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JANUARY 1991

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RAINBOW



NX-1020
RAINBOW



NX-1001
MULTI-FONT



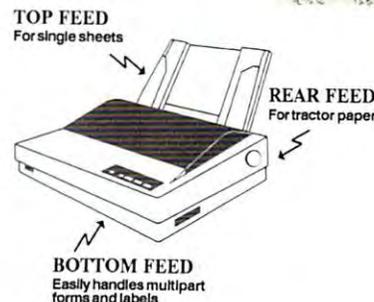
NX-2420
MULTI-FONT

For a while there, it was beginning to look like there would never be a dot matrix printer versatile enough to be a real jack-of-all-trades. But no more. Now, for the first time ever, there's a new series of printers designed to bring you big-business performance at a small-business price.

Star's new NX Series printers have all the write stuff you need to get the job done and then some. Let's start with multiple fonts. Each of the four NX Series printers comes equipped with an incredible variety of fonts, sizes and enhancements,

which, when combined, put thousands of printstyles at your fingertips. And all offer high resolution graphics for more professional-looking presentations.

Advanced paper handling features
(which are optional on most printers)



DESKTOP NEWS

VOLUME 2 What's coming... What's going No. 2

Network Television
A complete guide to the latest and greatest...
T.V. SWEEPS
All manufacturers' under scrutiny

MAGAZINES
A complete guide to the latest and greatest...
YEAR-END CIRCULATION
A complete guide to the latest and greatest...

Multiple fonts

Advanced paper handling

are standard with Star. The switchable push/pull tractor makes changing paper paths a snap — a feature that's especially handy when you're printing a lot of hard-to-manage forms. Plus, convenient paper parking lets you feed single sheets through at the touch of a button — without removing or wasting continuous-feed paper.



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NX printer control panels are designed for the ultimate in user-friendliness. You can easily select up to 14 of the most commonly used functions. And an Electronic Dip Switch Mode lets you customize the control panel with up to 15 of your own power-on settings.

Star's NX printers are Epson and IBM* compatible for use with most off-the-shelf software packages. Their standard parallel centronics interface with optional serial-to-parallel

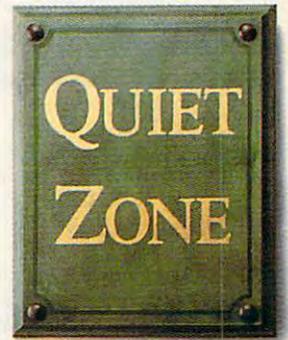


Compatibility

converter makes them simple to use with most personal computers. All are capable of high-speed, bi-directional printing at extremely low noise levels. And the two *RAINBOW* models — the NX-1020 and NX-2420 — even offer printing in seven vibrant colors.



Color printing



Low noise level

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star
THE COMPUTER PRINTER

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COMPUTE

JANUARY 1991

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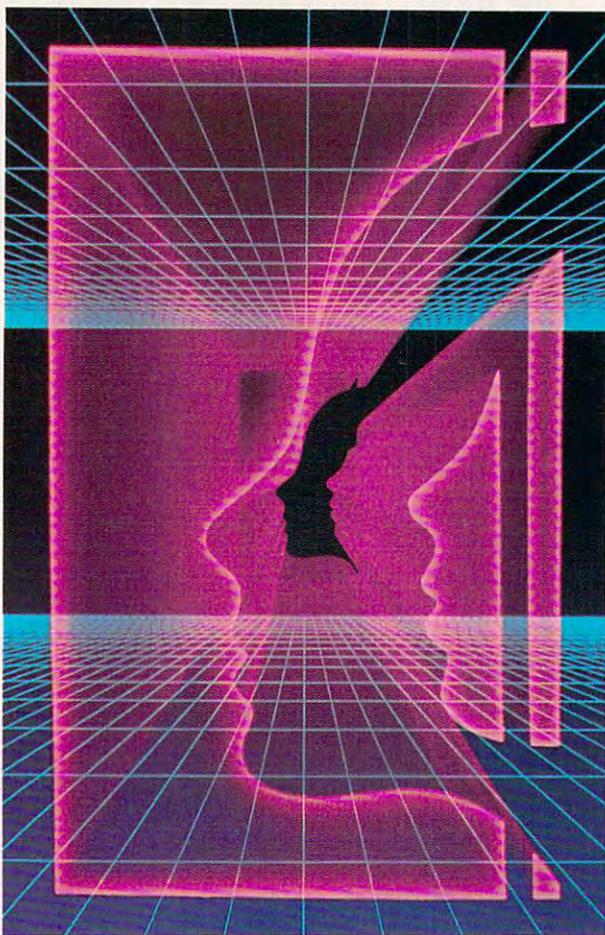
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Artist Alan Lee Page created our January cover on a Dicomed computer called the Imaginator. The work is a multimedia collection made with still photography and computer-enhancement techniques.

