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(SEE PAGE 60)

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MAY 1993

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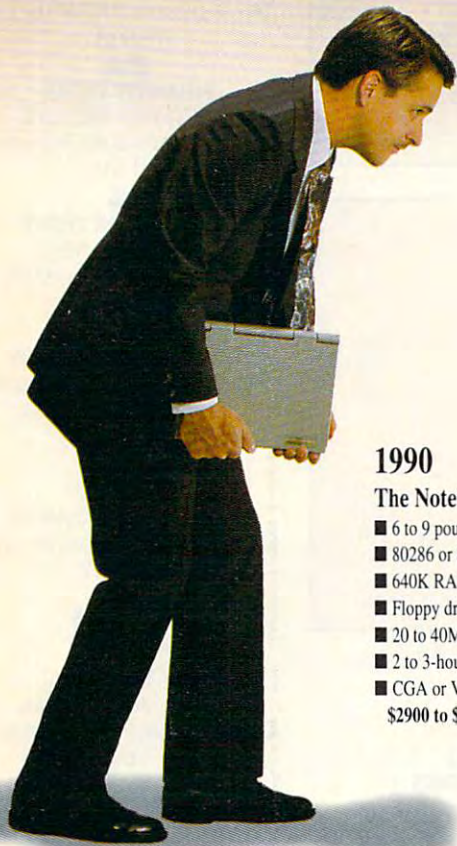
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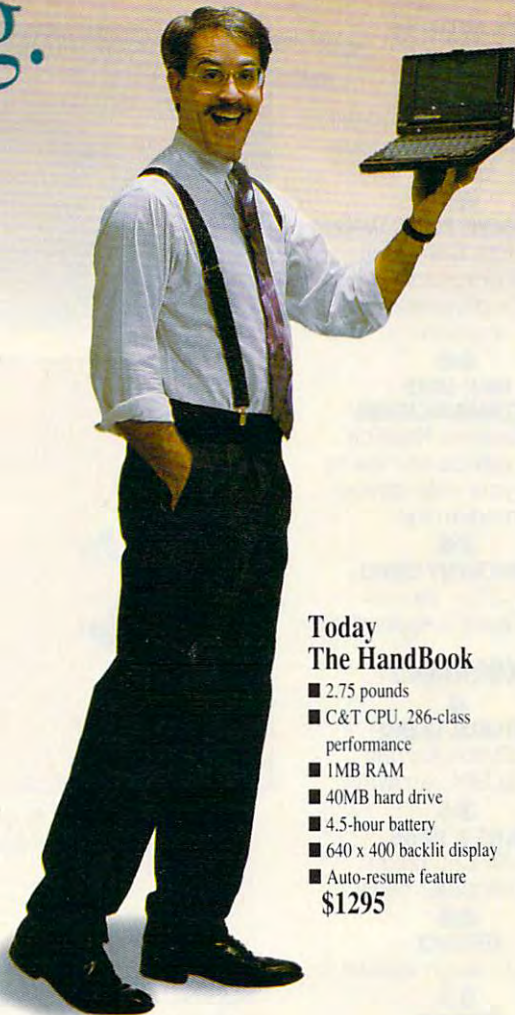
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1990

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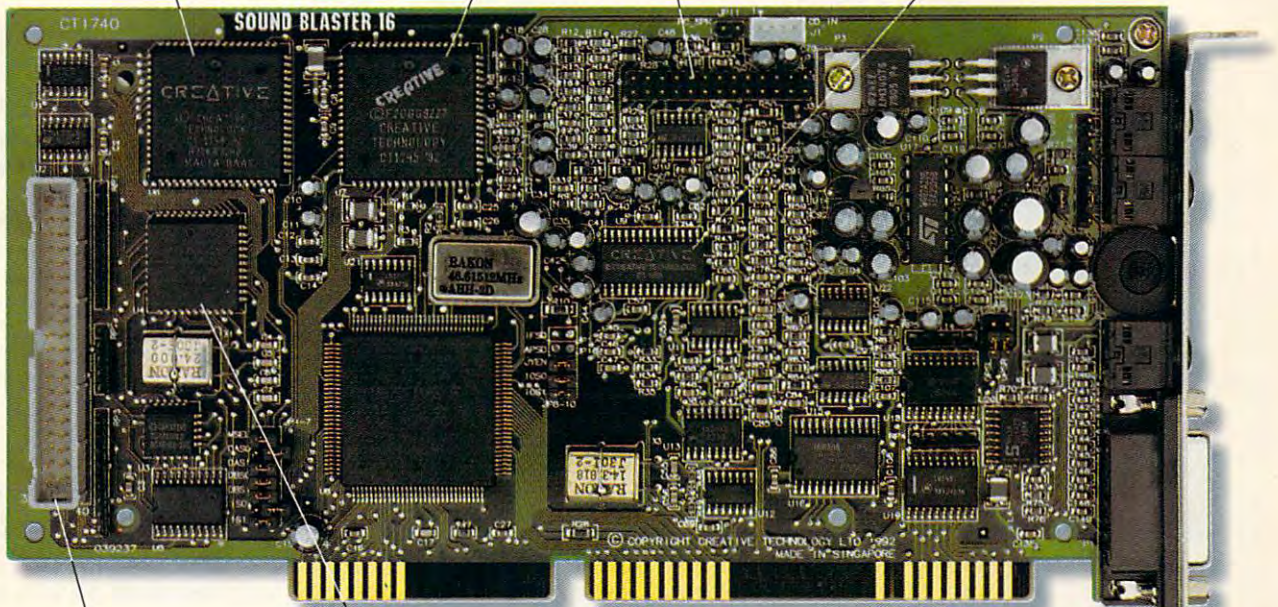
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EDITORIAL LICENSE

Clifton Karnes

If you open the door on the SPA and take a look inside, you'll see that this organization is much more than just the software police.

If you've heard of the SPA (Software Publisher's Association), you probably think of it as the software police. The SPA certainly has been the most active counter-piracy group in the country, and the organization has played a key role in several arrests and legal actions against software pirates. Recently, for example, the SPA aided the FBI in closing down "Rustie & Edie's," a huge pirate BBS located in Boardman, Ohio. This counter-piracy activity is important, and it's worth noting that this not only helps software publishers but protects consumers, too. But the SPA is much more than just an antipiracy organization, and that's what I want to talk about this month.

The SPA is a worldwide association with more than 1000

members from the software publishing industry. The membership is generally divided into business, consumer, and education groups, and the entire body meets twice each year, in spring and fall. The SPA spring symposium was held this past March in sunny San Diego and was attended by a record number of members. I attended several meetings, and what impressed me most was that the focus was not on software publishers themselves but on consumers. On how to give us more value for our money. And on how to make it easier for us to make buying decisions. Here are some examples.

At one of the symposium's first meetings, Phil Adam of Interplay Productions told a group of assembled consumer section members that all software publishers needed to arrive at a standard way to express the requirements for their software. "If we can make our packages clear and easy to understand, so someone standing in a store looking at our software can tell in a few seconds if the program will work with his or her hardware, we'll make it easier for everyone to make intelligent decisions on whether or not to buy our package. If our software won't work on a user's system, or won't work well, we don't want someone to buy it and be disappointed later when they try it. And if every package in the store is labeled in the same clear way, it will be easy for consumers to compare and easily tell what's going on." Clearly Phil is interested in more than just sales. He wants to increase the overall quality of software across the board, so end users are better served.

The next day, in a session devoted to the future of consumer software, Jeff Braun from Maxis gave a visionary's

view of the future. "Every year," he said, "we have to give consumers more of what's important to them." One aspect of this escalating value is the integration of different software products, something like the way Windows programs can integrate with each other using DDE and OLE. Jeff said he's working with Mallard, the maker of top-notch flight-simulator scenery disks, so that Maxis's Sim products can be integrated with Mallard's scenery disk technology. "With this cooperation, you could, for example, fly over a city you've created, increasing the value of the experience you'll get from the software." Jeff also thinks it's important for larger software companies to nurture smaller companies. "When you find talent," he said, "do everything you can to make it grow."

Another expression of this attitude came from Mike Knox of Park Place Productions, a company that develops software for Spirit of Discovery and several other labels. Recently, his company developed a math-learning tool that Grolier is marketing. "We really worked on this at my company, and it was *fun!* It's the kind of product I really like to do. We're paid by Grolier for producing a good product, Grolier gets revenue when it sells the final program, and kids learn some great math skills. Everybody wins, and that's how I like to do business. In fact, if it doesn't look like everyone's going to win when a project's starting, I cancel it."

These are just three snapshots from a conference that lasted more than four days, but they show you that the SPA is more than just the software police. It's a group whose members are trying to produce better software products for all of us. □



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TEST LAB

Edited by Mike Hudnall
Reviews by Tom Benford

Remember when people thought 1.44MB floppy disks would be great for backing up data?

Those days, alas, are gone.

And even if you don't remember, you're sure to recognize that backing up the latest generation of hard drives with floppies, even with high-capacity disks, is a major chore. In addition to changing disks for an inordinate length of time, you're faced with labeling and storing all of those disks. And you have to repeat this chore on a regular basis.

The smallest standard hard drive in our January lineup of 486SX PCs was 80MB, and the rest of the PCs had 120MB or larger drives. The drives in our July lineup of 486DX2/66 PCs will be at least 200MB. Consider backing them up with floppies. Then consider the speed and convenience of backing up your drive with a tape drive—and the good sense it makes. With a tape drive, you can protect your reports, appointment lists, spreadsheets, databases—all of your valuable data—and make the best use of your time.

This month Test Lab focuses on ten tape drives, each capable of backing up 250MB of data on a single cartridge. While 4-mm DAT drives store as much as two gigabytes on a cartridge, they're also much more expensive than the drives tested here (most of them QIC), which are much better suited to backing up a single computer. Eight of these drives are external, and five of them attach to a parallel port. Some of the drives use a proprietary interface, one of the drives is SCSI compliant, and one can attach to a serial port. Most of the drives use compression to fill the cartridge with 250MB of data, one does it without compression, and one stores over 600MB without compression. They range in weight from 1.25

pounds to 9.50 pounds. In short, you have a variety of drives and features from which to choose.

To help you choose the right drive for your particular needs, Test Lab provides in-depth reviews that comment on such matters as the ease of installation and use, the quality of the software and documentation, the level of noise produced, and the kinds of work environments for which a particular drive might prove well suited. In the product boxes accompanying the reviews, you'll find prices not only for the reviewed drives but for options and similarly configured drives from the manufacturers. Keep in mind, however, that the market is changing rapidly, with increasing competition among manufacturers; you should contact the manufacturer or your retailer for the best current street prices before making your purchase.

You'll also find helpful information in the grid of tape drive features—everything from recording formats to capacities, tape speeds, data transfer rates, software information, warranty information, and more. If you aren't up

on the latest tape drive terminology, there's a sidebar explaining the various features in the grid.

For the best indication of performance, turn to the benchmark graphs with performance data for a full backup and a full restore. And be sure to read the methodology sidebar, which explains how the testing was set up and carried out.

If you feel you can no longer tie up your computer and spend valuable time backing up your data with floppy disks, and if you're ready for the sense of security and freedom that tape drives offer, read on. This Test Lab has information you can use to understand the technology and make a more informed buying decision.

MIKE HUDNALL

COLORADO JUMBO 250

The Colorado Jumbo 250 offers easy installation, clear documentation, and an optional compression card that substantially reduces the time required for backups and restores of data.

The Jumbo 250 comes with a



Colorado Backup for DOS



40-page installation manual that's easy to follow and comprehend. A terrific example of lucid documentation, the manual leaves no question unanswered in the user's mind; it goes to great lengths to provide crystal-clear explanations and illustrations that drive the point home. Each step has at least a half-page of instruction or description and a diagram or an illustration, so virtually anyone should be able to perform the installation in half an hour or less.

The Jumbo 250 mounts in a standard 5 1/4-inch half-height drive bay and uses the PC's floppy controller for interfacing. A special "piggybacker" ribbon cable supplied with the drive simply plugs into the existing floppy drive's ribbon cable—a great idea which simplifies the installation considerably and reduces the possibility of connecting the cables incorrectly.

Colorado Memory Systems also offers an optional compression card for the Jumbo 250, a card that doubles the storage capacity of the tape and reduces the time required for backing up and restoring by 40–50 percent. When you use the compression card, the Jumbo 250 connects directly to the compression card for interfacing rather than to the floppy controller. I found the manual for the compression card just as thorough and explicit as the manual for the tape drive itself, making installation of this optional card a simple and straightforward process, too.

Without the card, a backup of

Colorado Jumbo 250
COLORADO MEMORY SYSTEMS
 800 S. Taft Ave.
 Loveland, CO 80537
 (800) 845-7905
 (303) 669-6500
List price: \$279.00 (\$438.95 for external version, \$229.00 for optional compression card)
Warranty: one year, parts and labor

just over 241MB takes approximately two hours; with the card, this same backup takes about an hour and ten minutes. Though reasonably fast, the Jumbo 250 is one of the noisier tape backup units reviewed, emitting a loud, high-pitched sound with each motion of the tape; this sound grows quite wearisome after an hour or two. And the Jumbo 250 is noisy whether you use the optional compression card or run it straight from the floppy controller.

The utility software for the drive came supplied only on 5 1/4-inch media, necessitating a copy-over using another PC to put it on a 3 1/2-inch floppy so it could be installed on the Tandy 433DX used for the reviews and performance tests. Dual-sized media should certainly be included as a standard feature, since so many of today's machines sport only a single 3 1/2-inch drive.

Though DOS based, the software for the Jumbo 250 lets you run from within Windows. A Jumbo 250 icon on your Windows desktop allows quick and convenient launching (you perform the backup from within a DOS window on the desktop).

INTERPRETER RETRIEVER/250
INTERPRETER
 11455 W. I-70 N. Frontage Rd.
 Wheat Ridge, CO 80033
 (800) 232-4687
 (303) 431-8991
List price: \$529 (\$679 for the 250/P, a rugged version designed to better withstand wear and tear)
Warranty: one year, parts and labor

If you're looking for an internal tape backup that's easy to install and does a good job even if it does generate a few extra decibels in the process, the Colorado Jumbo 250 is worth considering. And if you want to get the job done in express fashion, you might want to purchase the optional compression board as well.

Circle Reader Service Number 371

For coverage of the Trakker 250 drive from Colorado Memory Systems, see the Reviews section.

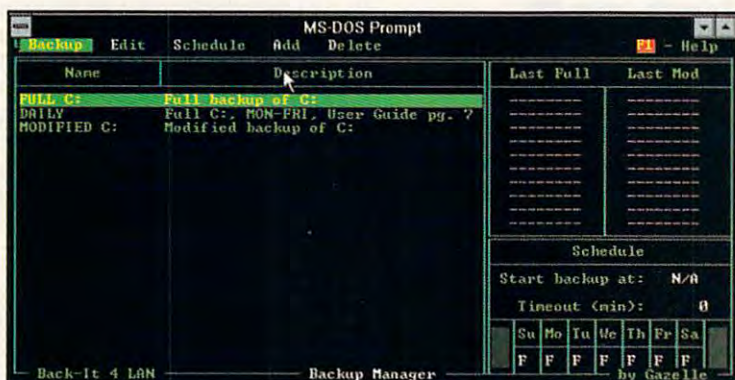
INTERPRETER RETRIEVER/250

Looking for a compact backup system that attaches to the parallel port and offers easy installation? Then take a look at the RETRIEVER/250 tape backup system from INTERPRETER.

Installing the drive hardware requires only connecting the drive's cable to the PC's parallel port and connecting the AC power adapter to the drive. I found the software installation equally simple. The install utility even provides a few hardware tests to make sure that the system recognizes the drive and that everything is connected and online. In addition to performing read and write tests, the software automatically analyzes the hardware, suggesting an appropriate driver for the particular tape drive model being used. Once you've complet-



TEST LAB



Back-It 4

ed these tests and everything checks out to the program's satisfaction, the file copying from the installation disk commences.

To avoid some of the problems encountered with other parallel-port tape backups on our Tandy 433DX test system, I attached the RETRIEVER/250's parallel connector to an auxiliary parallel port installed in the Tandy.

I wish this drive had a power switch, a feature conspicuous by its absence. Since the drive draws its operational power from an AC adapter, you must unplug it from the adapter (or the adapter from the AC outlet) to shut the drive off. While not a major flaw, this omission puzzles me. Why did the manufacturer not include so mundane and utilitarian a feature in an otherwise well-engineered device? If you use a surge-protecting outlet strip to power on your PC and all of its peripherals, then you probably won't notice the lack of a power switch. If you plug the adapter directly into an AC wall outlet, however, you'll soon miss the convenience a power switch would provide for turning the RETRIEVER/250 drive off.

The RETRIEVER/250 package includes a DOS version of Back-It 4 software, provided on both 3½-inch and 5¼-inch media. To order the Windows version of this software, you can call an 800 number listed on an included flyer. While it would be nice if the Win-

dows software were included, the flyer puts the RETRIEVER/250 a step ahead of some competitors who make no provisions whatsoever for using their products from within Windows.

The manual for the software consists of a small booklet, just slightly larger than a pamphlet, which contains only two diagrams (actually screen dumps of the main menu and a parameter configuration screen). Although Spartan, the manual is adequate for its intended purposes of getting you through the installation process and helping you use the RETRIEVER/250.

You can choose among three types of software compression, which naturally speeds up backup time as the level of compression is raised. Many users will find the INTERPRETER RETRIEVER/250 to be a good choice for their file-archiving tasks.

Circle Reader Service Number 372

Iomega Tape250 PC Powered
IOMEGA
1821 W 4000 S
Roy, UT 84067
(800) 777-6179
List price: \$429 (\$269 for Tape250
Insider [internal], \$279 for Tape250
Insider HH, \$548 for Tape250
Parallel Port, \$150 for optional Fast
Floppy Controller AT, \$75 for
**optional Floppy Extender Kit)
Warranty: five years, parts and labor**

IOMEGA TAPE250 PC POWERED

A sleek external tape backup, the Iomega Tape250 PC Powered installs quickly and is easy to use.

The tape backup unit came supplied with a 37-pin proprietary interface and floppy drive pass-through cable. The cable mates with the ribbon cable connected to the floppy drive and "splices" the tape drive's cable into the circuit path, which then connects to the proprietary card. The interface card, an 8-bit board, fits into any available half-length expansion slot.

I found the supplied software, Central Point Backup for Windows and DOS, extremely easy to use from either platform. Unlike some of the other tape drive packages reviewed here, which supply DOS-only software to be run from within a DOS window in Windows, this drive package includes a true Windows program.

The DOS version of the software bears a marked resemblance to the basic Windows interface, including a *Save settings on exit?* requester which presents itself when you're exiting the program. The DOS version of this program also makes use of windowed panels to provide prompts, choices, and the status of the operation in progress. The first window which presents itself when you run the program gives you three choices—Backup, Restore, and Compare.



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To select files to work on, you must first tag them from the Choose Directories section; if you'd like to back up these same files later (especially if you wish to do so regularly), you'll appreciate the option to save the list of these tagged files to another file. In succeeding backups you'll avoid having to select the files all over again.

To simplify file selection, the software uses a directory tree interface, which I like because it provides a useful visual representation of the file and its location on the drive.

Another nice feature I like in this program is its backup-time estimation. After you've selected your files and configured the tape drive, the software estimates how much time the backup will take even before the process has begun. There is some tarnish on this sterling feature, however, since the accuracy of the estimate leaves something to be desired. When I tried it out, the onscreen status clock that shows the time remaining for the operation changed from 1:10.00 to 2:57.00 after the backup had been in progress for approximately 40 minutes; so while this feature is nice to have, its true value depends on your expectations of accuracy.

The drive operates very quiet-

Irwin AccuTrak Plus A250E
MAYNARD ELECTRONICS
A Division of Conner Peripherals
36 Skyline Dr.

Lake Mary, FL 32746

(800) 222-5871

(407) 263-3500

List price: \$419 (\$299 for A250PC

[internal], \$198 for A120PC

[internal])

Warranty: two years, parts and

labor

ly, only a whisper louder than the PC's cooling fan.

Need more speed? An optional one-megabit-per-second connector card from Iomega delivers speedier backups and restores.

A quick-reference card and the drive's owner's manual explain the hardware installation. I found the supplied software manual complete, well written, and well organized. The scope and content of the DOS and Windows sections are excellent; even if you're a novice, you should have no problem installing or using this drive and the Central Point software packed along with it.

Combining performance and ease of use for both DOS and Windows users, the Iomega Tape250 PC Powered is a good choice.

Circle Reader Service Number 373



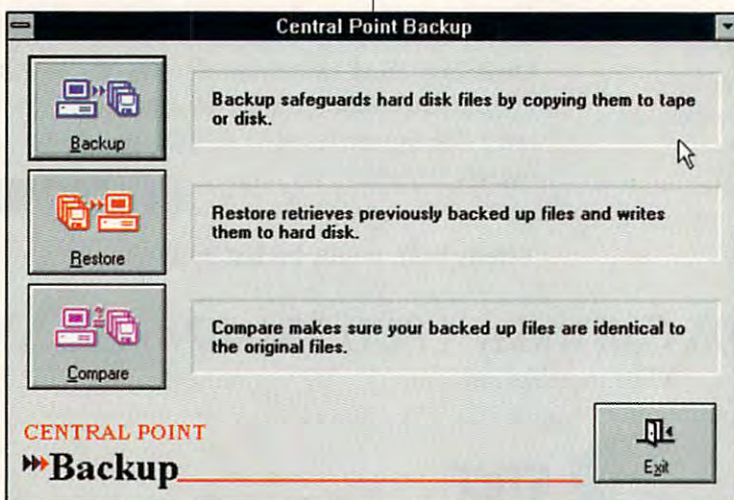
IRWIN ACCUTRAK PLUS A250E

Looking for a compact external tape backup unit that performs well and offers software for DOS, Windows, and OS/2? The Irwin AccuTrak Plus A250E fills the bill.

Three separate manuals (for MS-DOS, Windows, and OS/2 software) make this one of the better documented and more versatile tape device packages. For each of these software versions, the manufacturer provides both 5¼- and 3½-inch media. Covering all the bases this way goes far toward creating a good impression and bolstering confidence in the product.

This drive uses a proprietary interface card which will fit into any 8-bit half-length expansion slot. A ten-position DIP switch on the card allows you to resolve any address conflicts with other devices which may be in the system, but the default settings worked just fine in the Tandy 433DX test system. Once you insert the board, all that remains is to connect the cable to both the D connector on the card's mounting bracket and the port on the back of the tape drive. Unlike most other external tape drives, this one derives its power from the PC itself via the interface card and cable. If your power supply already has all the peripherals it can handle, you'll want to use the optional external power adapter for this tape drive.

The AccuTrak Plus A250E's driver software installs quickly



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and easily with minimal user interactivity. I particularly liked the DOS version of the software, since it provides an excellent range of options that I can invoke from the DOS command line—a highly useful feature for automating backups via batch files. The manual supplies an ample description (in tables) of all commands and parameters that can be implemented. A quick-reference card also helps you navigate different sections of the program, especially those sections you encounter as you become acquainted with the software.

While the drive performed without a hitch, I was somewhat surprised at how much tape it required to back up 241MB of data without compression; I needed three tape cassettes (120MB uncompressed capacity) to back up the hard drive, whereas only two cassettes were required with other drives covered here. If you have lots of data to back up with this drive, it's a good idea to have several preformatted tapes on hand and ready for use. Of course, to save tape and speed up the process, you can also perform selective backups, in which only specific files are archived.

This drive is quite compact, only 4.9 inches high × 2.6 inches wide × 7.5 inches deep, making it easily portable. But since the drive requires an internal interface card, it won't be well suited

Irwin AccuTrak Plus A250E
MAYNARD ELECTRONICS
A Division of Conner Peripherals
36 Skyline Dr.
Lake Mary, FL 32746
(800) 222-5871
(407) 263-3500
List price: \$419 (\$299 for A250PC [internal], \$198 for A120PC [internal])
Warranty: two years, parts and labor

for use with most laptop or notebook computers.

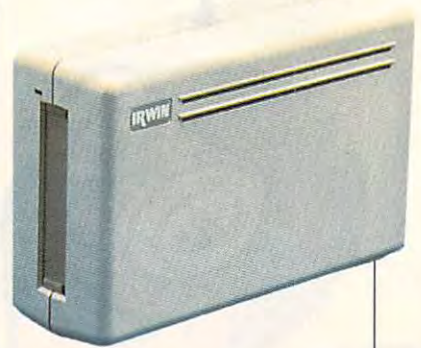
Overall, the Irwin AccuTrak Plus A250E is a solid unit that looks good and performs well while giving you the choice of using it under DOS, Windows, or OS/2.

Circle Reader Service Number 374

IRWIN EZPORT

Because it connects to the parallel port rather than a special interface card, the Irwin EzPort external tape drive merits the consideration of people looking for a non-floppy backup solution for their notebook computers.

Installing this drive should be a very simple and straightforward affair, requiring only the connection of the drive's cable to the PC's parallel port and loading the EzTape Software. For the vast majority of installations, that's all you'll need to do. However, if

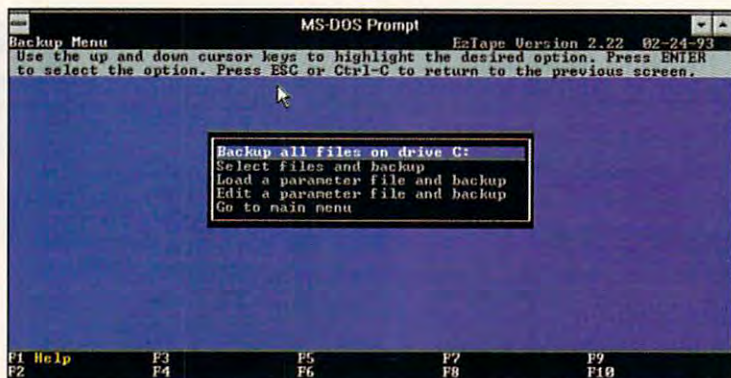


you're the owner of a Tandy 433DX (or presumably any of the Tandy Omni Profile 486 computers, which all use this same motherboard), you're going to have some problems.

The parallel printer port on these Tandy machines deviates from true 100-percent IBM-standard compatibility in some respects. In many instances this deviation from 100-percent compatibility won't be noticed, since normal printer functions seem to be without any problems. However, some other devices that use the parallel port for communication, as does the EzPort, don't find the required signals they're looking for on the Tandy parallel port, thus making a successful installation impossible.

The problem with the Tandy machines is that they do not allow user enabling of an interrupt for LPT1, which the tape drive requires for communication with the PC. Not finding an interrupt, the EzTape 3.1 program assumed no drive was connected, prevented any further operations, and displayed an *Error: Tape Drive Not Found* message.

To work around this problem, I installed in the Tandy 433DX an expansion board containing an additional serial port and a second parallel port. I disabled the serial port and set the parallel port to function as LPT2 on this board prior to inserting it in the expansion slot. Once the I/O board was installed, the software immediately acknowledged the presence of



EzTape 2.22 for DOS

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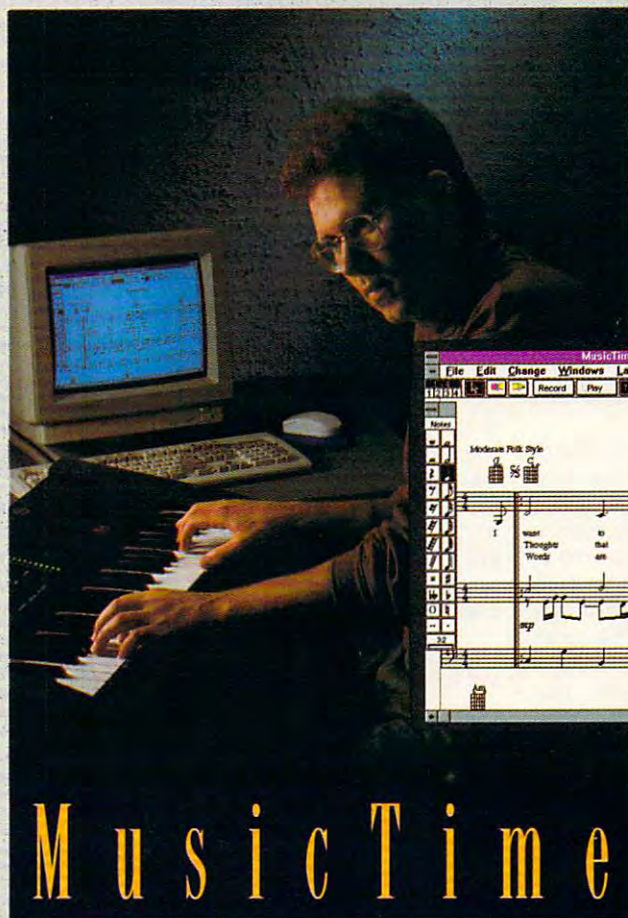
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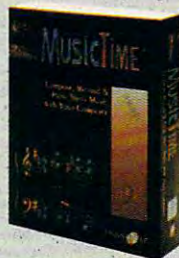
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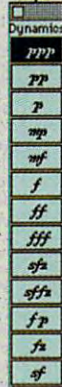
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Circle Reader Service Number 273

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EzTape 3.1

the drive and all functions became operative.

Part of the EzPort hardware installation requires snapping a back piece onto the tape drive's 25-pin connector, but this takes a bit of doing. Getting the pieces to fit snugly together (I had to force them to mate so that the unit resembled the picture on the box) required a considerable amount of pressure, something users may not be comfortable with. Once they were together, I connected the power supply and interface cables to the unit, and the software immediately recognized that the drive was connected. A backup was underway shortly thereafter.

The software's onscreen timer isn't as accurate as it could be, since it updates itself with each new *File Now Being Copied* screen message update. While this takes only a couple of seconds for each incident, it turns into a considerable amount of time for backups of any appreciable size. For instance, the EzTape timer indicated that only 12 minutes had elapsed after 15 minutes of actual time had passed.

This drive's package includes EzTape 3.1 software for both DOS and Windows on 5¼-inch and 3½-inch media. I found the software very easy to use, providing a friendly directory tree representation of the file structure; the directory tree makes select-

ing files for backup or restore a simple procedure. This drive required three tape cassettes to back up 241MB of data, so it's a good idea to have several preformatted cassettes ready for use if you'll be doing high-volume backups with this unit.

Circle Reader Service Number 375

MAYNARD ARCHIVEXL 9250E

I found the Maynard ArchiveXL 9250E one of the easier of this month's external tape drives to install and use.

