskPro 386S		
1MB Board	113633-001	\$189.00
4MB Board	113634-001	\$369.00
DeskPro 386/16 (Populate in this order)		
1MB Kit	108071-001	\$129.00
1MB Board	108069-001	\$289.00
2MB Board	108069/71-001	\$389.00
4MB Board	108070-001	\$679.00
BMB Board	108070/72-001	\$1209.00

LAPTOP MEMORY

TOSHIBA

Model 1000SE, XE, LE and 2000SX		
1MB		\$189.00
2MB		\$279.00
Model 1000LE and 2000SX		
4MB		\$649.00
BMB		\$1199.00
Model T1200XE		
2MB		\$169.00
Model T1600		
2MB		\$169.00
Model T3100E		
2MB		\$169.00
Model T3100SX		
2MB		\$169.00
4MB		\$399.00
Model T3200SX/C		
2MB		\$169.00
4MB		\$399.00
Model T3200		
3MB		\$279.00
Model T5100		
2MB		\$169.00
Model T5200, T8500		
2MB		\$169.00
BMB		\$999.00

COMPAQ

Portable 386/20		
1MB		\$279.00
4MB		\$819.00

Brother HL-4, HL-8E and HL-8PS

1MB	\$149.00
2MB	\$199.00
Canon LBP-4	
2MB	\$349.00
Canon LBP8-III	
2MB	\$339.00
QMS PS410	
2MB	\$199.00
Compaq LTE386/20	
1MB	\$279.00
4MB	\$679.00
AST Executive Notebook	
1MB	\$99.00
4MB	\$539.00

WE WILL BEAT ANY ADVERTISED PRICE! - WHY CALL ANYONE ELSE?

PRINTER MEMORY

Hewlett Packard LaserJet IIP, III and IID		
2MB	33475B	\$149.00
4MB	33477B	\$249.00
Hewlett Packard LaserJet II and IID		
2MB	33444B	\$139.00
4MB	33445B	\$239.00
IBM Laser 4019 and 4019e		
2MB	1039137	\$169.00
3.5MB	1038675	\$249.00
Canon LBP-8II, 8IIR, 8IIT		
2MB	S63-18B0	\$139.00
4MB	PN N/A	\$239.00
Panasonic 4450		
1MB	KX-P440	\$179.00
Panasonic 4450I and 4420		
2MB	KX-P441	\$169.00
4MB	PN N/A	\$269.00
Toshiba Page Laser 6		
2MB	LS6-NB0090	\$169.00
Okilaser 400, 800 and 820		
2MB	OKI PN N/A	\$169.00
4MB	OKI PN N/A	\$269.00

ZENITH MEMORY

Zenith Z-386/20/25/33 & 33E		
1MB	ZA36/3B00ME	\$79.00
4MB	ZA3B00MK	\$399.00
Zenith Z-386/25 & 33		
2MB	ZA3600MG	\$149.00
Zenith Z-386 SX		
2MB Kit	Z-605-1	\$129.00
Zenith TurboSport 386e		
4MB	ZA-3034-MK	\$569.00

AST MEMORY

Premium 386C and 386-16		
1MB Kit	500510-007	\$69.00
4MB Kit	500510-008	\$239.00
Premium 386-20		
1MB Kit	500510-003	\$89.00
4MB Kit	500510-004	\$269.00
Bravo 386-SX, WS/286/386 and /2		
2MB Kit	500510-002	\$129.00
4MB Kit	500510-008	\$239.00
Premium 386-SX/16/25/33 & all 486 models		
1MB	50071B-002	\$69.00
Premium 486		
2MB	50071B-004	\$179.00
Premium II 386SX/20 & 386SX/16		
1MB	500780-003	\$79.00
4MB	500780-004	\$399.00
BMB	PN N/A	\$779.00

HEWLETT-PACKARD MEMORY

Vectra QS/16S & ES/12PC		
2MB Kit	D1354A	\$129.00
Vectra QS/16S and RS/20PC		
1MB Kit	D1540A	\$79.00
4MB Kit	D1542A	\$259.00
Vectra QS/20PC, RS/25PC, 20C and 25C		
1MB Kit	D1640A	\$79.00
4MB Kit	D1642A	\$259.00
Vectra 486 PC		
1MB Kit	D2150A	\$89.00
4MB Kit	D2151A	\$399.00
Vectra 486PC and 386/25 PC		
BMB Kit	D2152A	\$899.00
Vectra 386/25 PC		
2MB Kit	D23B1A	\$149.00
CALL FOR HP SERIES 9000/400T & 425T		

Portable LTE 286		
1MB		\$129.00
2MB		\$189.00
4MB		\$599.00
SLT-286		
1MB		\$169.00
4MB		\$599.00
SLT-386		
1MB		\$169.00
2MB		\$279.00

ZENITH

SuperSport 286, 286e and Slimpart		
1MB		\$179.00
SuperSport SX, 286e and Slimpart		
2MB		\$229.00
SuperSport SX		
2MB A or B		\$229.00
TurboSport 386e		
1MB		\$199.00