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DANIEL JANAL
When explaining your work, it pays to be clear and specific. But be careful not to paint yourself into a corner.

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Create your own universe through electronic games.

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ERIN MURPHY
Hot products from the worlds of electronic games.



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COMPUTE

PC

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CLIFTON KARNES
We tend to think of PCs as high-powered calculators, but they're much more than that—they're expert communicators.

Feedback PC-4

READERS
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GEORGE CAMPBELL
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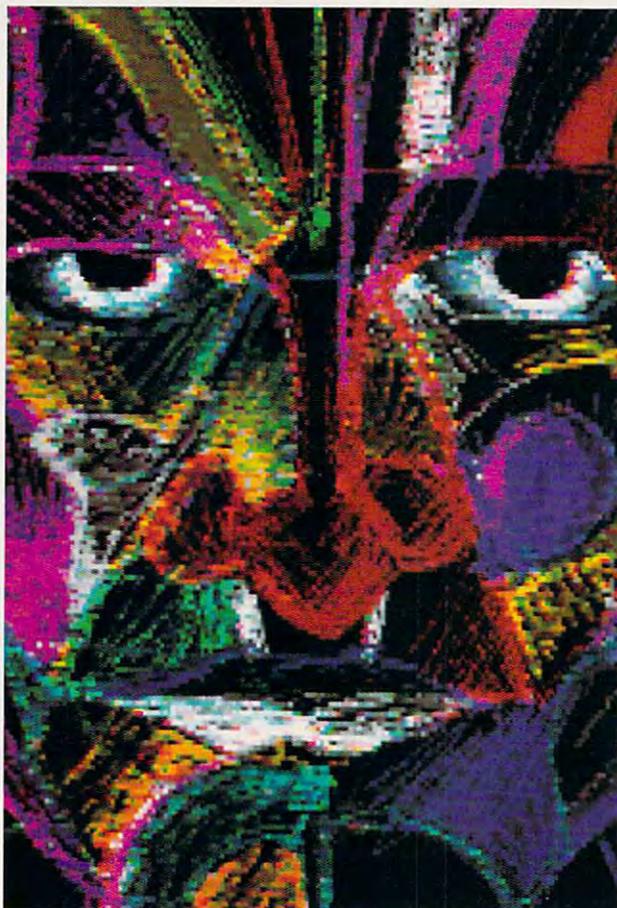
PC Disk Update PC-26

JOYCE SIDES
If you've called the technical support department during our transition period, we'd like to thank you for your patience. We're trying a different approach to technical support.

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READERS
Run any program on your hard drive, use ANSYSYS to set your screen colors, scroll with *WordPerfect*, and swap the contents of two files.

COMPUTE is looking for exceptional computer-generated art for use on future covers and with feature articles. If you're a computer artist interested in national exposure, send us examples of your work in either color slide or transparency format. Include a brief note listing the title of the work and the hardware and software used in its creation. Please address your samples to Art Director, COMPUTE Publications International Limited, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.



AMIGA RESOURCE

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Dissolver G-30

JESUS MENDOZA ESCALONA
Use this short machine language routine to add drama to your text screens by making text dissolve and materialize at will.

Module 64 G-31

MICHAEL J. GIBBONS
You no longer are restricted to the 64's memory limitations with this utility that loads and links BASIC subroutines or modules from disk.