The 9250E uses a 37-pin proprietary card in concert with the PC's own controller. The proprietary card installs easily into any available 8-bit half-length expansion slot, and a ribbon connector from the PC's floppy controller connects to the proprietary card. Another cable attaches a D connector on the card's mounting

Maynard ArchiveXL 9250E
MAYNARD ELECTRONICS
A Division of Conner Peripherals
36 Skyline Dr.
Lake Mary, FL 32746
(800) 222-5871
(407) 263-3500
List price: \$679 (\$279 for internal version)
Warranty: one year, parts and labor

bracket to the tape drive.

You'll find the installation procedure explained in a few pages near the back of the user manual—a rather odd location for it, since you would expect it to appear in the very beginning. The installation instructions, albeit a bit brief, cover the necessary territory well enough; diagrams and illustrations serve to simplify the installation so that even if you're a novice, you should have no problem performing it.

The software provided by Maynard, QICstream for DOS, runs under Windows as a full-screen DOS application provided that you run Windows in standard mode. This is bound to be a limiting feature for most Windows users, who run Windows in enhanced mode.

Many users will undoubtedly want to use the QICstream software directly from DOS, since it lends itself well to use in batch files to automate the backup process. While not as feature packed as some of the other backup software packages I've seen, the QICstream software is very easy to use. Performing a full backup requires a few keystrokes and answering four questions (for example, whether you want to use compression, back up all files and subdirectories, and so forth).

The ArchiveXL 9250E is certainly one of the quieter tape backup units I've come into contact with thus far; I could barely hear the drive in operation over the system's cooling fan. No loud, high-pitched whines here—just a barely audible hum as the mechanism shuttles the tape back and forth.





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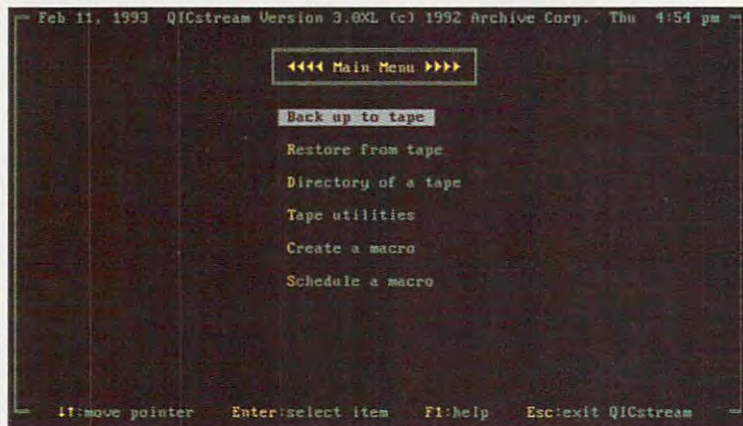
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QICstream 3.0

This drive uses QIC industry-standard data compression when backing up data, thereby increasing an archived tape's compatibility with other drives. This compatibility is a handy feature if you want to restore one drive's contents on another PC with a different brand or model of tape unit installed.

The QICstream software does not use a tree format of displaying a tape's contents, and this is unfortunate, since directory tree listings are the easiest to view and use. Users with files buried six or seven directories deep will find that the entire pathname of a file runs off the side of the backup/restore status screen, a definite shortcoming if you regularly nest subdirectories to any extent.

The floppy-based installation software supplied with the drive consisted of one 5¼-inch disk, and I found no mention of how to obtain a 3½-inch copy of the software anywhere in the package. This necessitated copying the software onto a 3½-inch disk on another PC before it could be installed on the Tandy 433DX test system.

If you're interested in a tape backup that does what it's supposed to without a lot of bells and whistles and you can live with the minor shortcomings cited here, then you should check out the ArchiveXL 9250E from Maynard.

Circle Reader Service Number 376

MICRO SOLUTIONS BACKPACK

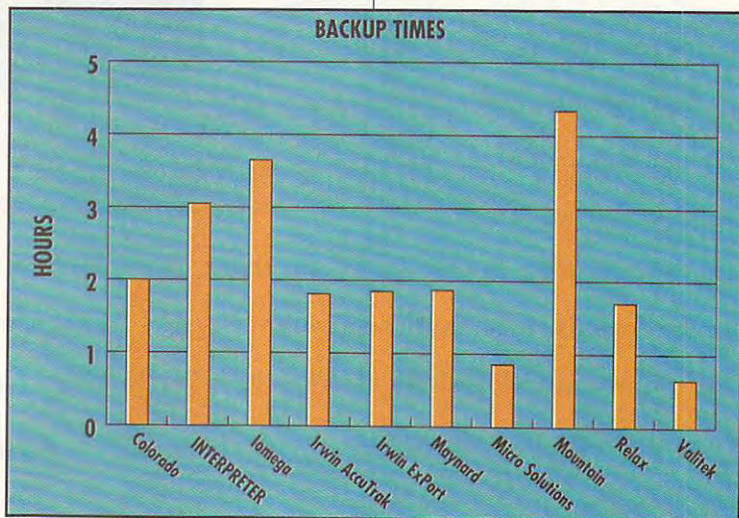
Good things often come in small packages, and the Micro Solutions Backpack tape drive is an excellent case in point. Weighing in at just 2.50 pounds and measuring only 1.50 inches (height) × 4.00 inches (width) × 7.75 inches (length), the Backpack is light and small enough to tote along in most notebook or laptop carrying cases. And since it's an external unit which connects directly to the computer's parallel port, it doesn't require any internal expansion slots for installation, making it ideal for transportable use.

TAPE DRIVE TIMINGS IN PERSPECTIVE

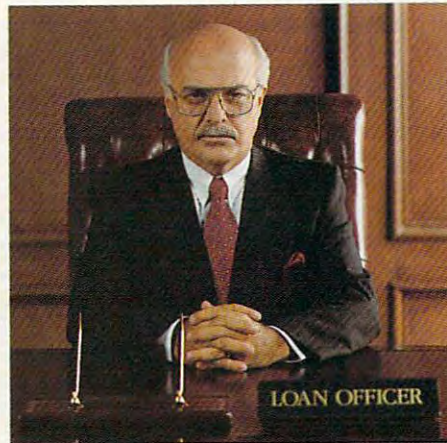
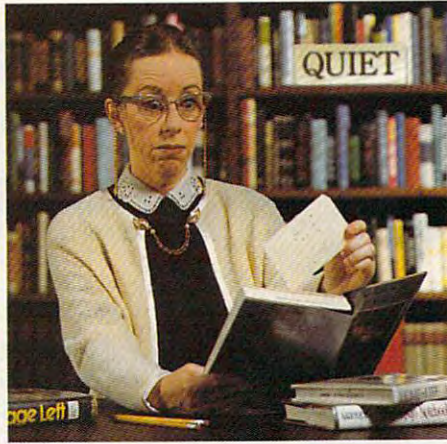
The type of data in a file can have a significant effect on the amount of time a tape drive takes to perform a backup or restore. For example, manufacturers sometimes use very large test files of X's, O's, or other single characters which, because of the redundant nature of the data, yield best-case performance times; these are usually the figures you'll see published in the advertising material for these products. It's important to remember that such files do not yield timing results comparable to the results involving the kinds of data you use on a daily basis.

Another factor in the speed of a tape drive is the hardware that writes to and reads from the tape. Tape devices using multiple heads have a significant performance edge over single-head devices, and that advantage justifies the higher price tag for these units. A single-head tape drive requires three passes (complete transport of the tape from one reel to the other and then back again) to read, write, and erase data. On the other hand, a three-head tape drive can read, write, and verify or erase in one pass so that, all other factors being equal, it requires only one-third as much time as the single-head drive.

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I found installing the Micro Solutions Backpack very straightforward and uncomplicated; that should be the case as long as your PC has a parallel port that conforms 100 percent to the IBM standard. The Tandy 433DX test system, however, does not totally conform; this made the installation interesting, to say the least.

An *Unable to generate printer interrupt* error message appeared very early in the installation, and I immediately suspected that a conflict with some other installed device was to blame. I removed from the computer the audio card (which also contained a SCSI CD-ROM drive interface), yet the error message still presented itself.

A call to tech support at Micro Solutions elicited a courteous response from the technician, who said the only reason for this message would be a device conflict (which I had already eliminated from suspicion by removing the audio card) or a parallel port that was not 100-percent IBM compatible. He suggested I install a second parallel port in the PC, and he felt confident that this would alleviate the problem. Fortunately, there was a multifunction I/O card not being used in the lab, so I immediately installed it in the Tandy with the jumpers set to activate LPT2. Like magic, the error condition disappeared.

It's very important to note here that this problem was not the fault of the Backpack tape drive (or the other unit reviewed here which encountered the same problem). Instead, the problem in-

Micro Solutions Backpack MICRO SOLUTIONS COMPUTER PRODUCTS

132 W. Lincoln Hwy.
DeKalb, IL 60115

(815) 756-3411

List price: \$539

Warranty: one year, parts and labor

volves the way Tandy configures its parallel port on the Tandy Omni Profile 486 motherboards. If you own one of these machines and you're thinking of purchasing a Backpack, then add an expansion card with a second parallel port to your shopping list as well.

The Backpack provides a printer pass-through port on the unit so you can keep both the Backpack and your printer connected to the PC simultaneously. The device is transparent when not in use, so normal printer function won't be disturbed in the least.

The Backpack stores up to 250MB using data compression with a standard DC2120 quarter-inch minicartridge. The Backpack can read and write standard QIC-80 tapes and will also read (but not write to) QIC-40 tape cassettes. Featuring a 1MB-per-second data transfer rate, the Backpack is one of the faster tape backup units covered here.

The software provided with the

Backpack is almost identical to that which comes with the Maynard ArchiveXL 9250E, and it will run in a DOS window from within Windows, even though it doesn't generate an icon. Using the Backpack software from DOS provides the most flexibility and greatest range of options.

If you're looking for a pint-sized tape backup that's easy to tote and big on performance, the Backpack merits a closer look.

Circle Reader Service Number 377

MOUNTAIN FILESAFE TD-250

Another internal-mount tape drive, the Mountain FileSafe TD-250 installs easily in any 5 1/4-inch half-height bay accessible from the front of the machine and uses the PC's floppy controller for interfacing.

While the installation procedure is uncomplicated and straightforward, the documentation assumes at least some prior PC knowledge on the part of the user. Unlike some of the other tape drives reviewed here, which go to great lengths for clarity and detail in their documentation, the FileSafe TD-250 comes with an installation guide pamphlet rather than a full-blown installation manual.

Sep 1, 1991 BACKPACK Tape Drive Version 1.00 Sun 1:00 pm

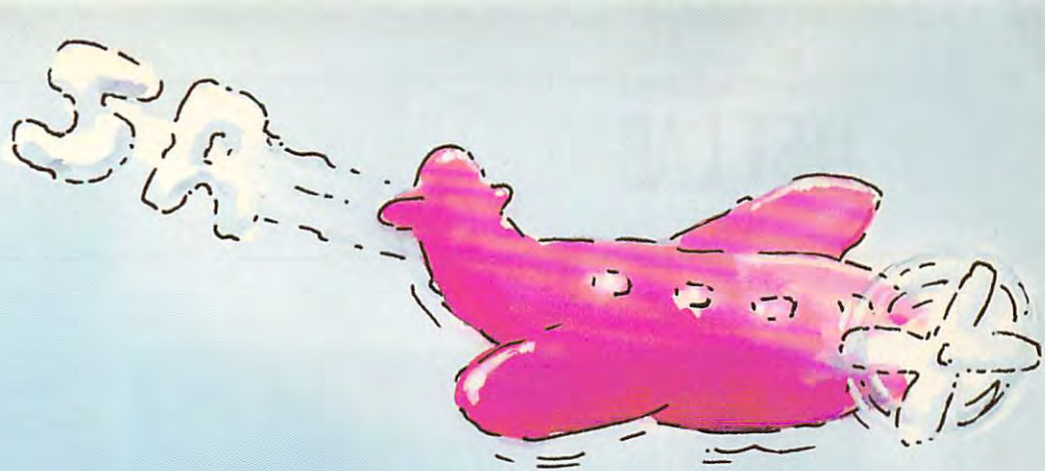
Tag files to backup

Name	Ext	Size	Att	Date	Time	Tagging Commands
IBMBIO	COM	23,591	.RHS	9-16-87	12:00p	Ins: Add file or <DIR> + to selected set
IBMDOS	COM	30,632	.RHS	9-16-87	12:00p	
ACCT	<DIR>			1-15-90	10:30a	Del: Remove file or <DIR> - from selected set
ACCTDATA	<DIR>			11-17-89	2:23p	
ACCTPGMS	<DIR>			7-05-90	10:35a	I: Include files by name
ASSYDNG	<DIR>			8-02-91	12:56p	
BACKPACK	<DIR>			8-24-90	2:06p	E: Exclude files by name
BP	<DIR>			7-30-91	0:30a	
CCARD	<DIR>			2-12-91	11:11a	D: Include/Exclude Date from.....01-01-88 through.....12-31-99
MMAKER	<DIR>			10-03-90	3:02p	
MPOINT	<DIR>			8-21-90	3:24p	
UNIDOS	<DIR>			11-08-89	5:02p	
UNIFORM	<DIR>			11-08-89	4:50p	

Total bytes= 856,877 Total files= 61
Path= C:\

!!:move list **:change<DIR> Enter:continue F1:help Esc:prev screen

Backpack 1.0 software



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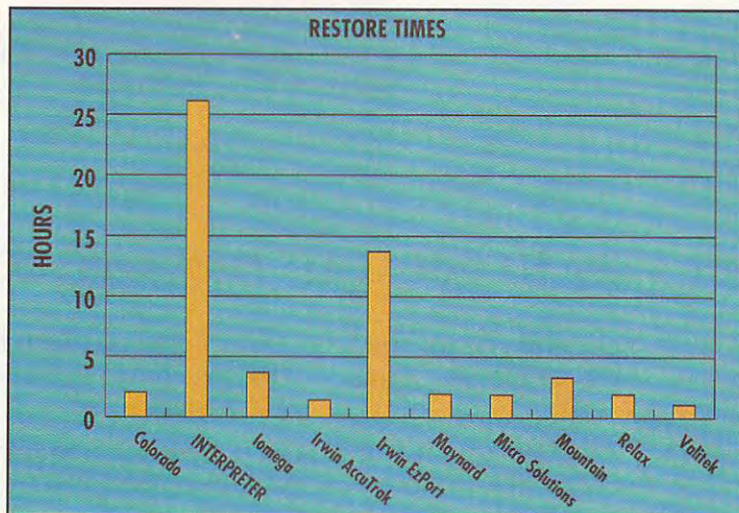


One Parsons Drive, PO Box 100, Hiawatha, IA 52233

Priority Code 7787201



TEST LAB



If you've ever installed a peripheral device in your computer system, you shouldn't have any problems with this installation. If you're a first-time installer, however, you may indeed have some trepidation that a bit more detail and explanation in the documentation would alleviate. You're instructed to "refer to [the] computer's manual or consult your dealer on installing an internal device" right from the first paragraph of the installation pamphlet. Since the guide provides only three diagrams to illustrate the installation process, it is entirely conceivable (and very likely) that someone who has never before installed a tape or disk drive might not feel comfortable with this sketchy documentation.

What the hardware installation documentation lacks is more than compensated for in the rather large manual provided for installing and using the backup software. You'll find clear and explicit text, augmented by numerous diagrams to reduce the learning curve and increase understanding of the material. A handy quick-reference card contains all of the DOS commands and prefixes. No Windows software or launching option comes with the drive package.

The software displays an

onscreen clock which provides elapsed-time information to let you know how long the backup/restore session will take and has taken thus far. While this is a good idea, the onscreen clock updates itself infrequently rather than running in realtime, and this makes it difficult to estimate how much longer the backup or restore operation will take.

The software gives you excellent file management utilities, allowing files to be tagged for selective restores and backups. You also get a software compression option, which decreases backup and restore times while doubling the tape's storage capacity (you must use the compression option to get the full 250MB capacity on a single tape cassette). A particularly nice feature

Mountain FileSafe TD-250
MOUNTAIN NETWORK SOLUTIONS
240 E. Hacienda Ave.
Campbell, CA 95008-6623
(800) 458-0300
(408) 379-4300

List price: \$315 (\$489 for external version without power supply, \$599 for external version with power supply)

Warranty: one year, parts and labor

TAPE DRIVE TESTING METHODOLOGY

The lab tested all tape drives using a factory-configured Tandy 433DX desktop PC equipped with a 250MB hard drive.

An accessory I/O card was installed in the Tandy to provide a second parallel port. Because the built-in parallel port of the Tandy machine does not generate an interrupt required by some of the tape devices that connect to this port, the lab tested all of the parallel-port drives by using the parallel port on the accessory board rather than the one that's part of the Tandy's motherboard.

Our testing consisted of performing a total backup of all data within selected subdirectories on the hard disk—241,232,326 bytes in 3679 files in 26 subdirectories nested up to five levels deep. To make the testing more representative of real-world activities (see "Tape Drive Timings in Perspective"), we used a variety of data types: programs, overlays, text, graphics, sound, spreadsheets, CAD files, and more. The sizes of the files ranged from 17 bytes up to 22,876,415 bytes.

The lab performed all tests from DOS and did not use any compression.

Although some of the programs packaged with these drives include a timing capability, we found the timers inaccurate in some cases. Therefore, all times reported were obtained using an external digital stopwatch to ensure realtime figures.

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TEST LAB

of the software is that you don't have to run the tape backup program to perform a function; all of the program's functions can be accessed from the DOS command line. This simplifies creating batch files for common backup routines, performing selective backups, and other such applications.

The Mountain FileSafe TD-250 is a relatively quiet tape backup unit. In operation, it produces a low and unobtrusive machinelike sound while the transport mechanism is in motion.

Circle Reader Service Number 378



FileSafe software

TAPE DRIVE FEATURES

	Colorado Jumbo 250	INTERPRETER RETRIEVER/250	lomega Tape250	Irwin AccuTrak Plus A250E	Irwin EzPort
External or internal	internal	external	external	external	external
Interface	computer's drive controller ¹	parallel port	proprietary with floppy controller	proprietary	parallel port
Dimensions in inches	5.32 x 1.63 x 4.00	7.25 x 2.00 x 5.00	5.50 x 1.00 x 4.00	7.50 x 4.90 x 2.60	12.00 x 4.90 x 2.60
Weight in pounds	1.25	approximately 2.00	2.50	1.75	3.00
Recording format	QIC-80 ²	QIC-80	QIC-80 ²	servo	servo
Recording density in bpi	14,700	14,700	14,700	11,600	11,600
Formatted capacity					
Without compression	125MB	120MB	165MB	120MB	120MB
With compression	250MB	250MB	250MB	250MB	250MB
Number of tracks	28	28	28	32	32
Tape speed in ips	read: 34 write: 68	read: 34 write: 34	read: 34 write: 68	read: 86 write: 43	read: 86 write: 43
Data transfer rate in Kbps	500	up to 800 ³	500	500	500
MTBF in hours	40,000	50,000	30,000	50,000	50,000
MTTR	less than 30 minutes	less than 30 minutes	less than 30 minutes	less than 30 minutes	less than 30 minutes
Hard error rate	less than 1 error in 10 ¹⁵ bits	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹⁴ bits
Magnetic tape	DC2120	3M or compatible	DC2120	AccuTrak 2000-120	AccuTrak 2000-120
Ambient operating temperature in degrees Centigrade	5-45	5-35	10-45	5-45	5-45
Relative operating humidity	20-80%	20-80%	10-80%	20-80%	20-80%
Data compression	hardware option	software option	software option	software option	software option
Software	Colorado Backup for DOS	Back-It 4 ⁴	Central Point Backup	EzTape	EzTape
DOS	yes	yes	yes	yes	yes
Windows	no	yes	yes	yes	yes
Warranty	one year	one year	five years	two years	one year

¹Unless you use the optional proprietary compression card.

²QIC-40 read only.

³Depending on CPU speed, parallel port design, and so forth.

⁴Also available for Windows.

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TEST LAB

RELAX 600 MEG. TAPE VISTA

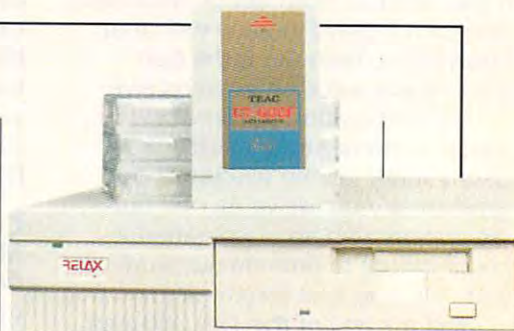
The Relax 600 Meg. Tape Vista external drive employs a SCSI interface to communicate with the host PC. This drive uses a Teac CT-600F tape cassette capable of holding 600MB of data (the total formatted capacity is actually 606.9MB).

Unlike other drives, this one doesn't require you to format cassettes prior to use, and the drive will use tapes from Teac drives such as the MT-2ST/45 (60MB) and the MT-2ST/N

**Relax 600 Meg. Tape Vista
RELAX TECHNOLOGY
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Union City, CA 94587
(510) 471-6112
List price: \$879
Warranty: one year, parts and labor**

(160MB) series. The highly durable CT-600F tapes can exceed 3000 passes (one pass is an entire back-and-forth circuit from supply to take-up reel and back).

Installing the Trantor T-338 parallel-to-SCSI adapter supplied with the drive is a snap, since it



plugs right into the PC's parallel port. You can connect a printer simultaneously by joining the printer cable to the T-338's pass-through jack; the SCSI cable that mates with the tape drive connects via another jack at the opposite end of the adapter. Once you

TAPE DRIVE FEATURES

	Maynard ArchiveXL 9250E	Micro Solutions Backpack	Mountain FileSafe TD-250	Relax 600 Meg. Tape Vista	Valitek PST-250F
External or internal	external	external	internal	external	external
Interface	proprietary with floppy controller	parallel port	computer's floppy controller	SCSI compliant	parallel or serial port
Dimensions in inches	8.80 x 2.50 x 4.50	7.75 x 1.50 x 4.00	8.00 x 1.63 x 5.75	5.75 x 1.63 x 4.00	13.25 x 4.50 x 6.00
Weight in pounds	2.50	3.25 ¹	1.50	1.50	9.50
Recording format	QIC-80	QIC-80 ²	QIC-80 ²	D/CAS-103	QIC-02
Recording density in bpi	14,700	14,700	14,700	38,400	12,500
Formatted capacity					
Without compression	160MB	120MB	NA	606.9MB ³	250MB
With compression	250MB	250MB	250MB	NA	NA
Number of tracks	28	28	28	21	18
Tape speed in ips	read: 68 write: 34	read: 68 write: 34	read: 34 write: 34	read: 60 write: 60	read: 90 write: 90
Data transfer rate in Kbps	296	500	500	242	up to 800 ⁴
MTBF in hours	15,000	60,000	12,000	10,000	25,000
MTRR	less than 30 minutes	less than 30 minutes	less than 30 minutes	less than 30 minutes	less than 30 minutes
Hard error rate	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹⁴ bits	less than 1 error in 10 ¹³ bits	less than 1 error in 10 ¹² bits
Magnetic tape	M-11120B	DC2120	DC2120	Teac CT-600F	DC6250
Ambient operating temperature in degrees Centigrade	5-45	10-40	10-40	5-45	5-45
Relative operating humidity	20-80%	20-80%	20-80%	20-80%	20-80%
Data compression	software option	software option	software option	none	software with compression is available
Software	QICstream 3.0	Backpack	FileSafe	Trantor TapeMate II	Valitek
DOS	yes	yes	yes	yes	yes
Windows	no	no	no	no	no
Warranty	one year	one year	one year	one year	one year

¹The transformer weighs one pound.

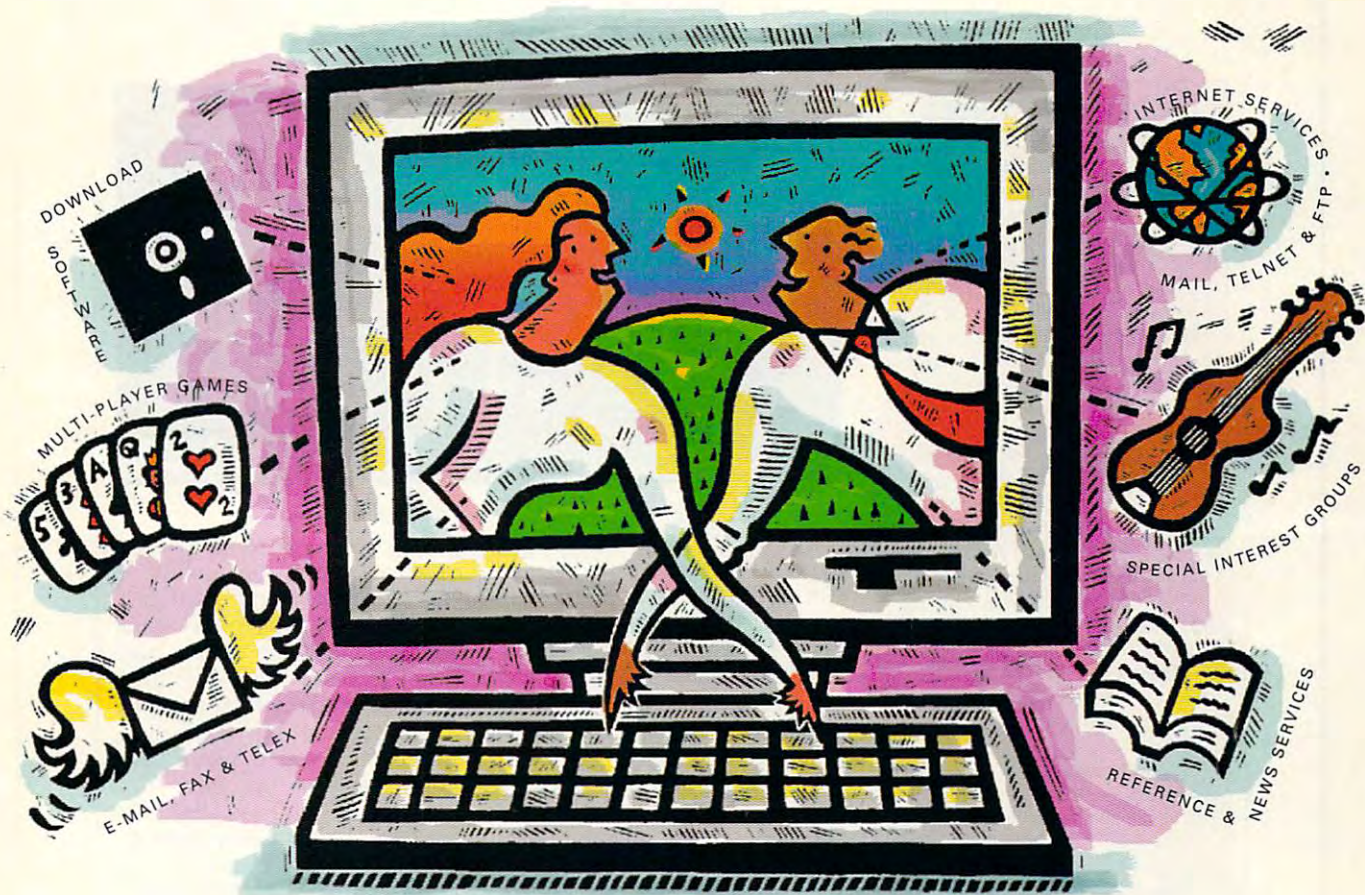
²QIC-40 read only.

³For 21-track mode; 581.5MB for directory-track mode.

⁴Depending on CPU speed.

NA=not applicable or information not available

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TAPE DRIVE TERMS

Recording format. The way that the data is written to the tape. The format defines the number and position of tracks, the number of bits per inch, and the recording code to be used. Most of the drives covered here use QIC standards (established by Quarter Inch Cartridge Standards, Inc.), which allow data interchange between drives of various manufacturers.

Recording density. Usually expressed in bits per inch (bpi), this is a measure of how much data is stored in a given length of tape.

Formatted capacity. Usually expressed in megabytes (MB), this is the amount of data that can be stored on a formatted tape.

Interface. The electrical and logical connection between the tape drive and the host computer.

Number of tracks. The number of rows of serial data bits written across the the tape from top to bottom.

Tape speed. Usually expressed in inches per second (ips), this is how fast the recording medium moves past the head during any operation.

Data transfer rate. The speed at which data is written to or read from tape. This rate is determined by the controller used and is usually expressed as kilobits per second (Kbps).

MTBF. Mean time between failures. The average time before a mechanism requires repair.

MTTR. Mean time to repair. The average time required to make a repair.

Hard error rate. The ratio between readable and unreadable data. In tape drives, error correction codes reduce nonrecoverable errors to an insignificant level.

Ambient operating temperature. The temperature range in which the tape drive is designed to operate.

Relative operating humidity. The humidity range in which the tape drive is designed to operate. This is limited by the tape media.

Data compression. A technique for increasing storage capacity by eliminating redundant data patterns.

—ART STAPP



Trantor Tape Mate 2.2

plug the T-338 in, all that's required is to run the Trantor installation software, which copies the required device driver and modifies the CONFIG.SYS file automatically. You can complete the entire highly automated software installation process in just a few minutes.

The tape drive did not come with any diagrams or instructions pertaining to the physical hardware installation, but since all of the cables and jacks will mate only one way, I had no difficulty figuring out the installation procedure. Since the Tape Vista is an external unit, as is the Trantor T-338, there's no need to open the computer's case, and this expedites installation as well. You don't need any technical prowess or special skills, and even if you're a total novice, you should be able to install the hardware and software completely in under 20 minutes.

The supplied Tape Mate backup/restore/utility software runs in DOS, and I could not find in the documentation any mention of using the software or hardware with Windows. The Tape Mate software creates a text file log for recording error messages as well as additional files for backup, restore, and verify history.

The software's online help text isn't aligned properly in the help window (it scrolls off the right side of the display), which makes it difficult to view the help text.

However, since the manual is very well written and organized, this doesn't present a major obstacle, and the online help would probably be seldom used in real-world circumstances.

I particularly like the directory track, which the software uses when backing up files. This track, along with Tape Mate's file manager (which displays the contents of the tape in tree format), makes file management easy from the tape itself. To restore files from a tape, for example, simply tag them; once you've tagged them, hitting the F10 key begins the restoration process.