NEC

PraSpeed 286 and 386SX/16		
1MB		\$219.00
2MB		\$329.00
4MB		\$569.00
PraSpeed SX/20		
1MB		\$219.00
4MB		\$529.00
PraSpeed 386		
2MB		\$299.00
BMB		\$1249.00

NEC MEMORY

Powermate SX		
2MB Bnd	APC-HB55	\$569.00
4-BMB Bnd	APC-HB53	\$849.00
BMB Bnd	NEC PN N/A	\$1429.00
Powermate SX Plus		
1-2MB Bnd	APC-HB50E	\$239.00
2MB Bnd	NEC PN N/A	\$399.00
4-BMB Bnd	APC-B52E	\$669.00
BMB Bnd	NEC PN N/A	\$1219.00
Powermate SX/20		
2MB CPU	OP-410-B101	\$239.00
2MB CPU/OK	OP-410-B100	\$299.00
2MB Bnd	OP-410-B102	\$239.00
2MB Kit	OP-410-B103	\$179.00

EXPANSION BOARDS

Everex RAM 3000 Deluxe

Up to 3MB of base, expanded and/or extended memory. EMS 4.0 compatible with no wait states. Uses 256Kx1 Dram.

with 512K: \$139.00

BocaRam/AT Plus

Up to 8MB for any AT or 16-bit compatible machines running up to 33MHz. Offers all types of memory, provides a maximum of 8MB LIM/EMS 4.0. Uses 1x1 Dram or 1x9 SIMM modules.

2MB with DRAM's: \$239.00

2MB with SIMM's: \$259.00

Orchid 8/16

Up to 32MB for IBM AT, or 16-bit compatible. Use as conventional, expanded and/or extended up to 32MB using 256K, 1MB or 4MB industry standard SIMMs.

with 1MB: \$299.00

SIMMS

IBM

4Mx9-B0	\$269.00
1Mx9-10	\$52.00
1Mx9-B0	\$53.75
1Mx9-70	\$56.25
256x9-10	\$15.00
256x9-B0	\$16.00

APPLE/MAC

4Mx8-B0	\$249.00
1Mx8-B0	\$47.00
1Mx8-B0	\$49.00

AVAILABLE IN

STATIC OR SIPP

(ADD \$2.00 FOR SIPP)

CALL FOR VOLUME DISCOUNTS ON ALL CHIPS, SIMM AND SIPP MODULES!

DRAM

1MBX1

1MX1-10	\$5.50
1MX1-B0	\$6.00
1MX1-70	\$6.50
1MX1-60	\$7.50

256KX4

256KX4-10	\$5.50
245KX4-B0	\$6.00

256KX1

256KX1-10	\$1.90
256KX1-B0	\$2.00
256KX1-70	\$2.50
256KX1-60	\$3.00

TOLL FREE FROM ANYWHERE IN THE U.S. OR CANADA
ORDER NOW! 1-800-535-5892



WE ACCEPT VISA, MASTERCARD AND AMERICAN EXPRESS!

- No surcharge on Visa or Mastercard. AmEx add 4%.
- Terms: AMEX, Visa, Mastercard, C.O.D., P.O.'s.
- 20% Restocking fee on all non-defective returns and refused orders. Return Authorization # required.
- Manufacturers' part numbers are for your convenience, all all products are third party. 100% compatible or full refund!
- Prices and availability subject to change.
- "We will beat any advertised price" valid only on identical brands, offer not good for SIMMs or DRAM.

INT'L 714-588-9866

U.S. 800-535-5892

FAX 714-588-9872

MAIL ORDERS TO:

FIRST SOURCE INT'L INC.
36 ARGONAUT, STE 140
ALISO VIEJO, CA 92656

FOLLOW YOUR PACKAGE EVERY STEP OF THE WAY!



FAST, INEXPENSIVE AND DEPENDABLE DELIVERY ANYWHERE IN THE WORLD! CHOOSE THE CARRIER TO FIT YOUR DELIVERY NEEDS AT LOW RATES. INFORMATION FOR TRACKING SHIPMENTS IS READILY AVAILABLE AT YOUR REQUEST!

CALL
TOLL FREE:

(800)345-5568

Unbeatable
Prices!

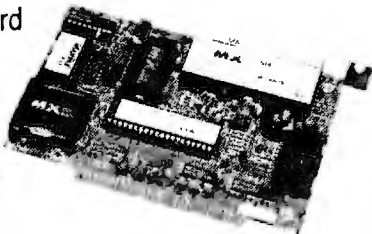


**MaxFax
9624**

FAX/MODEM CARD

- Powerful, intelligent, Group 3 9600 bps Fax & Hayes compatible 2400 bps Modem Card.
 - Unique Auto Direct compatibility
 - Background and "Unattended" operation
 - Dedicated On-Board Microprocessor & powerful software package
 - Supports several popular printer and page scanners
 - Easy to install and setup
 - Compatible with IBM PC, XT, AT, PS/2 Model 30, Compaq Deskpro 386 and all other IBM compatible PCs.
- Compact half-card size to fit most portable & laptops

\$128⁹⁵



Marstek 128

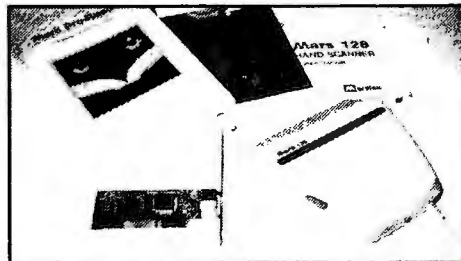
Hand Scanner

- Perfect Scanning Width & Highest Scanning Speed!
- Enables you to import directly into most desktop publishing software
- Allows you to scan text files directly into many OCR software

Complete Package includes...

