Special Multimedia Supplement: MPC World

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FROM THE PC WORLD TEST CENTER

AUGUST 1992

## DOUBLE-FAST 486 POWER

23 Low-Cost 486SXs: Buy Now, Double the Speed Later

### HOT WINDOWS SHAREWARE

30 Handy Utilities for Less Than \$50

## PERSONAL SCHEDULING SOFTWARE

Should You Kiss Your Day-Timer Good-Bye?

#### 200MB HARD DISKS

33 Roomy Drives Starting at \$595







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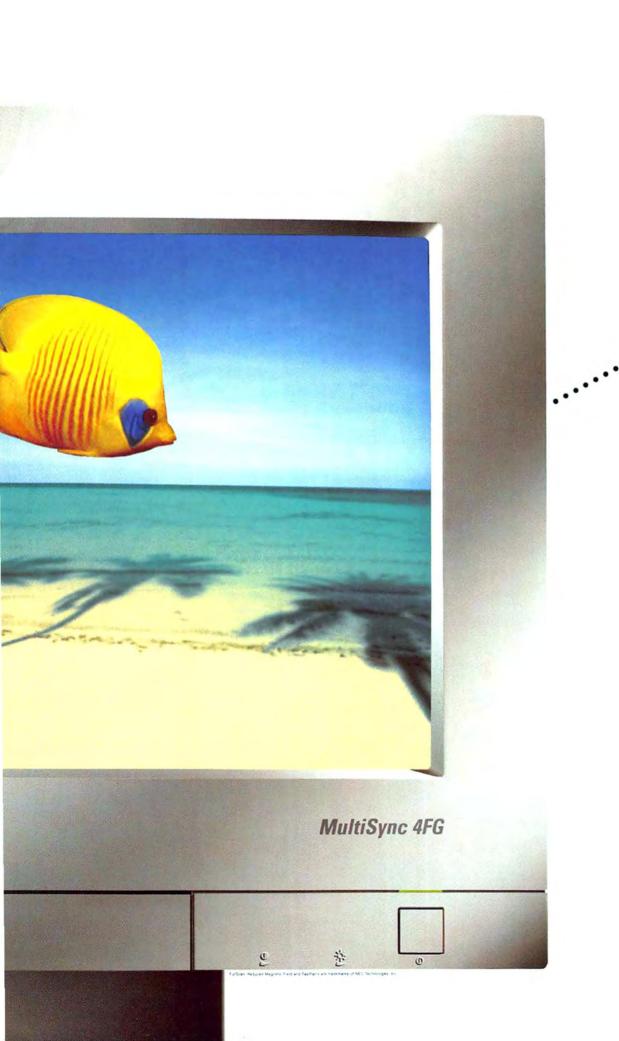
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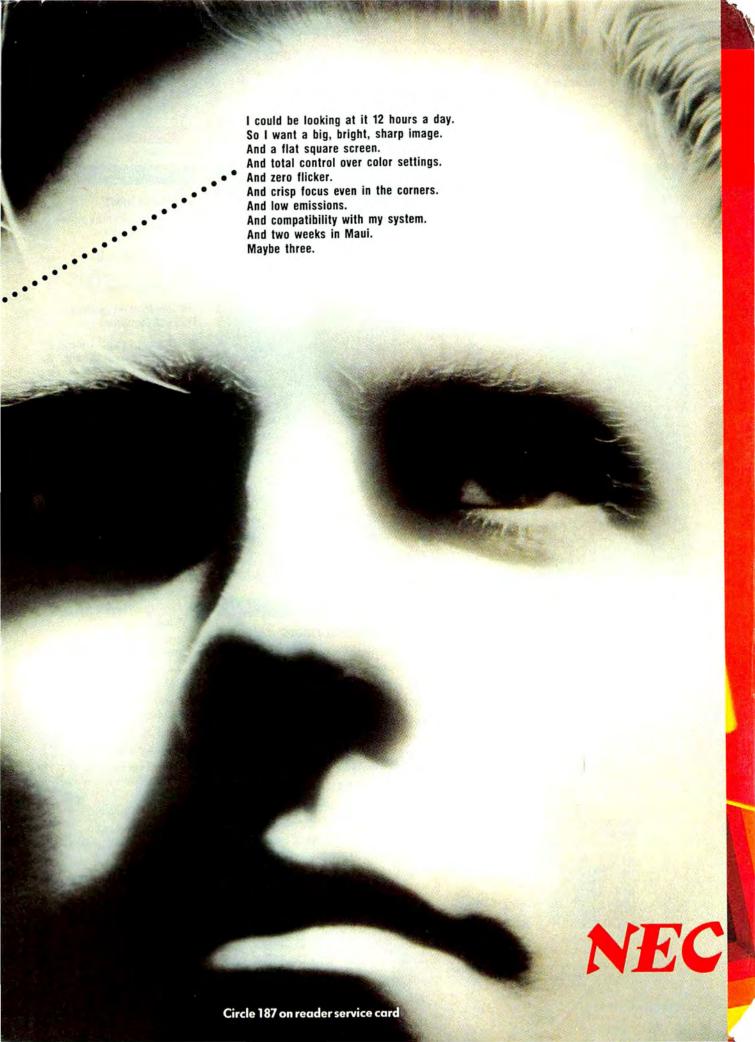
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## PC W\(\beta\)RLD



Invest in the future: Enjoy entry-level 486 computing and an upgrade path to doubled performance with today's low-cost 20-MHz 486SX PCs.

#### **COVER STORY**

#### 486SX PCs: Double-Time Performers

124/Buying into 486 computing doesn't have to cost you a bundle. Today you can pick up a fast 486SX PC for less than \$2000; tomorrow, you can nearly double performance with Intel's new OverDrive upgrade. *PC World* tests 23 upgradable 20-MHz 486SXs both with and without the OverDrive chip.

#### SPECIAL SECTION

#### Software for the Professions

230/Off-the-shelf software won't do the job? Custom-designed applications cost too much? Then turn to software designed specifically for your business. If you work in retail, law, construction, health care, or real estate, you'll find the application you've been waiting for in this guide.

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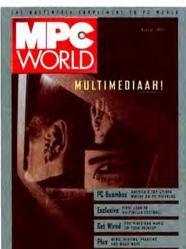
204/If your available hard disk space is shrinking fast, now's the time to expand with one of these 33 bargain drives.

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217/Stop that excess mousing around with 20 tips guaranteed to streamline your Windows work.



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### Hot New ZEOS '386 and '486 systems!

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as Well!

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you, too.

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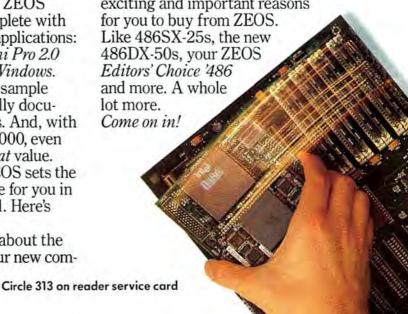
power supply! That's innovation, built in from ZEOS.

Here's another innovation we introduced to the hardware industry. 24-Hour-a-Day Toll-Free Technical Support. While most of the others still only offer part-time technical support, as a ZEOS customer, you get around-the-clock 24-hour-a-day support, 365 days a year. Not that you'll need the help. But it's comforting to know if you do have a question, all you have to do is pick up the phone and give

us a call, any time of the day or night!

And all of this is just for starters. Because when you turn the page we're going to talk about a lot of other very exciting and important reasons for you to buy from ZEOS.





Go ahead and Pick your Power! ZEOS gives you all the options. You can start out by taking a look at the de facto

## ZEOS. More Po

desktop power standard, the 386DX-33. Our 386-33 workhorse is a great entry point for true desktop power computing. But if it's a '486 you're after, hang on to your hat!

Because you're off to a fast start with our brand new 486SX-25. The 486SX is like a 486DX without the built-in math coprocessor. It's the easiest way to own the '486. And for full-blown 486DX power, why not opt for your own

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Your new ZEOS system is absolutely loaded with features. Like our high-capacity power supply with built-in surge suppression. And, every ZEOS system is UL<sup>®</sup> listed.

And don't forget you're also receiving 24-Hour-a-Day Toll-Free Technical Support, our 30-Day Absolute Satisfaction Money-Back Guarantee, Express Parts Replacement and more.

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your Package, and your Price and give us a call. Your friendly, expert ZEOS Systems Consultant

> is ready to answer any questions you may have. Call Now Toll Free 800-423-5891.

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  ZEOS 14" flat screen Hi-Res amber monitor
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- Shadow RAM and EMS support.

- Shadow RAM and EMS support.

  ZEOS/RS 101-key SpaceSaver keyboard.

  Two serial, one parallel & one game port built right onto the motherboard.

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  Seven drive bays and our custom high-capacity power supply with built-in surge suppressor!

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We take Package #1 and upgrade your ZEOS Modular System to include: 2 full Megabytes of rip-roaring RAM. Our incredible 107MB IDE hard drive with

- its own built-in cache.

- its own built-in cache.

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If you have a problem, PC World may have the answer. Send questions about PC products and procedures to The Help Screen. Send consumerrelated questions and complaints to Roberta Furger, Consumer Wotch.

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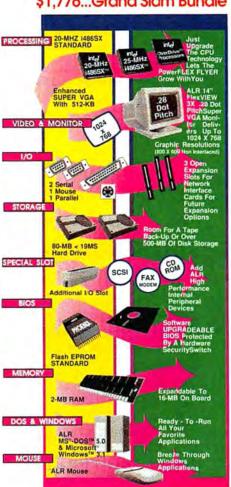
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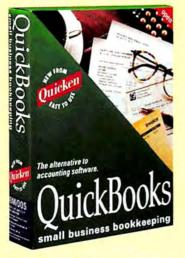


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### Introducing the alternative to accounting software.

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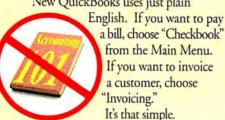


#### No accounting mumbo-jumbo.

With accounting software, you had to "post" "debits and credits" and "reverse entries" in "journals" and "ledgers." You practically needed to be a CPA.

But now you can computerize your books without any accounting mumbo-jumbo.

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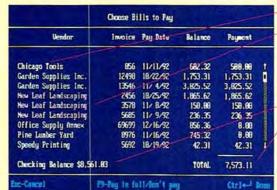
- The New York Times

"This is a great program if you're more interested in running your small business than becoming an accountant."

- PC World



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"QuickBooks' invoicing is as strong and flexible as any product tested for this review."

- PC MagazinelPrice Waterhouse Report

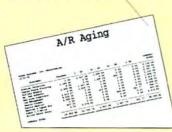
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130	SoilAmend Sales Tax	Quality soil Sales tax	l amendment/cul	dic yds	5.99 8.25 x	778.7 64.2
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All the information you need to call customers.

Quickly see who's behind.



Co	Hections I	Report		
Green Systems, Inc.	As of 12/3	1/92		
Custoner	Invoice	Issued	Due	Balance Due
Hew Line Computers	1825	9/ 2/92	18/17/92	1,888.76
Mr. Ridge Evers (309) 676-9896 ext 124	Total	New Line	Computers	1,886.76
Oak Hanagement	1886		12 4.92	818.92
Mr. John Driscoll (309) 673-7097 ext 234	2901	III IZA	11/26/92	57.75
	Total	Oak Manag	jement	868.67
Peoria Cinuma Mr. Garry Passwiltz (309) 673-9856 ext	1841	9/17/92	11/16/92	6,435.88
en Systems, IncReceivables Create Ctrl-H Henorize	F1-Help			Cirl-P F

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An independent research group tested new QuickBooks against the two leading accounting software products. They gave small business bookkeepers four hours to complete a list of common bookkeeping tasks.

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(Complete research results are available on request.)
Source: Merrill Research, 1992

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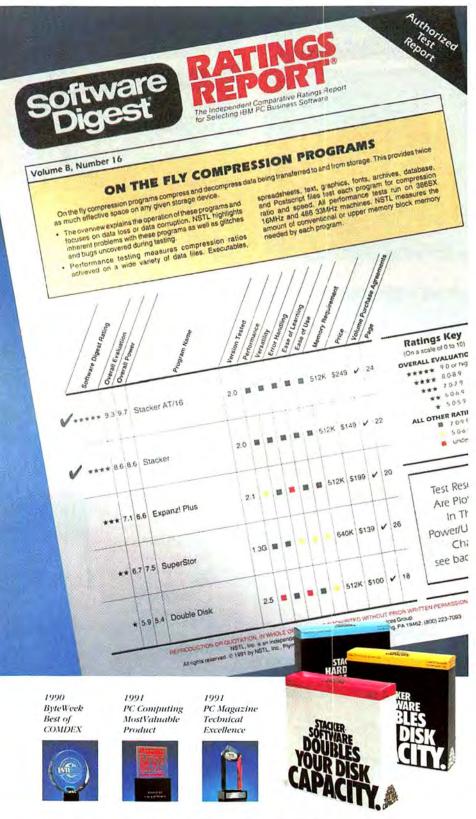
- · Your letterhead
- · Plain paper
- · Pre-printed form

#### Invoice formats:

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- Professional
- Service



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### Read what the experts have to say.

You probably *need* more disk space. Right? If you're running Windows\* you *must bave* more disk space. So now, the question isn't *whether* you need data compression, it's *which* data compression product? So listen to the experts.

The independent testing labs of NSTL, Inc., recently completed the most in-depth and comprehensive study on data compression done to date. This Software Digest Ratings Report rates Stacker<sup>16</sup> highest in performance, versatility, ease of learning and ease of use. In fact, Stacker AT/16 and Stacker 2.0 software are the *only* products "recommended" by the report.

But that's to be expected for Stacker. After all, it's won just about every major award in the industry. Now who would you trust your data to?

So what are you waiting for? Your disk isn't getting any bigger while you sit there.

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STAC

The Data Compression Company.

1992 Byte Magazine Award of Distinction 1992 PC Magazine Editor's Choice 1992 Windows Magazine WIN Award







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1992, Stac Electronics

### ANDREW FALLKINE

## Should Your Next Computer Be a Jeep?

The end of Intel's long monopoly on PC microprocessors is bringing higher performance, lower prices, and widespread confusion. Though bargains abound, it's become harder than ever to choose a PC. You must pay close attention because many Intel and Intel-compatible microprocessors offer similar part numbers and overlapping performance ranges, and PCs mostly take their names from their processors.

As Intel alternatives proliferate, just keeping the processors straight is a challenge. If you think you've got it down, answer these simple questions: Which is faster, the Cyrix Cx486SLC/25 or the Intel 486SX/20? Which has the larger cache, the IBM 486SLC or the Intel 486SX/25? Which has the faster math coprocessor, the Texas Instruments 486DLC/40 or the Intel 486DX/33? Which requires a socket for more pins, the Chips and Technologies Super38638605DX/40 or the Intel 486DX2/25? Do you know if the AMD386/40 plugs into the special Intel sockets built into 486SX machines? Did you know that IIT has a 486-compatible chip nearing market, or that Cyrix and TI have a whole family of processors in the works, including clock multipliers?

It probably comes as no surprise that Intel is pushing ahead with a whole catalog of impressive new processors, including the "P5," which might have been but definitely won't be called the 586, and which might have but won't fit into a 486DX socket. Not far behind the P5 will come Cyrix's "M1," said to offer P5-like performance. God only knows what all these processors will end up being called, but knowing the names won't help you choose a PC.

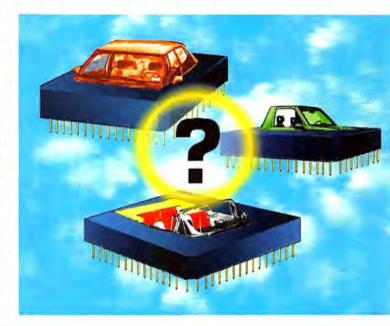
Though you may not be able to figure out the very best bargain, bargains are everywhere. Cyrix introduced its 486SLC at a price of \$119 in quantities of 1000, compared with \$282 for the same quantity of Intel 80486SXs. Intel has now been forced to drop that price to \$119. In fact, some large manufacturers say they're paying only \$70 for 20-MHz 80486SXs, \$80 for 25-MHz versions of the same chip, and \$70 for the Cyrix Cx486SLC. With a math coprocessor, the Cx486DLC price has just been slashed to \$119, or about one-fourth the cost of the 80486DX it replaces. Some manufacturers expect the AMD 386/40 to drop to \$40 or less sometime this summer.

Cost benefits aside, the proliferation of processor model numbers is more a curse than a blessing for the perplexed PC buyer. Both you and the industry need names for classes of computers that are as meaningful as the names we use for cars. When you go car shopping, you don't look at all the cars that have the same engine with the same part number, the same number of cylinders, and the same number of cubic centimeters of displacement. More likely, you try all the sports

cars under \$20,000, all the station wagons that seat six adults, all the performance sedans, or all the budget subcompacts.

The time has come to leave behind bits, bytes, caches, and clock speeds and review computers in groups meaningful to you. Rather than focusing on computers that have an identical Intel engine, we'd like to include systems with engines from other vendors. And we'd like to find product categories at least as useful and descriptive as those applied to cars.

We have some ideas for grouping different types of PCs. We've considered designating computers according to the types of people most likely to use them (executives, secretaries, frequent travelers), or by the most likely setting for their use (office, home-office, travel, all-setting), or by performance or



price range—you might want us to review the best 25 computers under \$3000, or the best under \$2000. We could even take a cue from the fashion industry and cover the manufacturers' new lines for spring, summer, fall, and so forth. The possibilities are boundless when Intel's CPU isn't the sole determinant.

You've been responding by the thousands to our fax-back surveys, like the one on page 283 of this issue, so we decided to invite your recommendations. Please let us know what kind of classification scheme you'd find most convenient and meaningful. We're doing this as a write-in because we'd like a broad range of suggestions, not just your reaction to our ideas so far. So think it over for a while and then turn to the survey and fax us your thoughts. Besides helping us move PCs beyond industrial jargon and into the fabric of ordinary life, you'll be entering a drawing for a free 200MB hard drive.

Phil Lemman

## THE COMPAQ DESKPRO/i. SO A LIMITED PRICE LEADS

The company most qualified to advance the state of the desktop computer announces four systems that represent a breakthrough in R&D. At prices that won't ruin your P&L. Reflecting the level of thinking and quality that you've come to expect from Compaq.

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The built-in COMPAQ

QVision 1024 Graphics

popular video graphic subsystems. So quickly, as a matter of fact, you may find your computer waiting for you. Instead of the other way around.

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Controller, for example, allows you to scroll, resize windows and pull down menus up to ten

that your PC won't be swept into obsolescence.

 ${f S}$ imple chip upgradability and a 64-KB cache

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## MUCH FOR THE IDEA THAT TO LIMITED THINKING.

memory module option provide quantum leaps in performance. Without

Intel 386/25, 386/33, 486SX/25, 486/33 & QVision accelerated graphics & Chip upgradability & Integrated business audio & 4 MB RAM (expandable to 32 MB) & Cache memory standard & 3 ISA expansion slots & 3 drive bays & 84-MB to 510-MB hard drive aptions & Multi-level security features & Microsoft MS-DOS 5.0 as published by Compaq



The fully integrated audio system brings an unprecedented, yet not

unfamiliar dimension to mainstream business computing: your voice. The result of a collaboration between Compaq and Microsoft, it allows you, among other things, to actually paste voice messages into spreadsheets and documents. Either as notes to yourself or as voice-mail across your entire network.

And we've engineered this breadth of technology right onto the PC's system board, preserving the small footprint, large storage capacity and expansion of the COMPAQ DESKPRO/i.

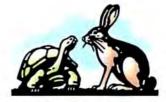
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We bet you'll be as excited about the COMPAQ

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In scrolling, window resizing and accessing menus, our new QVision accelerated graphics beat the competition by as much as 10 to 1.



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When Compaq engineers set out to build an affordable, full-performance desktop PC with

all the essential features, there were a lot of options to choose from.

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an existing low-end computer company.

We could have farmed out all manufacturing.

We could have bought parts from the cheapest vendor in town.

But then all we would have ended up with is simply another inferior,



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low-priced clone. And what we wanted was a low-priced COMPAQ computer.

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design and just plain common sense, we've cut costs in system design and manufacturing.

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We think you'll be pleasantly surprised at exactly how much the COMPAQ ProLinea PCs have to offer.

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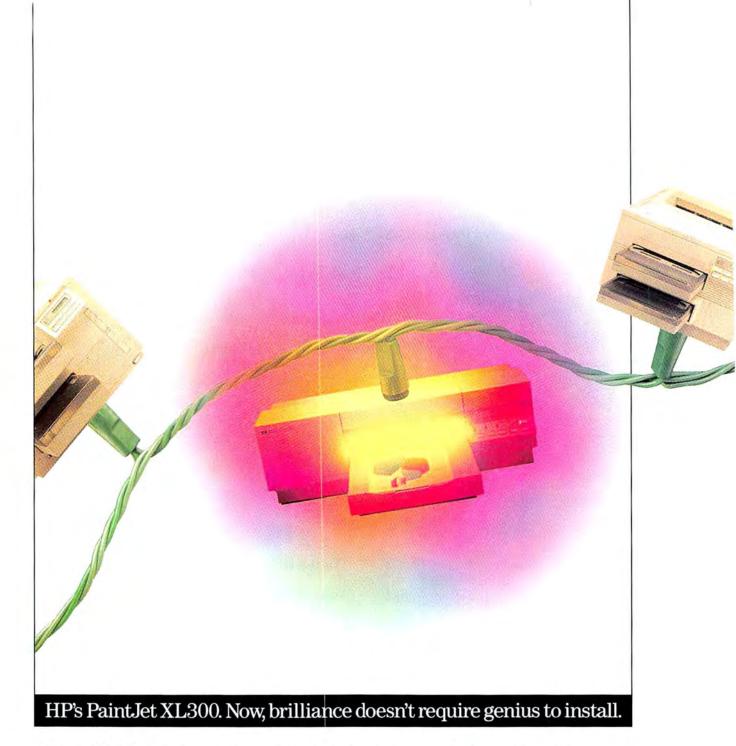


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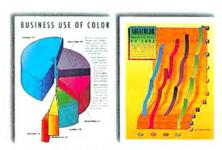




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© 1992 Hewlett-Packard Company "Suggested U.S. list price: Adobe and PostScript are registered trademarks of Adobe Systems, Inc. in the U.S. and other countries: †In Canada call 1-800-387-3867, Ext. 3158. PE12205 Vivid color has never been so simple. The new PaintJet XL300 inkjet printer gives you laser-quality color graphics, text, and the compatibility of HP LaserJet printers. All for the remarkably low price of just \$3,495.\*

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#### **LETTERS**

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

#### Scam!

always thought the objective of computer magazines was to help sell new products. Now I see that *PC World* has come of age with "Consumer Watch Special Report: Scam!" in May. The suspicion that you're in business just to keep others in business came to an abrupt halt with this hard-hitting exposé.

WILLIAM R. FITZGERALD PHOENIX

ack in November I bought a laser printer from the now-defunct Global Electronics. I was suckered into the "best deal anywhere" only to pay for the printer and never receive it. When I saw Mike Hogan's story on mail-order fraud in February ["Did You Buy Your Products Here?" in Top of the News], I called him. Mike did more investigating than the appropriate consumer groups or the Better Business Bureau even hinted at doing. Though I'm sure I'll never see my money or the printer, it's nice to know someone cares. Even though these guys will never get caught or punished, consumers will learn—pay by credit card, and only after you receive the product. I know that PC World has gone out of its way to find these bandits, and I, for one, appreciate it. Thanks and a tip of the hat to Mike Hogan.

> DAVE TAGERT FORT WALTON BEACH, FLORIDA

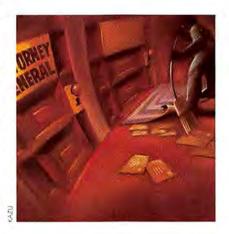
I would like to suggest that you add a tip to the sidebar "Ten Tips for Buying Direct," which appeared in "Scam!"

Tip 11: Don't believe everything that you read in computer advertisements. Before placing your order, make a test call to the company to find out how promptly the employees answer their published technical assistance telephone number.

This bit of friendly advice is offered by a *PC World* reader who learned the hard way.

> GORDON L. FROEDE LOS ANGELES

Or check PC World reviews. As part of our review process, we call the technical support numbers of manufacturers and distributors—Ed.



A sone who was burned by One Stop Micro, I commend PC World for its investigation. "Scam!" provided enough clues and evidence for everyone but the authorities. Unfortunately, even if thorough investigative reporting nails fraudulent mail-order firms to the attorney general's door, he will do no more than order the custodian to sweep them under someone else's rug.

MARC STALEY TAMPA

Report: Scam!" with great interest. We certainly share the concerns you expressed. The information provided in

your "Ten Tips for Buying Direct" contains excellent consumer advice. If these ten steps are followed before a product is purchased, some of the problems covered in your article should be alleviated. We only regret that similar tips are not used by publications before accepting advertisements. Although the Postal Inspection Service has a Publication Monitoring Program, it's impossible to review every advertisement placed in every publication nationwide.

We have received complaints about some of the companies you mentioned in "Scam!" On the basis of these complaints, we have authorized an investigation to determine if there is sufficient evidence to support a mail fraud prosecution. We are working with another federal law enforcement agency, sharing information to maximize the effect of our limited resources.

Any information that bears on the subject, particularly unresolved consumer complaints, should be forwarded to the Regional Chief Inspector, 850 Cherry Ave., San Bruno, CA 94098-0100. If appropriate, evidence will be presented to the U.S. Attorney's Office, where the decision to prosecute will be made. I would be delighted to be able to report to you in the near future that our efforts have been successful.

L. E. MAXWELL
MANAGER
FRAUD AND PROHIBITED MAILINGS BRANCH
CRIMINAL INVESTIGATIONS
U.S. POSTAL SERVICE
OFFICE OF THE CHIEF POSTAL INSPECTOR

PC World has forwarded all the complaints we received to the Regional Chief Inspector. We will report on any developments as they occur.—Ed.

#### READER RESPONSES

#### What Next?

The What Next? column in April kept me from canceling my subscription. I used to consider PC World the authoritative source on PC developments. In recent years, I think the magazine has become infested with press releases. Hogan's candid assessment of Windows convinced me to wait a year to

see what the magazine is going to be—a shameless drumbeater for Microsoft or an analyst of the computer industry.

> FORREST RHOADS VIA MCI

#### DOS vs DOS

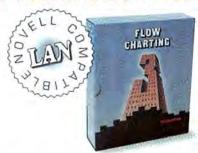
was disturbed by the comparison between MS-DOS 5.0 and DR DOS 6.0 ["DOS vs DOS"] in April. Specifi-

cally, I'm bothered by the attitude of Microsoft's corporate desk thumpers toward those of us who have DR DOS and want to run Windows. The Windows literature never mentions a problem with DR DOS and Windows 3.1. I found out the hard way when I purchased 3.1. Microsoft has apparently forgotten that, from the customer's perspective, competition in the marketplace enhances price, service, and products.

PHILIP E. HODGKINS SAVANNAH

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#### Multimedia-Ready CD ROM Drive

Thanks for the wonderful 3½-star rating you gave our Todd TCDR-7000 in your review "CD ROM Drives: 680MB or Bust!" in May. We also have a multimedia-ready model, the TCDR-7000M. Although it lacks the key-lock feature of the TCDR-7000, the 7000M comes with an RCA audio jack and a cable for connection to an audio system.

JOAN BERNHARDT
PRODUCT INFORMATION COORDINATOR
TODD ENTERPRISES, INC.
BAYSIDE, NEW YORK

#### **GUI of Choice**

A vocal group of readers on PC World Online have discussed the amount of your *Microsoft Windows* coverage; many wish you gave more coverage to *GeoWorks Pro* or *GeoWorks Ensemble*. I agree. While *Windows* looks like it will be a part of the "exciting future" of computers, there are other GUIs on the market now and more on the way. How about fully covering those software systems?

MICHAEL VIA PC WORLD ONLINE

We plan to—you can look forward to comparisons of Windows and other multitasking graphical user interfaces in upcoming issues.—Ed.

#### Informed Conclusion

eorge Campbell's glowing description of Microsoft's Word for Windows 2.0 in April's "Windows Word Processors" failed to point out that Win-

## Let Us Tempt You

3

No, we don't do apples — but we do PCs, and we know all their ins and outs. More important, we think you'll find **POWER USER** the perfect guide to the kinds of things you've always wanted to be able to do with your computer.

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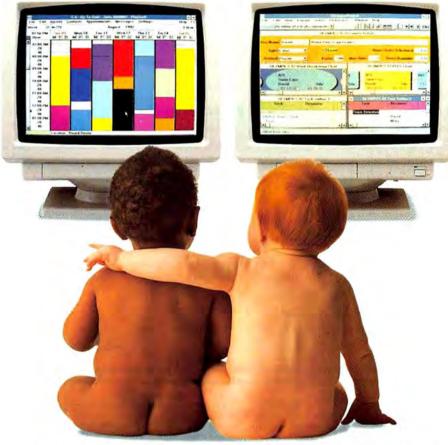
It's as friendly as a spreadsheet, but you can view and model up to 12 dimensions of data with new CA-Competer



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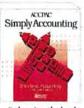
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slide shows in seconds with predesigned templates, or import graphics and scanned images.



Balancing the books has never been simpler. It's the accounting software that's perfect for almost any small business.



Word 2.0 cannot print TIFF formatted images. His assertion that "Ami Pro's handling of scanned images is superior to WinWord's" is understatement at its best. Don't you know that people base software purchases on your conclusions?

FRANK E. WEIR GALT, CALIFORNIA

Early releases of Word for Windows 2.0 had trouble interpreting gray-scale TIFF images. Many gray shades printed too dark. This problem has been fixed in later releases and in version 2.0a. If you purchased an early copy of WinWord 2.0, you can download a new gray-scale driver from Microsoft's online service (206/936-6735) that will fix the problem. Or call Microsoft technical support (206/462-9673).— George Campbell

#### **Large Partition Blunder**

In the April Letters column, your response to David T. Griffith, Jr.'s

question about partitioning hard drives said, "Compaq's version of MS-DOS 3.31 supports large partitions. However, no one else's does." I would suggest that you verify all the facts prior to making such blanket statements. I have been using ZDOS 3.31, and it supports large partitions.

JAMES M. PERCIC SAN FRANCISCO

Our readers have informed us in no uncertain terms that we dropped the ball with that response. Our apologies. The editor responsible for the rash comment is now a humbled shadow of his former self. —Ed.

#### Get the Right FCC Rating

hen purchasing a 486 machine for home use, make sure it has an FCC Class B rating. With the increasing home use of these formerly "industrial strength" machines, the Class A rating, which allows a computer to be

used only in commercial or industrial areas, will not suffice. The unwary purchaser of a Class A-rated 486 for home use will likely be inundated with neighbors' complaints about TV and radio interference. A would-be purchaser would be wise to get the system's FCC number from the vendor and verify that system's rating with the FCC.

WILLIAM SCHWARTZ BROOKLYN

#### Remote Disappointment

I was disappointed by "Remote Communications Software: The Next Best Thing" in February. After reading it, I bought Close-Up Dual Pack 4.0, which was recommended in the article. I then found that not only did it not work reliably, but its performance was dismal (especially with graphics programs). It operated at about one-hundredth real time on my 386 computer with a 2400-baud modem.

MICHAEL NAGY SAN RAMON, CALIFORNIA

-



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InfoWorld 9-30-91

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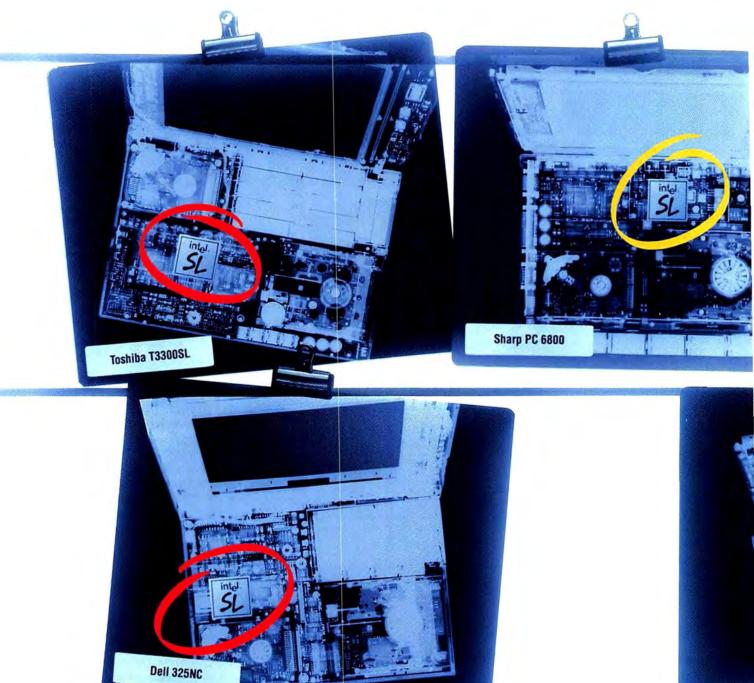
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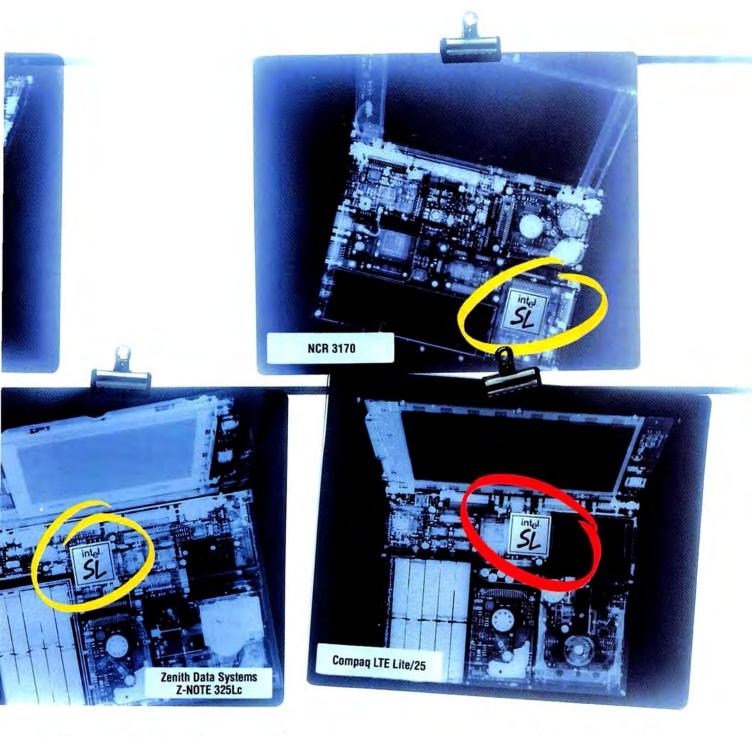
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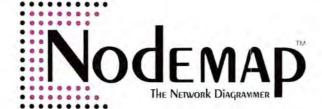
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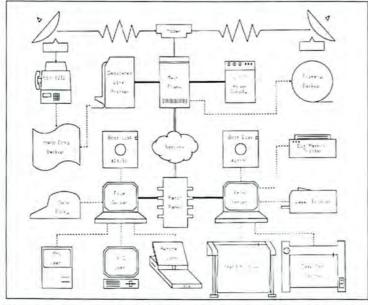
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#### READER RESPONSES

While we found Close-Up Dual Pack 4.0 to be the best package available, the fact is that working remote is slow—especially if you're sending graphics over a 2400-band modem. —Judy Heim

#### Wrong InCommand

e appreciate the announcement of InCommand 1.3 on page 114 in April, but it contains an error: Users should type DI ...\*.TXI,DOC to list all files with TXT and DOC extensions in the current directory and its subdirectories.

ERIC L. MICHELSEN
PRESIDENT
INDUCTIVE LOGIC
SAN DIEGO

#### **Power Blooper**

Power Tip No. 243 on page 290 in April has an error. Your replicate function contains "-1" as the code to put a dashed line between Lname and Rank. It should be only "-" unless you want to print -1-1-1-1... between every data set.

DAVID MACLAY LOS ANGELES

#### Off-Color Printer

In "Color Printers Come Through" in May, Dan Miller indicates that the HP DeskJet 500C is able to print in color from WordPerfect 5.1. I talked to HP, and they say the only color driver available is for the DeskJet 500. How did you print in color from WordPerfect 5.1?

STEVE MUNSON BUTTE, MONTANA

We should have added a footnote stating that we ran the WordPerfect test on a DeskJet 500C in monochrome mode. The 500C doesn't yet have a color driver for WordPerfect. —Dan Miller

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

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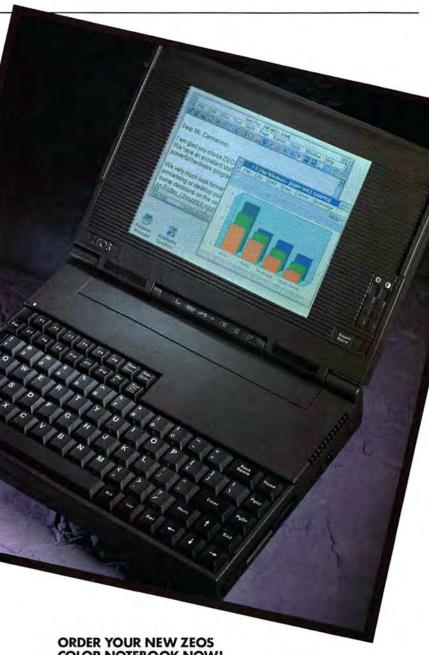
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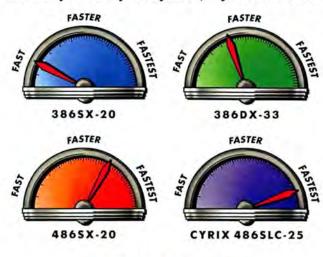
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#### CONSUMER WATCH

BY ROBERTA FURGER

Advice and information for the computer consumer

#### Scam Update

In May, "Consumer Watch Special Report: Scam!" detailed the workings of several Los Angeles mail-order companies that systematically defrauded dozens of consumers by taking money for orders that were never shipped. The story also recounted the failure of law enforcement officials to pursue the matter actively and urged the local, state, and federal agencies with jurisdiction to take immediate action. Since the article

was published, the Los Angeles County District Attorney's Office has initiated a preliminary investigation into the suspect companies. The U.S. Postal Inspector has also authorized an investigation to determine whether there is "sufficient evidence"

to support a mail fraud prosecution" (see Letters).

Investigator Rick Harrison of the Garden Grove Police Department reports that the Orange County District Attorney's office has declined to prosecute a case against American Computer Technology (ACT) owner Michael Thomas Lytle, whom Harrison was investigating for fraud.

"I had three witnesses willing to testify," says Harrison, "two from California and one from Mexico City." But according to the DA's office, three victims are not enough to prove that ACT was involved in a pattern of fraudulent activities, and it would be too expensive to fly in other victims from out of state to testify.

We've also heard from several more people who dealt with these companies. One consumer who got caught in their net was Daniel Nichols, a computer programmer in Redondo Beach, California. Nichols ordered a motherboard from One Stop Micro of Van Nuys in July 1991. After weeks of trying to deal with the company over the phone, he went to its warehouse in Torrance, California,

intending to get the product he ordered —or his money back. At the warehouse, Nichols found a woman answering two phones—one for "One Stop Micro," the other for "Minuteman Computers" (another company mentioned in the May article). When Nichols asked who was in charge, a salesman wrote "Tony Palomino" on a slip of paper. Palomino is the individual who sources say started the ring of mail-order companies.

Nichols hounded One Stop Micro until the company credited his charge account for the product he never received. "I called them daily every 15 minutes until they sent me a slip showing I'd been credited the amount owed," says Nichols. During his dealings with One Stop Micro, Nichols reports that one salesperson at the Torrance warehouse questioned his concern about getting a refund. "If we were ripping you off, the bank would charge us back anyway," the OSM employee told him. In fact, several banks are out thousands of dollars after crediting their customers' accounts for orders never shipped.

#### Take Action!

Have you dealt with One Stop Micro, Minuteman Computers, American Computer Technology, Computer Spectrum, or any of the affiliated companies mentioned in the May article? We'd like to hear about your experience.

We'll continue to investigate these companies and report any developments.

#### What's the Value of Outdated Software?

never realized how quickly software disks can accumulate. I now have 15 plastic disk cases full of outdated software going back to the birth of the PC. I've got copies of VisiCalc, Windows 1.0, Multiplan 1.6, Hacker II for the Apple, and Commodore 64 software.

I would probably save a small fortune if I just relabeled and reformatted all the disks, but for some reason I can't bring myself to format over *Windows 386* and just pitch the documentation.

What should I do with this software—documentation and all? Does it have any value? Do the software companies offer any incentives for returning old software?

> E. WILLIAMS, JR. DETROIT

Editor's note: As a general rule, when you upgrade to a new version of an application, you should destroy the previous one, because the software license entitles you to only one copy, according to Jodi Morrison, litigation coordinator for the Software Publishers Association in Washington. You may, however, donate the software to a nonprofit group, even if you're using a later version of the same application.

CompuMentor, in San Francisco, is one of several nonprofit organizations that distributes software to needy groups. According to spokesperson Bruce Ackley, CompuMentor welcomes individual software contributions, provided the application is still usable and all the original disks and documentation are intact. You can reach CompuMentor at 415/512-7784.

If you no longer use an application, you can also give it to a friend, provided you don't keep a copy for yourself, says Morrison. "If you're a registered user, you should also contact the company and let them know you've given the software away," she adds.

Finally, you may want to keep old copies of Windows 1.0 or the original version of VisiCalc, says Dr. Gwen Bell, director of collections for The Computer Museum in Boston. But don't expect them to be worth anything soon. "It's a question of supply and demand," says Bell. The longer you keep the software, the greater the chance it'll be worth something. "The nice thing about software is it's small. You can put the disks away for 20 years. By that time, plenty of people will have thrown things out."

#### Research Pays Off

We often write about the importance of investigating companies from whom you're considering making a purchase, but few of us enjoy spending the time required to research a purchase. Two readers saw firsthand the benefits of making the extra effort.

7 hen I was ready to move to a 386 computer I called several vendors and narrowed my choice to Dell, Austin, and Northgate. I sent a list of specifications to all three companies, requesting a price quote. Only Northgate bothered to respond. I bought the Northgate and found their support to be exemplary. They kept in close contact, notifying me when the machine shipped. Since the system was delivered, I have used Northgate's phone support, which has been far superior to the support I formerly received from the local dealer.

> ROBERT A. KLEIN POTOMAC, MARYLAND

n early January, 1992, I faxed letters to 20 computer manufacturers detailing my specifications for a new computer. Centrix Computer of Industry, California, was one of only three companies to respond. It also had the most appealing price.

I then tested the company's technical



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conference room, search for a free time block, send a memo to a hundred people, schedule a meeting for 25 differ-

















support by calling for information on two occasions. Each time I called, I received prompt and accurate answers to my questions.

My computer was up and running six days after I ordered it.

> JIM RODEMEYER ALTUS, OKLAHOMA

#### Where's My Rebate?

As a user of an early version of Quicken, I received a notice from Intuit last November about a special deal if I upgraded to Quicken 5.0 or Quicken for Windows. Since I was in the process of buying a new, Windows-capable computer, the latter option was of interest to me.

In its promotional literature, Intuit said that there were two ways a user could obtain the upgrade: Either buy the product directly from them, or "find the best deal" at a local software store and send the receipt, along with Intuit's personalized rebate certificate, and receive a \$15 rebate.

I found an excellent price on *Quicken* for *Windows* at a local Babbage's software store, and duly sent in the rebate request to Intuit.

When I didn't get my rebate check, I wrote to Intuit to inquire about it and received a form letter indicating that I had purchased my copy at a store offering an instant \$15 rebate and was therefore ineligible for an additional rebate. This was a shock to me, since I hadn't received an "instant rebate."

I checked with Babbage's and found that they did indeed offer an in-store rebate on *Quicken for Windows*, but I had no way of knowing this, since Intuit had not told me of the program and there was no notice of it in the store.

The store manager was kind enough to write a note to Intuit explaining that I had not received a rebate through them. I sent this information to Intuit but have received no reply.

JUDITH HEISSERMAN FARRLAND, INDIANA Editor's note: We contacted Intuit and discovered that several Quicken users were confused by the rebate offer:

According to Melissa Menge, Intuit's channel program manager, the rebate program, which ran from October through December of last year, was originally a mail-in program only. Several retailers subsequently decided to offer customers an instant rebate. Retailers, however, did not always require customers to submit the rebate coupon.

"It was never our intention to offer more than one \$15 rebate," says Menge, "nor was it our intention to mislead customers." According to Menge, although it's still Intuit's policy to allow only one rebate per customer, the company is making exceptions in cases where customers are "clearly confused" by the rebate program.

Ms. Heisserman is among those receiving a rebate.

-

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To Manage Time, People, And Resources.

ent users with full agendas, make lunch plans with a client or remind your entire 783-person sales team of top priorities and deadlines.

And it's so easy. The colorful, graphical look and feel



of CA-UpToDate makes it quick and simple to learn. The colorgrid schedules, pop-up menus, warning beeps and reminders help you keep

track of hundreds of people, events and resources with very little effort.

Call 1-800-CALL CAI today for your free demo disk.

It will show you how easy it is to bring you and your entire company UpToDate.







## Why consider a new you can leave we



Microsoft Excel 4.0, the spreadsheet for Windows

Because well enough just might not be good enough anymore.

Because new Microsoft Excel 4.0 for Windows is the

ultimate refinement of a powerful, easy-to-use spreadsheet.

Because you could be getting your day-to-day spreadsheet tasks, not to mention more amazing number-crunching feats, done faster. And more easily.

We're talking about one-step

just-about-everything here.

Take a feature like Autoformat: with just a click of your mouse, it applies one of 14 sharp-looking, professionally designed formats

to your worksheet.

Or consider Autofill, which intelligently helps you build your worksheets. For example, when you type January in a cell, Autofill automatically enters February, March, April—as many (or as few) months ahead as you designate.

Shortcut menus are another innovation. When you click the right mouse button, a menu appears on-screen next to whatever you're doing, offering you all the options that sensibly relate to the task at hand.

Wizards are step-by-step guides that take you through complex tasks, like charting, or creat-



The Scenario Manager is a powerful analysis tool that lets you easily create and save multiple "what if" scenarios, then instantly produce nice-looking summary reports. (Which makes you look nice, too.)

ing summary tables from a database, with incredible ease.

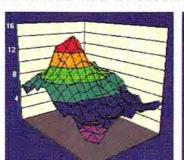
And with new Drag and Drop, all you do is highlight the area you want to move, "grab" it with your cursor, and drag and

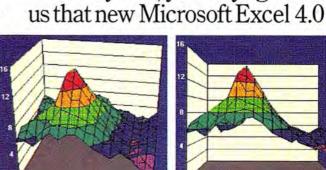
## spreadsheet when ll enough alone?

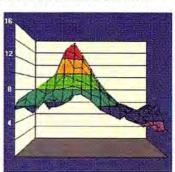
drop it to wherever you want it on your screen. It's that simple.

We've also made the Toolbar

customizable. Plus, it has handy new features, such as a Spelling Checker and AutoCenter, which lets you







The gallery of 90 chart types includes rotating 3-D charts, along with surface, radar and picture charts.

It looks great here. It's even more impressive on your screen.

center text over multiple columns with a single click of your mouse.

Invested a lot of time in Lotus\*? That's no problem. You can learn using what you know. Type in your

familiar Lotus 1-2-3°

commands, and Microsoft Excel shows you the equivalent commands. Easy.

Microsoft Excel also reads

and writes your Lotus files. And it runs your macros-unmodified. It even comes with a convenient 90for Windows is the ultimate refinement of one-step-power-with-ease.

day money-back guarantee:

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Wondering how to upgrade? Check out the caption underneath that guy to your leftif you're interested in the best spreadsheet on the planet,

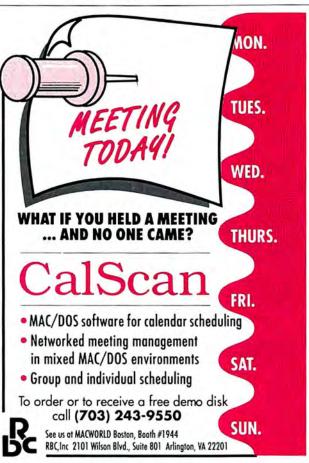
that is. Otherwise, just try

to forget vouever saw this.









#### Circle 226 on reader service card

#### **BUG WATCH**

Up-to-date information about hardware and software bugs.



#### Paradox 3.5

Paradox 3.5 is smarter than 3.0 when it comes to importing ASCII

files. It analyzes the data it receives rather than blindly importing it. This built-in intelligence can present problems, though. For instance, if fields in the data to be imported have spaces as leading characters, Paradox 3.5 gets confused and does not import all the fields. (Paradox 3.0 has no trouble importing in such cases because it doesn't analyze the data.) You can avoid trouble importing ASCII files by making sure that all fields in the first record are exactly as you want them, with no stray spaces or wrong date formats. Paradox uses the first record as a model for all the rest. Borland Int'l 408/438-5300

#### After Dark 2.0

Network users of After Dark 2.0, the Windows screen saver from Berkeley Systems, may run into trouble when enabling the program's network password feature. On some systems, accessing this feature results in an error message stating, 'Can't Read from Device Network'. If you've encountered this problem, contact Berkeley Systems, which has a fix.

Berkeley Systems
510/540-5535

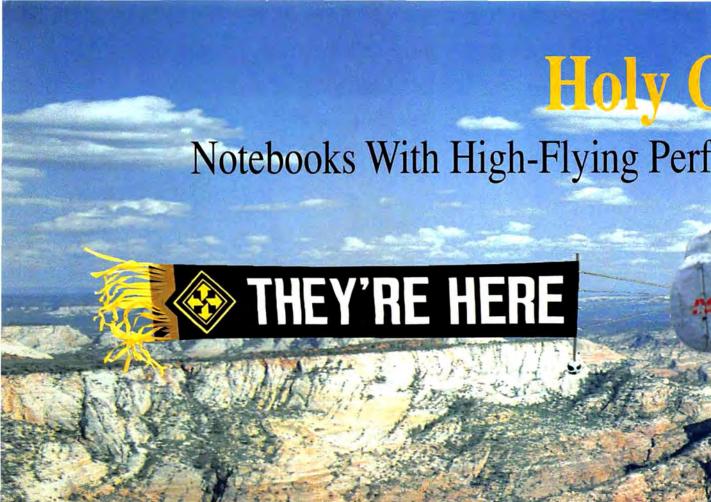
---Christina Wood

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

Christina Wood is an assistant editor for PC World.

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





The paths of dashing young scientist Dakota Smith and independent journalist Lexa Kirk, drawn by seemingly mysterious forces, recently converged in South Dakota. There they made amazing discoveries: the Nomad notebooks and the astonishing little HandBook™ from Gateway 2000! Now their sworn mission is to carry the news to the far corners of the world.

"The sky's the limit!" Dakota praises the new Nomads. "These systems are every bit as powerful as their desktop counterparts! I can actually do serious computing on land, at sea or in the air!" The Nomad's patented power-management system delivers soaring battery life — over six hours from a single battery on the 25MHz 486DX system. And it has one of the biggest and brightest notebook screens in the industry.

And Lexa takes off with her HandBook, smaller than a notebook but larger and more functional than a palmtop — a real PC in miniature form! "It's a totally new category of portables, and I feel as if this little



achine were designed especially for me!" she smiles, ith her head in the clouds. "The HandBook is so small d feather-light; yet it has a truly usable keyboard and splay, a real hard drive, and the capability to transfer es back to my editor. I can travel with it and not even town I'm carrying it!"

"Once again, Gateway is in the pilot's seat," Dakota ds. And, as he and Lexa fly off into the wild blue under with their message, we know in our hearts that agas of Gateway 2000 will continue....



### The Explorers' Notes

#### HANDBOOK

- Weight 2.75 Lbs. (HandBook & Battery)
- Dimensions 5.9" x 9.75" x 1.4"
- 4.5Hr.\* NiMH Battery, 1.25 Lb. AC Adaptor/Charger, 6.5" x 2.5" x 1.5"
- Traveling Weight 4.0 Lbs. (HandBook, Battery & AC Adaptor/Charger)
- C & T<sup>®</sup> Processor, 286-Class Performance
- 1MB RAM upgradeable to 3MB
- 40MB Hard Drive
- Backlit 7.6" Double-Scan CGA Screen, 640 x 400 Resolution
- 1 Parallel/1 Serial Port
- 78-Key Keyboard, 101-Key Emulation, Inverted T Cursor Pad
- MS DOS®5.0, File Transfer Software & Serial Download Cable
- Introductory Bonus Pack
- Carrying Case

#### \$1295

Options: FieldMouse pointing device, 2,400 bps modem, alkaline battery pack, portable printer, combo unit (3.5" drive with serial port and parallel port), extra batteries





NOMAD Options: 2,400/9,600 bps modems, portable printer, numeric keypad, Token Ring or Ethernet interfaces, SCSI interface, memory upgrades, executive carrying case, extra batteries

\*Battery life was measured using PC Magazine's Battery Rundown Test with power management enabled. Results may vary.

#### 

- Weight 5.8 Lbs. (Nomad & Battery)
- Dimensions 8.5" x 11" x 1.8"
- 6-Hr.\* NiCad 5.7Ah Battery
- 14.4-Oz. AC Adaptor/Charger, 6.12" x 2.25" x 1.5"
- Traveling Weight 6.7 Lbs. (Nomad, Battery & AC Adaptor/Charger)
- Backlit 10" VGA Screen, 640 x 480 Resolution, 64 Gray Scale
- Simultaneous Video
- 1.44MB 3.5" Diskette Drive
- 1 Parallel/1 Serial Port
- External Video & Expansion Bus Ports (Ports are Full Size)
- 79-Key Keyboard, 101-Key Emulation, Inverted T Cursor Pad
- FieldMouse<sup>™</sup> Pointing Device
- MS DOS 5.0 & Windows<sup>™</sup> 3.1

#### NOMAD 325SXL • \$1995

25MHz, 386SXL, 4MB RAM, 80MB Hard Drive

#### NOMAD 420SXL • \$2695

20MHz, Intel® 486SXLP, 4MB RAM, 80MB Hard Drive

#### NOMAD 425DXL • \$3495

25MHz, Intel 486DXLP, 4MB RAM, 120MB Hard Drive



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By MIKE HOGAN

#### Garage Sale Today: Three-Legged Chips



Retractions are painful, but here goes. In July you witnessed me getting just a little breathless over the prospect of a then-unreleased 486SX-based multimedia PC from AST that would drive the multimedia dollar premium down into the 300s.

But, a few days before introduction, AST decided that folks would rather have a 386SX/25-based

system with a big hardware-software bundle for about the same \$900 everyone else is charging. Sorry. Can't blame AST for the announcement miscue. I'm very pushy, and it's a rare company whose product is truly set before my monthly deadline. But a spate of recent 386 introductions from major vendors convinces me there's a cautionary tale that needs spinnin'.

It seems the industry is having a garage sale. You know about garage sales. That's where you push your Total Junk (as opposed to your Still Closet-Worthy Junk) out into the driveway and stare in wonder as muumuu-clad women and men whose T-shirts will never again see their belt buckles pay a quarter here, a buck there, to haul it away for you.

A friend of mine once spent 8 hours selling a three-legged card table for 75 cents at one of these fêtes. Why would anybody want a three-legged card table? And why did my friend, who happens to sell diamonds for a living, take the trouble? I guess the answer to both questions is, because it was there.

Because of the great chip war between Intel and its new competitors, PC makers get 386 chips on the street for \$30 to \$60 a throw. It's a deal they can't seem to pass up, so you'll soon have 386SX desktops dangled in front of you for \$700 or less, 386DXs for under a grand. Don't go for it.

Okay, 386s work for portables—but six months from now, 386 desktops are garage sale fodder. The chip war and the approach of Intel's P5 mean a similar blowout of 486SXs this half. Even in May, 486SX/20 and 486SX/25 CPUs sold for under \$80 on the street, not the \$213 and \$293 on Intel's price list.

By June, you could find a fully packed 486SX for

under \$1800 from companies like ALR (714/581-6770), ATronics (510/656-8400), CompuAdd (800/627-1967), Magnavox (800/722-6224), and Insight (800/755-9638) to name a few.

To tell the truth, smart money is already focused on 486DXs. Keith Jablon, MIS director for Los Angeles's De Anza Group, switched his 600 users to 486DXs nine months ago. Dean McCarron of InStat reports that industrywide, Intel 486DXs outsold 486SXs 4 to 1 during the first half of the year.

Still, a 486SX can be easily upgraded to 486DX capability and already has the horses for multimedia, *Windows*, and all the other apps that make a 386 wheeze. Unfortunately, I've only found one sub-\$2000 multimedia 486 PC, the Educator I by Prominent Computers (800/388-1688). But it's a lot of machine.

And don't let 386-based versions turn you off to multimedia. It's the future, the Great Mandala, the Uroboros—all your favorite analog devices converted to digital and converging at your PC. Everything will be everything. Your phone will be reborn as your PC, your monitor as your TV. Your MTV will be connected to your head bone, and you're going to be able to reach out and snag data over the phone the way you want it—voice-mail-turned-text, text-turned-speech, video, graphics. It's a higher level of consciousness, sort of Info at Your Nosetip.

But all these enriched data types are *muy gordo*; they take horsepower, memory, storage. Believe me, you can't get to Great Cosmic Oneness riding a 386. And next year, the muumuus won't give you 50 cents for one.

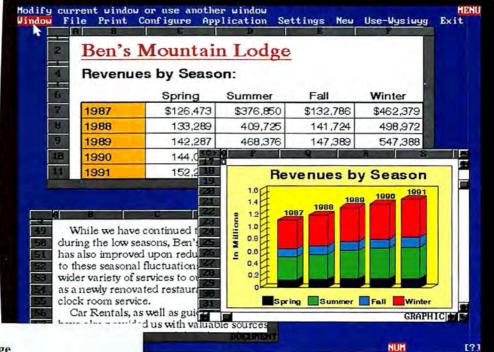
#### WHAT TO WATCH

Microsoft goes groupware in July with Schedule + for Windows, a robust scheduler/task planner—the first of many shared apps to rely on Microsoft Mail 3.0's messaging infrastructure . . . Lexmark debuts its 2½-pound IBM Portable Printer in July, a cigarette carton—size thermal-transfer device that prints 25 to 30 360-dpi pages per battery charge for about \$385 . . . . Microsoft Word for Windows meets an encyclopedia, a dictionary, a thesaurus, and other references on CD ROM in July for about \$425, letting you embed text, graphics, and sound entries in your docs . . . . For about \$175, Caere's FaxMuster will add Send Fax to the menus of your favorite Windows apps, automatically convert even low-res fax bit maps to editable text, and let you scan in images and text for faxing . . . . Questions? Contact me at 415/267-1718 or MCI Mail, 329-2648.

## Unlike most sym needs to be seen t

Look great on ► screen and paper, thanks to eight scalable Bitstream® fonts in more than 200 sizes and styles.

Need to do five things at once? Our Symphony windows let you perform different tasks side by side on screen. Just choose the size and number of windows you want to display.



#### Ben's Mountain Lodge Revenues by Season:

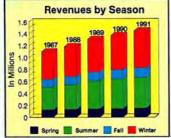
	Spring	Summer	Fall	Winter
1987	\$126,473	\$376,850	\$132,786	\$462,379
1988	133,289	409,725	141,724	498,972
1989	142,287	468,376	147,389	547,388
1990	144,090	498,042	151,234	575,876
1991	152,208	511,398	162,398	621,723
1992	153,947	532,684	164,010	630,242
TOTAL	\$852,294	\$2,797,075	\$899,541	\$3,336,580
AVERAGE	142,049	466,179	149,924	556,097

While we have continued to increase revenues during the low seasons, Ben's Mountain Lodge has also improved upon reducing its exposure to these seasonal fluctuations by offering a wider variety of services to our customers such as a newly renovated gournet restaurant and around the clock room such as a newly renovated gournet restaurant and around the clock room

Car tentals, as well as guided tours of the mountains, have also provided us with valuable sources of revenue, making us much less dependent upon high season sources, such as skiing in the winter, and fishing and hiking during the summer months.

Our estimation is

Our estimation is that these new sources of revenue



have increased our overall profitability by 24% over the past two years, and that other improvements to lodge facilities have attracted a wider variety of customers than we have seen in the past. Our expectation in the long-term is to see even more profitable years at Ben's Mountain Lodge.

With our new WYSIWYG interface, you can action easily create graphs, draw lines and add arrows, shading and color to your letters and reports.

■ Our new automatic print compression lets you print any size worksheet on one page. Now Symphony comes with full mouse support, so clicking from window to window is a breeze.

# phonies, this one obe appreciated.

## Introducing Symphony Release 3, now with a graphical WYSIWYG environment.

Symphony from Lotus has always been the one integrated DOS software package for all your business needs. But now this popular program, which features powerful spreadsheet, database, word processing, communications and graphics

BEN'S MOUNTAIN LODGE 1 Very High Road Silver Springs, Colorado

> Mr. John Reece President Rocky Mountain Travel Denver, Colorado 80203

▲ Take advantage of Symphony's integration by sending out large, personalized mailings that link to the program's database.

environments, is really something to feast your eyes on.

For starters, it features a new WYSIWYG (What-you-see-is-what you-get) interface, so you can easily create graphs, charts, diagrams, lines and arrows. An on-line tutorial and context-sensitive Help also make the program easier to work with.

With the new Symphony, you can switch environments on or off to maximize available

> memory to build even larger spreadsheets. Plus, you can use our improved file Viewer to quickly preview files before retrieving them. Or to link and combine files on your hard disk to your active worksheet. You'll also find our new Auditor helpful for analyzing and documenting complex worksheet logic.

> Since Symphony is such a flexible program, it can easily be customized to meet your specific business needs. And this newest release is compatible with all earlier versions of Symphony and

the most recent versions of 1-2-3\* for DOS.

To find out more about Symphony, visit your Lotus Authorized Reseller. For a free auto demo or to order your upgrade directly from Lotus, call **1-800-TRADEUP**, ext. **6827**.\*

Symphony Release 3. Sounds good, doesn't it?

## Lotus Symphony

### TOP OF THE



Edited by RUSSELL GLITMAN

#### **LA Computer Scam Artists Busted**

Undercover Police Arrest Trio as They Try to Sell Stolen Computers

Three alleged leaders of a nationwide computer mail-order fraud ring were arrested in late June and charged with attempting to sell \$750,000 worth of stolen Macintosh computers.

The arrests follow the May exposé in *PC World* of the trio's involvement in allegedly fraudulent direct sales operations. Tony Ortiz Arce (a.k.a. Anthony Palomino), who ran Los Angeles Component Corporation and Video-Tronics, and Robert Michael Hoover, owner of Integrated Systems (a.k.a. ISC Power Systems), were charged by the Temecula, California, Police Department with possession of stolen property, conspiracy to distribute stolen property, possession of a concealed weapon, and possessions.

sion of a loaded weapon in a public place. Martin Martinez, one-time owner of One Stop Micro in Van Nuys, California, was arrested at Arce's Video-Tronics headquarters in Signal Hill, California, and was charged with possession of stolen property and conspiracy to distribute stolen property.

Storefront mail-order companies operated by these and other men went out of business early this year after allegedly defrauding customers of hundreds of thousands of dollars.

According to Temecula Sergeant Howard Rush, detectives Paul Brinkman and Chris Antoniadis went undercover and negotiated to pay Arce and Hoover \$225,000 for 180 computers worth an estimated \$750,000 after receiving a tip the merchandise was for sale. Police are investigating how the stolen merchandise was obtained. —Mike Hogan

#### Compag's Introductions Rock PC Prices

ompaq's June product blitz of aggressively priced PCs is sending prices tumbling so rapidly that despite years of false alarms, some foresee an impending market shakeout.

"It's really happening this time," asserts Kimball Brown of International Data Corporation. "The consolidation is under way, and there will be a huge fallout." Armed with a near-\$750 million war chest, Compaq isn't out for just a share of the under-\$2000 PC market, explains Brown. It wants to wipe out as many clones as possible.

Its principal targets, Dell Computer and AST Research, have fired back with their own pricing actions and before summer's end will have revamped their product lines to up the hardware ante. Both preceded Compag into discount channels, and both are coming off years of impressive revenue and earnings growth. But in the days that followed the introduction of Compag's Deskpro/M, Deskpro/i, and entry-level ProLinea lines, both companies' stock prices were rocked by market makers who doubt they can outlast or outspend Compaq.

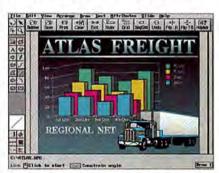
AST's counterattack strategy, says Director of Portable Systems Dan Sheppard, is "to offer more than Compaq for less, all across the line." In AST's case, more includes more slots, more bays, more hard disk, more accessories, and more processor speed for the same price or less.

Meanwhile, Dell has proved it can limbo down even further with a new low-priced Dimension line that complements its current models, which are being upgraded with features and services and repositioned as the Performance series. Starting at \$1259 for a 25-MHz 386SX and topping out at about \$2400 for a 486DX2/50, the Dimension by Dell line offers more memory, disk, and other features than comparably priced Compaqs.

One weak link in Compaq's strategy: its inexperience in mass merchant distribution, which the cloners pioneered, says Seymour Merrin, publisher of Channel Marker.

-Mike Hogan

#### WordPerfect Draws a New Strategy



DrawPerfect 2.0 is the first of a new breed of multiplatform WordPerfect applications.

WordPerfect has embarked on an ambitious project to allow applications to share information and services across platforms. The first glimpse of the new generation was a beta version of *Draw-Perfect 2.0*, shown in June.

Due this fall, DrawPerfect 2.0 will be followed by the key weapon in the company's strategy, a new version of WordPerfect Office—the mail, scheduling, and calendar application. New forms and document management applications and release 6.0 of the flagship WordPerfect in both DOS and Windows versions will follow.

The products will share a core engine and sport similar

graphical interfaces. They will have hooks into all the popular E-mail messaging protocols to link and transfer data. Also under development are document viewers that enable non-Word-Perfect users to view WordPerfect documents without

any loss of formatting.

DrawPerfect 2.0 has almost everything you want from a Windows application, plus the speed of a DOS program and the ability to run on any PC—it requires just 450K. It includes drawing, charting, and presentation modules, uses pulldown menus, and can open nine screens.

Features include a splitscreen capability so you can view and change imported Excel, 1-2-3, and Quattro Pro spreadsheets as you use one of the 15 chart types to graph the data. It supports sound, ships with more than 100 MIDI sound clips, and is expected to cost \$495.—Russell Glitman



Tiny drive: HP's 1.3-inch Kittyhawk is smaller than a matchbox, stores 20MB of data.

In any of the hottest products at the November COMDEX Fall show—hand-held computers, 1½- to 2-pound subnotebooks, more versatile printers, and powerful fax machines—will use unique new drives from Hewlett-Packard, Conner Peripherals, and MiniStor Peripherals.

The smallest drive in the world—the 1.3-inch Kittyhawk from Hewlett-Packard—can withstand incredible shocks, up to 100 g's while operating. "You could play Frisbee with them" and they'd still work, says Raymond Freeman, Jr., president of Freeman Associ-

#### Smaller, Versatile Hard Drives Arrive

ates, a Santa Barbara, California, market analyst.

The size of a matchbox, Kittyhawk holds 20MB, and it weighs less than an ounce. Despite the device's small capacity, HP

envisions broad applications for it: Printers might incorporate it as a cache or to provide soft fonts—it fits into font cartridges. In fax machines, removable versions could be used to store incoming and outgoing documents. Future hand-held data collection devices could use the drive with wireless features for periodic downloads.

Conner's Derringer drive is larger in both size (1.8 inches) and capacity (32MB). But it's the first 3-volt-capable drive to conform to the PCMCIA Type III specification, which provides room for two flash cards in a single bay. Bill

Klevehsal, director of product marketing at Conner, says the removable IDE drive could operate like a floppy: Workers could use it in their field machines and in their desktops for pull-and-plug data access. "We're working for interchangeability with flash memory," said Klevehsal.

Larger, 64MB, PCMCIAcompatible, removable hard drives will also be available from MiniStor Peripherals Corporation, a San Jose, California, start-up.

Vendors incorporating the drives aren't ready to talk, but a Kittyhawk version of HP's popular 95LX hand-held is a natural, says Jim Porter, president of Disk/Trend, a Mountain View, California, market research firm. Klevehsal confirms that hand-helds and subnotebooks under 2 pounds using the Derringer will be on the market in late 1992.

-Russell Glitman

#### Lotus Launches Organizer PIM

otus Development is taking another whack at the personal information manager (PIM) market with *Lotus Organizer*; the first *Windows* PIM from a major vendor.

Concentrating on handling basic daily chores, Organizer shows a friendly notebookstyle interface with calendar, to-do list, address book, notepad, and planning and anniversary modules. You can easily integrate information between the modules—for instance, link an appointment in the calendar with associated information in the notepad. Like all PIMs, Organizer also offers text searching plus plenty of bells and whistles such as

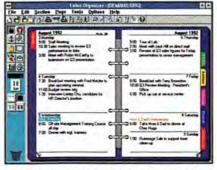
the capability to log phone calls or billable time.

Organizer should appear in August at \$149, selling on the street for about \$100—less than half the cost of most Windows rivals. Lotus will sell it

direct through an 800 number as well as through dealers. Organizer also will be bundled with such portables as Dell's System 320SLi. The product will be the centerpiece of a PIM strategy that extends from palmtops to work groups, says Bar-

bara Baird, senior product marketing manager.

Organizer's interface will help break through the PIM ease-of-use barrier, and Lotus's backing will broaden PIM sales, says David Marshak of Boston's Patricia Seybold Group. —Eric Bender



Lotus Organizer is a \$100 Windows tool for handling personal information.

#### Microsoft's First Work Group App

B uilding on the momentum of the July release of Mail 3.0, Microsoft plans to unleash a suite of products designed to let large companies combine Windows work group applications with their existing network backbone. After unsuccessfully chasing the LANbased cc:Mail market, Microsoft has its sights on Fortune 1000 companies already using large host-based messaging systems. Officials claim the products will allow customers who like the functionality of systems such as PROFS but who want a friendlier interface to standardize on Windows and on Microsoft's messaging standard, MAPI.

The applications will share an infrastructure that handles messaging, storage, administration, directory services, and gateways. According to Ronni Marshak, an industry analyst with the Patricia Seybold Group in Boston, the strategy makes sense: "Building on the Mail infrastructure is more logical than creating applications that don't have anything to do with each other."

The first product in the suite, released in July, is Schedule+ for Windows. It includes tight integration With Mail and a slick drag-and-drop interface. While Schedule+ offers most of the standard amenities of Windows group messaging packages, it comes with extras like a miniature project manager that lets you schedule time for projects or automatically selects the best time for a meeting.

The second product in the suite, an E-mail forms routing package, will be out by the end of the year. Work flow, conferencing, and other group application products are also slated.

—Bronwyn Fryer 📵



PC World Offers First Impressions of Prerelease Hardware and Software

#### Compaq Gets Budget Minded

The high-end giant introduces low-end machines with flair.

by Dan Miller

Though Compaq has tradi-L tionally conceded the low end of the PC marketplace to the mail-order guys, it looks like the status quo is changing.

Just months after redesign-

series ranges from around \$1800 for a 386DX/25 to less than \$2400 for a 486DX/33 and give buyers a passel of cuttingedge features in a nice slimline box, for hundreds less than the cost of a comparably configured Deskpro/M.

tions; 486 systems leave the 386 section of the motherboard unpopulated. In order to upgrade both 386 and 486 systems, all you have to do is to drop in the new processor and adjust jumper switches to indicate which chip and clock



Compaq introduces its new low-end ProLinea and Deskpro/i desktops and the LTE Lite/25C and Contura laptops.

ing and lowering the prices on its Deskpro/M systems, Compaq has introduced three completely new product lines-the midrange Deskpro/i and budget-minded ProLinea desktops, and the Contura series of low-end laptops. The company is also bringing out an aggressively priced active-matrix color version of its LTE Lite 25 notebook and "Windows Edition" Deskpro/M's. The bottom line for buyers: Compaq quality at mail-order prices.

#### Deskpro/i Series

The Deskpro/i series is targeted at performance-oriented buyers who want both high performance and low prices and might be considering a Dell or an AST. The Deskpro/i

Cutting-edge feature number one is what Compaq calls Business Audio, which combines an Analog Devices audio chip set, input/output jacks on the back of the box, a sleek microphone, and some extensions to Windows 3.1's sound support. Together, these features enable you to play 16-bit stereo sound from a variety of sources, through headphones or speakers, and to embed sounds in Windows apps compliant with Object Linking and Embedding (OLE).

The Deskpro/i's are eminently upgradable thanks to Compaq's VersaChip Upgrade Architecture. All the 386 models come with the BIOS, sockets, and circuitry to support both 386 and 486 configuraspeed you're using. Buyers of 486-based systems have the additional upgrade option of a secondary 64K external cache.

The Deskpro/i systems are available in a small, three-slot/ three-bay box; two of the bays are already filled by the floppy and hard drives. Compaq's speedy QVision graphics accelerator handles video chores. Buyers can choose 512K or 1MB of VRAM, which support 16 colors and 256 colors, respectively, at 1024 by 768 noninterlaced resolution.

Compaq is also incorporating much of the new technology from the Deskpro/i's into a new series of "Windows Edition" Deskpro/M's. These special editions will bundle Business Audio hardware, a QVision graphics adapter with 1MB of VRAM, and preinstalled DOS and Windows on existing Deskpro/M models, along with a minimum of 4MB RAM and a 120MB hard drive.

#### **ProLinea Line**

While the Deskpro/i line has that certain indefinable Compag-ness about it, the new ProLineas represent a departure from Compaq tradition.

They were designed in response to two pieces of market intelligence: Half of the PCs sold in the United States last year cost less than \$2000, and customers who loyally purchased their servers from Compaq were buying their lowend machines from whoever had the lowest price.

The result: The ProLineas are dirt cheap. Prices start at under \$900 for a

386SX/25; a 486/33 is available for under \$1800. Overall, these systems are competitive with similarly configured machines from Gateway and Dell.

In exchange for low price, you have to forgo a few of Compaq's traditional design touches. These are the first Compaq systems, for example, to make significant use of third-party components. Video is provided by Western Digital and Tseng Labs chips rather than Compag's in-house QVision (both chips support 1024 by 768 noninterlaced resolution). Logic chip sets and power sources are also supplied by outside

Another change: The Pro-Lineas are not particularly expandable. Unlike with the



The trackball on the new LTE Lite/25C notebook is next to the screen.



The Deskpro/i systems come with a bundle of audio hardware.

Deskpro/i's and higher-end Compaqs, you can't upgrade ProLinea processors. Also, the 386 models hold only 512K of RAM, and there's no optional memory cache for any of them. The 386s come in either a two-slot/two-bay configuration or with three of each, while the 486 has a three-slot/three-bay standard configuration.

#### **Bargain Portables**

In addition to introducing its brand-new desktop machines, Compag has added some significant new portables. The most impressive is the LTE Lite/25C, an active-matrix version of its LTE Lite notebook. The 25C's best feature is its sub-\$5000 list price, which should translate to about \$4000 on the street. In addition to the great price, the machine sports a crisp, bright screen and has a built-in Easy-Point trackball that's a pleasure to use (it's positioned to the lower right of the screen, with the buttons on the back).

Compaq is also introducing the new Contura line of portables. Like the ProLinea desktops, the Conturas are aimed at the low end. They, too, break with Compaq design tradition—where the Lite systems have looked like no-nonsense business machines, white and squared off, the Conturas are more stylish, black and sleekly curved.

The Conturas come in two flavors: a 20-MHz 386SL for under \$1700, and the 25-MHz version, for just over \$2000—both extremely competitive prices. The 20-MHz unit comes with 2MB of RAM (expandable to 10MB) and a choice of a 40MB or a 84MB hard disk; the 25-MHz model has 4MB of RAM (expandable to 12MB), a 64K memory

cache, and a 60MB or 120MB hard drive. Both models are monochrome and weigh in at a little over 6 pounds.

The Contura notebooks are designed to optimize price rather than cutting-edge technology. These new laptops make you give up a few of the features you might expect from a Compaq, such as an expansion chassis, simultaneous LCD-and-external-monitor display, and intelligent power management.

Finally, Compaq is changing the way it deals with customers. Although it's sticking with its established network of authorized dealers and retail outlets for sales, Compaq plans to offer a one-year on-site service contract with every product it sells. Compaq has also set up a fax-back product information service, a CompuServe forum, and an expanded enduser training program.

Compaq also plans an enormous expansion of its distribution channels. The company says it will essentially double its worldwide outlets this year. The company may also develop an increased presence in the low-margin superstores. And while there are no plans to set up a Compaq mail-order division, you may begin seeing the machines in other companies' mail-order ads.

Why the kinder, gentler Compaq? No doubt it all has something to do with the Dells and the Gateways of the world gaining ground with the corporate customers who are Compaq's core clientele. Whatever the reason, Compaq now has a machine to meet every buyer's needs. The question is whether Compaq can stay at the cutting edge of technology, where it made its name, while keeping up with price-cutting by the competition.

Dan Miller is an assistant editor for PC World.

#### SNAPSHOT

#### Compag revamps its entire line.

#### Deskpro/i desktop systems

■ Key features: Business Audio, chip upgradability, QVision graphics adapter with 512K or 1MB VRAM, three slots and three bays 3/25i: 386DX/25, 84MB hard disk (120MB option), 4MB RAM (expandable to 32MB), 16K internal cache \$1779

3/33i: 386DX/33, 84MB hard disk (120MB option), 4MB RAM (expandable to 32MB), 16K internal cache \$1879

**4/25is:** 486SX/25, 84MB hard disk (120MB option), 4MB RAM (expandable to 32MB), 8K internal cache with option of 64K external \$1879

4/33i: 486DX/33, 120MB hard disk (210MB option), 4MB RAM (expandable to 32MB), 8K internal cache with option of 64K external \$2349

#### **ProLinea desktop systems**

Key features: Low price, third-party components

**3/25zs:** 386SX/25, 2MB RAM (expandable to 16MB), 40MB hard disk (84MB option), Western Digital video adapter with 512K RAM, two bays and two slots \$899

**3/25s:** 386SX/25, 2MB RAM (expandable to 16MB), 84MB hard disk (120MB option), Western Digital video adapter with 512K RAM, three bays and three slots \$1099

4/33: 486DX/33, 4MB RAM (expandable to 16MB), 84MB hard disk (120MB option), Tseng Labs video adapter with 1MB RAM, three bays and three slots \$1799

#### LTE Lite/25C notebook

■ Key features: Active-matrix color screen, EasyPoint trackball 386SL/25, 84MB hard disk (120MB option), 4MB RAM (expandable to 20MB), 64K external cache \$4999

#### Contura notebooks

Key features: Low price

**3/20:** 386SL/20, 40MB hard disk (84MB option), 2MB RAM (expandable to 10MB) \$1699

**3/25:** 386SL/25, 60MB hard disk (120MB option), 4MB RAM (expandable to 12MB), 64K cache \$2099

#### AVAILABILITY

Immediate

#### Compaq Computer Corp.

P.O. Box 692000, Houston, TX 77269-2000; 800/345-1518

A new Intel-compatible CPU fits in the 386SX socket and delivers souped-up performance for PC Brand and Zeos systems



Zeos's and PC Brand's 486SLC systems are faster than their 25-MHz 386SX counterparts—but cost nearly the same.

#### by Jeff Bertolucci

hat if someone offered you a personal computer that ran nearly as fast as a 33-MHz 386DX—but at a 25-MHz 386SX price? Too good to be true? Maybe not. Thanks to Cyrix's new Cx486SLC microprocessor, you can ride up the power curve without paying a hefty premium.

Despite its name, the 486SLC is not a clone of the 486, but rather a 386/486 hybrid that's compatible with the 486 instruction set. Available in both 20-MHz and 25-MHz clock speeds, the

486SLC uses the same 32-bit internal processing as 386 and 486 chips. Like the 386SX, however, it uses a narrower 16-bit data path to interact with the rest of the system. And where the Intel 486 has an internal 8K RAM cache, the 486SLC's cache is only 1K.

#### PC Brand Notebook

Among the first vendors to ship a Cyrix-based notebook is PC Brand, Tandon Corporation's direct-market subsidiary, whose new 486/SLC notebook is a slightly modified version of its 386/SX-25 note. But while the 486/SLC offers greatly improved performance and longer battery life, it costs a bare \$200 more. Running PC World's application benchmarks, the 486/SLC consistently performed better than 386/SX-25 notebooks. For example, running the CPU-intensive 1-2-3 test, the PC Brand 486/SLC had a 24 percent edge over the average 25-MHz notebook (based on recent tests of 23 of the latest SL and SXL models).

The small, low-voltage (3-volt) 486SLC chip is a natural for notebooks, where powering the CPU uses a large percentage of a battery's juice and where motherboard real estate is at a premium. In informal PC World tests, the PC Brand 486/SLC ran about 2 ½ hours with power-management features disabled—respectable for a notebook using a standard nickel-cadmium battery

The 6½-pound 486/SLC has 2MB of RAM (expandable to 16MB), a backlit LCD VGA screen, a 120MB hard drive, and a 3½-inch floppy drive.

#### Zeos 486SLC-25 Desktop

For \$1995—same price as the company's 386SX/25—you get a complete Zeos 486SLC-25 with 4MB of RAM, 107MB hard drive, two floppy drives, and a super-VGA monitor with graphics card.

As with the PC Brand notebook, the Zeos 486SLC motherboard is essentially the same as Zeos's 386SX motherboard, but with slight hardware and BIOS modifications. Perhaps due to the added logic, the Zeos 486SLC-25 ran some 6 percent faster in the 1-2-3 benchmark than PC Brand's 486/SLC, or about 28 percent faster than the average 25-MHz 386SX.

#### The Crux of Cx486SLC

Overall, our preliminary tests suggest that running at 25 MHz, the Cx486SLC delivers processing performance only 12 to 15 percent shy of a 33-MHz 386DX.

With ever more-powerful, low-cost, high-performance CPUs promised by Cyrix and other firms, expect cheaper systems in the future.

Jeff Bertolucci is an assistant editor for PC World.

#### SNAPSHOT

#### PC Brand 486/SLC

Priced \$200 more than the 25-MHz 386SX but nearly 25 percent faster.

#### KEY FEATURES

- Comparable to a 33-MHz 386DX
- Up to 16MB RAM, 120MB hard drive

#### AVAILABILITY

**Immediate** 

#### PRICING

\$1995

#### PC Brand, Inc.

405 Science Dr. Moorpark, CA 93021 800/722-7263

Reader service no. 823

#### Zeos 486SLC-25

This low-cost desktop gets a healthy performance boost.

#### KEY FEATURES

- Near-33-MHz 386DX performance
- 4MB RAM, 107MB hard drive
- Seven expansion slots, four drive bays

#### AVAILABILITY

Immediate

#### PRICING

\$1995

#### Zeos Int'l Inc.

530 5th Ave. NW St. Paul, MN 55112 800/423-5891

#### **Ami Pro 3.0 Brings Easy Power**

Windows word processing gets friendlier and more powerful with this lively upgrade, which polishes basic writing and printing tasks.

by George Campbell

Mi Pro has always offered a snazzier interface, better graphics handling, and more accurate screen displays than its rival Windows word processors. Ami Pro 2.0 just missed getting a Best Buy in our April roundup, losing a features battle to Word for Windows 2.0. Now Lotus has added the missing features and gone Microsoft one better in several areas. The result is a very hot property.

#### **Taking Direct Action**

There's a bumper crop of new features. Like WinWord, Ami Pro 3.0 lets you move text with the mouse. You select a block of text, then hold the mouse button down inside the selected area, drag the cursor to a new location, then drop it.

Similarly, formatting also gets a boost with a unique tool that lets you use the mouse to copy formatting from existing text and apply it to other text.

Ami Pro 3.0 offers multiple

sets of SmartIcons, each suited to a particular task and completely customizable. Icon buttons let you cycle through the sets; you also can pick one from a list. Unlike WinWord, Ami Pro lets you edit the icons, change their size, or position them anywhere on screen.

How about that right mouse button? Ami Pro uses it for quick formatting jobs. For example, right-click in a paragraph to use the Modify Style dialog box, or click in a frame to see the Frame Layout dialog. Additionally, every dialog box now includes a help button.

A new preview feature lets you see a zoomable thumbnail view of any document or style sheet before loading it. What's more, without leaving the preview, you can search or move around in the document, or print. Ami Pro now handles landscape and portrait printing in the same document, too.

You'll also find some powerful new macros in *Ami Pro's* included set of sample macros. One of the best lets you print a list of documents in batch mode, immediately or at a specified future time.

#### Masterful Mail Merge

WinWord 2.0's easy mail merge tools bested Ami Pro 2.0's, but Ami Pro 3.0 is back on top with its intelligent mailmerge feature, which always knows the current stage of the merge. In addition, you can insert merge fields from a list, and an internal flat-file data base system with a friendly card-file front end offers dBASE III file support, search tools, and sorting.

Ami Pro 3.0's envelope printing command grabs the address from your letter, then lets you choose an envelope size. You can even store multiple return addresses, picking one at print time. Label printing, also hassle free, employs standard Avery label formats.

#### Keeping a Clean Screen

Windows power users will love Ami Pro's unique Clean Screen feature, which can hide

> any or all of the program's menus, rulers, and icon bars. Keyboard commands still open menus, and it's easy to jump back to the standard display.

Automated style sheets for fill-in-the-blank documents are easier too; you can run a macro just by clicking on a frame. And you'll find file importing capabilities are much improved. 3.0 also includes the complete Houghton Mifflin CorrecText Grammar Correction System plus spe-

cialized legal, financial, and scientific word lists for its spelling checker.

Lotus claims that Ami Pro 3.0 will run more than 20 percent faster than its predecessor, which ran head-to-head against Word for Windows in our tests. And Adobe's ATM for Windows font software still comes bundled.

About the only major omissions are desktop publishing tools: text that flows between frames, and a snap-to layout grid. Otherwise, *Ami Pro 3.0* can handle any word processing or light desktop publishing task with aplomb, and it sets the mark for its competitors.

George Campbell is a contributing editor for PC World.

#### SNAPSHOT

#### Ami Pro 3.0

imps in front of the rest with improved editing and formatting tools, automated style sheets, and intelligent mail merge.

#### KEY FEATURES

- Drag-and-drop text moves
- Document preview
- **■** Grammar checker
- Right mouse button formatting support
- **■** Clean Screen option

#### AVAILABILITY

Immediate

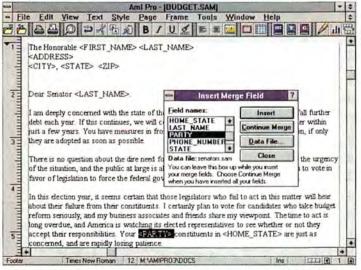
#### PRICING

\$495; upgrade \$129, \$49 if Ami Pro 2.0 purchased in last six months, \$79 if Ami Pro 2.0 purchased before February 1, 1992

#### Lotus Development Corp.

Word Processing Division 1000 Abernathy Rd. Bldg. 400 #1700 Atlanta, GA 30328 800/831-9679, 404/391-0011

Reader service no. 822



This built-in mail-merge data base system is typical of the additions to Ami Pro 3.0—it puts the tools you need right where you need them.