The Tape Vista's published specifications boast a restoration time of 42 minutes for a full 600MB of data; in actuality, however, it took nearly two hours to restore only 241MB of data during the review and benchmarking. The slower speeds we experienced were probably owing to the external SCSI interface, since all parallel-to-SCSI adapters have significantly slower data transfer rates than dedicated, internal SCSI adapters.

Overall, the Relax 600 Meg. Tape Vista installs easily, performs without a hitch, and provides a very user-friendly means of backing up and restoring massive amounts of data. It's also ideal for laptop or multi-PC use.

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VALITEK PST-250F

As soon as you open the box and see the carrying handle mounted atop the Valitek PST-250F, you realize that this isn't going to be a run-of-the-mill device. And this first impression is borne out as you remove the monstrously large (compared to other units covered here) PST-250F from the shipping carton. Tipping the scales at 9.5 pounds, it's certainly the heftiest drive reviewed as well.

The large physical size of the PST-250F is understandable, since it uses a DC6250 tape cassette capable of holding up to 250MB of data without compression. DC6250 tape cassettes, measuring approximately 4.25 inches x 6.50 inches, are also considerably larger than the DC2120 cassettes used with most other tape backup units. Remember: This drive can back up as much as a quarter of a gigabyte without compression on a single tape.

Another noteworthy feature is the drive's ability to connect externally to either the PC's serial or parallel port. This flexibility of I/O connection, coupled with the handy carry handle and large tape capacity, makes this drive ideal for backing up multiple PCs, as in a network or work group scenario. You can attach the drive to a PC and have a backup underway within five minutes, making this one of the faster and easier to install and use of the tape back-

Valitek Software
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List price: \$1,795
Warranty: one year, parts and labor

up units reviewed here.

You don't have to install the backup software on the PC's hard drive in order to use it; however, if you prefer to install it on your hard disk, it will be a manual installation, requiring you to use DOS commands to make a directory and copy the files. While this isn't a difficult or time-consuming task, an automated installation batch file would have been a nice touch to include.

I found the software manual well written and appreciated the screen shots used to illustrate points in the text. The very easy software provides a directory tree interface for file selection. A handy Select All command simplifies complete system backups.

I found the constant feedback of the software to be a particularly nice feature. Whenever the tape drive is active, the software provides you with lots of information about the current activity. The software's status window includes a list of terms (*rewind, searching, write tape, read tape, write disk, read disk, send data, rcv data*); the program highlights the appro-



prate words to describe the current activity and status of the operation. The elapsed-time indicator is also particularly noteworthy for its accuracy. Trailing a mere five seconds behind the actual elapsed time, it is the most accurate of any of the timers covered in this month's Test Lab.

The PST-250F's tape head is a three-gap head as opposed to the usual single-gap head found in other drives. There's one gap for reading, another for writing, and a third for erasing. While other tape drives require three passes to erase, read, and/or write, the PST-250F needs only one, performing all three operations in a single pass. This results in very speedy backup and restore times.

For the discriminating user with high-volume archiving demands, the Valitek PST-250F makes an excellent choice.

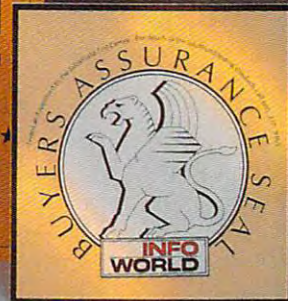
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Benchmark/performance testing was conducted by Computer Product Testing Services, Inc. CPTS is an independent testing and evaluation laboratory based in Manasquan, NJ. Every effort has been made to ensure the accuracy and completeness of this data as of the date of testing. Performance may vary among samples.

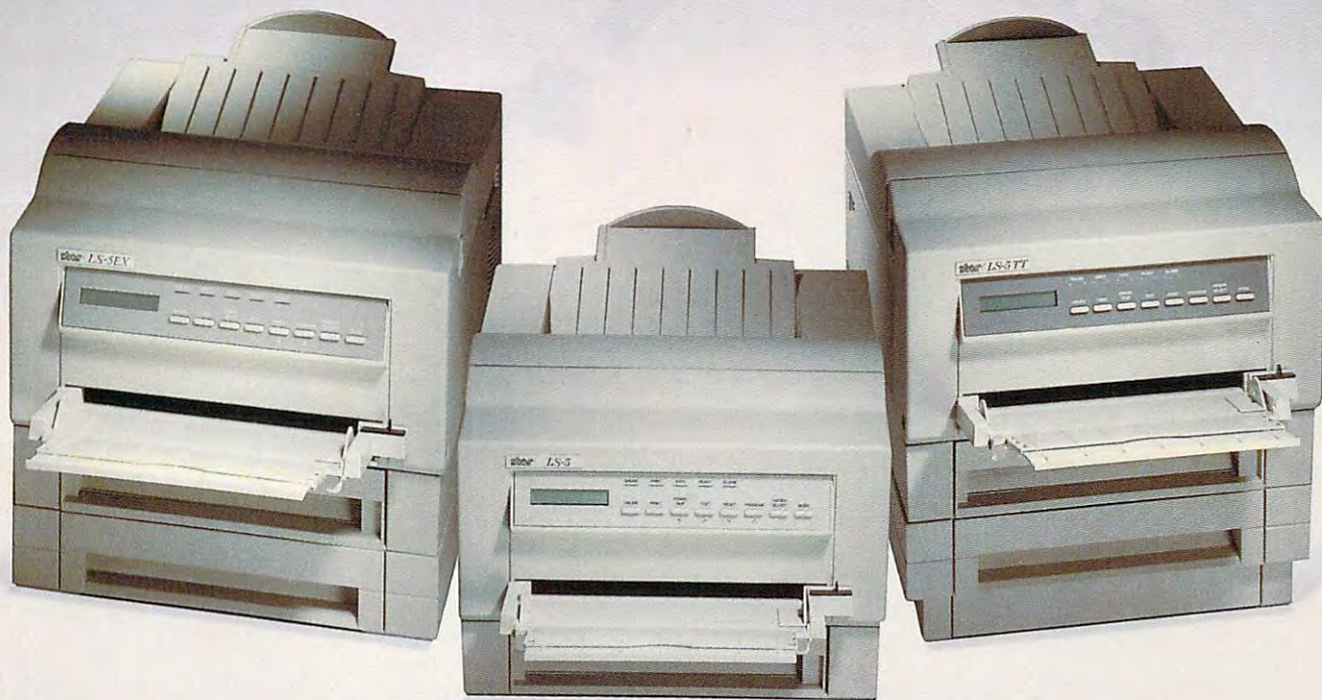


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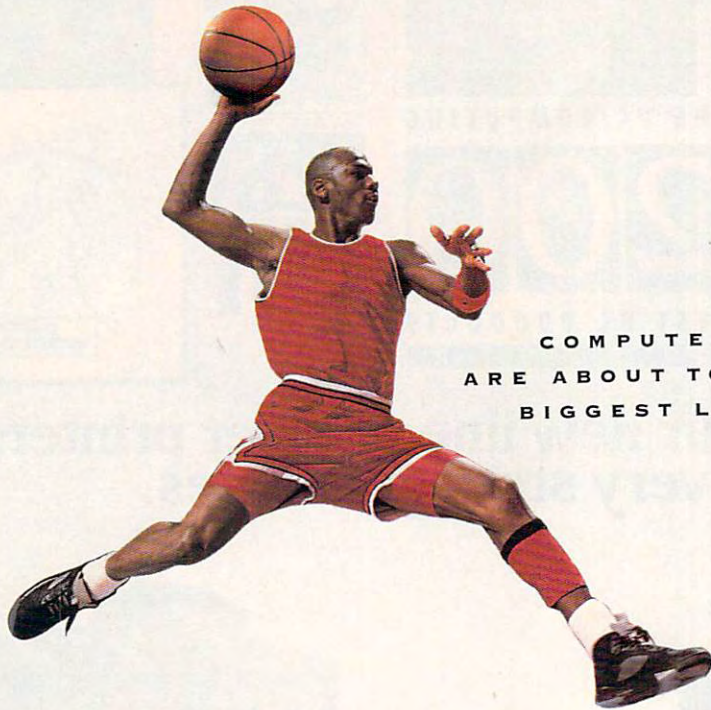
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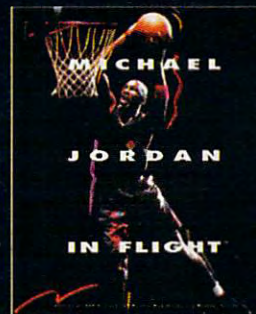
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NEWS & NOTES

Jill Champion

A New Standard

Texas Instruments is touting its new microWriter LED printers as "superaffordable personal page printers." The microWriter family consists of three models: the PS17, with 17 Adobe PostScript fonts; the PS35, with 35 PostScript fonts; and the basic microWriter, which offers HP LaserJet II compatibility.

The printers are powered by an LED (Light-Emitting Diode) print engine that delivers a resolution of 300 dots per inch at five pages per minute. Since the print engine—the "heart" of the microWriter design—has few moving parts, you can expect longer life and consistently dependable performance. Designed to expand as your work expands, the standard 2MB of RAM on the PS17 and PS35 models can be increased to 4MB in 1MB or 2MB increments, while the 0.5MB of RAM on the basic microWriter can be expanded to 4.5MB. Also, with a simple board upgrade, the basic microWriter can be made a PostScript printer.

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The microWriter lineup is very competitively priced at \$729 for the microWriter, \$999 for the PS17, and \$1,299 for the PS35 model. For more information, contact Texas Instruments, Information Technology Group, P.O. Box 202230, ITG-303, Austin, Texas 78720-2230; (800) 527-3500 or (810) 771-5856.

Sound Advice

If you own a PC, adding sound will enhance your experience. People who have sound report that it adds excitement and humor to using their computers. A few special sound effects can take the edge off your most serious applications. And adding sound doesn't have to break your bank: Some of the newest products retail for less than \$100.

If you don't own a sound card and aren't yet ready to spend the money for one, try Sound Explosion from Programmer's Warehouse. It's software that lets you customize any Windows-compatible program by adding giggles, squeaks, footsteps, explosions, or any of more than 500 sound effects, whether or

not you have a sound board. Add the clicking of an electric typewriter to your keyboard, set an alarm clock to ring as a reminder, or customize your word processor to play a motion picture theme. Machine noises, crashes, horns, buzzers, human noises, animal sounds, bells, swishes, zooms, whistles, laser zaps, creaks, splats, dozens of movie themes, and many more effects are included in the Sound Explosion library. Available directly from Programmer's Warehouse, the software is priced at \$49.95. Contact Programmer's Warehouse, 8283 North Hayden Road, Suite 195, Scottsdale, Arizona 85258; (800) 323-1809, (602) 443-0659 (fax).

If you're considering adding a sound card, the new SoundMaker and SoundMaker Plus digital sound cards from Best Data Products offer top-quality sound for digital composing, arranging, voice-control applications, and any use requiring high-fidelity sound. Both models of SoundMaker can vocalize in up to 32 synthesized stereo voices simultaneously. SoundMaker Plus is equipped with a powerful voice recognition capability for voice controlling your PC and features an isolated word recognizer and speaker-independent vocabulary. You can have 50 to 125 active words or phrases and create your own vocabulary that's limited in size only by disk space. Suggested retail prices are \$169 for SoundMaker and \$197 for SoundMaker Plus. For more information, contact Best Data Products, 9304 Deering Avenue, Chatsworth, California 91311; (818) 773-9600, (818) 773-9619 (fax).

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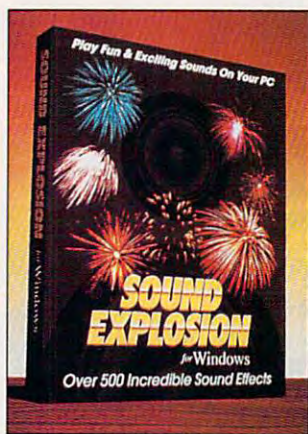


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NEWS & NOTES

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Sound Explosion from Programmer's Warehouse

who like to take extra-long work breaks, the Job Saver gag feature re-creates the sounds of someone hard at work by faking keyboard typ-

ing, coughing, and other work-related noises. Suggested retail price is \$79. For a product demo and more information, call (800) 551-4547, or contact Aristosoft, 7041 Koll Center Parkway, Suite 160, Pleasanton, California 94566; (510) 426-5355, (510) 426-6703 (fax).

Breaking NewGround

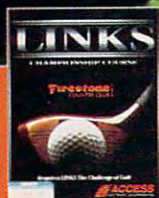
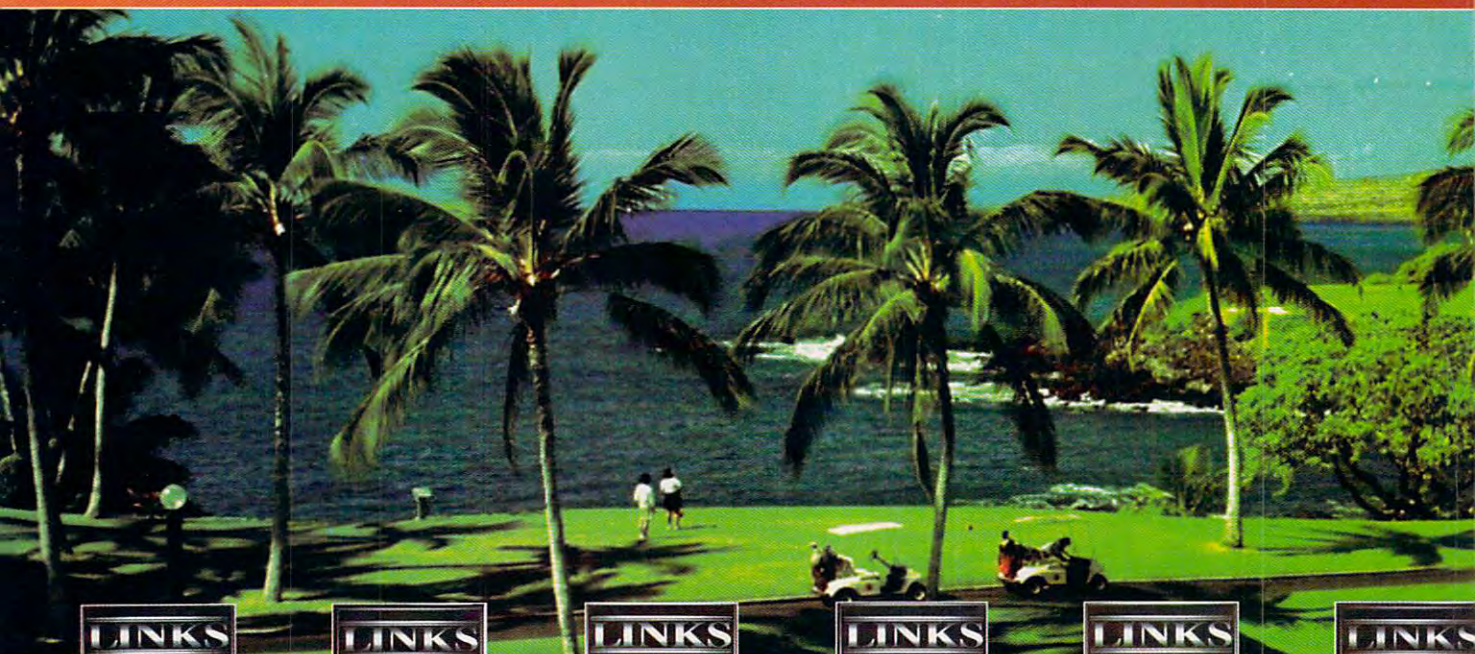
With the introduction of M.O.S.T., Compton's NewMedia is eliminating one of the major drawbacks of CD-ROM-based software—hardware format incompatibility. M.O.S.T. (Multiple Operating System Technology) will allow the same CD-ROM disc to operate in a variety of platforms, including DOS, Windows, Macintosh, and even

Sony's new multimedia player format, MMCD.

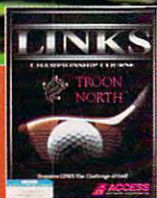
"Our main objective with M.O.S.T.," says Tom McGrew, sales and marketing vice president for the company, "is to make compatibility a nonissue." A title on a Compton's NewMedia CD-ROM disc will run in several different operating systems—and that also frees up space on retailers' shelves, allowing them to offer a greater variety of titles instead of numerous formats of one title. Dozens of M.O.S.T. CD-ROM titles from Compton's extensive library of education, entertainment, and information software should be appearing on retailers' shelves *now*.

There's more groundbreak-

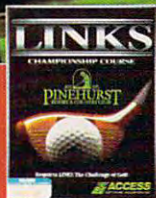
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ing news from Compton's: It's challenging the tradition of publishing for-sale-only software. The company recently entered into an agreement with Major Video Concepts to distribute more than 20 of its CD-ROM-based multimedia titles for rental in select video stores—a first in the software industry. Major Video Concepts will receive special discs and packaging earmarked for rental only. Titles will include consumer interests, children's books, education and reference software, entertainment, music, and art. If you would like more information, contact Compton's NewMedia, 2320 Camino Vida Roble, Carlsbad, California 92009; (619) 929-2500,

(619) 929-2511 (fax).

Mystery for Young Sleuths

There's mayhem at the Smithsonian: Priceless treasures have disappeared, a strange 3-D design rotates in the sky, and what was once a famous painting is now a jumbled-up mess. Calling all young detectives to help Investigator Edison put the pieces back together, decode messages, and visualize concepts to solve the mysteries in Smithsonian Mystery at the Museums from Binary Zoo.

In extraordinarily detailed 3-D graphics and digital audio, young sleuths search with Edison through 12 of the world's most exciting museums, thinking their way

through games, puzzles, and conceptual challenges, and developing and enriching problem-solving, creative-reasoning, memory, and logic skills. The game's unique construction allows players to shape their own explorations through the Smithsonian's extensive collection of artifacts and exhibits by setting their own levels of difficulty and investigating the museums that most interest them.

"Because so many elements can be adjusted and the collection of possible explorations is so vast," says Binary Zoo president Henry Karp, "the program is inexhaustible. It's constantly stimulating and challenging to virtually everyone."

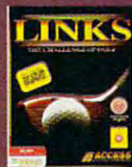
Recommended for ages 7 through 14 (but fun for adults, too), Smithsonian Mystery at the Museums has a suggested retail price of \$59.95. To find out more, contact Binary Zoo, 4119 Sherbrooke Street West, Montreal, Quebec, Canada H3Z 1A7; (514) 846-4059, (514) 846-1171 (fax).

Companies or public relations firms with items of interest suitable for News & Notes should send information along with a color slide or color transparency to News & Notes, Attn: Jill Champion, COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □

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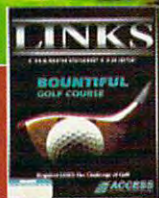
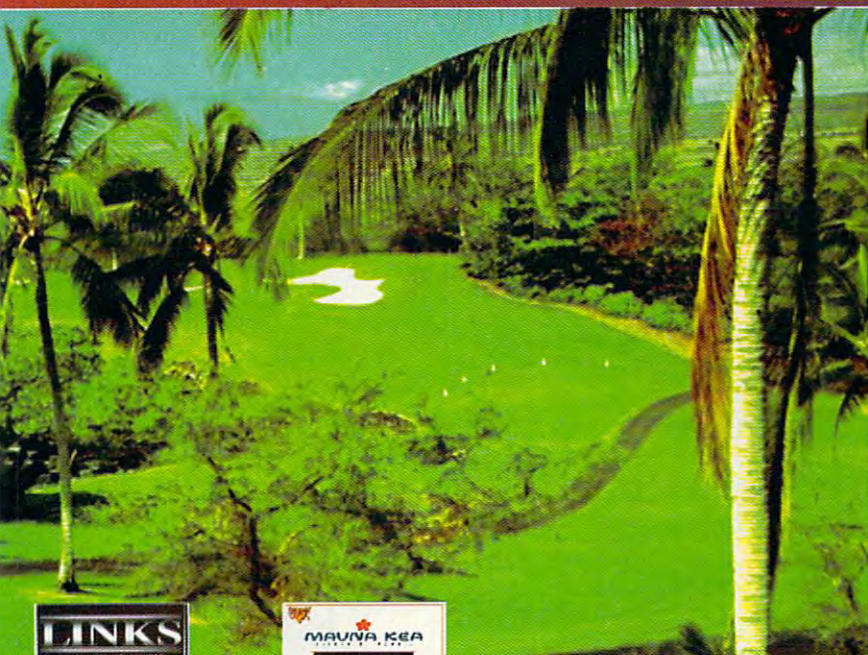


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Return of the Data Bus

Dan Gookin's article, "The Ultimate Windows Machine," in the February 1993 issue contains a mistake. The article says that the 486SX is 16 bits externally, but in fact it's 32 bits. The 386SX *does* have a 16-bit external data bus, but the 486SX is a full 32-bit chip.

MICHAEL PRATT
SASKATCHEWAN, CANADA

The editors were asleep at the wheel of the data bus on this one. You're exactly right, of course. The 486SX is a full 32-bit CPU with a 32-bit internal data path, 32-bit external data bus, and a 32-bit address bus. We apologize for any confusion we've caused.

It's interesting to note that the SX designation, which was originally applied to the 386SX, is an acronym for sixteen, because the 386 has a 16-bit data bus instead of the 32-bit data bus found on the 386DX. Intel must have decided that SX really meant "low-cost" before introducing the 486SX with its 32-bit data bus.

Return from a Comma

I'm looking for a QBASIC program that would allow me to substitute a carriage return (Enter key) for every comma in an ASCII file. Many word processors have search and replace, but I haven't found any that will allow a carriage return to be substituted. Do you know of any?

DENNIS EKSTEN
LOVES PARK, IL

Actually, most word processors will allow you to make this substitution, but the Enter is usually replaced by some special character such as Ctrl-M or Ctrl-Enter. Similarly, most word processors allow you to replace tabs with spaces and so on. You might check with technical support at the company that published your word

processor. But here at "Feedback," we're always looking for an excuse to write a quick, simple BASIC file, and we couldn't resist this one. Here's a program that replaces each comma with a linefeed and a carriage return. Many word processors insert both of these characters when you press the Enter key. If your word processor prefers a simple carriage return, remove +CHR\$(10) from the seventh line.

```
INPUT "Name of file to convert ";
file$
OPEN file$ FOR INPUT AS #1
file1$ = "temp_."
OPEN file1$ FOR OUTPUT AS #2
WHILE NOT EOF(1)
byte$ = INPUT$(1, #1)
IF ASC(byte$) = 44 THEN byte$ =
CHR$(13) + CHR$(10)
PRINT #2, byte$;
WEND
CLOSE
```

If you want to automatically replace the original file with the changed file, add these lines to the end of the program (be very sure you know what you're doing, though; this is a lot of power to give to an automatic process).

```
SHELL "DEL " + file$
SHELL "REN TEMP_." +
file1$
```

Remember to leave a space between the last letter and the quotation mark in these SHELL commands.

This simple program could be used to replace any single character in a file with any string of characters. For example, if you're writing a paper about pneumonoultramicroscopicsilicovolcanoconiosis and you don't want to type the word two or three times in each paragraph, you can use a symbol, such as @, that doesn't appear elsewhere in the piece. Then use your

search and replace or this BASIC program to substitute the word for the symbol wherever it appears. Just change line 7 to read as follows.

```
IF byte$ = "@" then
byte$="pneumonoultramicro
scopicsilicovolcanoconiosis"
```

Many Questions

Ads often say, for example, that a computer has an 80MB hard disk and a 1.44MB floppy disk. What's the difference between the two, and why are both needed? Are all computers IBM PC compatible? Does that mean they're identical to IBM PCs? I've read that PRINT and INPUT have the same function. Is that true? Do fax machines use the same ASCII as computers?

WALT HERRMAN
ARLINGTON, TX

A hard disk is a permanently installed medium with a large storage capacity, and a floppy disk is a removable medium with a small storage capacity. You need both. Software publishers generally sell or license their programs on floppy disks, but you'll usually need to install these programs on your hard disk before you can use them. To install a program, you copy it from the floppies to the hard disk.

Not all computers are IBM compatible, though all PCs are. Amigas, Macintoshes, Atari STs, NeXTs, DEC VAX machines, and so forth aren't IBM compatible. Generally, if a computer can run MS-DOS, it's called IBM compatible, though it may not be identical or even similar to the original IBM PC.

Both PRINT and INPUT are capable of printing a message to the screen. Once PRINT has printed its message, the program moves on to the next instruction. After INPUT has

Taking the wrong bus, substituting characters, dropping your caps, sorting out CPU terminology, translating GW-BASIC to QuickBASIC, and more

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FEEDBACK

printed its message, the program stops and awaits user input. To see the difference, run this simple program.

PRINT "This is a PRINT command. As soon as it's finished printing to the screen, the program will move on to the next command."

INPUT "This is an INPUT command. When this message is finished printing to the screen, the program will pause and wait for user input. Type your name.,"a\$
FOR I = 0 TO 10:PRINT a\$:NEXT

And finally, fax machines don't use any kind of ASCII. The information that comes over the line from one fax machine to another is strictly graphical information. One fax machine sends the shapes of the letters it sees on a page to another fax machine, which prints the graphical information on a sheet of paper. It doesn't send the letters themselves as ASCII or any other kind of code.

Software is available, however, that can interpret the shapes sent by a fax machine and turn them into ASCII code. This software is called optical character recognition (or OCR) software.

Boxing Revolution

I'm trying to create drop caps in Microsoft Word for Windows. I place a large letter in a frame and wrap text around it to create a large initial capital. Unfortunately, the box has an outline, which detracts from the appearance of my text. What can I do?

SUNNY SINGH
QUEENS, NY

The problem is that the frame has an outline. You can eliminate the outline of your frame quite easily. Click on the frame with your mouse to select it, pull down the Format menu, select Border, and click on the button marked None.

Terms of Estrangement

I'm confused about the terminology used in computer advertising, such as 386-40DX 64K Cache; 486-33 Cyrix; 486-33 EISA, 256K Cache; and 486-66 DX2. A short explanation of the significance of these terms would be appreciated.

FRED BELL
ARLINGTON, VA

Sure. Happy to oblige. The 386 is a 32-bit CPU. The 486 is a faster version of the same chip. If it's a 486DX, it has an operating floating-point math coprocessor, which helps speed up certain spreadsheets and CAD programs. A

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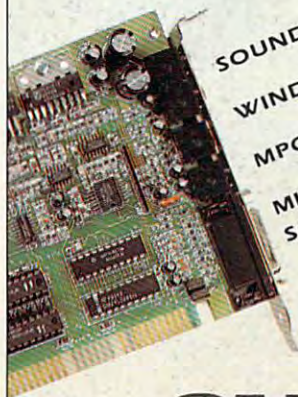
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486SX has no operating coprocessor.

A cache is a special area of RAM used for holding information frequently read from the hard disk. By retaining that information in RAM, the CPU can access it much faster than it could if it had to go back to the hard disk each time it needed the information. A large cache is generally better than a small cache, although, at some point, finding information in a cache is as time-consuming as finding it on a disk, so you don't want a cache that's too large.

Most CPUs are made by Intel, but competitors have recently entered the market, one of which is Cyrix. A Cyrix 486 is similar to an Intel 486.

EISA is a bus architecture. Most computers have 16-bit ISA (Industry Standard Architecture) buses. When the 386 appeared, it was a 32-bit chip, so two new kinds of buses emerged to take advantage of this: the EISA (Extended ISA) bus and the MCA (Micro Channel Architecture) bus. The EISA is compatible with the ISA, but the MCA isn't. Therefore, if you're planning to move any old cards into your new computer, you should look for an ISA or an EISA bus computer.

DX2 is a speed-doubling technology. It allows a 25-MHz CPU to operate internally like a 50-MHz CPU, and it al-

lows a 33-MHz CPU to work like a 66-MHz CPU. Oddly, this doesn't really double the speed of the computer because all external functions must still be carried out at the CPU's rated speed (25 or 33 MHz in these examples). However, it will make a computer noticeably faster.

All You Have to Do Is ASC

I recently upgraded to QuickBASIC 4.5, and it's fantastic. What I need to do is load in some GW-BASIC programs. How can you save a GW-BASIC program so that QuickBASIC can read it?

JUSTIN CASCAGNETT
GRAWN, MI

QuickBASIC's editor reads and writes simple ASCII files. You could use its editor to write anything—not just BASIC programs, but letters, papers, and so on—simply by turning off its syntax checking (pull down the Options menu and select Syntax Checking; to turn it back on, pull down the Options menu and select Syntax Checking again). Because early computers had such limited RAM and disk storage capacities, GW-BASIC saves its files in a highly compressed tokenized format. To save a GW-BASIC file in ASCII format, simply type save "basicfil.bas", a and press Enter. The BASIC

program will be saved in a QuickBASIC-readable ASCII format.

Zoned Again

Your cities are in reverse order in the program Zone ("Feedback," January 1993). They should start with the time zone you are in and proceed east, not west. Also, there are places in the world where time zones are separated by 45 minutes, 30 minutes, and 15 minutes.

WALTER W. WOLFE
WINSTON-SALEM, NC

You're right. Please reverse the order of the DATA lines in ZONE.BAS. As to the other, it's apparently true that some parts of the world don't separate time zones by the hour as we do here.

Readers whose letters appear in "Feedback" will receive a free COMPUTE's PC clock radio while supplies last. Do you have a question about hardware or software? Or have you discovered something that could help other PC users? If so, we want to hear from you. Write to COMPUTE's Feedback, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We regret that we cannot provide personal replies to technical questions. □

MAY 1993 COMPUTE 43

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WINDOWS PROGRAMMING: AS EASY AS PIE

EASY WINDOWS PROGRAMMING

Making the leap into Windows programming is much easier than it once was. Five years ago, when I first hired a Windows programmer, it was a given that the candidate would know C intimately and that I'd have to spend nine months training that programmer. Now, there's a middle ground: programming systems for the rest of us. Three new products, Visual Basic and Access by Microsoft and Borland's ObjectVision, make programming in Windows simple enough to be possible for the novice yet powerful enough to be used by professional consultants.

COMPUTE chose these three programs among many other capable, "easy" development environments because each one strikes the right balance in a complex mix of features, stability, price, documentation, raw power, and third-party support. Each is relatively open, and each can be extended in some way using C. All of them allow you to program the application's user interface visually, using the mouse to position controls such as buttons and scroll bars. All are programmable to some extent, and all allow you to place Windows bitmaps in your applications and to interact with the Clipboard, DDE, and OLE.