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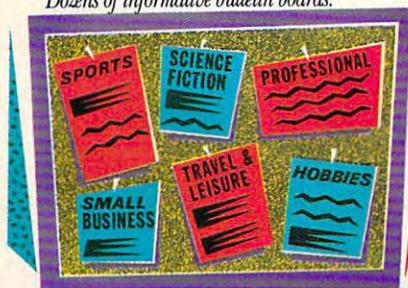


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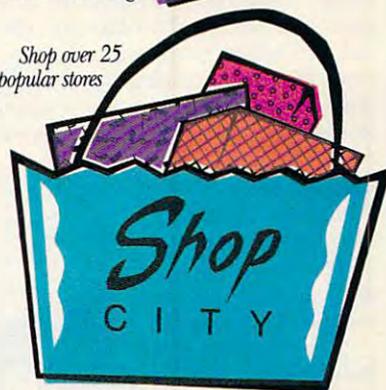
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P E T E R S C I S C O

The Swiss painter and sculptor Paul Klee once defined art this way: "Art does not render the visible; it renders visible." That phrase has never left me, for it so neatly describes the way the creative process works. The best human endeavors, no matter which field they are born to, do not merely represent the obvious, but instead make the obscure plain. It's true in art, in governance, in industry. It's true even in home computing.

Potentially, every software and hardware product released to the public has an audience, no matter how small or specialized. That's the power of the personal computer. But some products do more than that; they bridge the gulf between specialty and generality. Designed for the individual, they appeal to the group. Sometimes it's a technological innovation. Sometimes it's a different perspective. But whether they're based on innovation or insight, these products shape the computing landscape with an invisible hand and become the standards against which others of their kind are judged.

For the third year, the editors of *COMPUTE* have fought for what each believes to be the best consumer software and hardware products. The merits of each contender weighed evenly in the analysis, but in the end all of the others gave way to the 20 products that top our list. Those that did not come out on top are certainly worthy of your attention; we've tried to guide you with our reviews, "COMPUTE Choice" articles, and features.

This year's winners cover the gamut of home computing, from

extended office to entertainment. They appeal to every age, from preschooler to adult. They touch every level of expertise, from power-user professional to eager initiate. The list offers a glimpse into the world of consumer computing and renders visible the many levels of sophistication to be found there.

Designing computer products for the consumer market is difficult. Some people think it impossible. Among our winners are several products that defeat that latter judgment and several more that, though not designed as consumer products, nevertheless succeed in bringing technological wonder home.

It's an idea whose time has come, as evidenced by the increased attention being lavished on home computer users over the last six months. New products from major companies give credibility to computer users long dismissed as hobbyists or game play-

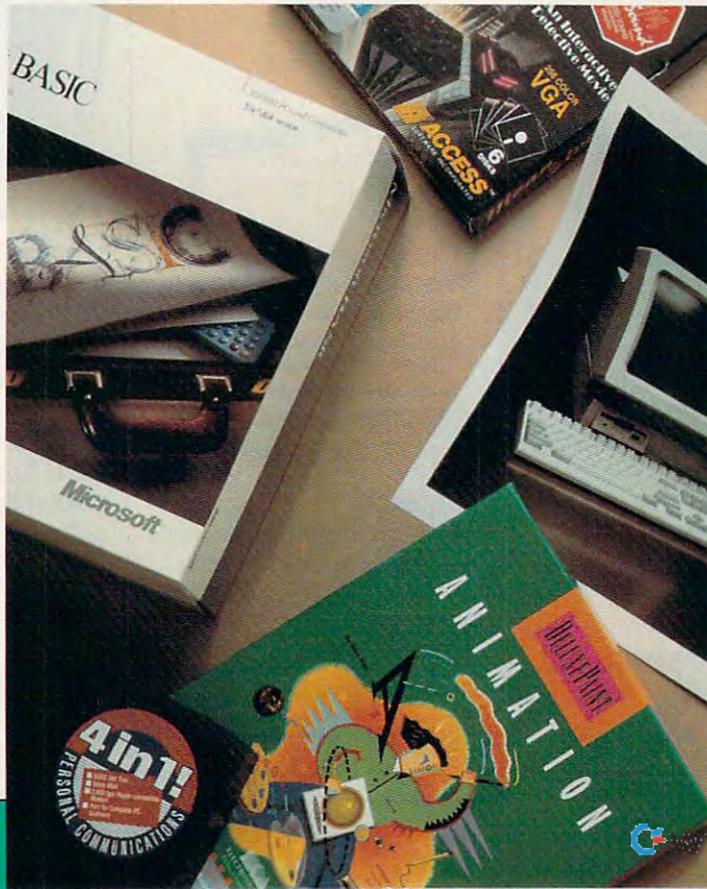
ers. The home computer owner is finally gaining recognition as a serious, productive computer user, whose needs are as valid as those of anyone in the corporate computer world (many times they're one and the same person) and whose reliance on outside sources for technical support and innovative solutions demands a credible response.