#### Gateway's Pint-Size Portable

The bantamweight HandBook's backlit LCD screen and usable keyboard may make it the optimum traveling companion.



Gateway's HandBook may weigh under 3 pounds, but that doesn't keep this mini-notebook from running your favorite DOS applications at a steady clip.

#### by Jeff Bertolucci

I've never understood all the fuss about palmtop PCs such as Hewlett-Packard's 95LX and the Poqet. Sure, equipped with modems or pagers, they're a good way to keep in touch with the office, but their keyboards are too small to type on, and their tiny, dim screens are all but unreadable in anything but optimum lighting conditions. In other words, you can't do any real work on them.

Enter Gateway 2000's new HandBook, a compact, 2.7-pound, 286-based portable with a large enough keyboard and screen to run your favorite DOS word processing, spreadsheet, and data base software. And at \$1295, the HandBook costs a good deal less than the 6-pound notes.

#### **Notebook Junior**

You'll appreciate the Hand-Book's space-saving design when you're using the machine

on an airplane dinner trayor even when stuffing it in a briefcase. Manufactured by Sanyo, the HandBook measures 6 inches deep, 9.8 inches long, and 1.4 inches high. (By comparison, Gateway's new Nomad notebooks measure 8.5 inches deep, 11 inches long, and 1.8 inches high, or about 86 cubic inches larger-almost twice the size of the Hand-Book.) There's still enough room, however, for an internal 40MB hard drive and 1MB of RAM, expandable to 3MB.

The HandBook's 7.6-inch, backlit LCD screen displays surprisingly crisp text and graphics at double-scan CGA (640 by 400) resolution. Gateway claims the internal nickelmetal-hydride battery offers 4 hours of battery life.

Touch typists will like the HandBook's 78-key keyboard. While the 2mm key travel is a bit cramped compared to the standard 3mm travel of most full-size notes, the keys are spaced far enough apart for comfortable word processing. The Hand-Book uses the customary inverted-T cursor key configuration, but space constraints forced Gateway to emulate <Home>, <Page Up>, <Page Down>, and <End> keys—a shortcoming common among note-book keyboards.

Another space-saving feature: the Hand-Book is powered by Chips and Technologies' PC/Chip (commonly called PC on a Chip), which integrates a 16-MHz 286compatible CPU and support chips for con-

trolling video, disk storage, memory, and other tasks. While you can maneuver through DOS applications at a steady clip on this AT equivalent, you're better off leaving Windows programs back at the office.

#### **Now the Compromises**

You can't take the kitchen-sink approach when designing a 3-pound PC, so it's no surprise that the HandBook lacks a floppy drive. An optional external floppy drive is available, but pricing wasn't set at press time.

The HandBook comes with only two ports: one parallel and one serial. If you bring both a modem and a mouse on the road, you'll have to disconnect one from the serial port to use the other.

Another shortcoming is the absence of a PCMCIA card slot for adding a fax-modem or additional RAM. The carrying case is just large enough for the HandBook itself. You'll have to force the AC adapter in the case—or pack it in your travel bag along with your external modem, phone cord, socks, and underwear.

Gateway president Ted Waitt often says his company isn't out to reinvent the wheel, and the HandBook makes his point: It uses proven technologies in a thoughtful, intelligent way. If you like to travel light, don't need high-quality graphics, and do lots of word processing, take the HandBook rather than a standard note the next time the road rises up to meet you.

Jeff Bertolucci is an assistant editor for PC World.

#### SNAPSHOT

#### Gateway 2000 HandBook

This mini-notebook's backlit screen and internal hard drive make it a worthy choice for portable computing.

#### KEY FEATURES

- 2.7 pounds with battery, 3.5 pounds with AC charger
- Chips and Technologies' space-saving PC/Chip for 286-class performance
- 78-key keyboard with 2mm key travel and inverted-T cursor pad
- 7.6-inch, backlit LCD screen offers doublescan CGA (640 by 400) resolution

#### AVAILABILITY

Late summer

#### PRICING

\$1295; pricing not set at press time on external floppy drive, external modern, or other options

#### Gateway 2000 Inc.

610 Gateway Dr. North Sioux City, SD 57049 800/523-2000, 605/232-2023 (fax)

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for Microsoft Windows

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seven drive bays, because we knew our customers wanted to use all kinds of hard & floppy drives, CD-Roms, tape backups and more. We

made the case stronger and gave it



extra shielding, compare it to competitors' unshielded designs. We then

incorporated surface mount technology throughout the system and put in a second temperature activated fan



to keep the system

cooler. A cooler system lasts much longer - particularly in the new upgradeable



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and extra capacity, we chose



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Diamond Stealth, both awarded PC

Magazine Editors' Choice. We also include



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## BUT YOU DO



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- 128K 25ns RAM Cache
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- Clock calendar, parallel port and two serial ports.
- 101 key keyboard.
   8 expansion slots, 2 occupied.
- MS-DOS, Microsoft Windows 3.1 & Mouse
- FastMicro Peace of Mind



#### FASTDATA 486/SX25 \$1559

#### **INCLUDES**

- i486SX<sup>TM</sup> 25mhz.
- Upgradeable to 50mhz
- Intel Overdrive Processor.

  128K 25ns RAM Cache.
  4 megabytes of high speed
- RAM.

  170 mb 17ms IDE hard
- disk with 32K cache.
- 1.2mb 5.25" / 1.44mb 3.5 floppy drives.
   Mini Tower Case with 4
- Drive Bays.

  200 watt power supply.
- Non-Interlaced Super VGA color monitor,
- 1024x768 resolution.■ 16 bit SVGA card with 1mb Ram.
- Clock calendar, parallel port and two serial ports.
   101 key keyboard.
- 8 expansion slots, 2 occupied.
- MS-DOS 5.0.
- Microsoft Windows 3.1 & Mouse.



#### **FASTDATA 386/33**

### 386/33 \$1459

- i386DX<sup>TM</sup> 33mhz Processor.
- 64K 25ns RAM Cache.
   4 megabytes of high speed
- RAM.

  170 mb 17ms IDE hard
- disk with 32K cache.

  1.2mb 5.25" / 1.44mb 3.5
- floppy drives.

   Non-Interlaced Super VGA color monitor, 1024x768 resolution.
- 16 bit SVGA card with 1mb Ram.
- Compact Desktop Case with 7 Drive Bays.
- 200 watt power supply.
- Clock calendar, parallel port and two serial ports.
   101 key keyboard.
- 8 expansion slots, 2 occupied.
- MS-DOS, Microsoft Windows 3.1 & Mouse.

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FastMicro backs up all FastData PCs with the most comprehensive support in the business. Seven day a week toll-free technical sup-

port is included for as long as you own your



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warrantee, we'll express ship you the replacement part. If we still can't resolve the problem, we'll send GE on-site service or replace

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quarterly full color catalog featuring over 400 PC products to keep your system up to date. We'd love to add you to the FastMicro

family. The next time you head West, stop by and see our 107,000 square foot facility.



For now, a

phone call will do. You can reach us at 800-821-9000.



#### FASTDATA 386/SX25 INCLUDES

■ Compact Desktop Case with 7 Drive Bays and

■ 200 watt power supply

Clock calendar, parallel

101 key keyboard.

MS-DOS 5.0

port and two serial ports.

Microsoft Windows 3.1 &

■ 6 expansion slots, 2 occu-

Dual Fans.

- 386SX 25mhz 4 megabytes of high speed RAM.
- 120 mb 17ms IDE hard disk with 32K cache.
- 1.2mb 5.25" / 1.44mb 3.5' floppy drives
- 16 bit SVGA card with 1mb Ram.
- Non-Interlaced Super VGA color monitor, 1024x768 resolution.



#### FASTDATA 386/SX INCLUDES

- i386SXTM 16mhz. 2 megabytes of high speed RAM.
- 40 mb 17ms IDE hard disk 200 watt power supply
- with 32K cache. 1.2mb 5.25" or 1.44mb 3.5" floppy drive, Super VGA color monitor,
- 1024x768 resolution. 16 bit SVGA card with

512K Ram.

- Compact Desktop Case with 7 Drive Bays and Dual Fans.
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- MS-DOS 5.0.
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#### **Optical Drives Reach a Pinnacle**

The PMO-650 is the first rewritable optical drive we've ever tested that can get out and run neck and neck with hard disks.



The Pinnacle PMO-650, shown here in a handsome external unit, offers removable 560MB disks and blazing speed.

#### by Rex Farrance

Rewritable magneto-optical drives have always had one great pitch—the capability to store huge amounts of data on removable, relatively inexpensive disks. What they can't supply is the fastball. They're only about half as fast as Winchester hard disks, so magnetic storage can still generally drive'em out of the park when it comes to day-to-day work in standard business applications.

But Pinnacle's PMO-650 changes that, This new 5%-inch drive is a speedy new addition to the optical lineup. Not only does it give you up to 560MB of usable storage per disk, it's by far the fastest optical drive we've ever tested—so fast it can challenge hard drives on their own playing field.

#### Meeting the Need for Speed

We put the PMO-650 to the test against a very fast full-height 16ms Micropolis Model 1588 SCSI drive with a 640MB data capacity. Pinnacle offers you a choice between Adaptec and Future Domain SCSI adapters; we tested with the Adaptec. We ran our standard suite of optical benchmarks plus a multimedia test, an attribute-resetting test, file deletions, and a data base test.

When we completed our benchmarks, we were blown away. In tests designed to evaluate typical use, the two drives came out dead even overall. Pinnacle held a 30 percent speed edge on the data base and attributes tests, while the Micropolis deleted 3000 files 43 percent faster and outperformed the Pinnacle almost 3-to-1 in the less common task of copying a 30MB file.

How does Pinnacle get around the bases so fast? The Pinnacle PMO-650's design employs a faster-than-usual 3600-RPM rotation, a new ultralight optic head, direct seeks (avoiding the two-step data access common to most optical drives), and a data queuing scheme for reads and writes that gives some of the benefits of the caching used on magnetic drives.

Pinnacle also packages the PMO-650 nicely. You can buy a full-height internal drive or a handsome external unit that can be laid flat or placed on its side. And a clever dust-protection scheme seals the door after you insert the media and even pulls the disk inside if you leave it partially ejected for over 30 seconds.

#### Is the Price Right?

So what might prevent you from buying this fleet-footed beauty instead of a hard disk? Price.

The Pinnacle internal drive lists at a hefty \$4294 with an adapter and a single disk, but you'll probably find it on the street for under \$3500. The Micropolis, on the other hand, costs approximately \$2500 if you factor in a third-party SCSI kit, and you can expect a street price of under \$2000. At about \$6 per megabyte, the PMO-650 costs almost twice as much per megabyte as the Micropolis.

But the situation turns around if you buy a second and third disk and expand the PMO-650's extended capacity to 1120MB or 1680MB: cost per megabyte drops dramatically to a little over \$3 and \$2 respectively. (Remember that only 280MB of storage is immediately available; you must power down and flip the disk to access the other 280MB.)

The bottom line? The PMO-650 has the raw speed to challenge a magnetic hard disk. But with its high price, it makes the most sense in the traditional roles of optical drives—to lock up data each night, juggle giant graphics files, or just to handle vast amounts of data. If you're playing in this ballpark, the PMO-650's pitch is right on the inside corner.

Rex Farrance is an assistant editor at PC World.

#### SNAPSHOT

#### Pinnacle PMO-650

This rewritable optical drive is easily the fastest we've ever tested, although it's still far more pricey than a comparable hard drive.

#### KEY FEATURES

- Performance competitive with fast hard drives
- Removable 560MB dual-sided disks
- Dust protection

#### AVAILABILITY

Immediate

#### PRICING

Internal version with adapter and one disk \$4294, external version with adapter and disk \$4394; media \$199

#### Pinnacle Micro Inc.

19 Technology Dr. Irvine, CA 92718 800/553-7070

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The Kodak Ektaplus 7016 printer gives you a built-in bonus of a convenience copier and, till August 31, it comes with a whole array of other bonuses!

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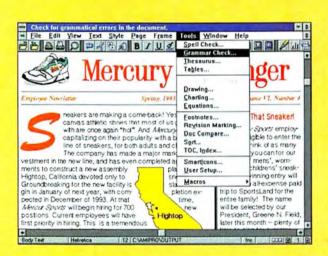
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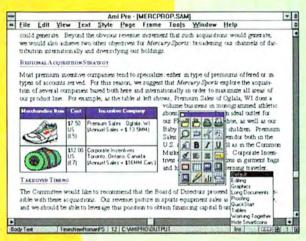
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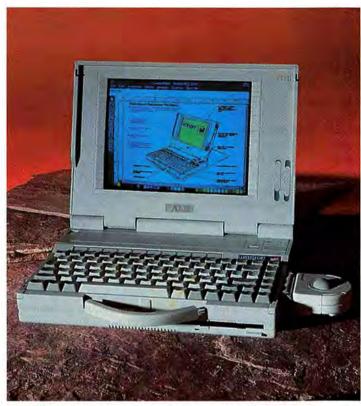
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See Other Side for Details.

Edited by RUSSELL GLITMAN

#### **ALR, Altima: A Tale of Two Notes**

These modular notebooks are based on 486SX and 486DX CPUs but offer different upgrade paths, pricing, and performance.



Upgrading the ALR Ranger's processor is a simple task: Remove two screws, lift a small panel, and swap the credit card–size CPU modules. The nickel-hydride battery supplies up to 5 hours of continuous power, ALR claims.

Technology trickles down from servers to desktop PCs to portables to notebooks. Modularity—a buzzword that generally means an easy CPU upgrade path—is no exception. The m-word has been an essential "checklist item" for desktop systems for at least a year now—even though vendors report that the option isn't always exercised.

Notebooks are following suit: ALR and Altima, two major manufacturers of lightweight, battery-powered machines, have announced upgradable lines. Both of these top-of-the-line manufacturers have elected to start their modular lines with a 20-MHz 486SX system, and both let you trade up to a 25-MHz 486SX. But while ALR's top step is a 25-MHz 486DX, with Altima you can move up another rung to a 33-MHz 486DX.

There are other differences between ALR's Ranger line and Altima's 420/425/433 units—not the least of which is price. The Altimas are considerably less expensive: Configured with 4MB of RAM and an 80MB hard disk, Altima's 486SX/20 comes in at \$2999-almost \$600 less than the comparable ALR unit, which costs \$3595. At the 25-MHz level the price difference is even greater: Altima's 425 model lists for \$3199, almost \$700 less than the \$3895 for ALR's Ranger M4SX/ 25 Model 80. Step onto the top level and you can purchase Altima's \$3499 33-MHz 120MB 486DX for \$700 less than ALR's slower \$4199 25-MHz 120MB 486DX model.

The difference between the systems will likely carry over to the upgrade modules. ALR's SX/25 upgrade costs \$695, and its DX/25 upgrade will set you back \$995. ALR will give you \$100 when

you trade in your old processor module; Altima charges \$599 to upgrade from the 20-MHz to the 33-MHz version and \$399 to step up from the 25-MHz version to the 33-MHz one. The price includes the trade-in of your old chip.

The Altima 5.7-pound base unit is nearly 2 pounds lighter than ALR's 7.5-pound system, boasts 2 more keys (84 as opposed to 82), and has a slightly larger screen (10 inches as opposed to 9). It also has a slightly higher RAM capacity—20MB instead of ALR's 16MB

—though both systems come with 4MB of RAM.

However, some kudos go to ALR, in particular the ease-of-upgrade award. ALR's engineers designed the processor upgrade to be so easy that any user can do it: Simply remove two screws, lift off a small panel, and swap the credit card-size CPU modules. The entire process shouldn't take longer than 2 minutes. Altima requires the user to return the unit to a service depot or the vendor for the swap-up.

ALR also scores points for its long-lasting battery. Thanks to its nickel-hydride battery, ALR claims its machine gives up to 5 hours of continuous service; Altima officials say their nickel-cadmium battery will run down after about 2½ hours.

-Michael Goodwin

#### IN BRIEF

#### ALR Ranger M4SX/20, M4SX/25, M4DX/25 lines

Three models offer a choice of CPUs—486SX/20, 486-SX/25, and 486DX/25—in a tidy 7.5-pound package.

#### Advanced Logic Research, Inc.

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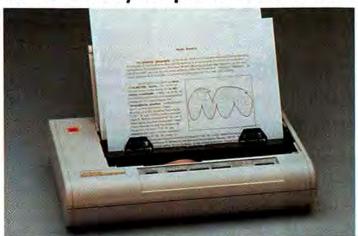
#### Altima 420, 425, 433

One 5.7-pound system unit houses your choice of processors: 486SX/20, 486SX/ 25, and full-tilt 486DX/33.

#### Altima Systems, Inc.

1390 Willow Pass Rd. #1050 Concord, CA 94517 800/356-9990, 510/356-2408 (fax)

#### Office-Quality Output to Go or in the Office



Kodak's portable Diconix 701 ink jet offers office-quality 300-dpi output.

odak's \$549 Diconix 701 printer feels at home on the road or on your desktop. At 2.4 by 7.4 by 11.7 inches, the Diconix 701's footprint is about the size of a ream of paper. The 5.9-pound ink jet is a little heftier than its closest com-

petitor, the Canon BJ-10ex (or for that matter, Kodak's own Diconix 180si), but it's still light enough to slip comfortably into your briefcase.

Unlike most mobile printers, the Diconix offers officequality 300-dpi text and graphics at a reasonable speed. Kodak claims print speeds of 3 ppm in draft mode and 2 ppm for higher-quality documents.

The Diconix 701 comes with a handful of fonts in sizes from 10 to 20 characters per inch: Courier, Gothic, and a Helvetica knockoff in bold, italic, underlined, and shaded styles. You can use 20K of its 23K RAM buffer for storing downloaded fonts; the

printer will also print in landscape mode.

Unlike the BJ-10ex, the 701 has a built-in paper feeder that holds 30 cut sheets of letter- or legal-size paper or transparencies. However, the Diconix can't print envelopes or indi-

vidual labels. The printer hooks to your PC via its lone parallel port and emulates HP's DeskJet Plus and IBM's Proprinter X24E, guaranteeing broad application support.

You can run the 701 via AC or battery. The \$50 nickel-cadmium battery is good for about 100 pages between recharges. Kodak offers a one-year warranty for parts and labor. A carrying case costs \$60.

-Daniel Tynan

#### IN BRIEF

#### Kodak Diconix 701

This \$549 printer produces output good enough for the office in a package small enough for the road.

#### Eastman Kodak

901 Elmgrove Rd. Rochester, NY 14650 800/344-0006

Reader service no. 605

#### **IBM Printer Delivers PostScript for the People**

PostScript isn't just for desktop publishers anymore. With its scalable fonts and superior graphics, a Post-Script printer can make almost anybody look good on paper—a big reason why many offices are adopting the Adobe standard. Now IBM spin-off Lexmark Int'l has two Post-Script printers that can handle the demands of busy offices.

The \$2295 LaserPrinter 6P features a 6-ppm engine with a standard 10-MHz 68000 processor and 17 scalable Adobe Type 1 fonts. The 6P's 2MB of RAM is expandable to a generous 9MB. The compact, 33.6-pound machine is 12 by 14 by 21 inches and has a duty cycle of 14,000 pages a month, ideal for small work groups.

The 6P employs Lexmark's own resolution enhancement for sharper output—or you can upgrade to true 600-by-600-dpi resolution by installing a \$799 4MB RAM module.

The \$3795 10P features the same footprint as its 6P sibling but with the greater speed, fonts, and paper handling a larger office requires. The 10-ppm unit is powered by a 16-MHz 68020 processor and comes with 39 Adobe fonts. With its 5MB of RAM, you can print at 300 or 600 dpi, though the higher resolution slows performance. Designed to crank out 20,000 pages a

month, this workhorse comes with a 250-sheet output bin that shuts down the printer when full, preventing overflow.

In addition to PostScript and their native PPDS page description language, both printers can emulate a Laser-Jet Series II and an HP-GLbased plotter. Laser-Jet III (PCL 5) emulation costs another \$199. A 200-sheet input tray is standard, and you can add a 500-sheet feeder for \$449. Both machines come with a one-year warranty. —Daniel Tynan



Lexmark's work group-worthy LaserPrinter 10P churns out Post-Script documents at 600 dpi.

#### .

N BRIEF

#### IBM LaserPrinter 6P, IBM LaserPrinter 10P

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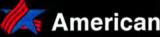
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#### **PC Brand Offers Power Without a Premium**

I f rock-bottom prices for high-performance PCs keep catching your eye, only to bust your budget once you've added in the cost of a monitor, hard drive, and the memory you need to run Windows, then take a look at PC Brand. This direct arm of Tandon Computers is an alternative that gives you everything you want, including a low price.

Most buyers looking for a fully loaded, power user's machine won't have to add much to the \$1495 price tag of PC Brand's new Leader Series 386/40 Cache. The 40-MHz 386DX system includes a 64K cache, 4MB of RAM (expandable to 32MB), a 105MB IDE hard drive, and a 16-bit super-VGA graphics card and monitor. The machine also comes with a 1.44MB 31/2-inch floppy drive and a 1.2MB 51/4-inch floppy drive, includes a serial mouse along with its 101-key enhanced keyboard, and comes bundled with Windows 3.1 as well as DOS 5.0. PC Brand also offers the 386/40 with a



The \$1495 Leader Series 386/40 Cache from PC Brand includes a 64K cache, 4MB of RAM, and a 105MB IDE hard drive.

170MB hard drive for \$1645, with a 200MB drive for \$1745, and with a 400MB drive for \$2145.

If a 40-MHz 386 isn't powerful enough, PC Brand has a 33-MHz 486DX model, similarly configured, for only \$400 more. The 486/33 Cache comes with the same hard drive options as its 386 stablemate: 105MB for \$1895, 170MB for

\$2045, 200MB for \$2145, and 400MB for \$2545. Both have one 8-bit and four 16-bit expansion slots and two 5%-inch and two 3%-inch drive bays.

PC Brand introduced the Leader Series last spring. By the time you read this, prices may be lower still. They now cost about 25 percent less than the company's Upgradable Series PCs, with upgradable CPU modules.

Both systems come with unlimited toll-free telephone support; a 30-day, "no questions asked" money-back guarantee; and one year of free on-site service. —Rob Garretson

#### IN BRIEF

#### PC Brand Leader Series 386/40 Cache, 486/33 Cache

Two souped-up, fully loaded PCs at rock-bottom prices.

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405 Science Dr. Moorpark, CA 93021 800/722-7263, 800/722-7392 (fax)

Reader service no. 608

#### Cache In on Better Performance

I f you work mainly with an application that makes continual calls on your hard disk-such as a data base program or Windows' virtual memory-your standard hard disk controller may be slowing you down, even if you have a fast 486 processor. Caching controllers can minimize disk reads, measurably improving performance for many applications. The price of these high-performance peripherals can be more than balanced by big savings in working time. With that in mind, SCSI hard disk users will want to check out DPT's latest SmartCache Plus controller, and IDE users will be interested in Intelisys's new DC-600.

DPT, the first vendor to offer a PC caching controller, is now shipping its SCSI Performance Package with the SmartCache Plus controller. You can purchase the Smart-Cache Plus in a cacheless configuration and expand to as much as 16MB of cache for use on big file servers and multiuser systems. The Performance Package puts a number of small commands together and executes them all at once-vastly improving SCSI performance on small operations. In addition, the Smart-Cache automatically reads more of the disk than was requested, moving that data to cache RAM. This can pay big dividends when you load large applications and files. List prices start at \$595 for the DPT SmartCache Plus ISA and \$785 for the EISA model with no cache. Adding 4MB of cache costs \$595.

The Intelisys DC-600 ISA controller is aimed at IDE users and is designed with an eye to the future, supporting up to four IDE drives of 4GB each. The controller automatically recognizes drive configurations, supports up to two additional floppy drives, and is available with standard SIMM caches up to 16MB. The Intelisys controller queues commands and uses a variety of caching algorithms to break up the I/O bottleneck, including deferred writes and a special write-back scheme that allows the controller to use

multiple drives at full efficiency. The DC-600 costs \$395 in its base configuration with 256K of RAM.

-Rex Farrance

#### IN BRIEF

#### SmartCache Plus, DC-600

Two caching controllers.

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#### Apple Tries a Bite of the PC Scanner Market

The Apple OneScanner for the Mac owes much of its success to Ofoto, a savvy onestep image-scanning software package developed by Light Source in conjunction with Apple. The Apple OneScanner for Windows (\$1299) is the same scanner with Ofoto 1.0 in Windows dressing.

The 300-dpi OneScanner measures just under 22 inches long and 13 inches wide. An 8-bit flatbed scanner capable of capturing up to 256 shades of gray, the OneScanner is primarily intended for imaging, so the first step you need to take to ensure a good quick

scan and optimum output is to calibrate your output device with the OneScanner. Like everything else about the OneScanner, the process is simple. Open Ofoto, select Create Gray Chart from the Calibrate menu, print out the Gray Chart, and scan it. Ofoto then goes through seven steps to create a new calibration for that output device.

Scanning an image can't get much more automated than this. Raise the OneScanner lid, toss a picture onto the bed any which way, click on AutoScan, and away you go. *Ofoto* first scans the picture at low resolution to determine which part of the scan area actually contains the image and whether it's line art or a photo. Then the image is rescanned at high resolution, automatically adjusted for brightness and contrast, sharpened, straightened, and finally cropped. All the while, Ofoto keeps you informed of its progress. If you wish, you can make all these adjustments manually; the program offers scaling and rotation tools to make this easier.

In addition to *Ofoto*, the Apple OneScanner comes bundled with a demo version of Caere's *OmniPage Direct*  OCR software. Ofoto is available as a stand-alone package for \$295 and works with a variety of scanners, such as the Hewlett-Packard ScanJet.

-Bruce Kinnaird

#### IN BRIEF

#### Apple OneScanner for Windows

The scanner for the Macintosh market is now available for PC users thanks to the Windows version of Ofoto.

Apple Computer Corp. 20525 Mariani Ave. Cupertino, CA 95014 800/776-2333

Reader service no. 611

#### **Zenith Delivers Notebooks That Network**

E very time you turn around, notebook PCs get smaller, faster, or lighter. Now Zenith Data Systems (ZDS) has done its part to make them better connected as well.

With its Z-Note line, ZDS has become the first major notebook PC maker to integrate networking hardware and software directly into the system. Each of the 386SL-based notebooks has built-in Ethernet circuitry and comes with shell software for Novell's NetWare, Microsoft's LAN

Manager, and Banyan's VINES preinstalled on the hard disk. In addition, ZDS has jettisoned the bulky and often expensive "docking station" approach to desktop connectivity in favor of a space-efficient, \$149 "port replicator" for connecting the notebooks to external devices when they're in the office.

The Z-Note line includes three 5.9-pound monochrome models and a 6.5-pound unit with an active-matrix color LCD. The Z-Note 320L Model 60 is built around a 20-MHz 386SL processor, comes with 2MB of RAM and a 60MB hard disk, and has a 10-inch, edge-lit monochrome LCD that can display 64 shades of gray. Two 25-MHz models also sport the same monochrome LCD and come with 4MB of RAM and 85MB and 120MB hard disks, respectively.

All three monochrome notebooks can be upgraded to the 9-inch, active-matrix, thinfilm transistor (TFT) color LCD of the Z-Note 325Lc Model 120, which uses a 25-MHz SL processor and comes with 4MB of RAM and a 120MB hard disk. All four Z-Note models have a 3½-inch, 1.44MB floppy drive that can be upgraded to a 2.88MB drive in the fourth quarter.

List prices range from \$3599 for the 320L Model 60 to \$7299 for the color 325Lc Model 120, with street prices expected to be between \$2600 and \$5300.

For those prices, you get nickel-hydride batteries and power management features that offer up to 4 hours of continuous operation for the monochrome models and 2½ hours for the color note. All come with a 64K cache, 128K of user-upgradable flash ROM, an enhanced parallel port (EPP), and an external super-VGA port that supports simultaneous video. The Ethernet-compatible, high-speed communications port boasts data transfer rates that are more than 50 percent faster than typical AT-compatible Ethernet cards and more than four times faster than portable LAN adapters connected to a standard parallel port, ZDS officials claim. The Z-Notes come bundled with a Logitech TrackMan portable trackball and DOS 5.0 and Windows 3.1 preinstalled. -Rob Garretson



Zenith's Z-Note 386SL notebooks have built-in Ethernet circuitry and preinstalled shell software for networking.

#### IN BRIEF

#### Z-Note 325Lc Model 120, 325L Model 85, 325L Model 120, 320L Model 60

These natebooks, including an active-matrix color model, come with built-in networking hardware and software.

#### Zenith Data Systems

2150 E. Lake Cook Rd. Buffalo Grove, IL 60089 800/553-0331

















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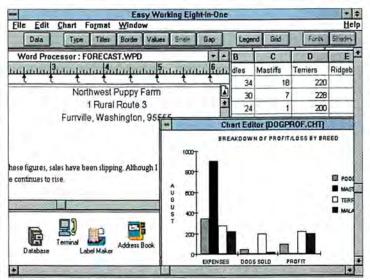
These low-cost worksavers from Curtis speed you through your day, helping you avoid costly equipment repairs, data losses, and delays. So you can spend less time coping with life and more time enjoying it.

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# Spinnaker Unfurls Eight Low-Cost Entry-Level Business Applications

Like a team of office assistants, these applications help you with mailings, letters, planning, business planning, and publishing.



Spinnaker's Easy Working for Windows Eight-in-One integrates word processing, spreadsheet, data base, address book, label maker, outliner, chart, and communications software to provide a suite of office tools.

S pinnaker has added three new applications to its popular *PFS* line and brought out five low-cost *Windows* versions of its *Easy Working for DOS* applications. Anyone who truly hates to part with their hard-earned cash for software will want to check out these price tags.

With style sheets, scalable fonts, clip art, and predefined templates, PFS: Publisher for Windows stretches your nickel a long way. You can create a custom palette of QuickButton icons to automate often repeated tasks. The \$149 program does manual kerning, drop caps, and halftones and easily wraps text around irregularly shaped objects. The application also includes a thesaurus, spelling checker, and hyphenation dictionary.

The \$129 PFS:Business Plan for Windows is an integrated spreadsheet, word processor, and chart program that teaches you to write a business plan. For instance, as you're writing the Executive Summary, a description of what it should contain and advice on how to write it shares the screen with your document. The formulas for financial models are already in the spreadsheet module, so you just enter numbers to create financial reports. The spreadsheets are 1-2-3 compatible, and you can select from eight exciting chart types to display your spreadsheet data.

A handy DOS-based package, PFS:Prospect keeps track of contacts and the attention they require. For \$129, a data base stores names, addresses, and relevant notes. Reports and letters are a snap to generate, so you can instantly fire out a follow-up letter while you're still on the phone. PFS:Prospect includes a calendar and a to-do list that moves a task to the next day until you

mark it done. It'll even dial the phone for you.

The Easy Working for Windows product line combines aggressive prices with ease of use-and in some competitive cases, functionality. If you don't expect much from a \$49.95 word processor, for example, Easy Working for Windows Word Processor is going to surprise you. It has an integrated address book and label maker; manual kerning; automatic indexing; footnotes; tools for drawing rectangles, lines,

and ovals; find and replace; and borders and shading. The package includes 30 scalable fonts, a spelling checker, and a thesaurus. You can customize your own style sheets or use one of the included templates or business style sheets.

Easy Working for Windows Eight-in-One provides all the essential business tools in exchange for very little cash: word processor, spreadsheet, chart maker, dBASE-compatible data base, communications program, address book, label maker, and outliner.

Although the features are not always completely integrated, you can quickly create a smart-looking document by incorporating graphics and charts into your letter and then create a mail merge using names in your address book. This bundle of tools includes a spelling checker and a thesaurus, and it retails for only \$59.95.

Easy Working for Windows Desktop Publisher doesn't have the customizable Quick-Buttons that come with PFS: Publisher, and it can't do irregular text wrapping. But it does do multiple columns. borders, customizable style sheets, shading, lines, and boxes. It imports text and graphics from most popular formats and comes with a host of predesigned templates, gallery of clip art, 50 scalable fonts, spelling checker, and thesaurus. And it costs less than a teenager spends on jeans-\$49.95.

Easy Working for Windows Mail Manager takes the annoyance out of mass mailings by combining a word processor with a data base and a label maker. Its predefined data base gets you merging right away. And it comes with 50 prewritten business letters, a spelling checker, and a thesaurus for \$49.95.

Easy Working for Windows Business Letters' 250 professionally written business letters cover a wide range of needs, from lunch invitations to letters negotiating pay. It's designed to save the time and effort required to compose polished letters from scratch, and it's also an adequate word processor with a thesaurus, a spelling checker, and a label maker. Retail price: \$49.95.

-Christina Wood

# IN BRIEF

## PFS line, Easy Working line

**WINDOWS** Eight entrylevel packages help you with everything from desktop publishing to basic office tasks.

#### Spinnaker Software Corp.

201 Broadway Cambridge, MA 02139 617/494-1200, 617/494-1219 (fax) Reader service no. 613



Compatible with PCs and Macs' simultaneously, the NEC Silentwriter Model 95 sets itself to the active interface port and appropriate language—Adobe PostScript Level 2 or HP's PCL5—and prints sharp-edged images using microfine toner at six pages per minute.

Prices for a fully-configured PostScript-language printer start here.

Some bargain down to here.

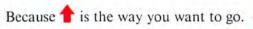
Or, even here.



But NEC's Silentwriter Model 95 starts here and ends here. \$1,749.

For information, dial 1-800-NEC-INFO (in Canada, 1-800-343-4418). Or via fax, call NEC FastFacts "at 1-800-366-0476 and request # SWM95.









# **PowerPoint 3.0: More Power to Make Your Point**

hen Windows 3.1 came to town, you'd better believe PowerPoint was ready and waiting. Microsoft's \$495 presentations package has polished its shoes, combed its hair, and put on some shiny new duds in version 3.0—including a real outline view and a whole passel of Windows 3.1–specific features.

Version 3.0's biggest improvement is its long-awaited outliner. Now you can organize your ideas inside *PowerPoint* and format them on the fly. You can view actual fonts and make style changes in the outline view without having to switch to the slide view. Outline and slide views are fully integrated: Change the order of bulleted items on a slide, and the outline changes too.

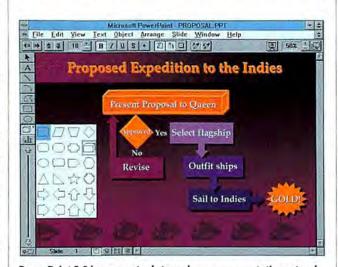
Version 3.0 makes creating presentations easier by adding an *Excel*-like tool bar to every view. Just click on icons to change text to boldface or italic, resize objects, add shadow effects, and more.

PowerPoint also gives you more ways to dress up your text charts. Version 3.0 augments Windows 3.1's 14 scalable TrueType fonts with 22 of its own, creating a full quiver of PostScript equivalents that can be used by any Windows application. Even better, the PostScript fonts can be saved along with your presentation—a big plus when sending presentations to a slide bureau that doesn't have the True-Type fonts you want to use.

And you get more tools for making your presentations stand out. You can create true 3-D graphs (using x, y, and z axes) and select from 24 different shapes—such as diamonds, cubes, and star bursts—to create organization or flow charts. You can even animate your charts with bulleted items that "fly in" from the sides, top, or bottom.

PowerPoint's 150 preset templates let you specify colors, fonts, borders, and other style elements with a mouse click. 3.0 lets you swap templates without losing edits to slides and save a presentation as a custom template.

Not surprisingly, Power-Point takes full advantage of Windows 3.1's OLE technology, allowing you, for example, to embed an on-screen slide show inside a WinWord document. Casting an eye toward the future, PowerPoint 3.0 also



PowerPoint 3.0 has more tools to make your presentations stand out. You can select from 24 shapes to create flow charts.

# IN BRIEF

### Microsoft PowerPoint 3.0 for Windows

grated outliner and a bevy of other enhancements make it even easier to create eye-popping presentations.

#### Microsoft Corp.

One Microsoft Way Redmond, WA 98052-6399 206/882-8080, 206/936-7329 (fax)

Reader service no. 614

includes hooks for multimedia sound and video, plus support for Microsoft's pen-based version of *Windows*.

To use all this stuff, you need at least a 386 with 2MB of RAM and Windows 3.1, plus 5MB to 17MB of disk space. Upgrades are free for users who purchased PowerPoint 2.0 after March 1, 1992; \$99 for other PowerPoint users.

-Daniel Tynan

# IntelliDraw: Another Draw Program From Aldus?

How is Aldus like a three-star restaurant? Both of them offer so many fine courses, we can't possibly all agree on one. Aldus already has the sophisticated draw program FreeHand on both the PC and the Mac. And now it's giving us IntelliDraw, an entry-level draw package, which also runs on both platforms. Why?

Aldus feels there is an audience of would-be users who want a functional draw tool but don't want to pay for or learn a high-end package. With a retail price of \$299, IntelliDraw falls between high-end packages such as CorelDraw and low-end ones like Micrografx Draw.

IntelliDraw is distinguished from other entry-level draw programs by innovations such as the Symmetrigon. You draw one-half of an object, and

the Symmetrigon completes it with a mirror image. Or you can combine basic shapes, drop out unwanted parts, and cut holes to make new, complex shapes. When you clone any object—even bit maps—and change the master, all its clones change. IntelliDraw also does multiple layers and editable blends.

Its primitive animation capability lets you "teach" your drawing a path of movement. For example, if you put a vase on a table and drag it off the edge and onto the floor, *IntelliDraw* will replay the sequence on request.

IntelliDraw will bend text on a curve; text that's been reshaped remains editable. Instead of the usual clip art, IntelliDraw has "flip books" of pictures that can easily be customized. For instance, a flip book bicycle yields numerous choices for seats, handlebars, and other parts you can use to assemble your own vehicle.

Many of these features are unique or inspired by high-end CAD applications. But Aldus claims to have made *Intelli-Draw* so simple that a novice can get up to speed quickly.

-Christina Wood

# IN BRIEF

#### IntelliDraw

Innovative features and ease of use characterize this draw program.

#### Aldus Corp.

9770 Carroll Center Blvd., Ste. J San Diego, CA 92129 619/695-6956, 619/695-7902 (fax)

Reader service no. 615

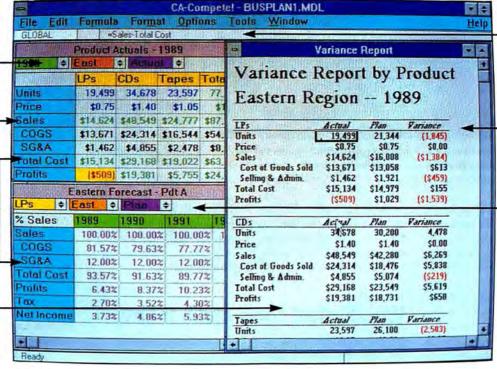
What Comes After Spreadsheets? Introducing New CA-Compet

different dimensions you can navigate through with the click of a mouse.

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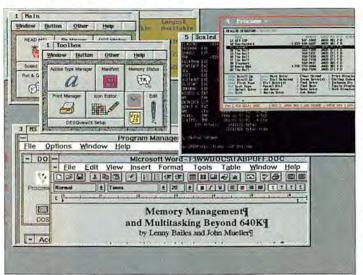
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# Multitasking Between Windows, DOS, and UNIX



Quarterdeck's Desqview-X is one multitalented multitasker. You can run DOS text applications and Windows programs concurrently, and run them side by side with UNIX X-applications.

uarterdeck's Desqview-X is a multitasker with multiple capabilities. Not only can you run DOS text applications and Windows programs concurrently, but thanks to a platform-independent protocol, you can run them side by side with UNIX X-applications.

Desqview-X really shines in mixed-platform networked environments. The Mark and Transfer feature, a cut-andpaste function, lets you paste between text-based applications or into graphical programs, be they DOS, Windows, or UNIX. However, there is still no support for cutting and pasting bit-mapped or vector graphics, nor can you copy or cut from a graphical application, such as Word for Windows or PowerPoint, into a text-based one, such as WordPerfect 5.0. You can also use the tree-based file manager to copy, delete, move, or rename files and directories between two platforms, or between two windows, locally.

With Desqview-X, you can use the machines on your network to create a distributed processing system. Any UNIX workstation with an X-Windows front end can connect to PCs running *Desqview-X* and remotely run DOS text applications or *Windows*. DOS

users can access Xapplications remotely,
run DOS text and
Windows applications
locally, or connect to
another Desqview-X
machine on the network to run these programs remotely. You
cannot remotely run
DOS graphics programs, such as Harvard Graphics or Ventura Publisher for
GEM.

Unlike Desqview/
386, which is a textbased environment, Desqview-X uses the X-Windows graphics standard to create a multiplatform graphical environment in

which you can customize menus. You may add nested program subgroups or internal *Desqview* commands anyplace on the menu. Desqview-X also includes a print spooler, file viewer, icon editor, and Adobe Type Manager. You even get more styles and control over DOS fonts than you do in Windows 3.1.

Desqview-X requires a 386SX, 4MB of RAM, and 10MB of hard disk space and retails for \$275. Quarterdeck users can upgrade to this multitasker for \$100.

-Lenny Bailes

# IN BRIEF

## Desqview-X 1.01

tasking environment lets you run text-based DOS, Windows, and UNIX applications simultaneously on the same screen.

#### Quarterdeck Office Systems

150 Pico Blvd. Santa Monica, CA 90405 310/392-9851

Reader service no. 618

# **WordPerfect Tools Make It Easy**

Two new utilities for Word-Perfect promise to automate some of the most tedious aspects of document production: hunting for addresses and converting files.

If you're a WordPerfect user who hates having to hunt through that three-foot stack of letters sitting on your desk for that letter you wrote to Joe in Memphis, Utley-Cross Correspondence Manager is an intelligent alternative. The program creates a complete name and address book from memos, letters, and documents already existing in your Word-Perfect files.

It locates all WordPerfect correspondence on your hard disk and lets you retrieve by category such as proper name, author, typist, date, addressee, town, state, and ZIP code rather than file name. To find the addresses of "those guys in Memphis in 1988," select "Memphis" from the town list and "1988" from the date list. You can view the set of letters, back up, copy, move, edit, or delete them. Correspondence Manager doesn't do a complete text search, but for \$89 it's cheaper than most other personal information managers.

Joining the likes of Software Bridge and Word for Word in the file conversion arena is WordPerfect's ConvertPerfect 1.0, a conversion program that converts more than 40 DOS and Windows word processing file formats to and from WordPerfect 5.1.

Using it is easy. Just select a file or directory for conversion from a list of files, and the program sniffs out the source format. Or you can select a source and destination format yourself. ConvertPerfect 1.0 retails for \$49.

-Bronwyn Fryer

## IN BRIEF

## Utley-Cross Correspondence Manager

A utility that stores names and addresses.

## The Utley-Cross Company

46 Middle Rd. Boxborough, MA 01719 508/263-0386

Reader service no. 616

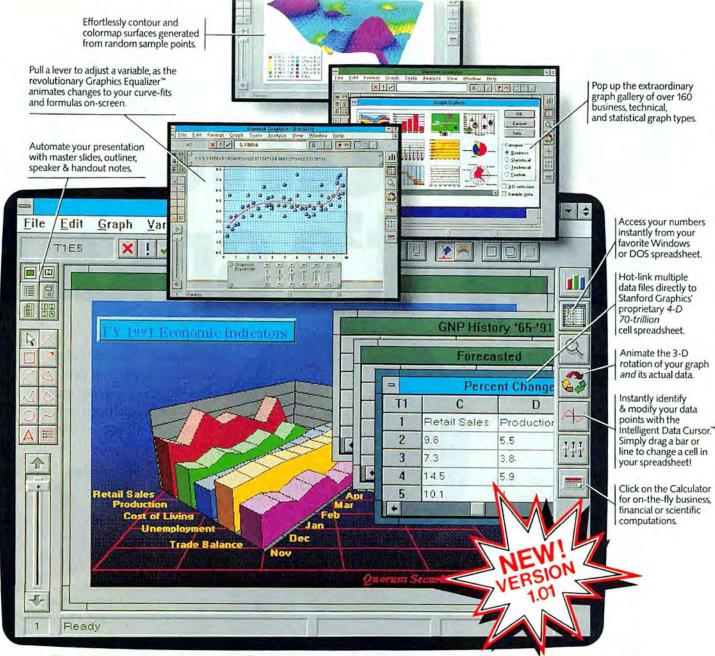
#### ConvertPerfect 1.0

This utility converts 40 word processing file formats.

#### WordPerfect Corp.

1555 Technology Way N Orem, Utah 84057 800/451-5151, 801/225-5000

Reader service no. 617



# STANFORD GRAPHICS FOR WINDOWS Finally...presentation graphics with numerical clout!

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PC Magazine March, 1992 "Stanford Graphics offers the best of both worlds. It combines top-notch presentation features with unprecedented technical sophistication. We were greatly impressed."

Infoworld, Sept., 1991 "Stanford Graphics slams the competition ... "

in Windows 3.0 and 3.1 technology, with

Stanford Graphics for Windows:

sophisticated DDE, OLE, and TrueType

Finally, form and substance.

font support.

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- Infoworld April, 1992

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# Borland Why it's smart

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dBASE® is the #1-selling relational database in the world. It offers the most complete set of tools for developers and users to access and manage their corporate data.

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# What's new in dBASE IV v1.5:

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- Mouse support
- · Editable multi-file view
- Calculated field linking
- · QBE summary operators and pick lists
- · Automatic install
- New optimization technology—IQ!
- · Save query indexes For Developers
- · INDEX functions · 40 work areas
- · Template Language included
- · Enhanced BLANK support
- · Browse/Edit organize menu toggle
- Conditional compilation
- · Low-level file I/O
- Open architecture Control Center
- Enhanced RUN function
- Multiple and global procedure libraries

automatically selects the fastest method to retrieve your data, Smarter because you can create tables, forms, reports, queries, and menus in record time-without programming.

Smarter because you get 40 different work areas for easier management of large applications. Plus mouse support for fingertip access to features, an enhanced RUN function to run popular DOS applications from within dBASE, and comprehensive multiuser capabilities. All of which means you maintain tight data integrity, more flexibility and more support than ever before.

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dBASE IV's easy-to-use Control Center comes complete with an innovative set of design tools, including report, form, and label generators that help you create your applications quicker. And the Control Center's open architecture makes it easy to enhance or customize your own applications by incorporating third-party add-on products available for dBASE.

# dBASE IV er to go with #1

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# BORLAND

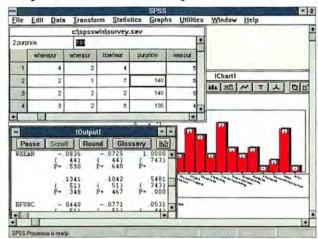
dBASE IV from Ashton-Tate," a Borland Company

# Easy Statistical Analysis for dBASE, Spreadsheets

ntil now, statistics was a course most of us took in college and happily forgot. Those who wanted to do means comparisons or linear regression were often put off by arcane or underpowered DOS products. Others simply had to rely on MIS and the company mainframe.

No more. SPSS, a leading statistical software developer, is shipping a *Windows* version of its namesake product that has all the functions of its mainframe big brother. Yet it's a breeze to use for anyone with a basic understanding of statistical concepts.

SPSS for Windows reads tab-delimited, 1-2-3, Excel, dBASE, and SYLK files and imports SQL Server data. Data management, including a spreadsheetlike data editor, data transformations, and descriptive and inferential statistics, as well as extensive



SPSS makes statistical analyses point-and-click easy—although a basic understanding of statistics is recommended.

graphics are just a mouse click away. SPSS for Windows also supports DDE and OLE, so you can link your analyses to data in Windows spreadsheets and data base applications.

Previous versions of SPSS relied on a command language to read data and generate statistics. SPSS for Windows can run those macros and programs without modification. In fact, SPSS for Windows will automatically generate the command language if desired, so you develop an analysis on your PC and run the resulting programs on any number of the more than 60 platforms SPSS supports.

SPSS officials say the product offers far more functionality than their DOS package, SPSS/PC+, which they plan to enhance later this year. SPSS for Windows runs on a 286 with 4MB of RAM. The base package is \$395 until September 30, \$695 thereafter.

-Peter D. Varhol

## IN BRIEF

## SPSS for Windows

1-2-3, and dBASE users who are familiar with statistics will find that SPSS for Windows lets them cut and view data in more ways than ever before.

#### SPSS, Inc.

444 N. Michigan Ave. Chicago, IL 60611 800/543-9262, 312/329-3668 (fax)

Reader service no. 619

# Power Launcher 2.0: Take Control of Windows

Power Launcher from hDC has been refurbished, providing a glitzy collection of Windows utilities that let you create custom button palettes, remap your mouse and keyboard, and

launch Windows applications, commands, and scripts.

New in version 2.0 is a tool bar that lets you launch applications and macros, using what hDC calls "enhanced commands." Activated from a com-

hDC's Power Launcher features a prominent tool bar that lets you launch applications or macros using "enhanced commands."

mand line on the tool bar, the **Enhanced Commands function** enables you to initiate scripts, applications, and macros and execute DDE commands. You can create custom menu options, add tools to your applications, and create applicationspecific floating toolboxes. The slim tool bar also holds a map of the product's virtual desktop, which provides the equivalent of 64 Windows screens and a bar chart that reports on system resources, memory, and disk space.

Version 2.0 also takes advantage of Windows 3.1 with buttons that act as drag-and-drop targets, an Action Editor for creating linked and embedded objects to insert in OLE-client applications, and support for sound.

Power Launcher lets you launch any application and control its initial directory, window position, and size and even change the text in its title bar. A macro language permits more advanced customizing. Although arcane and limited in power, it lets you edit macros, something you can't do with Windows' Recorder.

Power Launcher 2.0 retails for \$99.95, with upgrades from 1.0 available for \$19.95.

-Scott Dunn

#### IN BRIEF

#### **Power Launcher 2.0**

■ WINDOWS This utility lets you customize the way you use Windows.

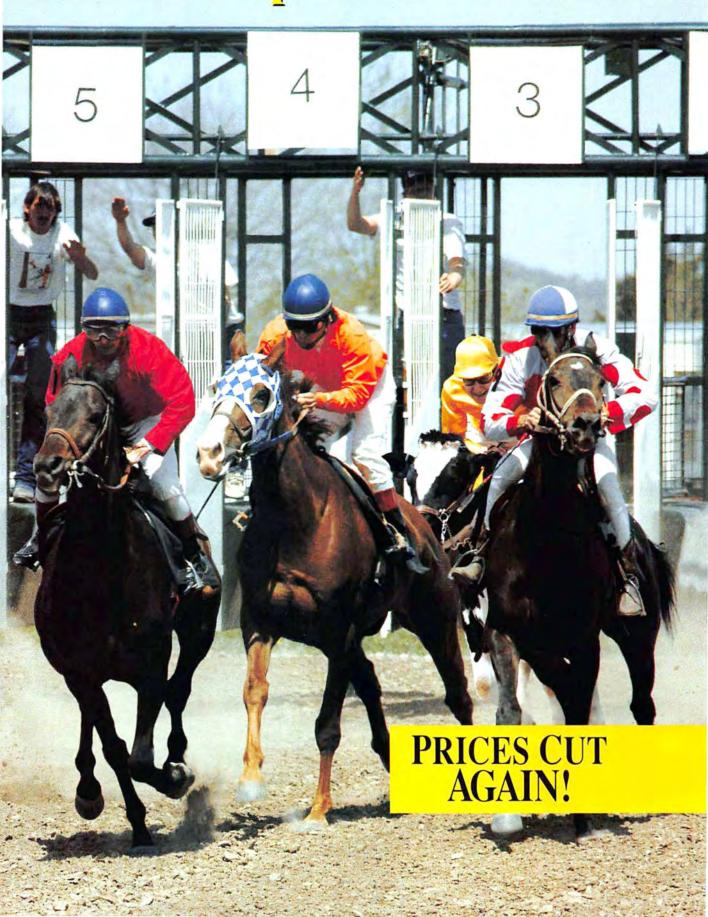
hDC Computer Corp.

6742 185th Ave. NE Redmond, WA 98052 206/885-5550, 206/881-9770 (fax)

Reader service no. 620

(continues on page 93)

# Can You Spot The Winner?



# It's Gate That Puts You In 1



# way 2000 The Winners Circle



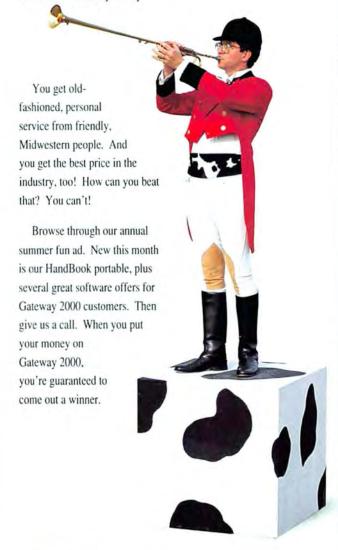
# The Choice Is-Black & White!

ATOKAD PARK

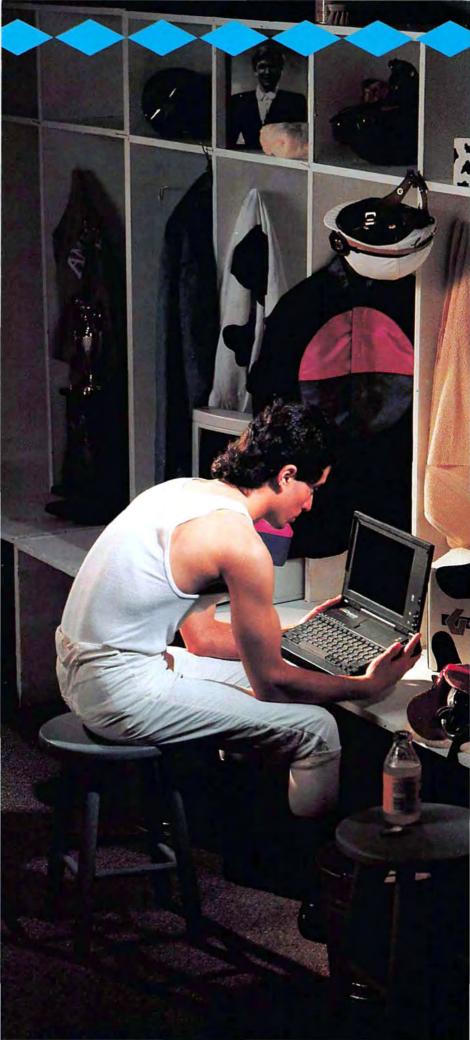


The results are final—all those thoroughbred "favorites" outdistanced by a simple, determined, black-and-white cow.

There's a big payoff for you if you picked Gateway 2000. You get a quality, high-performance system with the number-one customer satisfaction and reliability ratings in the industry, according to *PC Magazine* readers in the 1992 service and reliability survey.







# GATEWAY 2000 NOTEBOOKS PUT YOU IN RACING FORM

## The Nomad Series

Our small, lightweight Nomad notebook computers let you take desktop computer performance anywhere you go. Nomad models come with VGA graphics, a FieldMouse (portable pointing device), built-in floppy drive, and an 80 or 120MB hard drive, depending on the model. A patented power-management system gives you hard-to-beat battery life benchmarks — over six hours of operation from a single battery on the 25MHz 486DX system!

The Nomads have a bright, crisp, backlit, 10-inch triple supertwist VGA screen — resolution is 640 x 480, 64 gray scale, on the LCD. With simultaneous video, you can also display on an external monitor.

All these features ... and the Nomads are made in the U.S.A.!

# Nomad 325SXL ■ \$1995

25MHz, 386SXL processor ■ 4MB RAM ■ 80MB hard drive

# Nomad 420SXL ■ \$2695

20MHz, Intel® 486SXLP processor ■ 4MB RAM ■ 80MB hard drive

# Nomad 425DXL ■ \$3495

25MHz, Intel 486DXLP processor ■ 4MB RAM ■ 120MB hard drive

# For The Power User On The Go

# Nomad Combo ■ \$3995

Since the Nomad 425DXL has all the power of a 486DX desktop system, it's the ideal portable/desktop combination system! Save with this combo package!

Combo Highlights: Nomad 425DXL ■ 15" CrystalScan 1572FS color monitor ■ programmable 124-key AnyKey™ keyboard

## The HandBook™

If you like to travel light, you can't go wrong with the HandBook. It weighs only 2.75 pounds and measures roughly 6 x 9 inches — smaller than this magazine! Yet it has 286-class performance and real PC features including a bright, backlit screen, a bonafide 40MB hard drive and a comfortable keyboard (no chiclet keys). Downloading information from your HandBook to your office computer is easy with the serial cable and file transfer software provided.

HandBook ■ \$1295

## For The Executive On The Go

# HandBook Combo ■ \$3995

Combine the portability of our HandBook with the power of our 33MHz 486 desktop system with communication capabilities — and you have a terrific combo, Gateway value-priced!

\*Combo Highlights:\* HandBook with 2,400 bps external modem and communication software

■ 33MHz 486DX system with 120MB IDE hard drive ■ TelePath<sup>™</sup> fax/modem package



# GAIN THE WINNING EDGE WITH 486 PERFORMANCE

Gateway's powerful 486 models give you the winning margin!

And when you recap our new price reductions and compare feature-for-feature against the other runners, you'll find you won't even have to play your hunches — Gateway 2000 is the odds-on favorite.

# 25MHz 486SX ■ \$1895

At \$1,895, our 486SX/25 is the hottest value on the market. With this system, you get 486 technology, including an 8K internal cache and burst mode, at a 386 price. And besides being faster than any 386 on the market, the 486SX/25 is upgradeable to 50MHz if you need increased performance in the future.

System Highlights: 4MB RAM ■ 120MB

Western Digital IDE hard drive

ATI<sup>™</sup> Graphics Ultra ■ 14"
CrystalScan 1024NI VGA
color monitor, up to 1024 x
768 non-interlaced resolution
■ desktop model is standard

33MHz 486DX

# ■ \$2395

We recently increased performance and lowered the price of our best-selling, award-winning 486DX/33 by adding an ATI Graphics Ultra video card with a graphics coprocessor. At

\$2,395, the price/performance ratio on this machine is hard to beat. Plus, it's an upgradeable PC. You'll be able to switch to 66MHz later this year. System Highlights: 64K cache RAM

■ 4MB RAM ■ 200MB Western Digital IDE hard drive ■ ATI Graphics Ultra ■ 14" CrystalScan 1024NI VGA color monitor, up to 1024 x 768 non-interlaced resolution







Gateway 2000's new 486DX2/50 systems, ISA and EISA, incorporate Intel's speed doubler technology. The internal core of the DX2 processor executes at 50MHz while communicating with the external memory bus at 25MHz. Our benchmarks show a 35% increase in performance over a 33MHz 486DX PC.

The high-performance ATI card is standard on the 486DX2/50 as well, plus this system incorporates our new RIDE technology for faster disk operations. RIDE stands for Rapid Integrated Drive

Electronics. RIDE technology takes advantage of our new system BIOS that allows the drive to transfer bigger data blocks at one time. Our Coretest benchmarks show large block disk-to-memory operations are over 30% faster with RIDE. For example, you'll notice the increased performance whenever you type WIN at the system prompt, or when you double-click on an icon in Windows. It's much faster. Our product marketing director claims the 486DX2/50 with the ATI video card and RIDE is the fastest personal computer he's ever used!

System Highlights: 64K cache RAM ■ 8MB RAM

- 200MB Western Digital IDE hard drive with RIDE BIOS
- ATI Graphics Ultra 14" CrystalScan 1024NI VGA color monitor, up to 1024 x 768 non-interlaced resolution
- desktop model is standard



# **EISA SYSTEMS**

Our product line includes two EISA systems —
a 33MHz 486DX and a 50MHz 486DX2. Both EISA
systems now come standard in a floor-standing tower model,
and include large, fast SCSI drives and EISA SCSI
controllers. RAM cache is expandable to 256K. The
486DX/33 EISA will be upgradeable to 66MHz later this year.

System Highlights: 128K cache RAM ■ 8MB RAM ■ 340MB Maxtor® SCSI hard drive

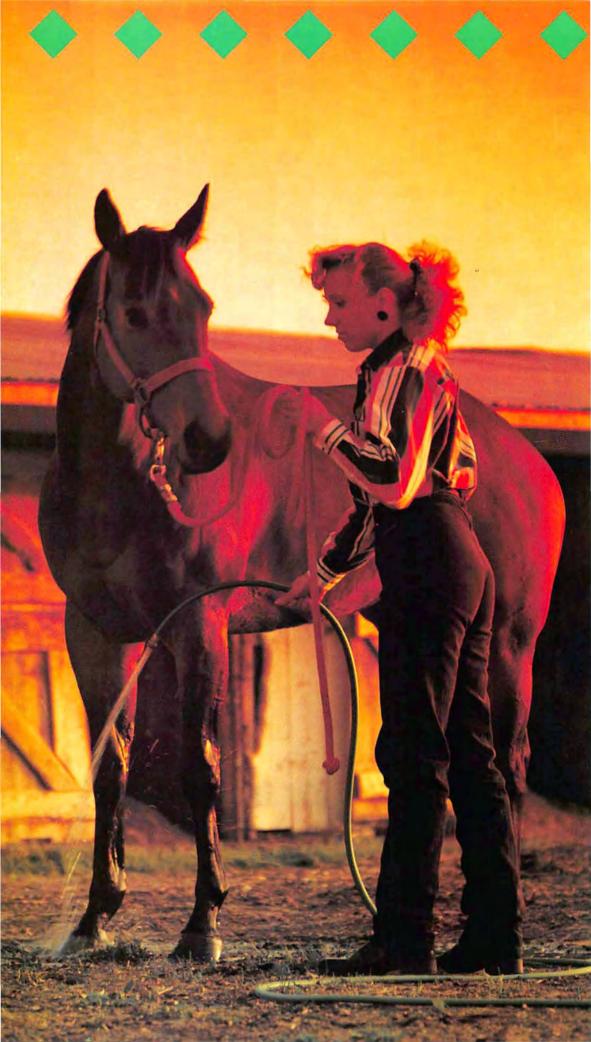
- 32-bit EISA SCSI controller 16-bit Diamond Speedstar Plus SVGA graphics with 1MB
- 14" CrystalScan 1024NI VGA color monitor, up to 1024 x 768 non-interlaced resolution
- floor-standing tower model is standard

486DX/33 EISA ■ \$3795 (Upgradeable to 66MHz later this year.)

486DX2/50 EISA ■ \$3695

Gateway 2000 systems come fully configured with all the performance features you want, including two floppy drives, a programmable 124-key AnyKey keyboard, a Microsoft® mouse, MS DOS® 5.0. Windows™ 3.1 and your choice of one application software option. See the back pages of this ad for complete configurations and information about software options, upgrades and peripherals.















# THE GATEWAY TEAM IS BEHIND YOU ALL THE WAY

There's a full team of dedicated service professionals standing behind your Gateway 2000 system. In fact, a recent *PC Magazine* reader survey proved Gateway the clear winner in service and reliability. We whizzed past all the contenders when PC owners were asked, "How likely would you be to buy the same brand system again?" The survey also rated Gateway Number-One in overall system reliability, and we were in the Top Five for tech support and repair service.

Whenever you call our sales number, you get a friendly, human voice — a helpful representative to provide you with information. In our customer support department, we have over 200 people on-line to supply free technical support for the life of your machine. They're experienced, rigorously trained and tested and ever patient, friendly and helpful. You'll see why we say "you've got a friend in the business" at Gateway 2000.

In our company mission statement, one of our stated objectives is to exceed customer expectations in quality, service and value. This objective is a personal challenge to each of us at Gateway. We know how important service is to you, which is why we're constantly striving to provide the best in the business.





# GATEWAY 2000 ADDS A FREE SOFTWARE BONUS

# Choose Your Free Software Option

With the purchase of any Gateway 2000 mini desktop, desktop or tower computer system, you receive your choice of one application software option at no additional cost. We'll install your software on your hard drive, optimally configured for your system and Windows, and provide master diskettes and manuals. You may also purchase a second application software option, pre-installed, at extremely competitive prices.

Installation and setup errors are responsible for over one-third of all software problems. You can eliminate that possible source of problems by purchasing your system from Gateway with software pre-installed, tested, and ready to run the moment your system arrives. Add that advantage to the hard-to-beat prices, and Gateway is the only logical choice for PCs and software!

Choose one of the following application software options:

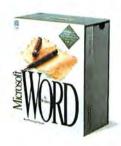
# Option #1-Microsoft Excel for Windows™ 4.0

■ New version of this powerful spreadsheet, includes online help for *Lotus 1-2-3*® users



# Option #2-Microsoft Word for Windows™ 2.0

■ Best-selling word processor for Windows. New version 2.0 adds online help for WordPerfect® users



# Option #3-Microsoft PowerPoint for Windows™2.0

■ Easy-to-use desktop presentations program creates high-quality overheads and 35mm slides



# Option #4-Borland\* Paradox 3.5

■ The award-winning database from Borland



# Option #5-The Entrepreneur Pack

■ Includes the latest Windows versions of *Microsoft Works*, integrating word processing, spreadsheet, and database in one easy-to-use program; *Microsoft Publisher*, for creating page layouts; *Microsoft Money*, to help you write checks, set budgets, track expenses; PLUS an *Entertainment Pack* with eight games, including *Tetris*.





# Option #6-The Windows Programmer Pack

■ Includes everything you need to create programs for Windows: Microsoft QuickC for Windows! Windows Control

Development Kit! Windows Help Compiler and Windows Programmers' Online Reference!



# Option #7-Microsoft Project for Windows 3.0

■ Flexible and easy project management program

NOTE: If you would rather replace an option with Microsoft Office, it is available for \$175. This package includes Word for Windows, Excel and PowerPoint.



# New! Second Applications At Great Prices!

The following applications are only available with the purchase of a system, pre-installed, or to Gateway customers.

Central Point Anti-Virus 1,2 For Windows ■ \$75

Central Point Backup 7.2 for Windows ■ \$75

The Norton Desktop 2.0 and Prisma Your Way 2.0 For Windows ■ \$95

These offers include the identical applications contained in retail packages but will not include the retail box. You get all master diskettes and manuals, shrink-wrapped and packaged in a Gateway 2000 box.



# Peripherals

# The 15-Inch CrystalScan 1572FS

You'll enjoy your new
Gateway 2000 computer even
more if you choose the new
15-inch CrystalScan color
monitor option. The CrystalScan
1572FS has a flat, square, nonglare screen to reduce distortion
around the corners and provide
edge-to-edge display area.
The CrystalScan 1577FS is an une



The CrystalScan 1572FS is an upgrade option only with the purchase of a 386DX or 486 system for an additional \$195.

# The Gateway 2000 TelePath Fax/Modem

The Gateway 2000 TelePath is a 14,400 bps mode, V .32bis, with 9,600 bps fax capability. The TelePath comes with WinFax Pro; "Crosstalk' for Windows, Qmodem™ and a free 30-day basic services CompuServe® membership — all for only \$195!

- Fax mode: V.17, V.29 and V.27ter
- Data mode: V.32bis, V.32, V.22bis, V.22, V.21, Bell 212A and 103, V.42 and MNP 2-4 error correction, V.42 bis/MNP 5 data compression

# Included With Every System:

■ One-year limited warranty ■ 30-day money-back guarantee ■ Lifetime toll-free technical support ■ Free on-site service to most locations (factory service only for notebooks) ■ Free bulletin board technical support ■ C.O.D. terms and major credit cards honored ■ Net 30-day credit terms and leasing options available to qualified commercial customers

Sorry — we sell peripherals only with the purchase of a Gateway 2000 system, or to people who are already Gateway 2000 customers. For fastest service, call our new direct line for the Component Add-On Division: 800-252-3333. Please have your customer ID handy when you call.



# **GATEWAY 2000 WINNERS CIRCLE**

# PORTABLES :

# HANDBOOK"

- 286 Class Performance
- 1MB RAM upgradeable to 3MB
- 40MB Hard Drive
- Backlit 7.6" CGA Screen
- Size 5.9" x 9.75" x 1.4", 2.75 Lbs.
- 4.5-Hr.\* NiMH Battery & AC Pack
- 1 Parallel/1 Serial Port
- 78-Key Keyboard
- MS DOS\*5.0, File Transfer Software & Serial Download Cabl
- Introductory Bonus Pack
- Carrying Case

\$1295

# NOMAD 325SXL

- 25MHz. 386SXL Processor
- ■4MB RAM
- 1.44MB 3.5" Drive
- 80MB IDE Hard Drive
- Backlit 10" VGA Screen, 64 Grays
- Simultaneous Video with 256K
- Size 8.5" x 11" x 1.8", 5.8 Lbs.
- 7-Hr.\* NiCad Battery & AC Pack
- I Parallel/I Serial Port
- 79-Key Keyboard
- FieldMouse Pointing Device
- MS DOS " 5.0 & Windows " 3.1

\$1995

# NOMAD 420SXL

- 20MHz, Intel® 486SXLP Processor
- 4MB RAM
- 1.44MB 3.5" Drive
- 80MB IDE Hard Drive
- Backlit 10" VGA Screen, 64 Grays
- Simultaneous Video with 1MB
- Size 8.5" x 11" x 1.8", 5.8 Lbs.
- 6-Hr.\* NiCad Battery & AC Pack
- 1 Parallel/1 Serial Port
- 79-Key Keyboard
- FieldMouse Pointing Device
- MS DOS 5.0 and Windows 3.1

\$2695

# NOMAD 425DXL

- 25MHz. Intel 486DXLP Processor
- 4MB RAM
- 1.44MB 3.5" Drive
- 120MB IDE Hard Drive
- Backlit 10" VGA Screen, 64 Grays
- Simultaneous Video with IMB
- Size 8.5" x 11" x 1.8", 5.8 Lbs.
- 6-Hr.\* NiCad Battery & AC Pack
- 1 Parallel/1 Serial Port
- 79-Key Keyboard
- FieldMouse Pointing Device
- MS DOS 5.0 and Windows 3.1

\$3495

# DESKTOPS :

# 25MHz 386SX

- Intel 386SX Processor
- ■4MB RAM
- 1.2MB & 1.44MB Drives
- 80MB 17ms IDE Cache Drive
- 16-Bit SVGA with 512K
- 14" CrystalScan 1024
- Color VGA Monitor

   1 Parallel/2 Serial Ports
- 124-Key AnyKey<sup>™</sup> Keyboard
- Microsoft Mouse
- MS DOS 5.0 and Windows 3.1
- Choice of Application Software

\$1495

# 25MHz 486SX

- Intel 486SX Processor
- ■4MB RAM
- 1.2MB & 1.44MB Drives
- 120MB 15ms IDE\* Cache Drive
- ATI Graphics Ultra Video
- 14" CrystalScan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0 and Windows 3.1
- Choice of Application Software

\$1895

# 33MHz 486DX

- Intel 486DX Processor
- ■64K Cache RAM
- ■4MB RAM
- ■1.2MB & 1.44MB Drives
- 200MB 15ms IDE\* Cache Drive
- ATI Graphics Ultra Video
- 14" CrystalScan 1024NI
- Color VGA Monitor
- 1 Parallel/2 Serial Ports ■ 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0 and Windows 3.1
- Choice of Application Software

\$2395

# 50MHz 486DX2 50M

- Intel 486DX2 Processor
- 64K Cache RAM
- SMR RAM
- 1.2MB & 1.44MB Drives
- = 1.2MD & 1.44MD DINES
- 200MB 15ms IDE\* Cache Drive ■ ATI Graphics Ultra Video
- 14" CrystalScan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0 and Windows 3.1
- Choice of Application Software

\$2695

\*Enhanced IDE with RIDE (Rapid Integrated Drive Electronics)

# 50MHz 486DX2 EISA

- Intel 486DX2 Processor
- Intel 486DX2 Proc ■ 128K Cache RAM
- 120K Cac
- ■8MB RAM
- 1.2MB & 1.44MB Drives
- 340MB 15ms SCSI Cache Drive
- 32-Bit EISA SCSI Controller ■ 16-Bit SVGA with 1MB
- 14" CrystalScan 1024N1
- Color VGA Monitor

  1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0 and Windows 3.1
- Choice of Application Software

Tower Model is Standard
\$3695

# OTHER SYSTEMS

Other systems in our product line: 16MHz 386SX, 20MHz 386SX, 25MHz 386DX, 33MHz 386DX, 33MHz 486DX EISA. Call for details and pricing.

\* Battery life was measured using PC Magazine's Battery Rundown Test with power management enabled. Actual results may vary depending on

configuration and applications.

All prices and configurations are subject to change without notice. Prices do not include shipping. Components, peripherals and software are sold only with the purchase of a system, or to customers who already oven Gateway 2000 systems. Some limitations apply.







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

610 Gateway Drive • P.O.Box 2000 • North Sioux City, SD 57049-2000 • 605-232-2000 • Fax 605-232-2023 Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CDT)

# **Wireless Communications Arrives**

The Mobidem portable radio modem signals a new era of remote communications that promises to keep you linked to your office.



Ericsson GE's Mobidem is a 1-pound, portable, wireless radio modem that lets you send and receive E-mail.

Exchanging electronic mail on the road can seem as realistic as the paperless office if you and a phone plug never seem to cross paths. If most of your travel time is spent at airport terminals, in cabs rushing to and from meetings, or grabbing a quick bite in restaurants, you know how difficult it can be to find a mate for your modem.

Enter the Mobidem M1090 radio modem. Like a conventional external modem, this portable communications device from Ericsson GE Mobile Communications plugs into a standard PC serial port. But unlike conventional modems, it lets you exchange E-mail and computer files with no strings —or phone wires—attached.

Mobidem exchanges data via the Mobitex packet-switched data network, a joint venture of Bell South and Ram Broadcasting. Mobitex users are charged for each "packet" of data they send, with costs running about 25 cents per 1K of data. Currently Mobitex is available in only about 30 North American cities, but plans call for coverage of more than 100 cities by the end of 1993, according to Ericsson officials.

Despite its bulkiness (the Mobidem is the size of a walkie-talkie and weighs only 1 pound), the device is a model of simplicity. In addition to the fold-down antenna and rechargeable battery pack, the user has only two keys to worry about. One turns the unit on and off, and the other activates the Mobidem's power-saving mode.

With power saving, the unit will run for over 10 hours between charges. This mode causes the Mobidem to go into a "doze" state, while still regularly checking in with the local Mobitex base station to search for incoming messages. In this mode, your incoming messages may be delayed by as much as 30 seconds, but you should be able to send messages instantly. If you don't want any delay, the Mobidem's regular operating mode keeps it in constant communication with the base station. However, you can expect only 2 or 3 hours of battery life in that mode.

The Mobidem offers messaging capabilities not available with cellular modems. For example, upon receiving a message, the Mobidem beeps to alert you. If your PC is turned off or disconnected from the Mobidem, the radio modem stores your messages, and its LCD shows the number of messages waiting. Furthermore, if your Mobidem is turned off or out of network range, incoming messages are stored within the Mobitex network itself. Messages are automatically relayed to you as soon as you reconnect to the network.

Before you rush out and buy one, however, be aware of the Mobidem's drawbacks. First and foremost is the radio modem's \$1795 list price (which Ericsson officials admit is too high-street prices should drop below \$1000 in 1993, they predict. A better deal might be Ericsson's \$1995 Viking Express package: a Mobidem unit bundled with the Hewlett-Packard 95LX palmtop PC. Included are a carrying case and Anterior Technology's RadioMail Remote software for sending and receiving E-mail using the Mobidem). Few software drivers for the Mobidem exist, and the unit's bulkiness makes it an extra burden for travelers with 6-pound notebooks.

With a data transmission speed of 8000 bits per second, the Mobidem is slower than the 9600-baud and 14,400-baud conventional modems that are steadily dropping in price. Ericsson is marketing the Mobidem as a wireless messaging tool and admits that users who transmit large files (like 40K of data) will likely find cellular transmission more affordable.

Despite its shortcomings, Ericsson GE's Mobidem M1090 hints at the future of remote communications. Along with competing wireless products, such as cellular modems and radio modems that use Motorola/IBM's Ardis network, the Mobidem shows where the future of computing is heading: through the air.

-Jeff Bertolucci

#### IN BRIEF

#### Mobidem M1090

A portable, wireless radio modem that lets you use your PC to send and receive messages.

Ericsson GE Mobile Communications, Inc.

15 E. Midland Ave. Paramus, NJ 07652 201/265-6600, 201/265-9115 (fax)

Reader service no. 621

# Harvard Graph quote, is easy t

"I'll focus on its most impressive aspect: it's easy to use. This is one of the nicest things you can say about presentation software..."

BYTE Magazine,
 D. Barker, 12/91

"Harvard Graphics' strength is that it's designed to let you create entire presentations with the least possible fuss."

- PC Magazine 2/25/92

"If you're serious about presentation graphics, this is a serious product for you to consider. It's easier than any you'll find on the market. It's every bit as powerful. And it'll carry you farther into the future."

- PC Magazine 2/25/92

"SPC has long experience with presentation graphics—and it shows."

— PC Computing 1/92

To see what everyone's talking about, call 1-800-336-8360, Operator 844, for your

# ics for Windows, ouse, unquote.

"Its ease of use, in concert with a full battery of features, places Harvard Graphics in the front of the presentation pack."

— PC Computing 2/92

"Users may never again settle for products that do not make child's play out of creating captivating, advanced presentations."

— InfoWorld 8/5/91

"... Harvard Windows promises to be a surefire hit with presentation novices and veterans alike."

— PC World 12/91

"Harvard Windows makes it easier than ever for you to produce 35mm slides, transparencies, printouts, and screenshows."

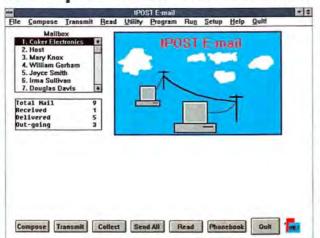
— PC World 12/91

free Harvard Graphics for Windows demo disk.





# **Dial-Up E-Mail for Remote Users**



A dial-up E-mail and file transfer system, PC-tPOST for Windows 1.0 stores messages on a central host station.

E ven if you've never heard of PC-tPOST, you might consider the new Windows version if you're shopping for an E-mail system designed specifically for remote users.

PC-tPOST for Windows 1.0 is a dial-up E-mail and file transfer system that works much like dial-up services, but unlike a service, it's both private and less costly—once you have a modem and have installed the software, all you pay is the phone bill. The program can send and receive data with any E-mail and communications programs that use the XMODEM CRC file transfer protocol. Messages and files are stored on a central host station, and they can be accessed from anywhere. Likewise, the host can communicate with connected desktops or laptops to collect data files automatically.

By combining remote communications facilities with Email features and Windows, PC-tPOST for Windows lets remote users feel like they're in the office. The product incorporates most standard features of a solid E-mail program, and a full-on Windows interface. An optional fax-forward feature lets out-of-office users send a fax remotely. Priced at \$149 for a singleuser version and \$349 for the host, PC-tPOST for Windows is also available in a LAN version; a five-user license costs \$495. The optional fax-forward feature is available for \$149. If you've got remote users to worry about, this might just fit the bill. —Bronwyn Fryer

# IN BRIEF

# PC-tPOST for Windows 1.0

tronic-mail and file transfer program for remote users features a slew of new E-mail features and a dressed-up Windows interface.

# **Coker Electronics**

1430 Lexington Ave. San Mateo, CA 94402 415/573-5515

Reader service no. 622

# Take Control of Networked PCs

With Funk Software's Proxy, you can control up to eight networked PCs from a single Windows session. Proxy is aimed at LAN administrators installing and administering software on farflung nodes and users lusting for the untapped power of idle computers.

Proxy has two components. The Master program runs under Windows on your PC and controls the remote unit. The Host program is a 60K TSR that runs on each remote system. Proxy is compatible with Novell's NetWare and most other LAN operating systems.

To take control of another PC, use the *Proxy* interface to choose a host workstation. *Proxy* makes the connection and displays the remote PC's screen in a window. You'll have mouse and keyboard control over the remote unit. While *Proxy* can run either DOS or

Windows apps remotely, you'll have to load special drivers on each host system to run Windows programs.

You can simplify the linking procedure by creating Windows icons that automatically load Proxy and connect your PC to a remote unit.

Proxy costs \$395 and supports one master and five host PCs. Support for five additional hosts costs approximately \$225.—Jeff Bertolucci

# IN BRIEF

## Proxy

WINDOWS This
Windows-based package
lets you control up to eight
networked PCs at once.

#### **Funk Software**

222 Third St. Cambridge, MA 02142 617/497-5210, 617/547-1031 (fax) Reader service no. 623

# An Executive's Group Scheduler

Ninalsoft Executive for Windows is a combination group scheduling, E-mail, and text editing program. The product includes a personal scheduler with a to-do list. The group scheduler gives you a graphical view of your colleagues' available time slots for a proposed meeting. There are even shades of project management in this package: You can see your colleagues' to-do lists (with their permission) and assign tasks. Since the scheduler is tightly integrated with the E-mail module, you don't have to send a separate message to confirm a meeting-the program does it for you.

You can send messages, attach files, send carbon and blind copies, and fill out "While You Were Out" forms about phone calls. To fire off a memo or letter, just use the built-in text editor and click a button to mail it off; a hypertext link lets you attach files. A built-in

dBASE-compatible data base lets you set up an address book of contacts.

LAN versions of Finalsoft Executive for Windows start at \$445 for six users. By combining personal and group scheduling with E-mail and Windows, the product blends the best of all worlds.

-Bronwyn Fryer

## IN BRIEF

#### Finalsoft Executive for Windows

and group scheduler combined with E-mail, text editing, and data base features gives you an all-in-one communications package.

#### Finalsoft Corp.

3900 N.W. 79th Ave. #230 Miami, FL 33166 800/232-8228, 305/477-2703

Reader service no. 624

# Never Underestimate The Importance of

What good is last night's backup if you just lost everything you worked on all morning?

And even if you have a data recovery product, it won't help when

F-1-5-1 + F-1-C-1-S

COMPLETE DATA PROTECTION Backup for Windows & DOS Disk & File Repair Undelete with Delete Sentry Unformat Disk Optimizer & File Locate

Virus Protection Data Encryption & Security

PLUS

Full Windows Compatibility DOS Shell & File Manager Disk Cache Remote Computing System & Network Info Desktop Manager



N 1 1990

you write over a file and then discover you want it back.

And virus protection software is great. If all you have is a virus.

There are dozens of ways

to lose data. If you bought a different product to solve every conceivable problem it would cost a fortune. You need PC Tools".

Only PC Tools gives you complete data protection in one integrated package. All 28 utilities in PC Tools were designed to work together to make using your PC safer, simpler and faster.

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# THE MOST POWER



# FUL 486SX. GOING.

Behold the new Toshiba T4400SX notebook—the first 486SX computer to offer all the power and performance of a desktop computer while freeing you from the tyranny of the nearest electrical outlet.

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The T4400SX

is the only notebook computer that offers a high-speed Gas Plasma screen, which means no mouse blur. And its 100:1 contrast ratio delivers seven times the contrast of a typical LCD display.

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for the gas plasma screen and 64 gray scales for the LCD screen.

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And for added expandability and connectivity, there are built-in parallel, serial, video, keypad/board, mouse and bus expansion ports. There's even



If you choose the 9.5" diagonal LCD display, you get the versatility of 64 gray scales as well as high-resolution 640 x 480 VGA on the black and white ultra thin screen.

a dedicated modem slot for an optional internal cellular-ready, 9600 bps fax or standard modem.

All that in an ultra-strong 11.7" Wx 8.3" Dx 2.2" H carbon fiber-reinforced case weighing only 7.25 lbs that fits into half a briefcase.

If you'd like to know more about the T4400SX notebook computer, or any



of our full line of Toshiba portables, call us at 1-800-457-7777.

We'll send you information that can lead to only one conclusion about desktop computers:

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# One-Write Plus 3.0

eca Software has introduced its first major upgrade to One-Write Plus since acquiring developer Great American Software last January. Version 3.0 of the popular small-business accounting package includes a detailed general ledger for a more complete audit trail, a prior-year comparative income statement, and on-the-fly account setup. Version 3.0 sells for \$129.95; current One-Write Plus users can upgrade for \$69.95. One-Write Plus 3.0 requires DOS 3.1 or a later version (3.3 or later is recommended), 640K of RAM, and a hard drive. Meca Software, 55 Walls Dr., Fairfield, CT 06430-0912; 800/388-8000.

Reader service no. 625

# AutoCAD Release 11 Extension for Windows

-WINDOWS - If you've resisted learning AutoCAD because of its reputation for having a learning curve as steep as San Francisco's hills, you'll be pleased to see that Autodesk is helping you scale new heights with its new AutoCAD Release 11 Extension for Windows. This \$99 product makes the AutoCAD Release 11 package that you already have work under Windows 3.0 or Windows 3.1. Its pulldown menus, customizable tool bar, and familiar Windows interface all straighten the learning curve considerably. The move to 16bit Windows means you lose the advantages of AutoCAD's 32-bit architecture but gain DDE capabilities. Say you need a parts list for your AutoCAD design. With DDE, you can export the relevant data to an Excel spreadsheet. Change the length of a pipe in your spreadsheet, and the change is reflected in your drawing. Or you can illustrate word processing or desktop publishing documents with *AutoCAD* drawings by cutting and pasting via the Clipboard. Autodesk, Inc., 2320 Marinship Way, Sausalito, CA 94965; 415/332-2344.

Reader service no. 626

# Waves

-WINDOWS ▼ Offices can be so straitlaced. But you can bang, bark, belch, boing, boink, or doink, giggle, yelp, or yipe, and escape personal responsibility-if you have Vitesse's new sound package for Windows. Waves adds a floppyful of barnyard, bodily function, and TV sounds-more than four dozen in all-to the "tada, ding" and other waves you get by upgrading to the multimedia PC-compatible Windows 3.1. Start up Windows to the sound of a rooster or a cavalry charge, or insert sound icons in OLE-compatible application files. This \$29.95 program works with all popular soundboards and comes with a PC Speaker driver for the non-MPC equipped. Go ahead and baa-a-a, quack, or puke; your co-workers will blame the guy next to you using the Mac. Vitesse, Inc., 13909 Amar Rd. #2, P.O. Box 929, La Puente, CA 91747-0929; 800/777-7344, 818/813-1273 (fax).

Reader service no. 628

# **Twinhead Slimnotes**

These slim-jims weigh under 6 pounds and measure 8.5 inches long, 11 inches deep, and 1.7 inches thick. And they've got power, too. The Slimnote 486DX/33 comes with an 80MB hard drive, 4MB of RAM (expandable to 20MB), a 3½-inch floppy drive, and DOS 5.0 and costs about \$3199. The 486SX/20 model has the same features and costs about \$2699. The

386SXL/25 comes with 2MB of RAM (expandable to 6MB) and a 60MB hard drive and costs about \$1999. Useful features include simultaneous LCD/CRT video output, an optional \$129 trackball, and about 3 hours of battery life with the power management features disabled. The Slimnotes' array of ports includes the usual serial, parallel, external video, and keyboard ports, plus a 100-pin expansion port for connecting external peripherals such as printers and CD ROM drives. Twinhead Corp., 1537 Centre Pointe Dr., Milpitas, CA 95035; 800/545-8946, 408/945-0808.