The price range is dramatic: \$149.95 for ObjectVision and \$199.00 for Visual Basic to \$495.00 for Access. But that doesn't even tell the whole story. Borland offers generous runtime license terms for ObjectVision, allowing you to distribute, at no extra cost, a version of the program that can be used to execute but not create applications. You can also distribute your Visual Basic programs. But Access doesn't come with a runtime module; for that, you pay an extra \$495.00 for the Access Developer's Kit—a total investment of \$1,000.00 if you want others to use your Access programs without owning Access itself. On the other hand, Access is a much more powerful tool than ObjectVision, and while both programs emphasize (but are not limited to) database development, its price is in line with similar high-end database developer's tools such as FoxPro and dBASE IV.

There's a point at which all such "easy-to-use" solutions begin to resist you, a point at which flexibility must lose to ease of use. I call this the wall, because there is no way to get over this obstacle when you come to it. You can do anything in Windows with C. You can do almost everything

BY TOM CAMPBELL

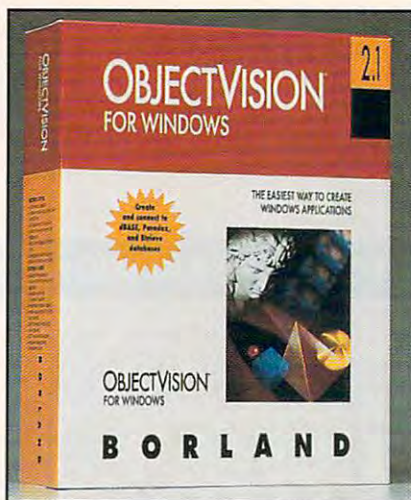
you need to do in Windows with Visual Basic, but at some point you may need a custom control or DLL written in C to get over the wall. Access reaches that point sooner for nondatabase applications, but it never comes close to the wall in databases. ObjectVision hits the wall much earlier than the others, but it's a lot less expensive. When you are ready choose your next Windows programming tool, you'd better know just where the wall is.

Visual Basic—For Just Plain Folks

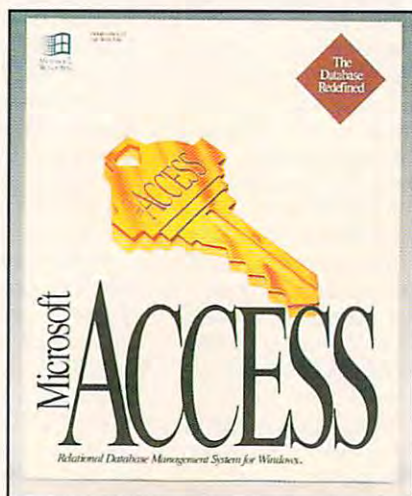
Arguably the most famous of this trio of products is Visual Basic 2.0, the Volkswagen of Windows programming. After the release of the DOS classic QuickBASIC in 1987, Microsoft seemed to be floundering a bit. But the release of Visual Basic in 1991 wiped away any doubts skeptics might have had that Microsoft pretty much owned the BASIC market. Visual Basic wasn't very compatible with QuickBASIC 4.5, but the market responded appropriately, buying the product in droves because it made programming Windows easy and, well, fun. Programmers had used QuickBASIC by the millions, but they understood that Microsoft couldn't be expected to retain compatibility with the masterful DOS product without fatally crippling Windows hackers.

Visual Basic lives up to its name, being both visual and basic. Its biggest departure from traditional BASICs is that you create the shell, or user interface, of the program first, plucking such items as push buttons, text boxes, and scroll bars from a toolbox at the left of the screen (don't worry, northpaws, you can move the toolbox anywhere) and positioning them on a window. Inexplicably, Microsoft, the company that invented Windows, refers to these windows as forms, not windows. You can have hundreds of these forms—windows—in a program. Visual Basic knows how to redraw them and the objects on them, a skill that saves you untold hundreds or thousands of lines of code per application. But this skill comes at a price: Visual Basic programs that haven't been scrupulously optimized for memory usage can bring the system to its knees for several seconds at a time, neither warning you nor deigning to put up that informative, if reviled, hourglass icon while it sorts out its memory situation. You then add code to these objects—forms, buttons, edit fields, and so forth—to create your program.

Each control has a property list



Objectvision: Create applications in hours.



Access: Extensive database development.

that appears automatically when you select the item at design time, and property lists can easily run into the dozens of items. They are very well organized and ruthlessly logical, to the point that you can often guess the name of the property even if you're only semifamiliar with Visual Basic. Controls can also fire events, and all the events you'd like or expect are there for you to attach code to. For example, not only can you write custom code for a mouse clicking on the object, but you can also distinguish between mouse up and mouse down. There are events for the mouse merely passing over the object, key-up and key-down events, and so on. There are controls for editing text, all kinds of buttons, combo boxes, list boxes, bitmap images, and even a spreadsheetlike grid control for displaying, but not editing, data.

Notably missing from the standard edition are equivalents of QuickBASIC's OPEN COM, graphics,

and IN and OUT statements. The graphics system is replaced by version 2.0's more Windows-like graphics controls and statements, but communications support is nil. You'll have to buy a third-party library or the Pro edition. As for IN and OUT, forget it. Windows is not very amenable to direct access to your PC's hardware, but you'll almost never need it, because Windows has most of what you need built in. Still, be forewarned.

Programmers of more traditional languages may suspect that this would appear to mean that a program can end up in the form of hundreds of little independent scraps of code and that a printout can be a real mess. You're right, and that's the good news! The bad news is that it took until the release of version 2.0 late in 1992 for Microsoft to give Visual Basic the ability to print properties as well. Not until version 2.0 could I recommend Visual Basic to any programming teams or to programmers who rely on printouts. You can print, and now when you enter programs in its built-in editor, keywords, comments, variables, and constants can be shown in different colors, allowing extremely quick syntax checking.

Visual Basic's most innovative feature is custom controls. Suppose, for example, you wanted to add low-level MIDI handling to Visual Basic. You could write a custom control using the new multimedia extensions, give it an icon in the shape of a musical note, and voilà! Users could add that note to their toolboxes as if it had been installed at the factory. That's pretty much what Visual Basic Professional Edition is, as a matter of fact. For \$495 you get additions to Visual Basic for graphing, communications, three-dimensional controls, high-level multimedia (no low-level MIDI, darn it), funky animated buttons, spin buttons, electronic mail, and more. With the package, you also get the Control Development Kit, which lets you write new controls in C, utilities to let you add real Microsoft Help to your applications, and support for Microsoft's ODBC, which is an attempt at forging a standard for communications among disparate computer types and other brands of databases.

Of the programs mentioned in this article, Visual Basic is easily the most versatile and certainly the most fun. The sample applications range from crisply competent to mind-boggling, its evolution has been swift and sure, its popularity is unparalleled in the Windows world, and it has a gigantic aftermarket. Visual Basic is so modu-

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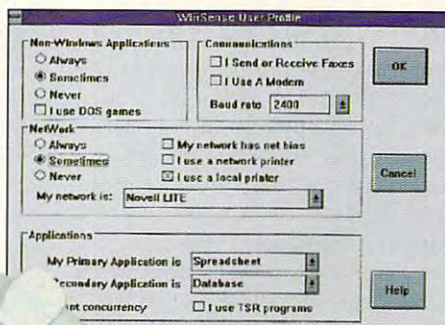
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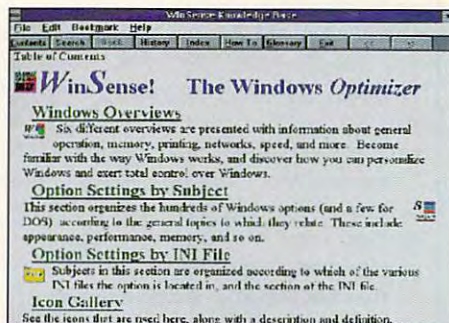
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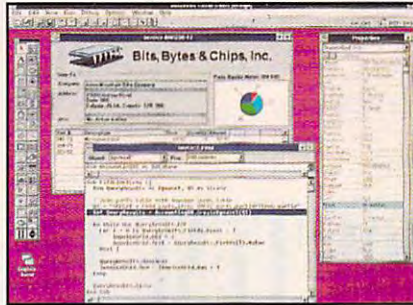
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lar that the Pro additions were packaged in a separate, tragically unindexed manual and a couple of extra disks. I loved using Pro, but if you're on a budget, the standard edition of Visual Basic is the standout bargain of this group.

Access Makes the Heart Grow Fonder

Microsoft's star database program was years in the making and threatens to take firm control of the



Visual Basic: Modular, versatile, and fun.

Windows market. That product is FoxPro 2.5 for Windows—no, wait! It's Sybase. No, wait! It's SQL Server. No, it's not any of those! It's Cirrus. At least that's the name you'll find on a few pages of the Access manual and one or two places in the online help. The product, of course, is Access, and I'll stick my neck out on this one. Access, code-named Cirrus during its turbulent six-year gestation, is by far the most significant microcomputer database product since dBASE II.

Glossary

Although the programming environments covered in this article are all pretty easy to use, sometimes the jargon gets to be a bit much. Here's a translation of some of the less obvious terms.

binary and source compatible. Visual Basic and Access Basic programs go from an English-like appearance, as in Printer.Print "hello, world", to a predigested form that BASIC can run more quickly. The first representation is called source, and the second is called binary.

custom controls. A function in Visual Basic. Custom controls let you draw buttons, combo boxes, and so forth on a form from a toolbox that C programmers can extend. Adhering to a relatively simple set of programming guidelines, C programmers can create custom controls that automatically appear on the toolbox, as if Microsoft had supplied them with Visual Basic, without changing Visual Basic itself.

DDE. Dynamic Data Exchange. DDE is the precursor of OLE and a way for Windows applications to communicate. This lets programs control other programs behind the scenes without the user's knowledge or interference. See OLE.

development environment. The overall set of tools a programmer employs to create Windows applications. For example, Access lets you design databases, enter data, create labels, program in BASIC, and so on, each in separate program modules. These modules are seamlessly integrated into the Access development environment. Likewise, ObjectVision's development environment consists of different modules for visual program

design, database creation, data entry, and so on.

DLL. Dynamic Link Library. DLL is a standard form of program that virtually all Windows programming environments can use; consequently, a DLL written in C can be used from Pascal or BASIC. Windows itself is a collection of DLLs. It's important that a programming environment be able to use DLLs so that third parties can fashion solutions not possible in that environment.

easy to learn. Easy to acquire knowledge, as opposed to putting it to good use. It's easy to learn how to jog, for example, but it's not easy to run a marathon. See easy to use.

easy to use. Easy to put knowledge to work on a routine basis. If you're a good typist, then taking your hands off the keyboard to copy text to the Windows Clipboard is counterproductive, even though the Clipboard is easy to learn. But if you've learned the product and have discovered that you can also copy using Ctrl-C, which isn't quite as easy to learn as using the mouse, then you'll find that product much easier to use.

event driven. Programs that work according to menu commands and mouse clicks are event driven. It turns out that writing a program that can respond to a Cancel button at any time or that allows the user to choose Exit from the File menu at any time requires a much different perspective than writing a program which forces the user to do things in a particular order. Programming Windows in C requires an enormous amount of forethought because you have to account manually for every possible click and command, tasks

that the programming tools in this article handle as automatically as is possible.

OLE. Object Linking and Embedding. In practice this means the ability to represent as pictures or icons in a program the application that created them. If you create a logo in the Microsoft Draw applet that comes with Microsoft Word, you can double-click on that logo, and OLE will automatically kick Draw into action, without your having to know what and where it is.

runtime distribution. Writing a program in a programming language doesn't necessarily mean you can give it away. That's because some languages require that the development system be present for the program to be run. Since you may not be able to afford to buy a copy of Visual Basic for everyone who uses your program, for example, you'll need to use its runtime module. The runtime consists of a version of the language that can be used to execute but not modify programs written in that language. When you purchase a programming environment, you must find out whether distribution is free; some companies charge a substantial amount for each copy you distribute.

text box. A tiny, stripped-down word processor that lets you enter up to 32,000 characters in a programmer-defined box onscreen.

VisiCalc. The first spreadsheet, a precursor to 1-2-3. VisiCalc is significant in that it allowed users to manipulate numbers instantly and through direct visual interaction, which was impossible before computers. It's considered a breakthrough product for that reason.

Access is a skillful blend of database manager, forms designer, reports designer, and BASIC dialect that makes every other data manager on the market pale by comparison. It uses Windows beautifully, always allowing you to do visually the tasks that ordinarily require laborious typing. In one memorable CompuServe exchange, a user bemoaned the fact that in dBASE he could copy a database in one line of code but that it took an unbearable number of operations in Access. He was unaware that all he had to do was copy and then paste using the Windows Clipboard! Truly, Access combines ease of use with extraordinary power in a way that no program since VisiCalc has been able to match.

Microsoft has made the mistake of marketing Access as an end-user tool, and it's certainly not that. Yes, a dedicated manual reader with a lot of time to spare could pick up Access, but it's not as easy as Microsoft claims. No program this powerful could be. If you're a database jock, you'll probably be simultaneously blown away by how easy some things are and stymied by tasks that a non-database user would find easy to accomplish. For example, Microsoft's FoxPro 2.5 for Windows does things in a very dBASE-like way. Adding a push button to your data entry form requires either the use of FoxPro's automated screen designer, which generates trillions of lines of code behind the scenes, or detailed knowledge of FoxPro's use of READ/GET (if you're not a dBASE or FoxPro user, you can—and should—safely ignore this sentence). The upshot of it is that dBASE users moving to Access will have difficulty coming to terms with the idea that a push button on an Access program requires no code at all and that the READ/GET idea has no place in the Access way of doing things. Windows users who haven't yet been sullied by dBASE experience will, on the other hand, be instantly comfortable with this paradigm and would no doubt be horrified at the thought of having to cope with dBASE's consistent, if twisted, READ/GET scheme. The same goes for Paradox users, and it seems to me that Microsoft would have done well to include short chapters on Access for dBASE users, Access for Paradox users, and so on.

Having warned you that Access is like no other product, I can tell you the best thing about it: It's like no other product. I became so productive in Access in such a short time

Buying Information

Access

Requires 2MB RAM (4MB recommended), hard disk with 8MB free, and Windows 3.0 or higher.

\$495.00

Microsoft

One Microsoft Way
Redmond, WA 98052-6399
(800) 227-4679

ObjectVision

Requires 2MB RAM, hard disk with 2.5MB free, and Windows 3.0 or higher.

\$149.95

Borland International

P.O. Box 660001
Scotts Valley, CA 95066-0001
(800) 331-0877

Visual Basic

Requires 1MB RAM, hard disk with 6MB free, and Windows 3.0 or higher.

\$199.00

Microsoft

One Microsoft Way
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(800) 227-4679

that I decided to convert my entire business to Access, even though I was in the middle of coding it in another language. It's that good. If you're reading this article because you're thinking of learning a new Windows language, mark my words. Access is the best way imaginable for you to start making money as a consultant. The lion's share of real-life consulting gigs requires database work. Since Access is a new product, you'd be well served to learn it thoroughly now, while it's new and you have a chance to become the first Access guru in town. There are hundreds of books on dBASE and millions of lines of useful code written in dBASE and its variants, such as Clipper and FoxPro. It's also reasonably simple to learn dBASE dialects. Until now, I've advised the would-be consultant to learn FoxPro or Clipper for those very reasons, and I take tradition dead seriously—maintaining old code is usually a programmer's bread and butter. Clipper may not be state-of-the-art, but it supports an awful lot of freelancers. So when I tell you that Access is so much better than these trusted standards that you should make it your first database development system, you must realize that it's not a snap judgment on my part.

And to some extent, you can hedge your bets, because Access can use Paradox, dBASE, FoxPro 1.0, and Btrieve files as easily as its own proprietary format. This lets you audition Access while using the data files you're used to, quite possibly without disrupting daily operations at all. Once you get more committed to Access, it can convert them to its own format transparently. Microsoft once had a history of ignoring the market leaders when it came out with its own products and then wondering why people didn't go for an obviously superior solution. Excel started a new trend with its 1-2-3 macro and worksheet conversions, Word for Windows continued the trend by bending over backward trying to accommodate WordPerfect users, and now Access is going for the jugular by offering data file compatibility with all the current market leaders. This is good because it allows cautious users to make the transition at their own speed. (Ironically, Access won't handle FoxPro 2.0 or higher data files, even though FoxPro is a Microsoft product, but full version 2.0 compatibility will happen soon.) Access also surpasses every one of its competitors in its handling of multiple related databases, using an extension of the industry-standard SQL language that takes advantage of the standard while filling in its holes.

If you're still not ready to program, you can go a long way in Access with its macros. Much more than a keystroke-recording utility, Access macros are displayed in their own database grid and look a lot like English. You can create and edit them interactively to produce a turnkey application without ever knowing Access Basic. You can also start off by adding tiny snippets of Access Basic to formulas or user interface objects and working up from there, supplementing your macros with Access Basic as necessary.

When you're ready to go all the way and dive into Access Basic, you'll find it well documented in two of its four superb manuals. If you're a Visual Basic user, you'll find Access happily similar to it, but as Microsoft is wont to do with its wild profusion of BASICs, it's neither binary nor source compatible with Access. Unlike the switch from QuickBASIC to Visual Basic, which was painful but necessary, I'm on the fence about Visual Basic versus Access. The addition of a C-like SWITCH statement was fine, because there was nothing like it in Visual Basic, but incompatible handling of

properties is much less forgivable.

My complaints about Access are so picayune that they serve only to illustrate how well conceived the product is in general. Access calls databases tables, which is fine, but it calls the entire application (which consists of tables, forms, reports, program code, macros, and queries) a database. Ouch! It also lacks a way to create databases—uh, tables—under program control, so if you're writing an application for someone else, you must include empty databases—that is, tables—to ensure they can get started. And as stated, distributing an application to someone who doesn't own Access requires the one-time purchase of Microsoft's \$495 Access Developer's Kit, which contains nothing more than a chopped-down version of Access that can't be used to create programs. Given that this is only the first version of the product, I'm astounded I couldn't come up with more substantial problems.

ObjectVision—A Cloudier Picture

Borland seems to be stumbling a bit with ObjectVision, but it's still a worthy product. ObjectVision lets you design and use databases in dBASE,

Paradox, and Btrieve format. You can make use of all the standard Windows controls such as list boxes, radio buttons, and so on. ObjectVision doesn't exactly sport a programming language, but you can build complete applications using what looks like a flow-chart designer. I have never felt entirely comfortable with this approach, but many other users took to it like ducks to water. More objectively, the program lacks certain classics such as loops, and you have to kludge substitutes.

Like Access, ObjectVision lets you create data-entry forms that simultaneously update databases in any or all of its supported database formats, and it makes database design and querying a snap. There's full Windows font support for its forms and reports; as long as your application remains simple, you can go from nothing to a ready-to-go application in a matter of hours. If you work for the kind of client who likes to hover around until every field is spaced just so, ObjectVision won't let you down. Better, it costs a mere \$149.95—and that includes the rights to a runtime module that you can distribute freely with your applications. But it hits the wall earlier than Access or Visual Basic. Borland's

solution is ObjectVision Professional, but I found it by far the most difficult to use of all these systems. ObjectVision Professional is a loose bundling of Borland's older C++ development system for Windows, and the documentation on extending ObjectVision with C is absolutely atrocious. At \$495.00, it's simply too complicated, too expensive, and too badly documented to compete with Access at that same price.

Which Is Right for You?

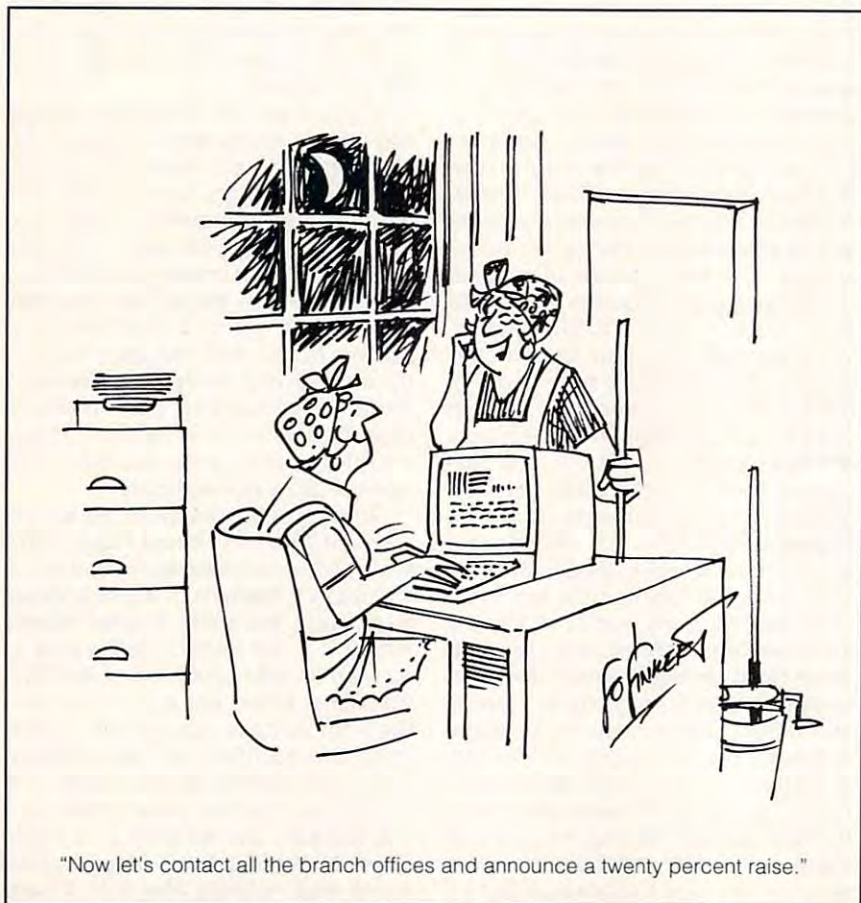
It's not hard to find a constituency for each of these products.

Visual Basic is the hands-down winner for versatility, offering the best feature-per-dollar value. If you're a hobbyist or if you aren't quite sure which direction to go, you can't go wrong with Visual Basic. If money is no object or communications support is of utmost importance, get the Pro edition, but the standard edition is a tremendous value. You can distribute your programs free.

Access is your only choice if you plan to do extensive Windows database development. It took six years to write Access, and that care shows. Its BASIC, while not quite as rich as Visual Basic, makes it as capable as any other database now on the market. What pulls it past all its Windows and DOS competitors is a tightly integrated development environment second to none. Access is not simple to learn, but it is incredibly simple to use and will make you more productive than any other database product. Use it if you plan to develop inventory, accounting, PIM, or office automation programs. If you will want to distribute your programs to nonusers, you'll need to spring for the \$495 Developer's Kit, so be sure to budget for both if necessary.

ObjectVision will get you in and out of simple database chores with the least trouble of any of these, but it will also get you into trouble faster because it's the least programmable. If you don't want to commit to a full development system, ObjectVision's seductive \$149.95 price may be all the persuasion you need. Just make sure your programming needs will never go beyond simple, because you may not get past the wall.

All of these three new development environments are powerful, capable, well supported, and good investments. Be aware of your current needs, experience, and future needs. Then it will be clear which system is for you. Soon you'll find that programming in Windows is as easy as pie. □



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INTRODOS

Tony Roberts

BATCH FILE RUNAROUND

Most batch files are merely collections of DOS commands that run straight through from top to bottom. If you're adventurous, however, you can supercharge your batch files by interrupting the linear flow.

CALL (in DOS versions 3.3 and higher) is a batch command that allows you to create nested batch files. Normally, when one batch file is run from within another, full control is handed to the second file. Any commands in the first batch file that appear after activation of the second one are ignored.

The CALL command, however, suspends the first batch file until the second is finished. Then control returns to the first batch file, and processing continues. To achieve this, simply place the keyword CALL before the name of the second batch file.

How can you use this? I like my computer to make my network connections automatically when I boot up, but I'm not interested in cluttering up the AUTOEXEC.BAT file with a dozen network commands. So I include the command CALL GONET in the AUTOEXEC.BAT. When the program runs, AUTOEXEC.BAT temporarily gives control to GONET.BAT. When GONET.BAT is finished, AUTOEXEC.BAT picks up where it left off.

This setup is extremely helpful because I use a couple of TSR programs that don't work unless they're loaded *after* the network. If I weren't able to use CALL GONET, I'd have to either include all the network commands in the AUTOEXEC.BAT or manually install those TSRs after the network was initialized.

Another way to change batch program flow is to use

the GOTO command. GOTO lets your batch programs move in different directions depending on conditions. For example, you could create a single batch file called START.BAT that contains start-up instructions for several programs.

At the command line, you could type *start wp*, for example, and the batch file would jump to the WP section and start your word-processing program. Similarly, typing *start win* could activate Windows, or typing *start finance* could initialize your financial management software.

This is accomplished with the GOTO command and labels. A label is a batch file line that begins with a colon. Here's how the START.BAT program might look. You'll have to replace the REM lines with the appropriate commands for your system.

```
@ECHO OFF
GOTO %1
GOTO end
:wp
REM Insert word processor
  commands here.
GOTO end
:win
REM Insert Windows startup
  commands here.
GOTO end
:finance
REM Insert financial manager
  commands here.
GOTO end
:end
```

When the batch file is executed, the replaceable parameter (the %1 in the first line) is replaced with the first word you typed after the batch-file name. If you typed *start wp*, then the %1 would be replaced with *wp*, and the batch file would jump to the :wp label and begin its execution. Note the line GOTO end, following each section. This prevents the program from run-

ning away with itself and executing the commands in every section.

Now that you're getting used to the idea that batch files don't have to run in a straight line, let's create one that runs in circles.

To do this, we'll combine the GOTO command and replaceable parameters used in the previous example with the SHIFT command. Let's say you wanted to display three files on your screen, but you didn't want to type three separate commands. We'll create a batch file, called T.BAT, to do this. To execute this file, you'll type *t file1 file2 file3*, filling in the names of your own files for *file1*, *file2*, and *file3*.

As you can see, we've entered three replaceable parameters on the command line. The SHIFT command takes all of the replaceable parameters and shuffles them to the left. After SHIFT is executed once, *file1* is gone, and *file2* is at the head of the list. Each time SHIFT is executed, a new parameter is available to be substituted for %1 in the batch file. Here's the batch file:

```
@ECHO OFF
:start
IF (%1)==() GOTO end
TYPE %1 MORE
PAUSE
SHIFT
GOTO start
:end
```

In this program, the third line makes sure there's a replaceable parameter available. If so, the TYPE command is executed. Then the SHIFT command shuffles the replaceable parameters, and the GOTO command loops the program back to the beginning. As long as a parameter remains on the stack, the looping continues. □

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TIPS & TOOLS

Edited by Richard C. Leinecker

Command Line Calculations

Everyone has a built-in calculator that works from the DOS prompt. All it takes is QBASIC, which comes with DOS, and a special batch file called CALC.BAT. Here's the batch file.

```
ECHO OFF
IF "%1" == "" GOTO ERROR
REM You must specify the correct
REM path to which
REM you want the CALC.BAS file
REM to be created.
SET CREATEDIR =
C:\WORK\XY\CALC.BAS
ECHO 0 PRINT "The answer is ";
> %CREATEDIR%
ECHO 1 PRINT %1 %2 %3 %4 %5
%6 %7 %8 %9 >>
%CREATEDIR%
ECHO 2 SYSTEM >>
%CREATEDIR%
QBASIC /RUN %CREATEDIR%
REM Change the above line to
REM GW-BASIC %CREATEDIR%
REM or BASICA %CREATEDIR%
REM for older versions of BASIC.
SET CREATEDIR=
GOTO END
:ERROR
ECHO You must specify the correct
ECHO parameters!
ECHO Usage: CALC <expression>
ECHO For BASICA and GW-BASIC,
ECHO make sure there are no
ECHO spaces.
ECHO The allowed sign operators
ECHO are (+) for addition,
ECHO (-) for subtraction, (*) for
ECHO multiplication, and
ECHO (/) for division.
:END
```

This batch file works by first setting an environment variable to the path that'll contain the CALC.BAS file. Before leaving the batch file, it's set to NULL. If you have another environment variable named CREATEDIR, change this in the CALC.BAT file.

Next, the batch file saves CALC.BAS, a BASIC source code listing. The BASIC program provides an answer to the arithmetic problem written

as arguments on the command line.

Finally, the SYSTEM command returns to DOS.

ILYA TROYCHANSKY
BROOKLYN, NY

Extending Paths

Sometimes I like to add directories to my path, but I don't want them permanently. Here's a handy batch file to do just that called PATHSET.BAT. This batch file should only be used once in a session. Since it only extends the existing path, you could easily create a dangerously long path if you used this program multiple times.

```
ECHO OFF
IF "%1" == "" GOTO ERROR
SET OLDPATH=%PATH%
PATH=%OLDPATH%;%1;%2;%3;%4;%5;%6;%7;%8;%9
GOTO END
:ERROR
ECHO Usage: PATHSET <appended
path> <appended path> . . .
<appended path>
:END
```

ILYA TROYCHANSKY
BROOKLYN, NY

Windows Variety

When you have to stare at the Windows screen for hours at a time, it's nice to have a change every so often. I'm constantly changing colors, screen savers, and most of all, wallpaper. This is the reason I developed a method of automatically rotating wallpaper when starting Windows. First, I turned off my wallpaper using the Control Panel icon and then the Desktop icon (this will avoid an error later). Next, I created a batch file called WIN2.BAT to run Windows and placed it in my path.

```
ECHO OFF
C:
CD \WINDOWS
```

```
REN FILE0.BMP FILE5.BMP
REN FILE1.BMP FILE0.BMP
REN FILE2.BMP FILE1.BMP
REN FILE3.BMP FILE2.BMP
REN FILE4.BMP FILE3.BMP
REN FILE5.BMP FILE4.BMP
WIN
```

Next, I renamed my five favorite wallpaper files to FILE0.BMP, FILE1.BMP, FILE2.BMP, FILE3.BMP, and FILE4.BMP (remember to start with 0). You can easily change the number of wallpaper files. Finally, I entered Control Panel again and changed my wallpaper to FILE0.BMP.

There is one limitation to this system in that all of your wallpaper files must be tiled or centered.

To invoke Windows with the wallpaper-cycling system, I just type *win2* instead of *win*.

DUSTIN WINTERS
SAYVILLE, NY

Screen Dressing

Here's a collection of three utilities that'll help you jazz up your text-based screens.