COMPUTE has provided that response for some time and will continue to do so. We'll explore the avenues of technological promise and the strategies of innovation. We'll map the evolving landscape of home computing, even as we maintain our connection to the inventive steps that got us here. And we'll do all of this with one goal in mind: to serve the reader by acting as both guide and medium, as a channel for the exchange of ideas that will propel home computing through this decade and into the next. This month, for example, you can interact

with *COMPUTE* by telephone, making your own choices for the best home computer products (see page 16).

That's just one of the many innovations we've planned. In the coming months, you'll be treated to an array of new perspectives. *COMPUTE* remains open to your feedback, and, as always, appreciates your ideas, suggestions, and observations. Like the hardware and software we cover, *COMPUTE* continues to evolve, working to maintain its unique perspective on home computing.

Choice. Grade A. Top gun. Number 1. Here is *COMPUTE*'s tribute to those few home computing products that render the power of home computing visible. □



THINK OF OUR SOFTWARE AS AN ENDLESS SUPPLY OF FREQUENT FLYER MILEAGE.

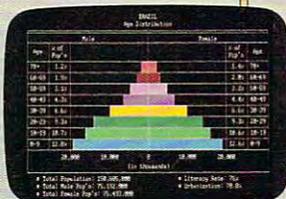
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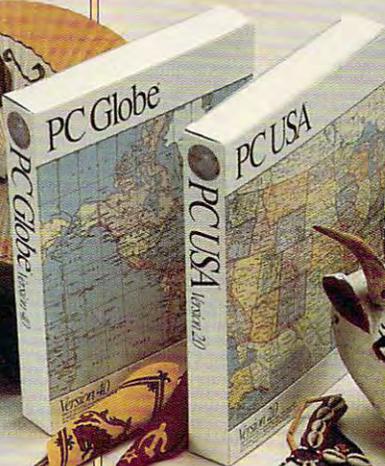
Here, in the efficient space of a few diskettes, is a simple to use "electronic atlas" that provides instant profiles, detailed maps and enhanced graphics for 190 countries and dependencies. What would ordinarily take hours to research becomes accessible in the split second it takes to press a button.

An almost endless combination of data may be displayed on detailed maps or via colorful bar charts.



What's more, PC Globe software supports popular programs for creating graphics and preparing text.

System requires IBM® PC/XT/AT/PS2 or compatibles with min. 512K RAM, floppy drive or hard disk. DOS 2.0+. Supports Hercules® monochrome, CGA, EGA, or VGA displays. PC Globe, Inc. makes other geography software products for business, travel, entertainment and learning. Selected titles are available for use with the Macintosh® and Apple IIs® personal computers.



PC USA 2.0, DISCOVER AMERICA

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NEWS & NOTES

They Shoot PCs, Don't They?

Most modern military buffs will recognize the Stinger as an infantry-launched anti-aircraft missile. But it's also the name of a tough high-powered PC from Bestway Systems in Yonkers, New York. Under 16-inch gauge cold-rolled steel beats the heart of a 400-watt power supply, a 386 or 486 processor, and a high-capacity uninterruptible power supply. The U.S. Navy has bought several, and the U.S. Army is also interested in the machine—provided it survives the ballistics test.