Reader service no. 633

# MoneyCounts 7.0

urrent users of Parsons J Technology's Money-Counts personal finance package will notice a whole new look and feel to version 7.0. The program now sports a checkbooklike interface, pulldown menus, pop-up lists, push buttons, and mouse support. The many new features let you create multiple sets of books for home and business accounts and subtotal accounts in any combination; support singleand double-entry accounting methods; and offer a notes field for all transactions among other things. In a departure from the traditional requirement for standard, preprinted checks, version 7.0 will print on any size check that you can feed into your printer. Money-Counts 7.0 sells for \$49. Current MoneyCounts users can upgrade for \$24.50, or \$5 if they purchased the package after November 1, 1991. Parsons Technology, One Parsons Dr., P.O. Box 100, Hiawatha, IA 52233-0100; 800/223-6925.

Reader service no. 630

# Pacioli 2000 2.0

-USA Business Systems has introduced version 2.0 of Pacioli 2000, the package that shook up the smallbusiness accounting market two years ago with its full feature set and rock-bottom price of \$49.95. Version 2.0 features a simplified chart of accounts, support for recurring entries, import/export and account balance consolidation, an improved report generator, and support for up to three different taxing authorities, such as city, county, and state taxes, in the same table. Pacioli 2000 2.0 sells for \$49.95, which includes out-of-the-box network support and a 30-day money-back guarantee. Current Pacioli 2000 users can upgrade for \$25; users of any



Twinhead's 6-pound notebook uses a 33-MHz 486 CPU and promises 3 hours of battery life.

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Back-UPS





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



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# At Okidata one good thing



In June 1990, Okidata's OL400 personal page printer won a PC Magazine Editors' Choice award. The editors praised its overall performance and value – applauding its graphics and text quality, and its wide selection of built-in type-

faces and fonts. All at the lowest suggested list price of any page printer available.

In November 1991, Okidata's new OL830 Adobe® PostScript® printer won the same coveted award. Once again, the editors praised our printer's overall per-

formance and value. They found it to be the fastest of *all* 8-ppm printers tested in PCL (HP emulation) graphics mode. And considering its record-setting low price, they rated it "the best inexpensive PCL/PostScript printer available".\*

# leads to another.



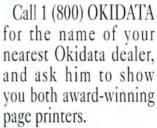
Both printers come equipped with an impressive list of standard features – including full HP Series II software compatibility, and the industry's only 5-year printhead warranty. Plus a choice of options to tailor either machine for your specific busi-

ness or home-office application.

And both come with one additional standard feature: the Okidata OK! It's our pledge to you that every product bearing our good name will deliver not just ac-

ceptable, but outstanding per-

formance and value.



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

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"After evaluating several others - even some costing over a thousand dollars - we chose Act Plus because of its superb accounting, full integration and flexibility. It easily handles our retail and wholesale operations and our multiple locations. And we've sure cut down on our CPA and tax preparation costs." - Vertek, Inc.

"We looked at several other packages, but when we found Act Plus we didn't have to look any further. It's fast, flexible and easy to use. I'd recommend it to anyone." - Water Sport Marine and Ski

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Cougar Mountain Software

2609 Kootenai St. PO Box 6886 Boise, ID 83707 (208) 344-2540 (208) 343-0267 Fax

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From lunar vistas to lowly coyotes, After Dark 2.0 provides colorful and imaginative screen savers and Windows backgrounds.

other accounting packages can make the move to Pacioli for \$29.95 in a competitive upgrade offer. Pacioli 2000 2.0 requires 640K of RAM, a hard disk, and DOS 2.1 or a later version. M-USA Business Systems, Inc., 15806 Midway Rd., Dallas, TX 75244; 800/933-6872, 214/404-1957 (fax).

Reader service no. 631

# Gulliver

7 ant a mouse that's small enough to stash in your coat pocket and use with your notebook on the road? Appoint's new mouse, Gulliver, is about half the size of a Microsoft Mouse and features a built-in suspension system that keeps the ball rolling on just about any surface-even your sleeve or the underside of an airplane seat tray. Your fingers won't have to grope for the primary button, which wraps around this rodent's nose. You get a standard second button and a third button that enables you to lower the resolution for drawing. Gulliver connects to serial ports or PS/2 ports and has a list price of \$99. Appoint, Inc., 7026 Koll Center Pkwy. #230, Pleasanton, CA 94566; 800/448-1184, 510/417-0614 (fax).

Reader service no. 627

# After Dark 2.0

-WINDOWS The latest version of this screen saver/wallpaper utility includes colorful new displays for use as a Windows background or to protect your screen from burn-in when it's not being used. You can mix different screen effects sideby-side or overlapped and digitized sound capability has been added to many screenshowling coyotes, fish tank bubbles, and more. After Dark 2.0 supports Sound Blaster and other multimedia boards, but they're not required for the sound effects. After Dark 2.0 even blanks DOS screens to protect them from phosphor burn-in, but its colorful displays require Windows 3.0 or a later version and a VGA or better monitor. The program retails for \$49.95. Upgrades are \$15. Berkeley Systems, Inc., 2095 Rose St., Berkeley, CA 94709; 510/540-5535.

Reader service no. 629

# PostSaver Bar Lite

ar Lite automatically attaches U.S. Postal Service Postnet bar codes to all letters and envelopes created with DOS-based word processing, accounting, or data base programs. The program



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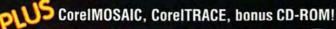
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is a 40K TSR that scans documents as they're sent to the printer. It searches for valid 5or 9-digit ZIP codes and tells your printer how to bar code your documents. You can configure Bar Lite to search for specific ZIP codes and thus prevent the program from bar coding return addresses on an invoice. Bar Lite costs \$99, and site licenses are available. PostSaver Systems, 2731 S. Adams Rd. #102, Rochester Hills, MI 48309-3103; 800/879-6820, 313/299-5050, 313/299-5052 (fax).

Reader service no. 636

#### Personal Access 1.5

-WINDOWS - Designed for corporate end users, Personal Access is a software tool that simplifies data access from a variety of data bases. Version 1.5 features an improved interface for simpler and faster query processes, and an online tutorial that guides users through query and reporting functions-from creating a simple query to working with tables and executing complex queries and reports. Personal Access 1.5 now supports Paradox as well as all major data bases, including Oracle, Microsoft's SQL Server, Sybase's SQL Server, dBASE, and Novell's Btrieve. It costs \$695. Upgrades are free. Spinnaker Software Corp., 201 Broadway, Cambridge, MA 02139; 617/ 494-1200, 617/494-0173 (fax).

Reader service no. 635

#### Accel-a-Writer VIII

I fyou're tired of waiting for your LaserJet to print, you might take your queue from Xante's new Accel-a-Writer VIII. This upgrade controller for the HP LaserJet Series I printer uses an AMD 29000 RISC processor to increase printing speeds as much as 12 times and is available in either 300-dpi or 600-dpi models. The

Accel-a-Writer VIII uses Phoenix Page emulation language for PostScript compatibility, includes 35 resident fonts, and can hold up to 16MB of RAM. In addition to parallel and serial ports, it has an AppleTalk interface, so you can print simultaneously from a PC and from a Mac. Also included is a SCSI port for attaching an external hard drive to store additional downloaded fonts. The 300-dpi controller (upgradable to 600 dpi) is priced at \$1295 and the 600dpi controller costs \$1695. Xante Corp., 2559 Emogene St., Mobile, AL 36606; 800/ 926-8839, 205/476-8189, 205/ 476-9421 (fax).

Reader service no. 639

#### Personal LaserWriter NTR

Y es, Virginia, Apple makes products for Windows users. Not only does Apple's new Personal LaserWriter NTR feature LocalTalk, parallel, and serial ports, it also has an "all ports active" design that enables networked Macintosh and Windows users to send documents to the NTR without changing DIP switches or other settings. Priced at \$2199, the NTR includes 3MB of RAM (expandable to 4MB) for fast printing and enough room for downloading fonts, as well as Adobe PostScript Level 2 and PCL 4+ page description languages. Apple has further boosted the Personal LaserWriter NTR's performance by placing the TrueType fontscaling technology and Adobe's Type 1 font software in ROM. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 800/776-2333.

Reader service no. 634

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

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# INDUSTRY UTLOOK

Edited by ERIC BENDER

## **New Compaq Aims to Crunch Clones**

Buyers Will Give Embattled Giant a Chance—If the Price Is Right

In the property of the propert

Compaq's new ProLinea desktops begin at about \$900 for a 25-MHz 386SX model, Corporation in Framingham, Massachusetts.

One key for success on this new turf will be "hiring new people who bring a merchandising background," says Stephen. Other analysts speculate that like IBM with the PS/1, Compaq may have chosen the right pricing and channels for these users, but underPC industry, Compaq saw sales and profits sag last fall. It replaced its chief executive, laid off employees, cut costs internally, and began to turn things around. Still, first-quarter sales of \$783 million were down 19 percent from the same period last year, while income dropped 60 percent to \$45 million.

New chief executive Eckhard Pfeiffer expects to post low earnings through the year as Compaq increases spending to roll out its entry-level PCs. Earnings also will be cut by company expansion beyond its traditional dealer distribution channel—perhaps even into direct mail.

#### Compag Rebuilds Its Line Product line Entry list Target market Prolinea \$899 small business/home low-cost PCs with limited upgrades Deskpro/i \$1779 business, low end introduces Business Audio, OVision Deskpro/M \$2269 business, high end Compag's improved flagship line \$4999 Systempro network server reduced prices, market leader Contura \$1699 traveler, low end inexpensive notebooks LTE Lite 52399 traveler, high end includes \$5000 color model

Compaq is rounding out its product line with PCs that compete aggressively on price versus Dell and AST.

and Contura 386SL notebooks start under \$1700 (see "Compaq Gets Budget Minded"). At these prices, Compaq is getting serious about attracting the small-business and home users who have always considered the company's PCs to be too pricey.

This group, which often buys through the mail or lowmargin retail outlets, is quite different from Compaq's traditional Fortune 500 clientele. In fact, "unless you're an experienced PC user, you may not know who the heck Compaq is," says Bruce Stephen, analyst with International Data estimated their need for power and expandability.

Compaq is also covering its traditional bases by rolling out the Deskpro/i line of inexpensive slimline desktops with fast video and built-in audio. And it has added a one-year on-site service contract for all products plus a grab bag of new support programs.

#### Taking a Lower Road

These dramatic steps all stem from a thorough battering in the past year for what was once the highest of PC highfliers.

Unable to keep up with the rapid price cuts throughout the

#### Users: The Price Better Be Right

For most users, the key concern remains simple: cost.

Lower Compaq prices are "only going to keep us loyal," says Brian Cordell, operations systems analyst for First Bank in Minneapolis, who buys mostly 25-MHz 386DX desktops from Compaq. "People are willing to pay a small premium for the Compaq name, but they're not willing to pay a large premium."

Volume buyers like First Bank get steep discounts. Small businesses like Fritz Companies, a San Francisco transportation firm, don't. That's why Jim Liefer, Fritz's PC buyer, switched to Dell Computer and Zeos International for stand-alone PCs. Liefer says he will reevaluate Compaq if its revamped prices prove competitive.

"I might consider them for

a server," says Sandi Graham, network supervisor for Franklin Federal Bancorp in Austin,
Texas. Graham notes that one of Franklin's two Compaq servers hasn't needed repairs since it was purchased three years ago, but she believes she can find a better deal elsewhere for net workstations or stand-alone PCs.

Some users also complain about the expense of upgrading Compaq systems—in particular, the requirement for expensive proprietary memory modules. Compaq replies that all its newer PCs employ industry-standard SIMMs—another example of how it's now listening to customers.

-Jeff Bertolucci

# Compaq Gets Leaner—And More Competitive Low-cost products, price

- reductions on existing lines
- New management, internal cost cutting, employee layoffs last fall
- Expansion into new distribution channels, possibly including direct sale
- Big push on service and support, including on-site repairs



Stung by last year's declining sales and profits, Compaq has regrouped for a comeback. Its goal is to expand its worldwide market share far beyond the current 5 percent level.

## **DOS Applications Still Dominate**

Major Upgrades With Graphical Enhancements Will Arrive Soon

The rumors of DOS's demise have been greatly exaggerated.

Microsoft may be pumping out a million copies of Windows every month, but DOS applications still outsell their Windows counterparts by a wide margin. While the gap is narrowing as businesses adopt new graphical environments, analysts expect DOS applications to remain strong well into the nineties,

And while few new mainstream applications are being written for DOS, major software developers are readying upgrades of their DOS flagships with graphical enhancements and features first seen on their Windows cousins.

#### **DOS's Staying Power**

Millions of PC users have yet to be swayed by the promised ease of use and graphical savvy of Windows applications. "It's unclear what Windows does for a data entry clerk," points out Jeffrey Tarter, publisher of Soft•letter in Watertown, Massachusetts.

Many large corporations planning to go graphical are treading cautiously due to the huge costs of upgrading machines, training users, and handling glitches in the new environment.

Richard Jacobson, a PC technician and analyst for Hormel Foods in Austin, Minnesota, is part of a team evaluating Windows and OS/2. "We're looking at over 600 machines we have to upgrade," Jacobson notes. "We have to make sure that OS/2 or Windows is stable enough to justify the cost of switching."

Other organizations are taking a Windows-on-demand approach, outfitting new machines with the environment and upgrading existing users as they request it. But one MIS manager at a midwestern aerospace firm reports that only one of every four users who request Windows sticks with it. "They want the fastest way to do the job," he says, "and unless you're working in a presentation-oriented environment, it's always faster to do it in DOS."

#### Old DOS, New Tricks

All of this adds up to a healthy DOS application market for established vendors.

"We don't see a world where everything converges on Windows," says Jeffrey Beir, vice president of Lotus's spreadsheet division. "Our goal is to 
bring the usability of the Windows world back to DOS."

Last spring's 1-2-3 version 2.4, 
for example, sports the SmartIcons and Solver first seen in 
Lotus's Windows and OS/2 
offerings. Lotus promises a 
built-from-seratch graphical 
DOS line by early 1993.

Also this fall, WordPerfect is expected to deliver a major upgrade of WordPerfect for DOS. Dave Moon, senior vice president of development, says the plan is to offer similar functionality and compatibility across DOS, Windows, and other platforms.

At press time, Borland International was preparing to ship Windows versions of its Quattro Pro spreadsheet and Paradox data base manager. But major rewrites like Paradox 4.0 for DOS show that Borland is far from abandoning its DOS roots. "We think a lot of shops will have mixed Windows and DOS for some time," says senior vice president Rob Dickerson.

Even Microsoft acknowledges that the world is not entirely ready for Windows. "DOS is alive and well, and Word 6.0 is in full development," says Taylor Collyer, product manager for Microsoft's DOS and OS/2 word processors.

As spiffy as the new DOS upgrades may be, they still will yield important ground to their Windows kin. They won't enjoy the same tight connections with other applications. Their interfaces won't be as rich. And if they stay within DOS's conventional-memory constraints, they'll have to give up some features and be satisfied with slower perfor-

mance on large graphics files.

Still, many users will remain faithful to their DOS standbys. "If a DOS product does everything you need it to do, there's momentum to stay with it," says Teri O'Neel, a marketing director for Software Publishing Corporation in Santa Clara, California. "Nothing is as easy to use as something you already know."

-Daniel Tyman

# Windows

#### They'd Rather Fight Than Switch

DOS advocates sound off on America Online

"DOS applications are faster, smaller, and you don't need to spend six months learning the operating system just to make 'em run without crashing every 5 minutes."

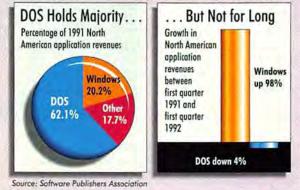
"Using those nifty little icons in Windows can involve more of a learning curve than a totally new interface with a DOS program. I get calls from users who say "There's this button that looks like a duck. What does it do?"

"The basic idea behind Windows—to remove the user from the command language—is a positive and necessary move in the current PC market, but I'm convinced that DOS programs can fit the bill just as easily as GUIs."

"I have both WordPerfect 5.1 and WordPerfect for Windows on my home system, but I use the DOS one. I'm familiar with it and can get my work done efficiently."

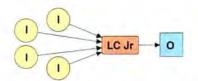
Many users find compelling reasons to stay with their familiar DOS applications.

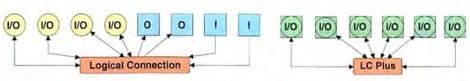
#### DOS Applications Reign—But Sales Drop



DOS packages hold on to clear leadership in PC applications.

# Printer Sharing PARALLEL OR I = INPUT FROM PC SERIAL DEVICE O = OUTPUT TO PERIPHERAL





LC Jr.-256Kb

The Logical Connection has eight ports: four bi-directional serial ports which can be set as input or output, two parallel inputs and two parallel outputs.

LC-512Kb

LC Plus-512Kb

Serially connect up to four PCs to the Logical Connection Jr. at speeds up to 115,200 bps. It will automatically convert the data for easy sharing of one parallel printer.



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Macintosh Powerbook 140/170 (Dealer must install)

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Toshiba Laptop Models: (User may install)

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Memory Card **RCT-1000** 1 Mb

Memory Card RCT-2000 2 Mb call **RCT-4000** 4 Mb Memory Card Memory Card **RCT-8000** 8 Mb

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RJB-0512 Memory Card 512 Kb

call Memory Card **RJB-1000** 1 Mb **RJB-2000** 2 Mb Memory Card

## **Mail-Enabled Software Advances**

As Vendors Battle Over Standards, Users Forge Ahead

ome day you'll be able to fire off an E-mail message to any co-worker anywhere from within any application, or easily write routines that automatically forward data from one application to another across your network.

Some advanced users have found ways to implement some of this today, but the promise of painless, full-featured E-mail won't be realized until major E-mail and application vendors settle their territorial disputes and cooperate on a common messaging backbone.

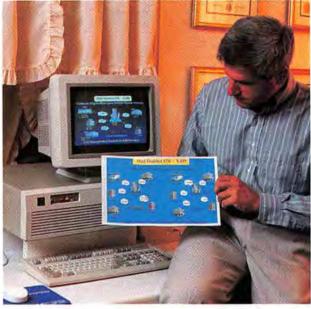
A handful of mail-enabled applications from major vendors are already out—including Windows programs from Lotus that offer a menu choice for Lotus's E-mail offerings. Stand-alone packages such as Microsoft's new Schedule+ for Windows group scheduler also build on mail. And in-house programmers are starting to create custom mail-enabled applications for high-payoff tasks such as collecting information from branch offices.

But commercial and inhouse developers alike need a standard application programming interface (API) before they can write a mail-enabled application that works across all mail systems—and vendors disagree on APIs.

Microsoft pushes its Windows-centered Mail Application Programming Interface (MAPI). Lotus has enlisted Borland, IBM, Novell, and Apple to support its Vendor Independent Messaging (VIM). Novell and Apple also promote alternative standards built into their operating systems.

#### Who's Got the Standard?

Microsoft won't discuss the possibility of adding VIM support to Windows or other



"I've listened to the vendors argue, and it was like, 'We've agreed that we'll make a mess here,'" says Vitro's Thomas Miceli.

Microsoft products.

"We think VIM has a great deal of support," counters Tim Dempsey, manager of developer relations for Lotus's Communications Products division. Still, he concedes, "maybe there isn't going to be only one API."

Customers would like to see Microsoft "support a larger industry standard, like VIM," says Borland's Ken Einstein, director of applications strategy, who adds that Borland will support whatever standards users request.

WordPerfect also will keep its options open: "We're going to run on top of all of them," says Dave Clare, head of development for WordPerfect Office.

#### Just Do It

Confusing, isn't it? "I've listened to the vendors argue, and it was like, 'We've agreed that we'll make a mess here," says Thomas Miceli, a systems analyst for Vitro Corporation in Mechanicsburg, Pennsylvania.

The good news, according to users like Miceli, is that customers need not wait for the dust to settle. With some creativity, cc:Mail, Microsoft Mail, MHS (which comes bundled with NetWare), and other mechanisms are already up to the task.

Among the pioneers was the nationwide auditing firm of Deloitte & Touche, which used cc:Mail's message import/export utility to build a distributed data base application that lets branch offices register employees for training courses. "Registrars at each office enter information in a Clipper application," says LAN services manager Larry Quinlan. "That program calls the cc:Mail import utility, sending the registration records to the main data base in the central training office via E-mail messages. But the registrars never see anything but Clipper."

At Tokos Medical Group in Santa Ana, California, "we need up-to-the-minute records at all our locations, 24 hours a day," says Project Manager Tony Roza, "Previously, nurses faxed charts between sites. Switching to network data bases at each office and using [an MHSbased application] to keep them in sync gives us faster updates and reduces costs by eliminating the time spent pulling charts, searching for files, and faxing information."

-Robert Lauriston

Daniel Tynan and Robert
Lauriston are contributing
editors for PC World.

#### The Battle for E-Mail Standards

Major players push their favored E-mail interface

Company	E-Mail products	Favored interface	Installed base
Apple	none	OCE, VIM	none
Borland	none <sup>1</sup>	VIM	none
IBM	none <sup>2</sup>	VIM	none
Lotus	cc:Mail, Lotus Notes	VIM	2,000,000
Microsoft	Microsoft Mail	MAPI	1,500,000
Novell	MHS, NetWare, Global Messaging (gateways)	MAPI, SMF, VIM	none
WordPerfect	WordPerfect Office	all	800,000

Future mail-enabled Paradox will compete with Lotus Notes.

<sup>2</sup> Endorses cc:Mail and Lotus Notes.

Mail-enabled applications promise to remap the way you share information across your organization—but vendors don't agree on a standard way for applications to hook into E-mail.

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- Computers Buyers Guide awarded TOTOW's 486-33 it's BEST BUY award, stating it was "one of the fastest computers ever tested" after comparing TOCOR Northgate, Gateway 2000 and 6 others!
- In May 1992 Computer Shopper compared 8 486 EISA systems including ZEOS and Gateway 2000. TOLOW "had the best price/performance ratio!"

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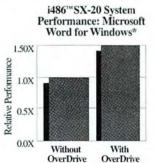
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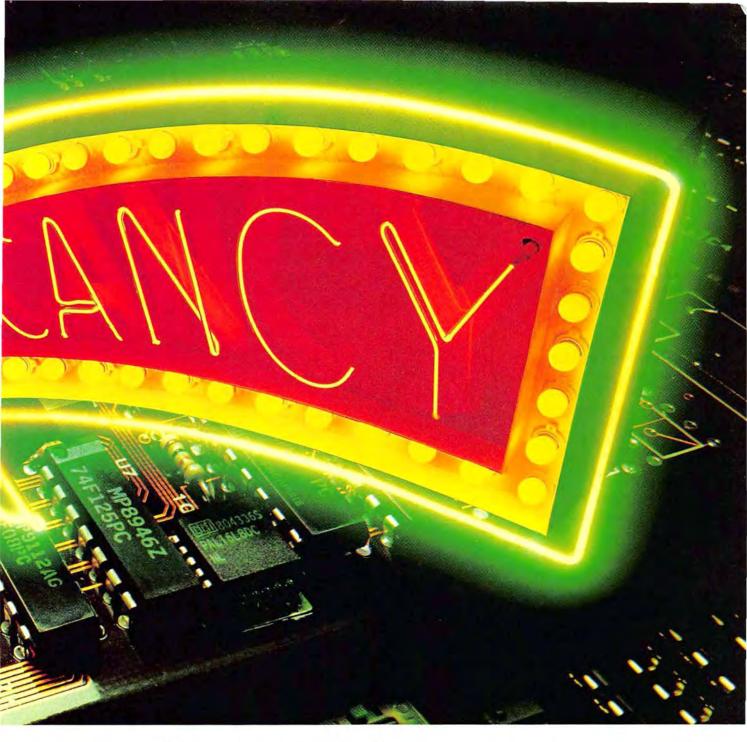
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### PC WORLD MARKETPLACE

#### **Bargains of the Month**





The Gateway 25-MHz 4865X and the Dell System NL25 were the most aggressively priced desktop and portable PCs in the May survey by International Data Corporation.

#### **Best-Sellers**

Leading PCs sold through computer stores and dealers

IBM PS/2 Model 55 SX
 IBM PS/2 Model 56 SX
 IBM PS/2 Model 70/20
 Compaq LTE Lite/20
 Compaq Deskpro 386/25M
 Compaq Deskpro 386/25M
 Compaq Deskpro 486/33M
 IBM PS/2 Model 35 SX
 IBM PS/2 Model 56 SLC

IBM and Compaq monopolized the best-seller list for PCs sold through the dealer channel, according to Storeboard Channel Tracking's April survey.

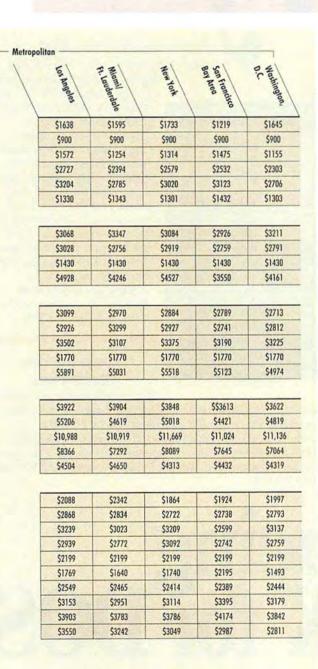
Over the Counter		Configuratio	n —		— National —	1			
What you pay at retail tores for popular PCs	Speed (MHz)	RAM (MB)	Hard disk	Video adapter	E	Average	Boston	Chicago	Pallasi Fl. Worth
80386SX/SLC-based desktop PC		(ma)	(MB)		\				
Compaq Deskpro 386s/20	20	2	60	VGA	\$1899	\$1604	\$1600	\$1399	\$1446
Dell System 325 SX	25	2	52	VGA	\$900	\$900	\$900	\$900	\$900
IBM PS/2 Model 35 SX-043	20	2	40	VGA	\$1520	\$1275	\$1292	\$1318	\$1000
IBM PS/2 Model 56	20	4	80	VGA	\$3030	\$2419	\$2316	\$2310	\$2412
IBM PS/2 Model 56 SLC	20	4	80	VGA	\$3560	\$2807	\$2757	\$2659	\$2543
NEC PowerMate SX/20i	20	2	60	VGA	\$1599	\$1322	\$1609	\$1235	\$1389
80386DX-based desktop PCs									
AST Premium II 386/33	33	4	210	VGA	\$3795	\$3087	\$3134	\$2978	\$3015
Compaq Deskpro 386/25M	25	4	120	VGA	\$3199	\$2839	\$2696	\$2912	\$2821
Dell System 333P	33	4	100	VGA	\$1430	\$1430	\$1430	\$1430	\$1430
IBM PS/2 Model 70/25	25	4	160	VGA	\$5475	\$4228	\$4238	\$3945	\$5475
80486SX-based desktop PCs									
ALR BusinessVEISA	20	5	120	none	\$3495	\$2889	\$3054	\$3169	\$3121
AST Premium II 486SX/20	20	4	80	VGA	\$3495	\$2891	\$2869	\$2798	\$3059
Compaq Deskpro 486s/25M	25	4	120	VGA	\$3699	\$3225	\$3116	\$3333	\$3470
Gateway 25-MHz 486SX	25	4	200	VGA	\$1770	\$1770	\$1770	\$1770	\$1770
IBM PS/2 Model 90XP-OH9	25	4	160	XGA	\$6545	\$5118	\$5007	\$4525	\$4876
80486DX-based desktop PCs									
AST Premium II 486/33	33	4	210	VGA	\$4495	\$3735	\$3965	\$3548	\$3934
Compaq Deskpro 486/33M	33	4	340	VGA	\$5499	\$4851	\$5076	\$4878	\$4976
Compaq Deskpro 486/50L	50	8	340	VGA	\$12,999	\$11,143	\$10,675	\$10,712	\$10,843
IBM PS/2 Model 90 XP-OKF	33	8	400	XGA	\$9295	\$7609	\$7698	\$8329	\$8123
NEC PowerMate 486/33e	33	4	300	none	\$5299	\$4398	\$4436	\$4535	\$4563
Portables/laptops									
AST Premium Exec 386SX/20	20 (SX)	2	40	VGA-LCD	\$2395	\$1982	\$1995	\$1971	\$1984
AST Premium Exec 386SX/25	25 (SXL)	4	80	VGA-LCD	\$3295	\$2789	\$2895	\$2668	\$2898
Compaq LTE 386s/20	20 (SX)	2	30	VGA-LCD	\$3599	\$3070	\$3059	\$2913	\$3175
Compaq LTE Lite/20	20 (SL)	2	60	VGA-LCD	\$3199	\$2832	\$2719	\$2912	\$2559
Dell System NL25	25 (SL)	2	80	VGA-LCD	\$2199	\$2199	\$2199	\$2199	\$2199
IBM PS/2 Model L40 SX	20 (SX)	2	60	VGA-LCD	\$1965	\$1639	\$1572	\$1731	\$1520
NEC UltraLite SL/20	20 (SL)	2	80	VGA-LCD	\$2999	\$2477	\$2543	\$2595	\$2524
Toshiba T3300SL	20 (SL)	2	80	VGA-LCD	\$3599	\$3187	\$3206	\$3380	\$3331
Toshiba T4400SX	25 (SX)	2	80	VGA-LCD	\$4349	\$3897	\$3852	\$4070	\$3950
ZDS MastersPort 386SLe	20 (SL)	2	60	VGA-LCD	\$3799	\$3043	\$3225	\$2750	\$2875

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.

#### **Price Information You Need to Buy Smart**



while 386 machines are pressured from below by 386SX machines and from above by 486SX and non-Intel CPUs, costs have held relatively steady this year among models sold through dealers. However, direct-sale vendors such as Dell Computer and Gateway 2000 continue to whittle away at pricing. You can now buy three Dell systems for the cost of the IBM model shown here.

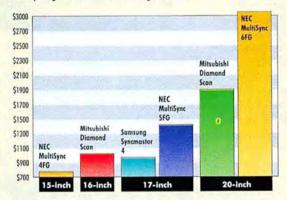


#### PC Futures: When the Going Gets Tough

Gateway 2000 carries off desktop Bargain of the Month honors with its 25-MHz 486SX, while Dell's new System NL25 wins as portable Bargain of the Month. Both firms not only slice away at prices, they also add (and withdraw) models every month or so. Notably, Gateway is dropping its entire line of 386 desktops in favor of 386SX and 486SX models. Embattled though they may be, IBM and Compaq still split the April best-seller list between them. The PS/2 Model 56SLC (based on IBM's homegrown 386SLC) makes its first appearance, and customers apparently like the taste of Compaq's new Lite notebooks. The 386DX desktop arena shows some enormous and widening price gaps between direct-sale vendors and suppliers who sell through dealers. There's also a very large price gap between standard 14-inch VGA monitors and larger monitors, although costs of the latter are dropping slightly as they begin to see higher manufacturing volumes.

#### Paying Extra to Get the Big Picture

Street pricing on selected 15-inch and larger monitors



Monitor prices are dropping, but far more slowly than PC prices. And while even the fanciest 14-inch monitors rarely break \$600 on the street, the price you pay climbs dramatically as display size increases.

Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.

Source: International Data Corporation.

# End PC Envy

A Window on the Network

As you can see, DOS programs run alongside Microsoft Windows programs. You've seen this all before in our DESQview, right? Yes, but

now there's more. DESQview/X lets you access and control a wide variety of PCs and workstations through your own PC. This feature is called remote computing.

In the example to the right,
Lotus 1-2-3 is running in its own 386SX PC. The window above it is a Microsoft Project document running on a remote 486 PC under DESQview/X. Below that is the AixTerm program running on a remote Silicon Graphics Indigo workstation in another part of the company.

#### Brand and Platform Freedom

DESQview/X runs on 386SX PCs and above. And from within windows on those PCs, you can use programs\* running on any

number of remote DESQview/X PCs if your network supports NetWare or NetBIOS. Add DESQview/X's optional network interface for TCP/IP networks and you can also access programs running on IBM RS/6000s to H-P 9000 workstations. And it works the other way, too: these workstations can view and use DOS programs in their windows. \*DOS graphics programs currently run only on your local PC.



You can change menus, add sub-menus. Add menu items that run remote programs.

Works the Way You Want

Change commands. DESQview/X gives you a menu to use for your macros. And if you prefer a graphical desk top instead of a menu, DESQview/X's Application Manager gives you buttons for opening a set of programs used in a project or even for launching remote programs. What's more, you can specify window size and color. And if you are using DOS text programs, you can set them up so that the font changes size as you change the size of the window. We call this feature scalable DOS windows (see the Lotus 1-2-3 window at left).

#### Looks the Way Users Want

DESQview/X supports sculptured

menus, customizable backgrounds, graphic buttons for launching programs, icons and online context-sensitive help to make computing easy and fun. If you are a DESQview user, you'll find DESQview/X very familiar, with an improved look. But if you prefer a different look and feel, we offer two other options: OSF/Motif and OPEN LOOK.

# Introducing DESQview/X for DOS

# DESQview/X gives everyone access to the power of the fastest PC—or workstation—on the network.

Remote Computing is a Reality

Set up and run programs on remote DESQview/X PCs on your network. Instruct and support users. Diagnose problems and solve them from your

own PC. DESQview/X provides controlled access to every program on every PC.

# Here's How You Might Use DESOview/X on Your Network:

Say for instance your company uses a particular database that requires lots of horsepower or lots of memory to run. You can set it up on a 486 PC loaded with memory —then allow appropriate users access as you normally do on the network. The difference is that the database will be running on the remote 486 instead of the local PC. Users can take advantage of the power they need, when they need it. And

you'll be able to best assess who actually needs his/her own 486 PC.

Give your PC the key to unlocking and sharing the power of other PCs on the network.

DESQview/X is a graphical multitasking environment for DOS. It is so powerful that it literally turns DOS PCs into graphical workstations. With DESQview/X, you can run DOS and Microsoft Windows programs simultaneously, view them in windows, transfer between them, create DESQview/X-global or program macros and manage your files.

DESQview/X makes computing lots easier, more productive, and more fun.



With DESQview/X, you can now run programs and access files on other computers on the network and view them in windows on your own PC. Distribute tasks among computers based on their

capabilities and available resources.

Remote diagnosis and support is now a reality. With DESQview/X you can support, instruct; even remotely demonstrate programs right at your user's computer.

If you have X-Window workstations, our optional

#### Easy to Set Up and Administer

DESQview/X asks three questions: Do you wish to transfer files to and from other computers? Do you wish to use programs on other

computers? and Do you wish other people to have access to programs on your computer? That's all it takes for DESQview/X to set itself up. DESQview/X incorporates QEMM-386 to assure maximum memory utilization and Manifest for easy diagnosis and problem-solving.



'DESQview/X to Other X Systems' TCP/IP Network Manager allows you to run workstation programs remotely from PCs.

For all this power, DESQview/X is stunningly easy to set up and use, and can run on any 386 or 486 PC with as little as 4MB RAM and 40MB hard disk.

DESQview/X multiplies the power of networked PCs by erasing the boundaries between computers; between programs and between users. Welcome to the limitless future of enterprise-wide computing.

Yes!	Qty Product 5- DESQview/X	1/4 3-1/2	Fach Totals \$275.00
Please Send:	DESQview/X Network Mgr. (TCP/IP)		\$200.00
Payment	OPEN LOOK interface OSF/Motif interface	$\rightarrow$	\$200.00 \$250.00
method □Visa □Mas Card#	sterCard Expires / California	Residents	
NameAddress			Or call (800) 354-322 for faster service Please allow 3 weeks for delivery
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INTEL'S NEW OVERDRIVE

**CHIP GIVES A HUGE SPEED** 

**BOOST TO 486SX PCS.** 

**BUY A FAST, INEXPENSIVE** 

20-MHZ PC TODAY AND

DOUBLE ITS SPEED,

CHEAP, WHEN YOU NEED

MORE HORSEPOWER

TOMORROW.

ooking for the least expensive ticket to the redhot world of 486 computing? Look no further than 20-MHz 486SX PCs. Introduced only 18 months ago, these upgradable performers are already being supplanted by 25-MHz models, which will undoubtedly send 20-MHz prices falling even lower than the budget prices you'll find in this review. Get one of these machines while they last, and you may bag one of the best deals in computing today.

If that kind of value sounds good to you, here's some free advice about 486SX systems: Never, ever, buy a 487SX math coprocessor, even if you crunch floating points for breakfast. Why? Because that 487SX coprocessor socket could hold something far more useful: an Intel OverDrive processor.

An OverDrive processor is an upgrade on a chip, essentially

BY REX FARRANCE AND MICHAEL GOODWIN



a replacement CPU-plus-coprocessor; think of it as a souped-up 486DX. What does it do? To find out, turn to the PC World Test Report in this article. As the report shows, we began by running our standard benchmarks on 23 of the latest 20-MHz 486SX systems. Then we plugged OverDrive chips into the same machines and tested them again. The result? Performance increases averaging 26 to 350 percent, depending on the application.

That wild 350 percent figure derives from the 1-2-3 test; the OverDrive, like

the 486DX (and unlike the 486SX) has an on-chip coprocessor that tears through 1-2-3 financial and statistical functions. The Windows benchmark (which doesn't employ the coprocessor) tells a more typical story: a 50 to 70 percent increase, which is about what you can expect to see with most business applications.

Yes, this is what Intel's "Vacancy" ad campaign, with neon sign pointing toward waiting socket, was all about. All the PCs in this review have dutifully danced to Intel's tune. Some have an

Intel-approved upgrade socket that holds either a 487SX or an OverDrive chip; others require you to pop out the 486SX CPU and replace it with the OverDrive. In either case, the Over-Drive processor doubles the 20-MHz signal from the system's clock chip to increase internal processing speed by a factor of two.

That means the OverDrive processes data and instructions inside its 8K onchip cache twice as fast as a 486SX can. You get an approximate 70 percent increase in the real world, because the 8K cache can't hold everything and the CPU must fetch from the slower offchip memory. Also, disk performance isn't affected. But no matter. The cost of an OverDrive chip-which you can only buy retail, and which should sell for \$450 or so at your nearest superstore or electronics supplier-is a small price to pay for such a big performance boost.

#### 486SX Prices Are Dropping So Fast, You Can't Keep Up!

Wow! Look what happened to list prices in just three months: They dropped almost \$200 on average. Our Best Buy Mitac 4270E led the way with a \$650-plus plunge, and the Best Buy Northgate Elegance ZXP 486SX/20 dropped a healthy \$250.

	List price as of June 1992 1, 2	Price drop from March 1992
AcerPower 386SX/486SX	\$3181	none
AcerPower 486SX	\$4122	none
ALR BusinessStation 486ASX	\$4367 3	\$100
ALR BusinessVEISA 486ASX	\$44673	\$100
ATronics ATI-486/SX-20	\$1745 4	\$389
Blackship BLK 486SX/20	\$1985	\$186
Boss 486SX/20 Cache	\$2995 5	\$500
Club American Falcon 420 SX	\$2487	\$394
Dell System 486D/20	\$2548 5	\$459
Dell System 486P/20	\$2248 5	\$359
Everex Tempo M 486SX/20	\$3817	none
First Computer FCS 486SX/20	\$1599	\$100
Grid MFP/420s Model 120	\$3013	\$105
IDS 420S Power User Pro	\$2345	none
Mitac 4270E	\$2259	\$660
NEC PowerMate 486\$X/20e	\$4382	\$35
Northgate Elegance ZXP 486SX/20	\$2399 4	\$250
Soft-Hard PowerBox PBS1 486SX-20	\$1899 5	\$150
Swan 486SX/20	\$2445 5. 7	none
Swan 486SX/20M	\$2420 5, 7	\$100
Touche 486SX/20	\$1999	none
USA Flex 486SX 20	\$1695 5, B	\$300
Wang PC 441/20SC	\$5420	none

cept as nated, price includes 4MB RAM, one floppy drive, hard drive, VGA, color VGA monitor, mouse, Windows 3.1, at DOS 5.0.

#### The Buys of the Moment

To find the best PCs in this category, we had to rate each of the 23 candidates in two ways-as 20-MHz 486SXs and as 40-MHz OverDrive systems. Along the way, we checked the OverDriveequipped systems six ways from Sunday for compatibility. None of the systems dropped out.

The speed test results include a few surprises. We expected the systems with external memory caches (that is, a cache of fast memory on the motherboard external to the 486SX) to have the performance edge, but in the end there wasn't much correlation. We believe the reason is that Intel's on-chip cache is so efficient, only large-memory jobs-such as serving a network or multitasking several large Windows apps-are likely to benefit much from an external cache.

Performance is only one element. Surveys tell us PC World readers care about price even more. Next in priority is service and support. We call vendors with tech-support questions and factor in availability of on-site service, repair turnaround policy, and so on.

With two floppies. Includes (OA Plus diagnostics, Includes Welthbuilder, Quicken for Windows, Microsoft Works for Windows. Includes PFS WindowWorks.

#### **Buying Smart: Two Steps to a Faster Desktop**

How are 486SXs different from all other PCs? Easy: They're the only systems that accept Intel's OverDrive CPU upgrade, which boosts processing speed by approximately 70 percent when running most business applications. Add the street price of an OverDrive chip—around \$450—to the price of any of the systems in this review, and you'll have an idea of how much it costs to achieve maximum performance.



#### PERFORMANCE

Some systems showed bigger improvements than

others when we boosted them into Over-Drive. The disparity can be attributed to such design factors as special memory-cache algorithms, burst-memory controllers, and write buffers, which enable some systems to benefit more from the double-speed processor. But any way you look at it, the OverDrive CPU is one of the least expensive ways you'll find to improve performance.

CPUs and upgrades aside, peripherals always have their own effect on performance. If you use a program such as dBASE or Paradox that continually calls on the hard disk, you should consider ordering a caching controller, which can boost disk-intensive performance. A fast video adapter can also help speed things up, especially if you're a desktop publisher, run presentations, or use Windows in 1024 by 768 mode.

Our performance weighting system places the most emphasis on 1-2-3. Overall, the Best Buy Mitac did best in the plain-vanilla 20-MHz 486SX tests, while the AcerPower 486SX turned in the best scores with the OverDrive chip installed.



#### PRICE

A good price is as important to most of us as performance (if not more so). Price comparisons in our reviews are based on street prices. For every system (except those sold directly), we call at least three PC dealers in eight major cities across the country to get price quotes, and then we average the results. Our researchers price units set up in the same standard configuration: 4MB RAM, a 120MB to 130MB hard disk (except where noted), one floppy drive, VGA and color display, one parallel and two serial ports, keyboard, mouse, DOS 5.0, and Windows. The least expensive system in our roundup is First Computer's valueconscious FCS 486SX/20.



#### **EXPANDABILITY**

All the systems reviewed here support an Over-

Drive chip, but that's just one upgrade strategy. A processor-board design lets you swap up to 50 MHz and beyond, giving you the greatest performance potential—though this scheme does tend to add to system cost. We give extra points for Zero Insertion Force (ZIF) sockets, which make for a truly painless chiplevel upgrade.

You'll also need sufficient expansion slots and drive bays. If you're planning to connect your 486SX/20 to a network, you'll probably be able to get by with three bays and four free expansion slots. But for a stand-alone PC, you'll want at least one more bay and one more slot.

All but one of these 486SXs—the
AcerPower 386SX, with its low 8MB
RAM limit—can accommodate at least
32MB of fast RAM (RAM that is
accessed at CPU speed). Unless you're
planning to use your 486SX as a network server or UNIX machine, you
won't need more than 16MB; most
people do just fine with 4MB. NEC's
PowerMate 486SX/20e has the largest
capacity for peripherals and memory,

with the Best Buy Northgate Elegance ZXP close behind.



#### SERVICE AND SUPPORT

All these systems come

with at least a one-year warranty and (with the exception of the Acer machines) a tech support number.
Unless your company is large enough to have its own service department, it's reassuring if a vendor offers low-cost or free on-site service, especially if the company sells direct.

We test support quality by calling the central number, asking three questions of varying difficulty, and rating the responses on promptness, courtesy, and accuracy. Then we factor in extras such as toll-free phone support and fax lines. We rate dealer support by looking at the vendor's policies on dealer training, inventory, and support staff. You're dealing with human beings when you call tech support, so there's some variation in the same vendor's ratings from review to review. This time Boss earned the best support rating, but for all intents and purposes you can expect equally fine support from ALR, Blackship, Club American, Dell, Swan, Wang, and two of our Best Buys: Mitac and Northgate.



#### DESIGN AND CONSTRUCTION

To make sure your system

will support all common software and peripherals, we run these systems through tough compatibility tests. All the systems scored perfectly on compatibility. We also look for rugged design and ergonomic details. The Best Buy Northgate Elegance ZXP, the Touche 486SX/20, and the ALR Business-Station and BusinessVEISA all took top design honors.

When the last hard disk spun down and the last phone call was made, IDS's 420S Power User Pro, Mitac's 4270E, and Northgate's Elegance ZXP all snagged PC World Best Buy awards. The IDS and the Mitac both rate four stars in performance, with or without the OverDrive, and the Mitac adds an excellent service rating. The Northgate's performance was good, although not as scintillating as either the IDS's or the Mitac's, but its combination of super upgradability, expandability, and service package usher it into the winner's circle.

We checked the systems' street prices with 4MB of RAM, hard disk, and a color VGA monitor (OverDrive chip not included): The IDS and Mitac were \$2345 and \$2521 respectively (with 200MB hard disks), and the Northgate cost \$2649 with a 120MB hard disk.

Performance addicts should note that the \$3392 AcerPower 486SX was the fastest system overall, while those who are looking for the lowest price should check out First Computer's FCS 486SX/20.

With prices and technology so volatile, some people say that *any* decision you make today will be the wrong decision six months from now. We don't agree. The only real mistake you can

make is burning your bridge to the future before you cross it. These 20-MHz 486SX PCs get you into the game for a very small buy-in, and they let you hedge your bets for the future—not just for the OverDrive processor, but for the upgrade chips of tomorrow. Now, may we interest you in a few slightly used 487SX math coprocessors?

Rex Farrance is an assistant editor and Michael Goodwin an associate editor for PC World.

For more information about all products in this article, circle reader service no. 902.



The AcerPower offers a chip-only switch from 386SX to 486SX. But watch that low RAM limit.

#### AcerPower 386SX/486SX

PROS: Chip-level upgrade from 386SX, fast Paradox performance, 2MB caching disk controller CONS: Poor expandability with tight 8MB RAM limit, have to pull the 486SX to add a doubler, tied for lowest service and support rating

We tested this PC configured with a 486SX and a 20/40-MHz OverDrive; with the latter, it came in second only to its near-twin, the AcerPower 486SX, on the *WordPerfect* benchmark. And with the help of the 2MB UltraStor IDE caching controller and 120MB Conner CP3204F hard disk, the two Acers aced the *Paradox* test too, both with and without the OverDrive.

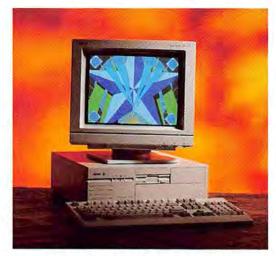
All this at a \$2192 street price is mighty tempting. But you could easily butt your head against the system's anemic 8MB RAM limit, and you get only three free slots and three to four externally accessible drive bays (depending on whether one holds a 5%-inch drive). Worst of all, the Acer comes with dealer-only service and no central tech support. The machine has an intriguing design, but as a 486SX, it's a small fish in a big pond.

#### AcerPower 486SX

PROS: Fast, chip upgradable to 33-MHz 486DX, 2MB caching controller, one-touch OverDrive upgrade, high 98MB RAM capacity CONS: Expensive, limited slots and bays, tied for lowest service and support rating in roundup.

Although it has a different motherboard, the AcerPower 486SX closely resembles its 386SX/486SX sibling. But this Acer is faster, with the best marks overall on *Paradox*, *AutoCAD*, and *WordPerfect* and a tie for the fastest *Windows* times with the OverDrive CPU installed. You also get a sophisticated CPU upgradability scheme that lets you replace the standard 20-MHz 486SX with either a 20/40-MHz doubler; a 33-MHz 486DX, or the forthcoming 33/66-MHz OverDrive.

At \$3392, however, the AcerPower 486SX is the second most expensive PC here. You get the same limitations on peripherals and drives as with the AcerPower 386SX. Service and support are also the same, including the stiff \$335 you pay for a year's on-site service. The AcerPower 486SX's high price and limited support options make it only a fair value.



The sleek AcerPower 486SX offers an easy chiponly upgrade to a 33-MHz 486DX.

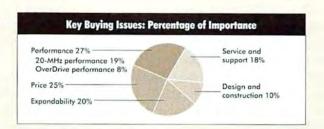
#### IDS Is Fast, Inexpensive, Expandable

Affordability and an upgrade path are essentials in 20-MHz 486SX systems. In addition, any PC must be expandable enough to accept the memory and peripherals you'll need in the future.



At 20 MHz, these affordable desktops are no slouches, but with Intel's 40-MHz OverDrive processor, they really burn. The IDS 420S and Mitac 4270E parlayed a winning combination of performance, price, and

service into Best Buys. The **Northgate Elegance ZXP's** super expandability, service, and design put it in the winners' circle as well. We also recommend the inexpensive, well-designed **Touche 4865X/20**.



Excellent ****  Good ***  Fair **  Poor *	Reader service	pertormance	price	Expandability	Service and	Design and construction	Overall
AcerPower 3865X/4865X	750	垃圾圾	*	ŵ	· ☆½	ជាជាជាក	**%
AcerPower 486SX	750	ជ់ជំជំជំ	☆%	ជំជំជំ	郊光	<b>垃圾</b>	***
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ALR BusinessVEISA 486ASX	751	立立立法	☆光	<b>垃圾</b>	垃圾圾圾	<b>始始始</b>	***
ATronics ATI-486/SX-20	752	设设设法	公公公公	<b>垃圾</b>	设设设施	<b>垃圾</b>	***%
Blackship BLK 4865X/20	753	ជជជ	公公公公	<b>ਪੈਪੈਪੈ</b>	<b>公公公公</b>	常常馆	***
Boss 4865X/20 Cache	754	<b>垃圾</b>	☆½	垃圾圾	ជាជាជាជា	立立立法	***
Club American Falcon 420 SX	755	立立立法	<b>企业</b>	ជជជ	ជជជជ	章章章	***
Dell System 486D/20	756	4444	ជជ	ជជជ	यंग्रंभंग	立立立法	***
Dell System 486P/20	756	立立立法	ជ់ជំជ	公公公	ជាជាជាជា	公公公	***
Everex Tempo M 4865X/20	757	<b>公公公</b> %	☆½	<b>公公公</b>	ជជជ	प्रथम	***
First Computer FCS 4865X/20	758	ជជជ	ជជជជ	ជជជ	<b>公公</b> 26	拉拉拉	***
Grid MFP/420s Model 120	759	<b>公公公</b> /	拉拉	章章	立立立5/2	拉拉拉	***
IDS 420S Power User Pro	760	****	***%	***	***%	***	****
Mitac 4270E	761	****	***	★★浴	***	****	***
NEC PowerMate 4865X/20e	762	ជជជ	1/2	ជាជាជាជា	ជជជ	立立立法	**1/2
Northgate Elegance ZXP	763	***	***	****	****	****	****
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Swan 4865X/20M	765	ជាជាជា	<b>垃圾</b>	垃圾垃	ជាជាជាជា	***	***
Touche 4865X/20	766	ជ់ជំជំ	<b>प्रेप्रेप्रे</b>	ជជជ	垃圾垃圾	垃圾圾圾	***
USA Flex 486SX 20	767	拉拉	拉拉拉拉	ជជជ	<b>常常常</b>	拉拉拉	***
Wang PC 441/205C	768	拉拉拉	垃圾	<b>垃圾</b>	拉拉拉拉	立立立法	***

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

1 Price ratings are based on street prices. Before the ratings are calculated, however, the street prices are adjusted to allow for bundled software and hardware over and above our standard configuration. One-quarter of the list price of the software is deducted. If the system is sold via dealers, 70 percent of the list price of the extra hardware is deducted; if the system is sold direct, 100 percent of the list price of the extra hardware is deducted. Bundled software and extra hardware for each system are noted in the Features Evaluation.

#### **ALR BusinessStation 486ASX**

PROS: Excellent support and design, very good performance, one-touch Over-Drive upgrade, CPU-card upgrade to 33-MHz 486, EISA bus CONS: High price, little room for additional boards and drives

ALR produces fine PC designs, and the sleek BusinessStation 486ASX is no exception. We tested this EISA system with ISA peripherals only, but it still proved fast, placing near the top on the *Paradox* and *Windows* tests. The doubler is easy to install, and if you really want to reach for the brass ring, you can swap in a new CPU card and upgrade to a 33-MHz 486DX. But the BusinessStation's \$3081 price is steep.

ALR's service and support policies are of the highest rank, but expansion capacity is poor. And although the system's 33MB RAM capacity is fine, its three storage bays are barely adequate, and a total of two free EISA slots is just too tight. If you can live with these limitations, this EISA PC is a good value. But for just a little more dough, the BusinessVEISA 486ASX is a better choice.



The BusinessStation 486ASX is a beautifully designed EISA system, but its slot count is limited.



The BusinessVEISA has an expandability and performance edge over the BusinessStation.

#### ALR BusinessVEISA 486ASX

PROS: Excellent support, design, and OverDrive performance; one-touch Over-Drive upgrade; CPU-card upgrade to 33-MHz 486; EISA bus CONS: High price

The compact BusinessVEISA 486ASX desktop PC shares many features with ALR's BusinessStation 486ASX, right down to the great design, 5MB of standard RAM, and a 120MB Western Digital Caviar 2120 IDE drive. As with the other EISA ALR, we tested the machine with ISA peripherals only and still saw very good overall performance. With an OverDrive chip installed, the BusinessVEISA nets a virtual tie for second on the *Windows* test.

You get ALR's terrific service and support, including a year of free on-site service and excellent toll-free tech support, even on weekends. Expandability is good, with a 49MB RAM ceiling; four EISA slots; one free 16-bit slot; and four storage bays, three of them externally accessible.

Which ALR to buy? At a street price of \$3308, this system costs only about \$200 more than the BusinessStation and delivers a better value.

#### ATronics ATI-486/SX-20

PROS: Very good price, plenty of slots and bays, removable hard drive option, good service and support CONS: Case could be sturdier, hard drive cage and 486SX processor must be removed to install OverDrive CPU, poor documentation

The compact ATI-486/SX-20 desktop has a lot to recommend it, not the least of which is a fine \$2134 street price. Performance was solid, with better-than-average 1-2-3 numbers, including a fourth-place finish with the 20-MHz 486SX CPU installed. Our test unit had an optional removable hard drive module with a 120MB Conner CP 30104 IDE disk. At just \$59 more than a fixed disk, this module is an attractive security option.

The ATI-486/SX-20 has an outstanding appetite for peripherals, with six free slots and five bays—and its 200-watt power supply should ensure that its eyes aren't bigger than its stomach. On the downside, to install the 20/40-MHz doubler, we had to completely remove the drive cage. Still, this system is a well-supported midpack performer that buyers on a budget should find worth their consideration.



If you want to lock up your data, ATronics gives you an optional removable hard disk.



one times the price.

#### The new lomega® Tape250.

Introducing the next generation in tape backup. Iomega's new 250MB tape drive, the Tape250.

It does five times as much as any other tape drive on the market—for the same price or less.

#### The only drive you need.

The Iomega Tape250 is the only drive that reads QIC and Irwin tapes: The only DC2000 drive that fits a standard 1 inch floppy bay. The only one that works with other QIC 80 tapes and software. And the

Minicartridge T	ape Drive	e Comp	parison
	Iomega Tape250	CMS Jumbo	Irwin Accil rak
QIC 80 Read & Write			
QIC 40 Read			
Irwin 80 & 40 Read	•		
Windows 3.1 & DOS softw	vare •		
Fits standard 1" bay			
QIC 80 entry price	\$299	\$350	8349

only one optimized specifically for Windows 3.1. It even includes award-winning Central Point software for both Windows and DOS.

#### The safe choice.

You can feel confident trusting your data to Iomega, the makers of Bernoulli. We've been making quality storage products for over ten years, winning more awards than any other fixed or removable drive manufacturer. Earning a 99 percent customer satisfaction rate. And we're the only computer company to win the Shingo Prize for excellence in American manufacturing.

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There's much more you should know about Iomega's new Tape250, like specific pricing and configurations. So call today for a free brochure. You'll be five times as glad you did. Makers of Bernoulli

#### FEATURES EVALUATION

### 486SX/20s: Affordable and Upgradable

These 486SX PCs offer a big helping of power at prices starting under \$2000. When you're ready, you can add an Intel OverDrive upgrade chip to any of the systems and enjoy a huge performance increase.

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Street price 3/31/921	\$2192	\$3392	\$30812	\$3308°2	\$2134 <sup>3</sup>	\$2171	\$33864	\$2881	\$3007 4
List price 3/31/921	\$3181	\$4122	\$4467 2	\$4567 2	\$2134 <sup>3</sup>	\$2171	\$3495 4	\$2881	\$3007 4
Memory cache (K)	0	256	64	64	64	0	64	256	0
Bus type (ISA, EISA)	ISA	ISA	EISA	EISA	ISA	ISA	ISA	ISA	ISA
Hard disk type/size	IDE/200MB	IDE/200MB	IDE/120MB	IDE/120MB	IDE/120MB	IDE/120MB	IDE/130MB	1DE/120MB	IDE/120MB
/average access time	/12ms	/12ms	/16ms	/16ms	/15ms	/15ms	/16ms	/16ms	/15ms
Power supply (watts)	145	145	150	150	200	250	200	200	224
pandability									
Free 32-/16-/8-bit slots	0/3/0	0/3/0	2/18/0	4/1/0	0/5/1	0/6/0	0/6/1	0/5/0	0/6/0
Accessible/internal drive bays	4/0	4/0	2/1	3/1	5/0	4/2	5/1	3/1	3/1
Largest hard disk option	245MB	245MB	535MB	1.7GB	500MB	1.7GB	1GB	1.2GB	1.4GB
CPU upgrade path									
CPU board	0	0	•	•	0	0	0	•	0
Clock-and-chip	0	•	•	•	0	0	0	0	•
ZIF socket/upgrade socket	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Weitek socket	0	•	0	0	•	•	0	0	0
Fast-RAM capacity (MB)	8	98	33	49	64	32	32	64	64
sign and construction									
Setup utility in ROM	•	•		•	•	•			•
Compact footprint or tower model	•	•	•	•	•	0	•	0	•
Front panel on/off switch	•	•		•	0	•	•	0	•
Parallel/serial/mouse ports	1/2/1	1/2/1	1/2/1	1/1/1	1/2/0	1/2/0	1/2/0	1/2/0	1/2/1
Easy-open case	0	0	0	0	0	0	0	0	0
ON THE STATE OF TH									
Warranty (months)	12	12	12	12	12	12	24	12	12
On-site service/under \$100 per year	010	•/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Turnaround policy	5 days	5 days	72 hours	72 hours	one week	48 hours	48 hours	24 hours	72 hours
Free unlimited support	0	0	•	•	Ollo Week	- 10 110013	40 110013	24 110013	72 mours
Vendor support									
Central support/toll-free	0/0	0/0	0/0	0/0	•/0	0/0	0/0	0/0	0/0
Daily support (hours)	n/a	n/a	11	11	9	9	11	11	15
Weekend support	n/a	n/a	•	•	0	0	0	0	•
Electronic BBS/fax	0/0	•/0	0/0	0/0	•/0	•/0	0/0	010	0/0
Vendor-to-dealer support	-			-1-		-1-	-1-		
Dedicated support staff required	0	0	0	0	0	no dealers	0	•	no dealers
Support staff training required	0	0	0	0	0	no dealers	0	•	no dealers
Dedicated support line for dealers	•	•	•	•	•	no dealers	0	0	no dealers
Inventory and parts requirement	0	0	0	0	•	no dealers	0	0	no dealers

<sup>&</sup>lt;sup>1</sup> Except as noted, price includes 4MB RAM, one floppy drive, hard drive as listed, VGA, color VGA monitor, mouse, Windows 3.1, and DOS 5.0.

<sup>&</sup>lt;sup>2</sup> Includes 5MB RAM.

<sup>&</sup>lt;sup>3</sup> Includes optional removable hard disk.

<sup>&</sup>lt;sup>4</sup> Includes two floppies.

<sup>&</sup>lt;sup>5</sup>Includes QA Plus.

M 4865A	FCS 4865	Mep 120 Model 120 Model 120	Ands User Proposed	A AND A	PowerWood	TAS GOODING	PBS1 4865X 20	A865KIL	A865KI F	AB6SX) F	A86SX E	PC AAT)	1905C
\$2607 <sup>4</sup>	\$3280	\$1699	\$3118	\$2345	69691	\$3782	52649°	\$2049 <sup>4</sup>	\$2445 4,6	\$2520 4.6	\$1999	\$19954,7	\$2979
\$2607 4	\$3817	\$1699	\$3118	\$2345	\$2521 \$2919	\$4417	S2649 <sup>5</sup>	\$2049 <sup>4</sup>	\$2445 4.6	\$2520 4.6	\$1999	\$19954.7	\$5420
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224	200	250	200	230	200	285	220	250	200	200	300	200	145
							-						
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2/1	5/0	6/3	3/0	3/2	3/1	3/2	3/4	3/3	3/1	3/1	4/4	5/0	2/2
500MB	535MB	200MB	440MB	3GB	1.2GB	1.4GB	1.2GB	2.5GB	400MB	400MB	1.6GB	1.2GB	637MB
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12	12	12	12	12	12	12	12	12	24	24	24	12	12
0/0	0/0	0/0	0/0	●/●	●/●	010	●/●	010	0/0	0/0	0/0	0/0	0/0
72 hours	none	48 hours	none	48 hours	one week	48 hours	5-7 days	none	none	none	24 hours	48 hours	48 hour
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●/●	0/0	0/•	•10	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/6
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<sup>&</sup>lt;sup>6</sup> Includes WealthBuilder, Quicken for Windows, Microsoft Works for Windows.

<sup>&</sup>lt;sup>7</sup> Includes PFS: WindowWorks.

<sup>&</sup>lt;sup>8</sup>Proprietary slot; takes ALR peripherals only.

#### Blackship BLK 486SX/20

\*\* PROS: Excellent service and support, lots of storage bays, very good price, onetouch OverDrive upgrade CONS: Poor documentation

We reviewed a Blackship with the same name in March. But while today's BLK 486SX/20 looks the same, it's now built around an AMI Super Voyager motherboard, which gives you an upgrade socket for one-touch Over-Drive support. The \$2171 price is very good, and you get six free slots and six drive bays, four of which are externally accessible.

Blackship's track record should allay any fears you might have about buying from a small company. This vendor consistently receives high marks for its reliable service and support. The BLK 486SX/20's excellent rating derives partly from a year of free on-site service and toll-free tech support provided by staff who are patient and helpful. Blackship even pastes its toll-free tech support number onto the rear of the case. Like most Blackship products we've reviewed recently, the BLK 486SX/20 represents a solid, no-nonsense value.



With the big BLK 486SX/20 system, you get lots of room for peripherals.



Boss puts buyers at ease with a terrific two-year warranty backed by two years' on-site service.

#### Boss 486SX/20 Cache



PROS: Lots of slots and bays, excellent service and support includes two-year warranty, one-touch doubler upgrade CONS: Expensive

The Boss 486SX/20 Cache is a nice little minitower that doesn't take much desk space yet offers plenty of capacity for peripherals. You get seven free slots, two floppy drives, six bays (all but one externally accessible), and a 200-watt power supply. However, if you fill the lowest 31/2-inch drive bay, one of the slots won't be able to accept a full-length card. This system has plenty of speed, with very good Windows performance and high marks on the dBASE and 1-2-3 benchmarks both with and without a doubler. To help you keep dust out, Boss designed in a plastic door to cover the drives, on/off switch, and turbo and reset switches.

Boss tallied the most points for service and support with a fine package including an outstanding two-year warranty, free on-site service, and a 48-hour service turnaround policy. This PC is expensive, however: Its \$3386 price is third highest in this review.

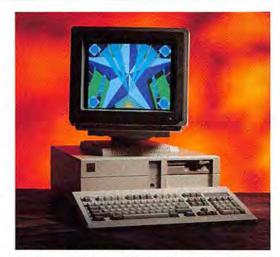
#### Club American Falcon 420 SX



PROS: Easily upgradable, excellent OverDrive performance, excellent service PROS: Easily upgradable, excellent Overbring and support with a 24-hour turnaround policy CONS: Somewhat expensive

At \$2881, the Club American Falcon 420 SX is not cheap. But then again, not every 20-MHz 486SX PC gives you an upgrade path to a 50-MHz 486DX2. A single system board accepts CPU modules from 25-MHz 386DX to 50-MHz 486DX2. The 20-MHz 486SX module has an upgrade socket for a one-step upgrade to the OverDrive CPU. As equipped, the Club was quite fast, with fine dBASE results and excellent OverDrive marks, including a tie for first place on AutoCAD.

The first things you see when you open the sturdy, full-size desktop case are a motherboard map and a switch guide, both conveniently mounted on the 200-watt power supply. There are five free slots and four drive bays, three of which are externally accessible. You also get fourstar service and support. This system is a very good value: The extra dollars buy you upgrade flexibility you can't find in most machines.



Thinking of the future? The Club American Falcon 420 SX's CPU-card design protects your options.

#### **IDS, Mitac Win Price-Performance Honors**

This chart shows how 23 486SX/20 systems compare on price and performance—with the OverDrive processor installed. The best deals will be found toward the lower left-hand corner; the worst deals congregate toward the upper right. Performance numbers are based on normalized results of our full 40-MHz test suite and are reported as total number of seconds. Prices are based on an average of each system's street prices plus \$549 for the 20/40-MHz OverDrive processor.



#### Dell System 486D/20

PROS: Flexible CPU upgrades, fine support CONS: On the expensive side, must pull 486SX to add a doubler

The Dell System 486D/20 has one of the most flexible upgrade schemes you can find. You need only move a jumper to change the speed of your system clock. Take your choice: 16 MHz, 20 MHz, 25 MHz, or 33 MHz. Dell packs two floppy drives, a 120MB Maxtor 7120AT hard disk, four drive bays, six free slots, and a big 224-watt power supply into the good-looking compact box. The \$3007 price reflects Dell's midrange to highend position in the direct-sales market.

For many buyers, Dell's enduring record for support and on-site service has earned the company an extra level of trust. You get a year of free on-site repairs; a 24-hour on-site repair policy; and 15 hours of daily, toll-free tech support. The Dell System 486D/20 may be priced beyond reach of the tightest budgets, but the flexible upgrade options ensure that if you buy it, you won't be facing instant obsolescence.



Dell lets you change your speed setting to support 486 CPUs from 16 MHz to 33 MHz.

# Paper



Introducing the best way to send, store, and retrieve your documents. Anytime. Anywhere. From any fax.

You may not believe this.

But now you can send, store and retrieve documents from your hard disk using a simple piece of paper instead of a keyboard. And it's all possible because of an amazing software product called PaperWorks."

# Retrieve.



To use PaperWorks, you don't have to touch a keyboard. Or click a mouse. Or even be near your computer.

You just check boxes and scratch notes on a special Smart Paper™ form. Fax that form to your PC. And PaperWorks follows your instructions.

Let's say that you're on a business trip in Seattle. Your PC is in your office in New York. And you need a document that's stored on your PC's hard disk.

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To get the document you need with PaperWorks, you simply pull a specially encoded PaperWorks Smart Paper form from your briefcase. Check a few boxes to indicate which document you want and the fax number where you are. Fax that form to your PC. And PaperWorks finds the document you want and faxes it back to you. And that's just a sample of what it can do.



## Send.

Let's say you need to distribute a document to a dozen or so people. Some of them work in your office. Others are scattered around the country. Maybe you're in the office. Or on the road.

No problem.

Once again, you just check a few boxes on a Smart Paper form. You can have one box per person as well as a box

that represents a distribution list that you want to receive the document. Fax the form and document to your PC and you're done.

You take off to your next appointment. PaperWorks looks up the fax numbers and makes the calls to distribute everything for you. Automatically,

PaperWorks remembers instructions as well. For instance, you can store a price list now. And PaperWorks will fax it to your customers at night when rates are lower.

You can also give your customers their own Smart Paper Retrieve forms. And let them get just the documents they need, when and where they need them.

#### **PaperWorks**

"This is the start of a

very big idea."

-Paul Saffo, as quoted in The New York Times

The best way to send, store, and retrieve your documents. Anytime, Anywhere, From any fax.

# Store.

Or let's say you're away from the office. And you need to store a document on your PC, such as a contract or sales results.

Fax that document to your PC. And PaperWorks will store it in any hard disk category you indicate on your Smart Paper Store form.

PaperWorks software lets your fax card work for you no matter where in the world you are. If you're in Tokyo, no need to wait until the business day begins in New York. You can send memos, file reports and give instructions without worrying about time zones or people's schedules. You can even scratch handwritten notes on Smart Paper Send forms and have PaperWorks distribute

them for you.

With PaperWorks. vou're never out of touch and always in control.

What do you need to use

PaperWorks? A 386 PC with 4 MB of memory and a hard disk with 20 MB free. Windows 3.0 or 3.1. One of the fax cards listed below. And something to print your Smart Paper forms on. Even an ordinary dot matrix printer or fax machine will do.

But why not try it for yourself by ordering a copy, risk free? If you're not satisfied within 30 days, we'll refund your money. To order and for details about our special introductory offer, call 1-800-892-4936 now. Or fax your business card to 1-800-HAVEFAX.

And see if PaperWorks doesn't make you think of a piece of paper as a quarter-ounce pen computer.





#### REVIEW 20-MHZ 4865X SYSTEMS

#### Dell System 486P/20

PROS: Flexible CPU upgrades, compact, highly integrated, fine support CONS: Not much room for boards and drives, must pull 486SX to add doubler

The System 486P/20 is a nicely integrated subcompact that would fit in best as a LAN workstation. The \$2607 price is less than its big sibling 486D/20's, but you get just three expansion slots and three drive bays, and to install or replace the hard drive, you have to pull the power supply. Dell integrates the VGA, I/O, and IDE connector onto the tiny mother-board. If you need both standard floppy formats, you can ease the bay shortage by ordering a Canon dual drive for the one half-height 5%-inch bay. As with the 486D/20, you get a 224-watt power supply, two floppy drives, and the jumpered clock.

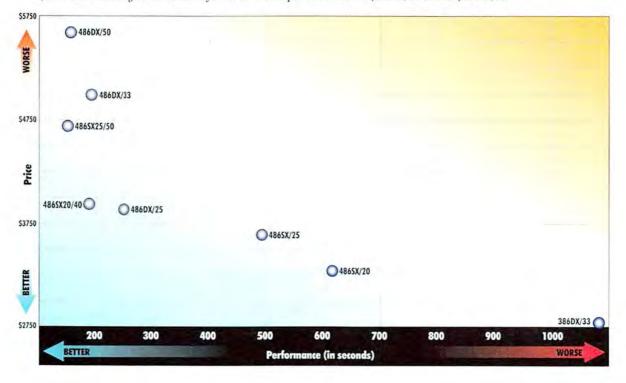
Trust is hard won, and Dell has earned its market position. So if a box with a slim-line design—backed by a company with a great reputation—means more to you than a cut-rate price and big expansion capabilities, the System 486P/20 could be the workstation for you.



With limited room for peripherals, the Dell System 486P/20 would make a great network workstation.

#### 20-MHz OverDrive Chip Beats 486DX/33

Losing track of the new processors and how they perform? To help sort things out, we took a modular ALR PowerPro system and set it up with eight different processors, including two of Intel's new OverDrive chips. Then we ran a CPU-intensive 1-2-3 benchmark and plotted the results against the list prices of the systems. In the case of the "clock-doubled" 486SX systems, we added the price of the original chip and the OverDrive chip. (We didn't add the price of any math coprocessors.) The table shows the results: On this benchmark, and with ALR's list prices, a 486SX/20 running at 40 MHz is faster and cheaper than a 486DX/33. A clock-doubled 486SX/25 running at 50 MHz is faster and cheaper than both a 486DX/33 and a 486DX/50.



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# PACIFIC DATA

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#### Everex Tempo M 486SX/20

PROS: Fast 1-2-3, dBASE, and Windows performance, lots of slots, CPU-card design, speaker switch CONS: Expensive, support line not toll-free, have to pull the 486SX to install a doubler

The modular Everex Tempo M 486SX/20 starts with a 20-MHz 486SX CPU. When you need more processing punch, you can get a 20/40-MHz doubler, or you can configure the system with either a 33-MHz 486DX module or a 50-MHz PX2 module. Consistent with its pedigree, this 486SX is quick. It ran near the front of the pack in the 1-2-3 benchmark both with and without the OverDrive; it also got great grades on Windows and dBASE.

The Everex is a full-size desktop with five front-accessible drive bays, a 130MB Seagate ST 3144A hard disk, and seven free expansion slots. Everex service and support are dependable, but you have to pay the toll to talk to a technician. Although its \$3280 price is high, the Tempo is fast, beautifully engineered, and ripe with upgrade potential.



With the Tempo M's modular design, moving up to a faster CPU is a plug-and-play affair.

First's FCS 486SX/20 gives you an impressive nine storage bays, and its price is fantastic.

#### First Computer FCS 486SX/20

PROS: Best price and largest drive capacity in the roundup CONS: No on-site service, have to pull the 486SX to add a doubler, design has rough edges

The price is no misprint: You can buy a loaded First Computer FCS 486SX/20 for an incredible \$1699! This roomy tower begs for applications that require multiple drives. First gives you nine bays, six of them accessible from the outside. Inside you'll find six free slots, a 120MB Quantum ProDrive LPS, and a 250-watt power supply. But getting the cover off is next to impossible, and the CPU socket is hard to get to as well: We had to pull the 3½-inch drive cage to install the OverDrive.

The First performed reasonably well overall, but even with its fast Orchid ProDesigner II SVGA card, it was slow on *Windows*. The service agreement includes a 48-hour repair turnaround policy. Unfortunately, there's no on-site service option, and you pay for tech calls. If shipping your PC back to the vendor for repairs doesn't bother you or you have your own tech resources, this lowball system will look awfully tempting.

#### Grid MFP/420s Model 120



**PROS:** Fast, good service and support, compact footprint **CONS:** Pricey, only three free slots

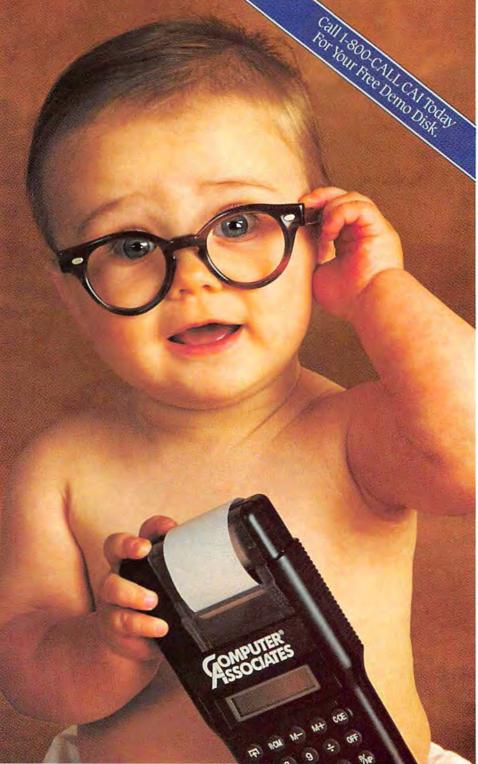
This fast, compact unit is ideal for LAN workstation chores. The MFP/420s comes with a 16ms, 120MB Quantum ProDrive LPS drive, and its performance is fairly spiffy. At 20 MHz, this system runs in fifth place. With an OverDrive chip installed it does almost as well, including a fourth-place finish on *WordPerfect*. However, at \$3118, this speedster is not cheap.

Expandability is minimal—you get room for only three drives and three boards—but if you're hooked to a LAN and can count on server storage, that count is probably adequate. Service and support are decent: On-site service is available for \$100 a year, tech support is toll free, and we got accurate answers—though on occasion we found it hard to get through. The bottom line? This is a fleet performer, but you can find faster, more expandable systems that cost a lot less.



The MFP/420s is not cheap, but you get impressive performance at both speeds.

# Some People Are Born Accountants. For The Rest Of Us, There's New ACCPAC Simply Accounting For Windows.

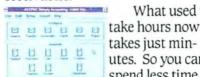


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Circle 29 on reader service card

#### PC WORLD TEST REPORT

## 20-MHz 486SXs: Quick Today—Quicker Tomorrow

Without the OverDrive upgrade, the Mitac, Acer 486SX, and IDS turn in the best scores.

OverDrive (20/40 MHz) 4865X (20MHz)

-2.		

Mitac	139	
IDS BIST	153	574
AcerPower 486SX	154	576
Boss	156	577
ATronics	159	577
Everex	155	581
Club American	160	581
Grid	158	582
ALR BusinessStation	163	583
ALR BusinessVEISA	163	583
Dell System 486D/20	163	583
Dell System 486P/20	163	584
Soft-Hard	168	586
NEC	163	587
Blackship	166	587
First Computer	168	587
Northgate PEST	170	587
Swan 486SX/20M	171	588
Touche	173	589
Swan 4865X/20	172	592
USA Flex	180	603
Wang	142	604
AcerPower 386SX/486SX	176	606

Methodology We tested all the computers with 4MB RAM except the two ALRs, which had 5MB. The systems' hard disk size ranged from 120MB to 240MB. We used the vendor's version of DOS 5.0 or MS-DOS 5.0. With the native 20-MHz 486SX processors installed, we ran every test in our suite except AutoCAD, which will not run on a system without a coprocessor. Then we installed 20/40-MHz OverDrive clock doublers and ran all six tests, including AutoCAD. Test results are

#### Windows 3.0

AcerPower 486SX  IDS  Boss  Everex  ALR BusinessStation	92 55 93 55 95 68 96 59 97
Boss Everex	55 68 95 68 96 59
Everex	68 96 59
	59
ALR BusinessStation	
	24
ALR BusinessVEISA	97
Soft-Hard	74
Dell System 486P/20	101
Grid	101
Dell System 486D/20	103
Club American	105
ATronics	105 72
Swan 486SX/20	74
NEC	108
Swan 4865X/20M	108
AcerPower 386SX/486SX	75 110
Wang	65
Touche	77
Northgate ****	74
Blackship	114 80
First Computer	115 79
USA Flex	98

presented in order of fastest performance using the 20-MHz 486SX processor, with the exception of AutoCAD, where only OverDrive results were available.

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

#### WordPerfect 5.1

AcerPower 486SX	33	45
cerPower 386SX/486SX	36	47
Aitoc BEST	38	47
DS SST	38	49
rid	39	50
LR BusinessVEISA	40	52
Dell System 486P/20	4	52
verex	4	52
Dell System 486D/20	4	52
Swan 486SX/20	THE THE	52 45
Boss	4	53
lub American	4	53
Soft-Hard	4	53
Tronics	4	54
wan 486SX/20M	4	54
NEC		54
Northgate CST		54
First Computer		55
Blackship		55 46
ouche		55 48
Nang	NAME OF THE PERSON NAME OF THE P	56
ALR BusinessStation	1 100	49
JSA Flex	14	53

Advisory Services of Seattle to run a number of financial forecasts.

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 Lotus's Ami Pro along with a 50K document that contains a 500K TIFF image. Finally, the macro launches Micrografx

Mitac	BUY	397 295
IDS	BEST	412
AcerPower 4	86SX	424 291
Boss	1 1 1 1	298
Everex		302
Soft-Hard		301
Club America	on I	303
ALR Business	EVEISA	454 317
Grid		455 344
ATronics		342
ALR Business	Station	338 338
Dell System 486D/20		475 358
Dell System 486P/20		476 358
NEC		483 354
Blackship		493 374
Northgate	BEST	495 354
Swan 486SX	/20M	369
Touche		503 394
First Comput	er	504 366
Swan 486SX	/20	516 420
AcerPower 3	86SX/486SX	544 442
USA Flex		564 440
Wang		575 401

Designer, opens a drawing, displays it on screen, and exits to DOS.

#### WordPerfect 5.1

We reformat three text files that vary in size from 5K to 55K. The files contain some boldface and underlining; one document includes a TIFF file.

#### dBASE IV 1.1

With the caching feature enabled, we complete an

#### Paradox 3.5

AcerPower 486SX	318 215
AcerPower 386SX/486SX	429 321
IDS PLST	510 390
Mitac BEST	558 459
ALR BusinessStation	559 438
ALR BusinessVEISA	560 437
Club American	563 436
Grid	583 468
Swan 486SX/20	620 518
Boss	629 504
Touche	630 513
Dell System 486P/20	639 526
Northgate BEST	640 512
Dell System 486D/20	640 528
First Computer	646 514
Swan 486SX/20M	646 519
Everex	656 532
Blackship	662 548
ATronics	664 563
Soft-Hard	667 544
USA Flex	677 554
NEC	680 570
Wang	72° 562

#### unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records. Paradox 3.5

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. PCs with caching disk controllers tend to have a dramatic edge

#### AutoCAD 10

AcerPower 486SX	129
Club American	129
IDS PUST	133
AcerPower 386SX/486SX	137
Grid	143
ALR BusinessVEISA	146
Mitac BEST	158
Northgate TUY	161
Soft-Hard	164
First Computer	166
ALR BusinessStation	167
Dell System 486D/20	167
Dell System 486P/20	167
Swan 486SX/20M	171
Swan 486SX/20	172
Blackship	176
Touche	176
Boss	177
Everex	178
USA Flex	185
ATronics	187
NEC	194
Wang	198

on this disk-intensive test. You can install a similar controller on any PC and reap a similar benefit.

AutoCAD 10
We load a 500K drawing. We then mask layers, change zooms, and remove the hidden lines.

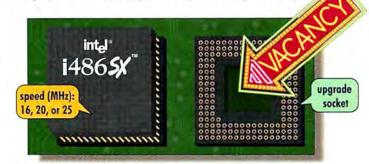
Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

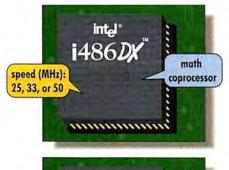


#### The 486 Family: Fast Company

The 486DX CPU processes at the speed of the system clock, whereas the 486DX2—the OEM version of the OverDrive chip—gives an average 70 percent performance boost by doubling internal processing

speed. Many 486SX systems include a vacant upgrade socket; when you fill it with either a 487SX CPU processing at the clock rate or a double-speed OverDrive chip, you put out the lights on the coprocessorless 486SX CPU. As a result, many manufacturers are now using a universal socket that can accept any of these processors.











#### **IDS 420S Power User Pro**

\*\*

**PROS:** Fast, lots of room for boards and drives, 200MB drive **CONS:** On-site service costs \$250 a year

With a four-star performance rating and a tempting \$2345 price, IDS's Power User Pro is a fine overall value. It is the second fastest system we tested, thanks in part to its 64K external memory cache and a big (200MB) 15ms Western Digital Piranah drive. In 20-MHz mode this system took second place on dBASE and 1-2-3. Drop in Intel's OverDrive chip, and you're looking at a first-place finish on dBASE and Windows plus second or third place on everything else.

You get seven free slots and five drive bays, and an easy-to-reach upgrade socket makes installing the OverDrive painless. Service and



support are mixed: The company guarantees a 48-hour turnaround on repairs, but you pay toll charges on tech support calls, and on-site service costs \$250 a year. Still, PCs like this are what the Best Buy award are all about.



Fast, expandable, and affordable, IDS's Best Buy Power User Pro includes good service and support.

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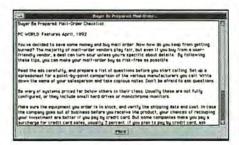
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#### Mitac 4270E

PROS: Fast, excellent service and support, 200MB drive, compact CONS: CPU socket hard to access

Mitac's 4270E is aimed right at the CAD/CAM and desktop publishing markets—and that means speed. This EISA machine took first place overall at 20 MHz and third place overall at 40 MHz. It comes with Conner's 200MB 3204F drive, with 12ms average access time, so you'd expect it to be fast on disk-intensive applications. In fact, at 20 MHz it took top spot on dBASE and fourth place on Paradox; at 40 MHz it placed third on dBASE. And thanks to its direct-mapped write-back 64K cache it's no slouch on processor-intensive applications either; it won the Windows contest at 20 MHz and breezed into top place on 1-2-3 at both speeds.



The \$2521 price is middle of the road, and service and support are tops. On-site service is free, tech support has an 800 number, and answers were prompt and accurate. The speedster with the oversize disk is worth every penny.



If you have a processing-intensive job to do, Mitac's Best Buy 4270E fits your PC profile.

### Best of the Rest: 486SX/20s Coming Out of the Woodwork

486SX/20s may soon be replaced by 486SX/25s. But right now there are more than can fit in a review.

lodel	List price 1	Hard disk size	Fast- RAM capacity	Free 32-bit slots	Free 16-bit slots	Free 8-bit slots	Drive bays	Compact footprint	Warranty (months)	Available	Less than \$100	Free
ALR Flyer 32DT 45X/20	\$2694	120MB	36MB	0	4	0	3	N	12	Υ	Υ	N
AMKLY Station 486SX/20	\$3110	120MB	52MB	0	2	0	2	Υ	12	Υ	Y	Y
Aquiline WinJammer SX	\$1595	120MB	64MB	0	5	0	6	Y 2	12	Y	N	N
Ares 486/20-SX Sonic	\$2475	120MB	64MB	1	5	0	7	N	24	Υ	Y	Υ
Axik Ace Cache 486SX-20 System	\$1799	120MB	32MB	1	5	0	8	Y 2	13	N	n/a	n/a
Bell 420 SXT	\$2048	120MB	64MB	1	3	2	5	3	12	Υ	Υ	Υ
Compudyne 486SX/20	\$1199	105MB	64MB	1	5	2	3	Y	12	Υ	Y	Y
CUBE 420ATX Upgradable System	\$2890	120MB	64MB	0	5	1	5	Υ	12	Υ	Y	N
Dell PowerLine 420DE	\$2948	120MB	96MB	6	0	0	5	Υ	12	Υ	Υ	Υ
DFI Model 420VSX	\$2699	130MB	64MB	1	4	1	6	Υ	12	Y	Υ	Y
Eltech Model 4200	\$1499	120MB	64MB	0	5	1	5	N	12	Υ	Υ	4
HD 486SX/20 System	\$1745	120MB	64MB	0	7	1	6	Y 2	12	N	n/a	n/a

#### WHERE TO BUY

800/444-4257, 714/581-6770

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**AMKLY Systems** 800/367-2655, 714/727-0788 Reader service no. 770

Aquiline 800/370-3322, 802/442-8661 (fax) Reader service no. 771

Ares Microdevelopment 800/322-3200, 313/473-4450 (fax) Reader service no. 772

**Axik Computer** 800/234-2945, 408/735-1234 Reader service no. 773 **Bell Computers** 800/542-2355, 818/909-3511 (fax) Reader service no. 774

Compudyne 800/932-2667, 214/702-0055 (fax) Reader service no. 776

**CUBE Computer** 800/522-2823, 914/592-8282 Reader service no. 777

**Dell Computer** 800/289-3355, 512/338-4400 Reader service no. 778

916/568-1234 Reader service no. 779 Eltech Research 800/358-8330, 510/438-0663 (fax) Reader service no. 780

**HD Computers** 800/347-0493, 408/720-1967 (fax) Reader service no. 782

Hewlett-Packard Co. 800/752-0900 Reader service no. 783

#### **NEC PowerMate 486SX/20e Express Workstation**

PROS: EISA, dual fans, three ZiF sockets, lots of slots and bays, upgrade path CONS: Expensive

NEC's PowerMate 486SX/20e Express Workstation boasts three ZIF sockets: one each for the 486SX, the OverDrive chip, and a Weitek coprocessor. Expandability is stupendous too, and twin fans—a small one at rear of the power supply, and a big one to draw air over the slotskeep things cool. So why no Best Buy? The PowerMate has the highest street price in the roundup: \$3782.