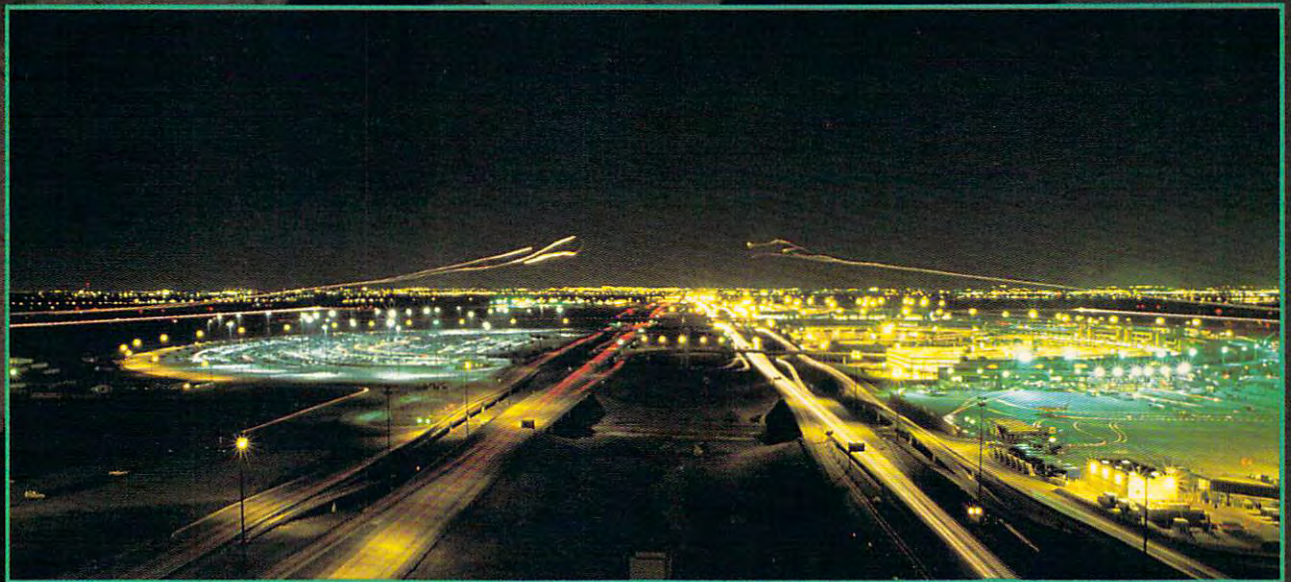
The first one is called Puts. It draws a text string in any DOS color on the screen. The next two are related. Savescrn saves a screen to disk for later use and Loadscrn loads it from disk and puts it on the screen.

You can type in these programs using the DOS Debug command. Make sure the DOS program called Debug is in your path or the current directory. In these examples, the italic text is what the computer prints; the roman text is what you should type.

One way to be sure you get these programs exactly right is to have someone read the numbers to you as you type them in.

You can also write a text file and pipe it into Debug (see "Tips & Tools" in the February 1993 COMPUTE to see

Calculate in DOS,
extend your
path, and share
your machine.



ETA, Summer 1993.

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TIPS & TOOLS

how this is done).

`debug puts.com`

`File not found`

```
-e 100 be 80 00 ac 0a c0 74 39
-e 108 e8 58 00 2b c0 8e c0 26
-e 110 8b 3e 4e 04 26 80 3e 49
-e 118 04 07 b8 00 b8 75 02 b4
-e 120 b0 8e c0 e8 1f 00 d1 e3
-e 128 03 fb e8 18 00 b8 a0 00
-e 130 f7 e3 03 f8 e8 0e 00 8a
-e 138 e3 ac 3c 0d 74 03 ab eb
-e 140 f8 b4 4c cd 21 2b db ac
-e 148 3c 30 7c 13 3c 39 7f 0f
-e 150 2c 30 2a e4 93 b9 0a 00
-e 158 f7 e1 93 03 d8 eb e8 e8
-e 160 01 00 c3 ac 3c 0d 74 d9
-e 168 3c 20 74 f7 4e c3
```

`-RCX`

`CX 0000`

`:6e`

`-W`

`Writing 006e bytes`

`-Q`

The checksum for this COM file is 062 (see "Tips & Tools" in the July 1992 issue). To use the Puts program, you'll need to give it three command line arguments. The first one is the column. These values start at the left side of the screen with a value of 0 and end at the right side of the screen with a value of 79. The second one is the row. These values start at the top of the screen with a value of 0 and end at the bottom of the screen with a value of 24.

The third argument is the color. It's made up of two parts, the foreground colors and the background colors. Both have values ranging from 0 to 15. The background colors will blink for colors greater than 7.

To combine both components into the correct number, multiply the value of the background color by 16 and then add the value of the foreground color.

If I want a dark blue background (color 1) and a white foreground (color 15), I'd calculate $1 \times 16 + 15$ and get a total of 31. Here are the DOS colors.

- 0 Black
- 1 Dark Blue
- 2 Dark Green
- 3 Dark Cyan
- 4 Dark Red
- 5 Dark Magenta
- 6 Brown/Orange
- 7 Light Gray/Dull White
- 8 Dark Gray
- 9 Light Blue
- 10 Light Green
- 11 Light Cyan
- 12 Light Red
- 13 Light Magenta
- 14 Yellow
- 15 White

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you can save it to disk for later use with the following utility.

debug savescrn.com

File not found

```
-e 100 be 80 00 ac 0a c0 74 44
-e 108 ac 3c 0d 74 3f 3c 20 74
-e 110 f7 8b d6 4a ac 3c 0d 74
-e 118 04 3c 20 75 f7 c6 44 ff
-e 120 00 b4 3c 2b c9 cd 21 72
-e 128 23 8b d8 2b c0 8e d8 8b
-e 130 16 4e 04 80 3e 49 04 07
-e 138 b8 00 b8 75 02 b4 b0 8e
-e 140 d8 b4 40 b9 a0 0f cd 21
-e 148 b4 3e cd 21 b4 4c cd 21
```

-RCX

CX 0000

:50

-W

Writing 0050 bytes

-Q

The checksum for this COM file is 062.

Just tell the program the filename you'd like to use. If you want to save a screen to a file called MYSCREEN, you'd type *savescrn myscreen*.

The opposite program that loads your screens in follows. To use it, just specify the filename to load as a command line argument.

debug loadscrn.com

File not found

```
-e 100 be 80 00 ac 0a c0 74 43
-e 108 ac 3c 0d 74 3e 3c 20 74
-e 110 f7 8b d6 4a ac 3c 0d 74
-e 118 04 3c 20 75 f7 c6 44 ff
-e 120 00 b8 00 3d cd 21 72 23
-e 128 8b d8 2b c0 8e d8 8b 16
-e 130 4e 04 80 3e 49 04 07 b8
-e 138 00 b8 75 02 b4 b0 8e d8
-e 140 b4 3f b9 a0 0f cd 21 b4
-e 148 3e cd 21 b4 4c cd 21
```

-RCX

CX 0000

:4f

-W

Writing 004f bytes

-Q

The checksum for this COM file is 062. Armed with these three utilities, you'll have no trouble making fancy screens for your computer.

RICHARD C. LEINECKER
MIAMI, FL

If you have an interesting tip that you think would help other PC users, send it along with your name, address, and Social Security number to COMPUTE's Tips & Tools, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. For each tip we publish, we'll pay you \$25-\$50. All tips submitted become the property of General Media International. □

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WINDOWS WORKSHOP

Clifton Karnes

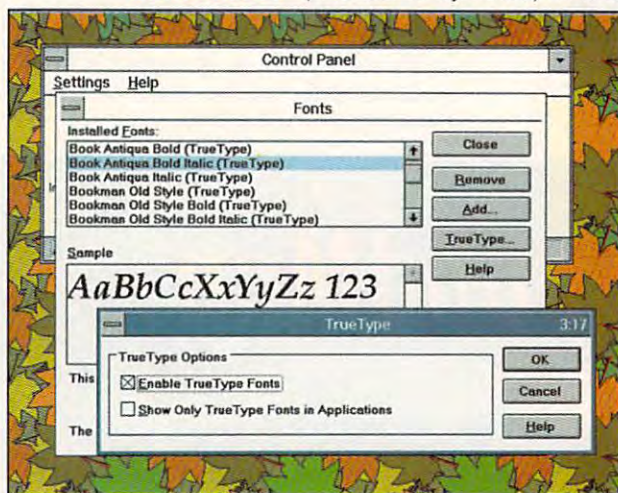
TRUETYPE AND BEYOND

Before discussing TrueType, we need to run through a little of the vocabulary we'll be using when we talk about fonts.

First, in traditional typesetting lingo, a typeface is a collection of fonts that share a common design. Times Roman and Helvetica are both typefaces, for example.

In this same traditional lingo, a font is a single collection of characters (usually upper- and lowercase alphabets plus some symbols) in one

To turn TrueType on, run Control Panel, double-click on



Fonts, click on TrueType, and click on Enable TrueType Fonts.

point size and style. Thus, 12-point Times Roman italic is a font. It's one of the fonts that make up the Times Roman typeface.

In modern terminology, *font* and *typeface* are used as synonyms, and they share both of the above definitions. I'll follow the modern terminology.

Style, which I just mentioned, is another attribute of a font. Style can be roman (also called normal), bold, italic, bold italic, or underlined, to name the most popular.

Fonts can be categorized in various ways, but the most usual way is to separate fonts into serif and sans-serif groups. Serifs are the finishing strokes on

fonts, and fonts that lack these strokes are called sans-serif. Serif fonts are generally easier to read in small point sizes. Sans-serif fonts are bold and simple and are often used for display type (subheads, headlines, and titles).

We're not out of the woods yet. Points are normally used to measure the height (and sometimes the width) of a font. One point is approximately $1/72$ of an inch. Thus, a 72-point font is one inch tall. It's worth noting that the size is measured from the top of the tallest letter in the font to the bottom of the lowest.

With Windows 3.1, Microsoft introduced TrueType and revolutionized the font business. TrueType is an outline technology, which means that each font is stored as an outline rather than a bitmap (screen fonts, we learned in last month's column, are bitmaps).

Windows takes these outlines and scales them to produce type of any size, so one TrueType font can be used to produce a huge range of point sizes. Better still, the same TrueType font is used for both screen and printer, so what you see on your screen is very close to what you'll see in print. What you see on screen isn't exactly like what you'll see in print because your screen is a 96-dot-per-inch (dpi) device and most printers are 300 dpi or higher. But the correspondence is still very close.

Windows comes with several TrueType fonts: Ariel (roman, bold, italic, and bold italic), Times New Roman (roman, bold, italic, and bold italic), Courier New (roman, bold, italic, and bold italic), and Symbol (roman).

Ariel is a sans-serif font very similar to Helvetica, Times New Roman is a serif font similar to Times, and Courier New

bears a striking resemblance to Courier. It's worth mentioning here that in the U.S., fonts themselves can't be copyrighted. But the font names can. So if someone owns the name *Helvetica*, no one else can use it unless they license it from the owner. That's why we see so many different names for what appears to be the same font.

Should you use TrueType? There are other programs available that do basically the same thing as TrueType, the best known being Adobe Type Manager (ATM) and Bitstream's Facelift, but although these are excellent products, TrueType has much to recommend it.

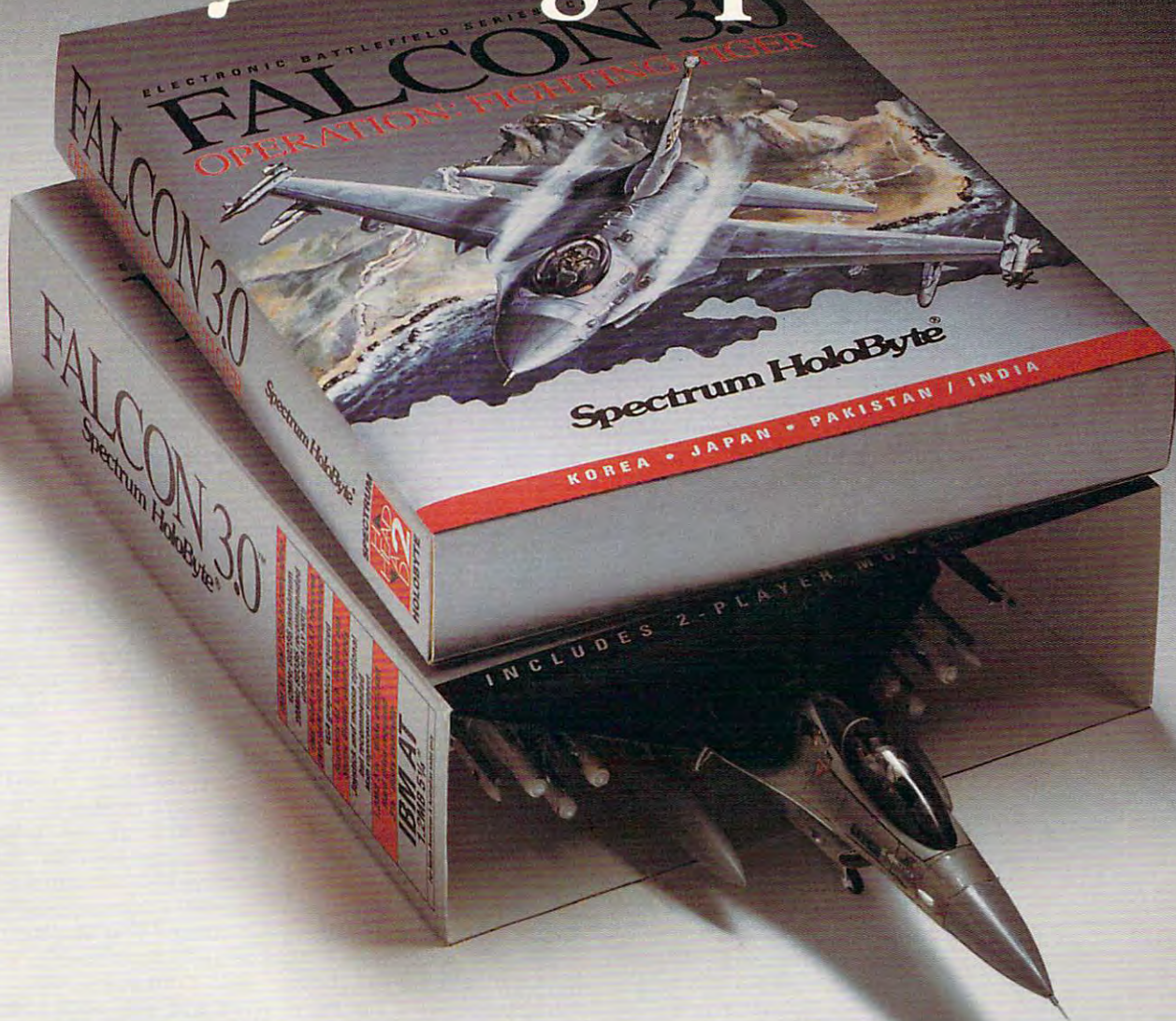
First, it's free. It's part of Windows 3.1 and ready to run when Windows is. Second, because of the way TrueType downloads characters, it's faster than ATM. Last, although all of these outline technologies give you WYSIWYG display, TrueType is more accurate.

The big exception to this advice that you use TrueType comes if you're doing desktop publishing and working with a service bureau that must have PostScript. If that's the case, then you'll need to use ATM, which supports PostScript fonts.

To run TrueType, the only thing you need besides Windows 3.1 is a dot-matrix, inkjet, or laser printer. TrueType is built into Windows, so to access TrueType fonts, you simply need to turn TrueType on. To do that, run Control Panel and double-click on Fonts. Next, click on the TrueType button and in the dialog box that follows, click on Enable TrueType Fonts. That's all there is to it.

Now your TrueType fonts will be available in all your Windows applications that use fonts, so fire up Write and take TrueType for a test drive. □

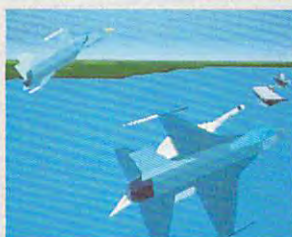
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HARDWARE CLINIC

Mark Minasi

DOS NT: A PLEA

By the time that you read this, either DOS 6.0 will be out, or it will be out soon. Of course, it's just one more step forward; DOS could use a lot more growth.

As I see it, DOS needs to change in four ways:

- DOS must provide reason and incentive for PC software developers to move away from direct hardware access and move toward greater use of the operating system as an operating system. Once that happens, DOS will have a clear pathway to growth and improvement that could make it the standard operating system of the desktop into the mid twenty-first century.

- DOS must offer a command line-based, protected-mode multitasking facility that doesn't rely on a graphical user interface (GUI). GUIs don't make sense for much of what PC users do, and they require advanced hardware to run properly. There must be a better way to offer secure multitasking than with an operating system that recommends 16MB of RAM, a 33-MHz 486 processor, and a CD-ROM to load the operating system, as Windows NT does.

- DOS needs an optional new file system that supports long names, automatic file-system fix-ups, faster access, and more information about how files are being used.

- DOS must provide better power-user tools. QBASIC can't interface with DOS or BIOS functions directly, and there are none of the tools (such as awk, grep, and sed) that make working with UNIX a pleasure for toolmakers.

Supercharging DOS

PCs with 286-, 386-, and 486-level CPUs have a processor mode, called protected mode, that allows access to

16MB or more of RAM. Protected mode not only supports more memory, it also provides much of the behind-the-scenes support for multitasking operating systems. Protected mode makes it possible for an operating system to load multiple programs.

Unfortunately, DOS and DOS programs don't use protected mode, which is why they're generally trapped in the bottom 1088K of your PC's RAM. OS/2 and Windows NT are built in protected mode and can access megabytes and megabytes of RAM. That points out a real problem with the Microsoft and IBM operating system offerings since 1986—that is, OS/2 and Windows NT. In order to get to the indisputable benefits of protected mode using OS/2 or Windows NT, you must accept the intrusion of a GUI.

Don't get me wrong—GUIs are good things. But they are processor hungry. Windows 3.1, which is probably less CPU intensive than either OS/2 or Windows NT, really needs a 25-MHz 386DX with 8MB of RAM to be useful. But if all I want to do is run a big spreadsheet program or sort a huge mailing list file, then I don't want a GUI. It slows me down and burns up precious RAM.

Instead, why not offer a DOS NT? In its simplest form, Microsoft could easily offer a text-based, command line-driven operating system that looks just like DOS and supports old DOS programs but could also run *new* DOS programs—programs written specifically for DOS NT. By its nature, DOS NT would live in protected mode. But any time that it needed to shift back to real mode—the alternative to protected mode—it could do that. There's no rocket science involved in doing that, as operating systems such as OS/2, Win-

dows, and Windows NT have been able to support real mode programs for years. Existing DOS programs would continue to run whenever you started them up.

New DOS programs would be built in protected mode, so they would have access to tremendous amounts of RAM.

Other Benefits

Additional RAM wouldn't be the only benefit of a protected-mode DOS NT:

- It would bring about the timely death of memory management. You'd never have to worry about extended, expanded, or conventional memory again.

- It would provide an easy upgrade path to future operating systems. Once a program is written to work under protected mode, it's basically tamed. It no longer does things behind the operating system's back, mainly because it no longer can. As a result, making the program work under any new protected-mode operating system, or even a completely different processor and operating system, is significantly easier than converting from a current DOS real mode to another operating system.-

- It would be less expensive and have a broader appeal than Windows NT or even Windows. Windows NT is a monster operating system that loads only off a 300MB+ CD-ROM. Windows uses as many as eight installation disks. Many people don't want to deal with that much stuff. They just want to run the programs that they're already using; they don't want to learn a pile of new stuff, particularly when the new stuff is often a bad adaptation of the old stuff.

One thing that Windows really needed was a good implementation of each of the

Some thoughts on the eve of DOS 6.0

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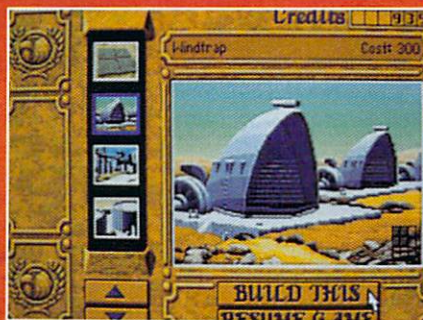
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most popular DOS programs: 1-2-3 in the spreadsheet category, WordPerfect in the word-processing category, and dBASE, Paradox, FoxPro, or Clipper in the database category. Unfortunately, 1-2-3 for Windows and WordPerfect for Windows suffer from serious problems, and, at this writing, there isn't a Windows version of dBASE, FoxPro, or Clipper, despite years of promises.

Why has there been so much trouble converting major DOS applications to Windows? I think that it's largely because the most successful DOS applications are often the fastest applications in their categories; that's certainly the case with 1-2-3 and WordPerfect. The way to make a DOS application fast is to break all the rules about working within an operating system and directly control the PC's hardware. That doesn't work in Windows. So software companies have to either retrain the lead programmers on their products or bring in green programmers and direct them in building a Windows program that acts like the big-selling DOS version. And sadly, it hasn't worked.

A conversion to DOS NT would certainly retain some of those problems, but not all of them. Conversion from a command line, text output, real-mode operating system to a command line, text output, protected-mode operating system is much easier than conversion to a GUI-based, graphical, protected-mode operating system such as Windows, Windows NT, or OS/2. And that means there's a better chance that the DOS NT versions of the major PC applications would appear on time at a reasonable price and look perhaps exactly like the familiar, popular DOS versions—except without any of the mem-

ory constraints and with multitasking possible.

This is perhaps the most important reason to create a new protected-mode version of DOS—because the software world can't move on until real-mode DOS fades away, and DOS ain't goin' nowhere until there's a decent mass market alternative. A DOS NT could run credibly on a 386SX computer with 4MB of RAM, even on a pen-based computer; that can't be said of Windows, Windows NT, or OS/2.

- It would easily support multitasking. Most of the pain and suffering of supporting DOS in a multitasking framework comes from the problem of having to keep track of several programs that are all trying to control the PC hardware directly.

- This could be the last new PC operating system, so it had better be good. Computing platforms are born; then they go through a period of rapid growth and change. Problems turn up, and workarounds appear shortly thereafter. Then applications follow that are built upon those workarounds.

Each change in the operating system brings with it costs and benefits. The benefits are the potential to create new applications that can do things that the old applications can't. The costs, on the other hand, are incompatibility or reduced compatibility with the older applications—the growing number of applications that we've already paid for.

At some point in an operating system's life, the sheer investment in machines and applications becomes so great that the potential benefits from any new operating system would have to be stupendous in order to justify a move to the operating system, whether it be OS/2, Win-

dows NT, UNIX, DOS NT, or whatever. The designers of operating systems understand this, so they tend to overpromise features and underestimate development time.

Eventually, the computing public sees that the promises were unreasonably optimistic, and that, in turn, lowers user confidence and the perceived future value of the operating system. The public figures that the hardware and software that are currently in place are solid enough and well understood, warts and all. "Better the devil you know . . .," we'll all say.

- At some point, it will be economically unacceptable to use anything but the most incremental of changes from the current operating system.

This isn't science fiction; it's already happened in the mainframe and minicomputer worlds. For all its power, the core of IBM's MVS/ESA operating system looks an awful lot like OS/MVT, the mainframe operating system of over two decades ago. IBM tried to overhaul the mainframe's operating system in the late seventies with the Future Systems project, but IBM's customer base said, "A new, better operating system that my existing programs won't work with? Thanks, but no thanks."

All of that is just a supporting argument to one of my premises here—we'll have maybe one more major operating system changeover and then the microcomputer world will be encased in amber forever after.

My nightmare is that the once-and-future operating system in the PC world will be a real-mode DOS. The jump to some kind of protected-mode DOS would be the last big jump necessary for DOS to continue to grow and change. Let's make it soon before it becomes impossible. □

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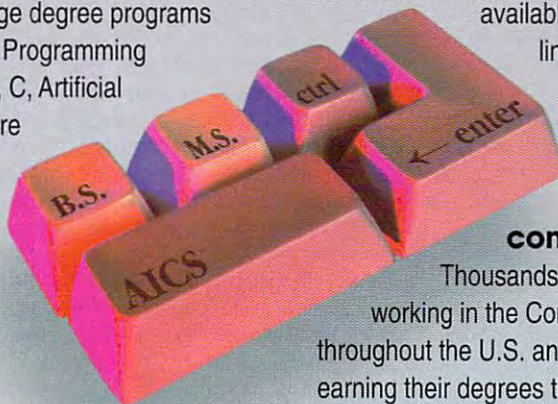
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BORLAND C++ 3.1: IS IT AN UPGRADE FOR YOU?

Borland C++ 3.1 & Application Frameworks is a fabulous package, priced (street price, \$500) and positioned for the professional developer. I use Borland C++ (BC++) to develop applications in C, C++, and assembler. This is a report from the front that should help you decide whether to upgrade or switch to Borland.

If you've been developing C applications, you'll be pleased to know that the Windows environment now handles all the options—it's not the crippled Turbo C++ for Windows that came with 3.0 but a full BC++ implementation. You can create project files automatically, but they're somewhat limited. There's no longer a transfer menu, and you can't run anything but the C/C++ compilers and assembler from a project. Since I use other program generators, I'm unable to automate my program development completely. Many C programmers won't have this problem, but it didn't make me happy.

One of the most widely publicized additions is a syntax-directed editor, which shows comments, keywords, identifiers, and so on in user-definable text attributes. This isn't a gimmick—it really does make your code easier to follow, especially in the case of mismatched comment braces.

The Windows documentation has been expanded and comes with a short, much-needed reference guide that documents, finally, a number of heretofore mysterious aspects of Windows programming. There's a chapter on the printing codes for the Escape() routine, which is necessary for using a printer

from Windows. File formats for bitmaps, icons, the Clipboard, and Windows Metafiles are described. And there are finally "see also" sections in the API docs. If you've been stumbling through Windows programming and know only enough to be frustrated by the lack of cross references in Borland's API manuals, this subtle difference alone may be worth the upgrade.

Lack of context is still the biggest problem in Windows API manuals. Sadly, there are no example programs or even fragments in the API documentation. Save yourself months of heartbreak by purchasing the Waite Group's superb *Windows API Bible*, which has an example for every message and function call.

Turbo Vision (TV) is a useful development tool that provides a complete set of programming libraries and conventions, much like Windows itself (hence the *Application Frameworks* moniker). Make no mistake: You can develop top-notch, commercial-quality DOS programs with TV, but you must use it to write your programs from scratch—and expect to spend plenty of time in the BCPPDOS forum on CompuServe. You'll also wind up hunched over printouts of the example programs with the same dedication with which a rabbi studies the Talmud. The libraries are complete but tough to follow. One of TV's advantages is that its high degree of modularity allows you safely to lift whole sections of code out of the sample apps and into yours, but only after you know the ropes. Thankfully, a lot of bugs have been eliminated, but code size is still a problem.

Borland Pascal TV apps are often 100K smaller than their C++ counterparts because the C++ linker can't strip out unused code as efficiently as Pas-

cal's. TLINK is quicker than greased lightning but needs improvement in smart linking and overlay management.

Horrifyingly, Turbo Debugger for Windows is still character based. Although technically a Windows program, it acts like a DOS app and suffers from the resultant graphics mode switching every time you step over a function call. Apart from that egregious flaw, TD remains one of the best debuggers known to humankind, far surpassing Microsoft's CodeView.

Another surprising omission is that you can't create DPML programs that use true 386 protected mode without buying a third-party DPML DOS extender, although you can do so with Borland Pascal 7.0. I imagine it's just a matter of scheduling and that BC++ 3.5 or 4.0 or whatever will indeed include the extender.

Turbo Assembler was upgraded a couple of versions ago to create Turbo Pascal and C++ classes; TA, TLINK, and the TLIB librarian are astoundingly fast. They don't seem to have changed since BC++ 3.0, however. Turbo Profiler is still the best profiler around and one of the least expensive, fastest ways to improve your code. TPROF doesn't seem to have changed since 3.0.

Should you upgrade from BC++ 3.0 to 3.1? Yes, if you need proper Windows 3.1 support, the full integrated environment running under Windows, or the incremental but significant improvements in documentation. But if you're expecting improvements or better documentation for OWL, the BIDS class library, or TV, save your money. Likewise for Turbo Assembler, Turbo Profiler, and Turbo Debugger, which are already extraordinarily good products and already pretty well documented. □

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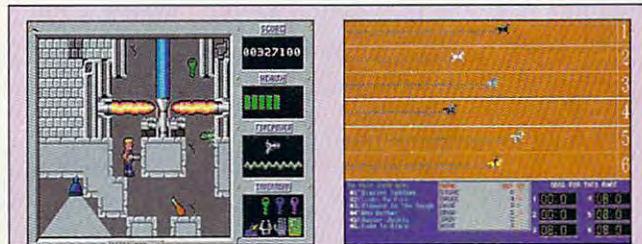
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In the beginning, modems were slow but steady, the Volkswagens of the computer world.

Simple devices that converted the digital signals from your computer to analog signals capable of traversing the telephone net, early modems performed the basic tasks of transferring files and dialing-up online services in a plodding but workmanlike way. If you wanted data compression, error correction, flow control, or any other bells and whistles that might make your data go faster, you had to look to your communications software. As a result, most early modems chugged along at

the snaillike pace of 300 bits per second.

For a while, 1200 bps was the standard. Just a few years ago, modems

HIGH-SPEED TELECOMMUNICATIONS

BY ROSALIND RESNICK

that transferred files at 2400 bits per second became the mainstay of the personal computing world.

Not any more. Thanks to computer users' clamor for faster and less expensive downloads and file transfers, mo-

dem manufacturers have been slashing their prices. While some high-speed (V.32bis) modems still cost \$500 or more, you can now pick up a reliable one with all the desirable features for under \$200. In fact, the

price differential between a V.32bis (14,400 bps) modem and a V.32 (9600 bps) modem has shrunk to less than \$100.

Dataquest, the San Jose, California, market research firm, says it's only a matter of time before high-speed modems take over the marketplace, making today's

2400-bps modems virtually obsolete. The reasons: the need to transfer large graphics and database files, remote file server or LAN-to-LAN connections, and general sensitivity to connect-time charges.

Here's how Dataquest sees things shaping up.

Back in 1987, 716,400 of the modems on the market were 2400-bps modems; only 20,000 were capable of transmitting data at a rate as high as 9600 bps. But the 2400-bps standard couldn't hold its ground for long. Last year (1992), 2400-bps modems peaked at 950,000 units, while sales of 9600-bps modems rose to 400,000 units and

sales of 14,400-bps modems, introduced in 1991, more than doubled to 220,000.

By 1996, Dataquest predicts, the V.fast modem—not even on the market today—will account for 350,000 units sold, with 9600-bps and 14,400-bps modems chalking up a total of 750,000 units sold. By contrast, sales of 2400-bps modems are expected to sink to 480,000.