- Mars 128 5" Scanner & Interface Card
- Scan Kit Utility Software & User's Manual
- Cat Reader OCR Software & PC Paintbrush Plus
- One Year Warranty

\$98⁹⁵



The MousePen

Works like a mouse, shaped and held like a pen! Uses existing drivers in Windows® and works with Microsoft or IBM OS/2 drivers. Includes...

- Microsoft Compatible Driver
- Menu Maker utility software for non-mouse applications
- TelePAINT® color paint program with VGA support
- IBM PS/2 Mouseport Connector
- Adapter for DB9 and DB25 serial ports
- 5-1/4" & 3-1/2" diskettes
- User's Manual
- Custom Pen Holder

\$58⁰⁰



Memory Products

IBM PS/2 MEMORY

CAT. #	DESCRIPTION	NSI
30F5348	512KB Upgrade PS/2 30 286	44.00
30F5360	2MB Upgrade PS/2 30 286	128.00
6450372	2MB Memory Adapter 6450367	395.00
6450603	1MB SIMM PS/2 70-E61; 121	68.00
6450604	2MB SIMM PS/2 50Z-70	108.00
6450608	2MB SIMM PS/2 70 - A21	128.00
34F2933	4MB SIMM PS/2 55SX; 65SX	279.00
6450375	1MB Mem. BD PS/2 80-041	96.00
6450379	2MB Mem. BD PS/2 80 111-321	158.00

CAT. #	DESCRIPTION	NSI
6451060	4MB Mem.BD PS/2 80-A21;A31	298.00
6450605	2-8MB Xpand Mem. PS/2 70&80 w/2MB	348.00
34F3077	2-14MB Xpand BD. PS/2 70&80 w/2MB	388.00
6450609	2-14MB Xpand BD. PS/2 50-65SX w/2MB	388.00

CALL FOR PS/1 MEMORY

SIMM MODULES

	150	120	100	80	70	60
256x8	15.00	17.00	19.00	22.00		
256x9	17.00	19.00	21.00	24.00		
1MBx8		45.50	46.00	55.00	65.00	
1MBx9		46.50	47.95	58.00	68.00	
4MBx8			259.00	279.00	309.00	
4MBx9			279.00	269.00	299.00	

DRAM CHIPS

	150	120	100	80	70	60
64x1	.90	1.20	1.50			
64x4		2.00	2.15			
256x1	1.25	1.40	1.60	1.85		
256x4		5.00	5.25	5.60	6.25	7.50
1MBx1		4.75	5.00	5.35	6.00	7.00

COMPAQ MEMORY

CAT. #	DESCRIPTION	NSI
107331-001	512KB Upgrade Portable III	38.00
107332-001	2MB Upgrade Portable III	118.00
107651-001	1MB Module Portable 386	218.00
107653-001	4MB Xpand Mem. Portable 386	630.00
107654-001	4MB Mem. Xtension Portable 386	630.00
108069-001	1MB Xpand Memory DP386-16	288.00
108070-001	4MB Xpand Memory DP386-16	630.00
108071-001	1MB Memory Upgrade DP386-16	108.00
108072-001	4MB Memory Upgrade DP386-16	438.00
110235-001	1MB Memory BD Sit 286	162.00
110237-001	4MB Memory BD Sit 286	630.00
112534-001	4MB Module DP386S-16	298.00
113131-001	1MB Module DP386286E, 386 20-25E	96.00
113132-001	4MB Module DP286E, 386 20-25E	228.00
113633-001	1MB Xpand Mem. DP386S-16	148.00

CAT. #	DESCRIPTION	NSI
113634-001	4MB Xpand Mem. DP386S-16	358.00
113644-001	1MB Xpand Mem. DP386 20E, 25E	148.00
113645-001	4MB Xpand Mem. DP386 20E, 25E	358.00
113646-001	1MB Module DP386S-16	110.00
115144-001	1MB Module DP386-33, 486-25, Syspro	158.00
116561-001	8MB Module 486-25, Syspro	899.00
116568-001	32MB Module DP486-25, Syspro	4,990.00
117077-001	512KB Mem. BD Portable LTE	119.00
117081-001	1MB Mem. BD Portable LTE 286	99.00
117081-002	2MB Memory BD Portable LTE 286	158.00
118688-001	1MB Module DP286N, 386N	90.00
118689-001	2MB Module DP386N, 386S-20	168.00
118690-001	4MB Module DP286N, 386N,	396.00