Despite a Conner 120MB 30104 drive (with 15ms average access time), performance fell in the bottom third. But you get five free EISA slots and five bays to add boards and drives, and the CPU is on a processor board for easy upgrade. The power switch and the keyboard and mouse ports are all located on the front panel where they're easy to reach. But for all its swell features, the PowerMate's price limits its appeal.



Three ZIF sockets make upgrading the PowerMate 4865X/20e Express Workstation a snap.

Model						16-bit 8-bit Drive Compact War		ON-SITE SERVICE				
	List Hard price 1 size	Hard disk	Fast- RAM capacity	M 32-bit	Free 16-bit slots				Warranty (months)	Available	Less than \$100	Free
HP Vectra 486s/20 PC Model 120	\$2899	120MB	64MB	5	0	0	4	N	12	Υ	Y	Υ
IDS 420ST	\$2445	200MB	32MB	0	7	1	5	A 5	12	Υ	N	N
Key 486SX-20	\$1995	125MB	64MB	1	5	0	6	Y 2	18	Y	Υ	N
Leading Edge D4/SX20	\$2819	130MB	32MB	0	6	0	4	Υ	5	Υ	Υ	Υ
Packard Bell Executive 486SX	6	107MB	32MB	0	4	0	4	N	12	Υ	Υ	Υ
Polywell Poly 486-20SX	\$1750	120MB	32MB	0	8	0	8	Y 2	12	Υ	Υ	N
Positive PC 2000	\$2399 7	200MB	16MB	0	6	0	4	N	12	Υ	N	ү в
Reply Model 32 486SX/20	\$4880	200MB	16MB	5	0	0	5	Υ	12	Υ	Υ	N
Silicon Valley SVC 486SX20	\$1525	111MB	32MB	0	5	2	5	N	12	Y	Υ	N
Soft-Hard PBS2 486SX/20	\$1749	130MB	32MB	1	7	0	5	γ2	12	Y	Υ	N
Tri-Star Tri-Win 486SX/20	\$1695	130MB	32MB	1	3	2	4	Υ	24	Y	Y	Y 9
Twinhead Superset 600/420C	\$1899	120MB	32MB	0	4	0	4	Y	12	Y	Υ	Y
Wyse Decision 486si	\$2448	120MB	64MB	0	5	1	5	N	12	Υ	Y	N

<sup>&</sup>lt;sup>1</sup> With 4MB RAM, 100MB to 210MB hard disk, 1.2MB or 1.44MB floppy drive, VGA and VGA color monitor, keyboard, mouse, DOS 5.0, and Windows.

For more information about all products in this table, circle reader service no. 903.

International Data Systems

714/530-8677 Reader service no. 784

Keydata Int'l 800/486-4800, 908/756-7359 (fax) Reader service no. 785

**Leading Edge Products** 800/874-3340,

508/836-4504 (fax) Reader service no. 786

Packard Bell Electronics 818/886-9998 Reader service no. 787

**Polywell Computers** 800/999-1278,

415/583-7222 Reader service no. 788 Positive Corp.

800/252-6345, 805/378-7823 (fax) Reader service no. 789

Reply Corp. 800/955-5295, 408/942-4897 (fax) Reader service no. 790

Silicon Valley Computer 415/967-1100,

415/967-0770 (fax) Reader service no. 791

**Soft-Hard Systems** 800/899-8269, 818/999-9683 (fax) Reader service no. 792

Tri-Star Computer Corp. 800/800-7400 Reader service no. 793

Twinhead Corp. 800/545-8946, 408/945-1080 (fax)

Reader service no. 794 Wyse Technology

800/438-9973, 408/473-1200 Reader service no. 795

YGA and YGA coor monate, separate modes are tower.
Tower.
Two models available; desktop does not have compact footprint but tower does.
Free for first six months, under \$100 for the next six months.
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Free for first 30 days, more than \$100 for next [] months.
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#### Northgate Elegance ZXP

PROS: Switchable clock, ZIF socket
CONS: Not a top performer

While you can find faster systems, Northgate's Elegance ZXP boasts good performance. And this PC is superbly upgradable. The 486SX chip is mounted in a ZIF socket, and you can set the system clock for any speed from 16 to 33 MHz. That means when an OverDrive/33 chip is available from Intel, you could be looking at a warp-speed 66-MHz monster.

Naturally, given the tower case, slot and bay capacities are excellent. (The Elegance is also available as a desktop.) The ZXP we tested came with an Orchid video board and a 16ms, 120MB Quantum ProDrive LPS hard disk. And its \$2649 price bundles a free copy of DiagSoft's QAPlus.



Service and support include free on-site service, oneweek turnaround, and toll-free tech support 24 hours a day, seven days a week. We recommend the upgradable Elegance ZXP without reservation.



A combination of reasonable price and outstanding upgrade features makes the ZXP a Best Buy.

The PowerBox PBS1 4865X/20 boasts a great price and a keyboard with a built-in calculator.

#### Soft-Hard PowerBox PBS1 486SX/20

PROS: Inexpensive, two floppies, Focus 5001 keyboard CONS: No on-site service

Soft-Hard's PBS1 tower costs only \$2049, but you still get two floppies and a great Focus 5001 keyboard with built-in calculator and two function key layouts—a set of left-hand keys and another set across the top. Performance falls in the middle of the pack at both 20 and 40 MHz, despite a 64K cache that's upgradable to 256K. The PBS1 comes with a 15ms, 120MB Maxtor 7120AT drive and a Diamond Speedstar SVGA video board with 1MB of video RAM.

Expandability is solid, with seven free slots, six bays (three accessible from the outside), and a 2.5GB drive option. If you have to call long distance for tech support, a toll-free number will save you dough—and the number is staffed on weekends too. But on-site service is unavailable at any price, and there's no turnaround guarantee. If that doesn't faze you, this low-priced, expandable system is an extremely tempting value.

#### Swan 486SX/20

PROS: Nice price, two floppies, fine service and support

Swan's 486SX/20 is one of the sweetest packages here. For only \$2445 you get two floppy drives and a bundle of software that includes *Wealth-Builder, Quicken for Windows*, and *Microsoft Works for Windows*. The system we looked at included a 16ms, 120MB Quantum ProDrive—but while the 486SX/20 is designed to accept up to 256K of cache memory, no cache was installed in our test unit. Perhaps that's why it ran only midpack at 20 MHz and toward the bottom at 40 MHz.

Board and drive capacities are good: You end up with six free slots and four bays. The system has a two-year warranty and free on-site service, and the toll-free tech support line works weekends. When we called, the response was fast and accurate. Busy people will appreciate the option of using Swan's BBS or fax machine to get help with technical problems. If you can live without top performance, this system has a lot to offer.



Low price is a big plus for Swan's 4865X/20—and that \$2445 includes a generous software bundle.

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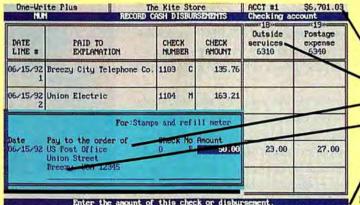
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#### Swan 486SX/20M

\*\*

PROS: Two floppies, CPU board, fine service and support

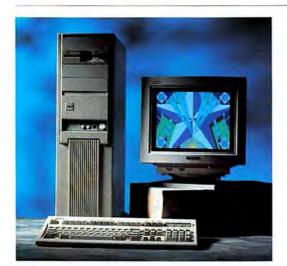
CONS: Below-average performance

Swan's modular 486SX/20M is similar to its nonmodular 486SX/20—including being a solid value. There are only three significant differences between the systems: This modular unit is based on a CPU board, which means you get a broader upgrade path; it has five free slots—as opposed to the nonmodular system's six; and it costs \$2520, \$75 more than its nonmodular sibling.

A 128K cache was installed in the modular unit, but it seemed to make little difference: While the M ran a bit faster than the non-M on some tests, it ran a bit slower on others. Expandability is not quite as good as with the non-M: Not only are you down a slot to begin with, but one of the slots is limited to a half-length board. Otherwise the systems are identical, and despite the slightly higher price and tighter slot count, we think the CPU board upgrade makes the M the Swan to choose.



Swan's economy-priced modular PC, the 4865X/20M, offers an easy upgrade path.



If you're in the market for a tower at a painless price, Touche's 486SX/20 could be your dream machine.

#### Touche 486SX/20

\*\*

PROS: Inexpensive, two fans, cables labeled

CONS: Not a top performer

Touche's 486SX/20 tower is engineered for expandability: eight bays, seven free slots, and a hefty 300-watt power supply. The low-priced (\$1999) system we looked at came with an oversized 240MB hard disk: Quantum's 15ms LPS 240. A 64K cache was installed as well, but performance isn't dazzling. At 20 MHz, Touche ran in the lowest third of the pack and close to the bottom on 1-2-3 and WordPerfect. With the Over-Drive installed, its overall performance slipped to second slowest.

All the cables are neatly dressed with ceramic rings, and wires are clearly labeled (hard disk power, speaker, reset switch, and so on). Service and support are fine: The warranty runs two years, there's a 24-hour turnaround guarantee, on-site service costs only \$29 per year, and tech support answers were fast and accurate. Despite its unremarkable performance, this superbly designed system is a real winner.

#### **USA Flex 486SX 20**

\*\*

\* \* PROS: Inexpensive, two floppies standard, compact case

CONS: Slow, hard to access processor socket

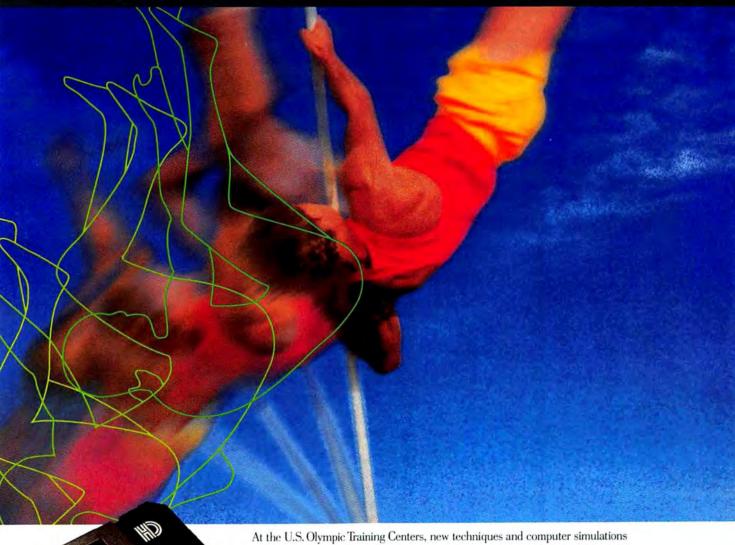
USA Flex's 486SX 20 is *really* inexpensive: It costs only \$1995, and that includes two floppies, a copy of *PFS:WindowWorks*, and a Western Digital Caviar 2120 120MB drive with 16ms average access time. But performance junkies better think twice. Despite a 64K write-back cache, this is the slowest unit in the roundup.

The system houses six free slots, and all five bays are externally accessible. Unfortunately, the cramped quarters make for a bit of an upgrade problem: You can't install the OverDrive chip unless you pull the 3½-inch drive bay that's blocking the 486SX socket. On-site service is free, and the toll-free tech support line works 24 hours day, seven days a week. But it wasn't always easy to get through, and the answers weren't always helpful. Adding everything up, the price is nice, but smart shoppers will note that the First, which is a good bit faster, can be had for \$296 less.



The \$1995 price on USA Flex's 486SX 20 is great, but the test scores may make you think twice.





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Approach

#### Wang PC 441/20SC

PROS: Compact, great service and support CONS: Expensive, poor expandability

At \$2979, Wang's entry in the 486SX sweepstakes is fairly pricey, and it's one of the pokier systems here. It was the second slowest 20-MHz system tested and, perhaps due to the 16ms, 130MB Seagate ST3144A drive, it finished last on the disk-intensive Paradox benchmark. It did somewhat better at 40 MHz-including an impressive second-place finish on 1-2-3. Improvements weren't nearly as dramatic on the other tests.

The mouse and keyboard ports are conveniently located near the front of the chassis, which can save you a lot of frustration with tangled cables. And the system is amply equipped with four free slots. On-site service is available (for \$28 per month), 48-hour turnaround is guaranteed, and the toll-free tech line is available 19 hours a day. All our questions were answered accurately and swiftly. This is a solid system, but you can get a faster, more expandable PC for a lot less money.



Wang's compact PC 441/20SC has convenient mouse and keyboard ports to avoid tangled cables.

#### WHERE TO BUY

#### AcerPower 386SX AcerPower 486SX

Acer America Corp. 2641 Orchard Pkwy. San Jose, CA 95134 800/538-1542, 408/432-6200 Reader service no. 750

#### **ALR BusinessStation** 486ASX **ALR BusinessVEISA** 486ASX

Advanced Logic Research, Inc. 9401 Jeronimo Irvine, CA 92718 800/444-4257, 714/581-6770 Reader service no. 751

#### ATI-486/SX-20

ATronics Int'l Inc. 45635 Northport Loop E Fremont, CA 94538 800/488-7776, 510/656-8400, 510/656-8560 (fox) Reader service no. 752

#### Blackship BLK 4865X/20

Blackship Computer Systems, Inc. 2031 O'Toole Ave. San Jose, CA 95131 800/531-7447,

408/432-7500 Reader service no. 753

#### Boss 486SX/20 Cache

Boss Technology, Inc. 2546 N.E. Expressway Atlanta, GA 30345 800/628-1787, 404/636-2126

#### Reader service no. 754

#### Club American Falcon 420 SX

Club American Computers, Inc. 3401 W. Warren Ave. Fremont CA 94539 800/524-2582, 510/683-6688 Reader service no. 755

#### Dell System 486D/20

Dell System 486P/20 Dell Computer Corp. 9505 Arboretum Blvd. Austin, TX 78759-7299 800/289-3355, 512/338-4400 Reader service no. 756

#### **Everex Tempo M** 486SX/20

Everex Systems, Inc. 48431 Milmont Dr. Fremont, CA 94538 800/821-0806, 510/498-1111 Reader service no. 757

#### FCS 486SX/20

First Computer Systems, 6000 Live Oak Pkwy. #107 Norcross, GA 30093 800/325-1911, 404/441-1911 Reader service no. 758

#### Grid MFP/420s Model 120

Grid Systems Corp. 47211 Lakeview Blvd. Fremont, CA 94537 800/222-4743, 510/656-4700 Reader service no. 759

#### IDS 420S Power User Pro

Int'l Data Systems 12800 Garden Grove Blvd., Bldg. E Garden Grove, CA 92643 714/530-8677. 714/530-0815 (fax) Reader service no. 760

#### Mitac 4270E

American Mitac Corp. 410 E. Plumeria Dr. San Jose, CA 95134 800/648-2287, 408/432-1160 Reader service no. 761

#### **NEC PowerMate** 486SX/20e

NEC Technologies, Inc. 1414 Massachusetts Ave. Boxborough, MA 01719-2298 800/388-8888, 508/264-8000 Reader service no. 762

#### Northgate Elegance ZXP

Northgate Computer Systems, Inc. 7075 Flying Cloud Dr. Eden Prairie, MN 55344 800/548-1993

#### Reader service no. 763

#### Swan 486SX/20 Swan 486SX/20M

Swan Technologies Inc. 3075 Research Dr. State College, PA 16801 800/468-9044 Reader service no. 764

#### Soft-Hard PowerBox PBS1 4865X/20

Soft-Hard Systems Inc. 6301 De Soto Ave. #C Woodland Hills, CA 91367 800/899-8269, 818/999-9531 Reader service no. 765

#### Touche 486SX/20

PC Pros/Touche Inc. 8205 S. Cass Ave. Darien, IL 60559 708/810-1010, 708/810-9490 (fax)

#### Reader service no. 766

USA Flex 486SX 20 **USA Flex** 471 Brighton Dr. Bloomingdale, IL 60108 800/872-3539, 708/351-9700 Reader service no. 767

#### Wang PC 441/20SC

Wang Laboratories, Inc. 1 Industrial Ave. Lowell, MA 01851 800/835-9264, 508/459-5000 Reader service no. 768

## IGITECH MICE

precision-crafted, meticulously engineered Logitech mice. Along with their cousins, the Logitech 256 grayscale scanner and the amazing FotoMan, these awardwinning pointing devices cover every need. Our favorite is the sleek new Trackman, perfectly contoured to the human hand, enables you to work quickly, with stream-line "glide-and-click" action. Great for desktop publishing and word processing - try it once and you'll never be able to use an ordinary mouse again.

The advanced new Logitech 256 ScanMan remains the finest hand scanner you can buy. With its new "virtual page scanning" technology, you can scan a larger image than using a full-page scanner! And only the ScanMan delivers full 256 grayscale images, rich with brilliant detail. Nothing else comes close. Excellent instrument for graphic designers.

The Logitech FotoMan has become one of our biggest sellers, bringing digital photography to the PC desktop. Throw FotoMan into your briejcase and take bictures on the road - and instantly download them from the camera directly to your PC.

#### TrackMan

The TrackMan Stationary Mouse gives you the precision of a mouse, but stays still on your desk. Logitech, the world's leading mouse experts, designed TrackMan so your fingers rest comfortably on the buttons and your thumb easily controls the ball. This advanced design features an ergonomic shape which is angles to fit your hand for hours of extra comfort and productivity.

#### TrackMan Portable

Whether you're on the road or in the office, Track-Man Portable puts Logitech power and convenience in a format that's ideal for portable systems.



- · Attaches to either side of a portable keyboard, so it requires no deskspace
- Small, lightweight and easy to handle
- · Easily adjusted for comfortable use with either right or left hand
- Also comfortable and easy to use with your desktop system. Just plug in the 5-foot cable extension and start working.

#### MouseMan

MouseMan is not just another mouse. Designed with nearly a decade of mouse experience and the feedback of ten million users worldwide, Logitech's MouseMan is the next step in mouse evolution. Specifically tailored for you, in right-and lefthanded versions, MouseMan provides maximum comfort, reliability and power.

#### Make Friends With Kidz Mouse!

Fun and smart, Kidz Mouse puts children in touch with their computer so they can learn educational programs, do their homework and play games. Kidz Mouse is a perfect fit for small hands, because it's designed specifically for children. Clicking the mouse button "ears" opens up a whole new world of computing for them.

#### The Cordless Mouse

The only problem with this new innovation from Logitech is that you'll have to get used to NOT POINTING IT AT YOUR MONITOR! The Mouse-Man is a cordless, three-button, radio-controlled mouse! No cables, no line-of-sight positioning! The radio receiver can be placed anywhere - even under your desk - and still allows you to work with precise movement. It's fully Microsoft compatible and includes Mouse-2-3, designed for maximum Lotus 1-2-3 productivity.

#### ALSO AVAILABLE FIRST MOUSE

LOGITECH MICE				
BCB2588 TrackMan Combo	\$89.00			
BCB2591 TrackMan Portable	\$99.00			
BCB2200 MouseMan MAC	\$89.00			
BCB2595 MouseMan (Cordless Mouse)	. \$99.00			
BCB2596 MouseMan for Serial & PS/2	\$69.00			
BCB2589 Kidz Mouse	. \$49.00			
BCB2587 First Mouse	. \$49.00			

#### **INSTANT DIGITAL SNAPSHOTS!** Introducing The Incredible New Logitech FotoMan...

REVIEWER'S NOTEBOOK: What is it? In short, it's a portable, digital camera - for your computer. FotoMan takes great pictures with amazing clarity and 256 gravscale richness - then allows you to instantly download them to your PC. It includes a slew of image editing tools that open a world of creative opportunity, and is compatible with virtually all desktop publishing programs. The applications for this new technology are enormous. Insurance and real estate professionals are using it to expedite claims and transmit photographs of neighborhoods and homes. Manufacturers use FotoMan to quickly catalog products and parts, while law enforcement officials are using it to photograph suspects, crime scenes and evidence - without the time and expense of film.



here are hundreds of practical uses for this new product, but we found FotoMan was also a lot of fun. It comes with an automatic flash, onebutton operation and a field of focus from three feet to infinity. FotoTouch provides a sophisticated range of features including 256 grayscale editing. It's one of the hottest new ideas in computing: the digital photograph taken by a small, portable and easy-touse camera that allows instant transfer to your computer - without a digitizing board or other hardware.

In the past, getting a photograph into your PC meant using a traditional film method. The film would first be processed into either slides or prints, then scanned or stripped into your document. Now just snap a photo of a new employee, for example, and send it directly to the corporate database. Once the images are downloaded, FotoTouch shows you miniature versions so you can choose the image you want. When you've got your shot onscreen, the FotoTouch software allows you to easily make modifications. Then save your image in either TIFF, CCIT, BMP, PCX or EPS format. There's no film, no developing and no waiting!

#### **LOGITECH FOTOMAN**

BCB2592 FotoMan ...... Call for requirements.

#### Merges Multiple Scans Together-Seamlessly! hen we first introduced the

ScanMan Model 256 Grayscale hand scanner last year, it met with a roar of enthusiasm. We published the results of our testing - unbelievably sharp scans, with crisp, rich detail and 256 levels of gray. Scanning photos, illustrations - and text - was instantly taken to a new level. In head to head testing, we found the Logitech Scan-Man Model 256 to be more versatile, faster and capable of producing large crystal-clear images. The 256 levels of

gray add more depth and realism to all your scanned images. Logitech had created the ultimate hand scanner, the hottest new product of the year.

But when you work with Logitech, you come to understand that they never sit still. While the ScanMan Model 256 was sweeping the in-dustry (PC Magazine's "Editor's Choice,"

InfoWorld's 1991 "Product of the Year," PC Computing's "Most Valuable Product of 1991"), they were at work designing an enhancement that would catapult it to another level entirely - a completely new category of scanners. The innovation: Virtual Page Scanning. The Technology: the Logitech

Autostitching feature. It automatically "stitches" 2, 3, - even 4 scans together (so it can handle more area than an 8.5 by 11 flatbed scanner!). No other scanner we've ever seen can automatically merge scans into one completely seamless image. The ScanMan Model 256 smooths and de-skews the stitch, while evening the tones across the scans for remarkable images.

ScanMan Model 256 comes with Perceive Personal, one of the industry's highest-rated OCR software.



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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 an XT with expanded memory outrun a full-blown 386! In tests, we loaded a 386 with FAST! and we almost blew the doors off the lab! (Keep reading for complete details on the head-to-head lab speed tests.)

On a standard data transfer performance test, FAST! is 18 times faster than a standard AT and 5 times faster than the leading competitor. In fact, an IBM XT with FAST! is faster than a Compag DeskPro 386!

#### SOFTWARE CAROUSEL

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!

#### DISK OPTIMIZER

Fragmentation kills hard disk performance. It causes excessive head movement across the media, creating bad spots throughout the drive. A fragmented hard disk, left unmaintained, is almost certain to crash. That means major data loss. Disk Optimizer 4.0's easy-to-use menus makes maintenance simple.

#### SUPERSTOR 2.0

This unique product, unlike conventional file compression software, employs sophisticated "onthe-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% - and in many cases more! You can store 2 to 3 times more on your hard drive without giving up speed with this new technology... old technology gives up speed to get space.

386MAX 6.0 New 386MAX 6.0 is the best memory manager on the market today. It recovers massive amounts of high DOS memory and does a better job of freeing conventional memory with advanced tools like these:

. ROMsearch™ reliably recovers huge holes of unused system BIOS.

VGAswap™ provides more contiguous memory by automatically relocating video ROM on all EGA and VGA systems.

Maximize Reordering automatically optimizes the loading of programs into high DOS.

PCPx is the perfect anti-virus solu-tion for notebook computer users or if you're computing in a Lan environment. The secret is a compact, 10K TSR filter that creates a virus behavior rule base which monitors virus characteristics and infection mechanisms, so PCRx predicts every possible move a virus can make before it infects! Even treacherous new strains are instantly spotted and conveniently removed with PCRx.

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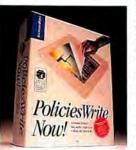
REVIEWER'S NOTEBOOK: Do you pay your employees during jury duty leave? Do you allow smoking, personal days, or leaves of absence? If you haven't given much thought to issues like these, you may be in for costly miscommunications. Policies Write Now! is an easy-to-use product that helps you answer all the questions and avoid the costly mistakes. It asks you the key questions in any of the 66 policy subjects. Using your answers, the software writes the policies for you.

Customizes policies to fit your exact needs. So easyto-use, you can produce a finished employee handbook in as little as half-a-day.

#### PoliciesWrite Now!

oliciesWrite Now! allows you to quickly establish personnel policies and avoid costly miscommunications. It is based on the highly successful Personnel Policy Expert, also from KnowledgePoint.

PoliciesWrite Now! is designed for use in small businesses where there's limited personnel staff and where quick results are a must. Choose any of the



software's 66 policy topics, and read concise background information on the resources human and labor laws that affect your topic. Then answer the questions posed by PoliciesWrite Now! and watch it instantly customwrite your policies for you.

#### **Built-In Editor.**

Editing is fast with the built-in text editor. Or you can easily make final revisions with your own favorite word processor by exporting files to ASCII. All policies are dated for easy archiving, and PoliciesWrite Now! automatically creates a Table of Contents for you - no tricky word processing is required!

Don't put off writing or revising your employee handbook! PoliciesWrite Now! is the one tool that can help you get the job done in as little as half-a-day.

#### NOW AVAILABLE!

#### DescriptionsWrite Now!

his brand new title just released by Knowledge-Point, the makers of PoliciesWrite Now!, gives managers and business owners the practical business benefit of clear and complete job descriptions in minutes. Covering more than 2400 job titles, the program gives you the ability to locate and merge language to clearly describe essential duties for any job. DescriptionsWrite Now! then asks a short series of questions and uses the answers to custom-write text that describes the job's supervisory responsibilities, qualifications, physical demands, and work environment. It's simple, easy-to-use and helps you to:

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# CD ROMSTARTER



#### **READ THIS BEFORE YOU BUY A CD-ROM READER ANYWHERE ELSE!**

**PUBLISHER'S NOTE:** I've noticed lately that the CD-ROM market is not only getting big — but also very tricky as well. In fact, I'm annoyed at my competitors who market no-name drives at ridiculous prices like \$199...

Those drives have incredibly low response times, and do not include the latest in laser technology. Will the interface be 100% compatible with your computer? They must get a lot of returns on those things. The offers are tricky, too. First I buy a reader, then I pick two CDs from page 4, row 8, then I pick from Page 11, third column — each pick costs me more money... by the time you're done, you've spent \$1000 for an off-brand!

That's why we offer the NEC line of quality crafted CD ROM readers — and made the offer very simple. Everything's included. One price. Complete interface kit, a convenient CD caddy for neat, organized storage, a pair of Koss premium sound stereo speakers, stereo headphones and TEN TOP-SELLING CD TITLES! After all, what good is a reader without some tasty software to use with it? The NEC CDR 36 and CDR 73 are the best in the business, packed with advanced technology and a 100% guarantee from Tiger and NEC — names you know. In fact, our "No Down Time Guarantee" protects your reader forever.

You simply pick either the ultralight, ultrafast portable CDR 36 or the firebreathing CDR 73, the industry's premier speedster. Prices start at \$599 and that's a massive value for that price. Compare! Really, take a look at the offers and you'll see that TigerSoftware is the most intelligent way to get into CD-ROM.

But there's one thing I left out. Something that makes TigerSoftware's offer absolutely irresistible: It's called *CD Speedway*, and it speeds up your CD-ROM reader by up to 1000%! Now your sleek NEC reader will run even faster! As fast or faster than your hard drive!

Now who's CD-ROM offer looks better? Oh, by the way CD-Speedway is brand new technology, exclusively available from TigerSoftware. You won't find it anywhere else. It's just one more way that Tiger delivers unparalleled value.

#### THE SOFTWARE LIBRARY INCLUDES:

Great Cities of the World. I personally found Great Cities of The World fascinating, it's packed with information on hotels in Paris, entertainment in New York, bull fights in Madrid and shopping in London. This multimedia guide covers tours by noted travel writer Jan Morris and information on culture, restaurants and shopping.

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Amplified Stereo Speakers. With free stereo headphones and a pair of Koss SA/30 amplified stereo speakers, you'll actually hear the sounds of the world when you slip in a CD — whether on CD Bun-



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"No Down-Time" Guarantee. It's Tiger's iron-clad guarantee to our customers. If your NEC CD-ROM reader ever fails to perform, we'll send you a new one on the spot.

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lanning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, shortest or most convenient route - right on your computer screen.

Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AutoMap where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive.

#### Take Me Home, Country Road.

One of the great joys of automobile travel is just takin' it easy and seeing the country. I used AutoMap recently on a family trip to chart a course through the Carolinas. We had a long list of things we wanted to see and we wanted to do it all without getting on a super highway.



Just select your starting point, end destination, and areas to visit and let AutoMap create a detailed map of your next trip.

We threw it all into AutoMap and instantly had detailed maps, printouts and directions. AutoMap provided several different routes that would let us all do exactly what we wanted. It gave us travel times, mileage, information on hotels and the parks themselves. AutoMap also provided information on the cities we wanted to visit. What a great vacation planner!

#### ALL NEW! AUTOMAP EUROPE. Scope Out The Autobahn - On Your PC.

#### REVIEWER'S NOTEBOOK:

Just Released! Tiger is proud to be among the first to have Auto-Mab Europe in stock and ready to ship. The makers of



AutoMap have created the definitive guide to discovering Europe by car. AutoMap Europe is perfect for sightseers, student travelers, business planning or that once-in-a-lifetime vacation. Over 250,000 miles of motorways.

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disk, mause recommended.	

#### Do You Know How Your Car Works?

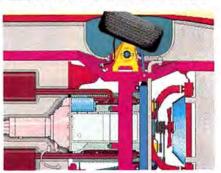
#### REVIEWER'S NOTEBOOK:

Unless you're an auto mechanic, you probably have no idea how a fuel injection system works, how a transmission works, how a car's suspension system operates - or even how the ignition actually operates. It's quite interesting ...

The automobile is a masterpiece of engineering. Today's cars are filled with fascinating mechanisms, systems and ingenious de-

vices. AUTOWORKS examines the automobile from bumper to bumper: from a basic overview of each system, to indepth graphics and explanations of how your brakes, belts and suspension work. Animated sequences illustrate your automobiles components and detailed diagrams are everywhere.

Just a few minutes and you'll be hooked. You'll want to know how your gas gauge and speedometer works, your engines' lubrication system, bistons, your air conditioner, brakelights, alternator - everything!...Also a great education on topics like emission control, ethanol fuel, electric cars, diesel engines, turbochargers vs., superchargers, rustproofing, unibody construction, auto safety standards, and more. Sit down with AUTOWORKS before you start looking for a new car and know what you're buying.



UTOWORKS is like having the ultimate owner's manual for your car. You'll find out exactly how the power generated by your engine (through combustion) is transferred from the crankshaft, to the drive train and on to actually turn the wheels. It's an amazing design feat. See how the gears work deep within the transmission's housing, and the gearbox controls the delivery of power to the drive shaft. Find out how the internal combustion engine creates all that horsepower. Even the most complex part is exploded and explained. Which means you can learn as much as you want about how a car works - down to the tiniest technological marvel.

#### **AUTOWORKS**

BCB4104 AUTOWORKS .... \$79.95

### The Solar System On Your PC.

REVIEWER'S NOTEBOOK: An explosive new hit title. Sometimes you take the dazzling beauty of our planet, our solar system - and if we dare imagine the universe. Since the early astronomers aimed their primitive telescopes toward the sky, man has worked with curious passion to understand how the universe began, how it sustains itself and what its future holds for its only (known) inhabitants. Orbits will ignite your family's interest in the nature of our universe. Packed with facts, brimming with vivid illustrations and interactive simulations

rbits is a brilliantly interactive space simulator and comprehensive space atlas that brings the universe to your PC! Spectacular 3-D graphics demonstrate the operation of our solar system. Animated sequences show you the effects of gravity on various planets, the movement of the sun and moon. Compare the planets' charstructure, chemical acteristics, makeup and more. Simulations of eclipses, nuclear processes of the sun and the life of comets. View actual satellite photographs from NASA and the let Propulsion Laboratory, watch a spectacular presentation on the birth and death of the sun. See the interior structures of the sun and moon, create reports and comparisons on anything, and play a few rounds of Orbit-Trek, the built-in brain teaser. A great edu-

cational tool. Orbits is also an entertaining way to spend some time with your PC. It brings the stars, the planets and beyond — into focus.

Orbits is packed with so many in-

triguing, colorful screens and great information that it's hard to stop. It has been meticulously researched, the graphics professionally prepared. More than an astronomy program, Orbits takes you to the wonders of the universe - and gives it an interesting spin! For instance did you know... where a world shaped like a peanut exists... or where a storm that could swallow our entire Earth has raged for over 300 years... or where two moons may actually exchange orbits? These places are real, and on a cosmic scale they are really not so far away.

This is a great program for stu-

dents e v e n smaller children enjoy learning about the heavens. A fascinating new title that's fun.



#### ORBIT

BCB4103-5	Orbits	514"	\$59.95	
RCR4103.3	Orbits	314"	\$50.05	

#### A Guided Tour of the Human Body.

he human body. A perfect machine. It grows and develops, protects and heals itself and is designed to last for decades. Now the wonder of the body is combined with the power of the PC to produce a fascinating journey into its structure and functions. You'll see detailed, full-color graphics of the entire human body and a comprehensive database of facts, descriptions and explanations. Do you know

the exact function of the hypothalamus? How about the kidneys? How do bruises heal or your brain work?

Experience a world of knowledge and beauty that provides profound insight into life itself. It's called BODY-WORKS, and it could be the most interesting software program you'll ever own - perfect for students, artists and hobbyists.

Since your body doesn't come with an owner's manual, BODYWORKS is a great way to learn and understand how it operates. Its elegant design and high quality color illustrations are as good as any we've seen.

We've seen a great interest in schools for products like BODY-WORKS, where so much data is at the user's fingertips. It's a faster way to learn, and since it is highly visual, the information is easier to understand. In

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fact, curiosity is all you or your child needs to embark on an amazing voyage inside the human body.

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RCR3861-3 Medical Bundle36" \$99.00

BCB4102 Chemistry Works Dual .. \$69.95



## **Novell's Do-It-Yourself Network In A Box.**

The Complete 2-PC Network Starter Kit: Includes Ethernet Cards!

**REVIEWER'S NOTEBOOK:** Everything you need is in one box - a sensational way to break into productive the world of peer-to-peer networking. Take any two computers — add NetWare Lite — and you can share files, applications, hard disks, peripherals and printers — all with the blistering speed of Ethernet. And Net Ware Lite is simple to install, use and administrate. Smaller businesses can now enjoy the advantages of 100% Novell networking (and make no mistake, they're the industry leaders), without a dedicated server, extra RAM or any

Everything for simple, do-it-yourself installation is in the box: 2 Ethernet adapter boards, 2 NetWare Lite Software Nodes, a complete installation guide and Videotape, 2 T-connectors, 1 Terminator kit and a heavy duty 20-inch RG58A/U coaxial cable. All you need is a screwdriver and about fifteen minutes... just follow along the the videotape that comes with Net Ware Lite...

Expanding Net Ware Lite is easy: add a PC to your office and purchase another low-cost node. Buy just what you need when you need it. Net Ware Lite will sup-

port up to 25 networked computers.

One note about speed and security: Novell's technology leads the industry in data transfer speed. The NetWare IPX network protocol is the fastest, most reliable in the business. Security is another Novell hallmark, featuring encrypted passwords, access restrictions and assigned privileges that keep curious eyes away from your critical files.

#### Complete And Do-It-Yourself.

What happens in a small business when two computers begin to fight for printers, hard disks and applications? Frustration usually runs high while productivity slumps. Those computers are screaming to be networked. By connecting your standalone PCs, you can avoid buying new laser printers, extra storage and memory. Networking is several years old now, but the small to medium size business never had the right solution available - until now.

As your network grows, you'll want to keep track of network activities and spot and errors immediately. Novell wrote the book on network management - and has built it into NetWare Lite.

#### Why Network My Computers?

An office environment changes when PCs are connected. An office full

of standalone PCs keeps people apart, not communi-cating. But when those PCs can share files, an entirely new vista for productivity is opened. Ideas are crystalized, errors are caught, new ideas flourish. NetWare Lite's electronic messaging system allows users to talk to each other anytime - even when they're not together. You'll eliminate redundant tasks and needless paperwork. Copy information and send it — even scan magazine articles and pass them along. That's the future ...

#### NetWare Pours On The Speed...

Some other networking systems rely on alternative technologies to provide a network solution. And while they may deliver adequate functionality, they'll never turn on the afterburners like Ethernet can. Your data clips along at 10 megabytes per second! And unlike the others, NetWare Lite requires very little RAM. In fact, your DOS programs will run with-

VetWare Lite

out the need for additional memory. NetWare Lite contains a read-ahead disk caching system - built right in - for even faster transfer speeds.

#### Free Video Tape Makes Installation Fast, Too.

As if installation isn't easy enough, Novell has prepared an installation videotape that gets you going fast. Basically it's a 1,2,3 process: 1. Insert the installation disc into your computer; 2. Install the Ethernet controller cards; and 3. Quickly connect the cables. That's it.

#### **NETWARE LITE**

BCB3304 Netware Lite	\$485.00
BCB3303 Additional Node (One additional computer)	\$279.00
IBM PC, XT, AT and compatible PCs, all IBM PS/2 mod workstation PC RAM, 50KB server PC RAM and DOS 3.x, 5.0, DR DOS 6.0.	

#### Timeslips® 5 Turns Time Into Money.™ The Most Comprehensive Time And Expense Tracking System You Can Buy.

imeslips 5 is the latest version of • 15 custom client fields store more inthe most successful, widely used time and billing program available today. Designed to help you better man-age and control your business. Determine which clients and projects are profitable, and see where your hours are going. New features include multiple billing rates, work-in-progress reports, Client and User History reports including year-to-date and inception-to-date figures, and a rede-signed security system. The Single User Edition records time and expenses for up to eight people. The Enterprise Pack supports simultaneously networked stations and records time and expenses for up to 250 people. The Enterprise Expansion Kit adds three networked stations to your Enterprise Pack.

#### Timeslips 5 is the perfect system for:

Law firms, Accountants and CPAs, Architects, Advertising agencies, Design firms, Engineers, Project managers, Consultants, Public relations firms, Construction managers, Financial planners, Photographers, Psychologists... any service company.

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#### FREE With Timeslips 5: PercentEdge and TS Speller!



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#### THE MEMORY SHOP

REVIEWER'S NOTEBOOK: Memory is a hot topic. It seems like everyone wants to upgrade their system by adding SIMMs, or upgrading the memory on their laser

printer. But there's a lot of confusion about what they actually need and how much it should cost. Then there's the issue of the quality of the memory itself it's not all the same. Some "dirt-cheap" memory chips are, well...unreliable, to put it mildly. I wouldn't put it in my machine, and I wouldn't want you to install it in yours...

When you call Tiger-Software, you'll speak to someone trained specifically by leading hardware manufacturers to help you choose the right memory for your system and offer helpful hints on installation it's easy! Just tell us what kind of machine you have, what applications you run - and we'll outfit you with the best possible memory upgrade. The Z-COM line of memory products all come with simple, understandable instructions that take the fear out of doing it yourself - today's machines are actually designed for simple memory upgrades. And Z-COM memory is the best in the business. They make memory for some of the industry's top names. Would Apple, Compaq, HP, IBM, Sun, Sharp, Toshiba and a host of others put their trust in anything but the best?

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BCB6435 SIMMS 4MB x 9 70ns \$179.00
BCB6436 SIMMS 4MB x 9 60ns \$199.00
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# Personal TIME MANAGERS

BY PATRICK MARSHALL ou may look calm while juggling a dozen pro-

jects. But behind that facade is a harried manager with too much to do and not enough time to do it. You can't expect to close a deal or win a contract bid if you miss a key meeting or blow a deadline—and if your daily calendar or appointment book is a morass of Post-it notes and illegible scrawls, you're courting disaster. That's why you need a scheduling program.

At first glance, most scheduling programs appear to work much like their paper equivalents: You enter appointments into a daily planner, specifying dates and times. Of course, electronic schedulers do much more, or this article wouldn't be worth reading.

Probably the most attractive feature is the capability to set recurring appointments with just a couple keystrokes—say, a regular Friday morning meeting for the entire year. Most schedulers also offer a graphic time line that lets you see the nearest block of free time at a glance; all but two print out calendars in a variety of formats. What paper calendar serves up your schedule in daily, weekly, or monthly views? Or buzzes you a few minutes before your next appointment?

FED UP WITH

SCRIBBLING, ERASING,

FLIPPING PAGES, AND

SCRIBBLING AGAIN?

THESE PERSONAL

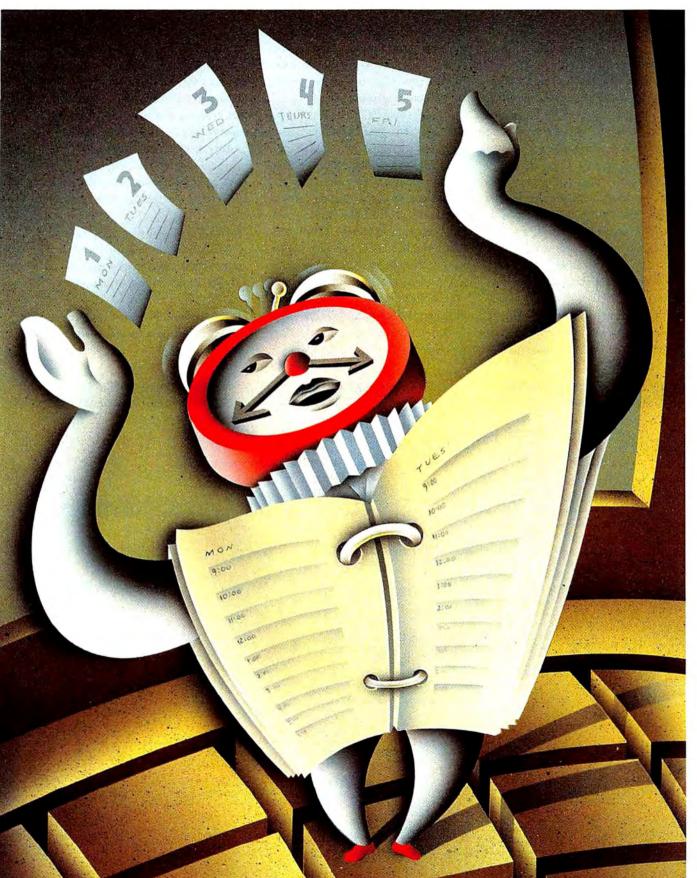
CALENDARING PROGRAMS

HELP YOU STAY ON

TOP OF A FAST-PACED,

EVER-CHANGING

SCHEDULE.



Time management is so crucial to productivity, you'll find electronic schedulers in all kinds of software. Some are just one component of personal information managers (PIMs), all-purpose utility packages, or network-based project managers. We focused on products that offer personal scheduling for under \$200, and we've come up with the seven top contenders. (If you're interested in slightly pricier programs that do more than scheduling, see the sidebar "Scheduling and a Lot More.")

All seven products can keep your appointments straight, and several come with such extras as phone dialers or network scheduling. But this is no features war. Schedulers are typically the third or fourth application you learn, so a short ramp-up time and hassle-free appointment changes are imperative—

otherwise, your new scheduler will wind up on the shelf. In addition, because your appointments are often tied to phone contact, we've given extra credit to packages that include integrated address books and phone logs.

Because schedulers have different strengths and appeal to different users, we picked a whopping three Best Buys from the seven products reviewed. On-Time for Windows wins a Best Buy simply because it's so easy to learn and use, though it still offers plenty of appointment management power. If you often look up addresses and phone numbers as you schedule engagements, DeskTop Set 3.0, another Windows Best Buy, seamlessly integrates its calendar with an appointment book and a phone log.

Borland's SideKick 2.0, the Best Buy for DOS, ties with the Windows winners in ease of use. Like *DeskTop Set*, it has auto-dial and Rolodex capabilities, and it can reconcile schedules between your laptop and desktop machines. Another worthy DOS package, *Instant Recall*, delivers graceful appointment and project tracking features, but stumbles when you try to view your schedule.

Any busy person will benefit from using one of these four programs. They can't lighten your work load, but they'll help find time to get it all done.

Patrick Marshall is managing editor of the National Security Syndicate, a newspaper articles service, and an InfoWorld contributing editor.

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

#### **EXECUTIVE SUMMARY**

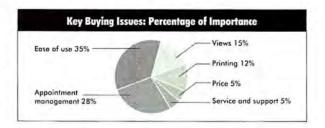
#### **Well-Appointed Personal Schedulers**

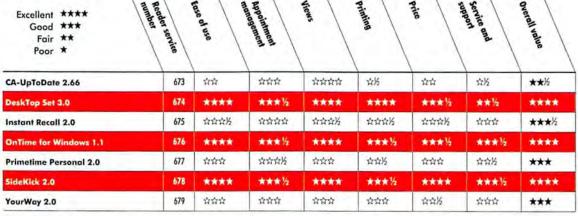
DeskTop Set, OnTime for Windows, and SideKick take the hassle out of time management.

SCHOOL SELECTION

Windows aficionados and DOS diehards both have something to appreciate in our scheduling Best Buys. **DeskTop Set** combines an elegant interface with strong scheduling and phone capabilities. **OnTime** 

for Windows sticks to calendaring and gets you up and running in minutes. Borland's trusty old **SideKick** is the DOS users' choice, thanks to its killer combination of low price and high ease of use.





Overall value is calculated by multiplying each category rating by its weight percentage, summing the results, and rounding to the nearest half number.

## **Buying Smart: Timely Buys in Personal Schedulers**

If an electronic scheduler doesn't make managing your hectic life a little easier, you've wasted your money. A scheduler should be as easy to use as its paper-based equivalent, but have numerous features for creating, viewing, and printing schedules. Unless you need a heavy-duty contact manager or network scheduler, it shouldn't cost much more than a good Day-Timer, either.



#### EASE OF USE

As with any software that claims to be personal,

ease of use is essential. The key is how smoothly a scheduler integrates its daily planner, calendar, time lines, to-do list, and other components. Take a close look at how easily a package lets you change appointments and navigate with a mouse. Users of DOS-based schedulers will want a RAM-resident option with a small memory kernel, so they can pop up their schedules from inside RAM-hungry applications. DeskTop Set, OnTime for Windows, and Side-Kick all make scheduling a breeze.



#### APPOINTMENT MANAGEMENT

There's more to managing

appointments than meets the eye. All schedulers let you fill in a daily planner with names and times, attach notes, create to-do lists, prioritize appointments, and set up recurring events such as a monthly managers' meeting. But the better ones offer conditional scheduling (letting you set appointments for, say, the third Thursday of each month) and enable you to overlap events (for example, to schedule a conference call in the middle of a meeting). And while most programs check your schedule for conflicts, only three check all occurrences of recurring events.

All these programs let you set al-

arms that pop up on screen minutes before a meeting, and most notify you when you boot up if you missed an alarm while the PC was turned off. And group scheduling features can really pay off for networked users. Wouldn't you rather compare calendars over the network than track endless loops of E-mail?

Finally, if your meetings often take place over the phone, you'll want phone accessories like an address book, a log for keeping track of calls, and an auto-dialer that lets you keep your hands where they belong—on the keyboard. A text editor is handy for jotting down notes as you gab. Overall, *Instant Recall* provides the most complete appointment management tools.



#### VIEWS

One big advantage of electronic schedulers is the

variety of ways you can view your calendar. All schedulers offer a daily view, but the best display appointments a week or month at a time, making it far easier to reschedule meetings and plan trips.

Look for programs that offer daily and weekly time lines, which consist of bar graphs that show you chunks of free time at a glance. The capability to search appointments can also come in handy—you don't want to scan each day's schedule just to find out when "lunch with Bob" was supposed to happen. You'll also want to be able to search your notes (if, say, you remember Bob's company but not his last name) and search for specific amounts of free time. OnTime for Windows and SideKick provide especially complete and well-implemented viewing options.



#### PRINTING

Unless you plan to spend all your time in front of a

computer, you'll want to take your

schedule with you when you go. Any program worth a dime will print your daily schedule and your notes. Look for one that gives you weekly and monthly printouts as well—they're generally easier to take on the road or post in the office while you're away. If you plan to make your schedule public, you'll want a package that gives you control over font selection. And if you already carry a paper scheduler such as a Day-Timer or a Franklin Organizer, look for a package that can emulate those formats. Desk-Top Set has the best set of printing capabilities, including mail merge.



#### PRICE

Most of the programs in this roundup cost around

\$100 or less on the street—and many offer more than simple scheduling for the money. In addition to scheduling panache, we factored in features such as group schedulers, phone accessories, and other extras to figure out which package gives you the best deal for your greenbacks. With built-in communications, phone management, calculator, text editor, and more, the venerable SideKick stands out as an amazing \$99.95 value.



#### SERVICE AND SUPPORT

When you find yourself

stuck, there's no substitute for prompt, efficient, and accurate technical support. We called each vendor several times, noting how long it took to reach a support technician and the quality of the answers. We also factored in support hours, toll-free numbers, and the availability of BBS and fax support. Campbell Services' support for OnTime for Windows and Borland's support for SideKick were especially impressive.

# Conventional wisdom has it that Compaq has the best features, and Zeos and Gateway the lowest prices.

# It also said disco and communism were here to stay.

Pardon us while we mess with your reality. But the new Dimension Value Series by Dell\* is about to make conventional wisdom look pretty dumb.

Introducing Dimension, a line of high-quality, full-featured PCs. From notebooks to i486 floor-standing systems.

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#### **CA-UpToDate 2.66**

PROS: Low-cost group scheduling, multiple appointment time lines CONS: Awkward, limited printing

CA-UpToDate takes a colorful approach to personal scheduling, but its awkward interface may leave you cold. To specify attributes like time and location, you must first create up to four categories—such as "meetings" and "conferences"—each of which can contain up to 15 color-coded entries. Sound confusing? It is.

Instead of building on a daily planner, Windows-based UpToDate centers on a weekly time line, where you doubleclick to bring up the day's schedule. You create appointments by filling out a contact form with name, title, address, and phone number of the person you're meeting—much as contact managers force you to do, but without their payoff of full-fledged contact tracking.

UpToDate displays a rich variety of views, but it's awkward to use and has limited print options. While you can print lists of appointments for any range of days, you can't print easy-to-read weekly or monthly views. The only standout feature is group scheduling at no extra cost. You can create groups of up to 255 users, and a time line shows which blocks of time are open for all

members and which are open for all but a specified number. The \$149 program is an affordable group scheduler, but most users want to get personal with it.



CA-UpToDate provides effective views of open time, but its complex color-coding scheme will try your memory.

#### DeskTop Set 3.0

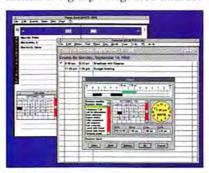
PROS: Excellent interface, rich scheduling options, phone log CONS: No conflict checking, no weekly views



Set, winner of our Best Buy in February 1991, rates that honor again.

This Windows scheduler is so deceptively simple, it takes a while to realize just how powerful it is.

DeskTop's daily planner looks like a blank sheet of notebook paper. You fill in times and names, then set alarms and priorities. Dialog boxes give you access to almost every personal scheduling feature you'd want, including the capability to set up recurring appointments for, say, the first and third Thursday of each month. A tightly integrated address



DeskTop Set makes good use of your mouse—to pick appointment times, just click on a miniature clock dial.

book and auto-dialer make it ideal for users who are glued to the phone.

But *DeskTop*'s real appeal lies in clever features like its month-at-a-glance view. You move cross hairs across color-coded time blocks until you find the one you want, then click the mouse, and up pops a box with the appointment's details. A unique phonetic search capability lets you snag appointments even when you can't remember how to spell someone's name.

DeskTop's not perfect. It can't check recurring appointments for conflicts, and it doesn't display a weekly time line. Still, for \$149 you won't find a more personable Windows scheduler.

#### **Instant Recall 2.0**

PROS: Strong scheduling features, task manager, phone accessories, low price CONS: Limited graphical views and font selections

Instant Recall's clean design, strong search tools, and low price have long made it a popular DOS personal information manager. The \$129 version 2.0 brings a host of improvements, including a phone log, beefier print capabilities, and a group scheduling option.

The program's scheduling capabilities are tops. You can create conditional recurring events, set alarms, and attach notes. A 22K memory-resident option gives you instant access to your schedule from any application.

However, with almost no graphical views, *Instant Recall* lacks other programs' capabilities to help you visualize your schedule. Its only time line is a weekly pop-up that shows blocks of open time. You can't view a detailed daily time line or peruse appointments by the week or the month. But version 2.0's printing features are strong, marred only by limited font selection.

Instant Recall's strong to-do list function, along with text-search and project-tracking tools, is a reminder that it's more than a scheduler. It's a good choice for DOS diehards who need a personal information manager and a calendar. But its many features make it slightly more complex than *SideKick*, leaving it just short of a Best Buy.



Instant Recall's clean interface makes moving between your daily schedule and to-do list easy.

## High-Priority Schedulers: DeskTop Set, OnTime, and SideKick

 $DeskTop\ Set,\ On Time\ for\ Windows,\ and\ SideKick\ pack\ plenty\ of\ power\ into\ deceptively\ simple\ interfaces.$ 

• Yes O No	CA-UPTODOIS	DaskTop Set	Instant Recall	OnTime OnTime	primelime personal 2.0	SHOWLER 7.0	YourMay 2.0
Deficient	e for	1	a	The same of	Some	a a	14 V
n/a = not applicable	8	3	Rece	don .	22 18	5	3
iive = not applicable	ā	- 7			,		0
Standard features							
Price	\$149	51491	\$1292	5129	\$189.95	599.95 <sup>2</sup>	\$1991
Mouse support	•		•	•	0		•
RAM required	2MB	1MB	512K	1MB	180K	512K	1MB
Disk space required	600K	1.2MB	1,1MB	1MB	640K	3MB	2MB
RAM-resident kernel	n/a	n/a	22K	n/a	7K	40K	n/a
Appointment management							
Schedules recurring events	•		•		•		•
Conditional scheduling	0	•	•	•	•		•
Conflict checking	•		•		•	•	•
Conflict checks recurring appointments	•	•	•	•	0	•	•
Allows overlapping appointments	0		•		•	•	0
Sets alarms	•		•	•	•	•	•
Notify passed alarms at boot-up	•		•	•	•	•	0
Searchable note fields	0		•		•		•
Auto-dialer	•		•	•	•	•	•
Phone log	0	•	•	•	0		•
Address book	•		•		•	•	•
Text editor	•		•	•	•	•	0
Group scheduling	•	•	•'	••	•'	•	0
Views							
Daily view	•		•		•		•
Weekly view	•	•	Q <sup>5</sup>	•	0	- i	•
Monthly view	06	•	0	•	0	•7	•
Daily/weekly time line	0/0		⊖8/●	0.0	010		010
Searches for appointments	•		•	•	•	•	0
Searches for free time	•	•	•	•	0	•	0
Deletie -							
Printing Weekly view	۰,		•		0		•
Weekly time line	0	-	0	·	•		0
Monthly view	0°	-	09	•	0		•
Font control	0	•	0	<b>©</b> 10	0	•	0"
Prints in organizer sizes	0	•	•	-	0	12	●13
10 + 62 × 8 2 3 1	-	•			0	~	
Service and support	•14		•				•
Unlimited free support Toll-free number	O <sup>15</sup>	•	0	•	0	•	0
		•	9				
Weekday tech support (hours)	24			- 11	8.5	- 11	12
BBS/fax support	0/0	BEST	0/•	BEST	010	BEST	0/0

<sup>&</sup>lt;sup>1</sup> Includes mail-merge capability.

<sup>&</sup>lt;sup>2</sup> Includes project tracking.

<sup>&</sup>lt;sup>3</sup> Includes calculator, communications, and notepad with spelling checker and thesaurus.

<sup>&</sup>lt;sup>4</sup> With extra-cost network version.

<sup>&</sup>lt;sup>5</sup> Displays simple list, not day-by-day breakdown.

Shows time blocks but no appointment details.

<sup>&</sup>lt;sup>7</sup> Six-month view only; does not show appointment details.

<sup>&</sup>lt;sup>8</sup> Same level of detail as weekly time line.

<sup>&</sup>lt;sup>9</sup> Prints appointment list for specified date range.

<sup>&</sup>lt;sup>10</sup>Limited to small, medium, or large formats.

<sup>11</sup> For to-do list only.

<sup>&</sup>lt;sup>12</sup>One generic Day-Timer format.

<sup>&</sup>lt;sup>13</sup>Four Day-Timer, four Franklin Desktop, and two YourWay formats.

<sup>14</sup> First 90 days only.

<sup>15</sup> Extra-cost option.

# WEIGH THE OPTIONS





Model	Price	Fast Renegotiation Online Fall Back/Forward	Remote Configuration	Call Back Security With Password Protection	FAX V.17 14.4 Kbps S/R	Caller ID	Distinctive Ring
Digicom 9624LE+	\$695	NO NO	NO NO	NO	NO	NO.	N0
Practical 14.4 SA	\$549	YES	NO	NO	NO	NO	NO
Microcom QX/4232bis	\$899	YES	YES	NO	NO	NO	NO
Hayes Ultra 14.4	\$999	YES	NO NO	NO	NO	NO	NO
U.S. Robotics Courier V.32bis	\$995	YES	YES	NO	NO	NO	NO
Telebit T3000	\$949	YES	YES	YES	NO	NO	NO
Multimodem MT1432BA	\$899	YES	YES	YES	NO	NO	N0
ZyXEL U-1496E	\$469	YES	YES	YES	YES	YES	YES

14.4Kbps-V.32bis/V.32 + V.42bis/MNP® 5, V.42/MNP® 4,3

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Editor's Choice: ZyXEL U-1496E

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"Best Value," February 1992

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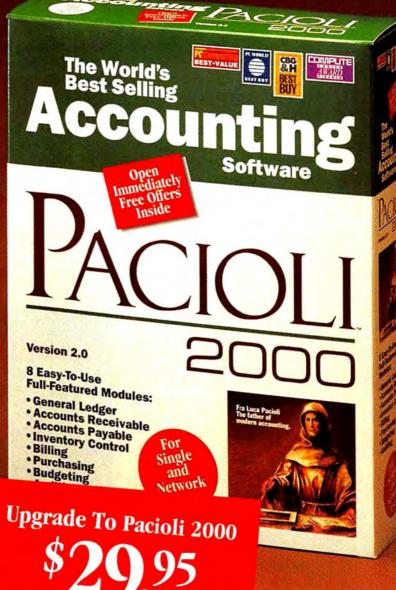
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## OnTime for Windows 1.1

PROS: Flexible scheduling, intuitive interface, network option CONS: Lacks phone accessories, limited print options



does one thing—Windows scheduling—and does it very well. Its

beautifully designed screens make setting appointments almost fun.

You'll have a hard time finding a Windows scheduler that's easier to use. On Time's main screen is dominated by the day planner, with appointments displayed in adjustable time increments.

To view your schedule down the road, simply click on a date from one of three small monthly calendars.

On Time has just about every calendar feature you can think of, from conflict checking to scheduling of biweekly meetings. A network version offers powerful group scheduling tools and notifies users when appointments are added to their calendars.

On the downside, *OnTime*'s reports are attractive but not very customizable, and you can't print schedules to slip into your Day-Timer. It also lacks *DeskTop Set*'s address book, log, and auto-dialer—features that will be missed by those who spend a lot of time

in Ma Bell's meeting room. But if you don't need to tie your calendar to addresses and phone calls, you can't go wrong with this \$129 Best Buy.



OnTime for Windows' simple, uncluttered screen makes it the friendliest scheduler ground.

## Scheduling and a Lot More

Some of the best schedulers aren't really scheduling packages per se. Here's a quick look at seven programs whose primary job is to manage contacts, projects, or local communications, but also offer powerful personal scheduling.

#### Act 2.1

Act is clearly designed for the sales pro who spends most of the day on the phone. In addition to an auto-dialer and phone log, the \$395 Act offers lookup tables for fast scheduling of follow-up calls. The program won't let you set up recurring events or prioritize your to-do list, but its solid mailmerge features make it easy to zip out letters to clients.

#### Action Plus 5.0

Like Act, Action Plus is a contact manager with strong telephone and mail-merge capabilities. But this \$495 package offers better personal scheduling than Act, with flexible alarms, the capability to handle recurring appointments, and more views of your



schedule. A \$1495 network version features sophisticated group scheduling and E-mail utilities.

#### Ascend 3.14

Carnegie of contact managers. This \$299 Windows program has all the basics for personal scheduling, plus about a half-dozen notepads and task lists for organizing to-do lists and projects. And when you find yourself veering from the straight and narrow,

a Values and Goals utility helps you keep tabs on your "governing values," such as temperance and sincerity!

#### PackRat 4.0

primarily a personal information manager (PIM), PackRat may be the most powerful allaround scheduler for Windows. This package provides utilities for

tracking projects, resources, notes, and just about everything else.

Though its profusion of PIM features makes it a tad tough for novices, the scheduler itself is fairly easy. Only its \$395 price tag kept it from contending for a Best Buy. A \$695 network version offers strong group scheduling features.

#### PC Tools 7.1

Is there anything this program can't do? Besides its many other virtues—

#### **Primetime** Personal 2.0

PROS: Full set of appointment tools, low-cost group scheduling, low TSR RAM requirements CONS: No monthly or weekly views, limited conflict checking, minimal printing

Primetime Personal is easy to learn and doesn't skimp on scheduling features, but its lack of mouse support and limited views keep it from the limelight.

Primetime's logical setup and wellorganized screens make it easy to get up and running. And the program offers every scheduling feature save one: It can't check all of your recurring appointments for conflicts.

However, once you get started, Primetime proves a tad more difficult. The character-based interface lacks color coding and sophisticated formatting options, which makes it harder to view your schedule at a glance or note high-priority items. Want to take your calendar with you? Primetime prints only your daily schedule and a weekly time line.

On the positive side, Primetime's network version costs only \$495 for a five-user license, and group scheduling is a snap to use. Simply go to 'Make Meeting', select the names of the people you want to include, and the program displays a weekly time line showing slots available to all participants. But with its limited views and minimal printing capabilities, the \$189.95 Primetime is not yet ready to play.



Primetime gives you all the scheduling essentials, but its drab interface makes it harder to view your day at a glance.

data backup, disk repair and optimization, file management, and antivirus utilities—PC Tools also features a personal scheduler. And it's a pretty good one, offering alarms, limited recurring events, time-usage graphs, and more. You also get phone accessories like an auto-dialer and an address book, though no phone log. If you're looking to stretch your software dollar, the \$149 PC Tools is hard to resist.

#### Who-What-When

Who-What-When's specialty is project and people management. The program makes it easy to track who's been assigned to what tasks and to follow the progress of projects. Like PackRat, this strong \$295 scheduler is too expensive for personal scheduling alone. Those who need a group scheduler, however, would be well advised to check out this package's network version.

#### **WordPerfect Office 3.1**

At \$149 per user, WordPerfect Office is a fairly cheap group scheduler, but it's not very personal. Designed for use on an office network, the no-nonsense, character-based program lacks colorful time lines and the customizable features of many other schedulers. But its scheduling options are rich, and it combines a highly capable group scheduler with full-fledged E-mail.

#### WHERE TO BUY

#### Act 2.1

Contact Int'l Software 1840 Hutton Dr. #200 Carrolton, TX 75006. 800/365-0606 LIST PRICE: \$395. 2-user network \$595. 5-user \$1295 Reader service no. 680

#### Action Plus 5.0

Action Plus Software 935 East 7220 South #D-108 Salt Lake City, UT

84047-2393 801/255-0600 LIST PRICE: \$495/\$1495

Reader service no. 681

#### Ascend 3.14

NewQuest Technologies Inc. 2550 S. Decker Lake Blvd. Salt Lake City, UT 84119 800/877-1814 LIST PRICE: \$249, with

hard-copy day planner

Reader service no. 682

#### PackRat 4.0

Polaris Software 1820 S. Escondido Blvd. #102 Escondido, CA 92025 619/674-6500 LIST PRICE: \$395, 3 users \$695 Reader service no. 683

#### PC Tools 7.1

Central Point Software 15220 N.W. Greenbrier Pkwy. Beaverton, OR 97006 800/445-4208 LIST PRICE: \$149 Reader service no. 684

#### Who-What-When

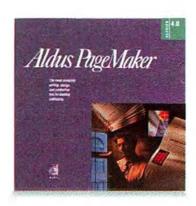
Chronos Software Inc. 555 De Haro St. #240 San Francisco, CA 94107

415/626-4244 LIST PRICE: \$295, server plus 6 stations \$695 Reader service no. 685

#### WordPerfect Office 3.1

WordPerfect Corp. 1555 N. Technology Way Orem, UT 84057 800/451-5151 LIST PRICE: \$149,5 users \$495 Reader service no. 686

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#### SideKick 2.0

**PROS:** Low cost, easy to use, multiple views, extra accessories **CONS:** No conflict checking for recurring appointments



SideKick was one of the first electronic schedulers for DOS, and version 2.0 is still one of the

best. For simplicity and power you won't do better than this \$99.95 Best Buy.

Borland packs a ton of robust features into an interface that's so simple, even novices will feel right at home. Slick pulldown menus and intuitive dialog boxes make moving between Side-Kick 2.0's time planner, address book, and notepad as easy as pressing a key.

SideKick 2.0 has almost all the scheduling moxie you can handle, though it can't check recurring appointments for conflicts or display a monthly calendar. The program more than compensates with a passel of features for users on the go. In addition to scheduling, you get a calculator, a Rolodex-style address book, and a communications program, all in a RAM-resident package of only 40K when it's not active—a big plus for notebook toters.

Even better, SideKick's reconciliation feature lets you download your laptop's calendar to a floppy, view it alongside the schedule on your desktop PC, and copy or delete items so that both schedules match. For a trusty scheduling companion in the DOS environment, look no further than Side Kick.



SideKick's simple but effective interface lets you view appointments and tasks in a variety of ways.

#### YourWay 2.0

PROS: Full scheduling features, attractive interface CONS: Can't search appointments, to-do list not integrated with colendar

**WINDOWS** Your Way is yet another impressive Windows scheduler, hiding strong scheduling features and phone accessories behind a pleasingly simple interface.

Setting appointments is a snap: Simply enter them into the day planner, and drag the mouse downward to block off as many time slots as you want. Since appointments are entered directly into time blocks, conflict checking is not a problem. In addition to a daily sched-

ule, weekly and monthly views help give you the big picture. However, you can't set overlapping appointments or hunt down the nearest block of free time.



YourWay's interface is smooth—colorshaded appointments make it easy to locate blocks of free time.

And Your Way's printing is bare bones
—daily and weekly schedules only.

YourWay's one edge over DeskTop Set and OnTime is support for Windows' Dynamic Data Exchange. This lets you summon YourWay's address book from, say, Word for Windows for easy insertion of names and addresses.

But while YourWay possesses unexpected strengths, it also has some annoying weaknesses—such as an incapability to search for appointments or display your to-do list and daily schedule on the same screen. With a relatively high price of \$199 and minimal search facilities, YourWay is merely a good value, not a great one.

#### WHERE TO BUY

#### CA-UpToDate 2.66 Computer Associates

711 Stewart Ave. Garden City, NY 11530 516/227-3300 LIST PRICE: \$149 Reader service no. 673

Reader service no. 67

#### DeskTop Set 3.0

Okna Corp. P.O. Box 522 Lyndhurst, NJ 07071 201/460-0677 LIST PRICE: \$149 Reader service no. 674

#### Instant Recall 2.0

Chronologic Corp. 5151 N. Oracle #210 Tucson, AZ 85704 602/293-3100 LIST PRICE: \$99.95 Reader service no. 675

#### OnTime for Windows 1.1

Campbell Services Inc. 21700 Northwestern Hwy. #1070 Southfield, MI 48075 313/559-5955 LIST PRICE: \$129, 3 users \$356, 10 users

Reader service no. 676

#### Primetime Personal 2.0

Primetime Software Inc. P.O. Box 27967 Santa Ana, CA 92799-7967 800/777-8860 LIST PRICE: \$189.95, 5 users \$495, unlimited users \$1495 Reader service no. 677

#### SideKick 2.0

Borland Int'l 1800 Green Hills Rd. Scotts Valley, CA 95067-0001 408/438-5300 LIST PRICE: \$99.95 Reader service no. 678 YourWay 2.1
Prisma Softwa

Prisma Software Corp. 2301 Clay St. Cedar Falls, IA 50613 319/266-7141 LIST PRICE: \$199

Reader service no. 679

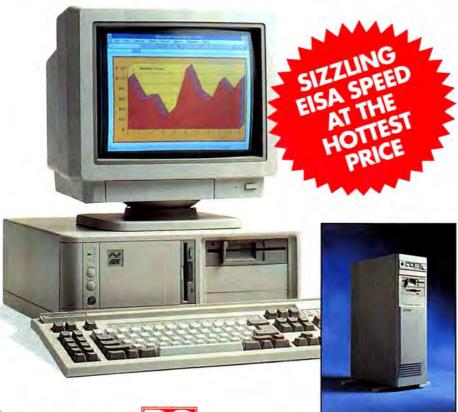
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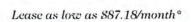
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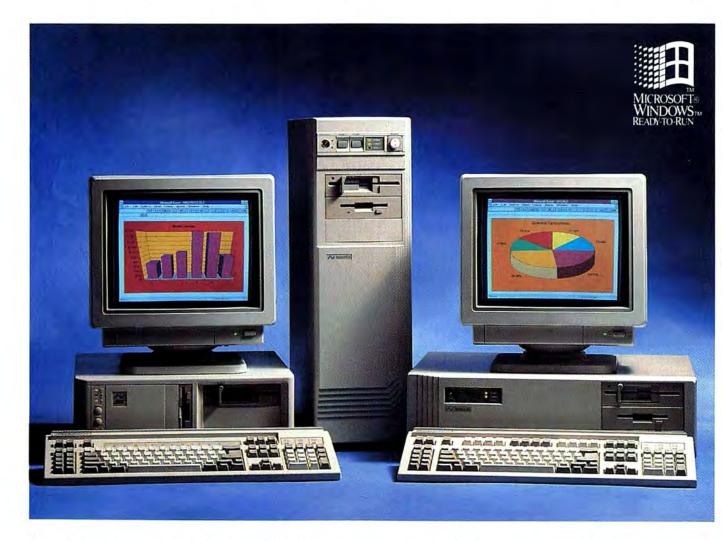
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— PC Magasine, May 26, 1992

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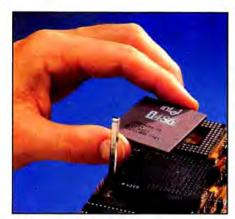
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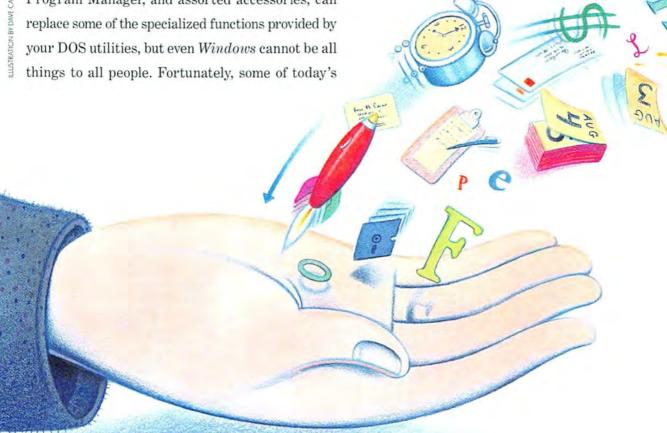
# Want super searching, a custom cursor, or even a fully

Want super searching, a custom cursor, or even a fully functional communications program for less than \$50? Try one of these 30 shareware impulse buys. BY STEVE BASS

chance that you were pushed there—kicking and screaming, maybe — because you urgently needed some indispensable *Windows* application. In the exchange, you may have left behind a valued collection of DOS utilities, little programs with large effects on your productivity. *Windows*, with its File Manager, Program Manager, and assorted accessories, can replace some of the specialized functions provided by your DOS utilities, but even *Windows* cannot be all things to all people. Fortunately, some of today's

brightest and most innovative software developers are writing imaginative programs to fill in the holes.

PC World surveyed user groups and monitored BBS's across the country to find 30 of the best Windows shareware utilities. Why shareware? Because it's low-cost, try-before-you-buy software. All the utilities



## SHAREWARE

presented here are compatible with both Windows 3.0 and 3.1, but you won't really know if one's compatible with your particular application (or needs, for that matter) until you use it. Most of them, like Hunter and WinGrab, can save you time and increase your productivity. Some, like Carets & Cursors, just make your life in Windows a little more attractive.

Shareware comes with an unconditional guarantee: Try it for a reasonable amount of time—usually about 30 days—and if you don't like it, just stop using it (see "Getting Shareware On Line"). If you decide it's valu-

able enough to occupy space on your hard disk, send your registration and payment to the author. This will usually get you a manual, updates, and sometimes phone or BBS support. If that's not motivation enough to register, the annoying "nag" or "guilt" screen variations will probably provide the extra incentive. Some programs force you to read the license screen; others pop up randomly to pester you to register. Worst of all, some programs stop loading altogether after a preset period of time. At the least, registering will clear the guilt screen and your conscience.



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Almanac for Windows lets you configure the calendar to include a wide array of holidays.

#### ► ALMANAC FOR WINDOWS 3.0

lmanac for Windows is a full-featured personal scheduler that includes a notepad, alarm clock, day calendar, and event viewer. What's more, Almanac for Windows offers sunrise and sunset information, phases of the moon. and dates of holidays. To keep track of appointments and day-to-day scheduled entries, double-click on any date in the main month display area to activate the Brief DayView. From there, it's easy to access notes for each day or scheduled entry or to set alarms for appointments, including recurring ones. Almanac for Windows supports portrait and landscape laser printing of monthly and yearly calendars, plus notes and daily schedules. Impact Software, 12140 Central Ave. #133, Chino, CA 91710; 714/ 590-8522, 714/590-0500 (BBS). List price: \$49. Download: ALM30.ZIP.

#### CARETS & CURSORS 1.3

want to add pizzazz to Windows' humdrum cursors? Download a copy of Carets & Cursors and take control of your arrows. This nifty program provides a way to assign a variety of mouse pointers and text editing cursors for all Windows applications. Configure the cursor to change its shape to a thumb, for example, whenever you press a button, or to turn into a thin, easy-to-point arrow when choosing a file in File Manager. Once you assign a cursor to a Windows class—say, all buttons or

scroll bars-the changes occur systemwide. Carets & Cursors comes with over 27 mouse pointer designs, including swords, flashlights, pencils, and mice. It also works with any DOS application that supports a mouse. Instant Replay Corp., 4525 South 2300 East, Salt Lake City, UT 84117; 800/388-8086, 801/272-0671, 801/272-0675 (fax and BBS). List price: \$24.95. Download: CCDEMO.ZIP.

#### ► CLIPMATE FOR WINDOWS 1.14

s the name suggests, ClipMate for Windows complements Windows' Clipboard rather than replacing it. Normally, when you cut or copy a text item to the Windows Clipboard, it's deleted for good the next time you copy or cut an item. You can think of ClipMate for Windows as a sort of "Clipboard rememberer." ClipMate captures the Clipboard data and writes it to a file. Clicking on ClipMate's Magnify feature takes you to an editing screen where you can scroll through the captured contents of past Clipboards and edit them as desired. You can save each ClipMate file in short- or long-term storage or chain multiple files together. Chris Thornton, P.O. Box 26263, Rochester, NY 14626. List price: \$20. Download: CLIPMATE.ZIP.

Reader service no. 645

## CP-72C P-72C

If you're giving up DOS for Windows but still want DOS's batch files and a character-based flavor, try Command Post. With this program you can control the Windows environment with a powerful menu and multiple-window file manager. The menu not only lets you quickly open

or switch to an application, but also gives you access to neat utilities such as the music player and wallpaper changer. Command Post's powerful batch language supplies the tools to create and customize menus. Command Post has a built-in screen blanker. Wilson WindowWare, 2701 California SW #212, Seattle, WA 98116; 800/762-8383, 206/935-7129 (fax). List price: \$49.95. Download: CP-72C.ZIP.

Reader service no. 646

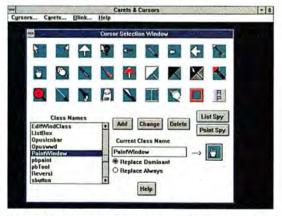
#### ► CT-SHELL 2.20

s a DOS shell, CT-Shell made it easy for novices to bypass the command line. Computer Training now has an equivalent that's perfect for beginning and advanced Windows users. CT-Shell acts as a replacement for Windows' File and Program Managers. For example, although the Windows 3.1 File Manager is improved, CT-Shell is easier to use for tagging and copying, moving, and deleting files. Other features include an event scheduler with alarms, a phone data base with automatic dialer, and a file-finding utility. Computer Training, 13215 N.E. 123rd St. #114, Kirkland, WA 98034-8032; 206/820-6859. List price: \$35. Download: CT220.ZIP.

Reader service no. 647

#### FONTER 4.1

Fonter enables you to print and view all of your Windows fonts, even if you use Adobe Type Manager (ATM)



You get to choose the cursor you want—from thumbs to flashlights—with Carets & Cursors.

or FaceLift. You can cut and paste special characters into other programs, print a font list with samples, print character set charts showing all available characters for any font, or output a complete font book, showing every font and character available. Fonter also lets you zoom in for a close look at individual characters. OsoSoft, 1472 Sixth St., Los Osos, CA 93402; 805/528-3753 (BBS). List price: \$15. Download: FONTER.ZIP.

Reader service no. 648

#### HUNTER 2.0

The more you use Windows, the quicker you fill your hard disk, until locating a particular file becomes an exasperating task. With Hunter, you get a magnet whose sole purpose is finding files or specific text within files. Hunter is easy to use: Choose one or more drives, and set the search criteria based on file name, date, or size. From the pulldown menu, use the Grep command-with over 12 pattern examples-for sophisticated text searches. Use (-212[)\V-]--:d:d:d[-]:d:d:d:d, for example, to find every occurrence of a phone number with an area code of 212. If the file you find has an association in your WIN.INI, a double-click lands you in the application. International Windows User Group (WUGNET), P.O. Box 1967, Media, PA 19063; CompuServe: 76357,2064. List price: \$30. Download: HUNTER.ZIP.

Reader service no. 649

#### ►ICON MANAGER 1.2

If you've collected more icons than you'll ever use, maybe you need Icon Manager, a convenient way to create, organize, extract, and modify them. You start by telling Icon Manager to create a new icon library window, named, for example, Graphics Icons. Then have Icon Manager search your hard disk for files ending in ICO or EXE, and select the icons you want to place in that library window. You can create as many libraries as you want and drag and drop icons to move or copy them into other

libraries. It's easy to capture an image from another program and turn it into an icon. Impact Software, 12140 Central Ave. #133, Chino, CA 91710; 714/590-8522, 714/590-0500 (BBS). List price: \$19.95. Download: ICONMGR.ZIP.

#### LAUNCH 2.22

Launch's rocket ship icon will transport you to a new way of using Windows—bypassing the clunky Program Manager.

Once you've installed the program, you activate Launch's pop-up menu by clicking a user-definable mouse button on any unoccupied portion of the desktop or by using the programmable keyboard hot key. You then highlight the application you want to run and Launch it. Customizing Launch is a snap. Among many other options, you can choose to make Launch the shell from which to run Windows, tell Launch to hide its icon, define new menu titles and multiple layers of submenus, and assign hot keys to run your favorite programs. Summit Research, Inc., 3321 Lauren Way, Lewisville, TX 75028; CompuServe: 76336,1436. List price: \$39.95. Download: LAUNCH22, ZIP.

#### ► LI FOR WINDOWS 1.22

There are times when you need to find, view, and edit multiple files quickly, and LI for Windows is made for the job. From the Open File dialog box, you can search multiple disk drives for files matching specific texts or conditions. When it has found your file, LI lets you view or edit it in ASCII. You can also delete, print, cut and paste, and launch the file's associated program. A handy Tree view makes navigating through subdirectories a breeze. Third Millennium Technologies, P.O. Box 852382, Mesquite, TX 75185; CompuServe: 73537,1203. List price: \$20. Download: LI122.ZIP.

Reader service no. 650



Get Hunter on the trail for fast text searches—here, it's finding every occurrence of the word "Windows."

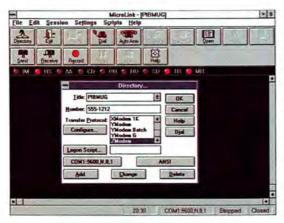
#### ► MAGIC SCREENSAVER 1.40

aking sure an image doesn't burn Linto your screen when the computer's unattended is the main job of a screen saver. Magic ScreenSaver eats up only 84K of disk space and gives you an eye-pleasing color pattern of random geometric shapes you can change to suit your mood. The time-out mode is configurable from 1 to 999 minutes, or you can activate Magic ScreenSaver by moving your mouse pointer to a configurable sleep corner. If you choose, you can require a password to awaken your computer from sleep mode. Software Dynamics, 84 Coach Gate Way, Calgary, Alberta T3H-127 Canada; 403/240-0103, 403/240-0105 (fax). List price: \$25. Download: MAGIC.ZIP.

Reader service no. 651

#### ► MICROLINK FOR WINDOWS 1.0

MicroLink for Windows is a full-featured, highly configurable modem communications application that works in the background. The dialing directory holds a data base of phone numbers along with the accompanying log-on scripts, terminal settings, and port settings for each selection. Among other features, MicroLink's button bar lets you send or receive files, print captured text, open a log, and invoke a script. There are eight transfer protocols, including ZMODEM, and the function keys can be programmed as shortcut keys. Modem status—initialization,



With MicroLink you get an array of powerful communication features, such as the on-screen status bar.

auto-answer mode, receive, and send—is indicated on a light bar, especially handy for those with internal modems. *MicroLink* comes with comprehensive documentation. MicroWerks, P.O. Box 768273, Roswell, GA 30076. List price: \$35. Download: MLINK.ZIP.

#### MONEY SMITH 1.2E

oney Smith is a flexible account-Ling system that comes with three account charts already set up for yousmall business, home, and renter. The program lets you manage multiple accounts, print checks, create a budget, and keep track of investments, including stocks and mutual funds. The tool bar gives quick access to transactions, accounts, the check register, and investments. With Money Smith you can print a balance sheet, income statement, tax summary, and other reports. Assets, liabilities, income, and expense reports can be viewed as graphs. Money Smith Systems, P.O. Box 333, Converse, TX 78109. List price: \$29.95. CompuServe: 71355,470. Download: SMITH12E.ZIP.

Reader service no. 652

#### ► PAINT SHOP PRO 1.01

If importing the proper image format into your favorite desktop publishing program is your problem, then *Paint Shop Pro* is your solution. This topnotch program supports more than 12 file formats, including BMP, PCX, PIC, TIFF, and GIF and even offers its own

proprietary JAS file compression. Paint Shop Pro also is a versatile capture utility and image manipulation tool. You can capture a Windows screen, a single window, or a selected area of the screen. Then you can improve on the original, using Paint Shop Pro's sophisticated imaging tools to trim, resize, and adjust color components. JASC, Inc., 17743 Evener Way, Eden Prairie, MN 55346; 612/934-7117. List price:

\$49. Download: PSP101.ZIP.

Reader service no. 653

#### ► PIXFOLIO 1.044

ixFolio lets you view and catalog most major graphics images, including TIFF, PCX, GIF, and RLE. With PixFolio you first select the images you want to include in a catalog. When you open the catalog, you can display the images as thumbnails or view them in their entirety. The program can read in one format and save in another for quick file conversions, and you can display images as a slide show. The edit feature lets you expand, resize, crop, cut and paste, or copy an image from the Clipboard. You can also print all or part of an image. ACK Software, 298 W. Audubon Dr., Shepherdsville, KY 40165; 502/543-3438. List price: \$35. Download: PIXF1044.ZIP.

#### PRINTER'S APPRENTICE 4.02

Printer's Apprentice is an easy way to browse through your computer's type families, including scalable fonts that come with type management software such as True-Type, ATM, and FaceLift. When Printer's Apprentice first loads, it finds and lists the fonts on your hard disk. You can view any font

in roman, bold, italic, or bold italic, change the size by sliding the point size bar, or see its extended character equivalent with the ANSI bar. Printer's Apprentice generates sample sheets for hard copy font catalogs. Lose Your Mind Software, 24 Winterset Ln., Simsbury, CT 06070; 203/658-4809. List price: \$20. Download: PA402.ZIP.

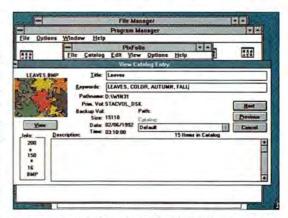
Reader service no. 654

#### THE PRINT QUE FOR WINDOWS 1.2

If you use Excel or Word for Windows, you'll probably want this speedy, hassle-free way to print files. Launch this application, and you'll see a dialog box from which you choose the directory of the files you want to print. Double-click on the appropriate files to add them to the queue, press the Start button, and Print Que opens either Excel or Word for Windows, sends the specified files to the printer, closes the application, and returns you to the desktop. ArGin Software, 133 Parker St., Lowell, MA 01851. List price: \$25. Download: QUE12.ZIP.

#### ► ROCKFORD 2.0

Be who you want to be with Rockford. This elaborate business card program includes a graphics preview screen that shows your card just the way it'll print—and you can make as many changes as you'd like. The program offers many powerful formatting options, such as horizontal and vertical card designs; line, box, and circle draw-



Images won't clutter up your hard disk if you manage them with PixFolio.

ing; four border types; and automatic bulleted lists and clip-art support. *Rockford* prints camera-ready copy up to twice the original size. OsoSoft, 1472 Sixth St., Los Osos, CA 93402; 805/528-3753 (BBS). List price; \$15. Download; ROCKFORD.ZIP.