"The marketplace has possessed a voracious appetite for higher-transmission-rate modems," says analyst Joe Noel, "and Dataquest does not anticipate this changing."

Today's modems are light-years ahead of their predecessors of a de-

cade ago. Swift, smart, and powerful, the new breed of turbocharged modem is loaded with cutting-edge features capable of speeding your data across the country in the blink of an eye—as fast as 57,600 bps—saving you vast amounts of time and money.

Consider: With a 14,400-bps modem, the fastest one on the market today, it's now possible to send a 1MB file from Los Angeles to Boston in 3.05 minutes for just \$0.73; sending the same file the same distance at 2400 bps would take 72.82 minutes and cost \$17.48. At 9600 bps, the fastest speed available on a major online service, you

can download a 1MB file from CompuServe in only 17 minutes for \$6.46—less than half the \$14.50 you'd pay to download the same file at 2400 bps and a fraction of the 68 minutes you'd have to tie up your computer.

And there's a bonus: Virtually all of today's high-speed modems are fax/data modems. This means there's no longer any need to print out a hard copy of your document and stuff it into your fax machine—or drive over to your neighborhood copy shop and pay exorbitant prices. You simply press a hot key, and your fax transmission is on its way.

Best of all, the new

modems are relatively inexpensive. For example, U.S. Robotics offers a 14,400-bps fax/data modem for as little as \$499 and AT&T Paradyne's DataPort internal 14,400-bps fax/data modem lists for \$505 (at the time of this writing, the internal and external DataPorts are on sale for \$399 and \$439, respectively). Street prices for these products are even less, and competition is driving prices lower virtually every day. Just two years ago, modems like these cost \$1,000 or more. Be sure to shop around for the best price before you buy a high-speed fax/data modem.

Ah, but just like those sexy little Ferraris that



burn up the tracks on their good days but seem to spend most of their time in the shop, today's high-speed modems are riddled with technical glitches that can sap their power, at times forcing them down to a speed as slow as 1200 bps, and at other times preventing them from functioning at all.

The reasons are numerous: everything from the inevitable hardware and software incompatibilities to overtaxed communications ports and busy networks.

The glitches result in modems that can't talk to other modems, modems with fax capability that won't send faxes unless you reboot your computer, data modems that can't upload files to a bulletin board, and front-end programs that won't let you go online unless you first shut off all of your modem's special features.

In short, these high-speed modems are creating a veritable Tower of Babel that leaves many home computer users, even those who are knowledgeable about computers, frustrated and confused.

CompuServe member Steve Ringley, an electronics technician who works for the Ohio National Guard, bought a high-speed modem in October to help cut his long-distance

phone bills. Because Ringley lives in McConnelville, a small town about 100 miles southeast of Columbus, there aren't any local access numbers he can dial to log on to his favorite online services.

The new modem managed a connection to CompuServe, Ringley recalls, but wouldn't connect with two other popular services, GEnie and America Online. Finally, after numerous calls to technical support staffers and hours of trial and error of his own, Ringley hit upon some modem initialization strings that worked.

"The lack of standardization is the real culprit," Ringley says. "The modems need to figure out what language they're going to use to negotiate with one another."

Asked about the problems, the modem manufacturers and the online services readily acknowledge the trouble but disagree on who's to blame.

"It takes two to tango," says Paul Hansen, vice president of technology and marketing services at Practical Peripherals, a leading manufacturer of high-speed modems. "There is no possible way, with all of the backward compatibility that the marketplace demands, to cover every sort of thing.

Why should we as a modem manufacturer do what the software people should be doing?"

The online services, for their part, say they'd like to see the manufacturers get their act together. Les Briney, Prodigy's director of development, says the service offers roughly 35 different modem initialization strings in a downloadable text file and keeps adding new ones every day to keep up with the hundreds of different high-speed modems as they come into the marketplace.

"The problem," Briney says, "is that no two modem vendors have identical modems. The standards are not as strong as they used to be."

Making Peace

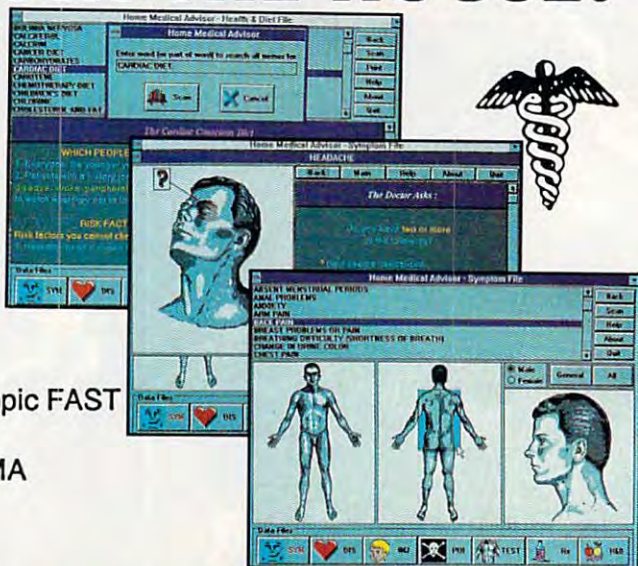
If you can't get your modem up and running, it doesn't really make much difference who's to blame. Here's a quick guide to some of the common problems involving high-speed modems, along with some practical solutions suggested by computer users and modem experts.

Problem: With my old 2400-bps modem, I had no problem dialing up my favorite online service. With my new high-speed modem, all I get are error messages.

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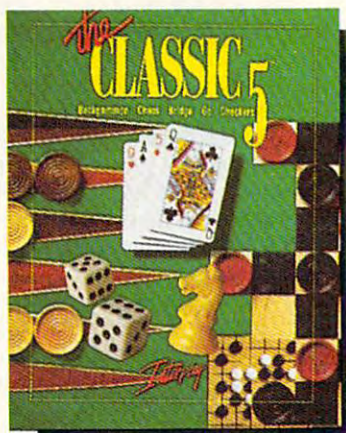
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Solution: If your online service is Prodigy or America Online, there's a reason for that. Both services use proprietary front-end programs developed back in the days when modems were a lot less powerful than they are now. To speed data flow, the two companies built things like data compression and error correction into the software itself. Unfortunately, even when you dial up an online service with a smart modem that has all the latest features, the software still wants to take control.

Change your modem initialization string (the set of commands that begins with AT) to turn off your modem's data compression, error correction, flow control, and other special features. This way, your front-end software will be able to call the shots, letting you dial up and log on with no problem.

Unless you enjoy reading modem manuals (and have the technical savvy to make sense of them), the fastest way to find an initialization string that works with your modem is to call the technical support department of the company that manufactured your modem or the online service you're trying to reach.

Problem: I've changed my modem

initialization string, but I keep getting error messages anyway.

Solution: Maybe it's a hardware problem. Before two modems can talk, they must first shake hands, deciding which signaling, error-correction, and data-compression protocols to use in their conversation. However, each modem manufacturer uses its own slightly different method for conducting the protocol handshake. Some even use proprietary protocols that aren't compatible with those of other modem vendors.

To find out if you have a hardware compatibility problem, call the technical support staff at your online service and explain exactly what kind of modem you have. Unfortunately, some of the earlier high-speed modems, such as the V.29 series, aren't supported by online services such as Prodigy. If you have one of these earlier models, you may have to make a choice between logging on to your favorite online service or scrapping your old modem and buying a new one.

Problem: Most of the time, my high-speed modem lets me go online at 9600 bps, but other times when I log on, communication is really slow.

Solution: The problem may be the communications network. If lots of people log on at the same time, the network may slow to a crawl—the same way it takes twice as long to drive home from your office during rush hour. That's why it makes sense to log on early in the morning or late at night when CompuServe and the other services aren't so busy.

Problem: When I try to use the modem, my computer locks up and I have to turn off the computer and reboot it.

Solution: The problem may be an interrupt conflict on your serial port, especially if you've already installed a mouse, an optical scanner, a tape backup, or other serial devices in your PC. Because of the way IBM originally designed the PC way back in 1981, communications ports 1 and 3 use interrupt 4 and communications ports 2 and 4 use interrupt 3. That's why, if you assign both a mouse and a modem to COM1, you're going to have to open up your computer and reset the DIP switch on your modem. Check your modem manual for instructions.

Problem: With my high-speed modem, I keep losing data when I try to transfer files with my Windows-based communications program.

Solution: Maybe it's your UART (Universal Asynchronous Receiver/-

Transmitter) chips, the chips that control the serial port of all personal computers. During modem communications, your computer's UART and the CPU transfer large amounts of data. When you run your communications program through a multitasking environment such as Windows, DESQview, or OS/2, especially at high speeds, the CPU can't juggle it all and bits of data start falling out along the way.

To fix this problem, you may need to invest in a new piece of hardware. If your computer has an 8250 UART, try replacing it with a 16550A UART that creates a buffer stack that allows the UART to save any incoming data while waiting for the CPU to catch up. Another option is Hayes's ESP Communications Accelerator for Windows, an add-on serial card with a dedicated coprocessor capable of supporting data transfers as fast as 57,600 bps.

Problem: The communications program I've been using for years won't run my new modem at its highest speeds.

Solution: Much of the communications software that came out in the late 1980s won't support modem speeds faster than 9600 bps. You'll need to buy a new program (or an upgrade to your old one) that lets you dial up at 14,400 bps and higher. It's also important to get a program that can take advantage of the 16550A UART described above.

Modem Wars

Remember when *Hayes-compatible* sounded like *modem's* first name? Most modems continue to be Hayes compatible, but there's been trouble in modemland. The fallout is incompatibility, consumer confusion, and bad blood by the gallon.

Unless you are an industry insider, you probably are unaware that telecommunications has been mired in a legal morass over the past half decade. The morass was created by a battle that tested the rights of the creators of intellectual property to protect that property even as the rest of the industry tried to make that property a standard. It was a situation similar to the one Lotus created when it sought to stop the publishers of 1-2-3 look-alikes by bringing lawsuits against them, but with important differences. Hayes, the creator of the industry-standard escape sequence used by most modems, was willing to share its property through licenses, and it found itself the target of lawsuits rather than the instigator.

What exactly is an escape

The Good...



The Bad...

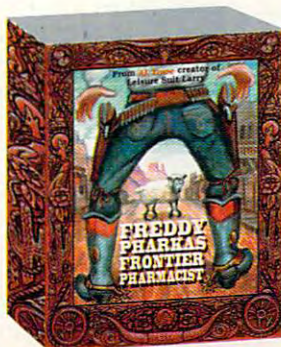


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MODEM LINGO

Back in the old days of low-speed communications, all you had to know about were the bauds and the bits. With today's high-speed modems, there's a whole new lingo to master—"V-dot-this," "MNP-that," "CCITT," "UARTs," and the like. Here's a pocket dictionary of the latest modem terms to help you swim your way out of this alphabet soup.

Bits per second. The rate at which units, or bits, of data are transmitted over a phone line or other communications channel.

Protocol. A set of rules that tells two modems how to communicate with each other.

CCITT (Comite Consultatif International Telegraphique et Telephonique). A European-based advisory committee established by the United Nations to recommend worldwide standards for modu-

lation, data compression, and error checking.

CCITT V.32. The international modulation standard for modem communications at 9600 bits per second, with fallback to 4800 bits per second when phone line quality is impaired.

CCITT V.32bis. The international modulation standard for modem communications at 14,400 bits per second. (The *bis* doesn't stand for anything. It's a suffix used in French to designate an add-on.)

CCITT V.42. An international error-correction protocol that ensures the integrity of data transmitted from one modem to another.

CCITT V.42bis. An extension of the CCITT V.42 protocol that, together with CCITT V.32bis modulation, can boost throughput as high as 57,600 bits per second.

CCITT V.fast. The nickname for the generation of high-speed

modems still under development. Because of its more sophisticated precoding and signaling features, the V.fast modem would be able to deliver speeds of 19,200 bits per second on telephone lines that are currently capable of transmitting data at only 14,400 bits per second.

MNP. Microcom Networking Protocol. An older proprietary standard of error control and data compression.

MNP 5. A Microcom data-compression protocol that lets a modem use fewer bits to transmit the same amount of information, dramatically increasing the speed at which a computer can send information to the modem.

UART (Universal Asynchronous Receiver/Transmitter). UART chips control the serial ports of all personal computers. An 8250 UART might need to be upgraded to a 16550A UART.

sequence? The escape sequence tells the modem to switch from data mode to command mode. In data mode your modem is sending information to the receiving modem, and in command mode it's ready to receive AT commands, the commands that tell the modem what to do (such as the command ATH, which tells your modem to hang up) or configure the

modem. The guard time mechanism prevents the modem from going into command mode unless there's a period of silence before and after the escape sequence. The escape sequence consists of a period of silence, three plus signs (+), and then another period of silence. The purpose of the guard time mechanism is to ensure that if you're sending a file

that happens to contain a series of three plus signs in a row, your modem won't accidentally go into command mode and wait for further instructions.

To make sense of the conflict, here is the recent history of telecommunications in brief. In June 1981, Hayes Microcomputer Products filed for a patent for its escape sequence and guard time mechanism. This patent

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fax/data modem with V.42 error correction and V.42bis data compression; offers throughput up to 57,600 bps

was granted in October 1985. A year later, Hayes offered to license the technology to other makers of modems. Within a month a consortium of modem manufacturers was formed (called the Modem Patent Defense Group), and two of the members (U.S. Robotics and Prometheus Products) brought suit against Hayes, challenging its patent. Hayes countersued. Microcom, Multi-Tech, and Ven-Tel sued Hayes. Hayes sued Everex and OmniTel for patent infringement. Microcom and U.S. Robotics settled out of court and agreed to license the patent. Three of those companies—Everex, Ven-Tel, and OmniTel—ended up in court, where the Hayes patent was upheld. All of the remaining lawsuits were either settled out of court or adjudicated in Hayes's favor.

Where does that leave us? Hayes has licensed its escape sequence and guard time mechanism to two chipmakers, Rockwell and Silicon Systems. If you purchase a modem with one of these chip sets, you are legally allowed to use Hayes's patented technology. However, a competing standard called TIES (Time-Independent Escape Sequence) has emerged. TIES is not patented and is free for use by anyone who wishes to

adopt it. The TIES sequence differs from the Hayes sequence only slightly. It consists of three plus signs, then the letters AT, and then a carriage return. Some argue that this sequence might be more prone to cause a shift into command mode in the middle of a file. The odds are still very slight that it will happen on any particular transmission. A Hayes white paper on the subject estimates that an individual computer user who transmits files for about an hour a day will encounter about six files per year that cannot be transmitted in full. Companies that send thousands of files a month might discover large numbers of files that can't be sent using TIES, and for reasons that would be a complete mystery to most computer users.

The international standard-setting organization CCITT is not likely to set a standard that incorporates the Hayes escape sequence. However, Hayes has established a de facto standard that has become so widespread that any competing standard will have difficulty prevailing over it.

The Future's Here to Stay

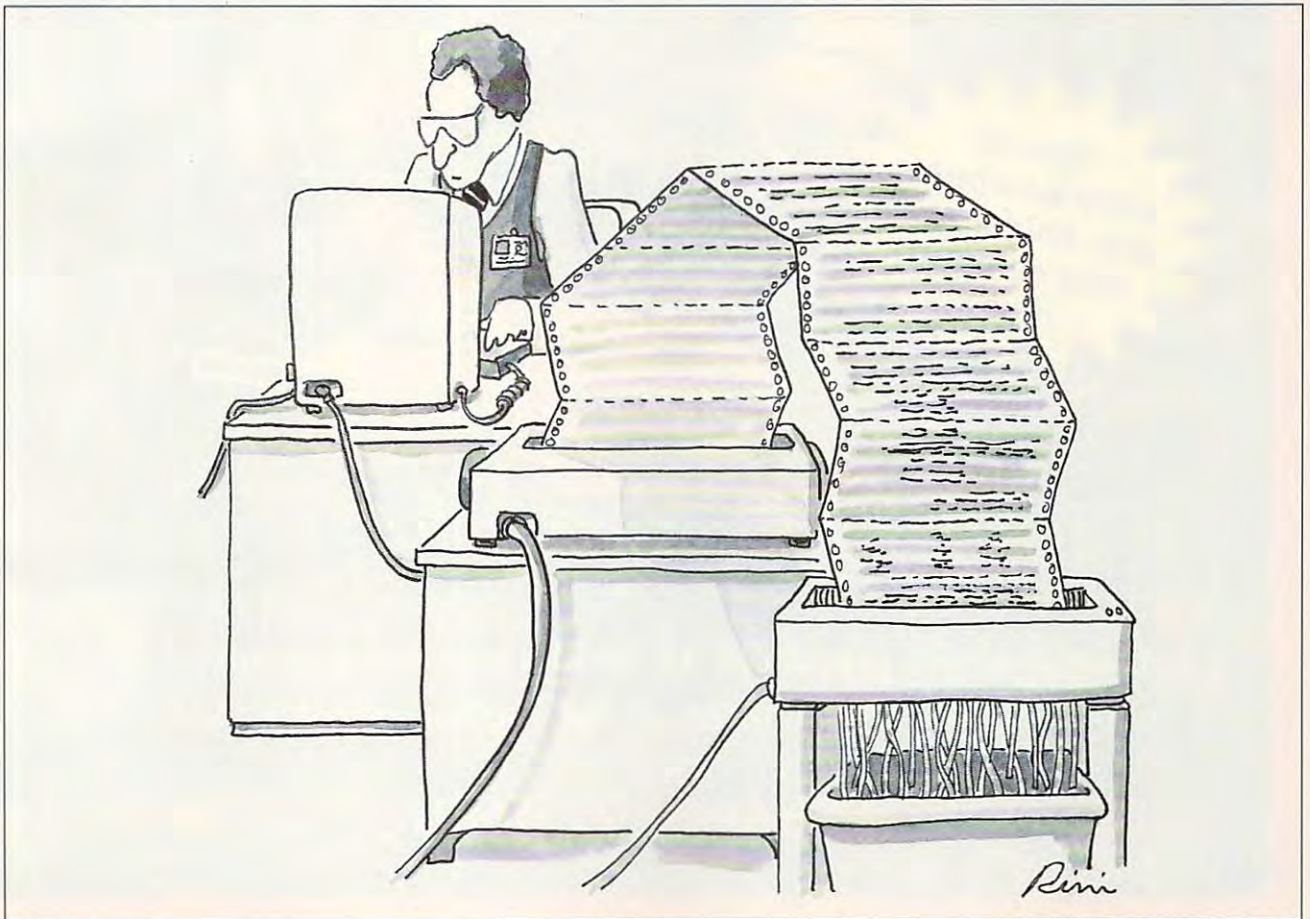
Despite the many problems that currently plague high-speed modeming, one thing is clear: There's no going

back to the days of 2400-bps communications. Modems are going in only one direction, and that's toward faster speeds. So, while fine-tuning your modem may not be anybody's idea of a fun time, it may be worth your while to invest a couple of hours learning a little about modem technology to save a lot of time and money later on.

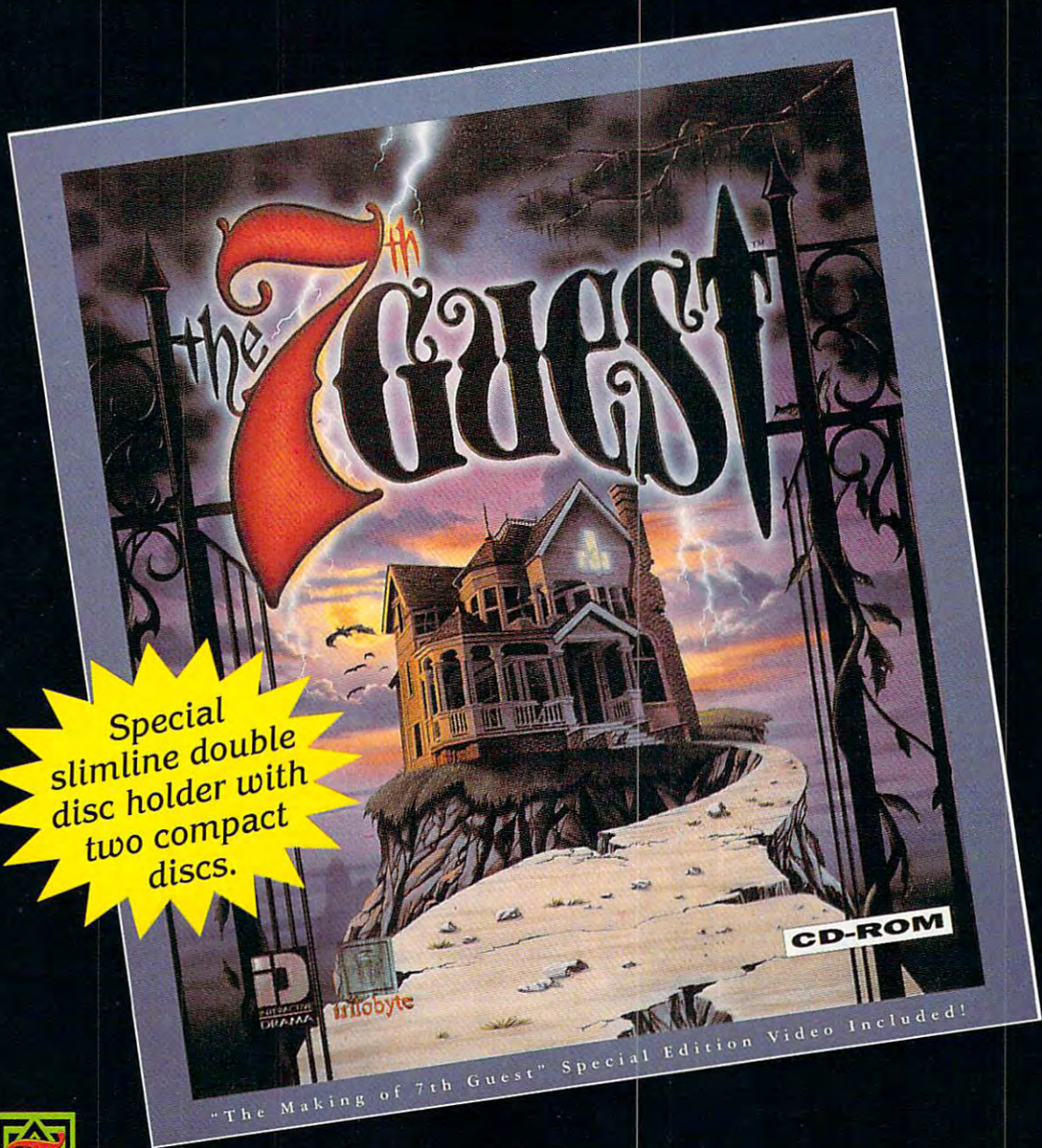
The good news is that some day soon the nation's homes and businesses will be rewired with digital phone lines, making modems—and modem problems—obsolete. Unfortunately, it may be a long time before PC communications will be as easy as plugging a phone line into the back of your computer and dialing up your favorite online service. You'll still need to buy a terminal adapter and navigate your way through another host of technological issues.

"Hopefully, in another year or two, there will be a standard switch interface for the terminal adapter to talk to," says John Copeland, vice president of technology for Hayes. As for the adapter manufacturers themselves, "People are always going to want to differentiate their products and include some feature or enhancement that the rest of the crowd doesn't have."

That's just modem nature. □



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PRODUCTIVITY CHOICE

With Ascend, you'll remember appointments, get things done, and maybe even find inner peace.

Clifton Karnes

ASCEND 4.0

I can't imagine life without Ascend. There are very few programs I can say that about, but Ascend is definitely one. In fact, it's probably my most important tool.

Ascend is a Windows-based personal information manager, or PIM. And like most PIMs, it manages diverse types of information, including a prioritized daily task list, an appointment schedule, calendars, a master task list, a telephone and address book, a journal, a database, and much more. The program's newest version, 4.0, adds many state-of-the-art enhancements—like drag and drop and OLE—that quickly become addictive.

Before discussing Ascend's specifics, I want to talk about its background—there's more to Ascend than might be apparent immediately. It's based on a philosophy, and every module in the program relates to this philosophy.

Ascend was developed by Franklin Quest, a time management consulting company that has been teaching time management techniques and selling paper-based Franklin Planners for years. The Franklin method is based on a top-down approach to time and task management with the final goal being inner peace, something most of us feel is not only worthy and desirable, but seemingly unattainable.

In the Franklin system, you begin not with figuring out how to arrange tasks for the day or manage contacts, but by defining your most important lifetime goals. From these long-term goals, you construct midrange goals, and from these you begin to



plan your daily tasks. Obviously, every task can't relate specifically to your long-term goals, but many can. And if they do, not only will you be more productive, but you'll also be at peace with yourself. This is the Franklin philosophy. Ascend's modules are well designed and general, so you can use them without buying into this philosophy. But then you'll lose some of the program's power. Now, on to the details.

Ascend sports a colorful multiple document interface (MDI). MDI applications, like Windows' own Program Manager and File Manager, let you have any number of modules open at a time, and you can size, maximize, and minimize each to get just the organization you want.

To make navigating these modules easy, there's a button bar with one button for each module. You can customize this button bar and determine which buttons go on the bar and in what order. You can place the button bar at the top, bottom, or side of your display; or you can let it

float. If you'd prefer to use the shortcut keys instead, you can even hide the bar.

The first module we should discuss is the Productivity Pyramid. This module helps you build your long- and midterm goals and apply them to your daily tasks. You don't have to use the pyramid, but if you do, you'll keep focused on your most important goals.

Ascend's centerpiece is its Prioritized Daily Task List. Note that this isn't called a to-do list, and with reason. Ascend wants to emphasize that this is a *prioritized* list.

Ascend's task list uses a system, recommended by several time management experts, of grouping tasks into three categories: vital, important, and trivial. Then the tasks in each group are ordered by priority. This is clearly the way to construct a task list, but it's amazing how many PIMs fail to follow this recognized formula.

All this ordering and reorganizing is a snap with Ascend. There are special dialog boxes that make sorting as easy as double-clicking. And Ascend 4.0 lets you sim-

ply drag and drop tasks to change their order. If you follow your carefully prioritized list, you may not get to every task, but you'll always get the most important ones done.

In version 4.0, all of the modules have similar button bars. If you dislike them, you just double-click on the band that the button bar rests on, and the bar disappears. To get it back, double-click on the area where the button bar would rest. It's hard to imagine a slicker system.

One of the most useful new features is the ability to link tasks to contacts. You simply click on the Link button, and a list of your contacts appears. Select one, and the link is made. You can then view all the tasks and appointments associated with an individual.

To support the Prioritized Daily Task List, there's a Master Task List module, which actually holds several lists: one for work, one for home, and two for miscellaneous lists. You can move tasks between your daily lists and the master list. The Master Task List also displays the age of each task in days. This is a useful form of passive nagging.

Ascend boasts several calendars. You can display a weekly or a monthly view, complete with the amount of free time available each day. Ascend lets you place informative icons on special days (suitcases for travel days, palm trees for vacation days, and closed signs for days your business isn't open, to name a few), and these are visible in the calendar.

There's also a small monthly calendar that you can leave on your desktop all the time if you like. It's useful for quickly changing the date,

and you can reschedule tasks and appointments by dragging them from their respective lists to the days on this little calendar. This is the easiest rescheduling system I've ever seen.

Ascend's Address Book was completely rewritten for version 4.0, and it's a terrific tool. It has fields for almost every imaginable aspect of a person, and you can link appointments and tasks to individuals in your Address Book.

Ascend 4.0 supports DDE and OLE, and it comes with Word for Windows macros that let you search your Ascend Address Book and insert names—all while you're in a Word document.

If you're looking for information that you know is hidden somewhere in Ascend, you can use the improved global search, which lets you select which modules to search in. And for taking notes, there's a journal, a record of daily events, and Red Tabs, which are special areas for storing information grouped by topic.

If you want to print your tasks and appointments and take them on the road with you, Ascend makes superb printouts on two sizes of Franklin Planner forms and on standard 8½- x 11-inch paper.

You probably realize that I'm enthusiastic about Ascend, and I am. I've found very little to complain about, but here are a couple of gripes. The program doesn't seem to respond to the standard Windows exit protocol, so if Ascend is open on your desktop and you exit Windows from Program Manager, the next time you run Ascend, it will tell you that its index is corrupt and it needs to rein-

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dex. I've never lost any data from this, but it's annoying.

Ascend 4.0 supports drag and drop all over the place (you can even drag and drop between appointments and tasks, which is pretty neat), but you can't drag a task from your Master Task List to your Prioritized Daily Task List, which is something most people would want to do every day. (You can drag tasks in the other direction, however.)

Both of these complaints are minor. And Franklin Quest has a history of quickly fixing bugs and relentlessly improving Ascend.

Should you buy Ascend 4.0? Yes. It won't solve all your problems, but if used conscientiously, it'll help you solve the most important ones.

Circle Reader Service Number 391

IBM PC or compatible (80286 compatible); 2MB RAM; Hercules, EGA, or VGA; hard drive with 2MB free; high-density floppy drive; Windows-compatible printer; Windows 3.0 or higher; Hayes-compatible modem (for use with AutoDial); mouse recommended—\$199.95 (Ascend software only), \$299.00 (Ascend software, Franklin Planner, and seminar tapes)

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PERSONAL PRODUCTIVITY

Lynn Walford

WHY DIDN'T I THINK OF THAT?

What can you do when you're stuck for ideas? Before the advent of idea generation software, you were left to your own means, but not anymore.

"You don't have to wait for a bolt out of the blue; there are processes that will help you gather more ideas. And the more ideas you gather, the more likely you are to get a great idea," says Roy Nieremberg, creator of Idea Generator Plus (Experience in Software, 2000 Hearst Avenue, Suite 202, Berkeley, California 94709-2176; 800-678-7008 or 510-644-0694 [voice], 510-644-3823 [fax]; \$195).

The Reverend Bernard J. Joy, of Memorial Baptist Church in Savannah, Georgia, needed help devising a program to help the families of soldiers overseas during the onset of Desert Shield. Mr. Joy and the program chairman brainstormed with Idea Generator Plus and developed a workable strategy in just over an hour. The plan enabled them to give assistance outside normal channels to families that might have been forgotten.

"American business is at a point where it needs new ideas, not the rehashing of old ideas," says Jan Saltzman, general manager of MindLink. "MindLink uses playful wishful thinking in a systematic way and helps make connections from dissimilar things . . . to create new innovative ideas."