TOSHIBA MEMORY

CAT. #	DESCRIPTION	NSI
PC10-PA8304U	2MB Memory Card Portable T5200 Toshiba Desktop T8500	168.00
PC12-PA8307U	2MB Memory Card Portable T3200SX	168.00
PC13-PA8306U	2MB Memory Card Portable T1200XE	168.00
PC14-PA8311U	1MB Memory Card Portable T1000SE-XE	218.00
PC15-PA8308U	2MB Memory Card Portable T3100SX	162.00

CAT. #	DESCRIPTION	NSI
PC15-PA8310U	4MB Memory Card Portable T3100SX	378.00
PC6-PA7137U	3MB Memory Card Portable T3200	228.00
PC7-PA8301U	2MB Memory Card Portable T5100	168.00
PC9-PA8340U	512K Memory Card Portable T3100E	120.00
PC9-PA8341U	2MB Memory Card Portable T3100E	168.00

ALL MEMORY PRODUCTS COME WITH 5 YEAR UNCONDITIONAL WARRANTY. CALL FOR QUANTITY PRICES.

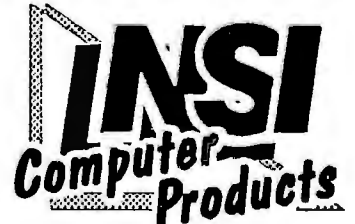
We buy and sell excess inventories..call or fax list.

20308 Gramercy Place, Torrance, CA 90501

(213) 328-3344 • FAX: (213) 328-2907 • (800) 345-5568

TERMS: ALL PRICES SHOWN ARE CASH PRICES. No Surcharge - NSI CHARGE, VISA, MC, AMEX, COD, PO's from qualified firms. 20% restocking fee on all non-defective returns. All returns/adjustments must be made within 15 days. CA residents Add 7% Sales Tax • PRICES SUBJECT TO CHANGE • \$8.50 Minimum Shipping.

WE ACCEPT...



LASER PRINTER MEMORY

Cat. #	WORKS WITH	NSI
H33474B	1MB HPLaser Jet IIP, III, IID	99.95
H33475B	2MB HPLaser Jet IIP, III, IID	139.95
H33477B	4MB HPLaser Jet IIP, III, IID	214.95
H33443B	1MB HPLaser Jet II & IID	99.95
H33444B	2MB HPLaser Jet II & IID	139.95
H33445B	4MB HPLaser Jet II & IID	214.95
1039136	1MB IBM Laser 401S	139.00
1039137	2MB IBM Laser 4019	185.00

Cat. #	WORKS WITH	NSI
1038675	3.5MB IBM Laser 4019	229.00
M6005	1MB Apple LaserWriter II/NTX	85.00
M6006	4MB Apple LaserWriter II/NTX	319.00
S63-1300	1MB Canon LBP-8II	119.00
S63-1880	2MB Canon LBP-8II	189.00
N/A	4MB Canon LBP-8II	269.00

MEMORY BOARDS—BOCA RESEARCH

BOCARAM/XT—Provides up to 2MB of expanded memory for 8 bit bus. Operates up to 12 MHz. Uses 256K D-RAM—with OK \$120.00
with 512K 149.00
with 2MB 229.00

BOCARAM/AT PLUS—Provides up to 8MB of extended, expanded or backfill memory. Operates up to 33MHz and is sset thru software. Uses 256K D-RAM—with OK \$119.00
with 2MB 219.00

BOCARAM/AT-I/O PLUS—Provides up to 4MB of Xtended, Xpanded or backfill memory. For 16 bit bus. Operates up to 33 MHz and is set thru software. has serial and parallel port. Uses 1MB D-RAM—
with OK \$149.00
with 2MB 249.00

BOCARAM 30—Provides up to 2MB of expanded memory for IBM PS/2 model 25, 30 and 8-bit bus utilizing 3.5" floppy disks. Uses 256K D-RAM—
with OK \$159.00
with 2MB 299.00

BOCARAM 50Z—Provides up to 2MB, 0 wait state, expanded or extended memory for IBM PS/2 model 50, 50Z, 60. Uses 1MB D-RAM—
with OK \$159.00
with 2MB 279.00

BOCARAM 50/60—Provides up to 4MB expanded, extended or backfill memory for PS/2 model 50, 60. Uses 1MB D-RAM—
with OK \$149.00
with 2MB 269.00
with 4MB 359.00

WE CARRY MEMORY UPGRADES FOR AST, ZENITH, IBM, HP, COMPAQ, NEC, APPLE SYSTEMS PLUS MANY POPULAR PRINTERS! CALL FOR LOW LOW PRICES!

REPLACE YOUR CASH REGISTER!



NEW VERSION 2.0
JUST \$179.95!
(bear included)

Replace your cash register with the Microbiz Controller Series... the #1 point-of-sale system.

Business Solutions for
Retail Stores, Liquor Stores,
Video Stores, Hair & Nail
Salons, Auto Repair Shops...