Reader service no. 655

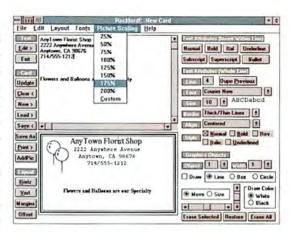
#### ► ROUTE 1 2.0

Then you install Route 1, it pops up vertically on the right side of your screen with preconfigured Windows accessory buttons at the ready: Notepad, Terminal, Paintbrush, and others. If you use other applications repeatedly, attach them to Route 1 for instant access. You can organize applications by category because each button can be configured with submenus. For example, designate a button for Windows' control functions-SysEdit, Control Panel, and Setup. Route 1 has dozens of unique icons and adequate help explaining how to access submenus and create a start-up script. David A. Karp, P.O. Box 20024, Oakland, CA 94620, List price: \$14. Download: ROUTE1V2.ZIP.

#### ► SYSUSE 1.2

Have you ever received a message in Windows that says you have insufficient memory to run an application? Sometimes that means you don't have enough free Windows system resources, and sometimes it means you have plenty of memory but Windows can't use it because it's not contiguous. SysUse 1.2 is a simple utility that keeps tabs of your system use in four key areas: CPU,

memory, Windows system resources, and disk space. When SysUse indicates your system resources are almost gone, you'll know when it's time to close down a few windows. Better yet, SysUse solves the problem with noncontiguous memory: Choose the Options menu from the SysUse window or icon and click on Compact. SysUse calls the GlobalCompact Windows programming function to ensure free memory is contiguous. You can then start your application



Save a bundle by designing your own business cards with a little help from Rockford.

without the frustration of closing down other programs. Jonathan Reed, 1575 Agnes Ave. SE, Palm Bay, FL 32909; 407/725-5318. List price: \$5.95. Download: SYSUSE12.ZIP.

#### ► VIRUSCAN FOR WINDOWS 89

Like its famous DOS counterpart, McAfee's Viruscan for Windows scans your entire system for known computer viruses. The program detects and identifies viruses it recognizes and

### **Getting Shareware On Line**

If you can do without fancy packaging and shrink wrap, you can sample all the shareware you want for the price of an electronic download.

You can download any shareware program reviewed here from the utilities section of PC World Online's Software Library. We've also listed the more popular on-line services and BBS's across the country. To minimize your phone bill once you're on line with a service or BBS, download the ZIP file of all available software programs. You can then log off, unarchive the list, and examine the product descriptions at your leisure. If you don't already use *PKZIP*, you'll also need to download this popular and widely used shareware (\$25) file compression program to open ZIP files.

If you don't have a modem, you can obtain a monthly catalog from most of the software distribution firms listed here, and some produce large sourcebooks. PC- SIG even offers its shareware collection on CD ROM.

User groups are a rich source of up-to-date shareware. Most clubs have a shareware librarian who gets the programs directly from the author. Access to the library ranges from distribution at monthly meetings to members-only BBS's.

Resist the temptation to get shareware from a friend. Not only might you get incomplete files, you risk picking up a virus. The best bet is to take your friends' recommendations but not their disks.

No matter where you get your shareware, even if it's directly from the author, it's always a good idea to scan the software for viruses. Although most virus detectors can't scan a ZIP file, there's an easy solution. Simply create a temporary subdirectory, unzip the files into it, and scan them. If the files pass muster, copy them to a permanent location.



Hard-core DOS users will feel secure with WinCLI in their Windows toolbox.

tells you if one has infected system memory, a boot sector, or a file. If it detects a virus, you run Clean-Up to disinfect the system and repair damaged areas. The package includes an automated installation program, full documentation, and *Viruscan* for DOS. McAfee Assoc. LP, 3350 Scott Blvd., Bldg. 14, Santa Clara, CA 95054; 408/988-3832, 408/988-4004 (BBS). List price: \$35 home use, site license for businesses. Download: WSCAN89.ZIP.

#### ► WINCLI 3.02

Reader service no. 656

det to the DOS prompt in Windows Jin a flash with WinCLI. This Windows command-line interface opens its own window to give you lightning access to the familiar C> prompt to run your favorite DOS and Windows apps. For example, instead of clicking on an icon to open Excel or Write, just type the name of the program. WinCLI searches your PATH command, locates the program EXE file, and opens the program in the appropriate operating environment. Eschalon Development Inc., 110-2 Renaissance Sq., New Westminster, BC V3M 6K3 Canada; 604/520-1543. List price: \$35. Download: WINCLLZIP.

Reader service no. 657

#### ► WINCLOCK 3.20

Run WinClock 3.20, and you'll get an on-screen display of time and date along with plenty of alarms, beeps, and timers. WinClock gives you ten alarms you can choose to set daily, weekly, or periodically, each with an attached note. And WinClock will let you set a program to run at a specified time. David A. Feinleib, 1430 Massachusetts Ave. #306-42, Cambridge, MA 02138; 617/484-5304. List price: \$16. Download: WINCLOCK.ZIP.

Reader service no. 658

#### ► WINDOCK 1.51

In Dock is a flexible and powerful substitute for Windows' Program Manager. When you first install WinDock, a "dock" button will appear in the right-hand corner of your screen. Then, using Windows 3.1's drag-anddrop capabilities, you attach an application to WinDock by dragging the application over from File Manager and dropping it on the dock. Each docked application appears as a separate button under the WinDock icon. Then not only can you launch the application by double-clicking its button, you can even drop a file onto it and the program will come up with that file. Brian E. Capson, 8 Marlin Terr., St. John, New Brunswick E2K 2B6 Canada; 506/648-9299. List price: \$15. Download: WINDCK15.ZIP.

#### ► WINEZ 3.0B

So you've got a dozen applications open and navigating through them is giving you a headache? Get organized with WinEZ, a simple way to switch quickly between applications or open new ones. WinEZ puts two icons on the title bar of your active application. Clicking on the first icon instantly gets you WinEZ's Power Menu and a list of every group in Program Manager. Scrolling

the list shows each application within each group for immediate access and loading. The second icon is a fast task switcher. The handy End Task feature immediately closes a *Windows* application. New Generation Software, P.O. Box 9700, Dept. 271, Austin, TX 78766-9700; 800/964-7638, 512/795-8300. List price: \$29.95. Download: WINEZ.ZIP.

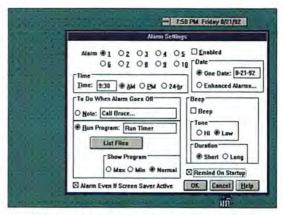
Reader service no. 659

#### WINFIN 1.0

hould you cash in your CD now? Pay Off your installment loan? Instead of creating a spreadsheet, load up WIN-FIN, a collection of 11 handy financial programs. In each program, all you do is fill in an unknown value, click the Calculate button, and view the results. For example, to calculate the worth of a CD, enter the face value, fees, date of purchase, and maturity, and WINFIN will tell you the net cost and income, APR, and quoted rate. The package includes programs for analyzing mortgages, bonds, U.S. Treasury Bills, Bankers Acceptance, and other financial instruments. Gjetaas, Inc., 7251 Mt. Baker Hwy., Deming, WA 98244; 206/599-2418. List price: \$20. Download: WFINANCE.ZIP.

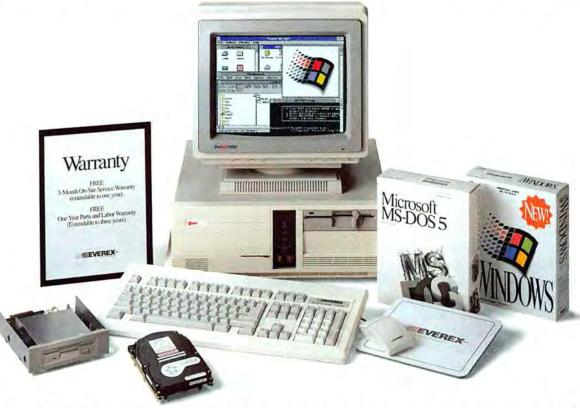
#### ► WINGRAB 6.1

Wouldn't you love to capture an onscreen address and send it to the printer formatted for an envelope in less than two mouse clicks? *WinGrab* is an easy-to-use, intelligent envelope ad-



WinClock gives you an on-screen clock and nudges you into action with ten handy alarms.

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- Microsoft<sup>®</sup> Windows<sup>™</sup> 3.1 (preinstalled)

- Standard 101-key Keyboard
- Microsoft -compatible Everex Mouse
- Everex Mouse Pad
- Free 3-Month On-Site Service Warranty
- Free One-Year Parts and Labor Warranty

(Both warranties extendable to three years).

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dresser that lets you do just that. WinGrab supports PostScript- and LaserJet-compatible printers and works with multiple printers simultaneously-for example, one port can print envelopes while another prints shipping labels. WinGrab is bundled with Win-GDB, a data base that maintains files of names, addresses, and print labels for mass mailing projects. Included in the package are macros for attaching Win-Grab and WinGDB to your Windows word processor. ZPAY Payroll Systems, Inc., 2526 69th Ave. S, St. Petersburg, FL 33712-5631; 800/468-4188, 813/866-8233. List price: \$49.95. Download: GRAB61.ZIP.

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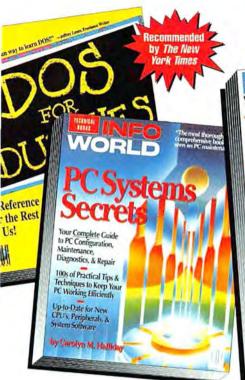
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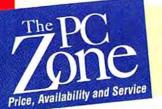


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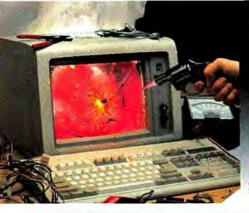
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## PARADOX for WINDOWS

The first heavy-duty DOS data manager to go graphical, Paradox for Windows promises to take the pain out of data management.

> BY CELESTE ROBINSON

> > aradox is the number one relational data manager on the market today, with a richly deserved reputation for mixing power with ease of use. So Borland International's decision to put a Windows face on Paradox has users everywhere understandably excited. It turns out that their excitement is entirely justified:

Paradox for Windows' impressive graphical user interface makes it simple to get at all kinds of data—even if you're just a novice.

Paradox for Windows, however, isn't just an old product with a new face. It's fundamentally a new program, complete with a slew of major additions that old-guard Paradoxers have been clamoring for: memo fields, drop-down menus, and cut-and-paste editing, along with vastly improved form and report designers. It handles both Paradox 3.5 and dBASE files, makes it easier to define relationships between files, and includes a new programming language,

#### FEATURE DATA MANAGEMENT

Object PAL. And Paradox for Windows takes advantage of Object Linking and Embedding (OLE) and Dynamic Data Exchange (DDE) to swap data with other applications.

#### A WHOLE NEW FACE

The new features make Paradox for Windows fly, but it's the revamped interface that makes it soar, especially for Windows users, who'll instantly feel at home. Of course, Paradox for Windows sports the standard Windows look, complete with drop-down menus and resizable, scrollable windows. Just under the main menu is a context-sensitive button bar—called a SpeedBar—that lets you access frequently used functions quickly, without having to navigate menus.

As with Borland's recently released spreadsheet Quattro Profor Windows, you can right-click on any Paradox for Windows object (a field, a box, or a grid line, for example) to bring up a dialog box where you can check or change the object's color, font, commands executed under certain conditions, or other properties. Called Menus on Demand, these dialog boxes display only the properties applicable to the current object.

Features such as a file browser and folders make it easier to keep track of your work. When you open a folder, for example, you see icons for objects such as tables, forms, and reports in the current work area. To access an object or launch an application, just double-click on its icon.

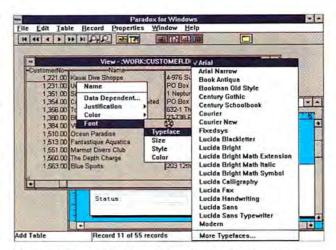
#### NEW WINDOWS ON FORMS AND REPORTS

The forms and reports in previous versions of *Paradox* for DOS were a pain to use: You couldn't cut and paste, use tabs, copy fields, or create lines or boxes. And you were limited in how many levels of relationships you could define between data tables. *Paradox for Windows* changes all this. You now get everything that was missing, along with lots of extras, like the capability to place graphics on a page, and menu-driven facilities for defining drop-down menus, buttons, and check boxes.

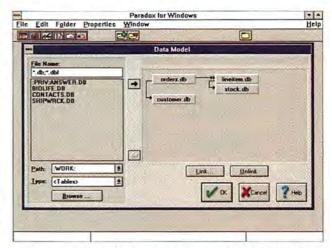
A new set of design tools gives you a whole group of paint program—type features that you might not want your kids to discover: You can spend hours just playing with colors, shapes, and fonts. And you can use the same design window to create forms, reports, and mail merges, so you don't have to learn different sets of commands for producing these objects.

## THE NEW FEATURES MAKE PARADOX FLY, BUT IT'S THE REVAMPED INTERFACE THAT MAKES IT SOAR.

Tools that make your data look good are fun, but the real question is, can you easily link files and massage data as needed? The answer is yes. With *Paradox for Windows*, you can "draw" relationships between tables using the new Data Model tool, as long as the proper indexes are set up. The product automatically links tables on their matching fields.



Menus on Demand are part of Paradox for Windows' new look; you can right-click on any object to display a menu of changeable attributes such as color, font, and size.

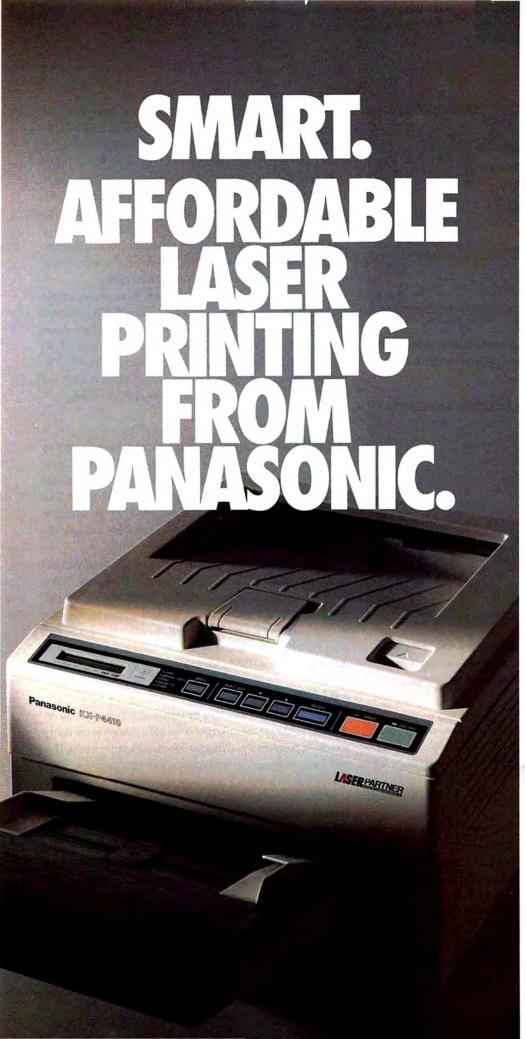


The Data Model tool lets you define multiple levels of table relationships for forms and reports, and it will automatically link tables using matching key and index fields.

With Paradox for DOS, to report on selected records from a table, you had to perform a query, copy a report to the resulting answer table, and finally generate the report. Even automating this process was relatively awkward; you had to either record your keystrokes or write a script. With Paradox

for Windows, viewing or reporting on selected records becomes a more straightforward, one-step process—you simply design a report based on a query that you've already saved.

The Data Model tool also lets you base forms, reports, and mail merges on a query instead of on a table or a group of tables. Just select *Queries* from the Type menu to display a list of saved query objects. When you choose a query from the list, all tables included in the query are automatically used for your document, their links already defined.



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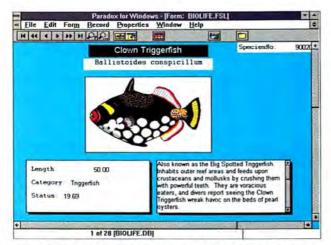
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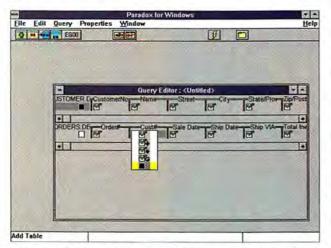
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Paradox for Windows makes it easy to include graphics and memos in fields. You can dress up your reports with colors, images, and fonts.



The Query Editor looks familiar but offers new features like drop-down menus for checking fields and SpeedBar buttons for creating and placing example elements in queries.

#### **NEW DATA TYPES**

The old Paradox limited field types to alphanumeric, date, currency, and numbers. No more. Paradox for Windows supports variable-length data fields, including memo fields, formatted memo fields (to store attributes such as font, style, and color, as well as text), graphics, and OLE fields to hold data from other Windows applications.

Paradox for Windows gives you greater control over your data and better data integrity than Paradox 3.x. In the past, for example, Paradox enforced referential integrity (a feature that lets you maintain common values in tables that are used together) only through the use of special forms. When you accessed a table through one of these forms, the tables related in the form were "link locked." This kept data in shape, but you couldn't view your data through any other form.

Paradox for Windows, on the other hand, makes it much easier to ensure that data gets entered the way you want it and stays that way. When you create a table, you can control the integrity of the data by defining features such as validity checks, table lookups, and referential integrity. You control what a user is permitted to enter in a table and whether linked tables are updated automatically whenever a table is accessed. By including these checks with a table, rather than in a form, you get data integrity without the inconvenience of form locks.

With the old version of *Paradox*, the order in which you could view a table was limited. Now you can view a keyed table by an alternate sort order, thanks to a dialog box that lets you define secondary indexes when you create a table.

If the *Paradox* tables aren't enough, you can also create *dBASE*-type tables. A new technology called BOCA—Borland Object Component Architecture—lets applications share objects such as forms and reports and allows for access to both *dBASE* and *Paradox* tables. A word of caution, however: The validity checks and referential integrity options you can use with *Paradox* tables are not available for *dBASE* tables.

#### QUERIES: A FAMILIAR FACE

One of Paradox's biggest innovations was its use of query by example (QBE)—a method of asking for certain information in your data base by checking off the fields you want to examine and giving an example of the type of data you'd like to see. Now you create queries in a Query Editor window, but the process is basically the same: You still use check marks and example elements to tell Paradox what information you want.

Some new query features in *Paradox for Windows* will please all *Paradox* users. The SpeedBar in the Query Editor window lets you add or remove tables quickly. Buttons for creating, copying, and using example elements speed the creation of a complex query. And you can tell *Paradox* whether to create a *Paradox*, *dBASE*, or SQL-type answer table, or how to order answer-table fields, using another button.

#### A NET GAIN

Users were often frustrated by *Paradox*'s insistence on restarting a query if the program detected a change in the query tables—a problem if you needed information from a table that was frequently updated by other users on a network. With *Paradox for Windows*, you can specify how you want the query to be handled under these circumstances. The query can be restarted, canceled, or run without regard to subsequent data changes. And developers will be happy to know that the dreaded form locking is gone. That means network users are no longer restricted to viewing linked tables from one form at a time, making it easier to develop multiuser applications.

#### A FLEXIBLE NEW LANGUAGE

Paradox for Windows features a new programming language, ObjectPAL, which, not surprisingly, is object oriented. Object-PAL is similar to PAL (Paradox Application Language) but includes event-driven commands that provide more control



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over how data base tasks are handled. According to Borland, ObjectPAL also makes it easier to develop and update applications. Unfortunately, the PAL scripts written in Paradox's earlier DOS versions won't work in the Windows version. It's possible, however, to launch a PAL application from Paradox for Windows; you can include an icon for the old application in a folder and use this to access Paradox for DOS in a window.

Once developers are over the hump, though, they will probably find that ObjectPAL is more flexible than its precursor. Instead of having to create a hierarchy of programs for an application, for example, you can attach ObjectPAL commands—called Methods—that tell *Paradox for Windows* what to do when a user opens a window or clicks on a button.

The new editor is yet another treat for *Paradox* developers. You can still tie in the text editor of your choice, but you may not need to anymore. With the cut-and-paste facilities of the new editor, you can copy text from templates of ObjectPAL commands and modify them as needed.

Paradox for Windows' debugger is also a big improvement. You can set break points on your programs, trace commands as they are executed, and display code from a Method other than the one being executed. In addition, you can tell the debugger to step through all the lines in a procedure or Method, or execute a call to a procedure or Method as one step.

The new Object Browser lets you check the relationships between the many objects that may be part of a *Paradox for*  Windows application. And for sophisticated developers, Paradox for Windows Methods can call Dynamic Link Library (DDL) functions written in languages such as C and Pascal.

#### DOS USERS: REV UP YOUR HARDWARE

If you want to go the *Paradox for Windows* route, you may first have to shell out for some hot hardware. The new *Paradox* needs a fast 386—or, better yet, a 486—with plenty of RAM and disk space, especially if you plan to use graphics files.

Still, *Paradox for Windows* is nothing if not seductive; it's easy to get caught up in all the new things you can do with colors and graphical objects on forms and reports. But when using a relational data base program like *Paradox* to manage linked files, the true test is whether it offers enough flexibility to manage data without jumping through unnecessary hoops.

Fortunately, *Paradox for Windows* goes a long way toward fulfilling this promise. With its solid query by example and

friendly *Windows* interface, it's a great product for new data base users. And *Paradox* for DOS users willing to learn a few new keystrokes will find almost everything they wished for in their old version.

Celeste Robinson is a contributing editor for PC World.

#### WHERE TO BUY

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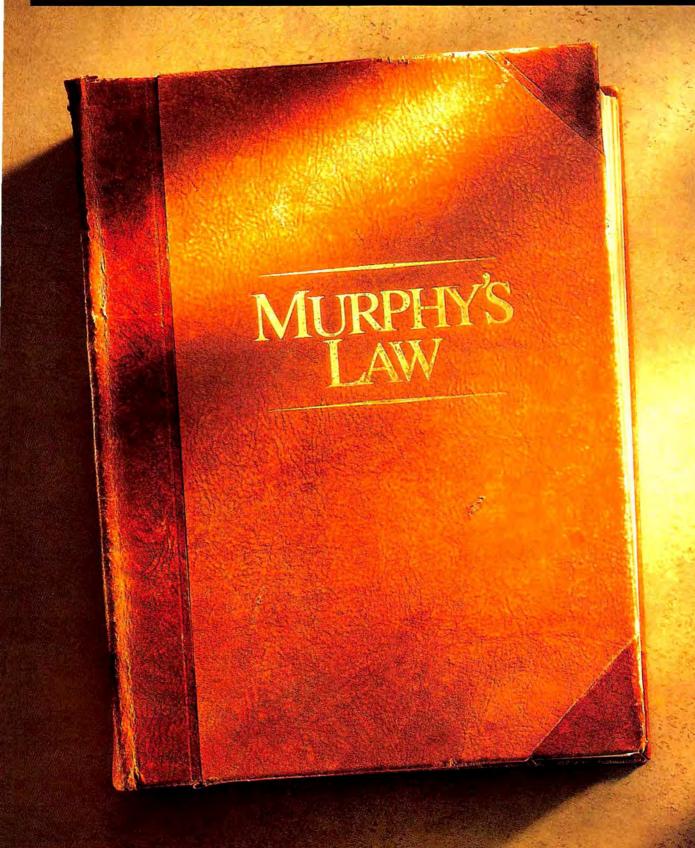
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Every Dell i486 system has FLASH EPROMs for easy BIOS upgrading.

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In the course of millions of conversations with our customers, we discovered what bothers you about buying and owning computers. One theme was sounded over and over: It's not just a great computer you want; it's what we can do to make sure you'll get the most out of your computer.

So we studied every area where we could help, from hardware to compatibility, from telephone response to service. The result was some fairly dramatic changes at Dell to make computing easier now, and in the future.

We added new services and specialists so you can get faster help. We involved our suppliers and software developers to find new ways to ensure compatibility. Most important, in the three key areas where you want assurances—compatibility, quick answers and fast service—we're offering something completely foreign to other computer companies: guarantees.

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They should make everybody happy. Except maybe our competitors. And Murphy,



## EIGHT

## **EXCEPTIONS TO MURPHY'S**

## LAW.

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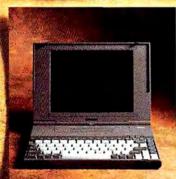
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## MURPHY'S LAW #77

THE ONLY PRODUCTS YOUR COMPUTER WILL NOT WORK WITH ARE THE ONES YOU REALLY NEED.

## INTRODUCING

## GUARANTEED

## COMPATIBILITY.

We've discovered a common phobia among computer shoppers. They're afraid the computer they're about to buy won't run everything they'll need in the future.

At Dell, one of our main goals when we design systems is compatibility. We have a state-of-the-art lab where our engineers do nothing but make sure our computers run other vendors' products. We configure our systems with third-party boards and hundreds of packages in virtually every possible permutation. With thousands of configurations behind our computers, we often find situations that will "break" the system. Then we find a way to make it all work, so you don't have to.

We also have strategic relationships with the people who make those new products. For example, if you have a problem with system software from Novell, Banyan, SCO, Microsoft or IBM, we'll use our alliances with these companies to bring everyone together to solve your problem.

WHAT ABOUT NEW PRODUCTS? As we said, our systems are designed to be compatible today and tomorrow. But if a new product is released, and your system is not compatible, we can provide free BIOS changes, if that will make them work together. For complex situations, we can modify the BIOS for you. And for the particularly tough problems, we have specialists in areas such as networking, UNIX\* and graphics. No one can predict the future. But we'll do everything we can to make your system compatible as quickly as possible.

DOESN'T ANYONE ELSE GUARANTEE COMPATIBILITY? In a word, no. Oh sure, you could probably squeeze a few vendors for some compatibility assurances. But when you try to get them in writing, they're a bit tougher to get.

OUR COMPATIBILITY GUARANTEE: Dell systems are designed and tested to run all standard operating systems, application software, peripherals and network operating systems developed for ISA and EISA architecture systems. If you encounter a compatibility problem with your Dell Performance Series system within three years of the original purchase, we guarantee Dell's engineers and technicians will work with you to identify the cause of the problem and recommend a solution. If the problem (other than software support for device drivers) can be solved by updating your system, we'll provide the change at no charge. Or, in the rare event we can't do that, you may return the system for a refund. You understand that we can't extend the guarantee to software or devices that were never intended to run on comparable ISA or EISA systems of the same vintage.<sup>1</sup>





For particularly tough situations, we can rewrite parts of the BIOS for you.



We guarantee we'll work with you to ensure compatibility with products introduced in the future.



We constantly create compatibility situations that will "break" the system, then find a way to make it work—so you don't have to.

### MURPHY'S LAW # 13

THE MORE
DESPERATE
YOUR PHONE
CALL, THE
LONGER YOU
WILL BE PUT
ON HOLD.

## INTRODUCING

## GUARANTEED

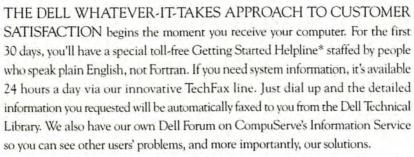
## RESPONSE.

Having trouble formatting your hard disk? Need somebody to explain the mysteries of MS-DOS 5.0? Can't set your modem switch?

If you have a Dell computer, you can call us and get all the help you need without umpteen call transfers or endless choruses of "Tie A Yellow Ribbon." We've put together a remarkable system that enables our trained technicians to solve most reported problems over the phone, usually in 10 minutes or less.

It works like this: Calls made to Dell Technical Support are entered into our system. If our technicians run into a problem they can't solve, they access the Problem Resolution Database. Chances are a similar problem—and solution—have been entered in the past. We also keep a complete history of your own computer. Over time, we'll get to know your system as well as you do. Maybe even better.

And the price of your system includes 7 day-a-week, 18 hour-a-day,\* toll-free phone support for as long as you own your Dell computer.



All these services haven't gone unnoticed by our customers. We've won PC Week's Customer Satisfaction Poll an unprecedented eight times, won PC World's World Class Award for Best Service, and ranked among the top of PC Magazine's customer service and reliability survey.

OUR RESPONSE GUARANTEE: We guarantee when you call our technical support center with a problem during operating hours (6AM-12 Midnight CT daily),\* you will talk to a technical specialist within 5 minutes. If you do not wish to hold for a technician, we guarantee your call will be promptly returned by a technical specialist within one hour. In the rare event you don't reach a technician or a technician doesn't call back within one hour, let us know and you will receive your choice of a check for \$25 or a credit of \$25 toward your next purchase.<sup>2</sup>





We solve most problems over the phone within 10 minutes.



24-hour system information is available on our TechFax Line.

## MURPHY'S LAW #37

THE MORE
URGENT THE
PROBLEM,
THE LONGER
IT WILL
TAKE FOR
SERVICE.

## GUADANTEED

## **NEXT-BUSINESS-DAY SERVICE.**

We heard what people had to say about service they've had elsewhere, and it wasn't very nice.

So instead of giving you the usual reliability story, we'll give you the straight scoop.



We guarantee a trained technician will be at your desk by the end of the next business day, if needed.

THE STANDARD SERVICE IS ANYTHING BUT STANDARD. When we find out you have a problem, a trained technician will be at your desk the next business day if necessary. The next-business-day service is backed by a \$65 million parts inventory. (That's probably ten times more inventory than most resellers' revenue.) It's also supported by an overnight parts shipment and a field service force that boasts hundreds of certified NetWare\* technicians.

If our next-business-day service isn't fast enough for you, there is the option, in many areas, of upgrading to Critical Care,\* 4-hour service.\*

You can even sign up for these service commitments for as long as four years.

Think of them as long-term insurance against Murphy's Law.



Every Dell system is tested for extremes of heat, cold, shock and vibration.

HERE'S A NOVEL IDEA: WE'VE DESIGNED THEM SO THEY WOULDN'T BREAK DOWN. For added confidence, we design our systems from the ground up rather than rely on dubious imports. With quality components rather than the rejects some vendors pick up on the open market.

Every Dell system is tested for extremes of heat, cold, vibration and shock. It features specially designed air cooling systems to keep noise and temperature levels low. Highly integrated systems boards minimize the number of connections and parts, so there are fewer things to go wrong.

OUR SERVICE GUARANTEE: If there is a hardware failure with your Dell system while under a service contract purchased from Dell and you notify us before 5:00 PM CT, a technician, if needed, will arrive to address your problem by the end of the next business day. In the rare event the technician does not arrive as promised, let us know and your situation will receive top priority for resolution, plus you will receive an additional month of service at no cost to you.<sup>3</sup>



## MURPHY'S LAW # 69

THE MORE
YOU ASK
FROM YOUR
COMPUTER
COMPANY,
THE HARDER
IT'LL BE
TO GET IT.

## INTRODUCING GUARANTEED

If someone ever does a survey to find the response most hated by a computer company's clients, it will probably be this: "It can't be done."

Companies that say things like that put their rules before your problems.

At Dell, we put your problems before our rules.

Depending on your circumstances, we offer a variety of specialized services like comprehensive system integration and preconfiguration, and preloading of popular and custom software.



We have close working relationships with industry leaders like Microsoft, Intel and Novell, and can enlist them to help plot a corporate IS strategy.

With the help of other business partners, we can do things like tailor a support package for you or arrange remote diagnostics for remote sites.

Our flexibility goes beyond our own products. For large projects, we can acquire and integrate over 5000 non-Dell products, so you don't have to go to a hundred different vendors to get your system together.

OUR SATISFACTION GUARANTEE: To show you we mean what we say, we'll give you a 30-day, no-questions-asked, money-back guarantee with each computer.

THE LAST GUARANTEE. Computer companies are notorious for broken promises. So, as you've read, we're not making promises. We're making guarantees. Guaranteed compatibility. Guaranteed quick answers. Guaranteed fast service. And guaranteed satisfaction.

Our philosophy of putting your problems before our rules is why two-thirds of the FORTUNE 500\* buy from Dell. It's a philosophy that made us an \$890 million company. And it's a philosophy we'll continue.

We guarantee it.



If, after 30 days, you're still not happy, we'll give your money back with no questions asked.



We're more flexible, to help you get the most out of your computing.



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# 200MB



# FIGIG Disks

IF WINDOWS AND ITS

APPLICATIONS ARE ABOUT

TO BURST THE SEAMS

OF YOUR HARD DISK,

SEW UP A SOLUTION WITH

ONE OF THESE ASUMB

TO 250MB DRIVES.

BY GEORGE CAMPBELL

ven in the best relationships, there comes a time when you simply need more space. And if you're in love with *Windows*, be prepared to kiss your old 40MB or 80MB hard disk good-bye.

Windows applications are such notorious disk hogs that even a 100MB drive can't handle a full suite of Windows applications and leave enough room for your data. As Windows runs, it often uses your hard disk as virtual memory, creating huge swap files. Applications also create large temporary files, making even further demands on available disk space.

Meanwhile, data files are growing. Scanned images start around

1MB, and multimedia files containing full-motion video or digitized sound can be enormous. If you're beginning to use more graphics-oriented applications like presentations, multimedia, or color desktop publishing, you'll need all the space you can get.

Fortunately, there's a quick solution for your storage woes. A 200MB drive will take care of your needs now and well into the future. With clock-speed doublers for 486s, graphics accelerators that make *Windows* screens fly, and ingenious new CPU upgrades for 386s, you'll likely hang on to your current system for a long time, which means you should consider expanding your storage space as well.

Most 200MB drives are a real bargain—many cost about \$600 on the street, just \$200 or so more than many 100MB units. We've rounded up 33 hard drives ranging from 170MB to 248MB, all featuring built-in interfaces with IDE or SCSI controllers for

### Hard Disk Shopper's Checklist

Before you order a new drive, make sure it's going to be compatible with your current system. Check these items on your system and with the vendor:

HARDWARE COMPATIBILITY: Does your current drive interface match your new drive's? If not, you'll need a host adapter card and new cables.

SOFTWARE COMPATIBILITY: Will it work with your operating system, BIOS, and network software? Make sure drivers for SCSI and external drives are included.

SIZE: Does the drive fit inside your system? A full-height drive won't squeeze into a half-height drive bay, and you'll need a mounting adapter to install a 31/2inch drive in a 5%-inch drive bay.

DATA BACKUP: Backing up a 200MB drive can take up to 138 high-density floppy disks and more than 5 hours. The boredom alone might prove fatal. An easier, faster solution is a tape backup drive, such as Colorado Memory Systems' Jumbo 250, which costs around \$350.

top performance. Prices vary wildly-from \$3 to \$8 per megabyte-but dealer discounts can chop 25 percent or more off the price. Some manufacturers sell their drives only through third-party dealers, so there's no list price. Once you decide on your drive model, shop around for the best deal. Here's what to look for.

#### THE ABC'S OF HARD DRIVES

Thanks to fundamental improvements in technology, today's hard drives are much faster, sturdier, and more capacious than those of even two years ago. Most drives then

### 170MB TO 250MB IDE/SCSI HARD DISKS

Сотрапу	Product	Capacity (MB)	Interface	LIST PRICE		SIZE		SPEED	
				Price	Price of host adapter	Width (inches)	Height	Average access time (ms)	Data trans- fer rate (mbps) 1
CMS ENHANCEMENTS	K200A3I3	212	IDE	\$1369	included	4	third	16	1.5
A STATE OF THE PROPERTY OF	K200a3-3540	212	IDE	\$1199	n/a 3	4	half	14	1.5
	K200-53	200	SCSI	\$1349	\$649	4	third	16	10
	K160S1	200	SCSI	\$1419	\$679	4	third	16	10
CONNER PERIPHERALS	Jaguar 170 CP-30170E	170	IDE/SCSI	n/a 4	n/a <sup>3</sup>	4	third	17	2
	Cougar 210 CP-30200	210	SCSI-2	n/o 4	n/a 3	4	third	12	2.5
	CP-3200F	213	SCSI	n/a 4	n/a 3	4	half	16	1.5
	CP-3204F	213	IDE	n/a 4	n/a <sup>3</sup>	4	half	16	1.5
CORE INT'L	LAN1T230 (external)	230	SCSI	\$1790	n/a <sup>3</sup>	5	6	13	1.5
	3HC230	230	SCSI	\$1395	n/a 3	3%	full	13	1.5
CUMULUS	124280	200	IDE	\$1250	n/a 3	3%	half	14	1.5
	124257	200 IDE \$1300 n/a 3 3% half 16 1.25	1.25						
	124259	200	IDE	\$1300	n/a 3	3%	half	15	1.25
	124351	200	SCSI	\$1350	n/a 3	31/4	half	15	1.25
	124361 (external)	200	SCSI	\$1550	n/a 3	3%	6	15	1.25
	124703	200	SCSI	\$1450	n/a 3	3%	half	16	1.25
	124732 (external)	200	SCSI	\$1650	n/a 3	3%	6	16	1.25
MICROSCIENCE INT'L	7200	201	IDE	\$595	n/a <sup>3</sup>	4	half	18	1.25
PERISOL TECHNOLOGY	DS213SPS2	213	MCA/SCSI	\$944	included	4	half	15	6
	DS213SESA	213	EISA/SCSI	\$1211	included	4	half	15	6
	LS2135	213	SCSI	\$816	included	4	half	15	6
	LS213A	213	IDE	\$711	included	4	half	15	6
PROCOM TECHNOLOGY	MD240	240	SCSI	\$1595	\$349 7	31/4	6	15	2
	Propag200	210	DE	\$1085	\$359	3%	half	16	5
	Si240	240	SCSI	\$1525	\$349 7	31/2	half	15	2
QUANTUM	ProDrive LPS240AT	245	DE	\$785	included	4	third	16	5
	ProDrive LPS240S	245	SCSI/SCSI-2	\$830	n/a <sup>3</sup>	4	third	16	10
SEAGATE TECHNOLOGY	ST1239A	211	DE	n/a 4	\$30	4	half	15	4
	ST3283A	245	DE	n/a 4	\$30	4	third	12	6
	ST3283N	248	SCSI-2	n/a 4	\$200 to \$300	4	third	12	10
STORAGE DEVICES	SHD-209 (external)	213	SCSI/parallel	\$899	included	3%	6	16	4
WESTERN DIGITAL	WDAP4200	212	IDE	\$899	n/a <sup>3</sup>	3%	half	15	5
	WDSP4200	210	SCSI	\$899	n/a 3	3%	half	15	5

n/a = not available

<sup>Performance may vary depending on motherboard
Compatible with all disk defragmentation software.

Just third-party host adapter.</sup> 

Not sold directly; pricing set by vendors.
Available through vendor.
External.

employed a modified frequency modulation (MFM) read/write scheme. Now virtually all drives use run-length limited (RLL) encoding, which parks 50 percent more data on the same physical space, boosting capacity and drive speed.

Old MFM drives used separate controller cards. The controlling electronics have shrunk, and manufacturers have moved them onto the drive. With 200MB devices, you have a choice of two interfaces: imbedded drive electronics (IDE) or small computer system interface (SCSI) drives. Which you choose de-

pends on the system you have now and the type of peripherals you plan to add later.

Most PCs now come with a connector for IDE drive cables built into the motherboard and support IDE in the system BIOS. If you've got an IDEready system, that interface is probably your best bet. (If unsure, call your vendor, or pop the hood on your PC-if the current drive's ribbon cables attach to the motherboard, it's an IDE.) If your PC lacks an IDE interface, you'll need to buy a separate IDE card that plugs into an expansion slot; most cost less than \$50.

A SCSI interface, on the other hand, is rarely on the motherboard. You can get inexpensive SCSI boards bundled with the drive or buy them separately for around \$50; others feature sophisticated data caching and cost another \$600 to \$700. You'll also need to install a device driver in your CONFIG.SYS file, which can make installation a tad tricky depending on the drive. The advantage to SCSI is that a single interface board can handle up to seven SCSI devices, including additional hard disks, CD ROM drives, tape backup systems, and scanners.

(Without special electronics, a system can't handle more than two IDE drives.) An improved version, SCSI-2, offers much higher throughput—ideal for systems that move around huge chunks of data, such as network application servers or multimedia PCs. SCSI-2 drives and adapters are typically more expensive.

If your storage requirements are massive or you plan to add other SCSI devices to your system, SCSI is the way to go. However, because specifications vary from vendor to vendor, check with manufacturers to ensure compatibility between peripherals and your SCSI adapter card.

#### SIZE COUNTS

A hard drive won't do you any good if it doesn't fit in your machine. All internal drives will fit into a full-height 5½-inch drive bay, though some require inexpensive adapters. If your machine's drive bays are only 3½ inches wide and/or half- or third-height, you'll need a smaller drive. Check with your vendor to make sure necessary adapters are provided or available.

Installing a new drive isn't a tough job, but if the very idea makes you queasy, professional installation isn't expensive; the job takes only half an hour.

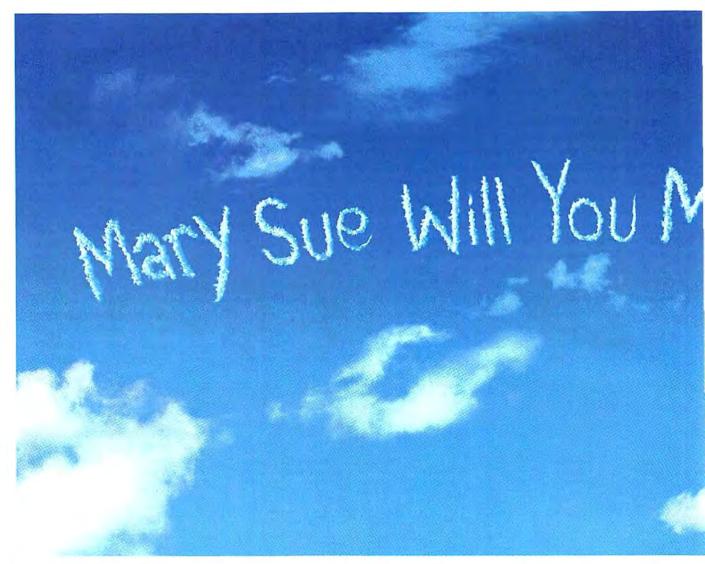
#### DRIVING AT WARP SPEED

The good news here is speed, indicated by the drives' blazing average access times and hefty data transfer rates. On average, the drives in our guide take from 12 to 18 milliseconds to locate data stored on disk. For most applications, 18ms is plenty fast. But if you use an application that accesses the disk frequently—such as a data base or Windows—you'll want to pay a few more dollars for a 12ms drive.

A drive's data transfer rate measures how much data can move between the drive and

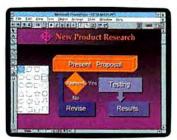
Size of on-board buffer (K)	Compatible with optimizing software <sup>2</sup>	MTBF	Warranty (years)	Money- back guarantee	Manufacturer- based customer support	Reader service number
0	Y	50,000	1	Y	Y	720
0	Y	50,000	1	Y	Y	720
0	Y	100,000	1	Y	Y	720
0	Y	100,000	1	Y	Y	720
64	Υ	150,000	1	γ.5	Υ	721
256	Y	150,000	1	Y 5	Y	721
64	Y	150,000	1	Y 5	Y	721
64	Υ	150,000	1	YS	Υ	721
0	Y	150,000	5	N	Υ	722
0	Y	150,000	5	N	Y	722
0	Y	86,000	1	γ5	Υ	723
0	Y	50,000	1	Y 5	Y	723
0	Υ	70,000	1	Y 5	Y	723
0	Y	70,000	1	Y 5	Y	723
0	Y	50,000	1	Y 5	Υ	723
0	Υ	50,000	1	Y 5	Y	723
0	Y	50,000	1	Y 5	Υ	723
32	Υ	60,000	1	N	Υ	724
32	Υ	150,000	1	Υ	Υ	725
32	Υ	150,000	1	Υ	Y	725
32	Υ	150,000	1	Y	Y	725
32	Y	150,000	1	Y	Υ	725
256	Y	100,000	2	N	Y	726
256	Y	100,000	1	N	Y	726
256	Y	100,000	1	N	Y	726
256	Υ	250,000	2	Y 5	Υ	727
256	Y	250,000	2	Y 5	Y	727
32	N	150,000	1	N	Y	728
128	N	200,000	1	N	Y	728
128	N	200,000	1	N	Y	728
0	Y	20,000	1	Υ	Y	729
64	Y	100,000	2	Y	Y	730
64	Y	100,000	2	Y	Y	730

For MCA or 16-bit ISA buses only; 8-bit ISA adapter \$189 For more information about all products in this table, circle reader service no. 904.



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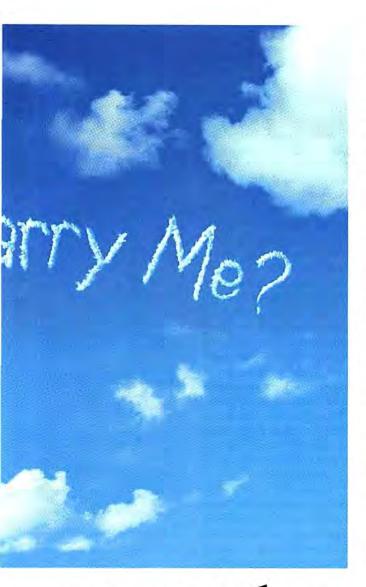




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memory in one second. Transfer rates range from 1.25MB to 10MB per second, but most users won't notice the difference, because a normal AT (ISA) bus can't handle more than 1.2MB per second. If you're working with huge color graphics or multimedia files and you have an MCA or EISA machine, you'll want a drive with a high transfer rate.

To move things along even faster, almost all the drives include an on-board disk buffer. Since the disk can load data faster than the system can accept it, a buffer minimizes the number of time-consuming passes over the same data. Though some SCSI host adapter cards include even more cache memory, they're generally incompatible with software cache programs such as Windows' SmartDrive.

Another way to boost drive performance is by using disk optimizing software. As you use any hard drive, files become scattered and fragmented, slowing down data access. Disk optimizing software, such as The Norton Utilities' SpeedDisk or PC Tools' Compress, herds a fragmented file's parts into contiguous blocks for faster retrieval.

In the past, IDE and SCSI drives experienced conflicts with disk utility software, but those problems are essentially over. Almost all drives in our list are now fully compatible with optimizing software. However, because these drives come with low-level formatting locked in, they won't work with popular disk utilities such as SpinRite and OPTune.

Today's drives are not only faster but more reliable. Mean time between failure (MTBF) figures are manufacturers' estimates of how many hours a given drive will run before failing. Since a MTBF of 100,000 hours translates to more than 11 years of continuous use, the figures obviously haven't been tested. A better gauge is the length of the warranty and money-back guarantee.

Finally, look for manufacturer-based customer support. This gives you an option in case your vendor can't handle a

# Hard Disks, Soft Prices

The cost of storing data has dropped like a rock over the past few years. With street prices leveling off for 200MB drives, now is an excellent time to buy.

Year	Price per MB 1
1987	\$25.52
1988	\$19.82
1989	\$13.6
1990	\$10.9
1991	\$ 6.3
1992	\$ 3.5
1993 3	\$ 2.8

technical question or simply vanishes into the night.

national Data Care.

#### SPINNING DOWN

Whether you buy now or later, you'll soon be in the market for a faster, roomier hard disk. Install a 200MB drive, and you'll have the capacity and blazing performance you'll need for years to come.

George Campbell is a contributing editor for PC World.

#### Hello Windows, **Good-Bye Disk Space**

Windows eats up hard disk space like a whale swallows krill. A typical suite of mostly Windows applications can consume about 100MB-and that doesn't include disk-hungry data files.

ogram	Disk space (MB)	
Adobe Type Manager (30 fonts)	6	
After Dark	2	
Ami Pro 2.0	10	
CorelDraw	12	
Crosstalk for Windows	2	
dbase IV	5	
Excel 4.0	8	
Freelance Graphics for Windows	11	
MS-DOS 5.0	2	
Norton Desktop for Windows	3	
The Norton Utilities	2	
PackRat	4	
Publisher's Paintbrush	4	
Ventura Publisher for Windows	12	
Visual Basic	4	
Windows 3.1	12	
Total disk space used	99	

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#### Seagate Technology, Inc. 920 Disc Dr.

Scotts Valley, CA 95066 408/438-6550

#### Storage Devices, Inc.

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Lotus Ami Pro™ 2.0¹ Retail value: \$495.00

Lotus Freelance Graphics™

for Windows <sup>2</sup> Retail value: \$495.00

Lotus Works<sup>™</sup> 3.0 Retail value: \$149.00

Lotus Agenda® 2.0 Retail value: \$199.00

Lotus 1-2-3 version 3.1+ Retail value: \$595.00

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Resolution Mode:	1024 x 768 SVGA Adapter with 512K Video RAM	
Display:	14" VGA Color Monitor	
Keyboard:	101-key Keyboard	
Mouse:	Three-button Mouse	
Software:	MS-DOS 5.0 and MS-Windows 3.1	

#### Selected Options:

Additional 2MB Memory. Add \$100 • 1.2MB 5.25"
 Floppy. Add \$75 • Upgrade 122MB Hard Disk to 245MB
 Hard Disk. Add \$200 • Upgrade to 14" Multi-sync VGA
 Color Monitor. Add \$100



#### DECpc 420sx

Microprocessor:	Intel 486sx running at 20MHz	
Memory:	4MB Memory (exp. to 32MB)	
Storage:	122MB IDE Hard Disk 3.5' 1.44MB Floppy	
Resolution Mode:	1024 x 768 SVGA Adapter with 512KB Video RAM, upgrades to 1MB for 256 color support	
Display	14" Multi-sync VGA Color Monitor	
Keyboard	101-key Keyboard	
Mouse:	Three-button Mouse	
Software:	MS-DOS 5.0 and MS-Windows 3.1	

#### Selected Options:

Additional 4MB Memory. Add \$200 • 1.2MB 5.25"
Floppy. Add \$75 • Upgrade 122MB Hard Disk to
245MB Hard Disk. Add \$200 • Upgrade to a 16' Multi-sync
VGA Color Monitor and 1MB of VRAM. Add \$600



#### DECpc 316sx

Microprocessor.	Intel 1386 running at 16MHz	
Memory:	3MB Memory (exp. to 13MB)	
Storage:	122MB IDE Hard Disk 3.5* 1.44MB Floppy	
Resolution Mode:	1024 x 768 SVGA Adapter with 512K Video RAM	
Display	14" VGA Color Monitor	
Keyboard	101-key Keyboard	
Mouse:	Three-button Mouse	
Software:	MS-DOS 5.0 and MS-Windows 3.1	

#### Selected Options:

 Additional 2MB Memory. Add \$100 • Additional 4MB Memory. Add \$200 • Upgrade 122MB Hard Disk to 245 Hard Disk. Add \$200 • Upgrade to a 14" Multi-sync VGA Color Monitor. Add \$100 • Upgrade to a 16" Multi-sync VGA Color Monitor and 1MB of VRAM. Add \$600



#### **DEC**pc 320P Notebook

Microprocessor:	Intel 386sx running at 20MHz	
Memory.	2MB Memory (exp. to 8MB)	
Storage	40MB IDE Hard Disk 3.5" 1.44MB Floppy	
Display	TST Backlit VGA 2400 bps Cata	
Modem:		
Keyboard:	84-key Keyboard	
Mouse:	Logitech TrackMan Portable	
Software:	MS-DOS 5.0, MS-Windows 3.1 and Stacker 2.0	

#### Selected Options:

- Upgrade to 80MB Hard Disk. Add \$400 Upgrade to 80MB Hard Disk and 9600 bps FAX Modem. Add \$500
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   Additional 4MB Memory, Add \$325
   Additional 6MB Memory, Add \$475
- Extra Battery Pack. Add \$75

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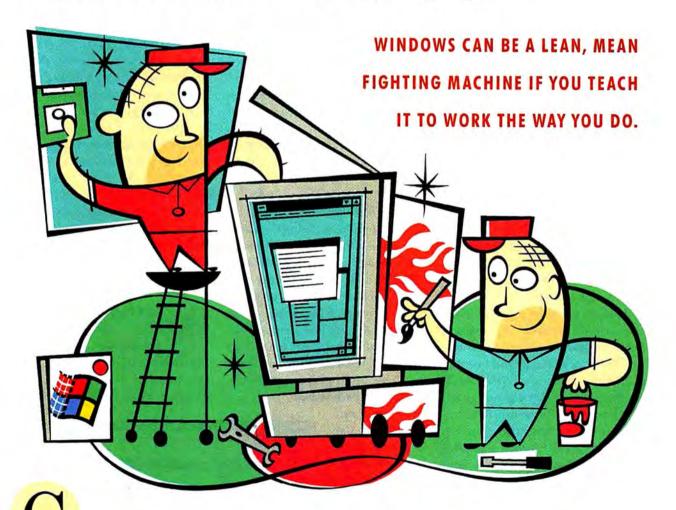
Your Name		Which of these graphics-oriented applications best describes your needs? (Check all that apply)	
Title		O Desktop Publishing O CAD/CAM O Animation	
		O Realtime Modeling O Image Processing	
Company Name		O AutoCad O Business Graphics	
Address		How many people work in your group, department	
		or small business?	
City, State, Zip		O Less than 10 O 10-20 O 20-35 O More	
Von Teleston No	Your FAX No.	Is your desktop operating system:	
Your Telephone No.	Tour PAX No.	O DOS O DOS with Windows O OS/2	
		O MAC O UNIX	
Contact me regarding	For:	O VMS O Other	
	Home Business Resale		
O DECpc i486 and i486sx based	systems	LAN Communication:	
O DECpc i386 and i386sx based			
O The DECpc 320P Notebook	-,	How many PCs do you have installed?	
O The Desktop Direct Catalog		From how many manufacturers?	
- The Desirep Direct Catalog		What kinds of connections does your PC(s) require?	
		(Check all that apply)	
Choosing the right PC n	nade simple:	O Links with other PCs in the immediate surroundings	
3		O Connection to the local area network (LAN) throughout a building	
I am interested in a:		O A line to a host system in a remote location	
386 486 Other	r Not Sure	What kind of media (cable) is used in your LANs today?	
How many applications will your How many PCs do you anticipate	A CONTRACTOR OF THE PROPERTY O	What is the networking software now being used in your company?	
12 months?		What kind of host system will your PC communicate with?	
Are you interested in leasing?	Yes No	O Digital O IBM O Other	
	months		
3 - 6 months 6 - 12	2 months		
	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	What kind of service do you need?	
What best describes the type of we	ork the system will be used for?		
(Check all that apply)		O On-Site Hardware Support O Software Support	
O Word Processing	O Order-entry	O Telephone Support O Training	
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hances are you've been working with Windows 3.0 for a while or are in the process of upgrading to Windows 3.1. It's also possible that you've been doing more work than you have to. How do you make sure you're using Windows to its best advantage?

We asked our favorite Windows experts—including the folks at Microsoft—for tips that help you customize versions 3.0 and 3.1 to make them work better for you. The 20 tips that follow will help you organize your application groups more efficiently, set up your icons the way you like, and manage your files better. They'll also help you use your fonts and printer more effectively, take advantage of *Windows*' built-in color and sound capabilities, and much more.

OF MACINTOSH ENVY, TRASH CAN FOR WINDOWS CAN HELP. IT LETS YOU DRAG FILE NAMES ONTO A TRASH CAN ICON IN ORDER TO DELETE THEM.

#### **Grouping Applications**

There's a handy way to keep Program Manager's window size and position on the Windows desktop arranged—with all of its group windows just where you like them—every time you launch Windows. In 3.0, get all your group windows in position, select File•Exit Windows, click the Save Changes check box if it isn't already checked, and choose OK to exit Windows. Relaunch Windows, but this time when you're ready to exit, uncheck the Save Changes box.

Windows 3.1 takes a much slicker approach. While you can still arrange Program Manager's group windows to your liking, now you can also save the position of its group icons. (One helpful organizational hint: Arrange your group icons along the side of the main Program Manager window rather than along the bottom; it's easier to see all your program groups at once.) Make sure Save Settings on Exit in the Options menu is unchecked. Then press <Alt>-<Shift>-<F4>. Your desktop configuration will be saved without having to exit Windows.—Microsoft Windows Team

#### **Managing Files**

PUT DOCUMENTS IN PROGRAM MANAGER

Yes, Virginia, you can put data file icons in Program Manager groups. This saves you the hassle of launching an application first and then searching for the file you want to load. For example, if you have a word processing document that contains all your contacts, you can keep an icon representing it in a group; a double-click on the icon will launch the

word processing application and load the file. First, position the File Manager and Program Manager windows so you can see them. Then simply drag the document file from File Manager to the appropriate group in Program Manager. The document will use the icon of its parent application. —Microsoft Windows Team

THE ROUND FILE (3.1)
If you're suffering from Mac envy, Trash Can for Windows is the answer. This new utility takes advantage of Windows 3.1's drag-and-drop capabilities to delete unwanted files. Simply drag a file name or group of file names from File Manager—or any application that allows you to drag file names—and drop them on the Trash

Can. They're deleted, and you never

have to touch the keyboard.

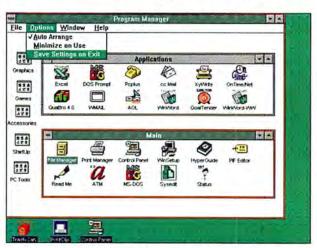
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#### KEEP FILE MANAGER CONSTANT (3.1)

You can set your own default configuration for File Manager's windows, minimized icons, and other options. First, adjust the position, size, and options for each window to your liking. (A handy way to arrange multiple windows is to select *Tile* from the Window menu.) Then click *Options*, and if Save Settings on Exit doesn't have a check mark in front of it, select it too. Choose *File \*Exit*. Restart File Manager, and click *Options \*Save Settings on Exit* to remove the check mark. —*Microsoft Windows Team* 

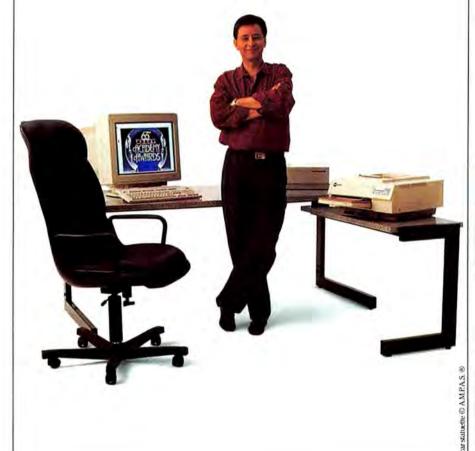
5 Don't work harder, work smarter. Keep icons of related files in one group and you won't spend time searching for them. Name your

groups by project (i.e., "Q4 Sales" or



TIP 1: To save the Program Manager configuration, uncheck Save Settings on Exit and press <Alt>-<Shift>-<F4>.

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# YOU CAN CHANGE THE HORIZONTAL SPACING BETWEEN ICONS IN PROGRAM MANAGER IN ORDER TO SQUEEZE MORE INTO A WINDOW OR SPREAD THEM OUT FOR GREATER CLARITY.

"August Projects") and you won't waste time trying to find the right group, either. To create a new Program Manager group, select File • New • Program Group • OK, type a name for the group window's title bar in the Description box, and click OK. Then drag files into your new group (as described in Tip 2).

—Microsoft Windows Team

#### DITTO DOS (3.0)

If you like to have several Program Manager windows open at once but hate searching for an application you use frequently, keep a copy of the icon in each of the various groups you work in. For example, if you need to get to DOS often, open the Main program group and any other group windows in which you want DOS to appear. Hold down the <Ctrl> key and drag the DOS Prompt icon (or any icon, for that matter) to the desired location. The icon will be copied and will appear in the new group as well as in its original group. —Steve Fox

# KEYBOARD SHORTCUT (3.1) Windows 3.1 lets you duplicate icons just as you can in Windows 3.0, but there's an even quicker way to get the applications you're after. Click on the icon of the application you want to switch to, then select File. Properties in Program Manager or press <a href="https://www.elent.com/her-select-file-">Alt>-<Enter></a>. Click the Shortcut Key text box in the dialog box that appears, then press any key. If you press A, for example, Windows defines

the shortcut key as <Ctrl>-<Alt>-A. If you hold down the <Shift> key while pressing the letter, Windows incorporates it into the shortcut definition: <Ctrl>-<Shift>-<Alt>-A, for example. You can assign other shortcuts, such as <Ctrl>-A and <Alt>-A, but they may cause conflicts with

Windows applications that already use them.—Brian Livingston

#### RUN DOS BATCH FILES FROM WINDOWS

You can create a PIF file that starts DOS and executes a favorite DOS command or batch file. Double-click on the PIF Editor icon in the Main group and fill out the top line, being sure to include the exact drive, path, and batch file name. Then select *File • Save*, type an appropriate name (don't type a period), and select *OK*.

Once you've set up the PIF file, create an icon for it to make running your batch file easy: Open the Program Manager group in which you want it to appear, choose *New* from the File menu, click *OK* for Program Item. The Program Item Properties dialog box appears. Fill in the Description box, and in the Com-

mand Line box type the drive, path, name, and PIF extension of the file you created using the PIF Editor (since your batch file should already have directory information, you can leave the Working Directory box blank); select Change Icon. In 3.0, you can click the View Next button to see more PROGMAN.EXE icons; other files, WINFILE.EXE for example, have other icons. In 3.1, PROGMAN.EXE icons are displayed on a scrolling bar; you can double-click one to choose it or click the Browser button and select another file, such as MORICONS.DLL in the Windows directory, in order to view its icons.—Kay Yarborough Nelson

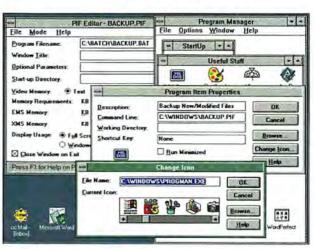
#### Icons

#### 9 TIMESAVING ICONS

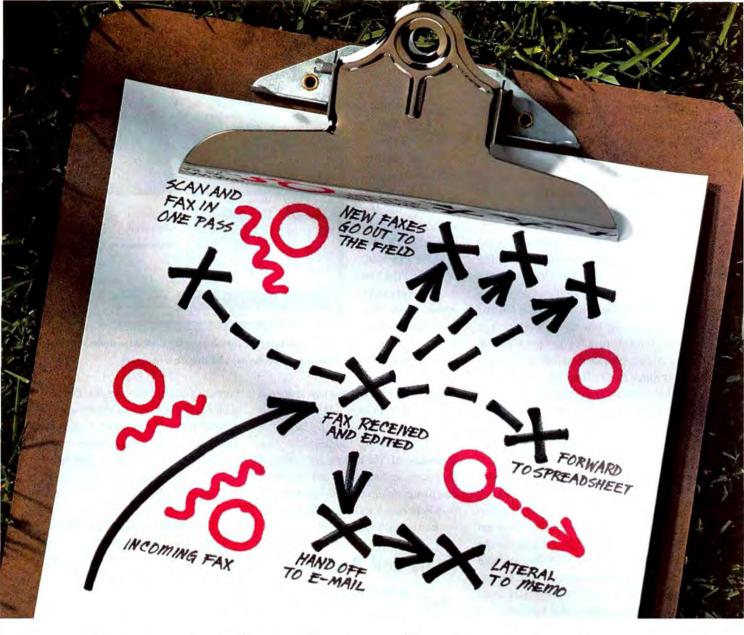
Windows' default configuration lures you into the myth of one icon, one program. But you can save time if you create multiple icons to launch different configurations of the same application. For example, you can have one word processing application icon for letters, one for memos, and one for reports.

First, copy the application item: You can use the steps in Tip 6. Or you can select the application icon and press <f8>. In the resultant Copy Program Item dialog box, scroll through the To Group list box to highlight the name of the program group that you want to copy the icon to, and click OK.

Click once on the newly made icon, then press <alt>-<Enter> or select File • Properties. Give your icon a name in the Description box and change the shortcut key (if any) and the working directory (e.g., C:\WINWORD\LETTERS). Then



TIP 8: Create an icon that calls a PIF file to start DOS and execute your favorite DOS command or batch file.



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click *OK* to save the changes you've made, and you're ready to rock 'n' roll.

—Scott Dunn

SPACING OUT You can change the horizontal spacing between icons in Program Manager groups if you want to squeeze more into a window or to spread them out for greater clarity. Go to the Control Panel and select Desktop. In the icon spacing box, change the setting from the default 75 to 48. Select OK and you'll see the effects of your changes immediately (in 3.0, you must also click a group icon and select Windows. Arrange Icons). However, keep in mind that when it comes to groups of icons, less is better-the more icons you have in a group, the harder it is on your eyes and your system resources.

In 3.1, you can also place icons for your open applications higher or lower on your screen. This also affects the placement of icons in Program Manager groups and group icons in Program Manager's main window. Go into the Desktop section of WIN.INI and add the line IconVerticalSpacing=75. Exit and restart Windows. Try making the number following the equal sign lower or higher; the lower the number, the lower your icons will appear. With a little experimenting, you can position the icons for your open applications just as you like. —Microsoft Windows Team

Microsoft Word - TYPESTYL DOC

\*\* File Edit View Insert Forms Tgols Table Window Help

\*\* Die St. Aboth \*\* Image: St. Aboth \*\*

TIP 12: Use the Character Map in Windows 3.1 to place characters such as a copyright symbol in your document.

# 11 CUSTOM TITLES (3.1)

You can modify icon labels' fonts by making a few changes to the Desktop section of your WIN.INI file. For example, try adding the line IconTitleFacename = Arial. Then save the change, quit Windows, and restart it. You'll notice that your Pro-

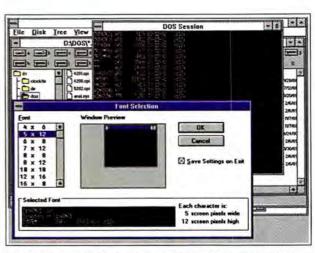
gram Manager icon labels now appear in a different typeface—Arial. You can also change the size of the labels to, say, 12 points by adding the line lconTitleSize=12. You can use any installed font name and size. To find out which font names are available for you to enter, load Paintbrush and select Text • Fonts.

—Microsoft Windows Team

Fonts and Printing

NEW CHARACTERS (3.1)
Typically, typefaces have many more characters than your keyboard has keys. However, Windows 3.1's Character Map, located in the Accessories group, lets you access the full range of characters in any installed

font. Double-click Character Map, then minimize it. Leaving the Character Map icon visible at the bottom of the screen, fire up your word processor in a window and click the desired insertion point in your document. Double-click on the Character Map icon, click on the Fonts list box, and select a face to



TIP 13: To enlarge or shrink your DOS window, press <Alt>-<Space>, select Fonts, and choose a new size.

view its available characters. Doubleclick each character you want; they will appear in the Characters to Copy box. Click the Copy button, then select Edit•Paste in your word processor. Voilà, the new character will appear. —Brian Livingston

## 13 CHANGE SCREEN FONTS IN DOS SESSIONS (3.1)

When you're running in 386enhanced mode and initially flip a DOS
program from full screen to windowed
(by pressing <Alt>-<Enter> or
<Alt>-<Space>), you may find that
the window for the DOS application
takes up too much space. It's an easy
matter to change the size of this window
to make it smaller.

Go to your DOS application and press <a href="Alt>-<Space"><Alt>-<Space</a>. When you select Fonts from the menu, the Font Selection dialog box's Window Preview appears (see screen shot above). The dialog box shows you the approximate relative size of your DOS window. Choose a smaller font size (say, 6 by 8 instead of 8 by 12) and click OK. Your DOS application will immediately appear in a smaller window.
—Brian Livingston

RUN DOS IN A WINDOW (3.1)

If you like Tip 13 and always want to see DOS or a DOS application in a window, try this: Use the PIF Editor in the Accessories group

(see screen shot below) to edit that application's PIF file (DOSPRMPT.PIF for the DOS prompt). Click on *Windowed*, then choose *Save*. The next time you run the DOS application, you'll be in a window. —*Kay Yarborough Nelson* 

## QUICK PRINTING (3.1) Print Clip is a free Windows

3.1 application that sits on the desktop at the bottom of the screen until you need it. This is handy when you see something in a document, and you just want to print one or two paragraphs. (It's especially nice because the Windows Notepad can't print just a highlighted section of a text file, and the Clipboard doesn't print at all.) With Print Clip, simply drag your mouse over the text in your Windows application, click Edit • Copy on the application's main menu, and then double-click on Print Clip's icon to send any text presently in the Clipboard to your current printer.

This handy application is stored in a file called PRCL11.ZIP in Library 15 of the GO WINADV forum on CompuServe (using Print Clip requires Microsoft's Visual Basic run-time utility, which is available in a file called VBRUN.ZIP in Library 15 of the GO ZENITH forum). You can also find both of these files on PC World Online, in the Software Library's Windows section. Use your PKUNZIP utility to decom-

press VBRUN.ZIP. which will generate a file called VBRUN100.DLL. Then copy the file VBRUN100.DLL into your Windows directory (you can run any Visual Basic application once you have this file in the directory). Decompress the PRCL11.ZIP file, which yields PRINTCLP.EXE and five other files.

Place PRINTCLP.EXE in any directory on your hard drive, and drag it from File Manager to your StartUp group in Program Manager, as in Tip 2. The next time you start *Windows*, the *Print Clip* icon will appear minimized at the bottom of your screen. —*Brian Livingston* 

# File Options Window Help Custom Color Schemes Color Schemes Color Schemes Custom Col

TIP 16: Define custom colors and apply them to Windows screen elements using the Color icon in the Control Panel.

#### Sights and Sounds

16
No one ever said you were limited to using the basic colors and desktop color schemes that come with Windows. In fact, most of these are hard on the eyes after a while, so you might want to mix your own lighter shades. Double-click the Color icon in the Control Panel, click on the Color

Palette button, and then choose Define Custom Colors. You'll see the Custom Color Selector, where you can drag your cursor around to place a color in the Color/Solid box. You can adjust the color to make it brighter or duller by clicking on the arrows on the right side of the box labeled Lum (for Luminosity). Click the Hue and Sat (for Saturation) arrows to change the shade, or click in the Red, Green, or Blue box's arrows to mix different colors. When you've got the color you want in the Color/Solid box, click a box in the Custom Colors palette. Click Add Color to add your new color to the palette, and then click Close. You can then use that new color in any of your color schemes. —Kay Yarborough Nelson

SOUND ADVICE (3.1)

Windows 3.1 allows you to associate sounds with events, so that you'll hear, say, a chime on the hour or a cymbal crash when you exit Windows. To play these sounds, your computer needs a soundboard supported by one of the sound drivers included with Windows 3.1. Fortunately, Microsoft provides a free sound driver for your PC's speaker. Just download the file SPEAK.EXE from the Microsoft Product Support Download Service at 206/936-6735 (which supports modem speeds up to 9600 baud). If you don't have a modem, you can get the complete driver library for \$20 by calling Microsoft Sales and Service at 800/426-9400. SPEAK.EXE is also available on PC World Online, in the Software Li-

Copy SPEAK.EXE to any directory, locate it in File Manager, and doubleclick it to expand it (it's in compressed

brary's Windows section.



TIP 14: If you prefer running a DOS application in a window, edit the PIF file that launches the application.

# IF YOU HAVE WINDOWS 3.1, A MICROPHONE, AND AN AUDIO BOARD, YOU CAN INSERT VOICE ANNOTATIONS IN ANY WINDOWS APPLICATION THAT SUPPORTS OLE.

form). To install the resulting SPEAK-ER.DRV file, double-click the Drivers icon in the Control Panel and click Add. Highlight Unlisted or Updated Driver from List of Drivers and click OK. Type in the path of the PC speaker driver, select Sound Driver for PC-Speaker, and click OK. Make any speed, volume, and duration adjustments in the resulting dialog box and click OK one last time. Restart Windows, and the next time you click on the Sound icon in the Control Panel, you'll be able to assign the sounds of your choice by matching an event (on the left) to the sound (on the right). Windows 3.1 ships with a few sounds, which you can identify by their WAV extension.

A few warnings are in order, however. Since the PC speaker driver may cause problems with communications programs, multimedia packages, or other timing-sensitive applications, you may want to avoid using such programs while the driver is installed. In addition, the sound quality isn't great, but if you don't have a soundboard, this is an easy way to perk up an otherwise dreary Windows session. —Scott Spanbauer

TALKING APPS (3.1)

If you have Windows 3.1, a microphone, and an audio board, you can insert useful voice annotations in any Windows application that supports Object Linking and Embedding (OLE). To embed a sound snippet in, say, a Word for Windows 2.0 document, open Sound Recorder in the Accessories group. Either record your message or open a prerecorded WAV file, and select Copy from Sound

Recorder's Edit menu. Next, switch to Word for Windows, place the cursor where you want your annotation to be, and hit the Paste button; the Sound Recorder icon will appear. Click on it once, and then drag

the handles to make it larger or smaller if you wish. Send this document to other Windows 3.1 users via E-mail or sneakernet. If they have a soundboard or sound driver installed, they'll be able to play the sound when they double-click the icon.—Scott Spanbauer

#### Miscellaneous

You can use the Annotate function in Windows to add Postit-like notes to the existing and unalterable Help file of most Windows applications. Simply choose Help, go to the Help topic you want to add a note to, and select Annotate from the Edit menu. Just type your notes in the space provided. When you finish, click the Save button (OK in 3.0), and a tiny paper clip will appear next to the Help topic's title to remind you that you've annotated it. —Kay Yarborough Nelson

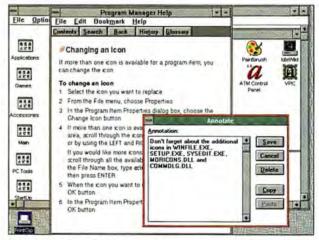
tion, and type EXIT: Open the PIF Editor and load (or create) the appropriate PIF file. Click the Advanced button and check the Allow Close When Active box. You'll see a stop sign and a warning. (Since you'll lose data if an application closes before you save new data, save your files before exiting Windows). Click OK to continue and OK again to return to the PIF Editor. Select File . Save to save your changes, and exit. Now switch to Program Manager and click once on the application's icon. Select File • Properties. Edit the entry in the Command Line text box so that it specifies the drive, path, and name of the PIF file you modified, and click OK. The next time you close Windows, you can simply click OK to close your DOS session.

Scott Dunn is coauthor of 101 Windows Tips (Peachpit Press, Berkeley, California, 1991). Steve Fox is a senior editor for PC World. Brian Livingston is president of Windows Consulting and author of Windows 3.1 Secrets (IDG Books, San Mateo, California, 1991). Kay Yarborough Nelson is author of Voodoo Windows (Ventana Press, Chapel Hill, North Carolina, 1992). Scott Spanbauer is a contributing editor for PC World. Our thanks to Contributing Editor Robert Luhn and the Microsoft Windows Team for contributing to this article.

-Microsoft Windows Team

20 SHUT-

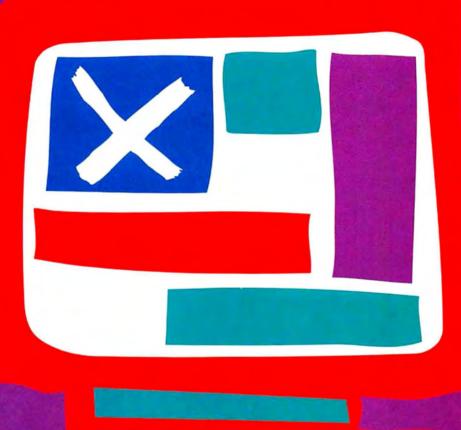
Have you ever tried to shut down Windows but been stymied because DOS or a DOS application is still running? If you use an icon to run them, you can exit Windows without having to switch to the DOS session, close the applica-



TIP 19: With the Annotate function, you can add Post-it-like notes to the topic of your choice in any Windows Help file.

Advertising





Special Tear-out Edition

### From the Desk of Therese Myers, President

#### Dear Quarterdeck Customer:

Well, we did it.

Ten years ago we formed Quarterdeck with the goal of bringing dramatically increased productivity to users of DOS computers. The result was DESQview, a product so far ahead of its time that the memory and windowing techniques we invented, and patented, in the early 80's are recognized today as the fastest and most powerful way to multitask DOS programs in a windowed environment!

And now we've done it again.

Now that the rest of the world has caught on to the fact that running more than one program at the same time is not just a good idea, but a GREAT idea, and that putting programs in windows that can be moved and sized and swapped dramatically increases your productivity, now that IBM and Microsoft (even Microsoft!) have caught on, well, we've gone one step further.

Announcing DESQview/X, the future of computing.

Just as DESQview brought the power of multitasking and windowing DOS programs to the world of 8088 computers, DESQview/X opens the world of shared processing to the computer users of today.

More than just another (very) pretty face.

Ok, it's true: DESQview/X is a GUI. And yes, everyone is telling us that it's the most drop-dead gorgeous user interface that they've ever seen. And it is fantastically easy to use and puts everyone else to shame. And it only needs a fraction of the RAM that other GUIs demand. But that's not the point.

The point is, that DESQview/X was designed to increase your productivity. To make you more effective. To make your computer more powerful. Whether you use DOS or MS Windows or both.

In the next few pages we try to convey just how new, how exciting, and how powerful the new DESQview/X is. Just as the original DESQview was, in 1985, the beginning of a whole new world of computing, today DESQview/X is your window onto the computing world of tomorrow.

Come join us.

Sincerely,

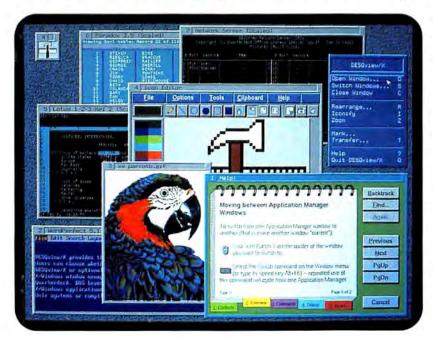
Therese Myers

Jury Mas

# DESQview/X brings you the future today.

**FLCOME TO THE FUTURE.** From the best graphical interface available on a PC, to the great performance, the efficient memory use and the low overhead... From recognized world-wide industry standards like Adobe Postscript and X Windows, to the fun of Tetris , customized icons and personalized menus... From the power of scalable windows and remote processing, to the fundamentals of on line context-sensitive help...

DESQview/X brings you the future today.



There's a lot of talk these days about windows and multitasking. Good talk. Important talk. But there are some people who would like you to think that they're the only game in town. Don't listen to them.

If you are looking for basic multitasking and windowing of DOS and Windows applications then turn the page and find out about DESQview and DESQview-386. Compared to "the other guys," our DESQview products deliver

faster performance, greater reliability, better network support, more features and top it off with much easier setup and installation. DESQview quite simply provides more power and greater ease of use.

But if you are looking for a GUI that not only makes computing more fun but also more efficient, that will enhance your productivity and the power of your computer today, and tomorrow, then take a look at DESQview/X.

#### Promises, Promises

We can do things that some bigger companies never even dreamed of. DESQview/X delivers today on promises that have only appeared in their press releases—and then only after they got their hands on a copy of DESQview/X and saw what it could do.

#### A Superior Interface

Let's start with the basics, like the interface. Sure, our interface is smaller and faster—and a lot better looking. But more importantly, it was designed to make you more productive. The minute you try it you'll see that it has a uniquely intuitive look and feel. Many people especially appreciate that it is just as easy to manipulate with the keyboard as it is with a mouse.

DESQview/X also increases your productivity by putting you in full control. Your ability to customize every aspect of the DESQview/X interface is one of the most dramatic differences between DESQview/X and every other graphical interface (see "Your Way" box).

#### DESQview/X

#### Easy to Use

Have you ever noticed how many people claim that their product is easy to use, and how often it just isn't true? When we say that DESQview/X is easy to use we're doing more than just blowing our own horn. Remember, we've been developing and supporting DOS multitasking solutions that really work for a decade—long before MS Windows 3.x appeared on the screen.

We know from experience what works—and what doesn't. With over a million multitasking users and ten years of experience, we've talked to a lot of people and listened to a lot of suggestions. As soon as you turn DESQview/X on you'll see the difference. From the informative and intuitive shapes that the icons take, to the fact that our menus pop up only when you need them. Little touches that make our window intuitive where others are frustrating.

Even more important is the way that DESQview/X empowers you to tailor your work space to your needs. Nothing in DESQview/X is set in stone, you can customize just about everything. From the size of the icons, to the design of the backgrounds, to the menus themselves (see accompanying box).

#### **Full Featured**

DESQview/X comes complete with everything you expect in a graphical environment. It starts with a tutorial that you run by clicking on the icon that's labeled 'Tutorial' (pretty clever, eh). The tutorial isn't very long though, because DESQview/X is just so



simple to use. (If you need more, you can always turn to the online context sensitive help that is always just a keystroke or a mouse click away.)

DESQview/X's ease of use is further enhanced by the way that it will automatically turn on any program or suite of programs every time you turn it on. Furthermore, programs can be grouped into sets, named and assigned to an icon. This makes it easy to organize and customize your computer.

#### Compatible and Safe

And DESQview/X is as easy on your programs as it is on you, because DESQview/X lets you run any program you want—you can even run Microsoft Windows! Whether you are using regular DOS applications like dBase or Word Perfect, extended applications like AutoCAD or Paradox, or programs that utilize expanded memory like Lotus 123 or Harvard Graphics, DESQview/X supports your program seamlessly, without any glitches.

Of course, just like DESQview, DESQview/X can protect you from the ill effects of misbehaving programs. If you encounter a fatal program error, DESQview/X can recover gracefully. Activating protection levels (1, 2 or 3) can ensure that only the window in which the error occurred is lost. Simply close the window, or in the most serious cases hit Ctr./Alt/ Delete to eliminate the window.

#### Fast, and Very Fast

DESQview/X runs most programs, like MS Windows 3.x, in one of two modes: Regular or High Speed. In High Speed mode programs run at very nearly the same speed under DESQview/X that they run in DOS. However, as in MS Windows' Standard Mode, programs utilizing high speed mode suspend operation when they are in the background. But unlike MS Windows standard mode, any other background programs running in DESQview/X's regular mode continue to multitask.

All MS Windows programs and nearly all DOS programs can be run in either regular or high speed mode. However DOS graphics programs, such as AutoCAD, can only be run in High Speed mode until custom drivers are developed for them.

#### More Powerful Than...

A speeding locomotive? You decide. We've already told you how fast DESQview/X is, and how easy it is to use. But DESQview/X has the power you need to make computing not just simpler but also more productive.

Let's begin with file management and the DESQview/X File Manager. File Manager lets you tag, cut, paste, delete and move any number of files at the same time. With two directories (or drives) in view at the same time, finding and organizing your data has never been faster or easier.

Then let's not forget the fact that Adobe Type Manager Mand the 75 fonts (including 13 Adobe Postscript fonts) are included with DESQview/X. Don't settle for imitations or cheap substitutions. With DESQview/X you get the world standard, for the maximum in both quality and compatibility with your favorite software and printer.

Print Manager gives all of your programs background printing capability. Turn it on and forget it. Or don't! You can suspend, delete, or simply peruse your list of files queued for printing.

Manifest supplies memory "show and tell" so that anyone can see how their computer's memory is allocated. How much of what have you got? How much extended memory, how much expanded, how much high RAM? Exactly how much memory is available for each of your programs, and how much was used by the programs you already have loaded? Manifest even tells you what you can do to increase available memory.

System Monitor gives you instant insight into what's happening to your computer's CPU. Where are your computing resources going? Are some programs eating up your CPU time? System Monitor tells you what's going on, and gives you the power to eliminate programs that are abusing your computer.

#### More Fun Than...

A barrel of monkeys? Definitely! In addition to the Tetris™ and BlaqJaq games (and by the way, BlaqJaq is network compatible and Novell ready), DESQview/X also comes with a selection of icons and what jsut might be the world's greatest Icon Editor.

Not only does it allow you to make rectangular icons of any size and color(s), it can also be used to capture images that can be modified, if you wish, and then used as icons or as your desktop backdrop/wallpaper. Selecting background colors is fun, sure. But now that you have four or five programs on your screen, this makes it easy to quickly spot the one you are looking for.

And don't forget the free fonts that come bundled with DESQview/X. Fonts that give you lots of options for any of your graphics programs that access fonts. There are also three special Adobe fonts for your regular DOS programs. Because with Adobe Type Manager (also included with DESQview/X) you can display your DOS programs in scalable PC fonts.

#### **Active Icons**

One of the most exciting and useful features of the new DESQview/X is something we call Active Icons. With DESQview/X you can, through the magic of Adobe Type Manager, scale almost any program to the size that is most convenient and useful.

Surprisingly, many programs are perfectly usable even when reduced to one quarter or less of their normal size. Finding the best size is easy. All you do is grab a corner of a window and change the size. Tall and skinny? Short and wide? Postage stamp sized? In just a few seconds you can find the best size for you.

Reducing programs has an incredible impact on your productivity. All of a sudden your regular monitor can display as many as half a dozen fully functional full screen programs. Whether you want to compare spread sheets, cut and paste data between programs, watch real time data updates in the background (this is great for uploading or down-loading over your modem), or just have instant point and click access to all of your programs, you will find that Active Icons will dramatically increase your productivity.

Active Icons are 100% active. You can type or mouse around inside any window at any size. Since Postscript fonts are infinitely scalable, so are your windows. All DOS text programs can be scaled.

### Up And Running With DESQview/X

When you first run DESQview/X you will find three program sets already set up for you: the Application Manager; Toolbox; and Fun & Games. From Application Manager you can directly select Help, start up a regular or scaled DOS window (more on scaled windows later), run the File Manager or open either Fun & Games or Toolbox.

In Fun & Games you'll find Tetris' (hey, forget about playing solitaire—we're talking fun here), our own special BlaqJaq, and some other surprises. In the Toolbox we've stashed some super utilities, like:

- Print Manager, lets you spool your print jobs to background process and gives you the ability to review, suspend or delete print jobs at will.
- Adobe Type Manager, where you can add, remove, select and review any of the 75 type faces included with DESQview/X.
- Manifest, for a complete analysis of exactly how and where your memory is being used.
- Memory Status, which gives you a quick look at how much memory is available on your machine at any given moment.
- And a clock, point and click access to DESQview/X setup, and more.

#### **Have It Your Way**

Freedom from choice? Not with DESQview/X. While some graphical interfaces (people) feel its their job to tell you what you need, what you want and what you can have, here at Quarterdeck we think that the best person to determine how your computer should work is, you.

DESQview/X gives you the tools to quickly, and easily, customize every part of the DESQview/X interface. Starting with the simplest things, like the size and dimensions of your icons, DESQview/X gives you more control over the look and feel of your system than any other interface in the world.

Do you prefer an icon driven or a menu driven system? Are you more comfortable with a mouse or with both hands on the keyboard? Do you want to hot key directly to applications or point and click? Or both? DESQview/X gives you these choices and puts you in control.

But beyond such basics as which way you choose to use DESQview/X is the radically new concept of letting you decide what the interface itself will be made up of. In just a few seconds you can change any part of the DESQview/X interface. Change the order of items on a menu, and put "Close" above "Open". Change the command keys you use to select an item. Change the name of menu items. Turn "Open" into "Select" or into "Choose" or anything else. Whatever you want to use.

Or go to the ultimate extreme. Delete every menu item and start from scratch. Put your name at the top. Title your menu "Steve's menu du jour," or "Sam's Excellent Computer," or anything you want. Add the menu items you want, in the order most useful to you, with the titles that make the most sense and the command keys that you like most.