MindLink Problem Solver (MindLink, Box 247, North Pomfret, Vermont 05053; 800-253-1844 or 802-457-2025; \$299) is based on over 30 years of research. It has four independent parts: The Gym, for warming up and playing; Idea Generation, which helps define the problem; Guided Problem Solving; and Problem

Solving. MindLink comes with a little bag of toys and sometimes asks you to do unusual things, like getting up and going for a walk or pretending an Indian leader is talking to you.

Kathleen Vick of TBA Architects in Waltham, Massachusetts, has used MindLink when teaching design students and in her own interior designs because it "takes away the obvious and catapults you deeper into an intellectual approach to design."

In a recent design for a consulting firm, where most of the consultants preferred to work at home, Vick used MindLink, which led her to the question, How do you make an office and not have it look like an office? MindLink helped her write down lists of associations and make parallel lists of associations about the qualities of a home.

Now that the design is complete, "everyone is showing up . . . people are more relaxed and speaking softly. The nature of colors, textures, lighting, and patterns creates a womblike feeling."

"IdeaFisher is a memory jogger," says Jess Fisher, project director for Fisher Idea Systems. "It's the only program with a database of over 705,000 idea associations and is useful for anyone who communicates."

Based on the concept that the mind works through association, IdeaFisher (Fisher Idea Systems, 2222 Martin Street, Suite 101, Irvine, California 92715; 800-289-4332 or 714-474-8111 [voice], 714-757-2896 [fax]; \$495) uses the IdeaBank, a super thesaurus of ideas, to freely associate concepts. It also has a compare function to compare concepts and the QBank, which contains questions for planning.

"When I have to define a problem, the first thing I do is crank up IdeaFisher," says

David Sonnel of Integrated Spatial Solutions, a Blaine, Washington, firm that creates marketing programs and is also responsible for global positioning of 25 satellites.

Sonnel uses both the IdeaBank and QBank when developing marketing plans, while interviewing clients, and especially for creating crucial business proposals. He remarks, "IdeaFisher structures the process and makes it harder to leave the important things out."

Other software available to help with ideas includes The Idea Savings Bank (Micro Computer Resources, Division of MCR Agency, 6116 Merced Avenue, Suite 81, Oakland, California 94611; 800-767-6797 [voice], 510-444-6561 [fax]; \$129.00), a ready-made database for storing and publishing ideas; Wisdom of the Ages (Micro Computer Resources, \$79.00), a collection of 6500 quotations from the greatest thinkers of all time; and Idea Tree (Mountain House Publishing, Route 100, Waitsfield, Vermont 05673; 800-639-5044 or 802-496-5000 [voice], 802-496-4320 [fax]; \$69.99), which helps chart and outline ideas.

All the people interviewed for this article adopted the techniques from the programs and used them even when not using the software. The software programs and methods don't create the ideas themselves and aren't the only ways to stimulate creativity. Beethoven stimulated ideas by pouring ice water over his head. Any method may be worth trying if it works. (Be careful not to spill the water on your keyboard!)

Lynn Walford, a computer consultant and author in Los Angeles, is the author of *Make Money with Your PC!*, published by Aproprose. □

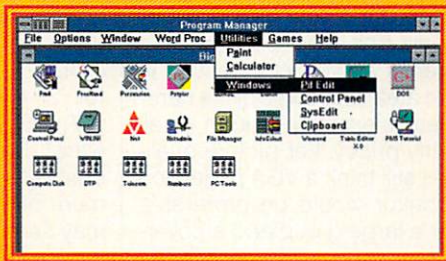
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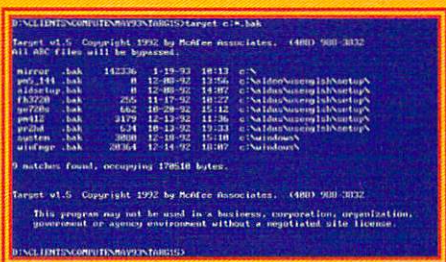
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ART WORKS

Robert Bixby

PRESENTATION AND PROJECTION

Last month, I opened with a brief discussion of presentation software. This month, I'd like to cover a little bit of presentation hardware before turning to a look at an interesting entry-level graphics program.

WatchIT!_{TV} has received some attention over the past couple of issues. I've had the opportunity to use it, and my observation is that it might be a good product for entertainment, particularly if you have

Recently, I've been hearing from several companies that make translucent LCDs for use in conjunction with overhead projectors for presentations. The idea isn't new, but there's a lot of competition in the area, and some of the hardware is exciting, though it's all fairly pricey. For picture quality, I still think a VGA projection monitor would be preferable for a large group and an oversize monitor would be preferable for a small group.

A VGA projection monitor can provide a display about as good as a slide projector's.

A translucent LCD screen with an overhead projector delivers an image about as good as the overhead projectors you remember from school—grainy and washed out. I suspect that the difference is that a VGA projec-

tion monitor has three light sources converging on a single screen while an overhead projector has just one light source. In many presentation situations with a captive audience (school classrooms, for example), a grainy picture is not a drawback.

One translucent LCD maker is nVIEW (860 Omni Boulevard, Newport News, Virginia 23606; 800-736-8439). Its SpectraMini screen costs a mere \$2,795. It's passive matrix and displays only 512 true colors. Also offered by nVIEW are the nSIGHT and Luminator self-contained projectors. The nSIGHT provides passive matrix LCD projection in 16 shades of gray for \$2,495, and the Luminator offers an active matrix LCD with 262,000 true colors, multiple input, and

audio for \$9,995.

If you're into software publishing, you might be interested to know that CD-ROM publishing has jumped onto the desktop. Philips offers the CDD521 CD-ROM recorder for a list price of \$5,995 (\$7,995 with required software). Recordable CD-ROMs cost \$40 each (with a minimum of ten per order). That may seem like a lot of money, but it's in line with the cost of a Macintosh and LaserWriter in the mid 1980s, when desktop publishing fell within the reach of the individual computer user. While the machine is designed for archiving and pre-mastering work and takes at least four hours to fill up a 690MB CD, the capability is there for anyone to use. According to Philips, most customers are lawyers, doctors, and accountants, who use the machine to make copies of legal and financial records. Unlike disk files, documents stored on a CD-ROM can't be altered or overwritten, which makes a CD-ROM a compact yet secure storage medium. To find out more about the CDD521, call Philips at (800) 722-6224.

Arts & Letters Graphics Editor has a new little brother: Scenario. It's the perfect way to get started in computer graphics. All of the tools are highly simplified and highly intuitive. For example, there's a grid that can be displayed on the screen, but the program lacks snap. The menus are simplified versions of the Arts & Letters interface. The program comes with a small collection of the clip art that made Computer Support (Scenario's maker) famous, including landscapes, animals, and airplanes. And best of all, it's the first step on an upgrade path that includes Graphics Editor. But most people (and kids in particular) will find everything they need in Scenario. □

Scenario comes with simplified tools and a collection of the clip art that made Computer Support famous. And best of all, it's the first step on an upgrade path that includes Graphics Editor.



cable service or rooftop antenna access in your computer room, but that for presentations and desktop publishing, it's not very useful. The quality of a broadcast television picture is poor when compared to VGA graphics. And pictures captured electronically from a videotape or off the air will not be of a high enough quality for publishing use (images from these sources have to be fed to the board in RF mode—there's no composite input). For the same price as the WatchIT!_{TV} unit (\$299), Circuit City has been advertising a 25-inch color television. What would you pay for a 25-inch VGA monitor? I liked the idea of WatchIT!_{TV}, but while it might serve for pure entertainment, it won't be of much use in desktop publishing.

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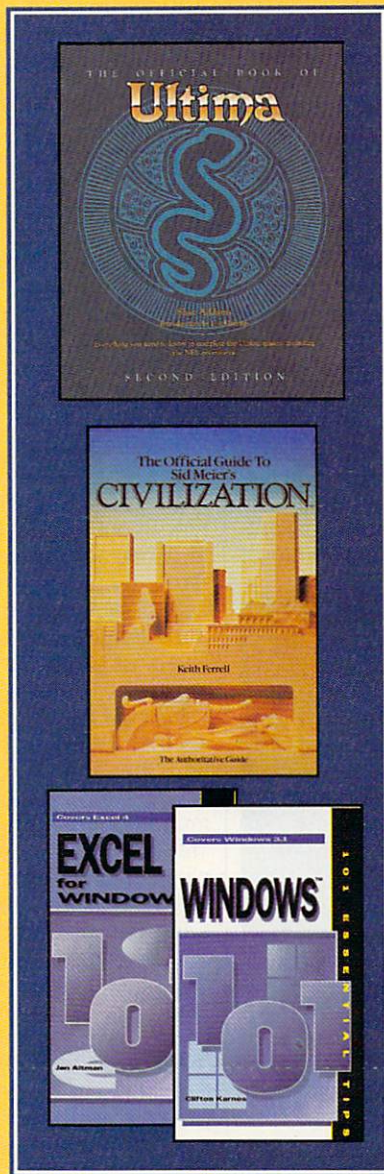
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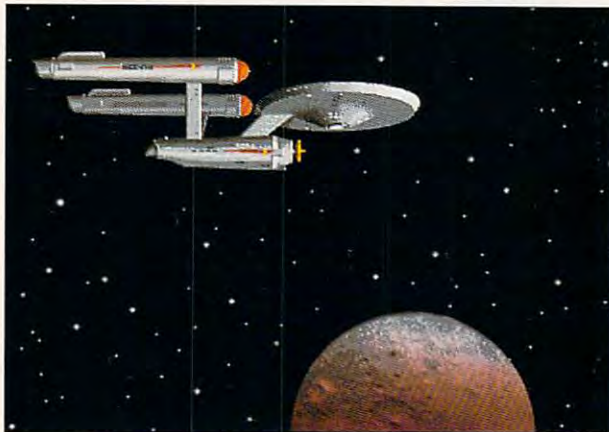
Steven Anzovin

LIVE LONG AND PROSPER

On a cool September night in 1966, I curled up in front of the tube to watch the first episode of a new show that promised to be like no other ever seen on network TV.

As the now-famous saucer section appeared on the TV screen, I was immediately and permanently hooked. The show was, of course, the original "Star Trek."

Not only did I wait impatiently for each new adventure of



The key to Star Trek's longevity is not in the hardware or in the writing but in how fans feel about the characters.

the *Enterprise* and its intrepid crew, but I also built Star Trek model kits, read Star Trek books (even one on how to submit a script to the producers, which I dreamed of doing right up until the show went off the air three years later), and argued over the deeper meaning of each episode with a small circle of like-minded, starry-eyed friends.

Almost twenty-seven years later, the longevity and popularity of Star Trek is something of a mystery to me. Older and not so starry-eyed, I find that the old "Star Trek" is painfully, predictably, laughably bad. Sure, the old series now qualifies as vintage cheese, but there's only so much cheese most people can take.

Nor is Star Trek's popularity a matter of great art triumphing over the marketplace, since nobody (except maybe the late, great Gene Roddenberry and a few truly intense fans) could claim that the hilarious old "Star Trek," the wildly uneven Star Trek movies, the deadly dull "Star Trek—The Next Generation," or "Deep Space Nine" are anything like masterpieces.

Maybe the key can be found in how Star Trek fans feel about the characters. Kirk, Spock, Bones, Picard, Data, Worf, and the rest are like family members whose every action is now familiar—and perhaps laughable—but no less loved for all that.

Guiltily, I have to admit that I still enjoy the hammy histrionics, the sophomoric bridge banter, the wonderfully tacky sets, and the thrillingly melodramatic score of the old "Star Trek." My brother and I, not close in other ways, can tune in to a "Star Trek" rerun, recite each line of awful dialogue, and feel closer than we do at any other time. I even watch "Star Trek—The Next Generation," maybe because I feel that I owe it to the Federation. Compared to the perilous, unpredictable real world, the universe of Star Trek, with its simple heroic values, consistent characters, and happy endings, is, well, comforting.

Whatever the reason for Star Trek's success, marketers have jumped on the bandwagon. Today, there are scads more Star Trek goodies available than there were when I was a kid. And, as befits a show that inspired many viewers to get into computing, several Star Trek-themed products are now offered on disk.

There've been computer games based on Star Trek concepts since the dawn of personal computing.

One recent authorized en-

try is the Star Trek: 25th Anniversary game, from Interplay Productions (17922 Fitch Avenue, Irvine, California 92714; 714-553-6655). This RPG lets you maneuver Kirk, Spock, and Bones (rendered in the hobbit-proportioned bodies apparently required in such games) around the *Enterprise* and on a variety of alien worlds.

Digitized scenes and sounds from the original series add the necessary authenticity, and you can even kill off a nameless ensign on every mission, just as happens in each episode.

Star Trek-flavored utilities are a new development. Berkeley Systems (2095 Rose Street, Berkeley, California 94709; 510-770-8787) has released Star Trek: The Screen Saver, a collection of modules for the company's popular After Dark Windows screen saver. Sound Source's Logical Collection is a set of audio clips from the original series for use with Windows. (Contact Sound Source at 2985 East Hillcrest Drive, Suite A, Westlake Village, California 91362; 805-494-9996.)

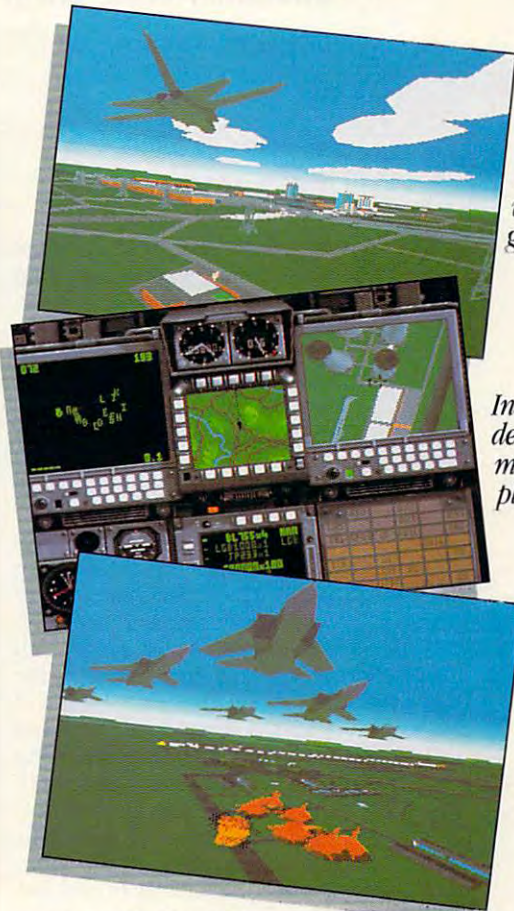
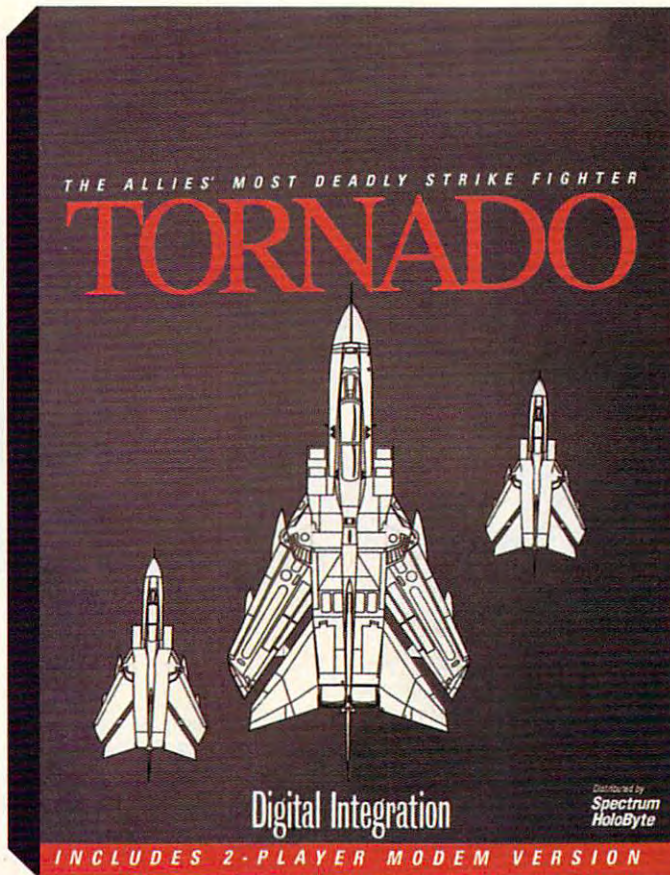
The final frontier of Star Trek fandom may be coming soon to your local mall. The people who brought you Virtuality, the virtual reality (VR) arcade game, are developing a new role-playing VR game based on "Star Trek—The Next Generation."

Up to 50 players at a time will supposedly be able to play various roles on each installation, manning (or womanning) the bridge, holodeck, and other stations while fighting off the Borg and repairing the hull integrity latching system.

Do we want to live Star Trek, not just watch it? Will overexposure finally kill our love for the *Enterprise* and its crew? Those are questions that even Spock couldn't answer. □

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DISCOVERY CHOICE

You'll find yourself peeking over your children's shoulders as they explore this powerfully entertaining story.

Clayton Walnum

JUST GRANDMA AND ME

If you've been looking for an entertaining way to help your children learn to read, Brøderbund has the program for you. Just Grandma and Me, the first title in the company's new Living Books series, will captivate your child. It's an interactive storybook that fully uses the multimedia capability of your computer.

Children's software and Brøderbund go hand in hand. Over the past several years, the company has created perhaps the best children's software library in the business. Programs like Kid Pix, The Treehouse, and The Playroom, all of which provide an interactive learning environment, are adored by kids—and, of course, by their parents. Now, with the introduction of the Living Books series, Brøderbund is adding yet more extraordinary titles to an already superior product line.

Just Grandma and Me, based on a book by Mercer Mayer, is a delightful romp through a storybook come to life. From the first page to the last, readers will be enthralled with this new style of storytelling that is just a hop away from a fully interactive cartoon.

When the program begins, the story's main character, Little Critter, guides children through the process of selecting options and getting the story going. For example, using full animation and digitized sound, Little Critter tells your child, "To have the story read to you, press this button. To play inside the story, press this button." As he speaks, he



points to the appropriate button onscreen. It's a cinch for even very young children to run the program without adult assistance.

The first option, Read to Me, lets children sit back and enjoy a fully animated reading of the book without having to interact further with the program. One after another, the program displays and reads each page of the story, highlighting the words as they are read—an invaluable learning aid for early readers. After the program reads each page, a minicartoon takes over, filling out the current scene. For example, on the first page, Grandma and Little Critter hold a short conversation about their upcoming trip; then a bus trundles down the road, stops before them, and allows them to climb aboard.

Although Just Grandma and Me is targeted at children, you'd have to be a cold adult indeed not to be affected by its delightful story and sharp sense of wit. The cartoon sequences range from charming to hilarious. In fact, adults, just like children, will

find it difficult to quit before the entire story has run its course. Also like the kids, most parents will enjoy seeing the story again and again. So although the program requires little or no adult assistance, it's likely that the "big people" will linger once the program has started, looking over their offspring's shoulders as the story unfolds.

In typical Brøderbund fashion, Just Grandma and Me goes way beyond being a simple storytelling program. When children choose the Let Me Play button, they can interact with virtually any element of any page in the book. Such interaction leads them into a wonderful, witty world of zaniness that is not only fun but also—dare I say it?—educational. And while children can choose the Let Me Play option to play in the story starting from page 1, a separate option screen allows them to choose, by picture, the page to which they'd like to go, immediately jumping them to favorite scenes and eliminating

any need to wait for preceding pages to flip past.

Some examples of the silliness to be found in the Play mode include beach umbrellas that snap shut and rocket into the sky; clams that sing in perfect three-part harmony; a dog that scratches furiously as fleas leap from his fur and escape into the ocean; a starfish that dons a top hat and cane and performs the old soft-shoe; a raccoon that steps off her beach blanket and jumps around, yelping, on the hot sand; fish that spray unsuspecting characters with sea water; a fence that can be played like a xylophone; and crabs that bother nearby fish. Children can easily activate dozens and dozens of other similar objects with single mouse clicks.

On the educational side, each page's text is also interactive. When a child clicks on a word, the word is highlighted and pronounced. This is a perfect way for children not only to learn to read new words but also to discover the way in which sentences are constructed from the words.

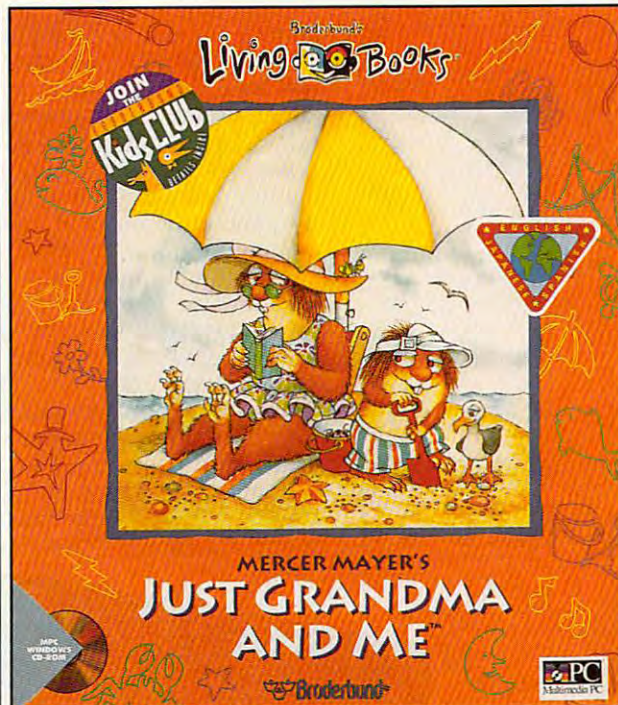
Just Grandma and Me's graphics, which are displayed in 256-color, 640 x 480 Super VGA, are colorful and detailed, drawing readers irresistibly into the cartoon fantasy. As already mentioned, every scene features topnotch animation sequences, scenes so good that they approach cartoon quality. And the careful attention the designers paid to facial expressions adds much to the characterization. Hundreds of digital voices and sound effects further enhance the story: Waves splash, breezes blow, birds chirp, cows moo,

helicopters clatter overhead, telephones ring, chimneys chuff, dogs bark, radios play music, and on and on.

As if this weren't enough, Just Grandma and Me can read the story to your child in three languages: English, Spanish, and Japanese. While the main goal of developing a multilingual program was more than likely an effort to increase its market share, doing so also enhances the story's educational value. Not only is it fascinating to see and hear the story in another language (especially in an exotic language like Japanese), but older children can also get some valuable lessons in what it's like to speak a different language. Unfortunately, the package doesn't include a multilingual dictionary that cross-references the words used in the book, an option that would've been helpful to parents and older children.

For those who savor traditional storytelling, Just Grandma and Me includes the original book by Mercer Mayer. Children can follow along in the book as the program reads the story. And, more important, parents can sit with their children and read the story the old-fashioned way. There's probably not a better way for parents to share quality time with their children than sitting close, reading a book together. In fact, many child experts say that young children should be read to several times a day.

Just Grandma and Me is superb, but it's a rare piece of software that doesn't suffer at least a minor flaw or two. However, if you try to find a fly in this ointment, you'll have to dig deep indeed. In fact, if Just Grandma and Me has a



negative side, it's only that it has high hardware expectations: an 80386SX or compatible with Windows 3.1, a CD-ROM drive, a sound card, a Super VGA monitor, and four megabytes of RAM. Still, it's programs like Just Grandma and Me that encourage people to upgrade their machines, and Brøderbund is to be applauded for taking the lead in advancing the state of the art of educational multimedia software.

In short, this is a virtuoso performance from a company dedicated to excellence in educational software. An electronic storybook overflowing with one enchanting discovery after another, Just Grandma and Me truly demonstrates the power of multimedia computing. It's also the perfect babysitter.

Circle Reader Service Number 392

IBM PC or compatible (80386SX compatible), 4MB RAM, Super VGA, CD-ROM drive, any major sound card, Windows 3.1 (or 3.0 with Multimedia Extensions)—\$49.95 plus \$4.00 shipping and handling and state sales tax (direct from Brøderbund), \$69.95 (suggested retail)

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MULTIMEDIA PC

David English

MUSIC FOR THE MASSES

Even if you're not a musician, you'll soon hear a lot about General MIDI. Not only is General MIDI making it easier for nonmusicians to control electronic keyboards and keyboardless MIDI modules, it may also dramatically improve the sound quality of the games we play on our PCs.

First, a little background. MIDI (Musical Instrument Digital Interface) is a communications standard that allows electronic musical instruments to talk to computers and to each other. Mostly, it communicates which note is being played, how long the note is being played, and which instrument sound is playing it. When you

User-friendly synthesized sound has finally arrived for the PC.



record a musical performance with MIDI, you're not recording the music itself. You're recording the least amount of information that will enable a synthesizer or MIDI module to re-create the original performance.

Unfortunately, a MIDI recording made on one synthesizer usually doesn't sound very good on another synthesizer. The note on/off and duration data usually matches, but the order of the instrument sounds is different. Because a Korg 01/W might have a steel guitar in the same position that a Roland D-50 has a church organ, that Bach fugue you recorded on your D-50 might come out sounding like a Willie Nelson tune on your 01/W. General

MIDI is the industry's attempt to set the order of the first 128 sounds so that you can count on a grand piano being in position 1, a choir pad being in position 92, and MIDI note 54 always calling up a tambourine.

The first General MIDI device was the Roland SC-55 Sound Canvas. Because of its excellent sound and great price (\$795), many professionals use it to supplement their professional MIDI equipment. The Sound Canvas has also proved to be popular with multimedia developers who can simply plug it into a MIDI-compatible sound card and drive it with any MIDI-based music program. Other General MIDI devices that have entered the market over the last 18 months

include Roland's SCC-1 (a PC-card version of the Sound Canvas), Turtle Beach's MultiSound (a sound card that includes the chip set to the popular E-mu Proteus/1 synthesizer), and Creative Labs' Sound Blaster 16 ASP (a sound card that offers an optional General MIDI daughter board).

One by one, the major keyboard manufacturers are taking their high-end synthesizer technology and creating low-end General MIDI boxes. These keyboardless MIDI boxes contain the kinds of sounds that would've cost thousands of dollars just four or five years ago. A good case in point is Yamaha's new TG100 (Yamaha, P.O. Box 6600, Buena Park, California 90622-6600; 714-522-9011; \$449). It weighs about two pounds, has

192 instrument sounds and ten drum kits, lets you play as many as 15 instrument sounds and one drum kit simultaneously, and contains its own digital reverb and delay effects. It also includes a special port—in addition to the standard MIDI connectors—that connects it to the serial port of a PC or Mac. This lets you use the unit with a laptop or other computer that lacks a MIDI interface. Best of all, the TG100 sounds great. It has a rich, full sound with especially strong strings and pianos. It uses the same AWM (Advanced Wave Memory) technology that's used in Yamaha's professional-quality SY99 and SY85 synthesizers.

Speaking of Yamaha's professional-quality synthesizers, I was also able to try out the new SY85 (\$1,995). If you want to go beyond General MIDI and design your own complex sounds, this is one killer machine. It includes 6MB of ROM-based sounds that sound as good as anything you'll hear on a record or movie soundtrack. In addition to the usual array of buttons and knobs for editing and storing your sounds, the SY85 includes eight slider controls that let you quickly alter your sounds in realtime. The SY85 also includes a 61-key, 30-note polyphonic keyboard; 512K RAM (expandable to 3.5MB); its own disk drive; great-sounding programmable effects; and an on-board sequencer. (For even more terrific sounds for the SY85, TG100, Sound Canvas, and other MIDI synthesizers, contact Sound Source at 800-877-4778 and Pro-Rec at 212-675-5606.)

As for the game connection I mentioned earlier, there's a movement to establish General MIDI as a replacement for the tinny FM technology on the sound cards. Imagine hearing a real trumpet or organ when your hero enters the villain's castle for the first time. □

Wolfenstein 3d

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Circle Reader Service Number 300

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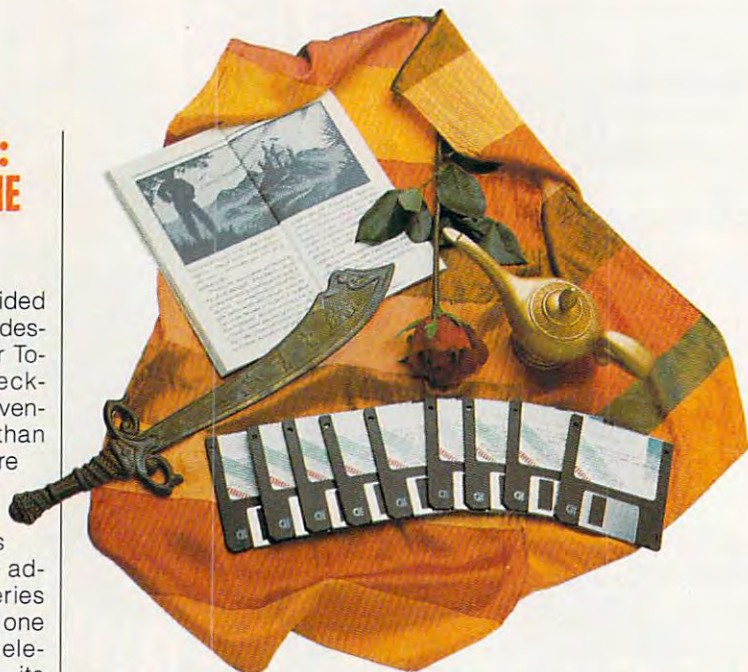
Scott A. May

KING'S QUEST VI: HEIR TODAY, GONE TOMORROW

Sparked by love and guided by an enigmatic sense of destiny, *King's Quest VI: Heir Today, Gone Tomorrow* beckons all to join its noble adventure. Bigger and bolder than ever, this is an adventure few can resist.

The sixth installment in Roberta Williams's award-winning graphics adventure leads the series down a familiar path, but one emblazoned with story elements far richer than its predecessors. Aided by some of the most creative minds in the business—writer Jane Jensen, art director William Skirvin, and composer Chris Braymen—Williams has assembled her most ambitious work to date.

Fans of the series will sink comfortably into the continuing saga of the adventure-prone first family of Daventry: King Graham, Queen Valance, and children Alexander and Rosella. Newcomers needn't feel left out: As in earlier games, the story is completely self-contained. A marvelous introductory sequence sets the stage while establishing a link to the previous episode, *Absence Makes the Heart Go Yonder*. In that story, Daventry's royal family is kidnapped by the evil wizard Mordack. King Graham journeys to the warlock's island stronghold and rescues his family along with a beautiful girl, who turns out to be Princess Cassima. She takes a fancy to Alexander, and he, deeply smitten, wonders if he'll ever hear from her again.