Flexible Enough to Work for You

You didn't go into business for yourself to do things someone else's way. Fortunately, we did. We've already computerized thousands of different retail stores, video stores, auto repair centers, beauty salons, clothing stores, health clubs, pet, furniture, liquor, and hardware stores . . . So we've learned how to make **The Retail Controller Jr.** flexible enough to do the job for you by building in a number of custom-designed options. Use it with or without a bar code reader, cash drawer, or receipt printer. And, if at a later date you need the additional features of **The Retail Controller Sr.** (accounts receivable, purchase orders, layaway plans), you can upgrade easily and economically at any time.

"Update . . . or Evaporate!"

That's how one of our customers put it. And it's true. In today's increasingly competitive retail environment, store owners need better ways to control their inventory, streamline their operation, and keep in touch with their customers. **The Retail Controller, Jr.** is a powerful point-of-sale program that's so cost-effective and easy to use, you can't afford *not* having it!

Replace Your Cash Register with a Cash Generator!

Can your cash register tell you what's in stock, control your inventory, check and correct prices automatically, provide quicker service, get more repeat business, and optimize your purchasing? **The Retail Controller Jr.** will help you leapfrog past your competition, reduce shrinkage, billing errors, costs, and time. It puts the profit-building speed, accuracy, and power of microcomputers to work for you. It's like replacing your cash register with a cash generator!

and select" customer and product lookup all help to make the program almost intuitively easy to use. All transactions are performed from just one Work Screen. Yet it incorporates many of the features you'd expect to find only in systems costing hundreds of dollars more, features like:

- ✓ automatic credit card verification
- ✓ bar code compatibility
- ✓ color/size matrix
- ✓ multiple pricing levels
- ✓ tracks inventory by size/color/style
- ✓ mailing labels
- ✓ tracks customer history
- ✓ daily closeout reports
- ✓ accepts split tender
- ✓ view in-stock status
- ✓ pull down menus
- ✓ pop-up windows
- ✓ source code available
- ✓ 99 levels of password protection
- ✓ tracks promotional sales
- ✓ prints bar code labels
- ✓ reorder reports
- ✓ extensive sales reports
- ✓ item/invoice discounts
- ✓ tracks sales by employee
- ✓ set limited-time promos
- ✓ links to One-Write Plus, Quicken and other popular accounting programs.
- ✓ receiving reports
- ✓ pop-up calculator

Record Control in Record Time

With **The Retail Controller Jr.**, you'll make smarter management decisions because you'll have pushbutton-quick, down-to-the-penny information. Operating at your sales counter, the program captures vital customer and sales data, organizes it, and presents it in neat, accurate reports that eliminate guesswork and improve control.

Bar Code Easy, Feature Packed

The Retail Controller Jr. is designed for first-time computer users. Even a brand new clerk can learn how to process transactions in minutes. The speed and efficiency of barcoding (optional) can keep keystrokes to a minimum. Pull-down menus, on-screen help windows, and "point



"I can't imagine running my shop without it. The program gives me much better control over all my items and has more than paid for itself."
 —G. Truglia, Car-Tune, New City, NY

It Pays for Itself — or You Don't. Guaranteed!

We believe in our product, and thus offer a **100% No-Risk Guarantee**. If you are not satisfied with any unregistered MicroBiz program for any reason, you may return it within 30 days for a complete refund.

■ The Retail Controller Jr.	\$179.95
■ The Video Store Controller Jr.	395.00
■ The Auto Repair Shop Controller Jr.	395.00
■ Cash Drawer	395.00
■ Receipt Printer	495.00
■ Cash Drawer with Receipt Printer	695.00
■ Bar Code Reader	399.00
■ One-Write Plus Accounting	225.00
■ One-Write Plus Payroll	79.97

(The Controller Jr. Series automatically links to Great American Software's One-Write Plus)



Call for prices on Senior and Multi-user versions. Ask about **The Rental Store Controller, Rental-Ease Property Management, and The Restaurant Controller**. On-site demonstrations of all packages are available at your local MicroBiz dealer.

CALL FOR DEALER PRICING

Prices and specifications subject to change. NY residents add sales tax.



MicroBiz
 500 Airport Executive Park
 Spring Valley, NY 10977
 Ph:(914)425-9500 Fx:(914)425-4598



1-800-637-8268

MicroBiz . . . programming your business for success.

Circle 168 on reader service card





TAKING IT HOME

The practical guide to home/office computing

Getting in the fast lane with remote computing

Steve Bass

Rush hour lasts all day in Los Angeles. That's why I hate getting on the freeway—especially when it's just to head back to the office to retrieve a forgotten file. The file I need just never seems to be on the right computer.

I know it doesn't sound like rocket science—copy the day's files onto a floppy, take the disk home, and transfer them to the home computer's hard disk. But keeping track of 20 files from numerous projects means spending as much time copying as creating files. And half the time, I simply leave the disk I need sitting in the computer that's where I'm not.

I've changed my tactics. I decided to stop schlepping the files around and instead keep them centralized. I leave all my files on my office hard disk and use a remote communications program to access what I need as I need it.