This should take you about 20 minutes.

#### Developers: Cut Windows Development Time By 90%!!

Today developers have three choices when they decide to develop for a windowing environment: MS Windows, OS/2 and DESQview/X. Among these three, DESQview/X stands out for the unparalleled ease with which programs can be developed for or ported to the environment.

Porting from another X Window system is particularly fast and easy. One company actually ported over 100 MB of code in less than two months. This is even more remarkable when you realize that they were not just porting into DESQview/X, but they were also moving from the UNIX to the DOS platform.

In another case, a member of our sales force walked into a government agency to demonstrate DESQview/X. After the demonstration he watched while a couple of government technicians ported one of their in house Motif programs to DESQview/X. It took less than a single afternoon, and was completed before our salesperson left.

Developing for DESQview/X is also fast and easy. You will be amazed at how simple and direct the DESQview/X tool kit is, especially compared to the competition. Adapting existing DOS programs to DESQview/X in up to one tenth the time it takes to adapt them to either of our competitors, with no compromise in power or flexibility.

#### 32 Bit Protected Mode Power, And More

DESQview/X delivers today the power and flexibility that competing environments only dream about. Stop waiting to put real 32 bit protected mode to work for you (of course 16 bit protected mode is still available, if you prefer). And our complete dynamic link libraries are just waiting for you, along with the complete Berkeley Socket interface.

The power of virtual memory, coupled with DESQview/X's preemptive multitasking and complete suite of interprocess communications abilities puts DESQview/X in a class by itself. And all of them are available today. Are you still waiting for these features?

#### A World-Wide Market

Perhaps more important than the ease and speed with which you can add windowing power to your software, is the size of the market you can reach. Remember, when you develop for DESQview/X you gain access to the entire universe of X Window computers. Any X Windows system running on any brand of UNIX or on DEC VMS can run your program developed for DESQview/X. With only the most trivial modifications, DESQview/X opens the world of RISC computing, SUN workstations, HP 9000, and an untold host of mini and mainframe computers world wide to your software.

# Network inspiration: Realize the

or proclaiming that, next year would be "the year of Networking." Now it's the 90's and, somehow, networks are here, everywhere. But even as networks have become ubiquitous, it seems that they have not brought the power and advantages we all thought they would provide.

#### DESQview/X Fulfills The Dream

DESQview/X will turn your network from a darkened room into a glittering palace. Every DESQview/X computer you have suddenly has the power of all of your computers.

How? Through the power of remote computing and shared resources you are no longer limited to the size of your hard disk, the speed of your CPU or the size of your memory. With DESQview/X you gain the ability to reach out to any other computer, or computers, on your network and harness their resources to meet your needs.

### The Power of Remote Computing

With remote computing you can start and run programs on any DESQview/X computer on your network from your keyboard. It shows up on your screen, in a window than you can zoom, or size, or move, just as if it were actually running on your computer. But it's not.

By sharing the computing resources of the entire network, critical applications and projects are only constrained by the fastest computer on the network, regardless of whether your computer is a 286 lap-top or only has two MB of RAM. With remote computing there is no load on the memory or CPU of your computer. Think of it as pure power.

You can even include remote programs in your suite of start-up applications. Double click on an icon or select from a menu. No matter how you reach out and activate the power of another computer, it is as easy and transparent as running something locally.

#### A Synergized File Manager

Remember File Manager, our point and click solution to hard disk management? You know, the one that lets you copy, move, tag, delete, (etc.) the files from two different drives or directories at the same time? The one that comes standard with every copy of DESQview/X.

Well, we didn't tell you the whole truth when we first described it to you. Yeah, we were holding back the fact that File Manager works just as well on networked drives as it does on your own drives. So you can review, copy,

arrange, etc. all the files you need, no matter what networked computer they reside on.

#### Don't Get Paranoid

We wouldn't put the power of DESQview/X in just anybody's hands. Included in DESQview/X is a complete security system. Before anyone can access your computer, you have to say "Yes!" You have full control over the people, the data and the applications that will be shared.

System Monitor also has hidden network talents. When it reports what system resources are being utilized, it also tells you who is utilizing them. You can tap into the program for a complete run down of what it is and what it is doing. You can even view the program on your screen as it executes.

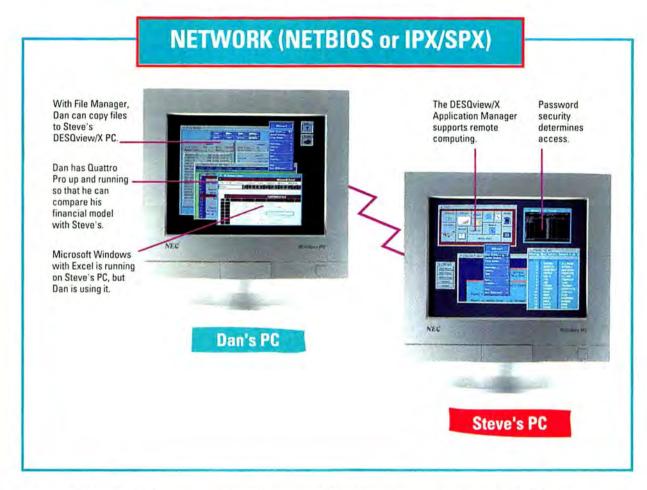
Is your system slow because of that big database sort you are running in background, or did Mike slip a big spreadsheet recalc into your computer without saying 'Please?' If he did you can 'nuke' him (but you might want to give him a call first to warn him).

#### An Administrator's Paradise

DESQview/X is also a dream come true for network administrators and support managers. To begin with, you can diagnose and repair problems remotely. After all, there is no reason why the programs that you run remotely can't be diagnostic programs, is there!

Start with one of the most valuable diagnostics around, Manifest. After all, it comes free with your

# dreams of two decades



copy of DESQview/X. Run it remotely on any DESQview/X computer on your network to quickly scan Config.sys and Autoexec.bat files, DOS version, network drives loaded, and memory usage/conflicts.

But don't stop there. Run Edlin or your favorite editor to make changes in real time. Right from your desk. Talk on the phone while you solve the problem, have the user reboot and verify that his problem is solved. Right from your desk. Are we having fun now?

#### Support Central

What about configuring and installing software? What about upgrades and updates and bug

fixes. You can do it all from your desk with DESQview/X and the DESQview/X File Manager.

Run install.bat for any program without getting out of your chair. Change program defaults, set data paths and distribute new releases from your own keyboard. Not to mention the ability to monitor just what software is actually in use, and make sure that your company has the licenses it needs to stay on the right side of the law.

#### Training For The Future

Don't forget about training. Remember the view feature of System Monitor discussed earlier? Think of the implications this has for training! One on one, you can view what a user is doing—or trying to do. At the same time, in another window, he can watch while you show him the way it should be done.

In fact, you can broadcast to four, five or even six DESQview/X computers at the same time. Give classes to an entire department at once. Everyone watches as you take them through the steps of installing a new program or learning how to use an old one. Monitor their progress without burdening your CPU or wasting any of your precious RAM.

#### Your Standard Solution

The DESQview/X interface is infinitely customizable (see box "Have It Your Way" in previous

#### **Go To VAR Heaven**

Old VARs don't die, they just become Systems Integrators.

If you are a VAR or Systems Integrator you'll think you have died and gone to heaven when you discover what DESQview/X can do for you.

With DESQview/X you can create fully customized menus and dialog boxes for every part of the DESQview/X interface. Customize the title bar of the main menu, where you can display your name, your customer's name or the name of the software solution you are installing. Standardize the menus for all applications you install with application specific sub menus. Give your installations a unique look and feel with specifically sized, shaped and colored icons.

Choose from simple point and click interfaces or easy to access keyboard based menuing systems. With DESQview/X you have the tools you need to create solutions that sell. Elegant, easy to use menus can be created in minutes. In no time at all you have a look and feel that is unique to your company and the solutions that you are selling. How's that for a competitive advantage?

Once you have developed your own suite of menus and icons you can save, transfer and install them on an unlimited number of computers in seconds. And the time it takes you to develop them will be counted in minutes. A complete custom environment can be done in as little as two hours!

And with DESQview/X's comprehensive support for both text and graphics based DOS programs and MS Windows, you can be sure that it is going to be compatible with the solutions you sell.

It's like having an in-house development team on your payroll for the price of off-the-shelf software.

section). Equally important is the fact that the custom look and feel you create can be quickly and easily propagated across an entire network in just minutes.

From a set of custom icons, to department or company specific

menus, propagating standards is as easy as selecting 'copy' in File Manager. Discrete files define the nature and composition of every menu. You can literally point and click your way to a companywide interface.

#### Work Groups: The Wave Of The Future

Today, everyone is talking about work groups the way they used to talk about networks. Well it's time to stop talking and start doing something about it.

With DESQview/X you can tap into the power of work group computing today, with the software you already use. All of the DESQview/X functions described above apply to remotely processing programs as well as local ones. Cut and paste between your Lotus 123 spreadsheet and Mary's Quattro Pro based budget. You and Mary both watch the results as your spreadsheet recalculates.

Monitor the report that Richard is typing up in Word Perfect and call him on the phone with a clarification or sudden brain-storm. Hold a real time meeting with six people on the network where you all see the same spreadsheet at the same time. If your network can handle it, DESQview/X can deliver it.

DESQview/X delivers today the network power you've been waiting for, and dreaming of. For DOS and for MS Windows. Don't settle for promises and press releases when you can have the real thing.

Quarterdeck, the technology leader in multitasking and windowing for ten years. Bet on a winner.

# DOS and UNIX synergy

BY now you probably realize that DESQview/X is astonishingly more powerful and more flexible than any other windowing system in the world. But many people will feel that we have saved the best and most amazing side of DESQview/X for last.

#### Amazing, Incredible, Impossible,... But True

What else can DESQview/X possibly offer? How about this: with DESQview/X you can tap into not only the computing power, memory and disk space of any other networked DOS machine running DESQview/X, you can also access the power of any networked UNIX or DEC VMS X Window system.

Just add our Network Manager for TCP/IP and Novell's Lan Workplace (or FTP's PCTPC) and you can put the power of a SUN SPARCstation on your DOS computer. You can upgrade an entire Novell network simply by adding a couple of RISC workstations. You can utilize divisional or corporate mainframes and minicomputers from your desktop.

And if you already have UNIX and PC networks running side by side you can link them together and multiply the power of each network almost infinitely.

Because there's one more thing about DESQview/X that you have to know.

#### Complete Integration

With DESQview/X your X Windows computers and workstations also gain complete and transparent access to the world of DOS.

Run Lotus 123, dBase IV, Pagemaker or any other MS Windows or DOS text program from a DEC Vaxstation or IBM RS 6000 workstation. Standardize on any collection of DOS and UNIX programs throughout your division or company. Select the application that best meets your needs, without regard to what operating system it requires.

#### Just Point And Click

That's right. Run any program on any computer just by double clicking on the appropriate icon. In fact, there is no reason for a user to ever know whether the program he is running is executing locally or remotely, in DOS or in UNIX.

No matter what the situation, regardless of the combination of programs that are running, everything appears as if it were just another program. Cut and paste text data freely. Scale windows and compare data from different programs side by side in real time.

If you are customizing your menus, adding UNIX programs is no different than adding any local or remote application. Of course when running any remote program you must indicate where the program is and what computer you want it to execute on. Once it is set up and assigned an icon or a hot key combination

you never have to worry about it again.

#### Share The Power

Use File Manager to transfer data between operating environments. In fact, File Manager is so powerful that many UNIX users may come to rely on it even when performing entirely UNIX file manipulations.

File Manager is also a quick way to give everyone easy access to any remote application. Once you have constructed an icon for running a remote program you can copy this icon to any other DESQview/X computer on the network. In seconds, everyone can share the power of a remote mini or X Window workstation.

#### Corporate Standards: OSF/Motif & OPEN LOOK

DESQview/X also goes a long way toward supporting your existing company standards.
Choose between the standard Quarterdeck X Windows interface that comes with DESQview/X, or



Desqview/X OSF/Motif



Desgview/X OPEN LOOK

# The Power Of One VS The Power Of Many



#### Who are you going to bet on?

If you listen to some people it sounds like the future holds a single answer. I guess it all depends on who you listen to. One thing's for sure, some people will make a lot of money if they're the only game in town. But do you really believe that any one company could really have all of the answers?!

Here at Quarterdeck we've built our company around two principles. First, it is our goal to bring increased computing power to the users of DOS computers. From our best selling memory products like Quarterdeck Expanded Memory Manager-386 (QEMM) and QRAM, to our powerful DOS multitasking programs DESQview and DESQview-386 (detailed in the following sections), to our newest graphical environment breakthrough: DESQview/X, Quarterdeck products put more computing power in your hands.

Second, we believe in the power of standards. Just as we support the DOS standard, DESQview/X is built on the international X Windows standard.

When you invest in DESQview/X you put the world's best minds to work on your computing needs. Every six months new extensions to the X Windows environment are released. And because X is an open standard, the new releases are all free.

From MIT to the legendary Bell Labs, computer scientists are putting together the multi-media, the networking, the voice recognition and the 3-D graphics solutions of the future. Domestically and internationally, businesses and universities combine their efforts to produce the most powerful, reliable and extensible systems in the world.

When you build on DESQview/X, as an individual user, as a company, or as a developer, you are supported by this worldwide X Windows community. X Windows advances are your advances. And every X Windows system is your oyster.

add one (or both) of the optional interfaces: OSF/Motif and OPEN LOOK.

With either optional interface your DESQview/X equipped DOS computers will not only have access to UNIX host computers, but they will have the identical menus, icons and complete look and feel. You even get all the interface specific customization tools you that are familiar with. This can save substantial amounts of training (or re-training) time for your company.

Keep in mind, though, that no one squeezes as much power out of your computers as Quarterdeck. Allow an extra 300K of RAM to run OPEN LOOK, and an extra 800K for OSF/Motif. Also, neither of these interfaces have the powerful mark and transfer, customiztion or keyboard macro features of our DESQview/X interface.

#### DESQview/X Is The Future

From DOS to UNIX. Run any DOS, MS Windows or X Windows program. Access DOS and MS Windows from a SPARCstation, or run the powerful Interleaf typesetting system on your 386. Utilize the full power of all of your computing resources, and discover the enormous untapped power of your PC and TCP/IP networks.

With DESQview/X your future is only limited by the size of your dreams and the reach of your imagination.

#### A Warning to Systems Integrators

You'll never have a competitive edge if you always run with the herd.

The future is clear, graphical interfaces are here to stay. In fact, you can throw away all of your DOS, MVS, UNIX and any other kind of software that you own or sell because there's only going to be one platform and one kind of software in the future. Right?

### Breakfast is Being Served (and you can have the competition for lunch)

VARS and System Integrators are invited to join us in Los Angeles, New York, Toronto and London for breakfast. See for yourself how DESQview/X will leverage additional sales into your existing client base, at the same time that it gives you a big edge in winning new clients and contracts.

Call us for times and dates: (310) 392-9851

If convincing your clients that spending hundred (or thousands) of dollars replacing software, retraining employees and supporting MS Windows doesn't sound like a winning strategy to you, we'd like to offer you an alternative.

DESQview/X gives you have the tools to supply elegant and uncompromising enterprise solutions to your clients. The built in support for PC LANs—Novell Netware or Netware Lite, or any NetBIOS supported network, such as LAN Manager or Banyan—means that you can enhance or upgrade the power of nearly any customers network instantly. And the interoperability provided

when you add the Network Manager for TCP/IP is truly extraordinary. Link your customers DOS and UNIX networks together for the first time. Deliver the best DOS solutions to IBM, Sun and HP workstations, at the same time that you reveal the unparalleled power of RISC based UNIX applications to

ordinary PCs running DOS.

DESQview/X brings you the windowing, pre-emptive multitasking, DOS and MS Windows compatibility, memory management, data transfer, and keystroke macro capabilities that you need. Today, not some day.

Add to this X Window System graphics, Adobe Type Manager, a graphic desktop, customized menus and icons, distributed computing, and a built in 16 and 32 bit shared DOS extender with dynamic link libraries and virtual memory.

#### **API Conference**

Seats have been going fast for Quarterdeck's annual developer's conference ever since it was announced that attendees who sign up before August 15th will receive free DESQview/X developer toolkits. Call us for details.

The result is power unmatched anywhere today.

#### VAR and SI Special Buy 4 Get 1 Free!

Buy four copies of DESQview/X from your favorite distributor. Send us your paid invoice and get an additional copy free—direct from Quarterdeck. Call us for the complete, no-hassle, details.

Take advantage of what DESQview/X has to offer, before the competition does. While the other guys are trying to explain that some day they will have powerful networking and cross platform solutions you can be selling and installing your own. Customized to look and feel exactly the way you, and your client, want. Supporting all the best applications in the world: DOS based, UNIX based, and even MS Windows. Platform independently. Stop waiting, the future is here.

# DESQview: State of the Art

## Bringing the Power of DOS Windowing and



You don't need 4 MBs of memory or a 386 computer to multitask your software in windows—all you need is DESQview!

performance from your computer. You've heard about MS Windows and the great features it provides. You want to run multiple programs in windows at the same time, move data easily between programs, get on line (and context sensitive) help when you need it, and make your computer easier to use. Wait a minute—you just described DESQview.

#### Shocking But True

This may come as a shock, but the programming techniques first developed by Quarterdeck nearly 10 years ago for DESQview, are essentially the same ones only recently adopted by competing windowing environments.

#### You Can't Touch It

Now that you know that, it should come as no surprise that after 10 years of experience we've got a few tricks that MS Windows can't touch. We bring the power and performance of windowing and multitasking to 8088, 8086 and 80286 computers. Full features. No compromises. Run Lotus 123 and WordPerfect side by side. And Paradox, or your favorite xBase program. And Pagemaker. That's right, with DESQview you can run both DOS and MS Windows programs at the same time, side by side (along with GEM and GEOS too, if you want). On any computer with EMS 4 memory, even an 8088.

#### Bigger Isn't Always Better

Have you ever wondered why every release of MS Windows is bigger than the last? Or why MS Windows 3.x isn't compatible with MS Windows 2.x which wasn't compatible with MS Windows 1.x? We sure have. It makes you wonder about MS Windows 4.x and MS Windows NT, doesn't it. While MS Windows has been getting bigger, DESQview has been getting better. Compared to the bloated 10 to 15 MB of space required by MS Windows 3.x, DESQview is positively gem sized: less than 400K.

# Technology

## Multitasking to 8088, 8086 and 80286 Computers

#### More Than You Bargained For

DESQview may be small in size, but it's big in features. Not only does DESOview deliver the multitasking muscle and superior speed that you need to increase your computing productivity, it also contains vital enhancements that MS Windows hasn't even dreamed of. Things like keyboard macros that can either be global, or that can be automatically customized for every application you run, auto dialing of phone numbers from within almost any program, and pop-up menus that are just as easy to access from your keyboard as they are with a mouse.

Supposedly new features touted by MS Windows 3.1, such as on the fly performance tuning, hot keying directly to applications, or auto start-up of any selected group of programs when you turn on your computer, have been available in DESQview for years.

#### Faster Is Better

In need of speed? DESQview delivers. In fact, PC Week tests revealed an amazing fact: DESQview multitasks DOS and MS Windows programs, like Excel, faster on an ordinary 80286 than MS Windows can do it on a 25 mhz 386! In addition, DESQview will let you run twice as many programs at the same time in any given amount of memory (1, 2, 4 or 8 MBs).

#### No Hassles

DESQview auto loads quickly and easily from a single disk. No complicated or confusing setup. DESQview searches your hard disk for applications and builds a customized menu that gives you instant access to your programs.

#### Power and Performance: Elegantly, Inexpensively

Flexibility and Savings. In case you missed the point: you don't have to buy new hardware or software to put the power of DESQview to work for you. DESQview works with the equipment and the programs that you already own, at the same time that it gives you access to the newest, most powerful technological advances. Run any program in just four keystrokes. Move from one program to the next with just a click of the keyboard or mouse. Zoom programs to full screen with a simple 'Alt-Z.' Cut and paste text between programs instantly. You'll see productivity gains immediately, and you will measure your learning curve in minutes, not in weeks or months.

#### A Portable Solution

If you have a portable computer you will really enjoy the superior technology that makes DESOview lap top friendly. The smaller size means more room on your hard disk. The faster speed means you don't have to trade in your hardware for superior performance. And the fact that DESQview will run twice the number of programs that MS Windows can in any given amount of memory will maximize your performance on the road. And the ease with which you can use DESQview straight from your keyboard and without a mouse is sure to put a smile on your face.

#### The Power Of Superior Technology

Think about it. DESQview is faster. DESQview is more powerful and more efficient. DESQview multitasks your programs and lets you run your choice of DOS, MS Windows, GEM or GEOS programs—side by side, using your keyboard or a mouse. Does this mean that a lap top 80286 with DESQview actually delivers more computing power than a full sized 386 with MS Windows?

In a word: Yes.

DESQview: The First. The Best.

#### **DESQview**

### Network Ready, Network Friendly

DESQview sets the standard for network support. As you might well expect given the amazing network power of DESQview/X, DESQview has extensive network abilities built in. From the first time your software reaches out to connect to a remote server, you will find that DESQview makes networking the simple, seamless experience that you dreamed it could be.

Whether you are connecting to a network file server, using 3270 emulation or accessing a remote host through a gateway—or even if you need to do all of these at the same time—DESQview delivers the reliable background processing and powerful multitasking capabilities you need for mission critical applications.

#### Stop Suffering

If you're suffering with MS Windows on a network, DESQview is heaven sent. By multitasking your MS Windows applications inside of DESQview you can not only improve your performance but you can eliminate those frustrating network problems that just don't seem to go away.



## Customized Solutions

Included in DESQview is a powerful Application Program Interface (API), that programmers can use to create multitasking programs and workstations. Using the API mailboxes, interprocess communications, shared programs and menu-building, DOS programs can gain MS Windows or OS/2-like power with a small fraction of the time and effort.

#### **Currently Available**

API tool kits for: C, xBase, APL, Clipper, Basic, and more!

# Desqview-386: All Gain, No Pain

NLEASH the power of your computer! Combine the power of DESQview with the power of Quarterdeck's Expanded Memory Manager-386 and you have DESQview-386. You also have a multitasking and windowing environment that puts MS Windows to shame.

If a 286 running DESQview is faster (even when multitasking MS Windows applications—see 'Faster Is Better' on previous pages), more flexible, and more powerful than MS Windows running on a 25 mhz 386, what happens when you add DESQview-386 to a 386 or 486 computer?!

#### Power Miser

Start with the basics: a 386SX running at 16 mhz and 2MB of RAM. In most companies this is the work horse of today, and tomorrow. With MS Windows this configuration lets you run one MS Windows application, like Excel, and that's it. So much for multitasking.

With DESQview-386 this same computer can switch instantly between three, four or even five different programs all running at the same time, each in its own window. No need for more memory, a bigger hard disk, or a faster CPU. You can even run MS Windows and Microsoft Excel in one DESQview window and still have plenty of room for other applications. Add Word Perfect and Paradox and cc:Mail. Or your choice of any DOS, MS Windows, GEM or GEOS programs.

#### More Performance, Not More Hype

MS Windows is fine if you've got memory, mips and money to burn. But why turn your 386 into a 286? Or your 486 into a 386? Why start all over again with a new spreadsheet, a new word processor and a new database?

The more horse power your computer has, the more performance DESQview-386 delivers. DESQview-386 enhances your productivity without extracting a huge penalty in computing power. With DESQview-386 you save time and money. You get the maximum out of the hardware and software that you already own.

#### Billions and Billions

Ok, this is an exaggeration. But it is no exaggeration to say that DESQview and DESQview-386 are used by millions of people in tens of thousands of companies all over the world.

### Where is DESQview-386 used?

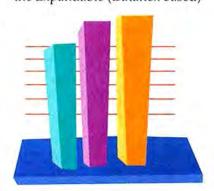
The best place to use DESQview-386 is everywhere. Here at Quarterdeck a 386 SX with 4 MBs of memory has become our base machine. With it we can run two or three large programs and another four to six smaller applications. Here's what we do:

To begin with, everyone has continual access to four basic company wide (world-wide) applications: cc:Mail; Fones, which contains name, title, extension, location and department information for the company, updated daily; QVL, an in-house database of random information such as pricing, product reviews, release and version notes, etc.; and Q-FAX, a program for sending out faxes over our bank of networked fax machines.

#### In Finance

How do you increase the productivity of your finance department? By removing barriers that keep them from getting the information they need, and by giving them the tools to efficiently analyze the information they have.

With DESQview our analysts have instant access to network based reports and information in the Expandable (Dataflex based)



#### **Standard Features**

Multitask DOS, MS Windows, GEM and GEOS side by side

Easy mouse and keyboard access to all commands

Run programs in re-sizable windows

Fully automatic installation

On line context sensitive help

Default start-up and auto loading of programs each time you start DESQview

Hot key to applications

Point and click file management

Bullet proof network support (both IPX/SPX and NETBIOS)

Cut and paste text data between any programs, with keyboard or mouse

API tool kit available to customize interface

Full keyboard macros specific to each program you run

Auto-dial phone numbers from within programs

Error isolation for application specific errors

Increased memory for all applications

Automatic memory management: extended/expanded/High RAM

Built in screen-saver

Tag, Copy, Move, Erase files at will

Display the contents of two, three, four or more directories at the same time

Easily add or remove programs and utilities from your menus

Full font and graphics support for graphics programs, even when running in background

Just two mouse clicks or four key strokes loads and runs any program

Run lots of programs without adding RAM to your 386 or 486

Format floppies in background while you work

Zoom any application to full screen or return it to a sized window quickly and easily with 'Alt-z'

Just double click on the Alt key to switch between loaded applications

accounting system and in our EmeraldBay (xBase) order processing system. Working in the accounting system they find the necessary data, and then cut and paste that data directly into their spreadsheet (Lotus or Quattro Pro), a database (usually Paradox) or word processor (Word Perfect). Reports can be generated on line and then immediately imported for further analysis.

The time saved and the increase in productivity is so great that it is literally impossible to measure. Running four to six programs at any one time gives our analysts finger tip access to the information they need and the tools they need to make use of it.

Yet all this is done with the same off the shelf programs used by most companies: Lotus, WordPerfect, Paradox, EmeraldBay/xBase, etc. No special software—except for DESQview, and no additional investment in hardware was required.

#### In Accounting

In the accounting department you see essentially the same situation as in the finance department, but with an inverted emphasis. Our financial analysts want to take information from the Expandable and EmeraldBay in order to produce budgets, presentations, etc.

Our accounting personnel spend less time using spreadsheets and more time cutting checks, entering invoices and posting journal entries. They use the same basic suite of programs with a different concentration effort. In accounting the spreadsheet is the "supporting software" that makes them more productive.

#### **DESQview 386**

Reconciling an account is a snap when the data can be instantly captured by a spreadsheet for review. A purchase order can easily be electronically mailed to a department for explanation, backup or clarification. Discrepancies between sales and accounting can be tracked down and repaired in real time more easily, when both systems are running side by side on the same screen.

In addition, credit card information can be instantly processed by having InFact (from Modular Data) process the



background.
Using DESQview scripts (keyboard macros) to automate the cutting and pasting between EmeraldBay and InFact reduces the entire verification process to only a couple of keystrokes.

#### In Sales

Is it possible for a company with sales of over \$40,000,000 to have less than twelve people in its sales department? It is if you give them the tools they need to make them truly productive.

Combine a regular telephone with ACT (network version), Word Perfect, cc:Mail, a data base (sales uses Alpha, Paradox and EmeraldBay) and a spreadsheet—



all working together, at the same time—and just watch what happens.

Letter based sales campaigns pour out for every trade show and every promotion. Customers receive faxes almost instantly (Q-Fax allows us to initiate faxes without leaving our desks, often while they are still on the phone with a dealer or customer). Sales and profit rates by region and by campaign are more easily tracked and analyzed.

Beyond that there are the intangible but very real benefits of having current pricing, version information, and supporting sales materials (all in QVL, mentioned above) instantly available.

And remember, all this is being done on an ordinary 386 SX with just 4 MB of RAM with a street price of about \$1,000, and the same DOS software that you probably are already using in your office today.

In Tech Support

Our technical support department turns out to be one of the heaviest computing users in the company. To begin with they run two major network applications: our customer database, which is maintained in EmeraldBay; and Previews, from Folio Corporation.

These two programs alone double the productivity of each of our people. The customer data base allows every technician to add, update and delete users, verify serial numbers and prompt for upgrade sales when a customer has an older version of our products. Previews forms the backbone of the department, as the central repository of all technical problems and solutions.

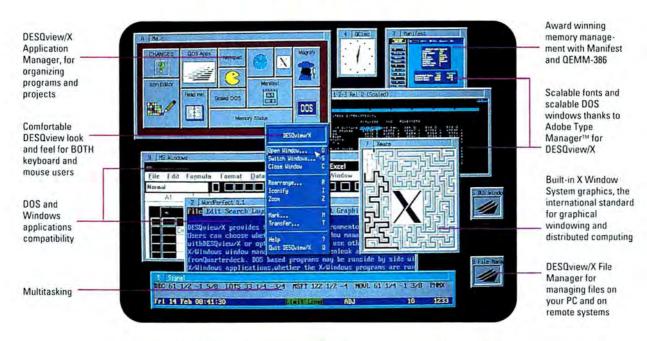
Of course they also run a copy of Manifest for reference use during calls; Q-Edit, Word Perfect, or Microsoft Word for taking notes; and a call timer. Tech support is probably the heaviest user of Q-Fax. With twenty or thirty 'tech notes' dissecting standard problems, long support calls can often be cut short by the instant, on line use of Q-Fax.

Beyond this, many of our techs are aspiring programmers. It is not at all unusual to find one them compiling a program in background while they are taking calls and using the customer database and Previews in the foreground. In addition, our designated electronic bulletin monitors run Recon (or an equivalent) to handle Compuserve, Genie, et. al.

But we have to confess, many of these people actually require 5 MB of RAM on their 386 SX!



# Raising DOS to the Power of X



DESQview/X takes your 386 or i486 computer where it has never gone before. Beyond mere windowing, beyond ordinary graphical interfaces. With DESQview/X your computer is no longer limited to the power of your PC and DOS applications.

DESQview/X brings you the windowing, multitasking, DOS and Microsoft Windows compatibility, data transfer, and key-stroke macro facilities, that you would expect from Quarterdeck, the leader in DOS multitasking. With the addition of X Window System graphics, Adobe Type Manager™ for scalable fonts and scalable DOS windows, a graphic desktop, customized menus and icons, and remote computing, DESQview/X redefines the limits of personal computing.

Technical Support: 310/392-9701 Fax: 310/314-3217
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Quarterdeck Office Systems, Inc. 150 Pico Boulevard Santa Monica, California 90405 310/392-9851 Fax: 310/314-4217

Ouarterdeck Office Systems Canada, Inc. 70 York Street, Suite 1220 Toronto, ONT, Canada M5J 1S9 416/360-5758 Fax 416/360-4885

Quarterdeck Office Systems (Middle East), Ltd. 1 Souliou Street, Suite 103 Strovolos, Nicosia, Cyprus 357 2 311 630 Fax 357 2 311 560 Quarterdeck Office Systems, GmbH Willstätter Strasse 15 D-4000 Düsseldorf 11, Germany 49 211 59 79 00 Fax 49 211 59 41 26

Quarterdeck Office Systems, S.a.r.l. 4 Rue du General Lanrezac 75017 Paris, France 33 1 44 09 03 91 Fax 33 1 44 09 03 47

Quarterdeck Office Systems España, SA G.V. de Les Corts Catalanes, 617, 1º - 3a 08007 Barcelona, Spain 34 3 412 29 45 Fax 34 3 412 44 41 Quarterdeck Office Systems, UK Ltd. The Widford Hall, Widford Hall Lane Chelmsford, Essex United Kingdom CM2 8TD 44 245 496699 Fax 44 245 495284

Quarterdeck International Ltd. BIM House, Crofton Terrace Dun Laoghaire, Co. Dublin, Ireland 353 1 2841 444 Fax 353 1 2844 380

## LABEL

## PRINTERS

BY DAN MILLER Have you been keeping that old

Selectric around just to address envelopes?

Here's how to bring labeling into the computer age.

**ENVELOPE** 

hen it comes to addressing envelopes, labeling file folders, and performing other specialized print jobs, you're probably still using your office's trusty old typewriter-or even your favorite pen. Doing any of these on the computer always seems like too much trouble: Formatting the addresses requires commands intended for desktop publishers, and when you try to print them on your regular printer, you just pray that some errant label won't apply itself to the printer's innards or that a co-worker won't print a spreadsheet on your envelope.

No wonder you've been reluctant to toss that typewriter. But now, thanks to specialized printers and software enhancements to programs you already use, you have some alternatives.

#### LABEL PRINTERS

If you produce lots of individual letters and need to address envelopes one at a time, you might consider buying a label printer. These small machines sit unobtrusively on the desk, always ready to spit out a label for an envelope, a file folder, a binder, or a disk.

Label printers are shipped with their own software-TSRs or stand-alone programs that can grab or import

> applications and then format them for output. These machines are about the same price as a cheap dot matrix printer, and each label costs about 5 cents. Their big drawbacks: They can't print anything but labels, and they're not much help when preparing high-volume mailings.

#### ENVELOPE PRINTERS

If you want to print on media that a label printer can't handle, or to share addressing capabilities over a network, check out one of CoStar's envelope printers.

Unlike their smaller cousins, these machines print on envelopes, rolodex and index cards, and other odd media, as well as on labels. You can attach CoStar's Address Express and AddressWriter to your network. On the downside, envelope printers are significantly larger and more expensive than label printers.

#### USING YOUR EXISTING HARDWARE

If you don't want to buy a printer just for labels and envelopes, you can always use the printer you already own.

For mass mailings, nothing beats a dot matrix. Dot matrix labels come in continuous-form sheets, so you can print thousands at a time; if you're using an off-site agency for a mass mailing, it will usually require such labels. Because of their relatively crude paper handling, however, dot matrixes aren't so good for envelopes.

Lasers, by contrast, are great for envelopes. The most convenient setup is a laser with an envelope feeder installed as the second tray; a single, adjustable paper tray is the second-best option, and a manual feeder's the most trouble. Lasers can do labels, too, particularly for small to mediumsize mailings when print qual-



ity counts. If your laser has face-up output, labels will follow a straight path through the printer—the best defense against labels "predispensing" inside the printer. If you're using your laser for labels (or if you're printing addresses onto plain paper and then copying them onto labels), be sure to use special laser labels with heat-resistant adhesive.

#### SOFTWARE SOLUTIONS

If you use your existing hardware to print labels or envelopes, you can also use your existing software to prepare addresses for output.

With older word processors, formatting labels and envelopes was laborious. Many newer versions, such as Word for Windows 2.0, WordPerfect 5.1, and Ami Pro 2.0 come equipped with icon buttons, macros, and templates so you can print envelopes and labels with just a couple keystrokes.

Most popular data base managers give you labeling utilities as menu items, but for envelopes, you may want to import data base addresses

## For printing one label at a time, TSRs will do the job.

into an envelope-friendly word processor. Data base programs have the advantage of letting you select and sort records; some can print bar codes, and a few can even calculate them from ZIP codes, which can mean major savings on mass mailing postage.

If your software can't print labels or envelopes convenient-

ly, you may want a specialized labeling program.

For printing one label at a time, you can find TSRs that will grab addresses from whatever application you're running and format them for printing. If, on the other hand, you want to print batches of labels, look for a stand-alone program that can import and

#### LABELING SOFTWARE

Manufacturer	Product	List price	Windows product	TSR/stand- alone mode	RAM required in TSR mode (K)	DBF/ASCII files
AVERY DENNISON	Label Pro 1.6 1	\$99.95	N	N/Y	n/a	Y/Y
BLOC PUBLISHING	Fast Pak Mail	\$99	N	N/Y	n/a	Y/Y
COSTAR	AddressWriter Address Express LabelWriter II/II Plus	n/a <sup>3</sup> n/a <sup>3</sup> n/a <sup>3</sup>	N 4 N 4 N 4	Y/N Y/N Y/N	44 44 44	Y/Y Y/Y Y/Y
DACEASY	Rolodex Live	\$49.95	N	Y/Y	7	Y/Y
DATA CONSULTING	Data-Easy PC Ultimate Mailer	\$125 5	N	N/Y	n/a	N/Y
E.R.M. ASSOCIATES	ERMAsoft Laser Envelopes	\$59.95	N	Y/Y	8	Y/Y
NOR SOFTWARE	Labels and Forms	\$89	N	N/Y	n/a	N/N
POWER UP	Labels Unlimited	\$89.95	N	N/Y	n/a	N/Y
REINIUS SOFTWARE	LaserBase	\$50	N	N/Y	n/a	Y/N
SEIKO INSTRUMENTS USA	Smart Label Printer Plus	n/a <sup>3</sup>	Y	Y/Y	8	Y/Y
USEFUL SOFTWARE	Books, Cards, and Labels	\$99.95	Y	N/Y	n/a	Y/Y
ZPAY PAYROLL SYSTEMS	Grab Plus/WinGrab	\$49.95	Y	Y/Y	6	N/Y
						THE RESERVE AND ADDRESS OF THE PARTY OF THE

Bundled with Avery printers.

#### PRINTERS

Manufacturer			Dimensions (inches)	Weight (pounds)	Printing method	Feed	Maximum label width (inches)
LABEL PRINTERS							
AVERY DENNISON	Personal Label Printer	\$279	6.3 x 3.9 x 7.8	1.3	thermal	friction	3.5
COSTAR	LabelWriter II LabelWriter II Plus	\$249.95 \$369	4.5 × 6.5 × 7 4.5 × 6.5 × 7	1.25 1.25	thermal thermal	friction friction	3.5
SEIKO INSTRUMENTS USA	Smart Label Printer Plus	\$199.95 1	6.1 x 3.6 x 6.3	1	thermal	friction	3.5
ENVELOPE PRINTERS							1000
COSTAR	Address Express <sup>2</sup> AddressWriter	\$795 \$595	16 x 16 x 8 8.7 x 8.5 x 8	14	ink jet dot matrix	gravitational friction/pin feed	10.25 5.3

<sup>1</sup> With Windows software \$249.95.

<sup>2</sup> Separate versions for dot matrix and laser printers.

<sup>\*</sup> Windows version expected to ship in third quarter

Single-user version; multiuser version \$2

<sup>&</sup>lt;sup>2</sup> Not shipping at press time; scheduled to ship by publication date

format groups of addresses from data base or commadelimited ASCII files. Some programs operate in both TSR and stand-alone modes. If you want to sort and select your records and don't have a data base manager, look for a program that can manage a mailing list on its own.

All these programs give you a choice of preset or customized label formats. Many let you add graphics and bar codes, and most support the most common dot matrix and laser printer emulations.

Whichever labeling solution you choose, whether it's buying a new printer or labeling program or updating what you've got, one thing is clear: You now have one less reason to hang on to your typewriter.

Dan Miller is an assistant editor for PC World. He can be reached on PC World Online (see page 8 for more information).

For more information about all products in this article, circle reader service no. 906.

#### WHERE TO BUY

Avery Dennison 800/732-8379

Bloc Publishing 305/445-0903

CoStar Corp. 800/426-7827, 203/661-1540 (fax)

DacEasy Inc. 800/877-8088

Data Consulting Group 415/883-2300 E.R.M. Associates 800/288-3762, 818/707-3818

Nor Software Inc. 908/291-2991

Power Up Software Corp. 800/851-2917, 415/345-5900

Reinius Software 209/296-4299 Seiko Instruments USA Inc.

800/888-0817, 408/922-5900

Useful Software 818/880-9128

ZPay Payroll Systems Inc. 800/468-4188, 813/866-8233

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						PRINTER SU			
	Preset label/ envelope formats	Supports PCX clip art	Maintains mailing lists	Selection/ sorting capabilities	Prints/ calculates bar codes	Epson	IBM Proprinter	HP LaserJet	Reader service number
	258	Y	Y	Y/Y	Y/Y	Y 2	γ2	Y 2	809
	30	N	Υ	Y/Y	Y/Y	Y	Y	Υ	810
	2	N	Y	Y/Y	Y/Y	N	N	N	811
	20	Y	Y	Y/Y	Y/Y	N	N	N	811
	2	N	Y	Y/Y	Y/Y	N	N	N	811
	5	N	Y	Y/Y	N/N	Υ	Y	Y	812
	7	N	Y	Y/Y	N/N	Y	Y	Y	813
0	12	N	N	N/N	Y/Y	N	N	Y	814
	100	N	N	N/N	Y/N	Y	Y	Y	815
	175	Υ	Y	Y/Y	N/N	Υ	Y	Y	816
	10	N	Y	Y/Y	N/N	N	N	Υ	817
	1	N	Y	Y/Y	Y/Y	N	N	N	818
	50	N	Y	Y/Y	N/N	Υ	Υ	Y	819
	3	Υ 6	Υ	Y/Y	Y/Y	Υ	Y	Y	820

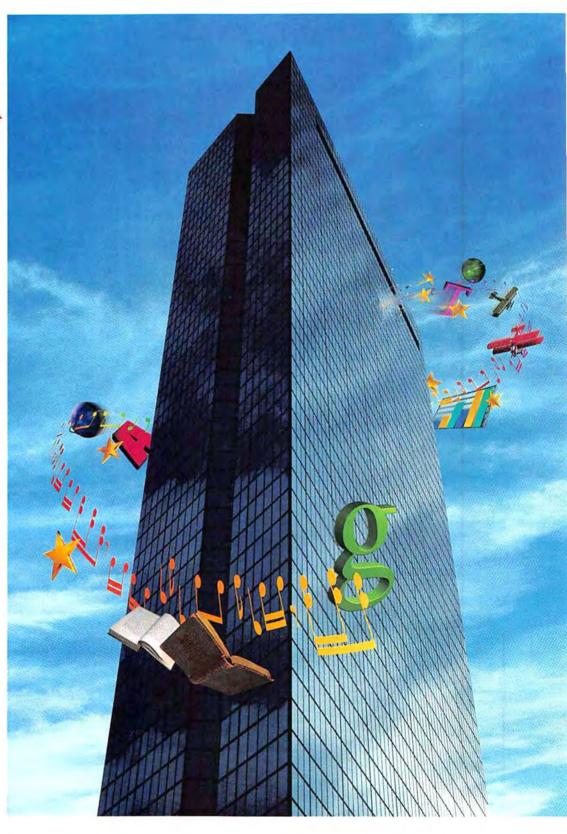
For more information about all products in this table, circle reader service no. 905.

Smallest media (inches)	Largest media (inches)	Resolution (dpi)	Maximum speed (seconds per label or envelope)	Prints bar codes	Prints graphics	Software included	Networkable	Warranty (years)	Reader service numbe
1.1 x 3.5	1.1 x 3.5	138	4	Υ	Y	Υ	N	.1	805
1.1 x 3.5	1.1 x 3.5	138	3.5	Υ	N	Y	N	1	806
1.1 x 3.5	2.2 x 4	138	3.5	Y	N	Υ	N	1	806
1.1 x 3.5	1.1 × 3.5	150	10	Υ	Υ	Υ	N	1	807
3 x 5	6.25 x 10.25	192	15	Y	Y	Y	Υ	1	808
3 x 5	5.3 x 12	144	12	Y	Y	Y	Υ	1	808

For more information about all products in this table, circle reader service no. 908.



A company of firsts.
Not only was NEC the first
to introduce the fastestspinning CD-ROM readers,
we also introduced the
first monitor color
control system and
the first activematrix color
notebook.



## Looks like someone just discovered CD-ROM with MultiSpin.



The fastest-spinning readers ever. The InterSect™ CDR-74 and 84, only from NEC. Now they not only have the ability to access large

amounts of information quickly and easily, but they provide you with endless Multimedia possibilities as well.

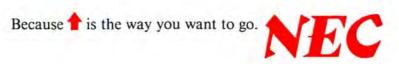
In fact, our MultiSpin technology can transfer data at a rate of 300 kb/sec. That's double the speed of any other CD-ROM reader. And, we have designed our readers to play back video without any pauses or lapses in motion.

But what happens to audio? Do human voices sound more like beings from another planet? Does music sound like a record being played at the wrong speed? Absolutely not. The amazing thing about MultiSpin technology is its ability to transfer data at twice the speed, while maintaining the standard 150 kb/sec rate for audio tracks.

Simply put, NEC's InterSect™ CDR-74 and 84 with MultiSpin™ are the speed champs of CD-ROM. What's more, our CD-ROM readers cover a full range of price and performance needs.

Choose from our external CDR-74 or internal CDR-84, with double dust doors and socketed firmware features. Or, if portability interests you, choose our CDR-37. All meet MPC Marketing Council guidelines for Multimedia computing, are Photo CD capable\* and fully QuickTime™ compatible.

So next time you hear the words CD-ROM, think MultiSpin." And remember: it's hot, it's fast, it's only from NEC. And you don't want to be the last on your block to get one.



#### BY SCOTT SPANBAUER

IT'S MONDAY, 8 A.M.—do you know where your business is? If you're a doctor, lawyer, contractor, retailer, or real estate agent, you can try tracking your company's vital statistics by laboriously customizing 1-2-3 or a generic accounting package (or pay a programmer a substantial bundle to work up a custom application from scratch). Or you can tap the powers of one of hundreds of industry-specific, or vertical market, applications.

Vertical applications are created by people who know your business. Point-of-sale packages usually support bar code and credit card readers, for example, while most medical practice management applications include an electronic equivalent of the new HCFA 1500 Medicare form. Try squeezing one of those out of a general-purpose accounting package.

Naturally, you have to pay for this kind of software customization. Generic

around \$500—and top out at \$10,000 or more.



GENERIC SPREADSHEET

AND ACCOUNTING

SOFTWARE TO THE

LIMIT? VERTICAL

MARKET SOFTWARE

CAN SMOOTH YOUR

PATH TO WEALTH—

spreadsheets, data bases, and accounting systems can cost as little as \$300; vertical applications start a little higher—

AND WEEKENDS.

LLUSTRATIONS BY LOU BEACH

Real Estate Health Care Construction Point of Sale Law Real Estate Health Care onstruction int of Law 装置 (t) AUGUST 1992 PC WORLD 231 For the extra investment, you get a lot more than just a preprogrammed product. Most vertical software developers sell their products through qualified dealers, who often will install the program and provide extensive on-site training and hand-holding. If things go wrong, competent help is usually a local phone call away.

#### THIS WAY UP

f vertical sounds like the direction you should be heading, let us give you a hand up. Starting with independent surveys of the field, we chose five of the most popular vertical market categories: point-of-sale, law, construction, health care, and real estate. After checking with experts and professional organizations, we selected some of the leading applications in each field for small businesses.

Choosing an application starts out easy. First, you'll have to decide between entry-level products, whose strength is ease-of-use, and more complex programs that provide better controls, reporting, and billing options. If you're not sure where you stand, look for a product that enables you to start small, and add power as you go. Many applications can grow with you by means of upgrades and added modules. Extra modules quickly add up, however, so make sure to price all of the extracost options you'll eventually need when comparison shopping.

Most vertical software is built around a basic accounting system that posts transactions either in batches or in real time. Batch processing speeds up data entry and helps you to catch errors before they are posted, but real-time posting of accounts allows you to find out where your business stands at any given moment and permits some billing methods the batch method does not. Just as with any accounting system, look for plenty of predefined reports and invoices that you can easily edit to suit your unique situation.

Vendors generally provide free demonstration versions of their products or live working models for a modest fee, which is usually applicable toward the purchase price. Make sure you also ask colleagues and professional organizations for recommendations before buying. At the end of this article we've provided a list of organizations that offer additional resources.

INT-OF-SALE



POINT-OF-SALE (POS) software gives your retail emporium a cash register with a brain and a memory that automates inventory tracking. As they record every transaction, POS systems update your business's general ledger (G/L) automatically, helping you get an up-to-date picture of where you stand at any given time. Often, POS packages are but one part of a multimod-

ule general accounting system that includes accounts payable (A/P), accounts receivable (A/R), payroll, and more. If you've set things up properly, your system will do handy things like generate a purchase order when your stock dips below a certain level.

Most PC-based POS applications are as easy for check-out people to use as an ordinary cash register. Moreover, POS software dealers generally sell, install, and support the necessary POS hardware, including cash drawers, bar-code readers, and credit card readers.

Key features to look for include integrated credit card processing; bar-code reading and printing; time-saving style, color, and size options for each item; and the ability to check for inventory at other locations. If you need to consolidate transactions from more than one location, many companies provide multistore communications modules.

#### Department Point of Sale 4.31

Although it seems a bargain-basement system at first glance, most of *Department POS*'s basic features (including A/R, bar coding, credit card authorization, inventory reporting, and password protection) cost extra, so shop carefully. The program also supports multistore installations and portable scanners for checking inventory. Freeman Software, 334 Fieldside Dr., Garland, TX 75043; 800/426-6598, 214/270-0625 (fax). \$189 to \$1713 single user, \$489 to \$2013 multistore. Free demo disk.

Reader service no. 690

#### The General Store 6.03

This 11-year POS veteran packs the basics plus credit card authorization; size/color/style matrices; and bar coding into a function-key-driven interface with no extra charge for LAN or multistore versions. The General Store can import data from 18 other POS programs, and Crichlow will convert any other system's data free. Crichlow Data Sciences, 2005 Old Greenbrier Rd. #103, Chesapeake, VA 23320; 804/523-6600, 804/523-4668 (fax). \$995. Free demo disk; trial version \$75 (refundable toward purchase).

Reader service no. 691

#### **Keystroke POS 2.0**

Keystroke's biggest plus, aside from real-time accounting, is its Windows-like interface, which makes extensive use of pulldown menus, pop-up windows, dialog boxes, push buttons, and context-sensitive help. Multistore and G/L modules are optional, and you can link Keystroke to Manzanita's Business Works accounting series. Specialized Business Solutions, 215 Long Beach Blvd. #523, Long Beach, CA 90802; 800/359-3458, 310/432-3458. \$695 to \$1180 single user, \$995 to \$1480 network. Free demo disk; full evaluation version \$45.

Reader service no. 692

#### The Retail Store Controller

MicroBiz claims their product is the best-selling POS program on the market. For a tantalizing price, it promises a spate of features, including a menued interface with lookup windows, password protection, and on-line help, as well as credit card and bar-code interfaces. MicroBiz doesn't offer its own accounting software modules, but The Retail Store Controller links to a number of third-party programs, including One-Write Plus, ACCPAC, Simply Accounting for Windows, and Quicken. Micro-Biz Corp., 500 Airport Executive Park, Spring Valley, NY 10977; 800/637-8268, 914/425-4598 (fax). \$695 single user, \$1395 network.

Reader service no. 693

#### TABS POS 6.35B, ELPOS 6.35B

This full-featured, premium-priced product is highly customizable and comes with Foxbase-compatible source code. Network-ready TABS POS offers automatic file transfers between stores: product lookups: inventory; bar coding, style/color/size matrices; and links to SBT accounting software. Credit card authorization is optional. ELPOS is a single-user, entry-level version offering the same features. Technologically Advanced Business Systems, Inc., 1239 E. Newport Center Dr. #106, Deerfield Beach, FL 33442; 305/570-8388, 305/570-8377 (fax). TABS POS \$1295 to \$2590 single store, \$3295 to \$11,295+ multistore; ELPOS \$595. Interactive demos \$40.

Reader service no. 694



porate both. Case management software tracks case status; schedules lawyers; checks for lawyer or firm conflicts of interest; manages attorney caseloads; maintains a data base of clients, witnesses, experts, and opposing counsel; and assists in generating correspondence. Time and billing programs track attorneys' billable time and produce client invoices and handle payroll, check writing, and reporting.

Many programs also offer trust accounting and track the amount of business that attorneys bring to the firm. Some are better suited to smaller firms, or come in versions geared either to small or large offices. Make sure the one you buy can handle every staff member whose work is billable, including paralegals.

#### TABS III 3.6, Case Master III 1.2

Out of the herd of programs on the market, TABS III is the best-seller according to the American Bar Association (ABA); a competitor calls it the "Word-Perfect of time and billing." Along with standard features, TABS III provides management reports and optional accounting and trust accounting modules. Case Master III integrates fully with TABS III and features docket, calendar, document, and conflict management. Software Technology, Inc., 1621 Cushman Dr., Lincoln, NE 68512; 402/423-1440, 402/423-2561 (fax). TABS III with Case Master III \$3495 to \$6545 single user, \$5995 to \$10,245 network. Free demo disk; full evaluation version \$45 each.

Reader service no. 695

#### Juris 2.4

Complete, and backed by an active user group and a company with a 20-year track record, *Juris* can serve an unlimited number of lawyers or just one. Starting with the core of timekeeping, billing, and A/R, you can choose from a number of key add-ons, including docket/case management, conflict avoidance, and trust accounting. Juris, Inc., 151 Athens Way, Nashville, TN 37228; 615/242-2870, 615/256-2053 (fax). \$2700 to \$11,500 single user; \$4150 to \$16,000 network. Free demo disk.

Reader service no. 696

#### PCLaw 8.6, PCLaw jr 2.10

PCLaw does all the timekeeping, billing, and accounting basics-plus trust accounting and docket scheduling-and targets firms of 5 to 40 lawyers. An entry level version, PCLaw ir, is designed for the sole practitioner, supports up to five users, and offers some of PCLaw's standard features as options. Alumni Computer Group, Inc., 155 North Michigan Ave. #722, Chicago, IL 60601; 800/387-9785, 416/292-1638 (fax). PC Law \$1995 to \$2795 single user, \$2995 to \$3795 network; PC Law jr \$495 to \$1695 single user, \$845 to \$2045 network. Interactive PC Law demo \$100; free PCLaw jr demo disk.

Reader service no. 697

#### Legal Billing 4.2, General Ledger/ Accounts Payable/Checkwriting 3.0, Legal Calendar 1.2

This moderately priced, three-module system (time and billing, calendar, and G/L) was written by a practicing attorney. It's also ranked number one in the CTS guide to time and billing applications and boasts over 1000 installations. Strengths include real-time accounting and a built-in report writer. Tussman Programs, Inc., 24 Colorado Ave., Berkeley, CA 94707; 800/228-6589, 510/528-2009 (fax). \$1290 to \$2780 single user, \$2890 to \$3880 network. Free demo disks.

Reader service no. 698

#### LegalEdge 3.01

LegalEdge users include one-person firms and multiple-attorney practices, but this application makes most sense for the latter. LegalEdge has the basics—case management, time and billing, trust accounting, and A/P—along with some extras, such as contingency fee calculation, mail merge, and an overlapping-window interface complete with pop-up reminder notes. A unique casebudgeting feature calculates projected versus actual expenditures and warns of potential liability. LegalEdge Software, 1150 First Ave. #700, King of Prussia, PA 19406; 215/337-5835, 215/

337-5845. \$3800 to \$11,250 single user; \$8500 to \$14,500 + network. Free demo version.

Reader service no. 699

#### THE BASIC organizing principle in any kind of construction business, whether big or small, is the job. Job costing-the heart of most construction management systems-tracks material, labor, and other costs. Job cost packages are frequently one module in an integrated accounting system that may include G/L, A/R, A/P, payroll, inventory, and purchase ordering. You're better off staying with one vendor's

ready invested in accounting sofware, make sure the job costing system you want to buy can export data to it. Systems that come preloaded with the National Association of Home Builders (NAHB) chart of accounts can save you setup time.

modules, but if you've al-

Estimating is an important companion application; sophisticated estimators let you create standard assemblies (for example, a wall consisting of studs, wall-board, paint, trim, nails, and so on), then bring up any component on the assembly list and swap it for a more economical or fancier product. Look for products that come with standard preprogrammed assemblies, and digitizer interfaces for scanning materials quantities from plans.

Another tempting option, integrated scheduling, may work for small contractors who don't already use a project management program. But if you have a separate person doing scheduling, a good stand-alone project manager like *Primavera* may perform better.

#### Basic Builder II, Profit Builder, Pro Sub, Bid Team

Basic Builder II, which is geared to the small commercial and residential contractor, integrates the basics-job costing, G/L, A/P, and A/R—with optional payroll, billing, inventory, estimating, and report-writing modules. Pulldown menus and pop-up job and vendor lookups help the novice get right to work. The Profit Builder adds stronger management reporting and analysis; more optional modules, including purchase orders; and subcontractor tracking. It works on a network and links with Bid Team, CDCI's customizable estimating package. Pro Sub offers downscaled construction management for subcontractors with little time or money for more complete applications. Both Basic Builder II and Profit Builder are NAHB approved. Construction Data Control, Inc., 4000 DeKalb Technology Pkwy. #220, Atlanta, GA 30340; 800/ 285-3929, 404/457-7725. Basic Builder II \$1995 to \$5075; Profit Builder \$2995 to \$9735; Pro Sub \$695 to \$1280; Bid Team \$995 to \$3995. Demo disks \$10 each.

Reader service no. 700

#### **Buildsoft 2.58**

UFAB's comprehensive system targets home builders with a dozen or so projects per year. Originally designed by builders rather than accountants, Buildsoft is semimodular, rolling the basics plus estimating into one moderately priced bundle. UFAB is particularly proud of its critical path scheduling module, which creates Gantt charts, schedules, and task lists. Buildsoft is NAHB approved. User Friendly Applications Builder, Inc., P.O. Box 13893, Research Triangle Park, NC 27709; 800/999-8322, 919/361-1224 (fax). \$2495 to \$4995; network license \$1495. Demo disk \$15 (refundable).

Reader service no. 701

#### Business Management System 5.0, Professional Estimating 4.5

Not intended for contractors who handle accounting in their spare time, Business Management System is a fullstrength, modular job costing and accounting system. Among the extracost options are a purchase order system, scheduling, a report writer, network capability, and Professional Estimating. Home builders who market their own properties will find Enterprise Computer Systems' sales tracking, proposalgeneration, and prospect follow-up options a plus. All three packages are NAHB approved. Enterprise Computer Systems, Inc., P.O. Box 2383, Greenville, SC 29602; 800/992-6309; 803/234-7676 (fax). \$1495 to \$7060 single user, multiuser license \$2495. Demo disk and report samples \$10.

Reader service no. 702

#### Construction Accounting 5.0, The Estimator 1.010

Yardi's integrated construction management offering is moderately priced and features a modern user interface with pulldown menus and scrollable lookup windows. Estimator is a stand-alone program that supports assemblies and tracks subcontractors but doesn't work with digitizers or networks. Construction Accounting is NAHB approved. Yardi Systems, 819 Reddick St., Santa Barbara, CA 93103; 805/966-3666, 805/963-3155 (fax). Construction Accounting \$795 to \$1785 single user, \$1595 to \$2590 network (payroll module not networkable); Estimator \$795. Free demo disk.

Reader service no. 703

#### The Construction Manager 1.4, Advanced Construction Estimating 2.12

Flexibility is the rule in *The Construction Manager 1.4*, a premium-priced modular system that includes basic accounting, payroll, inventory, purchase orders, and a custom report writer. *TCM* lacks a scheduling module but exports data to *Primavera*'s project manager. *Advanced Construction Estimating* 

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offers a modern windowed interface, tight links with TCM, and a library of prefab assemblies. TCM is NAHB approved. Software Shop Systems, Inc., 1340 Campus Pkwy., Wall, NJ 07719; 800/554-9865, 908/938-3200. TCM \$4495 to \$9995 single user, \$5995 to \$11,495 network; ACE \$4995 single user, \$7495 network.

Reader service no. 704

#### Easy Build 6.0, Builder's Package 6.0, Contractor's Package 6.0, Power **Estimating System**

ISS's three programs handle 12, 35, and 1000 active jobs, respectively, to fit your company's size. There's a smooth upgrade path from one package to the next, should you outgrow either of the first two. All three programs include basic accounting, with payroll, and networking is optional. ISS also sells a quartet of similarly job-rated stand-alone estimating products, the Power Estimating System, which integrates with the main program. Contractor's Package is NAHB approved. Industry Specific Software, P.O. Box 25249, Greenville, SC 29616; 800/877-2496, 803/297-7833 (fax). \$1530 to \$4240; network license \$600; upgrades \$1000 to \$1335; Power Estimating System \$495 to \$1250. Free demo disk.

Reader service no. 705

#### Medallion HomeBuilder 1.a, **Precision Estimating 4.5**

Timberline Software is best-known for its high-end construction management systems; Medallion HomeBuilder; however, is a midsize, integrated product that incorporates the standard accounting functions and offers an optional payroll module as well as a multiuser version. The Precision Estimating series. with entry-level, intermediate, and advanced flavors, comes with a seemingly endless array of options, including a digitizer interface and links to Primavera and Microsoft Project. Timberline Software Corp., 9600 S.W. Nimbus, Beaverton, OR 97005; 800/628-6583, 503/644-8155. Medallion HomeBuilder \$1590 to \$2080 single user, \$1790 to \$2770 network. Precision Estimating \$395 to \$2990. Precision Estimating demonstration disk \$10.

Reader service no. 706



MEDICAL PRACTICE management applications are built around a patient tracking and billing core. Insurance company and Medicare billing are the most important tasks for this product category. The more complete programs

also offer a patient-scheduling module.

Be sure to choose an application that bills via the new HCFA 1500 Medicare form, which became mandatory on May 1, 1992, and is being adopted by a growing number of states and insurance companies as well. Also, physicians need open-item billing that handles multiple payments by the government, insurance companies, and patients for each itemsimple balance-forward systems can't do this.

Also look for Electronic Claims Submission (ECS) and diagnostic coding. A number of insurance companies are now beginning to accept electronic claims, and President Bush is pushing for a dollar-per-claim surcharge for paperbased Medicare submissions. Standard ICD (diagnostic) and CPT (treatment) codes are required on insurance and Medicare billings; many programs also offer handy code lookups.

#### Lytec Medical 3.5

This program is packed but costs only a tenth of what its competitors charge. The key features are all here: open-item billing that maintains detailed records of charges as long as you want them; support for the new HCFA 1500 and ECS; a mouse-aware interface with pop-up appointment scheduling; and practice analysis that tells you where your money's coming from. Lytec Medical lacks a general ledger but offers links to DacEasy and Quicken. Lytec Systems, Inc., 6975 Union Park Center #270, Midvale, UT 84047; 800/735-1991, 801/562-0111. \$199 single user, \$499 network. Demo version \$22 plus \$7.50 shipping.

Reader service no. 707

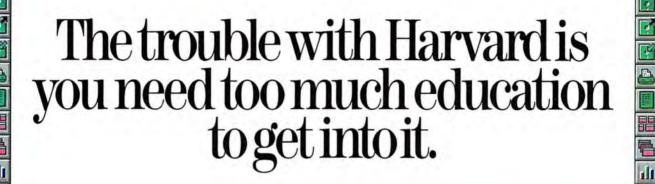
#### Cactus/MD 6.27, Cactus/DDS 6.27

The North Carolina Medical Society recently endorsed the Cactus Medical Group's programs, which integrate insurance and patient billing, reporting, and word processing and link up with optional accounting, diagnostic coding, scheduling, records management, and Electronic Claims Submission modules. Cactus/DDS also produces standard American Dental Association diagnostic codes and claims forms. Both of the Cactus products have been updated to handle the new HCFA 1500 form. The Cactus Medical Group Ltd., One Copley Pkwy. #200, Morrisville, NC 27560; 800/877-9495, 919/481-9307 (fax). \$2895 to \$5485 single user, \$4395 to \$7385 two users, each additional user \$495. Free demo disk; limited full version with manual \$50 (applicable toward purchase).

Reader service no. 708

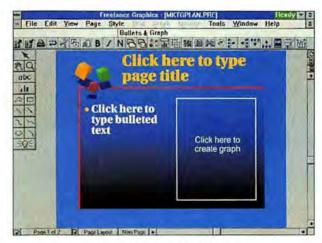
#### CompuMedic/Open Item, DentalWare

Thanks to real-time accounting, CompuMedic/Open Item allows partially paid items to remain open pending insurance company, Medicare, or patient payments. (DentalWare is a balance-forward system.) Both are network ready and incorporate patient history data bases and appointment sched-





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\* Usability Sciences Corporation. Freelance Graphics for Windows vs. Harvard Graphics for Windows, January 1992

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#### Index to Professional Resources

Now that we've given you a taste of the most popular applications for your business, you may want to learn more about what's available and how organizations go about "approving" certain products. Here's a brief directory to key trade organizations for the types of businesses discussed in this article.

GENERAL Solutions, 2444 Early Settlers Rd., Richmond, VA 23236. The Accounting Library is a computer-based needs-analysis system that lists 90 different accounting applications, some vertical.

CTS, 11708 Ibsen Dr., Rockville, MD 20852; 800/433-8015, 301/468-4800. Publishes reviews of a variety of accounting applications, including construction-, law-, and medical-specific software, which include needs-analysis templates for 1-2-3.

POINT-OF-SALE Indiana Cash Drawer Co., 1315 S. Miller St., P.O. Box 236, Shelbyville, IN 46176; 800/227-4379, 317/398-6643. Publishes the *POS Source list*, a list of available POS applications.

LAW American Bar Association Legal Technology Resource Center, 750 N. Lake Shore Dr., Chicago, IL 60611; 312/988-5465. Provides law professionals with information on technology from its voluminous data bases and computer bulletin board. The Center also develops guidelines for software development and certifies products.

CONSTRUCTION CIP Communications, 6585 Commerce Blvd. #292, Rohnert Park, CA 94928; 707/823-4211, 707/823-1007 (fax). Publishes the Construction Computer Applications Directory every other year, listing hundreds of applications. CIP also publishes a monthly newsletter.

National Association of Home Builders, 1201 15th St. NW, Washington, D.C. 20005. 800/368-5242, 202/822-0200. NAHB's Software Review Program thoroughly evaluates construction software; the results are available in its *Approved Product Summaries* publication.

HEALTH CARE Jewson Enterprises, P.O. Box 1331, Menlo Park, CA 94026-1331; 415/368-6570. Market analysis firm that maintains a satisfaction rating data base for more than 1200 practice management applications.

REAL ESTATE National Association of Realtors, 430 N. Michigan Ave., Chicago, IL 60611-4087; 312/329-8200. NAR's Business and Technology Committee produces forums and showcases new products at real estate conventions.

uling; basic accounting modules are optional. CompuMedic/Open Item supports ECS. Data Strategies, Inc., 15373 Innovation Dr. #210, San Diego, CA 92128; 800/875-0480, 619/451-0080 (fax). CompuMedic/Open Item \$7600 to \$9600; DentalWare \$2600 to \$5000. Free demo disk.

Reader service no. 709

#### MPM II, Medical Practice Management 4

MPM II is billed as the painless way to manage your practice, with a mouse-aware, menued interface; pop-up appointment scheduler that handles multiple doctors; ECS; open-item accounting; and support for the new HCFA 1500 form. Medical Practice Management 4

is its bigger sibling, with more billing options, in-depth reports on the practice's financial status, diagnostic coding references, and even a breakdown of the amount of time spent on a particular procedure. Cyma Systems Inc., 1400 E. Southern Ave., Tempe, AZ 85282; 800/292-2962, 602/831-2607. MPM II \$995 single user, \$1295 network; Medical Practice Management 4 \$3185 single user, \$3585 network. Free demo disk; limited evaluation copy \$45.

Reader service no. 710

#### MD VersaForm

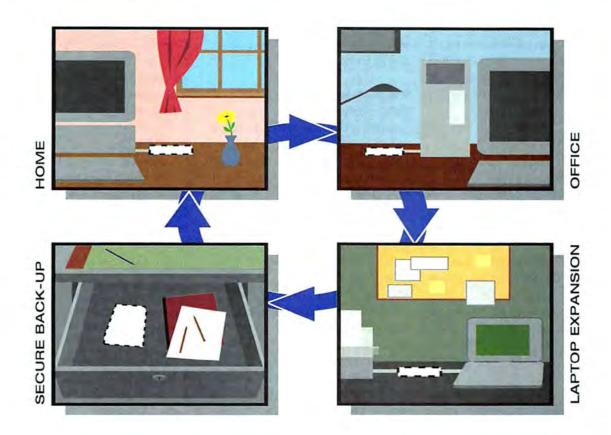
AST's completely integrated system promises to mind every aspect of your practice, right down to printing a deposit slip before you head off to the bank. Its interface mimics the familiar manual patient ledger—most patient information, including medical history, is displayed on one screen. *MD Versa-Form* handles ECS and the new HCFA form and is programmable—the program's data base engine and source code are included. Applied Software Technology, 591 W. Hamilton Ave. #201, Campbell, CA 95008; 800/678-1111. \$1295 single user; \$2495 network. Free demo disk.

Reader service no. 711

#### Medical Office Management 4.50, Dental Office Management 4.50

Ease-of-use is the strength of these products —a doctor's office manager can install and run them without train-

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ing. Both focus on accounting, with pulldown menus and a help prompt line at the bottom of each screen. You can produce HCFA 1500 forms with ICD, CPT and, in the dental product, ADA codes, but neither program incorporates ECS. International Micro Systems Inc., 4343 Merriam Dr., Overland Park, KS 66203; 800/255-6223. \$1995 to \$4320 single user; \$2495 to \$5320 network. Demonstration version \$35.

Reader service no. 712

#### Medical Practice Manager 6.2, **Dental Practice Manager 5.0**

Written in FoxPro, these systems are highly customizable and come with source code. The company also has over 100 custom data bases for specializations like medical labs, optometrists, and radiologists. All these packages include a menued interface, open-item billing, diagnostic code lookup, ECS, password protection, and links to SBT's accounting modules. Pacific Medsoft, Inc., P.O. Box 7049, 925 North Lake Blvd. #B301, Tahoe City, CA 96145; 800/343-5653, 916/583-1532 (fax). \$3995 to \$9263 single user, \$5495 to \$8495 network. Interactive demo \$49, \$25 for dental.

Reader service no. 713

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## REAL ESTATE

agents work in offices, but they're also



highly independent, go-getting, "people" people. So contact-management programs that watch over their hectic schedules, keep track of escrows, and help agents prospect for new buyers and sellers are valuable real estate tools. Look for autodialers, utilities that store and analyze comparable properties, and discounts for Certified Real Estate Specialist (CRS) certificate

#### CONTACT MANAGEMENT PROGRAMS CAN KEEP TRACK OF ESCROWS AND HELP REAL ESTATE AGENTS PROSPECT FOR CLIENTS.

holders. And remember to get a good referral from a satisfied user before closing the deal.

#### Real Estate Specialist 3.3

RES's relational data base tracks people, properties, and referrals; minds your schedule (with advance warning); lets you print agendas and reports; and includes an auto-dialer and context-sensitive help. You can organize clients into groups by any criteria, such as property type or what they do for a living, and print mail-merged letters and cards for one or more groups. Hibbs Henle Nelson Corp., 1115 Foothill Blvd., La Canada, CA 91011; 818/952-1000, 818/952-1115 (fax). \$598, discounts for agents with CRS certificate.

Reader service no. 714

#### The Broker's Book 1.0

Besides basic scheduling, client, escrow, and property tracking, The Broker's Book provides a number of financial analysis tools, including a quick eashflow report for a property's first year and a long-term analysis for up to 30 years. It performs mail merges, prints labels and envelopes, and creates lists of comparable properties. Yorkstone Technologies, 6720 Centinela Ave., Culver City, CA 90230; 310/397-4265, 310/391-7760 (fax), \$495. Free trial version.

Reader service no. 715

#### Howard and Friends 9.0

Quirky-sounding Howard and Friends is anything but, and it claims the largest user base in the industry. Along with the key client, property, and escrow trackers, the program's correspondence section has more than 100 stock cards and letters, including standard liabilityreducing documents. H&F Office Version gives an unlimited number of agents password-protected access to the system on one computer. EdgeTech

Software, 12602 Lake Ridge Dr., Lake Ridge, VA 22192; 703/491-8480, 703/497-2341 (fax). \$495 single user (\$100 CRS discount), \$850 multiuser (unlimited); trial version \$30. Free demo.

Reader service no. 716

#### Real/Quick 4.0

If you already use Symantec's Q&A 4.0, Real/Quick is an an easy, inexpensive way to automate your sales and listing prospects. In addition to standard tracking features, it has nice extras: a quick buyer-qualification and closing costs calculator, seller net proceeds sheet, loan comparison, comparative market analysis generator, and an optional utility that imports listings from some multiple listing services. Computer Smarts, 1240 N. Lakeview Ave. #120, Anaheim, CA 92807; 714/777-2130, 714/777-1983 (fax). \$349 to \$548, with Q&A 4.0 in bundle with Real/Quick \$549 to \$648.

Reader service no. 717

#### Realty Ally 4.0

The only networkable product featured in our listing, Realty Ally has all the contact management elements, including an appointment tickler, word processing and mail merge capabilities, custom reports, and a real estate calculator. In addition to all this, you get a phone dialer, expense account reporting, and a collection of prewritten prospecting letters. Scherrer Resources, Inc., 8200 Flourtown Ave. #2, Wyndmoor, PA 19118; 215/836-1820, 215/836-1804 (fax). \$395 single user, \$850 to \$1895 network. Free demo disk.

Reader service no. 718

Scott Spanbauer is a contributing editor for PC World.

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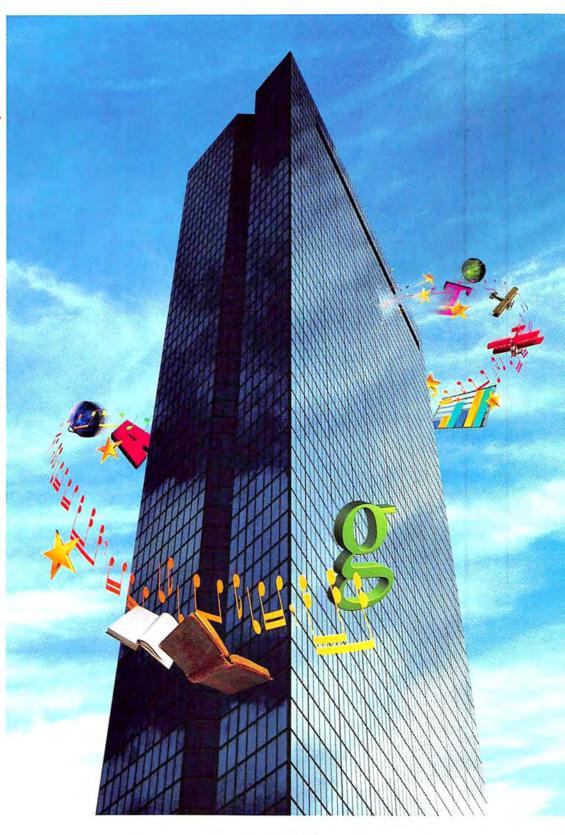
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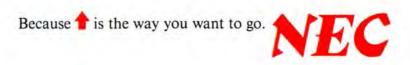
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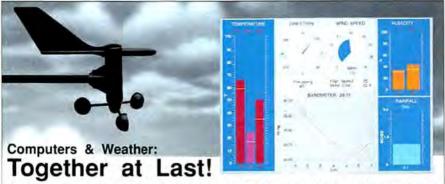


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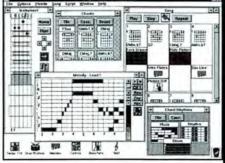
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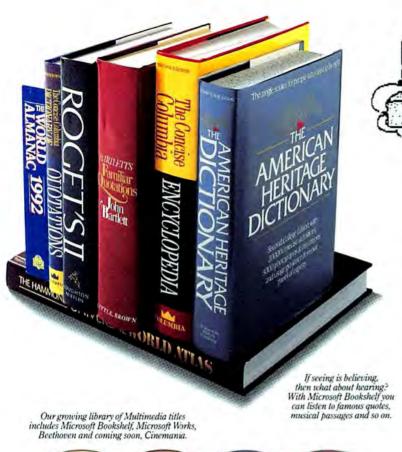
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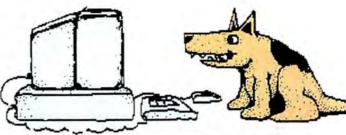
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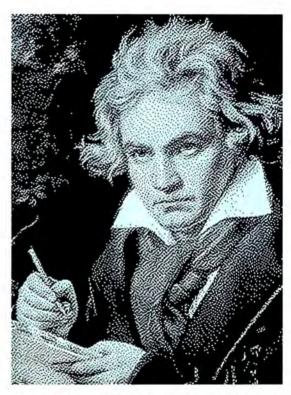
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## Everything Old Is New Again

ome of you are reading MPC World for the first time, so let me introduce us. This is the fourth issue of MPC World and the first inside PC World. Coming into the PC World fold (get it?) means we've doubled our circulation but kept our focus on multimedia at home-whether it's working, playing music, editing videos, learning French, or teaching your children to read.

In the past few months, we've reviewed almost every CD-ROM game and reference disk on the market, and researched each shipping multimedia PC system and upgrade kit, sound board, and multimedia-capable CD-ROM drive. In the coming months, we'll do more of the same, covering every leisure-time and work-at-home multimedia product or trend that comes along.

Multimedia is a confusing term. It's a word without tangibility. It has no immediate emotional content. For that reason, it probably has a short shelf life. Even today, the most effective multimedia programs don't call themselves multimedia. For example, The Software Toolworks' Miracle Piano System (keyboard and software that run off a PC, Mac, or Nintendo) uses lots of sounds and animations, a database, and some inspired feedback to teach a novice how to read music and play simple piano pieces to the accompaniment of simplistic Oscar Petersons or Lawrence Welks. Does Software Toolworks call it multimedia? Of course not. They call it piano lessons.

One definition of multimedia is anything that combines sound, motion, and data on the desktop. Another is that point where computer electronics and consumer electronics meet. Are the computer speakers in this issue multimedia? They are in the hands of Hans Fantel, stereo critic for the New York Times. How about video games? They combine music, animation, and video-what more do you want? (See Corey Sandler's exclusive peek at Konami's new football game-almost as good as owning your own football team, and a whole lot cheaper.) Is Windows 3.1? Yes, but it's not that easy. Explore with us the truth, the whole truth, and nothing but the truth about multimedia and Windows 3.1.

As for the future, tune in next month for our annual systems and upgrade kit Buyers' Guide. And our Readers' Choice Awards-the best multimedia products on the market according to MPC World readers. And a multimedia perspective on the hot new CorelDRAW 3.0 (fully integrated drawing, painting, and real multimedia plus more sound, animation, and drawing clips than most professionals will use in a lifetime) and Virgin Games' Seventh Guest, absolutely the most gorgeous, sonorous game ever developed.

Early next year, we'll have a flood of new CD-ROM titles as Compton's New Media and Sony's Affiliated Label programs stimulate the production and distribution of reference titles, games, sound and animation clips, foreign language courses, and interactive books for adults and children. If you don't have a CD-ROM drive now, ask for one for the holidays.

Not everything in life is multimedia. Really. If you live out of a Le Fax or Day Runner as I do, grab Portfolio Systems' Dynopage for Windows, due out any second. (They've been saying that for six months; must be hard to port this precious little utility from the Mac to Windows.) It prints any file on your PC in miniature for use in a small organizer. It prints long double-sided documents (almost as complicated as playing chess on a computer); it reduces, say, a 300-page address book so that three pages fit on one letter-size sheet, and then prints them double-sided so that every page comes out in order. It prints booklets, trifold brochures, business cards, and more.

Yes, we're talking print here. Print won't die in

your lifetime or mine. What would kill it off? Electronic books? Maybe for reference but not for pleasure reading. Electronic Filofaxes? Maybe, but if you thought a \$165 Filofax notebook with fillers was expensive, wait till you shell out \$300 to \$1000 for a Newton (from Apple, Sharp, and a bunch of other manufacturers). These products hint at the future overlap of consumer and computer electronics, but true multimedia will offer us products we've never seen before (as the phonograph and the VCR did).

Multimedia is the future. MPC World is your window into that future. Look for us every other month, same place, same channel, at your local newsstand. [1]

Can you imagine life without the phonograph or the VCR? That's how we'll view multimedia in the 21st century.





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#### A LONG TIME COMING

hen Windows first appeared in 1987, even Microsoft didn't foresee it evolving into the major force it is today. Windows actually floundered until the May 1990 release of version 3.0; that version sold like hot-cakes and spawned hundreds of Windows applications. But Windows users who craved sound, music, and motion video support had to wait more than a year for Microsoft and IBM to develop the multimedia extensions for Windows—a special version of Windows 3.0a with dynamic link libraries and drivers that allowed the software to communicate with multimedia hardware. Until IBM started selling the extensions a few months ago,

the only legal way to get your hands on a copy was from certified MPC developers who bundled the extensions with their hardware.

Windows 3.1 includes most of the multimedia capabilities found in the obsolete multimedia extensions (see the "Upgrading from Multimedia Extensions" sidebar), and now doit-yourself types can create their

own Windows-based multimedia PC without resorting to an official upgrade kit. Hook up a compatible CD-ROM player and sound card to a 386 or better system with at least 2 MB of RAM, install the appropriate drivers, and you'll be riding the MPC wave. (Rolling your own isn't easy, though. See Inbox in June/July 1992.)

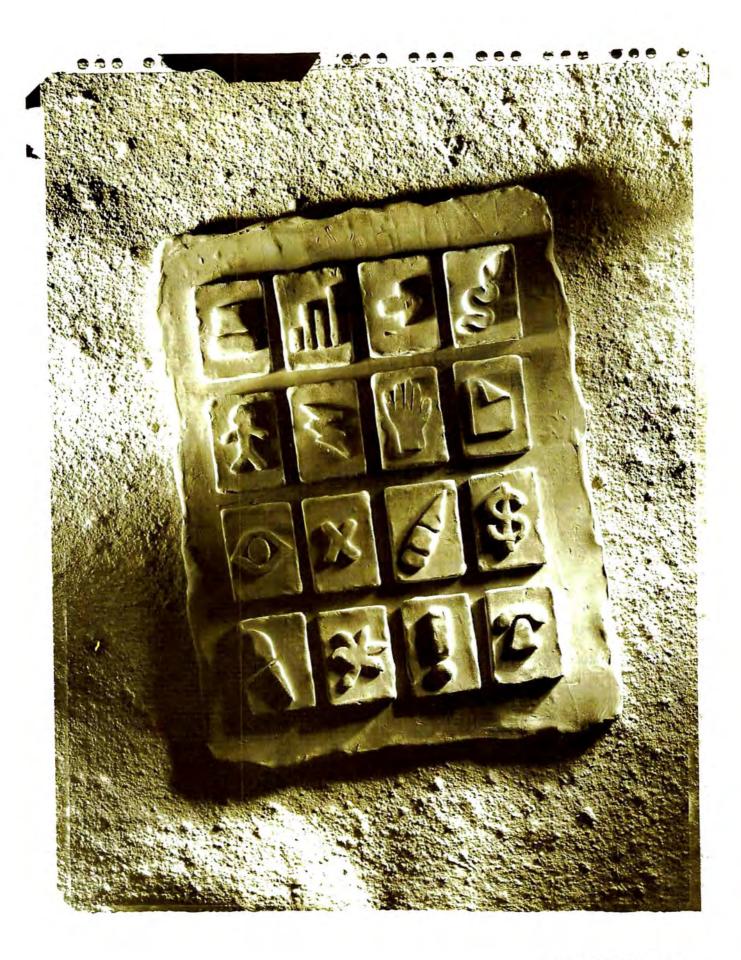


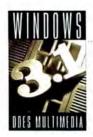
The Windows 3.1 Control Panel sports several new options. The Sound, Drivers, and MIDI Mapper icons are for multimedia.

#### **BEYOND BLIPS AND BEEPS**

with multimedia: waveform audio, MIDI, and CD audio. You will, of course, need a compatible sound board and CD-ROM player to unleash this new power. Waveform audio is essentially digitized sound that's stored in a file—usually with a WAV extension. Multimedia applications use these files to provide narration, music, and sound effects. You can also instruct Windows to play selected WAV files when certain events occur, such as a user error. Windows 3.1 includes only four sample WAV files, but others are available from bulletin board and online services, and you can even record your own sound files from an audio CD or through a microphone connected to your sound card.

MIDI song files, identified by their MID extension, contain instructions that allow your PC to play the synthesizer on your sound board or to control external MIDI synthesizers or sound modules (such as a Roland Sound Canvas or MT-32). Again, the pickings are slim since Microsoft includes





only one sample MIDI file. But thousands of MIDI files—in all musical styles—are available from BBSs and commercial sources. And if you're musically inclined, you can compose your own MIDI files or modify MIDI songs using what's known as sequencer software (not included with Windows). Windows sequencers include Master Tracks Pro from Passport Designs, Cadenza for Windows from Big Noise software, and Cakewalk Pro for Windows from Twelve Tone Systems.

The final sound medium, audio CD, plays standard compact discs on your CD-ROM drive. Some applications, such as Microsoft's *Multimedia Beethoven*, mix CD audio with text and graphics on a single CD-ROM.

As you explore Windows 3.1, you'll see references to MCI. This doesn't refer to the long-distance phone carrier, or even the E-mail system. Rather, MCI stands for Media Control Interface—a highlevel interface that allows software to control a variety of multimedia devices and files in a standard way. Pro-

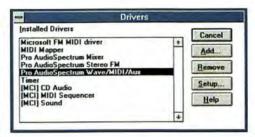
grammers use MCI to control waveform audio, CD audio, MIDI files, and even VCRs and videodisc players. Windows 3.1 includes a simple program, Media Player, that controls any installed MCI device.

#### THE MAGICAL MULTIMEDIA TOUR

ow that you know the basics, let's take a guided tour of the multimedia components in Windows 3.1. We'll cover the Control Panel first, and then jump into the multimedia accessories.

The Windows Control Panel application lets you set up many aspects of your system. The Windows 3.1 Control Panel has three icons relevant to multimedia: Drivers, Sound, and MIDI Mapper. This new control panel also accommodates third-party programs. For example, a trackball or joystick manufacturer could include an icon that you simply click on to have your system accept the hardware.

The Drivers icon installs, configures, and removes drivers for specific hardware devices. Think of a driver as an intermediary between Windows and the hardware. You need a driver for each multimedia device





The Sound dialog box lets you associate waveform audio files with specific events.

The MIDI Mapper dialog box provides a way to adjust your MIDI setup so you don't end up with a flute playing bass guitar.



you install—sound cards, CD-ROM drives, MIDI interfaces, and potentially VCRs and videodiscs. Windows 3.1 includes drivers for some devices, but for others you have to contact the hardware manufacturer or download the proper driver from Microsoft's Supplemental Driver Library (see the "Where to Get Windows 3.1 Drivers" sidebar). Installing a driver is fairly straightforward, but you have to restart Windows to activate the driver once it's installed.

The Control Panel's Sound icon associates specific WAV files with certain events. For example, be greeted by Bart Simpson every time you load Windows, or replace the normal error beep with an "oops" sound. This can be amusing at first—very Macintosh-like—but the novelty soon wears off. Perhaps the most useful feature of the Sound icon is its Test button, which quickly auditions WAV files.