At long last, he's given a sign. He sees the image of Cassima in his father's magic mirror. Seeing her cry out in sorrow, Alexander sets sail for her home. Sadly, his journey ends in disaster when his ship breaks apart in a violent storm. He awakes on the Isle of the Crown, home to his beloved Cassima.

Assuming the role of Alexander, you now begin your adventure. Among your first tasks: Seek out the royal palace, where you'll meet the suspiciously belligerent vizier, Alhazred. He claims the princess is in seclusion, mourning the recent deaths of her parents, and has requested not to be disturbed. You also learn that Alhazred and Cassima are soon to be wed. The vizier gives you a stern warning to leave the Land of Green Isles. Saddened and confused, you begin to doubt the image cast in the magic mirror. Still, you can't shake the ominous feeling that something is terribly wrong.

Although the game's central theme is readily apparent,

your direction and goal are purposely vague. Through hundreds of locations in the Land of Green Isles, Williams has cut many paths, each crisscrossing to one of several different endings. Ultimately, the course you follow determines your difficulty level, opening the game to newcomers and seasoned veterans alike. This flexible, open-ended design also means that you can reach the end and yet still experience only a small portion of everything the game has to offer. Replay value in a graphic adventure? What a concept!

The game unfolds in a world significantly larger than those of its predecessors. Initial investigation reveals four main regions, each with unique geography, inhabitants, and puzzles.

One of the game's main assets is Sierra's evolving player interface. Gone is the traditional text parser; it's been replaced with a more intuitive graphical cursor. By simply clicking the right mouse button, you cycle through four all-

purpose actions: Walk, Talk, Look, and Touch. Select the object to be acted upon and then press the left mouse button. Manipulating the hundreds of interactive screen elements quickly becomes second nature. A hidden top-down menu offers additional control of inventory items and game mechanics such as Save, Restore, Speed, and Graphic Detail.

How grand is your crusade? To put it in rather outrageous historical perspective, the first King's Quest, released in 1985, weighed in at a mere 128K. By contrast, this truly king-sized adventure tips the scales at 18MB. Nothing goes to waste, however, as Sierra pushes the envelope of disk-based programming. The package contains both 256-color VGA and 16-color EGA versions, although viewing the game's exquisite scanned artwork at anything less than its full-color palette would be a waste.

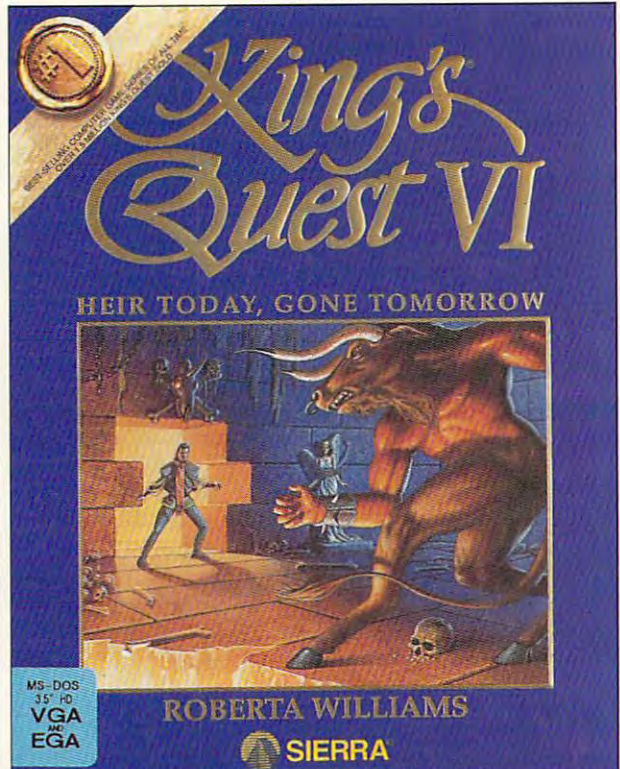
Typical of Sierra's commitment to cutting-edge graphic quality is the introduction, based on a 1.2-gigabyte animation by Kronos, the Hollywood special effects wizards known for their work in *Batman Returns* and *Lawnmower Man*. Like all of the game's minicartoons, the introduction showcases extraordinary cinematic finesse with its unique camera angles, 3-D panning, long tracking shots, and video-quality animation. Although the sampled speech is clear, it's rather stilted. Sierra would do well to hire professional actors for its next endeavor. For those who are concerned with hard drive space, this space-hogging introduction can be easily deleted.

Other graphic innovations in-

clude use of "pather" technology, a type of collision-detection system that ensures more realistic movement of on-screen characters. Instead of getting stuck or walking through props, your character automatically chooses the most intelligent path when moving from point A to point B. The game also boasts improved depth of field, accomplished by scaling animated characters as they move from foreground to background and vice versa. Finally, subtle use of spot animation and peripheral sound effects greatly enriches the story's ambiance. On the beach, waves lap the shoreline while gulls squawk overhead. As you move slowly through a cave, shadows cast by the flickering light of your candle dance on jagged walls. All of these techniques help suspend disbelief—one of the most important requirements in any fantasy—and further the illusion of reality.

The bulk of the game's puzzles merely require knowing which items to use when. Along the tenderfoot trail, most puzzles are painfully obvious. Players are helped along with telltale hints from not-so-subtle character dialogue and glaring onscreen clues. The further you stray from the beaten path, the more intricate and challenging the puzzles become, including spell casting, arcade-style interaction, and occasional timed events. Particularly interesting are the Logic Cliffs and deadly catacomb floor traps, although solutions to both are spelled out in the 50-page guidebook.

One of the game's few shortcomings is common to the genre: Many solutions require



tedious backtracking to pick up and deliver items, making you feel less like a brave adventurer than an overworked courier.

Williams and Jensen carefully balance the story line to attract players of every age, gender, and skill level. Those who love action will find plenty to pump their adrenaline, yet they won't be put off by the game's gentle, romantic side. Likewise, this tale of unrequited love will inspire the usually timid to complete its challenging quests.

Sierra describes King's Quest VI: Heir Today, Gone Tomorrow as an adventure so vast you may never experience it all. You'll have the time of your life trying to prove this claim wrong.

Circle Reader Service Number 393

IBM PC or compatible (80286 compatible); 640K RAM; 16-color EGA or 256-color VGA (only VGA for Tandy); hard drive (20.2MB free to run with introduction, 13.2MB without); mouse recommended; joystick optional; supports Sound Blaster, Ad Lib, Sound Source, Thunder Board, Pro AudioSpectrum, and MT-32—\$79.95

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GAMEPLAY

Paul C. Schuytema

SPAGHETTI POLITICS

Now there are tools for those of us who want to test the waters of superpower governance, to dabble in despotism or delve into democracy. D. C. True has developed Shadow President, a simulation of presidential foreign policy. Spectrum HoloByte offers Crisis in the Kremlin, a simulation of domestic policy in the former Soviet Union.

Shadow President places you in the Oval Office and



Power—getting it and keeping it—drives political simulations.

hurls the world in your face. You're presented with a map of the world, and selecting countries allows you to examine the influence, ambition, and ethical levels of their governments. You also have access to a wide range of advisers, from the chief of staff to the director of the CIA.

Shadow President is a flexible simulation that allows you to set your own agenda: world peace, ending hunger, or total world domination. You start out on June 1, 1990.

This game made me appreciate how complex and convoluted the world order is. Even my best intentions were stymied by opposing ideologies. When I took office, I wanted to

do right by the world, and I thought I would start with the war between Ethiopia and Somalia. But neither side wanted my help—no troops, no peace envoys, no money, nothing. I was Don Quixote with no windmills to battle.

Beyond being a fascinating game, Shadow President is quite an education in international politics.

When Robin Antonick and Brad Stock were tossing around their ideas for a presidential simulation back in 1984, they had no idea what an effort it would be. After doing some research, Stock came to the conclusion that some research just wasn't enough.

He enrolled in the doctoral program in political science at Tufts University and spent seven years studying international politics.

After years of study, he had learned enough about international relations to be asked to brief the State Department before a NATO meeting.

By converting Stock's studies into a complex array of algorithms, the programmers at D. C. True were able to blend the formulas with the comprehensive world data from *CIA World Factbook* to create a dynamic, living world.

And they expect *me* to be able to run the thing?

Shadow President is great for kids. It will provide them with a window on the mysterious connections and relations they hear about on the news.

Beyond the borders of the United States, the Soviet Union was once the most powerful nation on earth, and Crisis in the Kremlin by Spectrum HoloByte puts you at the helm of that late, great superpower. In the early summer of 1985, you, as president, can elect to govern as a Hard-liner, a Reformist, or a Nationalist.

The objective is simple:

stay in power. But the means are much more difficult. Historical events unfold in much the same way they did in those years: Republics attempt to secede, Chernobyl nearly melts down, and the U.S. urges weapon reductions.

Larry Barbu, the designer of Crisis, not only wanted to make the simulation real but also wanted an end product that didn't look like a model. As you attempt to find a safe path through the domestic and international crises, information comes at you in a myriad of ways: jokes, phone calls from foreign ministers, and television broadcasts.

What I learned in Crisis was that compromise is the only tool that allows any progress but that sometimes it isn't enough.

I held the Soviet Union together for 12 years (actually, a handful of republics had seceded), and all of the indicators showed that things were improving: health, education, food, exports, and foreign relations. I was even able to survive a popular election, but I made one fatal mistake: I cut the military budget too deeply, and there was a backlash. Even popular support is useless against an assassin (but the state news reports fabricated a natural demise).

So after 12 years of hard work, I was out of the picture.

I learned something from these games. The political world is much murkier than I had ever imagined, and rational thought is not the panacea I once believed it was. Maybe if political malcontents the world over could cut their teeth on these simulations, they could get a good feel of this global spaghetti bowl we live in. As for me, I'm going to dole out another packet of humanitarian aid before I get really mad and throw some missiles at the problem. □

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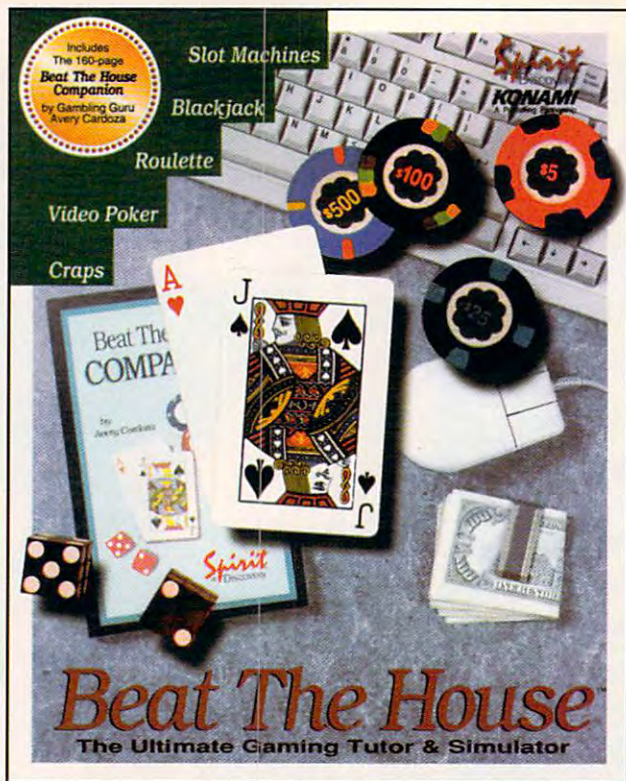
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Lady Luck

By Paul C. Schuytema

A deck of cards is unimposing all by itself, but put those cards in the hands of a dealer, and they seem to come alive. Fifty-two cards. That's all there are. And yet that finite number yields an almost infinite array of games. One of the most popular of these permutations is poker, a game of posturing and anticipating, all to create a hand of cards numerically superior to the others.

Poker has been with us for centuries, evolving from the French game of Gilet in the sixteenth century. During the French Revolution, the first serious betting techniques were applied to the game, and later, the English added the skill of bluffing. Poker, almost more than any other card game, is focused on a system of wagering which adds interest and financial reward to the game. Close on the heels of poker in terms of sheer popularity is the game of blackjack, or twenty-one, a fast and simple game that draws crowds at nearly any casino.

Since the very earliest days of computers, the electronic world has been simulating the world of the 52-card deck. Now, these games have advanced far

beyond just a good play, providing instruction, statistics, and advanced theoretical problem solving.

Video Poker

Because of the universal popularity of games like poker, casinos have recognized a huge potential in their slot halls, and slot manufacturing companies such as Sigma and International Gaming Technology (IGT) have answered the call by marrying the game of poker to the traditional slot machine to produce the most popular casino game machine to date: video poker.

Video poker is basically a five-card draw hand (with many house variations) which is played on a betting machine in a casino (or in a pub or tavern). The player drops in quarters to place a bet, five cards are presented on the color monitor, and the player decides which cards to hold and which to throw. Then the draw is made, and if the hand comes up a winner, coins fall into the lucky patron's lap. Otherwise (and most often), the video poker machine deals a losing hand and prompts the player to drop in more quarters to bet again.



Video poker is an entirely different animal from real face-to-face poker, full of its own frustrations and enjoyments. While real poker is an interpersonal game, video poker is a statistical game, pure and simple, and there is no posturing or bluffing. The best payoff is the royal flush, which is destined to occur about once in every 2½ million hands. The trick is to be ready for it.

The popularity of this game has spawned an entire industry of help products, and the video poker games available for the PC are the most exciting of the lot. Video poker games on the PC serve two purposes: entertainment and training. Video poker is fast paced and exciting, and nearly every package allows a different array of games to be played. The video poker games also act as training grounds for the Las Vegas-style coin eaters, and careful attention to the PC tactics can mean a payoff in real casino play. Many claim that with solid practice, 100-percent payback rates are possible.

Here is a selection of major players

in the video poker game.

Video Poker for Windows.

Masque Video Poker for Windows is as much a tutorial as a game. The first 48 pages of the manual take you through the ins and outs of the main video poker machines in the casinos, teaching you which machines to look for and what sort of payback you can anticipate. Full of stats, the manual teaches you what to expect from any given hand (there are roughly 2½ million possible hands in video poker).

The game itself is extremely intuitive, keeping all of the statistics in the background until you really need them. The look of the game is similar to the look of the casino games, complete with payback tables and the large square buttons.

Masque Video Poker provides a comprehensive array of statistical tools. At any moment, the player can pull up a chart showing the results of play, including payback rate, the percent of expert plays, and the number of hands dealt. You can also run computer simulations (in which the computer plays the hands) to quickly eval-

uate a certain game's characteristics. For example, using this tool will give you an idea of how many coins you will need to have in your bankroll to sit down at a particular casino machine and have a chance at winning.

The tutor will recommend expert plays on each hand. However, if you remove the tutor window from view, the tutor will only alert you when you're making a play which it considers wrong.

The basic strategy inherent in Masque Video Poker is to get your payback level as close to 100 percent as possible. If you can play expertly, you can keep your losses and gains nearly equal and hope that luck will send a jackpot your way.

Stanford Wong Video Poker.

Villa Crespo's video poker is a DOS product based on the statistical work of Stanford Wong. Wong is a mathematician who has spent countless hours working through the myriad of permutations of video poker. Villa Crespo's video poker is a slick front end for Wong's original BASIC language program (the program has been completely rewritten in C), which allows on-the-fly computation so you can adjust the various payback levels to make the program play like any machine you find in a casino.

Like Masque's Video Poker, Villa Crespo's game can run simulations that will give the long-term payback of any machine. There is also a tutor that can be set either to recommend the correct play for every hand or to warn of a bad play. Each hand can be analyzed according to value and possible payback. Gaming sessions can be saved to disk and resumed at any time.

Stanford Wong Video Poker differs in strategy from Masque's Video Poker in that it targets its advice at the higher payoffs, favoring the potential for a straight rather than merely holding any high cards.

The manual is clear and concise, but it offers very little in the way of a tutorial. The game assumes a player will know video poker games.

Strategic Video Poker.

If you're looking for a very fast and flexible package, Strategic Video Poker is for you. While you can't completely custom-configure a game, all of the games I've encountered are supported in this product, and payoff schedules can be easily modified.

Like the other two, Strategic Video Poker attempts to teach expert strategy for playing the video poker slot machines, and it offers many options, from a tutor to a simulator. It can even generate printed reports.

While the game doesn't have quite

How Do Casino Operators View PC Casino Games?

With all the assurances of computer gambling simulations that, if you learn the games, you can break even, how do casino managers feel about customers training on PC games? They're all for it. An educated player will not get frustrated as easily and will become a repeat customer. Besides, an uneducated player is dangerous to a casino's profits (someone blindly putting a pile of money down on 30-to-1 odds and hitting costs a casino far more than an educated player who plays the statistics and wins steadily).

Ron Moore, computer manager of The Par-A-Dice, a riverboat casino home-ported in Peoria, Illinois, says that he plays PC blackjack to get himself ready for a trip to Reno or Las Vegas. According to Moore, an uneducated player will ruin the play on a blackjack table. Players need to realize that whether or not they hit will affect everyone else's play (everyone to the left, that is). The Par-A-Dice even uses PC blackjack programs to train its dealers for handling the tables.

Here is some gambling advice from the pros.

- If you're playing a slot game, like video poker or video blackjack,

always make the maximum bet (generally five slugs, or \$1.25). The payoffs are higher, and you'll kick yourself if you get a flush with only a one-token bet.

- In video poker, the big jackpot is in the royal flush, which generally pays 4000 coins for a 5-coin bet. Keep that goal in mind when you're playing a hand.

- Make three maximum bets on every machine, and no more. If a machine is close to hitting in its cycle, then it will. Otherwise, you could be there all day with nothing but an empty coin bucket to show for your time.

- Pick a machine with some control, like video poker, and play smart and long on the same machine for the big hands. Moving from machine to machine only decreases the odds of a win.

So which is it? Stick with a machine or move on? Another expert, one who has the privileged knowledge of the slot machine's weights and cycles, told me that it's all luck. You can twist the odds in your favor in games like video poker and win back nearly everything that you put in, but as far as winning the big one goes, that's just luck.

the look of a casino poker machine, the mouse-based left- and right-button commands make playing and spending artificial cash as fast and as intuitive as possible.

The manual provides a solid tutorial, mixing the statistics with examples from the program and providing a well-rounded experience that is fun and educational.

Blackjack

One of the fastest and most popular casino games is blackjack, or twenty-one. The tables are small, the rules are simple, and there are no convoluted codes of etiquette to follow. Another feature of blackjack that makes it so popular is that an educated player stands a good chance of having a winning edge over the house. Forget breaking even. If you know how, you can make money at the blackjack table.

But blackjack can be just as arcane as the other casino games if you want; from elaborate hand signals to scraping your cards on the felt, you can indicate your plays to the dealer in many ways. Also, making a small bet for the dealer, known as tipping, can possibly convince the dealer to hold off on a reshuffle if you tip at just the right time.

Here are two of the best computer blackjack games.

Blackjack for Windows.

Masque Blackjack for Windows is an elaborate blackjack game that allows the player the options of recreational play, strategy training, or a by-the-hand tutorial.

Like the manual that comes with Masque Video Poker, the Masque Blackjack for Windows manual goes to great lengths to explain the game of blackjack before it addresses the program itself. Nearly 40 pages cover basic strategies, as well as an overview of counting strategies, including an exploration of Dr. Edward Thorp's ten-count system.

Masque Blackjack for Windows plays very well. The game allows you to point and click your hit and stand options, or you can use the hand-shaped cursor to practice the standard hand signals to indicate your choices.

The program keeps extensive statistics to help you keep track of your progress, and you can even run computer simulations, in which the computer plays the hands at expert levels, allowing you to explore various house rules and betting strategies.

Dr. Thorp's Mini Blackjack. In Villa Crespo's blackjack simulator, Dr. Thorp's Mini Blackjack, play is

Product List

Trump Castle 3—\$29.95

CAPSTONE

A Division of Intracorp
7200 Corporate Center Dr.
Ste. 500
Miami, FL 33126
(800) 468-7226

Strategic Video Poker—\$49.95

LWS SOFTWARE

714 S. Roberts Rd.
Bryn Mawr, PA 19010
(800) 828-2259

Masque Video Poker for

Windows—\$54.95

Masque Blackjack for

Windows—\$54.95

MASQUE PUBLISHING

P.O. Box 5223
Englewood, CO 80155
(800) 765-4223

Beat the House—\$49.95

SPIRIT OF DISCOVERY

Distributed by PC Connection

6 Mill St.
Marlow, NH 03456
(800) 800-0003

Stanford Wong Video Poker—

\$29.95

Dr. Thorp's Mini Blackjack—

\$12.95

Amarillo Slim Dealer's Choice—

\$29.95

VILLA CRESPO SOFTWARE

1725 McGovern St.
Highland Park, IL 60035
(708) 433-0500

emphasized over computer simulation. It offers the interesting option of playing as many as six hands at once, allowing the player to simulate an entire table and try out different strategies in different simulations on the fly.

Dr. Thorp's also provides a tutor based on the counting tables created by Dr. Edward Thorp in the 1960s. You can even access the actual counting tables during play, to study the probabilities without the intervention of a tutor.

The game plays very well, and the speed of play is user-selectable. Even a six-player-plus-dealer game can move along at quite a clip. Of course, you can access a statistics table at any time to gauge progress.

Dr. Thorp's Mini Blackjack is a complete but abridged version of Dr. Thorp's Blackjack; it's a part of Villa Crespo's Coffee Break series.

Poker

Played around a smoky table in a dark basement, poker is a mysterious game that has become entrenched in our culture. The game is a true social event, and the social nature of the game has evolved because of the systematic way wagers are made. Because of this, many a paycheck has been lost in friendly play.

Poker can be most easily learned when played with seven players, since a great majority of the cards are drawn and dealt, and the odds can then be calculated. But what if there aren't seven players around? A poker simulator can give the needed practice, as well as coaching.

Amarillo Slim Dealer's

Choice. This game simulates play around a table. You can select from one to six opponents at three skill levels, and the games vary each hand as the computer players select the game, from seven-card stud to some of the more eclectic games.

The program is extraordinarily simple to set up and play, but the games are strong, and the expert players truly play at expert levels. I showed the software to a local poker expert. Against a table of expert players in Amarillo Slim, it didn't take long for his pot to empty. He was stunned at the skill of the computer players.

Daniel Seizer, president of Villa Crespo, says that the players were programmed with a little bit of random play so that a player couldn't just find out their computer preferences and beat them consistently.

In Amarillo Slim, you can call up the tutor to ask for advice at any time. You can also see a selection of statistics and odds. The game is fast paced and enjoyable, and it can teach you to read the table, from the bets laid out by the other players to the cards on the table.

Multiple Games

In the spirit of casino gambling, some programs give you a choice of games.

Beat the House. Spirit of Discovery offers Beat the House, a game package that includes an entire casino, from slot machines to roulette. The graphics in Beat the House set this package apart; crisp Super VGA screens filled with dark greens and rich colors contribute to the feel of casino play, and the main menu level is a bird's-eye view of the casino floor. Beat the House simulates the whole casino experience. When you check in at the front desk, your name will be registered and you'll be issued chips (and a line of credit); the chips and

winnings can then be taken from game to game. The attention to detail is impressive: When you're playing blackjack, the hands are dealt in three-dimensional views, and when you're playing craps, a digitized stickman calls the dice.

Beat the House doesn't offer the statistical depth of the games discussed in the preceding sections, but every game in this package offers some sort of tutor that will recommend an expert play. Calling up the tutor for a recommendation is an extra step which involves bringing up two levels of screens, but for the serious player, this infringement will seem negligible. Also available is a coaching option, which alerts you with a digitized voice when it detects a poor play decision.

Beat the House includes the most complete manual I've seen. It's more like an in-depth tutorial for casino play than a software manual. I think Spirit of Discovery knows this, because it offers the customer a chance to purchase an additional manual as well.

The manual takes you through each game, providing clear and accurate rules and offering counting tables and suggestions for expert plays. This package aims to bring you a complete casino experience.

You can't run simulations or massive computer projections with Beat the House, but this solid package would make a good addition to some of the more specialized packages discussed above. Use the statistic-intensive products to hone your game, and use Beat the House to test your skills in some of the most beautiful, playable renditions of casino games anywhere.

Beat the House offers blackjack, craps, slot machines, video poker, and roulette, with several rule variations for blackjack and a number of video poker and slot machines to choose from.

Trump Castle 3. Capstone's Trump Castle 3 is a multigame casino package based on Donald Trump's Atlantic City casino. Trump Castle 3 offers baccarat, blackjack, craps, poker, video poker, roulette, slots, and even a wandering keno girl. The graphics are Super VGA, and while not quite as slick and photorealistic as the graphics in Beat the House, they are far and above those of many of the other casino games.

You command an onscreen character to any of the gaming rooms. You initiate a game by stepping up to the table or machine you'd like to play.

You can then customize your poker face (right down to facial hair and sunglasses) and save the attributes (and the cash) for later gaming sessions. Trump Castle 3 is unique in that it supports network and modem play, allowing several players to sit at a table together and play against the house dealer, while viewing the other players' faces and engaging in cross-table chatter.

The games play very well, and the graphics fill the screen. The play options pop up as small buttons near the bottom of the display. There is no tutor of any kind, and the game offers no statistics. The instruction manual is geared more toward the program than toward providing detailed rules for the many house games. Trump Castle 3 does offer online help with rules of the game, but you're on your own when it comes to making play decisions.

Like Beat the House, Trump Castle 3 allows you to carry a bankroll from table to table, and the Castle even offers an ATM for those necessary cash infusions.

While offering the least depth of all of the packages mentioned, Trump Castle 3 comes as close as possible to simulating a real casino on the PC screen. If you want to learn a game, I'd suggest looking into one of the more specialized packages mentioned above; but if you want to test your skills or merely play for fun (alone or with friends), then you'll find that Trump Castle 3 has the odds stacked in its favor.

Laying Your Cards on the Table

Advanced statistics and training options are available in nearly every product currently on the market, taking advantage of a computer's inherent number-crunching ability and giving the player the tools to plumb the mathematical depths of nearly any card game.

Casinos are becoming more and more popular, with states recognizing the advantage, in both tourism and tax dollars, that a casino can bring. By experimenting and practicing with gambling simulators, you can learn and explore the games being played in the casinos even before setting foot in those carpeted and mirrored meccas of cash flow. Having that experience will give even the novice casino-goer a more enjoyable (and possibly more prosperous) night at the slot machines and tables.

Now, all we have to do is to get these PCs to pay out the money we rightly win. After all, *our* house rules are the ones that count. □



64/128 VIEW

Guess what, GEOS fans!
You've got your
own magazine—again!

Tom Netsel

Computer publications have a way of appearing and disappearing faster than a magician's rabbit. But when one pops up for 64 and 128 users, I have this reaction to wish it well—despite the fact that it's a potential competitor. After all, it's nice to see someone else taking a serious interest in our machines.

Rather than trying to cover the whole Commodore 8-bit spectrum, publisher and managing editor Grady Brown is focusing his attention on GEOS with his new journal, *geoVISION International*. The premier issue has just arrived, and it looks impressive—and the typeface is clear and legible. Too many GEOS publications are tough to read.

A bimonthly publication of 28–32 laser-printed pages, *geoVISION International* plans to print columns once found in other Commodore and GEOS magazines in addition to new articles. Brown states in his editorial that the philosophy behind his new publication "is to bring all GEOS users and programmers together, spreading the knowledge, experiences, and information of GEOS users worldwide, and to give you the best GEOS support possible."

That's quite a goal for any publication, but Brown offers a good selection of articles and information. Articles in the first issue include what's hot and what's not on the big telecommunication networks, a tutorial on geoPaint by Australian artist Jane Voskamp-Jones, a geoWrite tutorial, and a roundup of the four GEOS programming languages.

There are reviews of several GEOS products, including geoCanvas, Perfect Print LQ, Dual Top, and Collete Utilities. (For more information about Collete Utilities, see Steve Vander Ark's "GEOS" column in this issue.) There's a list of bulletin boards, publications, and user groups that offer GEOS support. There are even several Australian newsletters and groups mentioned.

In his editorial, Brown addresses questions that are bound to be asked by people who have subscribed to magazines only to have them cease publication without honoring their obligations. "We cannot guarantee we'll be around forever. No one can. But we do promise to follow through with all our commitments to each and every subscriber."

In addition to the magazine, Brown offers six GEOS disks per year. They include programs and utilities covering fonts, desk accessories, applications, drivers, geoCalc and geoFile templates, and clip art.

To give *geoVISION International* a try, U.S. subscription rates are \$21 for six issues or \$4 for a single issue. Washington residents must add local sales tax. Canadian and Mexican subscriptions are \$27 per year, \$5 for a single issue. International subscriptions (via air mail) are \$33 per year, \$6 for a single issue.

Disk subscriptions are \$30 for six issues in the U.S., \$39 in Canada and Mexico, and \$45 elsewhere. Order by writing to *geoVISION International*, 816 Southeast Polk Street, Camas, Washington 98607. □

GAZETTE

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TRY THESE NINE PROGRAMMING GEMS TO



One of the biggest advantages the 128 has over its little brother, the 64, is its powerful built-in BASIC 7.0 language. This language's rich array of 165 different commands (not counting OFF and QUIT which were planned but never implemented) allows you to do many things more easily than you can on the 64, not

the least of which is graphics. Consequently, you can create interesting graphic displays on your 128 with a minimum of effort and without using complex machine language.

That leads me to the subject of this article. Following are nine concise programs that show off some of BASIC 7.0's graphical talents. These hacks, or screen gems, do a variety of fascinating things on both 40- and 80-column screens. I did my best to write them in clear, straightforward code so you can modify or incorporate them easily into your own programs. Experimenting with programs is one of the best ways to learn to harness BASIC 7.0's power for yourself.

Now on to the gems. Let's first look at some col-

orful sparklers that work on 40-column screens.

Sprite Chaos

Sprite Chaos is a short sprite demonstration program. First, all eight sprites, depicted as colored spheres, are set in motion at random angles and speeds. Here's the twist. Once they're moving, the process is repeated, but with new random angles

and different speeds. This occurs continuously, resulting in sprites that fly around the screen in unpredictable and interesting ways. You might want to use the effect as an eye-catching backdrop for a title screen in your own programs.

```
1 REM SPRITE CHAOS
10 COLOR 0,1:COLOR
4,1: COLOR 5,13:
GRAPHIC 0,1
```