The idea behind remote-control programs is simple—you use a modem to establish a connection and take control of the computer you've called. It's just like sitting in front of the host computer, but you can be hundreds or thousands of miles away. You see the same screen on the remote computer, and every keystroke you make is immediately relayed

over phone lines to the host. Choose a program to load into the off-site computer's memory and you're in the driver's seat. Until recently, though, a slow modem and inadequacies in remote programs made the process unbearably tedious for me.

I tried all the remote packages and found one shortcoming or another in all but *pcAnywhere*, which is a snap to set up and use. Before I leave the office each night, I call up the *PC-Host* portion of the program, and it waits for my incoming call. Once I get home, I make the connection just by dialing in.

When I'm on the road, I can call in to the office with either my Toshiba or Po-



LYOYD DANGLE

get laptop and tap 80 megabytes worth of files. Password protection assures me that I'm the only one who can.

I also use *pcAnywhere* to help user group associates who own the program's host module. Instead of trying to talk them through a problem ("No, type the word *type*, then a space and then..."), I make the remote connection and solve the mystery while they watch. When my group's newsletter editor wants changes in my column, it's quicker to call his computer remotely and make the changes on his machine while

he scrutinizes the results.

But as easy as *pcAnywhere* is to use, don't even consider running it at 1200 bits per second. A 2400-bps modem is tolerable, but some applications are so big that you'll still grow impatient. If you think you'll be a frequent remote user, it's probably worth it to buy a 9600-bps modem. Prices have come way down this year, and you'll save money in line charges and precious time.

I use a USR Courier V.32bis at home and Intel's 9600EX at the office. I don't worry about the integrity of file transfers because both modems support V.42 error correction as well as the V.42bis protocol, a data compression standard that can speed up data transfers to almost 38,400 bps under ideal conditions. I like external modems because they are easy to move among computers.

Now I only have to face the freeway twice a day. If I had a car phone, I could plug one of those laptop/fax/modem/answering machines into my cigarette lighter, and finally put those long waits in traffic to good use. ☺

Contributing Editor Steve Bass is a family therapist and president of the Pasadena IBM Users Group.

Courier V.32bis \$995; U.S. Robotics; 800/342-5877, 708/982-5235 (fax)
Reader service no. 618

Intel 9600EX \$799; Intel PCED; 800/538-3373, 800/525-3019 (fax)
Reader service no. 619

pcAnywhere IV remote and host \$179, host only \$129; DMA; 516/462-0440
Reader service no. 620

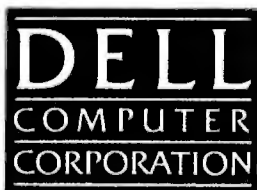
For more information about all products in this article, circle reader service no. 903.

PERFORMANCE, VALUE AND SERVICE.

WE WROTE THE BOOK ON IT.

Send for the newest Dell product catalog, loaded with information on all our award-winning computers, services and prices. Plus, get the details on our newest line of PCs, laptops and turbocharged servers. So return this card today, or call us at (800) 873-1130. In Canada, call (800) 387-5752.

TO ORDER, CALL 800-873-1130 <small>FOR FASTER PROCESSING PLEASE REFERENCE #11D35 HOURS: 7 AM-6 PM CT M-F 8 AM-4 PM CT SAT.</small>
IN CANADA, CALL 800-387-5752



©1991 Dell Computer Corporation. All rights reserved.

GET OUR FREE CATALOG NOW.

Return this postage-free card and we'll mail you the latest Dell Catalog with information on our newest line of PCs, laptops and turbocharged servers. You'll also find out about our award-winning service and unbelievably low prices, so return this card today, or call us at (800) 873-1130. In Canada, call (800) 387-5752.

☐ Please have a Dell Representative call me.

Name: (M) _____
(Please print)

Title: _____

Company: _____
(If Applicable)

Address: _____

City: _____ State: _____ Zip: _____

Type of Business: _____

Approx. # of Employees in Company: _____

Home Phone: (_____) _____

Business Phone: (_____) _____

Fax #: (_____) _____

1. Which products are you most interested in?

- | | |
|--|--|
| <input type="checkbox"/> 286-based systems | <input type="checkbox"/> UNIX® based systems |
| <input type="checkbox"/> 386-based systems | <input type="checkbox"/> Laptops/Notebooks |
| <input type="checkbox"/> 386SX-based systems | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> i486-based systems | |

2. Are you interested in computer products for:

- ☐ Home ☐ Business ☐ Resale

3. If for resale, please identify your primary customers:

- ☐ General Business ☐ Government ☐ Education ☐ Medical

4. How many PCs does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		

5. What do you plan to use computer products for?

6. How many PCs do you have installed now at your company?

7. Are you interested in leasing? ☐ Yes ☐ No

AD CODE 51D35

GET OUR FREE CATALOG NOW.

Return this postage-free card and we'll mail you the latest Dell Catalog with information on our newest line of PCs, laptops and turbocharged servers. You'll also find out about our award-winning service and unbelievably low prices, so return this card today, or call us at (800) 873-1130. In Canada, call (800) 387-5752.