The MIDI Mapper icon appears in the Control Panel only if you installed a MIDI device. MIDI Mapper selects a MIDI setup for your sound card or synthesizer to ensure that the sounds generated are appropriate—for example, that each synthesized instru-

The Drivers dialog box is where you install, configure, and remove drivers for your multimedia devices.

ment actually sounds like its real-life counterpart. General MIDI is a standard mapping of instrument sounds to MIDI codes. If your sound card or module doesn't conform to the general MIDI standard, you'll need to remap the sounds or the MIDI files will sound terrible—a flute playing a bass guitar line just doesn't cut it. Windows includes a few setup files for common sound devices. You can edit these or create your own. But be sure you understand what you're doing, and keep the user's manual for your sound device handy.

#### UPGRADING FROM Multimedia extensions

If you've been using Windows 3.0 with the multimedia extensions and want to upgrade to Windows 3.1, install the new version in the same directory as the old version. If you don't, the program will not be properly configured.

Don't expect to find any new multimedia tools or toys in Windows 3.1. In fact, you'll give up a few things. The Music Box application, which plays audio CDs, isn't fully compatible with Windows 3.1. It plays CDs, but you can't store title and track information. Also, Microsoft claims that the Alarm Clock program may not work properly.

But the worst part is that Windows 3.1 may not include a driver for your particular sound card—and the drivers included with multimedia extensions probably won't work. Windows 3.1 ships with drivers for Ad Lib, Creative Labs' Sound Blaster (version 1.0 and 1.5), and Media Vision's Thunder Board. In addition, the package includes drivers for Roland's LAPC1 and MPU-401 MIDI interface. If you have any other sound card, procure the proper driver from the manufacturer or download one from a BBS.—J. W.



#### **NEW ACCESSORIES**

ou'll also find two new accessories that support multimedia: Media Player and Sound Recorder. Media Player controls hardware and plays various media files. Start by selecting the device from the pull-down list that displays all installed MCI devices. If it's a simple MCI device such as an audio CD, click the Start icon to begin. For compound devices such as WAV players or MIDI files, specify which file you want to play. Media Player's controls are like those found on audio CD players—Play, Pause, Stop, and Eject.

If your system has a CD-ROM drive set up when you install Windows 3.1, the Windows Setup programs automatically install the MCI audio CD-ROM driver, so you can play your favorite tunes in the background using Media Player or other software. However, if you install your CD-ROM after you set up Windows, prepare for some manual finagling. You'll need to copy the MCICDA.DR\_driver file from the Windows in-

stallation disk (disk 5) to your WINDOWS\
SYSTEM directory, decompress it using the EXPAND.EXE utility in your WINDOWS directory, and install it using the Drivers icon in the Control Panel.

The other multimedia application, Sound Recorder, records WAV files using a

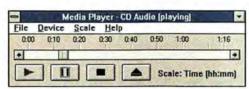
microphone attached to your sound card or from an audio CD. The program records only in 8-bit resolution,

not the higher-fidelity 16-bit mode supported by some of the newer sound cards, such as Media Vision's Pro AudioSpectrum 16. Sound Recorder displays a rough approximation of the waveform, and the program provides commands to mix files or string them together. Sound Recorder also performs some simple effects—plays a file backward, adds an echo, or doubles the playback speed, for instance.

Sound Recorder is an Object Linking and Embedding (OLE) source application. OLE protocols embed one application's file into another OLE-supporting application. For example, you can embed a WAV file as an icon in a Word for Windows 2.0 or Ami Pro document. The user then clicks on the icon, and the file—a verbal note to accompany a memo to the boss, for instance—automatically plays back.

#### JUST ADD SOFTWARE

ou won't experience the full multimedia benefits of Windows 3.1 until you install multimedia software that takes advantage of the features described here. Many programs are already available. Expect a surge of new titles now that Windows 3.1



The Media Player application uses controls similar to those found on a home CD player. This simple application controls any MCI multimedia device that you've installed.



The Sound Recorder application records your own WAV files using a microphone attached to your sound board or it picks them up from an audio CD.

has pushed multimedia into the mainstream. Windows is destined to become *the* operating environment for the next few years. Virtually all major software development these days is for Windows.

The upshot is that Windows 3.1 looks a lot like Windows 3.0, but the thousands of new bytes lurking behind the scenes promise to breathe new life into your properly equipped PC.

John Walkenbach is a contributing editor for PC World and InfoWorld, and a self-proclaimed MIDI addict.

#### WHERE TO GET WINDOWS 3 I DRIVERS

In the crunch to get Windows 3.1 out of Redmond on schedule, Microsoft did not include drivers for all the devices the program supports—and it supports a great number of displays, printers, sound cards, and other hardware. But Microsoft did the next best thing by developing a widely accessible Supplemental Driver Library. Twenty dollars gets you the latest version (call 800-426-9400 to order).

If you want to save a few bucks and get only the drivers you need, try contacting third-party vendors directly. For instant gratification, download. Many vendors have their own BBSs, and there are several other sources for Windows 3.1 drivers. Check the software libraries on any of the major online services.

Microsoft BBSs: The driver library is available on two bulletin board services operated by Microsoft: their Product Support BBS (206-637-8009) and the Microsoft Download Service (206-936-MSDL). Anyone can log onto these BBSs. Follow the instructions on screen to locate the driver you want.

CompuServe: You must have a CompuServe account. Log on as usual and type go msl to enter the Microsoft library area. The quickest way to find the appropriate driver is to do a keyword search for the driver you want. For example, the keyword proaudio takes you directly to the file for Media Vision's Pro AudioSpectrum board. The keyword speaker displays the file that contains the internal speaker driver. (These self-extracting compressed files have an EXE extension.) Execute either file at the DOS prompt to decompress it. You might find other goodies included. For example, the Pro AudioSpectrum file comes with two sound mixer applications that control the volume and tone of your sounds.

GEnie: You must have a GEnie account. Log on as usual, and enter M505 to bring up a menu. Select the third menu item, Microsoft Library. This displays another menu, which you can search to find a keyword that describes the driver you need.

Microsoft planned to include a software driver to play sound through the PC's internal speaker—not exactly audiophile quality, but better than nothing for users who don't have a sound board. A few compatibility problems resulted in the driver being pulled from the final version of Windows 3.1. However, the driver is available if you'd like to try it out, although there are no guarantees that it will work with your particular system.

Install these Windows 3.1 drivers just like any other drivers, using the Drivers icon in the Control Panel. Select the option called Unlisted or Updated Driver, and specify the locations of the driver file and the OEMSETUP.INF file. Then restart Windows.

### Rock

for their video games, to compose music via MIDI, or make music an interactive experience with the aid of CD-ROM.

#### THE QUALITY OF SOUND

All this adds up to a new challenge for computer buffs: Upgrading the quality of sound. More than any other component, speakers determine what you hear.

Some computers come with built-in speakers. Forget those. Most of them are nasty little screamers, spewing out ragged sound that would curdle milk at 50 paces. That's not surprising. Those built-in speakers are designed to reproduce speech. The demands of music are beyond their ken.

Just what are those demands—and how can they be satisfied? Musical sound—as well as the sound effects in many computer games—requires three crucial performance factors: wide frequency range, adequate audio power,

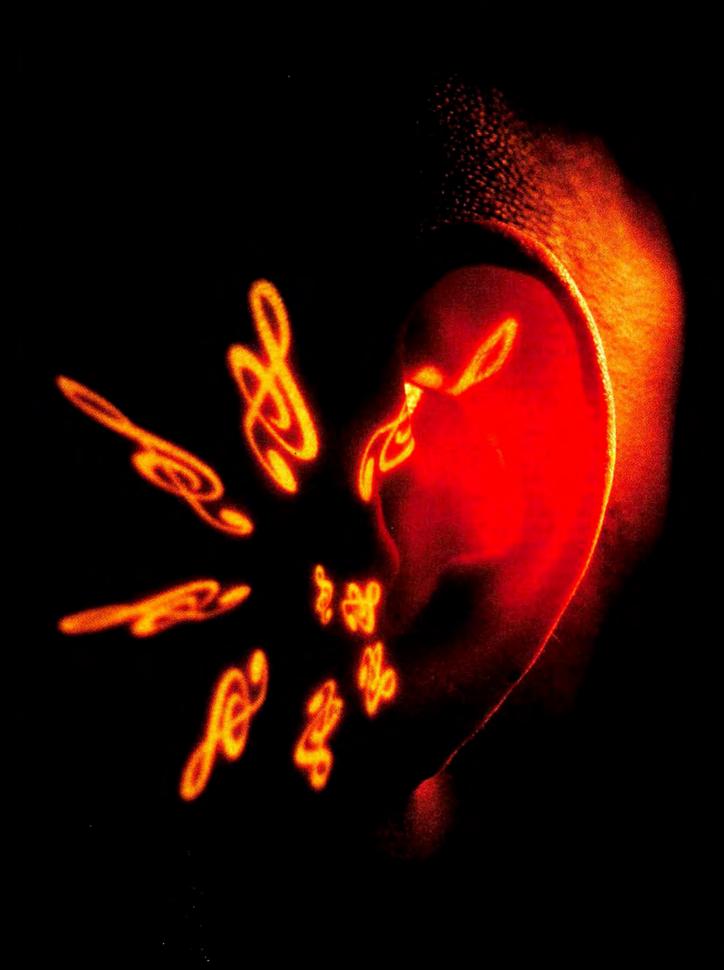
Computers are finding their voice. They used to be dumb creatures, signaling silently in alphanumeric symbols on the screen. But now, in the era of the MPC, they not only speak but sound forth with all the power of a great orchestra.

More and more, PCs are employed as part of a multimedia setup that involves audio as well as visual display. In short,

SOUND ADVICE FROM AMERICA'S FOREMOST STERED WRITER

music is becoming part of the computer scene. Some applications lean toward the wild side. For instance, at the University of Iowa, a talented computer has been taught to imitate the voice of Luciano Pavarotti (with a program named "Pavarobotti"); it gave a brief recital at the famous Juilliard School, "singing" operatic arias. But most MPC users have more modest aims. They just want good sound

and low distortion. (Technical guidelines for these basic specs are spelled out in the "What's It All About, Audially?" sidebar.) In a sense, loudspeakers are musical instruments. They must sound off as vio-



Altec Lansing ACS300

Acoustic Research Powered

Partner 570 speakers



musical fare is fed to them in the form of an electric signal. As a result, loudspeaker design is a tricky area of engineering where electronics, mechanics, and the ancient craft of musical instrument building overlap.

The trouble is that the flimsy speakers and puny circuits built into the computer are usually deficient as far as music is concerned. If you want musically convincing sound, you have to beef up your computer with outboard sound gear.

The easiest way to do this is with a speaker/amplifier combination specifically designed to function as a computer peripheral. Several models of this sort have recently been launched: Front runners include the Bose RoomMate Computer Monitor (\$339/pair), the Acoustic Research Powered Partner 570 (\$475/pair), and the Altec Lansing ACS300 (\$400/three-piece system).

All three are highly compact—barely bigger than a lunch box. Each speaker contains its own amplifier as an integral unit, so all you have to do is plug it into your PC's audio card and the sound comes pouring out.

Normally, the sound of small speakers tends to be skimpy and rough. But these speaker/amplifier combos manage to pack surprisingly big, smooth sound into bantam boxes. It's done by a neat technical trick called "frequency contouring."

BIG SOUND FROM SMALL PACKAGES

Because speakers and amplifiers are literally made for each other in these uniA Bose RoomMate Computer Monitor speakers

fied designs, the amplifier response can be adjusted to make up for the little speaker's reluctance to pump out lots of bass. Normally it takes a big object to emit deep sounds, which is why a double bass is bigger than a fiddle. But when combining the speaker and amplifier, the response curve of the amplifier can be fitted to that of the speaker much as a key fits a lock. One zigs where the other zags. This compensation by both speaker and amplifier evens out the deficiencies in frequency response. It's a sort of electronic shell-game by which clever engineers tweak the laws of nature.

The design of these speaker/amplifier combos also pays off in efficiency—that is, the volume of sound obtained from the rather limited wattage of the amplifier. As a result, these compact computer speakers bring out the best in the audio portion of computer games and similar applications. As for music, while they do well with jazz, pop, baroque, and orchestral music of a lighter texture, they fall short in projecting the impassioned outbursts of a full symphony orchestra or the more sonically demanding kinds of rock. Wagnerian thunder and heavy

metal at full blast would almost certainly result in distorted sound from these speakers. But comparatively tame musicians, such as Wolfgang Mozart or Natalie Cole, come across fine.

The three self-powered MPC speakers mentioned are comparable in capabilities, but each has its specific strong points. For example, the Acoustic Research Powered Partner packs the most wallop. The 35 watts pushing each speaker make for punchy sound effects in computer games, and many kinds of music benefit from the bright timbre of the sound.

By contrast, the Bose RoomMate has a sweeter, more subdued sound that is extremely well suited to classical music since it brings out the natural warmth of string instruments.

Altec Lansing's ACS300 computer speaker system is the only model in this group consisting of three separate units. In addition to the two small speakers regularly placed alongside the computer, the ACS300 has an additional bass module (or sub-woofer) that can be placed under a desk or anywhere in the room. The extended bass response enlarges the sound with added depth and richness. What's more, the two small side speakers can be optimally placed, depending on their intended use. If only one person is working at the computer, the side speakers can be located next to the screen to produce intimate sound with a fine sense of immediacy. If many people are listening, the speakers can be wallmounted to project their sound throughout the room.

Not even their designers claim that these small computer add-ons challenge the sonic prowess of a full-fledged stereo sound system. If you value musical fidelity and often use your MPC for playing CD-ROMs' demanding musical programming, your best bet would be to hook your computer into a regular stereo system.

In setting up such a system, again the speakers are the most crucial choice.

### CHOOSING BETWEEN SPEAKERS

With so many diverse elements affecting their performance, it's no wonder that no two speakers sound quite alike. Each has its own tonal flavor, its own tone color. Some tend to be bright and brilliant, enticing every sonic detail with analytic precision. Such speakers add excitement to jazz, rock, and synthesizer sound. Other speakers—the minority these days—are notable for blending orchestral sound into coherent sonority, conveying the warmth and solidity of a massive score. But this particular virtue usually comes at the sacrifice of other characteristics such as crisp definition of tonal detail and dramatic bite.

It's impossible to say which kind of speaker is best. It depends on what you like. The trick is to test a lot of different speakers, preferably listening to them side by side. Pick one whose foibles happen to match your own tonal taste.

#### MORE BOOM FOR THE BUCK

When comparing specs, you may find an \$80 speaker and an \$800 speaker claiming the same frequency response. In view of the substantial price difference, you ask yourself: Are the figures lying? Or are the liars figuring?

The answer is, a bit of both. Engineers, just like accountants, often find ways to make the figures look better than the facts. The specs may be true as stated, but that doesn't mean that the budget speaker really *sounds* like the more expensive model.

For instance, the specs may say that a speaker has a frequency response from 40 Hz to 20,000 Hz. All this tells you is the top and bottom notes the speaker can

### BONUS: FANTEL'S TIPS FOR CHOOSING STEREO COMPONENTS

If you want a complete sound system to interface with your MPC, you'll need at least two more stereo components in addition to the speakers and receiver: a CD player (unless you already have a CD-ROM drive, which plays regular CDs) and a cassette deck.

In choosing a CD player, pick a model with the latest technological advance—a 1-bit decoder. The decoder in a CD player converts the stream of digital pulses into continuous waveforms that can be amplified to drive the loudspeakers.

The newly developed 1-bit principle enables relatively inexpensive decoders to achieve the same degree of fidelity that formerly was attainable only through much costlict methods. These decoders are largely responsible for making recent budget-priced CD players sound just about as good as far more expensive models.

Outstanding cases in point include the Technics SL-PG300 (\$180), the Onkyo DX-720 (\$230), the Yamaha CDX-450 (\$249), and the IVC XL-V241TN (\$200).

When gauging cassette recorders, there is a fast practical way to Judge performance: Just put each through its paces.

Work all the controls and observe whether the tape starts and stops smoothly without jerking. Check whether the machine runs quietly, without vibration or whirring. Switch back and forth between rewind and fast forward and watch for any tendency to snap the tape.

The main thing, of course, is the sound. Bring one of your own discs to the shop and ask the salesperson to make a copy of it on the recorder you are testing. Then play the original and the dub side by side and see how close the copy gets to the original.

Keep in mind that no cassette recorder can fully capture the frequency and dynamic range of a CD. But a good one can come pretty close.

Outstanding budget models among cassette decks include the Denon DRM-510 (\$250), the Pioneer CT-W250 (\$210), and the Yamaha KX-30 (\$299).

### WHAT'S IT ALL ABOUT, AUDIALLY?

Three main measurements define the performance of audio components: frequency response, power output, and distortion.

Frequency response tells the tonal range of the equipment. The audible range extends from 20 Hz to 20,000 Hz (or cycles per second), but except for the lowest notes of a great pipe organ, few musical sounds occur below 40 Hz. Frequency response extending down to 40 Hz is therefore adequate in loudspeakers.

Power output is the amount of energy the amplifier delivers to the loudspeakers. Contrary to popular belief, it does not directly relate to how loud the equipment can play, but to the loudness attainable within stated limits of distortion. A power output of 30 to 40 watts per channel suffices for most computer-based home applications. Only massive orchestral sound requires high power ratings.

Distortion is any change in the signal or the sound falsely introduced by faulty equipment anything in the electronic chain of reproduction that makes the end result different from the original musical performance. High-quality amplifiers should have less than one percent distortion when operating at full output power, where distortion is likely to be greatest.

### WHAT TO LISTEN FOR IN LOUDSPEAKERS

If you want to judge the fine points of speaker performance, the best way is to listen to symphonic music. The orchestra creates a broad range of frequencies and the many different instruments provide a variety of sound textures. As you listen, be on the alert for these clues:

- Do the violins have a silky sheen of sound without harshness? This shows that the speaker has smooth treble response.
- Is there solid weight in the sound of cello and contrabass? This is a test for bass projection.
- Do drums or plucked strings sound sharp and crisp? This is a test for socalled transient response.
- Does the sound stay clear and unblurred even in loud passages scored for full orchestra? This test reveals distortion.

Any speaker passing muster on all four points is a good candidate.

squeeze out. It says nothing about the quality of sound, which depends mainly on how the speaker deals with all the notes in between.

In general, you can't really tell how a speaker will sound based on its specs. The only way to judge speakers is by listening—preferably in direct comparison with other speakers. (See the "What to Listen for in Loudspeakers" sidebar.)

There's good news for the budget-

bound. The performance gap between inexpensive speakers and deluxe models is shrinking. Computer-aided research into basic acoustics has led to new design principles that bring the sound of smaller models closer to that of their larger and costlier counterparts.

To hear what budget speakers can do these days, listen to such well-priced standout models as the Boston Acoustics HD5, or the HD5v for the magnetically shielded model, (\$150/pair), the Polk M3 (\$199.90/pair), the B.I.C. Venturi V62 (\$219/pair), and the Pinnacle PN 50 (\$250/pair). Many listeners find speakers in this class entirely satisfy both their ears and their bank balances.

But if music is a serious passion, you may want to spring for a pair of speakers that put a bit more muscle into the sound. Top-ranked designs in the midprice group include the KEF Q60 (\$599/pair), the PSB 50MKII (\$550/pair), and the Celestion 11 (\$699/pair). Compared with lower cost designs, these speakers put out more bass, giving the music a sense of weight and warmth. They also tend to lend the highs a silent air quality that enhances the sense of musical presence.

Since none of these speakers contain their own amplifiers, you will need to obtain a separate unit to drive them. This unit may be either an amplifier or a receiver, which is an amplifier with a built-in radio tuner to pull in FM stereo and AM broadcasts. Receivers are by far the more popular choice and (because all the electronics eggs are put in a single basket) receivers usually represent better value.

Excellent budget-priced receivers include the Pioneer SX-2900 (\$300), the Yamaha RX-350 (\$239), the Technics SA-GX303 (\$350), and the Denon DRA-345R (\$280). Each of these receivers has sufficient power to fill an average-size living room with clear, undistorted sound at concert level.

A final tip: Avoid discount shops or department stores that sell sound equipment as a sideline. Head for a specialized audio dealer, where you can get competent explanations of specs and features on each model, and advice on how to interface the sound system with your PC. Incidentally, the prices quoted here are list prices. Most audio dealers sell the equipment for less.

Hans Fantel is the audio critic for the New York Times.

For more information about products in this article, send in the Product Information card. The Editorial Index on page 240A-48 lists product numbers.



## YOUR EARS WILL SMILE! & YOUR COMPUTER, TOO!

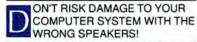


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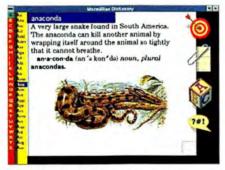
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attack

There are three games included with the

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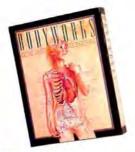
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# Reviews

METROPOLIS NOW

### Around the World in 80 Mouse Clicks

he two *Great Cities of the World* discs don't live up to their billing as multimedia travel guides, but they do provide a taste of different lands and cultures for the armchair traveler. Although the discs are packed with data, including minutiae such as restaurant prices and foreign consulate addresses, they lack information crucial to a traveler—such as detailed tips on appropriate dress and native foods.

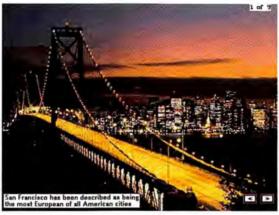
Volume 1 looks at Bombay, Cairo, London, Los Angeles, Moscow, New York, Paris, Rio de Janeiro, Sydney, and Tokyo. Volume 2 covers Berlin, Buenos Aires, Chicago, Jerusalem, Johannesburg, Rome, San Francisco, Seoul, Singapore, and Toronto.

While these discs aren't a traveler's best friend, students will find them useful for researching geographic or historic reports and essays. I learned quite a bit about cities such as Rome, Berlin, and Chicago, but your mileage will vary depending on how much you already know about a particular city.

### SEEING THE SIGHTS

Both volumes install quickly and easily with their own setup applications. The program opens into a world map with oversized icons for that CD's cities; double-click on any city icon and you're off.

The main interface for touring each city is a 12-panel display, one panel for each of the program's main features: Fast Facts, Culture, Sights, Transport, Shopping, Entertainment, Recreation, Restaurants, Hotels, Travel Planner, Slide Show, and, for some reason, Quiz.



Each Great Cities slide show combines text and digitized narration with color photographs.

The program asks for your home country during setup; when exploring a city with a different language, a "Useful Phrases" section encourages you to learn practical terms. For example, when studying Rome, learn how to say in Italian such phrases as "I don't speak Italian" and "Where is the bathroom?" However, the recording of "ciao" is cut off so it sounds like "ow!" Also, loading each word is slow, and you have to wait for each to reload before replaying it.

I report primarily on the San Francisco entry here, because as a San Franciscan I can compare it against my own knowledge. The level of detail is similar in the other entries; my complaints about the San Francisco entry apply to the *Great Cities* discs as a whole.

I was disappointed to find the slide show had only 9 pictures of this photogenic town; most of the other cities' Slide Shows have 10 shots, although Singapore has 14. Three photos are night shots, obscuring detail on, for instance, the historic Embarcadero building. Music and narration perk up a brief but interesting introduction to the city and its history.

Clicking on the Sights panel got me a map of San Francisco, with a few "hot" spots that could be blown up with the magnifying glass tool—the pointer becomes a magni-

fying glass only over these areas. (Volume 1 doesn't have these "zoomable" neighborhood maps.) I zoomed in on North Beach, the Italian sector of town, and then the Coit Tower monument; the picture appeared on screen. A notice said to click to return to the map, but the program did so on its own after 15 seconds.

Next to the map are buttons for Museums, Parks & Gardens, Tours, and Landmarks.

Great Cities spotlights nine San Francisco landmarks, including the Golden Gate Bridge and the Transamerica Pyramid. (Most of the other cities have only seven landmarks shown.) Switching to the text option yields mini-essays of about 80 words on each of the choices. This has some good shots, but again, almost half are dark nighttime pictures. Each photo is accompanied by a sentence or two of narration. The bad news is each photo is preceded by a redundant dialog box that tells you to click a key to leave the photo; but you have to hit a key to leave this dialog box — every time.

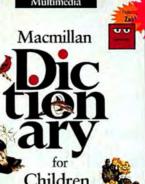
Choosing the Tour listing produces a map of the entire San Francisco Bay Area. The names for larger cities such as Berkeley and Oakland look like hot buttons but aren't. The Alcatraz nameplate is,

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The Park button brings up nine parks, and only Golden Gate Park rates a picture; each park gets 12 to 70 words of background information. Pressing the Museum button yields dozens of museums listings, but only addresses and phone numbers are provided.

At this point I encountered another flaw in the interface; I couldn't return directly to the 12-panel screen. I had to either click on the ubiquitous World button, start again at the beginning world map, and rechoose my city, or backtrack one screen at a time with the Return icon.

The Culture section opens with an essay from Conde Nast's *Traveler* that describes such San Francisco wonders as a homeless woman who shares her cheescake recipe. Actually, this story could have introduced the entire city.

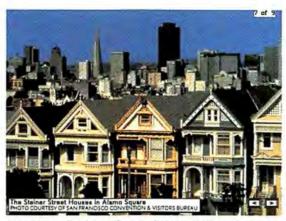
General Info provides a good breakdown of San Francisco's various neighborhoods. The History listing runs from Sir Francis Drake's discovery to the '89 earthquake. There are also entries for politics, religion, festivals, and holidays.

The Fast Facts section provides the most useful travel info: it gives consulate and embassy addresses and phone numbers, as well as data on time zones, currency, and climate. *Great Cities* would be more valuable if it gave some firsthand tips, such as don't wear shorts in San Francisco in summer—your legs turn blue, much to the natives' amusement.

The Entertainment section gives a fairly wide spectrum of good places to try. At least the Paradise Lounge and Vesuvio's, my local club and favorite bar, are mentioned in the Nightlife listing, but South Beach Billiards, MPC World's pool hall of choice, isn't listed.

The Arts entry has just two paragraphs; listing 24 theaters and 13 cinemas doesn't do justice to this city in which it seems everyone is an artist of some kind. There's also a five-paragraph bit on Spectator Sports, which doesn't mention the 49ers' back-to-back Super Bowl wins.

The Travel Planner looks like an ugly



Onscreen credits detract from a photograph illustrating San Francisco's contrasts.

DOS application with jagged type, and that's strange in this otherwise glossy package. I clicked on Hotels and filled in my price range and the area of town I wanted. The list of lodgings that came up

SIGHTS



The well-designed interface for *Great Cities* quickly accesses the disc's 12 features; the Travel Planner isn't snazzy, but features a good sorting engine for its database.

included prices and phone numbers. My low-cost choice had the comment "Just the basics. Nothing to write home about." When I upped my budget to include the famous Fairmont Hotel, the comments included a history of the building as well as its starring roll in the TV series "Hotel." Click on Restaurants to choose eateries the same way—by location and cost. Alas, my favorite Italian restaurant, Capp's Corner, was not listed.

Transport has subcategories for Air, Ship, Train, Car, and Taxi; this panel includes car rental agency

listings and information on rail systems and airports. Recreation covers hang gliding, ballooning, cycling, boating, and other activities. Shopping tells where to buy antiques, and arts and crafts, and

gives notes on fashion. The Travel Planner panel accesses the same data the Restaurants and Hotels panels do; the information looks better in the Restaurants and Hotels panels, with nicer fonts and such, but it's still scrollable lists without any efficient way of finding items.

And there's the Quiz. These certainly aren't Questions You Must Be Able to Answer Before Having a Safe Trip in San Francisco. They're just a list of 20 trivia points, and when you click on the question, you get a notquite-complete answer. For instance, in answer to the question "What's the name of SF's metro?" the answer is BART-with no mention of the Muni Metro.

### DON'T LEAVE HOME WITHOUT IT?

If Great Cities really wants to be a city sampler,

the databases of hotel, restaurant, and embassy listings should be junked in favor of more cultural or scenic information. An introduction to specific cities and cultures doesn't need travel-planning features.

If Great Cities intends to be a thorough travel resource, it needs a complete, up-to-date database including timely and detailed information on accommodations, climate, appropriate dress and behavior, and transportation. Without the search and retrieval features of a database, CD-ROM guides aren't as useful as a language tape and a paperback travel guide with a good index—which provide more information for a third of the cost.

Great Cities doesn't make it as either a travel resource or a reference tool. But if you want an introduction to the world's metropolitan wonders, Great Cities is worth the trip.

-Paul Worthington

#### Great Cities of the World, Volumes 1 and 2

CD-ROM based. Requires MS DOS 3.1 or later, VGA and a mouse. DOS and MPC/Windows 3.1 versions available; Macintosh version in development. \$79.95 each volume. InterOptica Publishing Ltd., 300 Montgomery St., San Francisco, CA 94104, 415-788-8788, fax 415-788-8886. Circle 1220 on product card.

KING'S QUEST V

# The Sound and the Furry

t was like falling in love all over again with the same person. I have been looking at the fifth version of *King's Quest* since early 1990, when it was only design notes and a set of artists' sketches; I began playing it months before it was finished, and reached the point where familiarity bred boredom.

But playing the multimedia version of *KQ V* was a new experience—akin to interacting with an animated feature film. Like rediscovering an old lover, it was a sweet surprise. While I had rushed through extended scenes in the text-driven version, in the multimedia *KQ V* I settled back to enjoy and absorb the story. I felt genuinely sorry I knew the game so well; I would have loved to play this new *KQ V* with no knowledge of what would happen next. Sierra On-Line used multimedia to breathe new life into the game, adding great depth and dimension.

King's Quest V: Absence Makes the Heart

Go Yonder! is the latest installment in the life and adventures of King Graham of Daventry and his family. (I know; the second part of the title is a little lame—that's probably why it's printed in such small type on the box.) The game was a smash hit when it was first released, and has sold strongly since.

Like all the other titles in the King's Quest series, KQ V is basically nonviolent. Death does occur, but this game isn't about killing your way out of problems. In fact, Sierra On-Line promotes the product as one the whole family can play, either individually or together.



King Graham prepares to enter his enemy's lair in the new CD-ROM-based version of the popular King's Quest V game.

Based on both content and ease of play, it succeeds. This is not a child's game, but children can play and enjoy it.

KQ V is best described as an animated cartoon with puzzles that must be solved to advance the story. As the player, you control the actions of King Graham as he



No more text boxes in the MPC version of King's Quest V; actors speak all the dialogue.

searches for the wizard who kidnapped his family and castle. They're locked away in a bottle somewhere, threatened by a magician-turned-cat (who's not at all pleased with his condition). Other cast members include elves, desert bandits, shopkeepers, gypsies, harpies, a wicked witch, an Ice Queen, a mermaid, and the Ancient Mariner. There's even an uncredited appearance by Rumplestiltskin. To succeed in his quest, King Graham must travel from one end of the world to the other, through deserts and forests, across mountains and oceans, and survive the critters he meets along the way.

So, what do MPC and a CD-ROM contribute to the party? As in cartoons and animated movies, everything in adventure games revolves around a well-developed storyline. With standard floppy disk versions, getting into that storyline is al-

most like reading a wellillustrated book, as the dialogue and narration are conveyed with text on screen. But in the multimedia version, the characters talk, laugh, and cry. The actors' voices bring emotion to scenes, and sound effects create such a convincing environment that players feel they're a part of it: Ants sing their marching song,

birds chitter, falling people scream. A well-synchronized musical score adds to the game's mood.

Just as a film differs from the novel on which it was based, the MPC/CD-ROM experience is fundamentally different from its floppy disk progenitor. Scenes

play differently; the conversation between King Graham and Princess Cassima was a one-dimensional narrative exposition in the text-driven version; when actors read the scene, it's the personal tale of a young woman's suffering. Other characters also come to life: the Ice Queen thaws, revealing a formerly undetectable personality; the rat rescued by King Graham gains your

sympathy instead of coming off as a bogus, cutesy character thrown in for the preadolescent set. Throughout the tale, the once-flat descriptions of people, objects, and scenery now unfold as part of a fable instead of simply telling players how to proceed.

This translation does, unfortunately, bring out some of the weaknesses in the script of King's Quest. Passages that read fine silently sound stiff or flat when read by the narrator. This is especially true of

descriptions that you hear a dozen times-when King Graham quenches his thirst in the desert, for example. This problem is one that all computer game publishers must face as they move to multimedia: Just as film or TV writing differs from a good novel, narration and dialogue in a game with sound must be scripted differently than text meant to be read by the player.

And then there's the acting. As a culture we mock bad acting, and KQ V has its share of it. Most, if not all, of the actors are amateurs: many are employees of Sierra On-Line. Roberta Williams, the

game's author and designer, plays the rat; she's good. Some of the other folks should keep their day jobs.

Despite these flaws, the game-playing experience works remarkably well. The strong story and artistic technique easily

Sound effects create such a convincing environment that players feel they're a part of it: Ants sing their marching song, birds chitter, falling people scream.

> compensate for the uneven quality of the acting and occasional flat dialogue.

> Installing this MPC version of King's Quest is a snap: Insert the CD and type install. The program asks about your sound card, video display, and a few oth

er simple hardware matters. Except to name saved games, you don't type in KO V; seven icons that appear at the top of the screen control everything. This interface is so simple, many hard-core players claim the game is too easy.

> King's Quest V is an outstanding example of what animated computer adventure games can be; it proves that the potential and power of the multimedia game-playing experience is here today. It doesn't hurt that it's also a damn good game.

> > -Peter Spear

King's Quest V: Absence Makes the Heart Go Yonder!

CD-ROM based. Requires MPC (386 CPU and hard drive), DOS 5.0; 2 MB RAM; VGA with 640K of video RAM. Supports all major sound boards. \$69.95.

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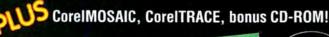
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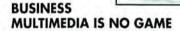
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# Sneaks Reference and Relativity

### NEW WORLD DRDER

eflecting a tumultuous year in world events and politics, over 500 new images fill the electronic pages of the 1992 edition of Microsoft Bookshelf for Windows. This new edition of the software company's \$195 multimedia reference library incor-

porates the geopolitical remapping of the Commonwealth of Independent States, and may still be accurate when you read this.

New in this edition is the interconnectedness of the seven "books" that make up this virtual library; this new technology means users can access encyclopedia and almanac entries from within the atlas. Microsoft has also increased the number of animations to 40, double that of previous sets. And, in this version, one mouse click and you can hear every city in the atlas pronounced.

To make room on the CD for the new information, Microsoft did away with the narration used on the previous editions (usability studies found it wasn't needed). M

### Microsoft Corp.

One Microsoft Way, Redmond, WA 98052-6399, 800-426-9400. Circle 1215 on product card.

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Look up "Moon." You can jaunt from lunar astronauts to Newton pondering why the moon doesn't fall-and hear Neil Armstrong's original broadcast of his famous "One small step for man,

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writing with 300 color images and 60 sound files. Asimov covers mathematics, physics, technology, ecology, and life sciences in this appealing interactive science lesson.

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The EBook Multimedia Storybooks are designed for interactive reading or just listening to the stories' narrators. The illustrations can be explored by children as they search for hot spots that activate sounds or music; definitions for highlighted words are also provided. Both titles should be available now for \$49.95 each.

#### EBook, Inc.

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### **VADER'S RAIDERS**

Even though George Lucas says it'll be years before he makes the next Star Wars film trilogy, fans can get their fill of the Force in the new X-Wing game from



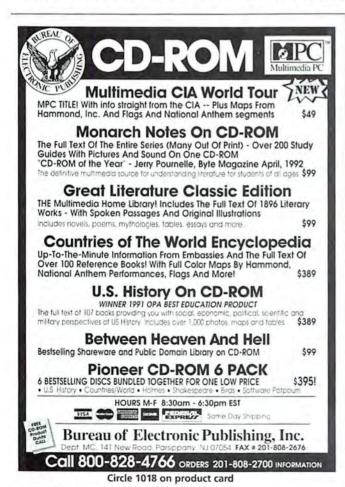
LucasArts Entertainment Co. In this specialeffects-filled adventure game based on the top-grossing science fiction films, players pilot Rebel Alliance starships against the evil TIE (twin-ion engine) fighters of the notorious Imperial fleet.

Before players can soar into battle, however, they have to pass muster in basic training at the Rebel Academy. As a final step toward graduation, they reenact many of the historic flights of earlier ace fighters for the Rebellion.

X-Wing, for IBM-compatible PCs, will be available near you in time for the holidays. Pricing was not set at press time.

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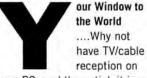


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RAM memory is expandable to 32MB and comes standard with either 2MB or 4MB on the



# echnolust Sound and Vision

### No-Motion Video

The Xapshot is dead, long live the...the RC-570 Still Video Camera? Canon ditched the catchy name, but has improved this camera's quality and integrated it into a multimedia image capture and presentation sytem. The \$3400 RC-570 records images directly from a VCR or other standard TV-signal source and provides point-and-shoot camera capabilities with a 3x power zoom lens,

automatic flash, and infrared focusing system.

The camera plays back through a TV monitor and serves as a portable presentation device. It also comes with a remote control.

If you buy just the camera, you'll still need a video capture card to get images into your PC; companies such as Creative Labs offer these for less than \$500. If you want to buy everything you need in one convenient package, Canon couples the RC-570 with its FV-540 drive for \$6250. The drive reads and digitizes the 2-inch floppy video discs the camera records on and sends the computer-ready picture into a PC through an included SCSI card.

RC-570 Still Video Camera: SCSI Computer Imaging Set

\$3400; \$6250. Canon USA Inc., One Canon Plaza, Lake Success, NY 11042, 516-488-6700 ext. 3359, fax 515-775-4717. Circle 1201 on product card.



### Takin' It to the Streets

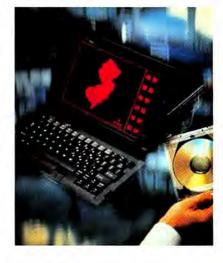
I f you need a movable multimedia system, take a look at NEC's portable MPC setup, which combines three NEC products into one take-itall-with-you package. The primary component is the UltraLite SL/25C, which uses a 25-MHz 386 processor and an active-matrix color VGA display; its docking station has a full-size slot and a drive bay that accommodates the Sound Blaster Pro audio board included in NEC's multimedia upgrade kit. This kit comes with stereo headphones, a microphone, a pair of speakers, and NEC's double-speed CDR-83M CD-ROM drive. The \$8287 bundle also includes Asymetrix's ToolBook multimedia authoring application.

### **NEC Portable Multimedia Solution**

\$8287. NEC Technologies, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719-2298, 800-388-8888, 508-264-8000. Circle 1202 on product card.

### Have ROM, Will

W ant to study that CD-ROM copy of Great Literature while on your next trip? Multimedia or data-intensive CD-ROM work can be done anywhere with Grid's addition of an external CD-ROM drive to its notebook PC. The \$6295 Gridcase 1550CD is no MPC (it doesn't have a sound



card), but it does sport a built-in SCSI port for connecting the included drive, which has a 350ms access time. Because the drive isn't built into the unit, it can be left behind when not needed. Based on a 20-MHz 386SX CPU, the Gridcase includes 2 MB of RAM and a 120-MB hard drive. as well as a built-in Isopoint pointing device.

### Gridcase 1550CD

\$6295, GRiD Systems Corp., 47211 Lakeview Blvd., Fremont, CA 94537-5003, 800-222-4743, 415-656-4700. Circle 1203 on product card.

### Digitize Your Photo Album

olaroid's new photograph scanner offers a fast way to put snapshots into a multimedia presentation. The CS-500i digitizes a 4x6-inch photo into a 24-bit image in about 3 seconds at 125 dpi, or 12 seconds at its maximum resolution of 500 dpi. Polaroid incorporated extensive real-time image-correction capabilities into the scanner, resulting in a sharper image than other machines in its price range can produce. Speed and color quality are impressive, but the scanner's inability to accommodate a book or any picture larger than 4x6 inches could be a fatal limitation. A book of photos can be laid on a flatbed scanner but won't run through this machine's rollers.



#### CS-500i

\$4495. Polaroid Corp., 575 Technology Square, Cambridge, MA 02139, 800-225-1618, 617-577-2000. Circle 1204 on product card.



### The Mouse That Typed

ook, up in the sky! It's a mouse, no, it's a keyboard—it's the Twiddler! If you want to lean back in your easy chair instead of crouching over a keyboard, this input alternative might fit the bill. The Twiddler's not QWERTY, but ergonomically it may be even better. You can "chord" the 12 finger keys and 6 thumb keys for the equivalent of a standard 102 keyboard; pushing one or more keys at the same time generates unique characters, commands, or words. Handykey claims users can master the new method in about ten days and type up to 30 words per minute.

The Twiddler has a sealed, dirt-proof sensor on top that lets it work like a mouse, and it even has a joystick mode for playing games. A supplied "Y" cable connects both the Twiddler and a keyboard to a PC.

### Twiddler

S199. Handykey Corp., 141 Mount Sinai Ave., Mount Sinai, NY 11766, 516-474-4405, fax 516-474-3760. Circle 1207 on product card.



box; this out-of-the-ordinary MPC does everything but the dishes. Acer's first MPC—sold as the AcerPAC 150 and under the company's home-market label as the Acros 380—includes such consumer electronics flourishes as a telephone answering machine, fax machine, audio CD player, AM-FM radio, and speaker phone functions. You don't have to leave the computer on 24 hours a day to get the phone; Acer's StartSmart system boots up the machine in seconds to answer an incoming phone call or fax and powers down when the call is handled.

The system records and plays back phone messages as standard digital WAV files, which you can save and use in other applications. It sports front-mounted volume controls, and all the home electronics touches are controlled through a software graphic interface that resembles a home stereo system and an answering machine. The MPC is based on a 386SX processor and comes with 4 MB of RAM, a 130-MB hard drive, and super-VGA display output. The MPC has a standard stereo sound card with a MIDI interface and a CD-ROM drive with a 600ms access time. Bundled software includes Microsoft's Works, Bookshelf, and Entertainment Package.

### AcerPAC 150, Acros 380

\$2399. Acer America Corp., 2641 Orchard Parkway, San Jose, CA 95134, 408-432-6200, fax 408-432-6221. Circle 1205 on product card.

(Continued on page 240A-58)

# Tandy Multimedia PCs: A New Dimension in Learning



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# Audio

# Clipping Right Along

# Spiff Up Any Multimedia Project with CD-ROM—Based Clip Music

usic and sound help give multimedia productions their emotional and dramatic impact. Because many multimedia creators don't have the time or budget to compose their own music and sound effects, they use clip music, which has evolved to resemble the more expensive production libraries used in broadcast applications. Production libraries have been around for many years. They are especially useful to TV and radio ad producers—it's a cinch that a local supermarket isn't going to hire a symphony orchestra for a radio spot.

When you purchase clip music, you are buying a license to use it. The precise terms of usage—whether the clip can be used for broadcast, for instance—are spelled out in the agreements that accompany each package.

### Multimedia = Multiple Formats

Sound for multimedia comes in three formats: CD audio, wave audio, and MIDI (see "The Shape of Sounds to Come" in Media Lab, April/May 1992, for explanations of these formats). The products in this column run the gamut.

Multi Media Music from Killer Tracks is an audio CD just like the ones you play on your stereo except it's designed and licensed for multimedia use. ClipMedia from Macromedia has tracks licensed from Killer Tracks, as well as wave format sound effects and a large selection of animation, digitized video, and graphics files. MusiClips from Voyetra is a collection of MIDI files on floppy disks, and MusicBytes from Prosonus combines all three formats on a CD.

Before deciding which sound format to use in a multimedia project, consider your distribution requirements. With CD audio, you can play your presentation back only when the CD is in the drive; you need multiple copies of the CD if you want your project to be installed in several places. Wave sound is more transportable because it can be played from hard disks. However, MPC owners can use their sound boards to convert the CD audio tracks to waveform. It is sampled in a format appropriate to the source material—from 11-KHz mono for voice and some sound effects to 22-KHz stereo for high-quality music playback and fancy effects. (CD audio, on the other hand, is 44-KHz stereo.)

MIDI sound is the most compact of the three formats, but it is a different animal in many ways. MIDI files are essentially like piano rolls for synthesizers, with recorded instructions instead of sounds. Consequently, a MIDI file sounds different on different systems because the quality of the sound card installed in the computer or the external synthesizer affects the output. MIDI allows musical sequences to be manipulated, rearranged, transposed, made faster or slower, and printed as musical notation. MIDI format is ideal when users need the ability to manipulate sounds.

The MIDI files in the products mentioned in this column are set up for the MPC spec, which means that each file contains two separate orchestrations: general MIDI base-level sound modules (which is what most internal sound cards are) and more elaborate arrangements for general MIDI extended-level devices. General MIDI is a standard mapping of instrument sounds to MIDI code. The folks at Voyetra have done the best job on the base-level arrangements; they've kept the percussion and sound choices in MusiClips fairly simple. By comparison, the more elaborate percussion tracks in

### ClipMedia

CD-ROM based. Requires DOS or Windows, 286, 2 MB RAM, sound board. \$395 for audio tracks, sound effects, and a graphics and animation library. Macromedia, 275 Shoreline Dr., 4th floor, Redwood City, CA 94065, 415-595-3101, fax 415-595-3077. For more information, circle 1208 on product card.

### Multi Media Music

CD-ROM based. Requires DOS or Windows, 286, sound board. \$300 per CD (approximately 30 audio tracks plus effects); \$800 for all three CDs. Killer Tracks, 6534 Sunset Blvd., Hollywood, CA 90028, 213-957-4455, fax 213-957-4470. Circle 1209 on product card.

### MusicBytes, Volume 1

CD-ROM based. Requires Windows, 286, 2 MB RAM, sound board. \$149.95 for 27 tracks in all formats and 107 sound effects. Prosonus, 11126 Weddington St., North Hollywood, CA 91601, 800-999-6191, fax 818-766-6098. Circle 1210 on product card.

### MusiClips

Floppy based. Requires DOS or Windows, 286, 512K RAM. S89.95 per group (approximately 50 MIDI files), \$149.95 for Collector's Edition bundle (three groups). Voyetra Technologies, 333 Filth Ave., Pelham, NY 10803, 800-233-9377, 914-738-4500, fax 914-738-6946. Circle 1211 on product card.

some of MusicBytes' arrangements don't sound that great on a base-level synthesizer, but fare better with a more advanced sound module.

### A Con-Chord-Ance

MusicBytes contains 27 tracks of varied, top-notch music replicated in all three formats, plus 107 sound effects in CD audio and wave format. The clips range in length from 5-second tags to 60second vignettes, and the music—arranged and performed by first-rate studio musicians—is truly exciting. The arrangements are hip and sassy, with lots of funky numbers, hot guitar licks, and unexpected twists and turns. Styles range from bluegrass to jazz to urban rock. And each cut is convincing. The wave files contain some fun percussive elements, but they don't stand out the way the music cuts do.

Multi Media Music consists of three CDs: Training, Education, and Sales. As with MusicBytes, musical production values are state of the art. The pieces on each CD run from 30 seconds to 2.5 minutes, including a number of "urban contemporary" pieces (think of the "L.A. Law" theme) and a few pieces that evoke anticipation and nostalgia (imagine driving across the country through the mountains to start a new life—it's something like that). Each CD also includes about 30 sound effects and such production effects as fades, wipes, and bridges.

ClipMedia from Macromedia doesn't contain MIDI files or CD audio, but it does include well-organized and interesting wave audio (and, as a plus, many graphics and animation files). Most of the music clips are about 30 seconds in length, and the sound effects average 8 seconds each. The effects in this package are impressive, and the stereo is well implemented, particularly in the amusement park effects. The roller coaster sounds are great.

Voyetra's MusiClips is a compilation of MIDI files set up for an internal sound card or any general MIDI sequencer. Collector's Edition Group 1 is a good choice if you're looking for recognizable music; it contains favorite children's songs, folk songs, religious themes, and holiday songs. Other editions contain arrangements of public-domain material and original tunes styled after familiar melodies, such as "Louie, Louie"; "Mercy, Mercy, Mercy"; "Light My Fire"; and "A Whiter Shade of Pale." (Naming them could make for a good parlor game.) These are solid, fun, rocking arrangements. Collector's Edition Group 3 contains a special set of drum arrangements you can use to back up your own tunes.

While all of these are high quality, there is no single best package of clip music; your best bet is to select the package that meets most of your needs. If no one package does, consider mixing and matching for optimum flexibility.

Warren Sirota is a composer, guitarist, and music technologist. He is president of Digital Arts & Sciences, publisher of MIDI Guitarist magazine.







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What

you

need to

know

ultimedia PC computing is not just a vision for the future. It is here today. Multimedia computing is simple: the integration of sound, animation, and photo-quality images with text and graphics. Yet, this simple idea will have a remarkable impact on the way people use computers.

The Multimedia PC Marketing Council has developed a standard multimedia computer specification: the Multimedia PC. The MPC trademark was established to encourage the use of a standard multimedia computing platform. The appearance of the logo on computer systems or upgrade kits guarantees that the hard-

ware meets the MPC specification. End-users can be assured that software bearing the MPC mark will work on any MPC licensed system or upgrade kit. By establishing a standard platform, and by guaranteeing "plug and play" simplicity for the consumer, the Council encourages widespread use of multimedia applications and hardware. The MPC trademark is owned by the Multimedia PC Marketing Council, Inc.

Based on the standard desktop PC already used by millions, the Multimedia PC provides users with an affordable approach to multimedia computing that preserves their investments in PC software and hardware. The Multimedia PC a CD-ROM drive, an audio board, and an operating system environment.

The minimum PC configuration for a Multimedia PC is a machine with a 386SX processor and 2 megabytes of RAM, a 30 megabyte hard disk, and a VGA or VGA+ display. (More powerful base configurations are also supported.) To this base a CD-ROM drive has been added, to give the Multimedia PC its tremendous information retrieval capabilities. The addition of an advanced audio board and speakers or headphones gives the Multimedia PC its ability to play and manipulate speech, music, and other sounds. The operating systems that currently comply with the Multimedia PC specifications are Windows 3.1 and Windows 3.0 with Multimedia Extensions.

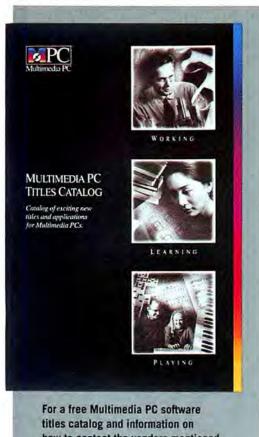
You may purchase a Multimedia PC as a pre-configured system. Alternatively, if your PC meets the minimum system requirements, you can easily expand it to Multimedia PC functionality with a Multimedia PC upgrade kit. A Multimedia PC upgrade kit includes a CD-ROM drive, audio board and any software necessary to meet the Multimedia PC specifications. It can be used either as an enhancement of your current machine or to configure a new system.

Some common questions...

Is there a risk in assuming that hardware systems or upgrade kits that are advertised as "MPC compatible," but do not bear the MPC trademark, will provide full Multimedia PC functionality?

Yes, there is a risk. Although such systems may work well, without the MPC trademark on the package you cannot be sure that the vendor has fully complied with the Multimedia PC specifications. Vendors displaying the trademark are subject to independent testing

# Multimedia PC Computing



For a free Multimedia PC software titles catalog and information on how to contact the vendors mentioned in this article, please circle reader response #56 also takes advantage of the Microsoft® Windows™ graphical environment, making Multimedia PC software easy to access and integrate with other software applications on your PC.

The list of Multimedia PC software products already includes more than 100 titles and applications from over 50 software companies. Multimedia PC titles include whole reference libraries brought to life with photos, drawings, animation, and sound; languageinstruction titles with spoken lessons and pronunciations: interactive children's titles with engaging animation and sounds; and tools to help you build your own multimedia creations. Multimedia functionality is also migrating into application programs, bringing multimedia capabilities to word processors, spreadsheets, and other popular productivity software.

Multimedia PC's – The Basics A Multimedia PC consists of these basic components: a PC,



look for this logo on all Multimedia PC hardware and software

to verify adherence to these specifications.

### Will a Multimedia PC slow down my computer or interfere with my current software?

No, the Multimedia PC is intended to protect your software investment and will not place an additional burden on your computer in running your existing software applications.

### Do I need the Multimedia Extensions to Windows to run Multimedia PC software? Where do I get the extensions?

Windows 3.1 is all you need to run Multimedia PC software. The extensions are not built into Windows 3.0, however, so the addition of this system software, which comes bundled with Multimedia PC systems and upgrade kits, is necessary.

Look for the distinctive MPC trademark on systems and upgrade kits from these fine companies: ACS Computer PTE, LTD. Advanced Logic Research, Inc. (ALR) Aztech Systems PTE, LTD. Brysis Data, Inc. CompuAdd Corporation Creative Labs Fujitsu Limited ING. C.OLIVETTI & C. Media Resources Media Vision Mind Computer Products NEC Technologies, Inc. Philips Consumer Electronics Procom Technology Tandy Corporation Technology Integrated Products, Inc. Turtle Beach Systems

Zenith Data Systems

### Can I install the Multimedia PC upgrade kit myself?

Yes, upgrade kits are designed for installation by the user. Upgrade installation requires opening your PC and inserting an audio board into one of the PC's expansion slots, as well as installing an internal, external, or portable CD-ROM drive and loading the necessary system software.

### How many expansion slots does a Multimedia PC upgrade kit require?

A Multimedia PC upgrade kit requires one or two slots, depending on the kit manufacturer and whether you select an internal or external CD-ROM drive. A number of upgrade kits with external CD-ROM drives require two expansion slots in your computer. Some upgrade kits offer an integrated audio board and internal CD-ROM drive that occupy only one expansion slot. I already own a CD-ROM drive can I use it with a Multimedia PC? Perhaps. Upgrade kit manufacturers offer special packages that allow you to upgrade to a Multimedia PC without buying a new CD-ROM drive. However, CD-ROM drives come in a variety of performance levels, not all of which are sufficient for a Multimedia PC. To be fully compatible with the Multimedia PC standard, the drive must be capable of a sustained transfer rate of 150K per second and a maximum seek time of 1 second, and utilize

no more than 40 percent of the computer's CPU processing power. This information should be included in the technical specifications for your drive. If it is not, check with your drive's manufacturer. In addition, you need to be sure that you are using Microsoft MS-DOS® CD-ROM Extensions (MSCDEX) version 2.2 or later and an updated device driver for your CD-ROM drive. The manufacturer of your CD-ROM drive can provide you with version 2.2 of MSCDEX and an appropriate driver.

### I already have an audio board in my computer — can I use it with my Multimedia PC?

Some upgrade kit manufacturers offer special upgrade packages that allow you to use your current audio board. However, many popular audio boards are not fully Multimedia PC compatible. Multimedia PC audio compliance for digitized sound is 8 bit samples at an 11 kHz input sampling rate and 8 bit samples at a 22 kHz output sampling rate. Your audio board also requires a software driver from the audio board supplier to communicate with Windows. You can obtain this driver from your audio board manufacturer. The Multimedia PC also has audio mixing capabilities that enable it to output a variety of audio sources through a single output jack. Most older audio boards do not have this mixing capability but can be enhanced with external audio mixers that can be purchased separately. Check with your audio board manufacturer for more information.

Hardware and software vendors may call the Multimedia PC Marketing Council at (202) 331-0494 to learn about licensing the MPC trademark.

This information is provided as a service by the Multimedia PC Marketing Council, 1730 M St. NW, Suite 707, Washington D.C. 20036

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The MPC logo is a trademark owned by the Multimedia PC Marketing Council, Inc. The following companies are among the growing list of software publishers producing titles for Multimedia PCs:

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Zuma Group, Inc.

# Video And Then There Was Video

### Tips for the new desktop video producer

arshalling the extra hardware needed to create digitized video sequences is usually the hardest part of getting real-world moving images into a computer. But once you collect the appropriate equipment (see "Plug In, Turn On" in Media Lab, June/July 1992), capturing good digital video still requires a little time, a little skill, a little practice, and a lot of storage space.

Of course, the precise procedures you will use-and many of the trade-offsvary with the characteristics of your specific video digitizer and any ancillary image compression hardware. Also, software support is just beginning to address the concerns of the desktop video producer. Even so, following some general principles when working with digital video can help you get better results across a wide range of products.

### Set the Stage for Quality

Because all current desktop video solutions diminish the quality of the original image, you need to start with the best possible source material. If you begin with a badly lit scene or a low-quality VCR recording, by the time the image is digitized, compressed, and restored, it may look more like bubbling mud than professional video footage.

To address the limited dynamic signal range of most digitized formats, aim for a moderate contrast range. Good lighting is always important in video, but you'll improve your output if you avoid digitizing images that show people in front of brightly lit windows or that combine deep shade and bright sun, for instance.

If you're working with prerecorded video, remember that industrial or professional tape machines produce much better results than low-cost consumer gear. Professional formats such as Beta-Cam or 3/4-inch SP offer higher starting fidelity than VHS. And a machine with time-based correction (TBC) produces images with far less jumpiness.

Don't forget that many multimedia systems offer limited audio fidelity. Any background noise or limitation in the audio pickup is magnified when you play the recording back through the typical multimedia sound system. Attempting to "scrub" your audio requires expensive equipment and a lot of time-consuming, tedious work-and it still doesn't always produce a clearly audible result. The bottom line: Start with a clean signal.

### Clean Up Your Act

Manipulating the bits that represent a digitized video signal on your computer is as easy as pulling up your latest spreadsheet. But the process of digitizing video involves firing up extra hardware, hooking up bunches of cables, and recording big files. Each step in digitizing your video increases the chance of crashing your hard disk.

Consequently, to be completely safe it's best always to precede your video digitizing sessions with a hard disk backup. Deleting unneeded files clears space for digitized images, and defragmenting your disk eases the task of packing away the digitized video sequences at high speed.

Naturally, the danger of a disk crash is highest when you first connect the video system, but system safety isn't guaranteed even after hours of operation. If you have a removable disk or other suitable backup system, you might want to save immediate backup copies of any digital files that required tricky setups.

### Computerizing Video

Video signals in their original analog form are fragile tracings, ready to bend, shake, bounce, or hum at the smallest disturbance in their path or environment. The more connections and the



We've become
accustomed to replacing
stacks of paper
documents with small
electronic discs; video
storage is almost
exactly the opposite.

longer the cables, the less chance you'll get an accurate reproduction of the original imagery. Once a signal is converted to digital form, however, it's relatively hardy. Remember, the earlier you convert the signal to digital format, the better.

Does it matter which type of computer you use? At the production stage, a desktop system is definitely better than a portable. Because many video digitizer cards use chips that rival CPUs in complexity and power consumption, they throw off a great deal of heat. Even if your portable has the spare power and space to house an extra card, it probably can't withstand the heat generated by today's digitizer cards.

### Video Storage

We've become accustomed to replacing stacks of paper documents with small electronic discs; video storage is almost exactly the opposite. To digitally store the information on a standard video tape, you might need a hard disk as large as 300 MB. Unless you have a cousin in the high-capacity disk drive business, it's best to use the PC only to record short clips and to store source footage temporarily for editing. Recording and storing long sequences is still best done on more traditional video equipment.

### Check Results

In theory, if you set up your digitizer correctly and feed it the appropriate signals, you should get the correct results. But mixing video and computers brings out the uncertain nature in both systems. Each time you move or change your system, be sure to capture and view a few actual images before recording crucial footage. Otherwise, you might find that all your cables, connections, and software look right from the outside but your actual images look very wrong.

Following these tips doesn't guarantee good results, but it should increase the

odds that you're happy with the final product. Whether you're a neophyte or an accomplished digital videographer, you'll feel better about your digital video endeavors if you're prepared to give them your best shot.

Steve Rosenthal, an author and video producer from Berkeley, California, regularly writes about multimedia for MPC World and other publications.

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# Q & A

About 14 months ago I purchased a Sony CD-ROM drive. Recently I purchased two discs: Infoquest's North American Indians and U.S. Civil War. Both programs run, but neither shows the graphic photo sections. I spoke with a representative of the company who said the fault may lie in my new super-VGA Packard Bell PC. Someone else told me that it was the fault of my CD-ROM drive, that Sony has adopted a different "standard" since I purchased my unit. What's the story? Do I have to buy a new CD-ROM drive every year or so?

Dr. George J. Doersam, Springfield, MA

A According to Quanta Press, the publisher, Packard Bell's super-VGA card (which uses an Oak controller chip) is not fully compatible with other cards. The result: You cannot show the images at full resolution (640x480 with 256 colors). Quanta has found that the software will work in a lower-resolution (320x200x256) mode; to fully enjoy this and other titles, you may need to buy a different display card.

I purchased the Sony CDU 7205 CD-ROM drive with the Laser Library five months ago. I hooked it to my stereo and got phenomenal results. Thinking I had the equipment for a multimedia PC, I bought Multimedia Beethoven and was terribly disappointed when nothing worked except the audio presentation of the Ninth Symphony—no dialog, no examples, nothing! I immediately called my dealer who said I needed a "sound card" but could not tell me which one. I called Microsoft and got the same response. Sony told me, through a rather curt young man who seemed to think I was an idiot, that the Sony CDU 7205 was incompatible with Microsoft's Multimedia Extensions 1.0 as well as Windows 3.1, and that Sony was manufacturing its own card but didn't know when it would hit the market. Nobody else I talked to seems to know anything. Can you give me an answer in simple terms? All I want to know is whether I can ever get multimedia with the outfit I have.

Jerome D. Valentine, Tamarac, FL

How much will a faster computer help multimedia performance? Isn't the bottleneck at the CD-ROM drive? Will more

than 4 MB of RAM speed things up? Why are CD-ROMs so sloooow? Does it have to do with mechanical limitations, or is it just adherence to the audio CD standard?

David Pakalnis, San Antonio, TX

A The main bottleneck in multimedia applications isn't always the CD-ROM drive. While CD-ROM access time can certainly slow things down, the graphics adapter is also a likely source of delays. Windows, in particular, takes a heavy toll on multimedia performance by consuming large amounts of RAM and acting as a slow "middleman" during graphics operations. The penalty is severe enough that some of the best games written for MPCs run directly from DOS rather than Windows. A faster CPU always helps; if you're using Windows, you probably need at least a 33-MHz 386—and working from a 486 will definitely speed things up. More RAM may help if you see a lot of hard disk activity, which indicates that Windows is swapping programs and data to and from the hard disk.

CD-ROM drives are slower than most other drives because of the fundamental limitations of the medium. The drive's motor must change speed as the head moves inward and outward on the disc—which takes extra time. And because the disc does not rotate very quickly, there's often a long wait before the data you need comes around to the read head. You're correct to blame the audio CD standard; had CD-ROMs been designed to use concentric tracks as hard disks do (rather than one long spiral track like a phonograph record) and to rotate the disk at a constant speed, they'd be much faster.

Recently I purchased the Sound Blaster version 1.5, and I really enjoy the great features it provides. A few days later, the Sound Blaster Pro came out and the ad stated "with full compliance to Microsoft Multimedia Level 1 Extensions to Windows and an interface to CD-Audio." Are those features necessary for multimedia? Does my Sound Blaster have the same capabilities? If those features are necessary and my Sound Blaster doesn't provide them, is there any way I can upgrade my Sound Blaster to a Sound Blaster Pro? It is really scary to buy something and find it's already out of date.

James Wang, Cerritos, CA

A Unfortunately, even the manufacturer admits that the Sound Blaster version 1.5 isn't enough to make your PC meet the MPC specification. The most important omission: It lacks an on-board mixer, which you can't obtain separately for less than the cost of a Sound Blaster Pro. You may still be able to enjoy some MPC applications with the card you bought. Windows 3.1 comes with multimedia drivers that let you play digitized audio on an ordinary Sound Blaster, so if the programs you run don't require a CD-ROM (or if they don't require CD audio and digitized audio to be mixed), you may be in good shape.

I have a 386 system in a case that sits vertically on the floor, and I want to upgrade it to an MPC system. Can I install an internal CD-ROM drive and have it run properly in a vertical posi-

tion? Will any or all CD-ROM drives work this way?

Daniel Stowell, Gainesville, FL

A Many CD-ROM drives—particularly those without caddies—have to be horizontal. If you must use one in a vertical position, check with the manufacturer. For the widest choice of drives, get a drive in an external case. Besides solving the problem of how to mount the drive, this puts the drive on your desk within easy reach. Also, if it has a separate power supply, the drive puts less of a load on your PC's power supply.

I am hoping to purchase an MPC CD-ROM player with a multiple-CD cartridge holder, like many CD players have, that lets you put six CDs in one cartridge and directly select which CD you want to utilize. Is this available now from anyone?

Mike Peery, Kilgore, TX

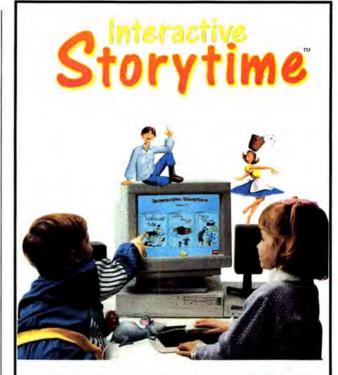
A ....... Pioneer's DRM-600A is a six-disc changer that, unfortunately, came in last in our speed tests. Its half-second access time is quite slow by today's standards, and it didn't achieve the minimum transfer rate required by the MPC specification. Pioneer promises a speedier version by the end of 1992.

When I play a CD-ROM sound track recorded at 11 KHz, it sounds fine, but when I try to play the same passage recorded at 22 KHz, it's chopped up. If I copy both recordings to my hard drive and play them back, they sound fine. Is this a function of the access time of the drive or the transfer rate of the interface card? I am using a Sony CDU-531 with an 8-bit interface card. The system is a 33-MHz 486DX with a Sound Blaster Pro.

Bob Murdock, Bayville, NJ

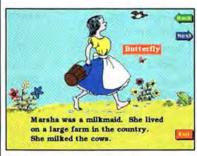
Brett Glass is an electrical engineer, programmer, and industry analyst in Palo Alto, California. Brett answers technical questions about multimedia in each issue.

Send questions to Q&A via MCI Mail at MPC World, America Online at MPC World, Prodigy at KAMD36B, CompuServe at 75300, 2503, The WELL at mpcworld, or Delphi at mpc world. Fax a question or comment to 415-281-3915 or mail it to MPC World, 501 Second St., San Francisco, CA 94107. Sorry, we can't respond to all questions.



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# Playing

## ON ANY GIVEN SUNDAY

### KONAMI'S VIRTUAL FOOTBALL OUTRUNS AND OUT-PASSES EVEN ITS OWN SUPER **NFL** SIMULATOR

suppose I could learn to enjoy football if it weren't for the violence, the crummy weather, the boorish fans, and the obnoxious and overpaid players.

But I've learned an important lesson: It's not whether you win or lose—it's how you play the game. And my favorite way to play is from the climate-controlled comfort of my limited-access swivel chair.

I've just taken the helm of a real National Football League team and led it to the Super Bowl. Along the way, I've glimpsed the multimedia future of sports simulation games. More about that later.

First, a look at an important new entrant on the market: I've been playing Konami's new NFL game. Konami is a major player in the video arcade marketplace; it's also a giant in the huge Nintendo industry and is making a move on the developing multimedia marketplace. In NFL, Konami has produced one of the most playable football simulation games yet.

As PC sports fans know, the world of PC games is more or less divided into statistics-oriented and play-action games. The stat-driven products are from the same school as flight simulators and military and historical re-creations; think of them as "what if?" spreadsheets of the gridiron, diamond, or boxing ring. This class of games allows you to act as a general manager, testing premises. For example, will your team perform better based on a squad of skinny but speedy track stars? Or will the path to the play-offs be cleared by a herd of steroid-bulked steers who can't run but also can't be moved?

The second type of PC sports game emphasizes the muscles in your fingers over the gray matter between your ears. In most cases, you directly control the quarterback on offense and the middle linebacker on defense.

Konami's NFL game is a mix of both. You are the General Manager and make all of the decisions—including drafting, trading, and making God-like alterations to the capabilities of your players. You take charge of the team and move the characters about.

NFL absolutely shines in the depth that lies behind the screen. All 28 pro teams are represented by name, and each has a roster of 45 players. Individual team members have ten player attributes and six vital statistics, each subject to change by the GM; team member stats and attributes change across the length of the season, affected by the outcome of the games. The computer ref

The animation is very good; what is truly amazing is that all the players on screen are controlled independently by the computer. The linemen raise their elbows to block; the soccerstyle field-goal kicker moves in on the tee convincingly. Also, a range of digitized sound effects and voices add depth.

has a rule book with an astounding 22 penalties.

Although you see the names and uniforms of real NFL teams, the players within the game are all fictitious (albeit modeled after players on the real teams). This game is licensed by the NFL itself and not by the players' association; paying two licensing fees was too large a pill to swallow,

even for Konami. However, if—and this is a gigantic and exciting "if"—if you have the time and the inclination, you can use the editing features of the game to enter stats and attributes and even change the names of the players to your favorite pros of the present season or years past.

Now, back to the future—and remember you read it here first: Konami is preparing to let loose on the computer playing fields of America a fantastic new multimedia football game.

NFL Video Master, the working title of a new game being developed for Konami by Park Place

Edit the game to clone your favorite players of the present season or years past.



Productions, will use digitized video footage from the NFL Film Library. You'll be able to select from something like 200 plays, set the ball in motion, and then watch the X's and O's on one screen and video images on another. The digitized video will be black and white, which saves space, gains speed, and lets you sidestep the problem of different uniform colors for each team.

But wait: Virtual reality comes closer as you play an entire season. A week of football happens simultaneously; as you play, video highlights of other games appear as updates. If they seem more interesting, or if you just like bouncing from one coach's job to another, you can take charge of other games in progress with the click of a mouse.

NFL Video Master is without a doubt unique; it's also gigantic. Developers wonder if the product can be held below 20 MB. Its size raises the question of why this game is designed for use on a hard disk rather than a CD-ROM. The answer:

economics and market share, of course.

I spoke with Gordon Walton, a development manager at Konami. Walton was formerly with Three Sixty Pacific Software, where he was responsible for the successful *Harpoon* game.

"It's clear to Konami that we're going to do multimedia, on MPC and other platforms," Walton said. "I personally think the delivery medium will be CD on all platforms within three to four years."

One development that will spur the multimedia industry is the forthcoming CD-ROM player for the Super Nintendo system; that system, with a rumored list price of \$200, is expected early in 1993.

"Nintendo will overcome the inertia against adopting a new technology," Walton said. "Cartridges, video arcades, and PCs are all getting more powerful, able to do things we thought unthinkable five years ago. I'm not sure they are converging in terms of abilities, but the delivery medium will converge. You can

make a CD cheaper than you can a ROM chip or five disks."

The ultimate sports simulation game, as I see it, will include digital representations of players, coaches, playing fields, weather conditions, and all the other variables of the game. It'll play out on your high-resolution video screen and through your stereo speakers. And, it'll even simulate your seat between the fan on your left drinking beer through tubes connected to his hat and the over-friendly garlic farmer on your right.

Corey Sandler's home town team, the Nantucket Whalers, keeps losing its football in the fog.

#### NFL

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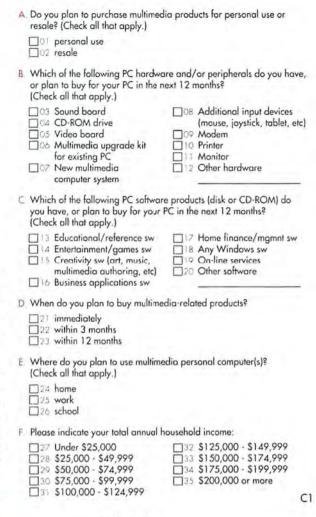
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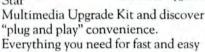
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f you want to drive yourself nuts, you could spend some time considering how "real" Cyberion City is. Is it as real as Springfield, Ohio; or as real as the Springfield where Bart Simpson lives; or as real as the vast underground cave in the original *Adventure* game; or as real as the cave where Injun Joe trapped Tom Sawyer?

Virtual reality is no longer enough. Now you have to ask: How virtual? Which reality? It's often said that the future of multimedia is graphics; it used to be said that the future of communications was picturephones. The imagination is a big screen; it has lots of bells and whistles.

Cyberion City is located in the mind of the user, in orbit around Earth, or in a computer in Massachusetts, depending on which reality you've selected from our fine menu. Cyberion City is a space station, carefully mapped in arcs and sectors, with a transportation system running along its spine. There are public and private areas; once a user becomes a citizen, the user gets a house. There are 6000 "rooms" in Cyberion City and 47,000 "objects," with space for perhaps twice that many.

At another level of abstraction, Cyberion City is a MUSE (Multiuser Simulation Environment). MUSEs grew out of MUDs (Multiuser Dungeons), which are (to vastly oversimplify) text-based group-hallucination online D&D games.

MUDs are a little programmable; MUSEs are a lot programmable. That's the point of MUSEs: Each user is a builder and everyone plays everyone else's game. Plus, it all happens in a space station.

Sounds confusing; is confusing, at least at first. During my maiden voyage within the shiny walls of Cyberion City (or microMUSE, as it's more officially known), I felt as though I'd been dropped into downtown Tokyo with only a flashlight and a screwdriver.

Robots everywhere; other players zipping

Players can make robots of themselves; if you get good enough, there can be half a dozen little you's wandering around.

around. Announcements coming over the public address system, promising untold delights in Section 7, Arc 3, or Section 2, Arc 0. Visit Narnia; visit Oz; visit Disneyland; visit Moscow. And now there's a dragon that wants to take you somewhere. And now there's a statue asking you questions.

Fortunately, you can type *who* and get online help—just ask any director anything at all. Type page (playemame) = message and a friendly person will be at your side urging you to try stuff.

Trying stuff is the point. Eventually, if you stick with it, you'll get a residence. You can put anything in that residence you want; if you ask, one of the many friendly directors will teach you how to build objects and how to make them do odd things. A flower that turns into a refrigerator; a refrigerator that turns into a troll; a troll that turns into a gateway to a planet on the back side of the universe.

Players can make robots of themselves; if you get good enough, there can be half a dozen little you's wandering around.

Lost? There's a robot named Caspian who can tell you how to get anywhere in the space station—and a few places beyond. Or type *go home* anywhere at any time, and you will.

I can't begin to tell you everything there is in Cyberion City; it will have changed a lot by the time you read this anyway. (And if

> you become a citizen, you'll change it some more; you could be a micro-MUSE legend in the making.)

> > And it's free.

microMUSE is an educational device; all the people running it, including the people who designed it originally, are volunteers. The Massachusetts Institute of Technology gives it free disk space; MIT is interested, in a vague sort of way, in what will happen in this superheated (Continued on page 240A-58)



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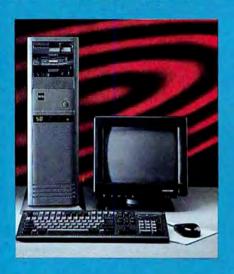


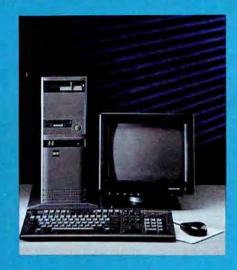


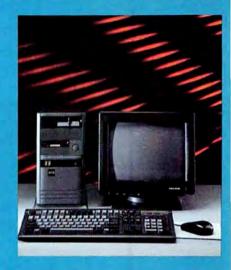




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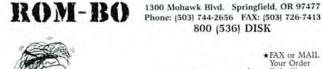
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(Continued from page 240A-52) intellectual environment.

So is everyone else; that's always the payoff. It's the fourth generation of hackers now, but information still wants to be free.

There is a code of behavior on micro-MUSE, partly because there are kids online. You'll be given a copy of the charter and asked to agree to its provisions. Disputes are settled in a "trial" setting, with a prosecutor, and a defense attorney, and an impartial judge. The kids part is important; Cyberion City is passionately designed to be a land of unlimited challenge for young cybernauts. The chief code hacker at micro-MUSE is 14 years old; the youngest user is six.

Oh sure, right, all of a sudden it sounds too wimpy for words. But it isn't. Here's a small wager: I'll bet you won't be able to figure out how old your fellow players are, unless they choose to tell you. In fact, you might spend a lot of time talking to an artificial intelligence

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Jon Carroll is a daily columnist for the San Francisco Chronicle and a computer dodo.

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5801 East Slauson Avenue, Suite 200 Los Angeles, CA 90040 TechnoLust (Continued from page 240A-35)

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## THE HELP SCREEN

BY KARL KOESSEL AND ROBERT LAURISTON

PC World offers answers and advice at every level

Q. Sometimes I want to be able to access my office PC from my laptop when I'm on the road, but I'd prefer not to leave the office system on for weeks at a time. Is there some way to turn it on remotely by phone?

BARRY SMITH FREMONT, CALIFORNIA

A. We found three available products that will let you remotely switch on the power to your computer: PhoneBoot, Remote Power On/Off, and the X-10 Powerhouse system.

PhoneBoot looks much like a regular six-outlet power strip, except it also has two RJ-11 telephone jacks. Connect one jack to the wall and the other to your modem, and plug your computer equipment (or anything else you want to control remotely) into the outlets. When you're at the office, hit PhoneBoot's on/off switch to power your PC and peripherals. Before you hit the road, you revise your AUTOEXEC.BAT so it will load your remote-control program or launch your communications program in host mode, and then use only Phoneboot's on/off switch to turn off the power to your system. To turn on the power to your computer remotely, dial in from a touch-tone phone and tap in a threedigit security code. PhoneBoot automatically turns on the outlets. (Alternatively, you could write a script for your communications program to dial up and enter the code.) Then call back with your modem and log on to your system. After you hang up, PhoneBoot waits for 20 minutes, then turns off the power to your computer.

Remote Power On/Off hooks between your PC equipment and the wall just like PhoneBoot does, but you get only one outlet. Depending on how you specify the settings, it turns on your PC after 1, 6, or 12 rings; after you hang up, it shuts off either immediately or 2, 15, or 60 minutes later.

The X-10 Powerhouse system encompasses a whole range of modules you can use to control electrical devices in your office (or home), either from a dedicated master controller or with software you run on your PC. You need only two modules to turn on the power to your computer. You insert an Appliance Module between your PC's power plug and the wall socket, and plug a Telephone Responder into the same touch-tone phone line your modem uses. The dialin process is pretty much the same as with PhoneBoot, except you need to call back after your telecommunications session to shut off the power to the system.

#### WHERE TO BUY

#### **PhoneBoot**

Cybex Corp. 2800-H Bob Wallace Ave. Huntsville, AL 35805 205/534-0011, 205/534-0010 (fax) LIST PRICE: \$395

Reader service no. 663

#### Remote Power On/Off

Server Technology, Inc. 2332-B Walsh Ave. Santa Clara, CA 95051 800/835-1515, 408/988-0142 LIST PRICE: \$169.95 Reader service no. 664

X-10 Powerhouse Telephone Responder, X-10 Powerhouse Appliance Module

X-10 USA Inc. 91 Ruckman Rd. Closter, NJ 07624 201/784-9700, 201/784-9464 (fax) LIST PRICE: Responder \$70, Appliance Module \$16

Reader service no. 665

Q. I use WordPerfect Office's Shell as a task swapper. I've upgraded my 386 to 8MB of RAM, more than enough to load all my applications at once. The problem is that when I start Quattro Pro, it grabs all available expanded memory and hangs on to it. That means programs I load afterward are swapped to disk, slowing down switching. In addition, my other programs can't use expanded memory. Do you have a work-around?

RUTH JONES GRANVILLE ISLAND, BRITISH COLUMBIA, CANADA

A. One trick that works with almost any memory-hogging program or task switcher is to load all your other programs first. That way, the task switcher has reserved each of your other programs enough expanded memory for swapping before you load the problem program. With Office, you can make this automatic by toggling the Start Resident? option in Shell's Program Information screens to YES for every program except Quattro Pro.

For Quattro Pro, however, there's an even better solution: Restrict the amount of expanded memory the program locks up by using the /E start-up option. Follow /E with the number of 16K expanded memory handles (blocks) you want Quattro to use. For example, to allocate 1MB of memory, use Q/E64 to start Quattro Pro. To use this option with Office's Shell, enter /E64 in the

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Q. I have a 16-MHz 286 with 2MB of RAM and MS-DOS 4.01. The MEM command tells me that the largest executable program size is 550,240 bytes, yet I get a 'Program too big to fit in memory' message when I try to run a program that's only 539,042 bytes long. Any suggestions would be greatly appreciated.

JAMES BURNIP COMPUSERVE 70703,3041

· Programs often require more memory than the EXE or COM file takes up on disk. Programs may load additional files or may reserve additional memory as work space. You probably need to free up some memory. Make backup copies of your CONFIG.SYS and AUTOEXEC.BAT before you make changes, then check the files for items you don't actually use and can remove. RAMDRIVE.SYS and SMARTDRV-.SYS use the most memory, ANSI.SYS, GRAPHICS, and FASTOPEN less. You can experiment with lower settings for FILES and BUFFERS, though some programs may not run properly if you set these too low. If you upgrade to DOS 5.0, you can free up about 45K by loading DOS into high memory and even more by loading your device drivers and TSRs high, too.

If the program still won't run in the amount of memory you have available, it's likely that it's incompatible with your version of DOS, with some memory-resident software, or with some unusual hardware in your system. Such conflicts sometimes result in misleading 'Program too big to fit in memory' errors.

Q. I recently upgraded to DOS 5.0. I use a security program, Fischer International's Watchdog, that supports DOS only through version 4.0. I understand I could use SETVER to let Watchdog run under 5.0, but I don't know how to use it.

ANTHONY LEE WEST HOLLYWOOD, CALIFORNIA A. SETVER is a DOS 5.0 utility that tells programs they're running under earlier versions of DOS. This little lie is often all that's necessary to get a program to run under DOS 5.0. First, enter the command SETVER WDRIVER.SYS 4.0 at the DOS prompt to add Watchdog's device driver to SETVER's version table. (When using SETVER for other programs, you might specify an EXE or COM program instead of a SYS driver. And if a program required, for example, DOS 3.3, you'd replace the 4.0 with 3.3.)

Next, insert the line DEVICEHIGH = C:\DOS\SETVER.EXE in your CONFIG.SYS.
Because SETVER must be loaded before Watchdog's device driver is, be sure to put SETVER'S DEVICE command before WDRIVER.SYS's.

Reboot. Watchdog will think it's running under DOS 4.0 and should have no problems. If you find the program still won't run, you have three choices: Upgrade the application, go back to an earlier version of DOS, or stop using the application.

Note that even though Watchdog should work fine using SETVER, Fischer International suggests you upgrade to its new, DOS 5.0-compatible version. If you do upgrade, be sure to use the command SETVER WDRIVER.SYS /D to remove WDRIVER.SYS from SETVER's version table.

Q. Can you explain DOS's STACKS command? I read the manual but am still not sure if I should add it to my CONFIG.SYS file.

ED KEIM DILLSBURG, PENNSYLVANIA

A. Stacks are small chunks of memory used by DOS and a few applications to manage hardware interrupts. The default setting is nine 128-byte stacks (9,128).

Unless your computer manual or the installation instructions for an application specify a STACKS setting, or an installation utility adds one, don't worry about it. In most cases, you can even use a setting of STACKS=0,0 to free up the 1152 bytes of base memory the default



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setting uses. However, some programs and device drivers may not run properly without stack space. If you run into trouble, take STACKS=0,0 out.

In the rare event that two programs require different STACKS commands, use the larger values from each program. For instance, if one program wants STACKS=10,128, and another wants STACKS=9,256, you should use STACKS=10,256.

. Our office is moving to Windows, so we want to upgrade our 16-MHz 386SX (an NEC PowerMate SX Plus) from 2MB to 4MB. Our dealer wants \$450 for NEC's upgrade board. This seems exorbitant, since on other systems such an upgrade costs less than half that. Why the big difference? Is there a cheaper alternative?

> SUSIE SANDERS NEW LONDON, NEW HAMPSHIRE

A. Over the last few years, most PC manufacturers have redesigned their systems to use standard single in-line memory modules (SIMMs). On those systems, you upgrade memory either by plugging in additional SIMMs or by replacing existing SIMMs with highercapacity ones. With SIMM prices at \$45 (or less) per megabyte and dropping, upgrades are relatively cheap.

Older systems use various kinds of proprietary memory hardware that vary from one brand to another and even-as in NEC's case-between different models from the same company. Generally, these are modules that plug into sockets on the motherboard, memory boards that plug into a special slot, or a combination of the two. These upgrades are always more expensive than using SIMMs, but there are often less costly third-party alternatives.

Though it's not always possible to find memory upgrades for older systems (especially if the manufacturer has gone out of business), we found two companies that carry upgrades for your system. They're good bets for those looking for upgrades for other old systems, too.

Before you buy a proprietary RAM

board, though, seriously consider trading in the system. Though a 16-MHz 386SX will run Windows, you're likely to find it irritatingly slow. The money you'd spend on the board, plus what you'd get for selling the old SX, would add up to a substantial down payment on a faster system.

#### WHERE TO BUY

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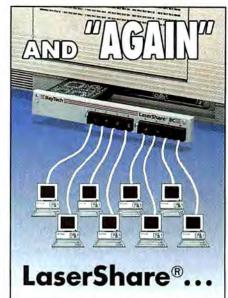
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If you have a copy of The Norton Utilities installed on your PC, you can use it to quickly find data, regardless of its file's format, thanks to Norton's Text Search program (TS.EXE). For instance, if you keep addresses in a file called ADDRESS.DOC in a directory called C:\DATA and you keep Norton programs in the \NORTON directory, you can create a one-line batch file called ADDRESS.BAT: C:\NOR-TON\TS C:\DATA\ADDRESS.DOC "%1". Once you've saved this file in a directory that's referenced in your AUTOEXEC. BAT's PATH command, you can find any name in your address file by simply typing ADDRESS name at the DOS prompt.

> Kenneth Naversen Long Beach, California



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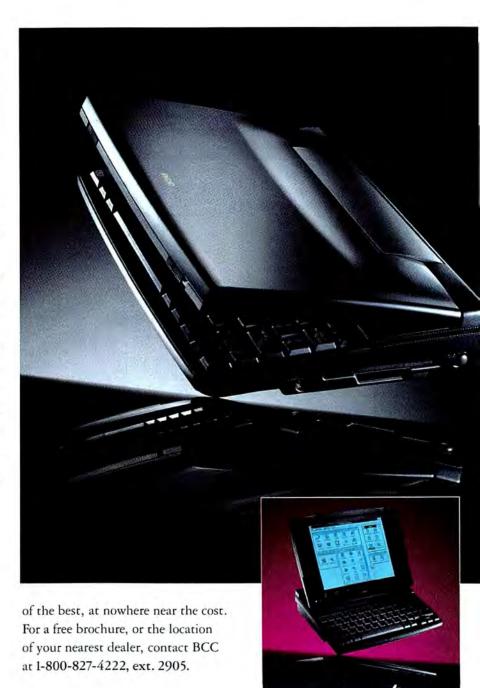


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#### From PC to TDD Redux

Our March item on how to use your PC to communicate with a TDD (Telecommunications Device for the Deaf) prompted programmer and TDD expert Norman Williams to tell us about additional options for making such a connection. ASCII-TDD and Futura-TDD are programs that let you use a conventional modem to communicate with TDDs that have ASCII capability. When used with one of the special TDD-compatible modems listed below, the programs can exchange messages with any TDD.