☐ Please have a Dell Representative call me.

Name: (M) _____
(Please print)

Title: _____

Company: _____
(If Applicable)

Address: _____

City: _____ State: _____ Zip: _____

Type of Business: _____

Approx. # of Employees in Company: _____

Home Phone: (_____) _____

Business Phone: (_____) _____

Fax #: (_____) _____

1. Which products are you most interested in?

- | | |
|--|--|
| <input type="checkbox"/> 286-based systems | <input type="checkbox"/> UNIX® based systems |
| <input type="checkbox"/> 386-based systems | <input type="checkbox"/> Laptops/Notebooks |
| <input type="checkbox"/> 386SX-based systems | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> i486-based systems | |

2. Are you interested in computer products for:

- ☐ Home ☐ Business ☐ Resale

3. If for resale, please identify your primary customers:

- ☐ General Business ☐ Government ☐ Education ☐ Medical

4. How many PCs does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		

5. What do you plan to use computer products for?

6. How many PCs do you have installed now at your company?

7. Are you interested in leasing? ☐ Yes ☐ No

AD CODE 51D35

GET OUR FREE CATALOG NOW.

Return this postage-free card and we'll mail you the latest Dell Catalog with information on our newest line of PCs, laptops and turbocharged servers. You'll also find out about our award-winning service and unbelievably low prices, so return this card today, or call us at (800) 873-1130. In Canada, call (800) 387-5752.

☐ Please have a Dell Representative call me.

Name: (M) _____
(Please print)

Title: _____

Company: _____
(If Applicable)

Address: _____

City: _____ State: _____ Zip: _____

Type of Business: _____

Approx. # of Employees in Company: _____

Home Phone: (_____) _____

Business Phone: (_____) _____

Fax #: (_____) _____

1. Which products are you most interested in?

- | | |
|--|--|
| <input type="checkbox"/> 286-based systems | <input type="checkbox"/> UNIX® based systems |
| <input type="checkbox"/> 386-based systems | <input type="checkbox"/> Laptops/Notebooks |
| <input type="checkbox"/> 386SX-based systems | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> i486-based systems | |

2. Are you interested in computer products for:

- ☐ Home ☐ Business ☐ Resale

3. If for resale, please identify your primary customers:

- ☐ General Business ☐ Government ☐ Education ☐ Medical

4. How many PCs does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		

5. What do you plan to use computer products for?

6. How many PCs do you have installed now at your company?

7. Are you interested in leasing? ☐ Yes ☐ No

AD CODE 51D35

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD.
AUSTIN TX 78759-9860

**COMPAQ
WOULD LIKE
THIS BOOK
BANNED.**

For A Free Catalog Of Dell's New Computers,
Send This Card.

DELL
COMPUTER
CORPORATION

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD.
AUSTIN TX 78759-9860

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD.
AUSTIN TX 78759-9860

EXTRA!



EXTRA!



If you want to find out how to get a 386DX system, plus one free MB of memory, a free Microsoft™ Mouse, free MS-DOS®, free Microsoft Windows™ 3.0, the big story is on the following page.

TO ORDER, CALL. PLEASE REFERENCE #11DF1	
800-289-1140	
HOURS: 7 AM-9 PM CT MON-FRI 8 AM-4 PM CT SAT	
FOR SPECIFIC DETAILS OF OFFER:	
IN CANADA 800-387-5752. IN MEXICO 95-800-010-0664.	
DELL COMPUTER CORPORATION	

Circle 74 on reader service card

READ ALL ABOUT IT.

Here's the scoop.

When you buy an award-winning Dell 325P system with 1 MB RAM, 40 MB hard drive, and a VGA Color Plus Monitor for—good news—only \$2,299, we'll throw in a few extras.

Make that a lot of extras.

Like a free 2nd MB of RAM. A free Microsoft mouse. MS-DOS 4.01 or 3.3. And Microsoft Windows 3.0. All preloaded. All free. And all worth \$369. (No other discounts or offers apply.)

Plus you get the kind of service and support that

has won Dell 8 PC Week Customer Satisfaction Polls. Which includes one year of next business day desk-side service.[△]

Access to our toll-free technical hotline and 24-hour TechFax service. And a 30-day no questions asked money-back guarantee.

But you have to hurry. This offer is for a limited time only. So call us now.

And get in on this extra, extra special deal from Dell.



THE DELL 325P 25 MHz 386 SYSTEM.
\$2,299

WITH 1 MB OF RAM, MS-DOS 4.01 OR 3.3,
MICROSOFT WINDOWS 3.0,
AND A MICROSOFT MOUSE ALL INCLUDED FREE.

SYSTEM ALSO INCLUDES 1 MB RAM, 40 MB HARD DRIVE, AND VGA COLOR PLUS MONITOR

TO ORDER, CALL. PLEASE REFERENCE #11DF1

800-289-1140

HOURS: 7 AM-9 PM CT MON-FRI 8 AM-4 PM CT SAT

FOR SPECIFIC DETAILS OF OFFER:
IN CANADA 800-387-5752 IN MEXICO 95-800-010-0664



THE EISA-BASED DELL SYSTEM® 433TE.