#### **POWER TIP NO. 255**

# Remapping <Home> and <End> in WordStar

In WordStar 5.x and later, the default assignment for <Home> duplicates <Ctrl>-QE (upper screen left), and <End> duplicates <Ctrl>-QX (lower screen right). You can remap these to have <Home> and <End> take the cursor to the beginning and end of the line, respectively.

First, make a backup of your program file. Go to the DOS prompt in your WordStar program directory, and enter wschange ws. At the main menu, type e=248 and press <Enter>. You should see a line that begins '0248 11 05 02 00 4F 02 11 18 02 00'. Press <Enter> to move the cursor under '05'. Type 13, then press <Enter> five more times to place the cursor under '18'. Type 04 followed by a period to redisplay the string; it should now begin with '0248 11 13 02 00 4F 02 11 04 02 00'. Press x, then < Ctrl>-XY to save the changes.

> Ken Smith San Francisco

#### WHERE TO BUY

#### ASCII-TDD 1.1

Technology Assessment Program
Gallaudet University
MSSD-200
800 Florida Ave. NE
Washington, DC 20002
202/544-3613 (BBS, 2400 baud), 202/6515257 (TDD), 202/651-5476 (fax)
LIST PRICE: free from BBS, \$3 by mail
Reader service no. 668

#### Futura-TDD 2.01, CM-4 (external modem)

Phone-TTY Inc.
202 Lexington Ave.
Hackensack, NJ 07601
201/489-7889, 201/489-7890 (TDD),
201/489-3323 (BBS)
LIST PRICE: software \$40, modem \$350 (includes Futura-TDD)
Reader service no. 669

#### **IBM Phonecommunicator**

IBM Special Needs Information Referral Center P.O. Box 2150-H06R1 Atlanta, GA 30301-2150 800/426-2133, 800/284-9482 (TDD) LIST PRICE: \$600 (includes software) Reader service no. 670

#### Intele-Modem (external modem)

Ultratec Inc.
450 Science Dr.
Madison, WI 53711
608/238-5400 (voice or TDD)
LIST PRICE: \$329
Reader service no. 671

#### Smart Modem SM-85 (external modem)

Krown Research
129 Sheldon St.
El Segundo, CA 90245
800/833-4968 (voice or TDD),
310/322-3202 California (voice or TDD)
LIST PRICE: \$349
Reader service no. 672

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



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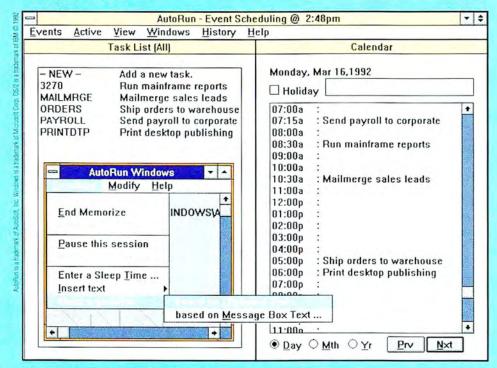
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# SPREADSHEETS (A..Z)

BY RICHARD SCOVILLE

Practical tips for building better worksheets

A lot of former 1-2-3 users are switching to Excel these days, but not all of them are taking advantage of their new spreadsheet. If you've recently made this change and you're still doing things the 1-2-3 way, you're probably wasting a lot of effort; Excel has tricks to make your job much easier. This month we'll build the budget worksheet shown in FIGURE 1, taking full advantage of Excel's features, and we'll show off Excel's outliner along the way.

To start the model, open a new worksheet file. Make sure the tool bar is visible on your screen; if it isn't, select Options • Workspace, click the box for Toolbar, and click OK. (If you're using Excel 4.0, the command is Options • Toolbars.) Now enter the label shown in A2, and click the B button on the tool bar to boldface it. Enter Total in A8, then click on the B and I tool bar buttons to bold-

face and italicize the label. Enter the labels in the range B1..C1, or as it's called in *Excel*, B1:C1.

Now let's see how Excel can really make things easier. In D1, enter 7/92; Excel will interpret your entry as a date value and format it in the mmm-yy format. Next, select D1:F1, then hold down <Ctrl> and select H1:J1; note that you've just highlighted two separate ranges (try doing that in 1-2-3!). From the menu, choose Data · Series; in the dialog box, click the radio buttons for Rows, Date, and Month, then click OK; Excel fills in the selected cells with month values calculated from cell D1. Enter the labels shown in G1, K1, and L1. To format everything in row 1 to centered bold italic, click on the 1 row label in the left frame to highlight the entire row, then on the B, I, and Center buttons on the tool bar (the Center button is the stack of centered lines directly below the 'o' in the menu bar's Macro option).

Enter the labels and values shown in B3:C7. To quickly enter some dummy data values, select D3:F3, type 10000, and press <Ctrl>-<Enter>; then highlight D4:F7, type 1000, and press <Ctrl>-<Enter> again. To format the data, select D3:F7, choose Format • Number, select the #, ##0 format from the list, and click OK. Notice that the range remains selected. To make these data values appear distinct from the formulas you're about to add, select Format • Font, click the field under Color in the dialog box, then choose dark blue from the list.

Now for the formulas. Select the range D8:F8, and click the tool bar's *Sum* button (it's labeled with the Greek letter sigma, which looks like a crooked *E*, or an *M* turned on its side—right below the 'O' in Option on the menu bar);

	A	В	C	D	E	F	G	H	1	1	K	L
1		Expense	GL-No.	Jul-92	Aug-92	Sep-92	Q3	Oct-92	Nov-92	Dec-92	Q4	Year
2	Nashv	ille District										
3		Salaries	102	10,000	10,000	10,000	\$30,000.00	10,000	10,000	10,000	\$30,000.00	\$60,000.00
4		Supplies	230	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
5		Equipment	250	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
6		Lease Pmts	780	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
7		Advertising	875	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
8	Total			\$14,000	\$14,000	\$14,000	\$42,000.00	\$14,000	\$14,000	\$14,000	\$42,000.00	\$84,000.00
9												
10	Green	sboro District										
11		Salaries	102	10,000	10,000	10,000	\$30,000.00	10,000	10,000	10,000	\$30,000.00	\$60,000.00
12		Supplies	230	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
13		Equipment	250	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
14		Lease Pmts	780	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
15		Advertising	875	1,000	1,000	1,000	\$3,000.00	1,000	1,000	1,000	\$3,000.00	\$6,000.00
16	Total			\$14,000	\$14,000	\$14,000	\$42,000.00	\$14,000	\$14,000	\$14,000	\$42,000.00	\$84,000.00
17												
18	Grand	Total	\$28,000	\$28,000	\$28,000	\$84,000	\$28,000	\$28,000	\$28,000	\$84,000	\$168,000	

FIGURE 1: Excel's assortment of shortcuts makes creating this budget worksheet an easy job.

#### SPREADSHEETS

a flashing border will appear around D3:D7 while the formula bar displays = SUM(D3:D7). Press < Ctrl>-<Enter>; a set of formulas will appear in the range. With one difference, you can repeat the process for the G3:G8 totals: When you click the Sum button, the flashing box will incorrectly surround C3:F3 and you'll have to reselect the correct D3:F3 range. Next, highlight the D8:F8 and G3:G8 ranges together and use Format•Number to format them as \$#,##0);(\$#,##0).

Now copy the data and formulas for the fourth quarter: Select D3:G8 and press <Ctrl>-<Insert>; then select H3 and press <Shift>-<Insert>. In L3, enter the formula =SUM(K3,G3). Format the cell to \$#,##0\_);(\$#,##0), select the range L3:L8, and in the menu choose Edit\*Fill Down.

Now build the section for the Greensboro district. Select A2:L8 and press <Ctrl>-<Insert>; then select A10 and press <Shift>-<Insert>. Enter Greensboro District in A10 and boldface it. Enter the label in A18 and make it bold, and, finally, enter =D8+D16 into D18, format it as \$#,##0\_);(\$#,##0), select D18:L18, and use Edit • Fill Right to copy D18's formula into E18:L18.

#### **Automatic Column Widths**

n 1-2-3, setting column widths can be a repetitious chore, but Excel can automatically set your column widths en masse. To set most of the columns to their proper width, click on the B in the frame above the worksheet, and drag to highlight columns B through L. Doubleclick on the right border of any of the selected column labels, and Excel will adjust the width of the columns to accommodate their longest entries. Because column A doesn't have to be as wide as its longest entry, adjust its width manually: Drag the border between the A and B column labels to the left until you've got a narrow column A.

Adjusting the height of rows 9 and 17 is a similar process. Click on 9 in the frame at the left edge of the sheet, then hold down <Ctrl> and click on 17 to select the two rows. Drag the border at the bottom of either row label to adjust the height of both of them.

#### **Excel Shortcut**

USE OUTLINING TO SELECT LARGE RANGES by Ralph Soucie

Outlining not only helps you organize your spreadsheet work, but it's helpful when you need to copy large ranges.

Let's use Richard Scoville's budget worksheet (FIGURE 1 in the accompanying article) as an example. Collapse the outline by clicking the 1 button for rows and the 2 button for columns. The worksheet now displays only the quarterly totals. Copy the range A1:L18 to cell A20. If you expand the outline to show the monthly totals again, you'll see that Excel has copied all the budget

amounts, monthly and quarterly, to the paste range.

But what if you want to copy only the quarterly totals, perhaps to create a worksheet for long-range financial planning? Select A1:L18 again, then click the Select Visible Cells button on the tool bar (it looks like a sideways cross and is directly below the Data menu's 't' in Data on the menu bar). Now perform the copy operation. Excel copies only the "visible" cells (the quarterly numbers) to the paste range.

#### No Pane, No Gain

I f your worksheet is larger than the screen, it's easy to get lost when your row and column labels scroll off the sides. That's where panes and outlining come in.

Panes let you keep the labels in row 1 and in columns A through C on screen as you move around the sheet, much as titles do in 1-2-3. To create panes, move the mouse pointer to the small black bar just above the arrow at the top of the vertical scroll bar. The pointer will turn into two horizontal lines with up and down arrows. Drag the pointer down until the gray line that appears is over the border between rows 1 and 2; when you release it, you'll see two copies of row 1. Drag the corresponding black bar at the left end of the horizontal scroll bar to the boundary between columns C and D. Select Freeze Panes from the Options or Windows menu, depending on whether you're using Excel 3.0 or 4.0. Now, as you scroll around the worksheet, the row and column labels remain visible.

When you're preparing a budget, your focus constantly shifts in and out; sometimes you want months, other times quarters. Wouldn't it be nice if your spreadsheet could zoom in and out to match your perspective? Take a look at SCREEN 1. Thanks to *Excel*'s outliner, the monthly detail has been collapsed to show only quarterly and yearly totals.

To set up the outline, select the entire worksheet by clicking on the box where the column and row frames intersect, directly to the left of the 'A' and above the '1'. Then click the Show Outline Symbols button on the tool bar: It's just under the 'D' in Data on the menu bar (in release 4.0, select Formula • Outline and click OK in the dialog box). A message box will appear on your screen, offering to create an outline; click OK.

You now have three-level outlines both vertically and horizontally, represented by sets of '1', '2', and '3' buttons at the top of the left margin and at the left edge of the top margin, and by the level bars within the margins. To collapse an outline level and hide its detail rows or

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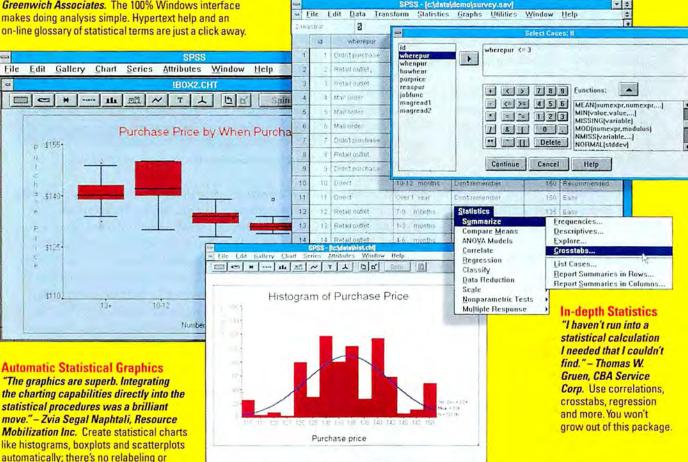
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columns, click on one of the numbered buttons or on the minus signs in the left or top margin. For example, to make your screen look exactly like **SCREEN 1**, click the '3' button for rows and the '2' button for columns.

Excel's graphical interface and intelligent shortcuts make the chore of building your worksheets almost a game. And the outliner makes it easy to view your data in the most meaningful way. In our next column, we'll show you the simple way to consolidate multiple Excel budget worksheets into a single summary sheet.

Q. I'm using 1-2-3 for Windows to store a list of bibliographic references. To save space, I put all the authors for each article into the same data base field, like so:

A

- 1 AUTHOR
- 2 Brophy, LS and GH Heichel
- 3 Lory, JA and MP Russelle

I need to search for records by authors' last names. It's easy to find Lory: I just use Lory\* in the criteria range. But how can I search for Russelle or Heichel?

> MARKAS DABACH St. Paul

A. I'll assume you know how to use the Data • Query commands and have set up the appropriate Input, Criteria, and Output ranges. In your example, you'll also select cell A1 and use the /Range • Name • Labels • Down command to name cell A2 'AUTHOR'. To find the

cells that contain an author's name in any version of 1-2-3, enter the name you're searching for in cell C1, then enter the following logical formula in your criteria range: #NOT#@ISERR(@FIND(\$C\$1,AUTHOR,0)). When you use Da-

-				BUDO	SET.XLS			8
	1 2 3				•	•	=	2100
123	100	A	В	C	G	K	Long	
	18		Expense	GL-No.	Q3	Q4	Year	٦
- 7	2	Nas	shville District					
11	3		Salaries	102	\$30,000.00	\$30,000.00	\$60,000.00	
$[\cdot]$	4		Supplies	230	\$3,000.00	\$3,000.00	\$6,000.00	
•	5		Equipment	250	\$3,000.00	\$3,000.00	\$6,000.00	
•	6		Lease Pmts	780	\$3,000.00	\$3,000.00	\$6,000.00	
$  \cdot  $	7		Advertising	875	\$3,000.00	\$3,000.00	\$6,000.00	
	8	Tot	tai		\$42,000.00	\$42,000.00	\$84,000.00	П
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	10	Gre	ensboro Dist	rict				П
[ r · [	11		Salaries	102	\$30,000.00	\$30,000.00	\$60,000.00	П
• [	12		Supplies	230	\$3,000.00	\$3,000.00	\$6,000.00	
$  \cdot  $	13		Equipment	250	\$3,000.00	\$3,000.00	\$6,000.00	
1 - [	14		Lease Pmts	780	\$3,000.00	\$3,000.00	\$6,000.00	
•	15		Advertising	875	\$3,000.00	\$3,000.00	\$6,000.00	
	16	Tot	tai		\$42,000.00	\$42,000.00	\$84,000.00	
2 700	1/	-	1000	-				S18

SCREEN 1: Excel's outliner lets you tuck away file details.

ta • Query • Extract, you'll get the data you want in your Output range.

Here's how it works: The @FIND() function yields the starting position of one string of characters within another; in this case, it finds the name you entered in C1 within the Author field, beginning at position zero. The absolute cell reference on C1 is required whenever a criterion formula refers to a cell outside the data base range. If the first string is not found within the second one, @FIND() yields ERR, and the @ISERR() function is true. The logical operator #NOT# reverses its logical value. In other words, the formula is true whenever the name you entered in C1 can be found in the Author field.

Mail your spreadsheet questions to Spreadsheets (A..Z), PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Spreadsheets (A..Z); CompuServe, 72341,2727; MCI Mail, 357-4517; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge unpublished materials.

Richard Scoville and Ralph Soucie are contributing editors for PC World.

# Spreadsheet Toolbox

TEMPLATES THAT MEAN BUSINESS

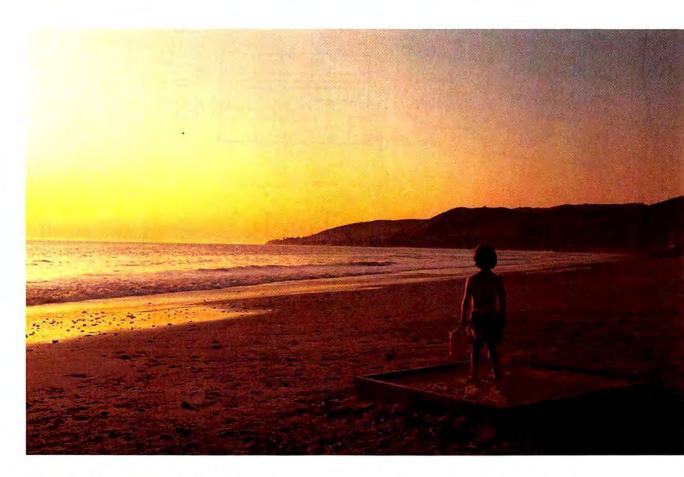
astering your spreadsheet program's commands and procedures isn't all that difficult; building models that answer important questions is. For years financial professionals and business school students have relied on the spreadsheet columnists at CFO (Chief Financial Officer) magazine—Jack McGrath, Jason O'Neal, and others—for expert advice on topics such as cash flow, securities management, taxes, inventories, capital investment, break-even analysis, and company valuation.

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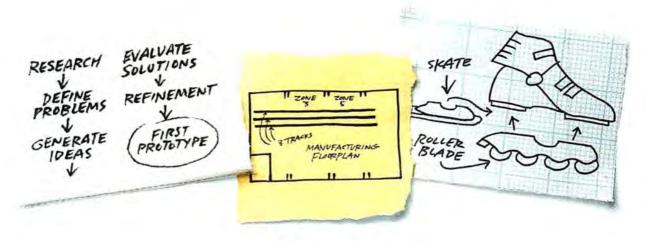
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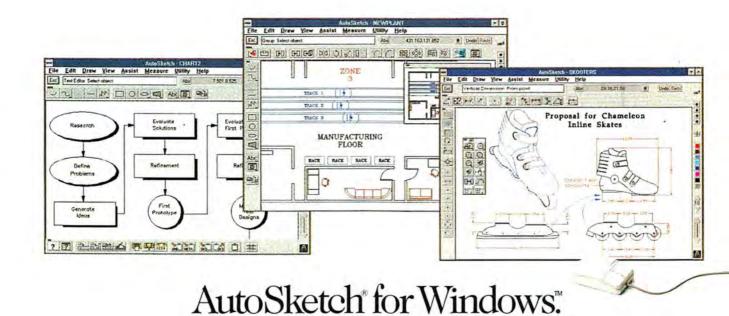
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## WORD PROCESSING CLINIC

BY GEORGE CAMPBELL

Tips for getting the most out of your word processor

a lot of other software. I can't make any sense of the way WordPerfect handles moving the cursor. The keystrokes that work in other applications work differently in WordPerfect. Can you offer a quick reference?

DAN JEROME BURNSVILLE, MINNESOTA

A. You're absolutely right; WordPerfect uses a nonstandard set of keystrokes for cursor movement that involves using the <Home> key to navigate. Here's the concept:

Press a cursor key by itself to move the cursor one unit—that is, one character left or right or one line up or down—at a time. The <Page Up> or <Page Down> key moves the cursor to the beginning of the previous or next print page.

Press < Ctrl> plus a cursor key to move by word or to the beginning of a paragraph. < Ctrl>-< Right>/< Left> moves a word at a time. < Ctrl>-< Up> moves to the first character of the current paragraph (or if the cursor is on the first character of the current paragraph, to the start of the previous paragraph). < Ctrl>-< Down> takes the cursor to the first character of the next paragraph.

When you press <Home> followed by a cursor key, WordPerfect will jump to the extremes of the visible editing screen. For example, try pressing <Home><Up>/<Down> to move the cursor to the first or last line of the current screen (or press the number pad's <Plus> or <Minus> key instead as a shortcut). If you're already on the first or last line of a screen, press

<Home><Up> or <Down> to move to the first or last line of the previous or following screen. Pressing <Home> <Right>/<Left> moves the cursor to the last or first character at the edge of the screen.

Press < Home > twice followed by a cursor key to move the cursor through the entire document's text. < Home > < Home > < Cursor Right > / < Left > moves the cursor to the end or beginning of a line, even if it extends off the screen. < Home > < Home > < Up > / < Down > jumps to the top or bottom of your text but ignores WordPerfect's formatting codes.

Finally, press < Home > three times followed by < Up > or < Down > to jump to the beginning or end of the entire document, beyond any WordPerfect codes.

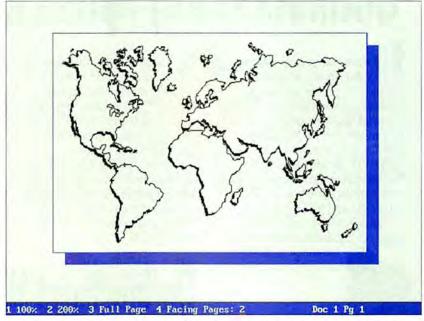
Q. Is there a way to add shadowed borders around clip-art images to give them a three-dimensional look in WordPerfect 5.1?

> JEFFREY MARTIN SUNNYVALE, CALIFORNIA

A. Happily, WordPerfect anticipated your need. You can't set border styles when you import a graphic file, but here's how to do it once the image is in your document:

First, select the image: Press <Alt>-<F9>FE, type the number of the figure (you'll see it in your document), and press <Enter> twice.

Next, set the borders for that image by pressing <alt>--<f9>FOB. This selects the Border Style options in the menu. You'll see a list of border styles at the bottom of your screen.



By adding shadowed borders to graphical images in WordPerfect 5.1, you can lend them a three-dimensional look that will punch up your pages.

To produce a typical shadowed border, type SESE. WordPerfect automatically offsets thick and extra-thick lines to produce a shadow effect. When you're done, press < Enter> to return to the edit-

CHARACTER	CODE
"	0147
"	0148
	0145
1	0146
=	0150
=	0151
**	0171
<b>39</b>	0187
0	0169
TM	0174
¢	0162
•	0149

TABLE 1: To insert a special character in any Windows word processor, hold down the <Alt> key and type the character's code number on the numeric keypad.

BUFFERS

ing screen. If you want to see a preview of your page, press < Shift>-< F7>V.

. I use Adobe Type Manager with Ami Pro 2.0. I need to produce typographical characters, such as true quotation marks, but they're not available on the keyboard. Is there a way to get tupographical characters in Ami Proor Windows, for that matter?

> JONATHAN BALSAM LAWRENCE, NEW YORK

. If you use Windows there's an easy solution that will work with any Windows word processor. Windows uses the ANSI character set, which contains characters not available with a single keystroke, including the typographical characters you need. These characters are the same whether you use Adobe Type Manager or the True-Type fonts that come with Windows 3.1. To insert a special character, make sure < Num Lock > is on, then hold down the < Alt > key while you type the appropriate number from TABLE 1 on the numeric keypad. Release < Alt> to insert the character. If you use any of these characters frequently, use your program's macro tools to record a hot-key macro containing the keystrokes. To access a typographical chart in Windows 3.1, just click on the Character Map icon in the Accessories group of Program Manager, copy the character you want, and paste it into your document.

Mail your word processing questions to Word Processing Clinic, PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Word Processing Clinic; CompuServe, 71571,222; MCI Mail, GCAMPBELL; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge unpublished materials.

George Campbell is a contributing editor for PC World.

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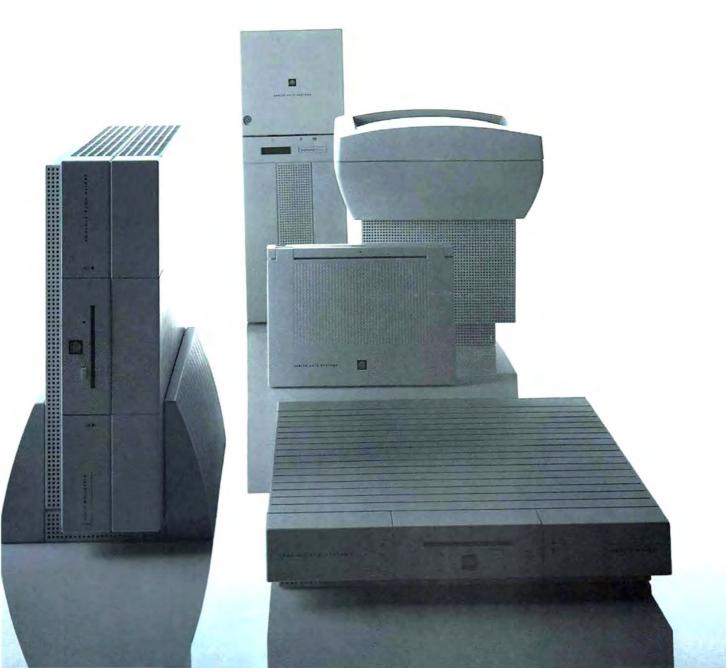


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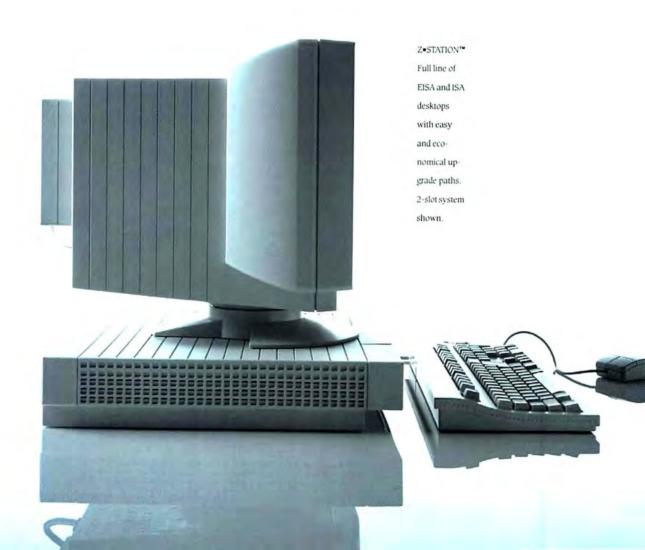


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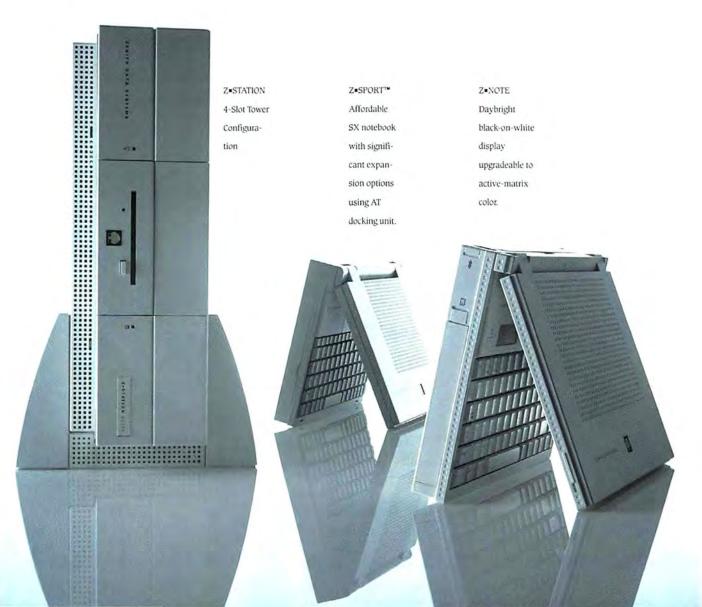


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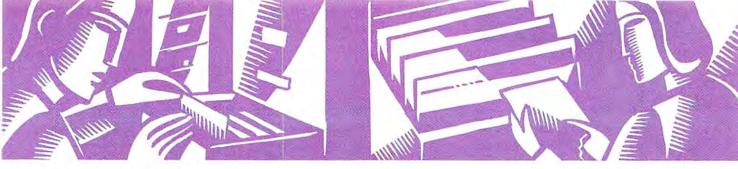


#### ZENITH DATA SYSTEMS

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#### DATA BASICS

BY CELESTE ROBINSON

Tips and techniques for managing your data

When I use the dBASE III MOD-IFY COMM command to open a large program file, I get the message 'File too large'. Is there some way to tell dBASE to use a larger file?

> RENGY J. VERGHESE DAYTONA BEACH, FLORIDA

A. You can't tell *dBASE* that you need to edit a bigger file, but you can tell it to use another text editor, one with a larger capacity. Here's how to do it: Add a statement to your CONFIG.DB file that says **TEDIT** = *editor*; where *editor* is your preferred text editor's path and file name. To use your favorite text editor when working with memo fields, also add the line **WP** = *editor* to your CONFIG.DB file.

Although program size isn't a problem in dBASE IV, you may still prefer your own editor to the one built into the program. The same CONFIG.DB commands will do the job.

• I keep a list of projects I'm working on in a Paradox table called PROJECTS; I also keep a CLIENTS table, and I use the client number to link these tables together.

In order to make sure that I don't create a project for a nonexistent client, I've set up PROJECTS' 'Client #' field with a table lookup validity check to the CLIENTS table; this way, Paradox won't let me enter a client number into PROJECTS that's not already in CLIENTS, and I can easily bring up the CLIENTS table for lookup purposes if I can't remember a client's number:

This all works fine, but if I'm adding a project for a new client, Paradox won't allow me to create the new client record when I bring up the CLIENTS lookup table. Do you know of any way to get around this?

> DELIA BROWN NEWARK, NEW JERSEY

A. As you've discovered, when you display one table for lookup purposes while entering data in another, you can't add a record to the lookup table. But don't heave a sigh of resignation yet; you can set up either a multitable form or a simple script to give yourself an editable lookup table.

The script is the easier way to do this. Copy LISTING 1 to an ASCII text file called ED-LOOKUPSC in your working directory. To run the script and edit PROJECTS, press <Alt>-<F10>, select Play, type EDLOOKUP, and press <Enter>. The script will bring up PROJECTS and CLI-ENTS, with the cursor ready to edit a new record in PROJ-ECTS. When you press <F1>, the cursor will move to CLI-ENTS, where you can select, edit, or create a record. Pressing <F2> will bring you and the current 'Client #' back to PROJECTS.

To use the script with other tables, replace the text strings 'Client #', 'Clients', and 'Projects' in the first three lines of the script with the names of your own key field and tables. The key field must have the same name in both tables.

If you prefer to do your editing in full-screen forms, you can skip the script and instead design a single form that will do much the same thing. First, use Forms • Design to create a form for CLIENTS, either single record or multirecord, that uses only a small amount of screen space. Next, create a one-page, one-record form for PROJECTS. As you place your fields, leave space on the screen for inserting the CLIENTS form. Once the PROJECTS fields are where you want them, select Multi•

```
= "Client #"
    "Clients"
EDIT "Projects"
IF NOT ATLAST()
THEN END
DOWN
WHILE True
 WAIT TABLE
  PROMPT "F1: Client
                       F2: Do_It"
UNTIL "F1", "F2"
  CASE retval = "F1" :
   IF FIELD() = keyf
    THEN UPIMAGE
     WAIT TABLE
      PROMPT "F2: Select record"
     UNTIL "F2"
     ch = "val
     EXECUTE ch
     DOWNIMAGE
     ch = "[" + keyf +
     EXECUTE ch
    ELSE KEYPRESS "F1"
  CASE retval = "F2" : DO_IT!
   QUITLOOP
  ENDSWITCH
ENDWHILE
```

LISTING 1: This Paradox script gives you an editable lookup table. Alter the first three lines to make this script match your own tables.

Table • Place • Unlinked. When prompted for a table, type or select CLIENTS and pick your new CLIENTS form. Paradox will prompt you to position the CLIENTS form in the space you left blank for this purpose. Once this is done, press <F2> to save your work.

With this multitable form, you'll be able to add new clients in the middle of adding projects. If you're working in Edit mode, press <F3> to move the cursor from PROJECTS to CLIENTS; when you're finished adding a new client, press <f3> or <f4> to move the cursor back to the PROJECTS part of the form. If you're in Coedit mode, follow the same procedure with one exception: After adding a new client, press < Alt> -<L>, then <F3> or <F4> to return to PROJECTS. Unfortunately, using this form in Data Entry mode will only lead to frustration; when you're in the PROJ-ECTS side of the form, Paradox won't know about the new records you've added to CLIENTS.

Q. I'm using DataEase to manage my new list of business contacts, and I prefer all the names to be uppercased. Is there some way I can make sure that they're all entered that way?

> LEN MONROE GIG HARBOR, WASHINGTON

A. It's pretty simple to ensure that all entries in a field are uppercase, once you find the place to do it. Start DataEase and open the data base that includes your CONTACTS form. From the main menu, press 1 to go to the Form Definition menu, then 2 to modify your form; select contacts (or whatever your form is called) from the resulting list. This will bring you to the Forms Design screen.

Move the cursor to the field in question and press <FIO>. DataEase will now display the Field Definition screen. Move the cursor to the 'Derivation Formula' field and type UPPER(fieldname), where fieldname is the title of the field you're currently defining. Make any other changes you want to this field def-

inition, and press <F2> to return to the previous screen. Press <F2> again to save the form, N when DataEase asks whether you want to save the form under a new name, and <Esc> to return to the main menu. From now on, when you enter data in that field, it will initially appear on screen in whatever case your keyboard is in, but DataEase will automatically convert the text to uppercase when the cursor leaves the field.

Mail your questions to Data Basics, PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Data Basics; CompuServe, 74055,412; MCI Mail, 179-3813; or 415/442-1891 (fax). PC World pays \$50 for published questions and tips. Sorry, we cannot acknowledge unpublished materials.

Celeste Robinson is an information systems consultant and the author of several data base how-to books.

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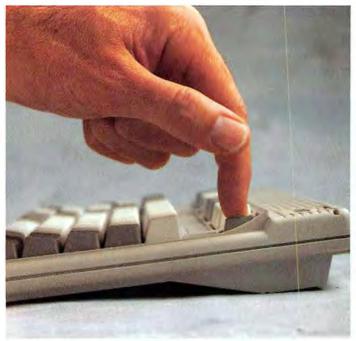


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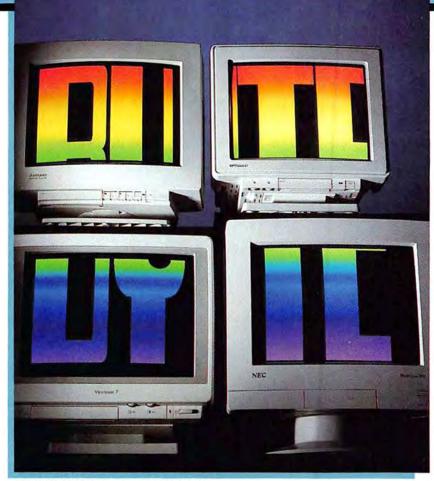
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## PUBLISHING & PRESENTATIONS

BY RICHARD JANTZ

Expert advice for creating high-impact documents and presentations

How many columns should your newsletter have? Although a three-column layout is most common, a two-column format requires less planning and is easier to produce, making it a good choice for busy publishers. The trick with a two-column newsletter, where articles simply flow one after the other, is to keep the layout from becoming overly symmetrical and monotonous. Adding contrast makes a newsletter more readable.

To illustrate this principle, we've redesigned the first page of an 8½-by-11-inch, four-page newsletter published by the Todd Organization of Chicago. The Todd Report covers news about executive compensation programs and is distributed to thousands of corporate managers throughout the country. For this type of document and audience, a structured two-column format using justified type lends authority to the newsletter's no-nonsense material.

The basic problem with the original newsletter, however, is its lack of contrast. Crowded copy fills the page, leaving scant white space to invite the eye into the text. The headlines are too blocky and dense, and the pull quote doesn't stand out effectively from the surrounding text.

The goal of our redesign was to make the newsletter more visually appealing without changing its basic two-column format. To do this, we revamped the newsletter's nameplate, or banner, by incorporating the company's eye-catching logo and using reversed type—white letters on a black background—for the issue identification line. Moving the issue identification line closer to the

publication title and slogan helped anchor the nameplate and separate it from the text.

Resetting the headlines in upper- and lowercase provides better contrast and makes them easier to read. To give the pull quote more impact, we placed it slightly in the left margin and used white space to separate it from the text. We also chose a different second article from the inside pages, one that included a bar chart, adding another much-needed graphic element to the front page.

Finally, we changed the paper stock. Instead of the original *Todd Report*'s dark-blue ink printed on plain gray paper, we recommended a paper with a texture or pattern, such as a speckled recycled stock. If your newsletter could use more visual variation, don't forget that changing your paper stock is an excellent way to add dramatic contrast at little or no additional cost.

Mail your publishing and presentation questions to Publishing & Presentations, PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Publishing & Presentations; CompuServe, 7405,412; MCI Mail, PC World Editorial; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge unpublished materials.

Contributing Editor Richard Jantz is a computer publishing consultant in Berkeley, California. Larry Westdal, a graphic designer with Westdal Design Associates in Berkeley, California, also contributed to this article.

- 1 The publication's title and slogan are innocuously symmetrical in the original. Adding the company's lively logo makes the nameplate more dynamic and immediately calls attention to the page.
- 2 The original 16-point Helvetica Black Italic headline is increased to 22-point Helvetica Black. Adding white space above the head and setting it in upper- and lowercase, two columns wide, makes it easier to read and amplifies its importance.
- Carge capital letters, set two lines deep in 30-point Helvetica Black, serve a dual purpose: They add contrast to the page and help distinguish the entry point to each new article.
- The centered pull quote is now flush left, increased from 10-point Helvetica Black Oblique to 12-point Helvetica Condensed Black Oblique. Moving it into the left margin creates a much stronger visual element on the page.
- An article with a graphic is more visually interesting than an article without one. We selected a different article for the front page so we could position a strong graphic element to attract readers.
- We differentiated secondary headlines from the main head by setting them slightly smaller (in 18-point Helvetica Black) and making them only one column wide.
- Flush-left subheads produce a cleaner, more consistent look than centered ones.
- Reversed type makes the line pop out and unifies it with the company logo.



AFTER



#### THE TODD REPORT

DEVELOPMENTS IN EXECUTIVE BENEFITS

UCED BY THE TODO ORGANIZATION W VOLUME 7, NO. 2

#### **Redeployment Stretches Benefits Budget**

n the early years of the 1990s, it seems clear that U.S. business is proceeding cautiously. After the excesses of the 1980s, corporations now are insisting on a return to the basics. Particularly with so many disappointing interim earnings reports, the belt tightening and corporate overhead control of the past 12-18 months seem likely to continue for some time to come

Even after significant cuts in overhead budgets in 1990 and 1991, there is a reluctance to increase these budgets at this time. Todd Organization consultants have found that corporate leaders want the highest quality programs practical, but would prefer to meet their needs by redeploying the resources already allocated in their current budgets

#### Impact on Executive Benefits

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These corporate budgetary pressures certainly extend to executive benefits. For many corporations, it has been several years since they have significantly im-proved their executive benefits. And during that same period, the performance of stock option plans, phantom stock plans, equity plans, and other wealth accu-mulation vehicles has been restricted by the effects of the recession on business and profits

Because of this, even a modest improvement in an executive benefit today might well have a dispropor-

tionately beneficial effect on the morale of senior executives, most of whom must have doubts about their future wealth accumulation prospects. What's more, such enhancements can be accomplished with-in current budgetary restraints by rede-

ploying already budgeted funds more cost-effectively. A good example is group life insurance.

Virtually every corporation has a group life insurance program which provides term life insurance to its executives. In recent years, the value of this perquisite has grown until today \$500,000 policies are not at all unusual. The executives have this insurance coverage until they retire or leave the company, and usually they pay nothing for it.

However, the executives do pay a price for this insurance. They don't pay their employers or the insurance company for this coverage, it's true, but they pay the IRS a substantial amount. The IRS considers that if the employer pays the premiums for life insurance above \$50,000, the executive is receiving imputed income and must pay income tax on it. For an executive in his sixties, that involves a tax bite of several thousand dollars a year.

#### Real Costs of Group Life Insurance

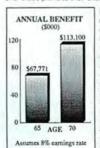
That adds up. If a typical 45-year-old executive has this group term coverage until he retires at 65, he will pay the IRS \$25,000 in income taxes on the premiums for \$450,000 of insurance. And during this period, the corporation will be paying out \$\$5,000 in premiums. That's a total of \$120,000. Moreover, since only 13.6% of 45year-old males are actuarily predicted to die before they they are 64, this insurance has a value of only \$61,200 (13.6% x \$450,000). This constitutes quite expensive protection.

continued on page 4

O

#### **Bridge SERP Builds** 401(k) Benefits

or very good reasons, the 401(k) plan has be-come the most popular qualified retirement plan. Today, the vast majority of major U.S. corporations offer these plans to their entire workforce.



Effect on 401(k) benefit by deferring payout.

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continued on page 3

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## **COMMUNICATIONS Q&A**

BY JUDY HEIM

On-line resources for business and professional users

Q. Is it really necessary to turn off my modem and disconnect my PC and modem from the telephone during a thunderstorm?

> ANDREW DUGAN BOWLING GREEN, OHIO

A. Leaving your PC on the phone during a thunderstorm is like using a popcorn popper in the bathtub: Errant volts shooting through the phone line can fry both your modem and your PC. What's worse, whether the PC is actually on the phone when lightning strikes doesn't make much difference, nor does it take a direct zap to render a modem senseless. Phone line disruption from a nearby ground strike is all it takes to turn your collection of costly, interconnected electronics into a mass of costly, interconnected toasted marshmallows.

Special phone-line surge protectors, available at office supply stores, offer some protection, as do power-strip surge protectors that include jacks for your phone—but they're hardly fool-proof. (Your phone company may say they have special antilightning talismans screwed into their switching equipment that will protect your hardware, but these aren't foolproof either.) The best thing to do when clouds start rumbling is unplug the phone cord from the modem as well as the modem from the power outlet. You'd be wise to unplug the PC as well.

Q. I want to send an E-mail message to a friend on CompuServe, but I don't know his user ID. Is there any way I can look it up?

> LARRY SUNDANCE BAYONNE, NEW JERSEY

A. Yes, there is: Type GO DIRECTORY. After offering a few basic options, the service will ask for a last name; once given, it will list all the members that match. If there are a lot of members with that name, CompuServe will ask for a first initial, too. You can also search for company names.

Q. Our rental car agency is planning to purchase a network to link four of our local outlets. We talked to four network consultants about this. Three of them told us that we could use dialup phone lines, but the fourth said that we needed leased lines. What do you recommend?

TED LANGO MILWAUKEE, WISCONSIN

A. Expensive, privately leased phone lines are much faster than dial-up, public lines, so you have to ask yourself how much you're willing to pay for performance. The top speed at which you can communicate safely on a regular phone line is 14.4K baud, while leased lines let you cruise at 56K baud and up. But leased lines cost \$2000 to \$2500 each to install, plus \$500 to \$800 a month in maintenance fees. Compare that to a conventional phone bill, especially one devoted to local calls. In other words, unless you're running a large-scale, fullfledged network across long distances and have a large-scale, full-fledged budget to match, warp-speed leased lines don't make sense.

Are dial-up connections as clean as leased lines? Contrary to myth, yes, thanks to today's error-correcting modems. If you're still uneasy about using modems and dial-up lines, give them a shot for a month: Modems don't cost much.

If you go with public lines, you have to decide whether to keep the phone links between your network sites alive and open 24 hours a day. This gives you real-time contact, but your local phone company may sock it to you in extra charges. If your phone company bills calls by duration, or if your outlets are scattered enough to require toll calls, you'll save money with a network where the nodes dial each other up periodically to swap data.

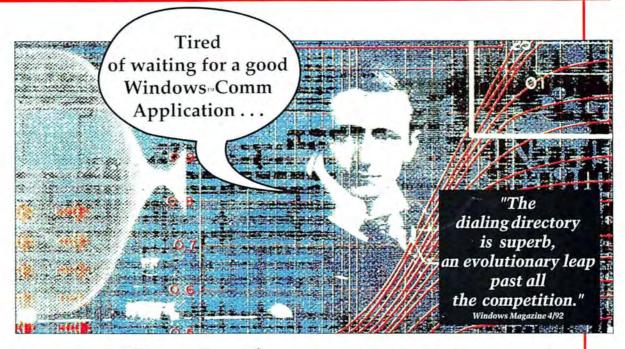
Lucky for you, the Milwaukee area has no intramunicipality-call tariffs or call-duration billing. You'll be able to keep all your nodes continuously connected around the clock for only \$21.16 per phone line per month. What a deal! Doing the same in, say, New York, would cost \$498.04 per phone line plus tax.

(As we went to press, Mr. Lango informed us that he chose to go with dial-up, public lines and that they're working great.)

Mail your communications questions to Communications Q&A, PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Communications Q&A; CompuServe, 75300, 713; Internet, 3127737@mcimail.com; GEnie, JUDY.HEIM; MCI Mail, 312-7737; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge unpublished materials.

 $\begin{tabular}{ll} \it Judy \it Heim is a contributing editor for \\ \it PC \it World. \\ \end{tabular}$ 

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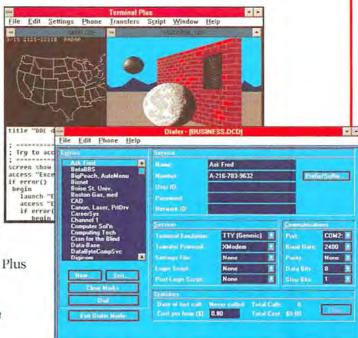
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## WINDOWS WORKSHOP

BY SCOTT DUNN

Practical answers to your questions about Windows

Q. When I first installed Windows, it started with the Program Manager window open. I have since installed utilities such as hDC FirstApps and PC Tools 7.1. Now Program Manager comes up as an icon at the bottom of the screen (along with various icons from my utility programs). How can I keep the utilities displayed as icons but have Program Manager's window open when I start?

CHARLOTTE CHAMITOFF DERBY LINE, VERMONT

A. In Windows 3.0, Program Manager always begins as an open window unless an application is listed on the "run=" line of the WIN.INI file, in which case, Program Manager will appear as an icon. Apparently, one or more of your utilities was added to the "run=" line during installation.

To fix this problem, make a backup copy of WIN.INI, then open that file in Notepad or, even easier, in your System Configuration Editor (SYSEDIT). To get to SYSEDIT, select File • Run in Program Manager, type SYSEDIT, then click once on the WIN.INI window to bring it to the front for editing. Look for the line beginning "run=" near the beginning of the file. Select everything following the equal sign, cut it, and paste it at the end of the "load=" line. (Make sure there is a space between the portion you paste and anything that was previously on the "load =" line.) Save WIN-.INI, exit, and restart Windows.

If you upgrade to Windows 3.1, you'll no longer need to list start-up programs on the "run=" or "load=" lines. You can just drag icons into Program Manager's StartUp group, which will launch them

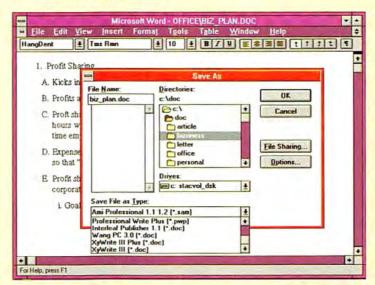
automatically. If for some reason you want Program Manager to start minimized, simply select *Minimize on Use* from the Options menu.

Q. I love being able to paste Corel-Draw 2.0 pictures into Word for Windows 2.0. But now that I've got Windows 3.1, I've discovered object linking and embedding (OLE), and I'm envious. Word for Windows' own drawing program lets me "embed" pictures for easy updating, but it isn't powerful enough for what I need to do. Is there some way around this, or will I have to wait until my boss springs for a different drawing application?

MARIAN WALKER VIENNA, VIRGINIA

A. You can simulate OLE's capabilities with applications that aren't necessarily OLE-aware, though only you can

#### **Windows Toolbox**



The latest upgrade of Windows Word for Word, the popular file-conversion utility, now works with Word for Windows. Installation is a breeze: Just copy the desired DLL files to your Word for Windows directory and see the new filters appear in the Open and Save As dialog boxes. Windows Word for Word supports more than 30 file formats and retails for \$79.95. Users of other versions may upgrade for \$39.95 from Mastersoft, Inc., 6991 E. Camelback Rd. #A-320, Scottsdale, AZ 85251; 800/624-6107, 602/970-0800.

Reader service no. 801

decide whether it's going to be worth all the trouble you have to go through.

The solution rests with Object Packager, a utility that comes with Windows 3.1. To create an embedded CorelDraw drawing for Word for Windows or any other OLE "client" application, first create your drawing in CorelDraw. Save the file, then select and copy it to Windows' Clipboard. Next, start Word for Windows, open your document, and position the cursor where you want your picture to appear. From the Insert menu, choose Object. In the Object dialog box, choose Package and select OK. This launches Object Packager.

From Object Packager's File menu, choose *Import*. Select your picture's file name, then select *OK*. The Object Packager displays a *CorelDraw* icon in the Appearance window (left) and 'Copy of YOURFILE.CDR' (or whatever the name) in the Content window (right).

Click in the Appearance window, then choose Paste from the Edit menu (or press <Shift>-<Insert>) to paste your CorelDraw picture into this window. Your object is now complete, but to finish the job, you still need to embed the object in your word processor. Since you launched Object Packager from Word for Windows, you simply choose Update from Object Packager's File menu. Then close Object Packager.

(Tip: If you launched Object Packager from Program Manager, the Update command is grayed out. No problem. Just choose *Copy Package* from the Object Packager's Edit menu, then paste your object anywhere you like in your document.)

Now suppose you need to revise the picture. Just double-click the image in your document to launch *CorelDraw* with your picture loaded and ready to be edited. Make your changes and, as before, save the file, select it, and copy it to the Clipboard. Then exit.

With the picture still selected, choose Package Object from Word for Windows' Edit menu. The Object Packager opens with your picture loaded. Click in the Appearance window and choose Paste from the Edit menu (or press <\shift>-<Insert>). Then exit Object Packager, which will prompt you to update your document; click Yes.

You may find it more convenient to choose Word for Windows' Package Object command before you edit the CorelDraw picture. Once Object Packager is launched, you can access your CorelDraw picture simply by double-clicking the file name in Object Packager's Content window. Then save and copy (in CorelDraw), and paste into the Appearance window (in Object Packager). Finally, exit and update as explained before.

One note: When you open your picture from within Word for Windows (or Object Packager), don't expect the file name to be the same as the original. Object Packager creates a copy of your picture. The original is independent of further updates, while the new copy is the one that's embedded in your Word for Windows document.

If all these steps seem like an annoyance, you can automate repetitive steps with a Recorder macro. Your alternative is to get the boss to shell out for a drawing application that supports OLE. And if you want to stick with *Corel-Draw*, there's good news. Version 3.0, a \$149 upgrade, has been released, and it's an OLE server.

When I try to run certain DOS applications in a window in 386-enhanced mode, I get a message: 'You cannot run this application in a window or in the background'. Other applications work just fine in a window. Any suggestions?

MUKUND S. CHIPLUNKAR DUKHAN, QATAR

A. The problem is that your DOS program is using VGA or EGA graphics, which Windows 3.0 cannot display in a window. You have three alternatives. First, you can switch to full-screen display by pressing <a href="#">Alt>-<Enter></a>. To make sure the program runs full screen every time, launch the PIF Editor, open the PIF that starts the application in ques-

tion, and select Display Usage's Full Screen option.

If you insist on running a DOS application in a window, consider dropping down to text mode (as opposed to graphics mode) if your application supports it. Otherwise, check to see whether your application supports CGA graphics mode, which is compatible with a windowed DOS session. Consult your program's documentation to find out how to change this setting.

Finally, consider switching to Windows 3.1. Your success will depend on your video board and driver, but you'll stand a much greater chance of running your VGA or EGA graphics in a window.

Q. I recently upgraded to Windows 3.1, and suddenly none of my Adobe fonts seem to be available in any of my applications. I checked the Adobe Type Manager control panel to make sure I hadn't somehow deleted my fonts, but fortunately they all still seem to be there. What went wrong?

Doug Keogh New York

A. Not to worry. You probably inadvertently checked a box that tells applications to display only Windows 3.1's own TrueType fonts. Double-click on Fonts in the Control Panel, then select TrueType. Click the 'Show Only TrueType Fonts in Applications' box to deselect it. When you return to your applications, your Adobe fonts will magically reappear:

Send your Windows questions to Windows Workshop, PC World, 501 Second St., San Francisco, CA 94107; or send them electronically to PC World Online, Windows Workshop; CompuServe 74055,412; MCI Mail, PC World Editorial; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge unpublished materials.

Scott Dunn is coauthor of 101 Windows Tips (Peachpit Press, Berkeley, California, 1992).

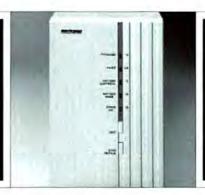
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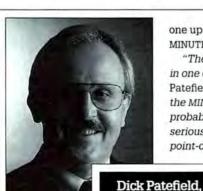
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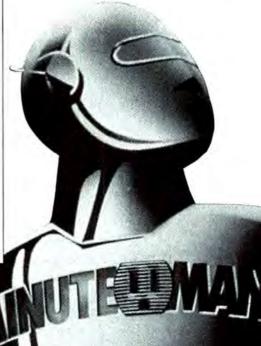
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## USER GROUP TIPS

#### Helpful hints from members of the nation's user groups

#### **Hardware Warnings**

If you ever upgrade your system's RAM by adding SIMMs, a few simple rules and precautions will make everything go smoother.

Before you change any jumpers or DIP switches, jot down the original settings on a piece of paper. That way, if something goes wrong, you can return your computer to its original state.

Once you've installed the hardware, you'll have to use your computer's setup program to reconfigure your system so it can use the extra memory. Since setup programs vary, I can't tell you exactly how to do this, but I can tell you that you'll need to know precisely how much extended memory you now have. Get that number by subtracting 640K from your total amount of RAM.

Remember, however, that a megabyte is equal to 1024K, not 1000K. For instance, if you have 2MB of RAM, you will have 1408K of extended memory (1024 times two, minus 640).

JOHN B. WOODYARD II GREAT BASIN PC & HACKERS

#### Better Quotes in WordPerfect

I need great-looking documents with great-looking quotation marks. Although WordPerfect 5.1's extended character set has opening and closing quotes, they aren't of very good quality.

I discovered that in a proportional font, two single quotes make a great-looking double quote. What's more, what you see on screen, while not pretty, looks a good deal more like quotes than the square boxes you get with the extended character set.

To create an opening quotation mark,

press the single open-quote key (on most keyboards, it's left of the 1) twice. For a closing mark, press the single close quote, or apostrophe, twice. The resulting two-character marks won't look good in every font (they look horrible in Courier and other monospaced fonts), but they look great in many of them.

BETTY SHERWOOD CHICAGO COMPUTER SOCIETY

#### The Excel Formula

A few tricks make it a breeze to debug formulas in *Excel*. If you double-click on a cell containing a formula, for instance, *Excel* will select all



the cells the formula refers to, providing an opportunity to catch any additional errors.

Double-clicking won't help you catch a '#NAME?' error. Excel produces this message when either a range or function name is misspelled in your formula. But in a long formula, it's difficult to quickly identify which name is wrong.

With function names, at least, there's an easy way to catch the error. When Excel evaluates a formula, it automatically converts all correct function names to uppercase. Therefore, if you type your function names lowercase, all you need do when you get a '#NAME?' error is look for the function that's still lowercase. You'll be able to see at a glance which one is misspelled.

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#### Free PageMaker Condensation

hat do you do if your PageMaker 4.0 document needs the Helvetica Condensed typeface but you don't have it? Here's what: If you have plain old Helvetica, use PageMaker's Set Width command to turn it into a dead ringer for Helvetica Condensed.

Select Type • Font • Helvetica, then choose Type • Set width • Other. Type 83 as your percentage and press < Enter>. The resulting text may look weird on screen, even when you're using Adobe Type Manager, but it will look great when it comes out of the printer. This trick works in all type sizes, with roman, italic, and boldface print.

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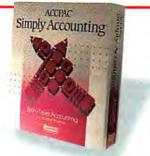
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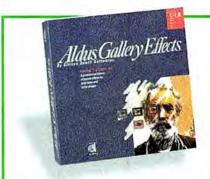
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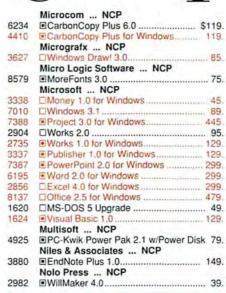
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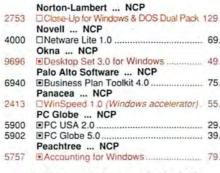




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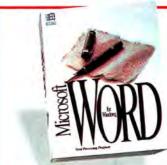


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Sample	All	Some	Least	2	3	4	Most 5
In This Issue (page 13)	0	0	0	0	0	0	0
Letters (page 19)	0	0	0	0	0	0	0
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What Next? (page 45)	0	0	0	0	0	0	0
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Compaq Gets Budget Minded (page 50)	0	0	0	0	0	0	0
Zeos and PC Brand Adopt 486SLC (page 52)	0	0	0	0	0	0	0
Ami Pro 3.0 Brings Easy Power (page 53)	0	0	0	0	0	0	0
Gateway's Pint-Size Portable (page 54)	0	0	0	0	0	0	0
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New Products (page 63)	0	0	0	0	0	0	0
Industry Outlook (page 113)	0	0	0	0	0	0	0
PC World Marketplace (page 120)	0	0	0	0	0	0	0
486SX PCs: Double-Time Performers (page 12	4) ()	0	0	0	0	0	0
Personal Time Managers (page 158)	0	0	0	0	0	0	0
Buyers' Guide: Windows Shareware (page 174	0 (	0	0	0	0	0	0

	Did you read it?		Value to you?				
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Paradox for Windows (page 187)	0	0	0	0	0	0	0
Buyers' Guide: 200MB Hard Disks (page 204	0	0	0	0	0	0	0
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Star-Dat-Star (page 285)	0	0	0	0	0	0	0
Instant Reference Card: Excel 4.0 (page 287)	0	0	0	0	0	0	0
The Home Office (page 326)	0	0	0	0	0	0	0
	0	0	0	0	0	0	0

How would you like to see PCs categorized in PC World reviews? (See In This Issue, page 13.)

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## STAR-DOT-STAR

EDITED BY BRETT GLASS

#### A global exchange of personal computer discoveries

#### A Message From the Top

hen you work in a Windows 3.0 DOS session for extended periods, you might forget that Windows is running and type WIN to enter it again, starting one Windows session inside of another. In January's "50 Tips for DOS and Windows," the Microsoft Technical Support staff offered a solution to this problem: Change your prompt. But the two-line prompt their batch file creates results in a screen that scrolls one extra line for every command, wasting space.

My solution is a variation on that tip: Use ANSI.SYS parameters to put a reminder in one place on the screen. This also changes the foreground and background colors to make the screen more vivid.

For this screen to work, you must have the line DEVICE=C:\DOS\ANSLSYS in your CONFIG.SYS file. Then, rather than a standard DOS session, run DOS.BAT [see LISTING 1] to use the DOS prompt in Windows.

STEVE JOHNSON POWDER SPRINGS, GEORGIA

Editor's note: Mr. Johnson's screen is not needed in Windows 3.1, which won't let you load Windows within Windows, but his tip can save a lot of confusion in Windows 3.0 or most other places where you might shell out of a program. Check out "Retrieving Your Precious Prompt," Star-Dot-Star, December 1991, to see how a batch file can change the prompt, enter an application, and then change it back again when you exit. That batch file and this one can be easily combined.

You can also play with the PROMPT command to change the look of your screen. For instance, if you change the batch file's first line to PROMPT Se[1;33;44mSpSgSe[1;31;44mSe[sSe[1;1HSe [KWindows is activeSe[1;69HStSe[1;3744mSe[u (note that there are no blank spaces here except the two in the 'Windows is active' statement), you can also display the time.

#### **Frustration-Free Formatting**

I've discovered an undocumented option, /AUTOTEST, for the DOS FORMAT command. By bypassing the Volume label and Format another diskette prompts (it assumes the negative for both), /AUTOTEST lets you format disks with less input. There's one drawback: /AUTOTEST doesn't work with DOS 5.0's /Q (quick) option.

VINAY MEHTA LENNOXVILLE, PQ, CANADA

Editor's note: The AUTOTEST option is available in DOS 4.0 and later. Because it lets you bypass the prompts, AUTOTEST is extremely handy for formatting a disk from a batch file, or if you simply want to format a single disk with no questions asked.

#### Batch Files that Loop the Loop

The FOR statement makes DOS run the same command on a list of files. For instance, you might type FOR %F IN (\*.DOC \*.TXT) DO TYPE %F to display every DOC and TXT file in the current directory. The trouble is that FOR can send only one command to all its listed files. If you want to list and copy all the DOC and TXT files, forget it. FOR isn't intended to help you run a loop.

I've discovered a solution. You can create a batch file that recursively calls itself and then jumps to a subroutine within itself every time FOR acts on a file. An example, FORTEST.BAT [see LISTING 2], is attached.

MICHAEL SIGMUNDT WILLOWDALE, ONTARIO, CANADA

Editor's note: To see how this works, simply run FORTEST at the DOS prompt. Note how the ECHO Once' and ECHO Twice' commands (these substitute in this example for whatever real commands you may need) work on each file in the directory.

This trick essentially allows you to implement a subroutine—something DOS's batch language can't normally do. (DR DOS and most third-party shells can.) A special value of the first parameter acts as a signal to the batch file, which can jump to the subroutine code on entry. Note Mr. Sigmundt's clever use of the SHIFT command to

PROMPT \$e[1;33;44m\$p\$g\$e[1;31;44m\$e[s\$e[1;62HWindows is active.\$e[1;37;44m\$e[u CLS acommand.com

```
aecho off

If "%1"=="#Loop#" Goto Loop

Echo This is the beginning...

For %%f IN (*.*) DO CALL FORTEST.BAT #Loop# %%f

Echo This is the end....

Goto End

:Loop

REM Subroutine portion here

SHIFT

Echo Once with %1

Echo Twice with %1

:END
```

LISTING 2: This sample batch file uses the DOS FOR command to run a subroutine on multiple files. The 'ECHO . . . with %1' commands represent the looping routine.

eliminate the special parameter once the subroutine is entered.

#### **Printing via Sneakernet**

If you don't own a good graphics printer but have access to one elsewhere (say, at a local copy shop), Windows provides a nifty, little-known way to take your formatted document, on a floppy, to another computer for printing. The other computer doesn't need to have your application or even Windows.

First, set up a printer driver that will send its output to a file: Select *Printers* from the Control Panel's window, then select *Add*; a list of printers will appear. Select the one you'll be printing to (not the one, if any, attached to your computer), then select *Install*. Follow the prompts for installing the printer from the *Windows* setup disks. Once your new printer is in the Installed Printers list, highlight it and select *Connect*. Scroll down through the resulting list of ports to select *FILE*:. Exit the Printers window and the Control Panel.

Now, every time you use File • Print Setup to select your nonexistent printer, and then print from any Windows application, Windows will first ask for a file name. Once you've given it, Windows will send all the control codes and data to the file just as if it were a printer.

To print your document, take the output file on a floppy to the computer with the printer. Print with a simple command from the DOS prompt: COPY /B

A: filename LPT1:. The /B switch makes sure that binary control codes are preserved. You may need to replace LPT1: with another port address and A: with another floppy drive letter.

This procedure has a few limitations. First, make sure you stick to fonts that are in the printer. If you use Adobe Type Manager; make sure that ATM's 'Use Pre-built or Resident Bitmap Fonts' option is turned off.

Second, you may find that your Windows output file is larger than the floppy can hold. Most Windows applications allow you to select a range of pages to be printed, so you can easily create a number of smaller output files if one file is too big with your full document.

STEVEN FOX CHUNG Ho CITY, TAIPEI HSIEN, TAIWAN

Editor's note: You'd have to print a very large file to overflow a floppybut if you do encounter this problem, here's another way to handle it: Because printer control codes contain a great deal of redundancy, compressing a print file with PKZIP (or any other compression utility) will reduce the size of the file by as much as 80 percent, letting you get up to five times the output on a single floppy. You can then use PKUNZIP's -C (Console) switch to direct the output to the printer as the file is decompressed: The command PKUNZIP - C zipfile.ZIP > LPT1: will unzip a file directly to your printer:

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## PC W\(\beta\)RLD

Instant Reference Card #27

For use with PC World Instant Reference Card Portfolio

#### BASICS: EXCEL 4.0

In Excel, unlike in 1-2-3, you generally select the area you want to change, then choose the command for changing it. Click the right mouse button to bring up a menu, near the mouse pointer, of common tasks for the current selection. Click OK or press <Enter> to finish most tasks.

#### THE STANDARD TOOLBAR

The default buttons on the Standard toolbar provide easy, mousable access to common tasks. The bar is located directly below the menus, but if you wish, you can move or hide it. You can also change its buttons or display additional toolbars. To use a tool on the toolbar, click on the appropriate button.

Button	Task	Keyboard equivalent			
	Create worksheet	<shift>-<f11></f11></shift>			
Ci Ci	Open file	<ctrl>-<f12></f12></ctrl>			
	Save active file	<shift>-<f12></f12></shift>			
8	Print active file	<ctrl>-<shift>- <f12></f12></shift></ctrl>			
Normal	Select style	<ctrl>-S</ctrl>			

#### DATA ENTRY

You can enter numbers, formulas, or text into any cell in a worksheet. Formulas normally begin with =, but you can also use +, -, or @

Fill range with same values or formulas

Type value in first cell, drag fill handle (lower right corner of cell selection box) across desired range

Fill range with incremental labels (months, weekdays, and so on)

Type starting value in first cell, drag fill handle across desired range

Fill range with linear values

Type starting values in first two cells, drag fill

Fill cell with repeated

handle across desired range Type character(s), < Enter> Format · Alignment ·

character(s)

Fill

Copy current date to formula bar

<Ctrl>-<Semicolon>

Copy current time to

<Ctrl>-<Shift>-<Colon>

formula bar

Copy formula from cell above to formula bar

<Ctrl>-<Apostrophe>

Copy value from cell above to formula bar <Ctrl>-<Shift>-<Quote>

Fold

Enter SUM() function with proposed range Make selection boldface

<Alt>-<Equal>

<Ctrl>-B

selection(s)

<Shift>-<F8>, make additional selection(s), <Esc>; or press <Ctrl> while making additional selection(s)

Fold

<Ctrl>-I Italicize selection

Turn on drag-and-drop capabilities

Add noncontiguous

COPY, MOVE, AND REARRANGE

Options • Workspace • Cell Drag and Drop

Enlarge selection's font size Shrink selection's font size <Ctrl>-PSize. select new size

Right

Move selected range, overwriting target range Point to selection border, drag, drop

<Ctrl>-PSize. select new size

Move selected range, moving target range Copy selected range,

overwriting target range

Copy selected range,

Point to selection border, hold down <Shift> while dragging and dropping

Center-align selection

Format · Alignment · Left Format · Alignment · Center

Edit · Poste Special ·

Formats

Point to selection border, hold down <Ctrl> while dragging and dropping

Right-align selection Center active cell's text

moving target range Format · Alignment · Change selected formulas to values

Point to selection border, hold down < Ctrl>-<Shift> while dragging and dropping <Ctrl>-C; or <Ctrl>-<Insert>, Edit\*

across horizontal selection Apply last-used autoformat to range

Left-align selection

Format · Alianment · Delete selected row(s)/ Center across selection column(s) Insert selected number of Paste Special · Values <Ctrl>-<Hyphen>

Apply border around selection

Format · AutoFormat, row(s)/column(s) select format

<Ctrl>-<Shift>-<Plus>

Apply border to bottom

<Ctrl>-<Shift>-& Set width of selected columns to each column's best fit Format · Border · Bottom

Double-click on right edge of any selected column header

edge of each cell in selection Copy selection to Clipboard Paste format from Clipboard

Hide selected row(s) Hide selected column(s) <Ctrl>-C or <Ctrl>-<Insert> Unhide row(s) within

<Ctrl>-9 <Ctrl>-0 <Ctrl>-<Shift>-(

to selection Create chart, with Excel

selection Unhide column(s) within selection

<Ctrl>-<Shift>-)

none prompting you through each step <Shift>-<F1> Bring up context-sensitive help pointer

## PC W\(\begin{aligned} \text{RLD} \end{aligned}

Instant Reference Card #27

For use with PC World Instant Reference Card Portfolio

#### **ADVANCED: EXCEL 4.0**

#### TOOLBARS

The Standard toolbar is one of nine you can bring up and place anywhere on screen. The other toolbars are for specific jobs (charts, formatting) or backward compatibility with Excel 3.0.

Display toolbor Attach toolbar to side of Options . Toolbars, select toolbar, Show Drag toolbar to side of screen or window

screen or window Turn toolbar into free-

floating window

Drag toolbar away from side of screen or

window

Add existing tool to toolbar

Display toolbar, Options • Toolbars • Customize, select command category, click tool button to see description of what it does, drag tool button from Customize window to toolbar

Remove toolbar from screen

Options . Toolbars, select toolbar, Hide; or turn toolbar into free-floating window, click upper

left corner

#### FORMATTING

Format numbers in selected cell(s)

Format · Number, select category and code

Change font/style/size of selected cells

Format • Font, select font, style, and/or size

#### DATA BASES

A data base within a worksheet should use rows for records and columns for fields. For instance, a mailing list data base would list each person in a separate row, with columns for first name, last name, street address, city, and so on. The first row of a data base contains the field names for the columns.

Dota · Form

Define data base

Select range containing field names, data, and blank row below last record, Data • Set Database

Use form to edit data base

Sort range on worksheet

Select range (do not include field name row),

Data · Sort, enter options

Prepare search criteria

Copy field names to another part of worksheet, type search criteria under copied field names, select field names and criteria, Data • Set Criteria

Find records that match criteria

Prepare search criteria, Data · Find, use arrow keys to view other matching records

Extract records that match criteria

Prepare search criteria, copy field names to another part of worksheet, select new headings,

Fold

Delete records that

Data • Set Extract, Data • Extract

match criteria

Prepare search criteria, Data · Delete

Fold

Align or reorient contents of selected cell(s) beyond what can be done at

Format · Alignment, select options

toolbor Wrap text within selected

Format · Alianment · Wrap Text

Add border to selected

Select cell or range, Format • Border, select

cell(s)

Add shading to selected

cell(s)

Format · Border · Shade

cell(s)

#### CHARTS

Create chart within worksheet, with step-bystep prompts and instructions

Select data to chart, click on ChartWizard tool on Standard toolbar, drag pointer to place chart, answer questions in series of dialog boxes

Create chart within worksheet, without prompts

Display Chart toolbar, select data to chart, click button for desired chart type, drag pointer to place chart

Enter chart object to make changes

Double-click on object

Create chart file

Select data to chart, File • New • Chart

Change chart type

Click on desired type in Chart toolbar; or Gallery, select type, select display format

Add titles

Chart Attach Text Chart Title OK, type new title, < Enter>

Add arrow

Click on arrow in Chart toolbar or Chart Add Arrow; move and size arrow as needed

Add legend

Click on legend icon in Chart toolbar or Chart. Add Legend; move legend where desired

Change text font

Select text object with right mouse button, Font, select options

Change line width or patterns

Select object with right mouse button, Patterns, change settings as needed

#### **EXTERNAL FILES**

An external file is any file other than the one you're currently working on. For you to insert an object from another Windows application, the application must work as an OLE server.

Reference value in

another worksheet file

or, with both files open, =, select cell or range in other file, < Enter>

Group worksheets so commands affect all of them

Open files, select moster worksheet, Options. Group Edit, hold down < Ctrl> while clicking on worksheets

=path\filename!range name or address;

Link data from Windows application other than Excel

Open non-Excel document, select data to be linked, Edit • Copy, open worksheet, select destination, Edit · Paste Link

Replace link with its value

Select cell with formula, <F2><F9>

Embed existing non-Excel Windows object or document in Excel worksheet

Select object or data to be embedded, Edit\* Copy, open Excel document, select destination, Edit · Paste Special, select data type, Paste

Create embedded non-Excel Windows object or document while in Excel Select destination range, Edit Insert Object, select object type; Windows will load other application; create object in other application, exit application, confirm all prompts to save file

Export Excel file to another application File · Save As, type new file name, select file format in Save Files As Type box

Import another application's file into Excel

Import file, select column with data, Data • Parse,

if desired

File · Open, type name of file

Import text file, dividing lines into columns by length Import text file, dividing

lines into columns where

fields are separated with specified character

Import file, File • Open, C:\EXCEL\LIBRARY\ FLATFILE.XLA < Enter > , select column with data, Data • Smart Parse, select or enter

adjust brackets if necessary, change destination

delimiter character

#### Two Ways to Save the Environment

any programs, including word processors and spreadsheets, allow you to temporarily shell out to DOS. But if you are in one of these temporary DOS sessions when you invoke a batch file-especially one of the more complex ones featured in Star-Dot-Star-you may find that the batch fails for lack of environment space.

Here's why. When you shell out of a typical application program, DOS recreates a new environment space, with copies of all the existing environment variables, in whatever unused memory it finds. But since it anticipates a potential memory shortage, DOS makes the new environment space just big enough to hold all the existing variables; it doesn't leave any room for new ones! Thus, when a batch file attempts to create a new environment variable, it gets an 'Out of environment space' error message. The batch continues, but produces incorrect (or even dangerous) results because it can't save information in the environment.

One solution to this problem is to create a "dummy" environment variable for reserving space. For instance, if you add the line SET RESERVE = XX....XXX (where there are 120 X's on the line) to your AUTOEXEC.BAT file, another batch file can reclaim the room in its own environment with the command SET RESERVE = (where nothing follows the equal sign). The problem with this approach is that everyone who might use the batch file must have the command in his or her AUTOEXEC.BAT if the other batch files are to access the extra

Here's another solution: If you know a batch file will require lots of environment space, but you don't know how much will be available, you can design the batch file to temporarily enlarge its own environment. BIGENV.BAT [see LISTING 3] provides an example of how you can do this.

The batch file works by calling itself. When launched, BIGENV.BAT checks if its first parameter contains ?Do It?. If not, BIGENV runs COMMAND.COM with the switches /E:1024, to create a 1K environment, and /C, to run the string that follows as a command. That string runs the batch file again, this time passing it the ?Do It? parameter.

Because of the passed parameter, BIGENV skips to the Do It label when it runs inside of itself. A SHIFT command deletes the special argument and shifts the others to the left. The batch can now continue, knowing that it has enough room to work. When the batch is finished, the recursion "unwinds" and the extra COMMAND.COM, with its 1K environment space, is unloaded.

> RON LEWIS HUNTSVILLE, ALABAMA

Editor's note: Each of these approaches is useful under different circum-

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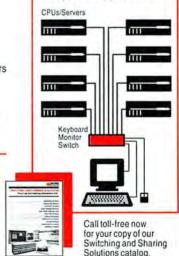
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```
BECHO OFF
IF "%1" == "?Do_It?" GOTO Do_It
COMMAND.COM /E:1024 /C BIGENV ?Do_It? %1 %2 %3 %4 %5 %6 %7 %8 %9
GOTO Exit
:Do_It
SHIFT
REM Place regular batch file command here.
:Exit
```

LISTING 3: This sample batch file opens up 1K of environment space, then calls itself to run commands that need the larger environment.

stances. The "reserve" variable is ideal when you need a small amount of space (the most you can reclaim is 123 bytes), and you can edit AUTOEXEC.BAT and your other batch files to use it. Unlike the second technique, this one guarantees that you'll get a specific amount of free environment space, and it doesn't take up extra RAM by reinvoking COMMAND.COM. But if your batch file CALLs another that also uses the same "reserve" variable, the two will compete for the same RAM, and one of them won't work.

The second technique is better when you need more room. It's also easier to set up, because all you need to do is place the appropriate commands at the beginning and end of an existing batch file with heavy environmental needs. However, this method has two drawbacks. First, because it tries to load another copy of the transient portion of COMMAND.COM (which can be as big as 17K), it wastes conventional RAM. Second, the amount of free environment space provided by this technique isn't guaranteed. If your system already has 1009 bytes of environment variables, /E:1024 will provide no more space than you had before. (DOS always rounds the size of the environment up to a multiple of 16 bytes.) For this reason, I recommend this technique primarily for situations in which you can closely estimate the amount of environment space that's already been used.

As you may have noticed, we've printed two tips this month that in-

volve a batch file that calls itself; each of these files uses a similar technique to solve a very different problem. It just goes to show you what a little bit of creativity can do.

#### **Unconditional Save Redux**

In the February Star-Dot-Star column, James Knoblock showed how a 1-2-3 file-saving macro could work dependably whether there was already a file with the same name or not. (1-2-3 prompts for confirmation when you save to an old file name but not when you save to a new one—a situation that can confuse a macro.) I have a simpler solution. Following the Save command with an R and an <Esc> will instruct 1-2-3 to overwrite the old file if it asks and will have no effect if it doesn't. Thus, a one-line macro,  $|FSfilename \sim R{ESC}|$ , will handle all situations.

NATHAN X. SNEED BETHESDA, MARYLAND

Have a macro, batch file, short program, or general tip you're proud of? Mail your tips to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107; or send them electronically to PC World Online, Star-Dot-Star, CompuServe, 74055,412; MCI Mail, PC World Editorial; Internet, rogue@well.sf.ca.us; or 415/442-1891 (fax). PC World pays \$25 to \$200 for each tip used. Sorry, we cannot acknowledge unpublished materials.

Brett Glass is a contributing editor for PC World.

#### **POWER TIP NO. 256**

#### True Flush-Right Alignment in 1-2-3

When you use the quote (") label prefix to right-align your cell contents, a single space is always retained at the right border. So for true right alignment, you must left-align the label with the apostrophe (") prefix and insert the correct number of leading spaces. This macro counts the spaces you need, no matter what the cell width. You can run it again if you increase cell width, but if you reduce, you must delete the existing leading spaces before rerunning the macro. For example, to set up the macro in cells G1..G3, place your cursor in cell G1, type {edit}{home}{del}, and press <Down>. Then type '@repeat(" ",@cell-pointer("width")-@length(@cellpointer("contents")))&" and press <Down>. Finally, type {end}"{calc}~ in cell G3, press /RNC, and enter \ followed by the letter you want to use to invoke the macro. Highlight the range G1..G3 and press <Enter>. Then place your cursor on a cell holding a label you want right-aligned, hold down <Alt>, and press your macro call letter.

Shane Devenshire Walnut Creek, California

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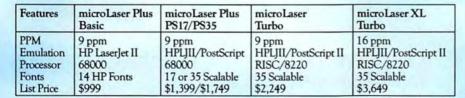
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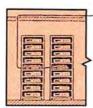
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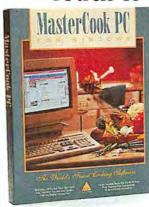


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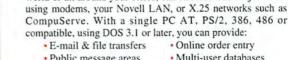


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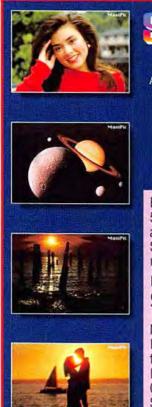


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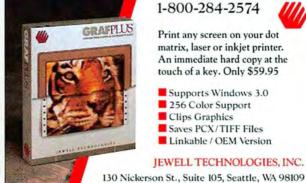
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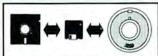
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#### Batch File Programing Made Easy

Video Tape 2

Step by little step approach to batch files. The tape starts off as if you didn't even know BATCH FILES ever existed. Batch File language isn't elegant, but it packs a wallop into its few commands. Once you master the dozen or so batch commands, you can have DOS automate all your daily chores and chop tedious file management tasks down to size (even if you just use WINDOWS!).

#### Optimizing Windows 3.0 & 3.1

Video Tape 3

Line by line, detailed explanation of all the Windows INI files: Learn these and master Windows. This video will show you step by step all the tricks needed to make Windows scream!

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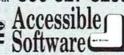
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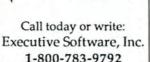
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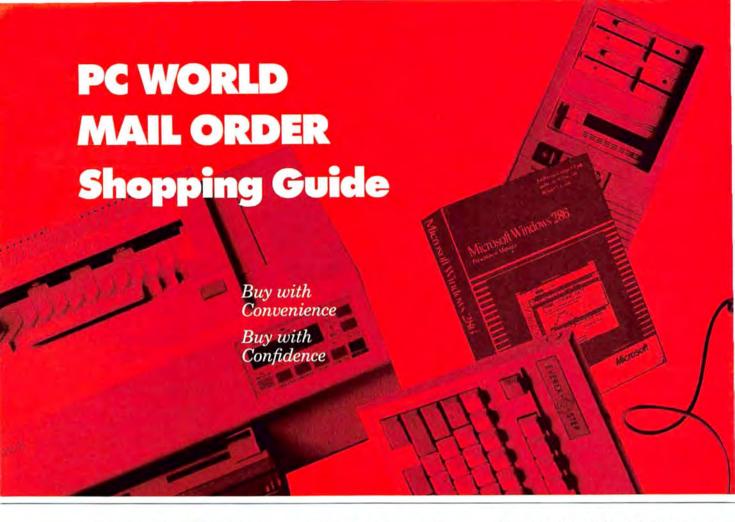
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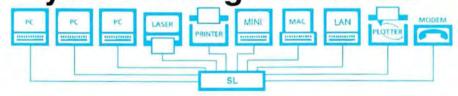
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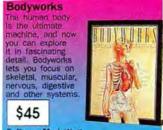


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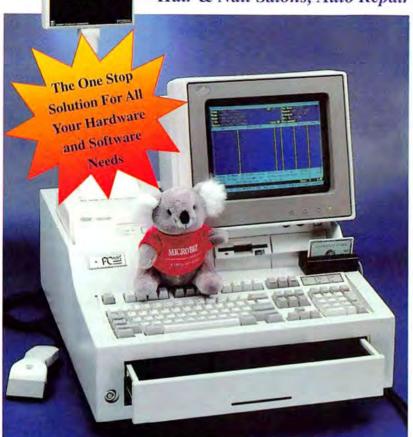


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### THE HOME OFFICE

BY STEVE BASS

The practical guide to home/office computing

Let's get to the point: GUIs or no, there are still plenty of times when you have to work from the DOS prompt. And it's so annoying to struggle through the retyping of lengthy subdirectory paths or misspelled DOS commands.

There are commercial and shareware programs to minimize your keystrokes, but you may have overlooked a spectacular utility already on your PC. When you installed DOS 5.0, you also got DOS-KEY, a first-rate keyboard enhancer.

DOSKEY saves time three ways. First, instead of retyping commands, I replay them. It's also easier to turn a recycled command into a new one than to retype all those letters just to change a few. But the neatest part is, I can create a macro that executes a whole series of commands by typing a single letter or number (but no <Ctrl>- or <Alt>-key combinations).

Load DOSKEY into your AUTOEX-EC.BAT, and it will always be handy. A tiny TSR, it takes almost no conventional memory if you load it high using a memory manager. The line in my AUTOEXEC.BAT reads 'LOADHIGH DOSKEY/BUFSIZE=3000'. The default buffer size is 1024 bytes, but I increased it to 3K to allow for plenty of macros and a larger command history.

DOSKEY's slickest trick is that it lets you cycle through your previous commands using the up and down cursor keys. <Page Up> gets you to the first command, <Page Down> to the last. <F7> displays all the commands in your history along with their line numbers. <F9> followed by the line number displays a command for editing. Even

handier is the <F8> search key: Type in the first few letters of a command, and up comes the closest match.

But to tap into DOSKEY's real power, you have to experiment with macros. You probably already use batch files for repeated multiple operations. Macros are similar but take practically no disk space—they all reside in one definition file. Macros are easier to create than batch files, run faster, and take priority over similarly named batch files and DOS commands.



My rule is, if I use the same DOS keystrokes more than once a day, I convert them into a DOSKEY macro. It's easy—just type DOSKEY followed by the macro name, an equal sign, and the definition. For example, DOSKEY EXE = DIR \*.EXE creates the macro EXE, which when run gives me a directory of files ending in EXE. If a macro has the same name as a DOS command or batch file, DOS runs the macro; type a space first to run the DOS command or batch file instead.

DOSKEY macros have a few variations on the replacement parameters used in batch files. For example, the macro equivalents to the replaceable batch parameters %1 through %9 are \$1 through \$9. You can include multiple DOS commands in a macro, but they must be separated with \$T.

Ever delete all the files in your hard disk's root directory when you're just trying to clean a floppy? I don't anymore. Just enter the command DOSKEY ZAP=DELA:\*.\*, and thereafter you can simply enter ZAP to delete only the files on your A: drive no matter which drive you're logged on to. To create a new subdirectory named WORK and copy all the files on the A: drive into it, try a macro called SLICK: Type DOSKEY SLICK=MD S1 ST COPY A:\*.\* \$1. Then type \$LICK WORK, press <Enter>, and go get a cup of coffee.

If you don't want to lose today's macros when you turn off your machine, save them to a file: Type DOSKEY /MACROS>MACS.BAT. You'll also need to edit the batch file, placing DOSKEY and a space at the start of each line. Then add CALL MACS.BAT to your AUTOEXEC.BAT after the line that loads DOSKEY.

Sure, it's only a few keystrokes here and there, but DOSKEY makes your day go a lot smoother.

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group. He can be reached on PC World Online (see page 8 for more information).

### WHERE TO BUY

MS-DOS 5.0 \$99.95; Microsoft Corp.; 206/882-8080, 206/936-7329 (fax)
Reader service no. 601

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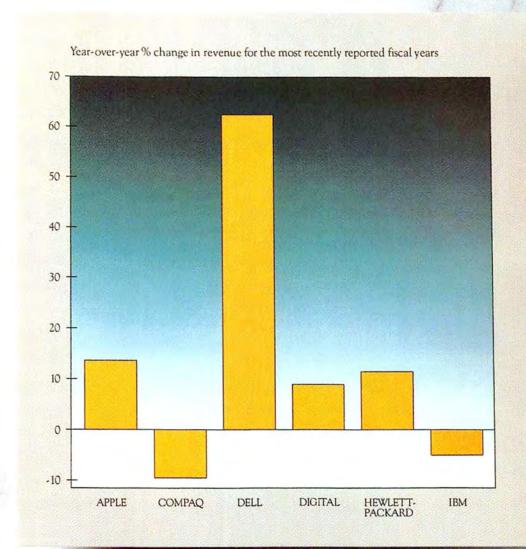
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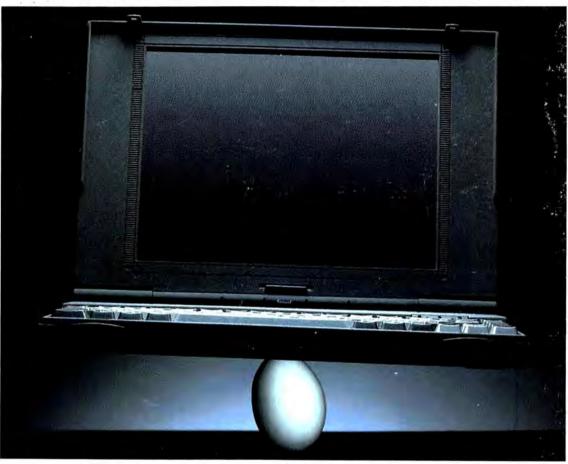
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