- i486™ microprocessor running at 33 MHz with 128 KB external cache.

Commercial Lease Plan. Lease for as low as \$384/month**

330 MB VGA Monochrome System \$9,649

Price listed includes 4 MB of RAM* 80, 100, 190 and 650 MB hard drive configurations also available.

25 MHz systems also available starting at \$6,649.



THE EISA-BASED DELL SYSTEM 433E.

- i486 microprocessor running at 33 MHz.

Commercial Lease Plan. Lease for as low as \$296/month**

190 MB Super VGA Color System (800 x 600) \$8,199

Price listed includes 4 MB of RAM* 80, 100, 330 and 650 MB hard drive configurations also available.

25 MHz systems also available starting at \$5,749.



THE NEW DELL SYSTEM 433P.

- i486 microprocessor running at 33 MHz.

Commercial Lease Plan. Lease for as low as \$181/month**

100 MB VGA Color Plus System \$4,999

Price listed includes 2 MB of RAM* 190 and 320 MB hard drive configurations also available.



THE DELL SYSTEM 333D.

- Intel® 80386 microprocessor running at 33 MHz with 64 KB external cache.

Commercial Lease Plan. Lease for as low as \$152/month**

100 MB Super VGA Color Plus System (800 x 600) \$4,199

Price listed includes 4 MB of RAM* 40, 80, 190, 330 and 650 MB hard drive configurations also available.

25 MHz systems also available starting at \$2,749.



THE NEW DELL SYSTEM 325P.

- Intel 80386 microprocessor running at 25 MHz.

Commercial Lease Plan. Lease for as low as \$87/month**

40 MB VGA Color Plus System \$2,299

Price listed includes 2 MB of RAM* 80, 100, 190 and 320 MB hard drive configurations also available.

33 MHz systems also available starting at \$2,649.



THE DELL SYSTEM 320LX.

- Intel 80386SX microprocessor running at 20 MHz.

Commercial Lease Plan. Lease for as low as \$97/month**

40 MB VGA Color Plus System \$2,599

Price listed includes 2 MB of RAM* 80, 100, 190, 330 and 650 MB hard drive configurations also available.



THE DELL SYSTEM 316SX.

- Intel 80386SX microprocessor running at 16MHz.

Commercial Lease Plan. Lease for as low as \$79/month**

40 MB VGA Color Plus System \$1,999

Price listed includes 1 MB of RAM* 20, 80, 100 and 190 MB hard drive configurations also available.



THE DELL SYSTEM 316LT.

- Intel 80386SX microprocessor running at 16 MHz.

Commercial Lease Plan. Lease for as low as \$108/month**

Lease for as low as \$108/month**

20 MB, 1 MB RAM* \$2,899

40 and 120 MB hard drive configurations also available.

20 MHz systems also available starting at \$3,499.



THE NEW DELL SYSTEM 320N.

- Intel 80386SX microprocessor running at 20 MHz.

Commercial Lease Plan. Lease for as low as \$127/month**

30 MB, 1 MB RAM* \$3,399

40 and 60 MB configurations also available.

12 MHz 286 also available starting at \$2,399



THE DELL SYSTEM 210.

- 80286 microprocessor running at 12.5 MHz.

Commercial Lease Plan. Lease for as low as \$56/month**

20 MB VGA Monochrome \$1,499

Price listed includes 1 MB of RAM* 40, 80 and 100 MB hard drive configurations also available.



The Dell System 433TE is a Class A device sold for use in commercial environments only. *Performance Enhancements: Within the first megabyte of memory, 128 KB (316SX, 320LT, 316LT, and 210) 96 KB (333D, 325D, 333P, 325P, 320N and 212N) and 384 KB (320LX, 425E, 433E, 433P and 433TE) of memory is reserved for use by the system to enhance performance. Can be optionally disabled on 433P, 333D, 325D, 333P, 325P, 320N, 212N, 316SX and 210. All prices 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. *Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell and Dell System are registered trademarks of Dell Computer Corporation. Intel is a registered trademark and 386 and i486 are trademarks of Intel Corporation. Microsoft and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. Other trademarks 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 trade names other than its own. ^On-site service provided by Xerox Corporation and may not be available in certain remote locations. 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, limited warranty, and Xerox's Service Contract, please write to Dell USA Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. ©1991 Dell Computer Corporation. All rights reserved.

IF YOU WANT A COMPLETE 386DX SYSTEM FOR UNDER \$2,300, HAVE WE GOT NEWS FOR YOU.



THE DELL® 325P 25 MHz 386™ SYSTEM.

To find out more, turn the page.

TO ORDER, CALL PLEASE REFERENCE #11DF1

800-289-1140

HOURS: 7 AM-9 PM CT MON-FRI 8 AM-4 PM CT SAT

FOR SPECIFIC DETAILS OF OFFER:
IN CANADA 800-387-5752 IN MEXICO 95-800-010-0664.

DELL
COMPUTER
CORPORATION