PETER SCISCO

The Final Frontier

Teachers who want to provide their students with the most up-to-date information about the U.S. space program will appreciate NASA Spacelink. This 24-hour bulletin board service provides updates on all current space projects, from daily reports on the space shuttle to situation reports on the Hubble Space Telescope to weekly reports on the Magellan mission to map Venus. In-depth reports on the history of rocketry and space exploration are also available. You can leave messages and questions for NASA personnel or read press releases and recent congressional testimony about NASA. All information can be downloaded for later use. The BBS number (in Huntsville, Alabama) is (205) 895-0028. NASA Spacelink operates at 300, 1200, or 2400 bps; and the parameters are 8, n, and 1.

ROBERT BIXBY

Our Gang

Ever wonder who really developed *Windows 3.0*? Well, just between us, there's a secret key sequence that displays the *Windows Gang Screen*, a list of all the *Windows 3.0* developers' names. Here's how to get it.

First, minimize all your applications, including the Program Manager. Next, hold down F3 and type *win3*. (Be sure to hold down the F3 key while you're typing *win3*.) Last, release F3 and press the backspace key.

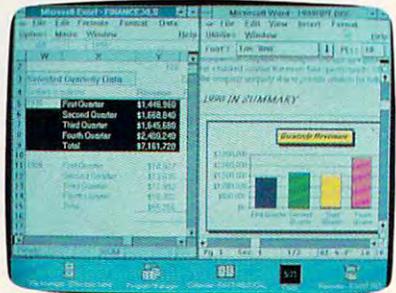
Your wallpaper will be replaced with a screen of the *Win 3* development team. If the names look a little strange, it's because they're the developers' computer log-ons. Under DADS, for example, you'll see *billg* for Bill Gates. Click a mouse button or press a key to make the gang screen disappear.

If this whets your appetite for more and you have *Microsoft Word for Windows*, here's how to get that program's gang screen, which includes background fireworks. This is a little involved, so hang on.

Choose Format from the menu bar and Define Styles from the pull-down menu. Click on Options. In the Based On combo box, select Normal (be sure Next Style is Normal). You'll get an error message. Click on OK in the dialog box and Cancel in the Define Styles box.

Next, choose Help from the *Word for Windows* menu bar and About from the pull-down menu. When the dialog box appears, press your Caps Lock key. Now for the big moment: Press and hold the keys O, P, U, and S. The dialog box will be replaced with multicolored fireworks, and the names of the *WinWord* developers will scroll by. Be sure to notice the names under Penguin Trainers. I'm still wondering exactly what they did.

CLIFTON KARNES



Peek behind these windows to discover a team of Microsoft programmers.

I'm OK. Are You OK?

Annoyed by computerized solicitation calls? You'll be glad to hear that the technology that makes them possible is also saving lives. According to an article in the *Wall Street Journal*, Northland Innovation introduced an automated system called *Are You OK?* that calls elderly, homebound, and handicapped individuals at regular intervals. If they fail to answer the telephone on the second attempt, the system notifies the operator (usually a police station or other emergency response service), and someone is dispatched to make sure everything is all right.

By using inexpensive, off-the-shelf technology, Northland Innovation is able to sell the unit at costs easily absorbed by local government or fraternal organizations. For information, contact Northland Innovation, 1626 Terrace Drive, St. Paul, Minnesota 55113.

ROBERT BIXBY

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No doubt about it: The best way to learn to service computers is to actually build a state-of-the-art computer from the keyboard on up. As you put the machine together, performing key tests and demonstrations at each stage of assembly, you see for yourself how each part of it works, what can go wrong, and how you can fix it.

Only NRI—the leader in career-building, at-home electronics training for more than 75 years—gives you such practical, real-world computer servicing experience. Indeed, no other training—in school, on the job, *anywhere*—shows you how to troubleshoot and service computers like NRI.

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Loco for Logo

Richard Leinecker's articles on Logo (*COMPUTE!* May 1990, pp. 28, 76) reawakened an enthusiasm for the language that had died when my old Apple II went into the attic in 1984 and I joined the PC revolution.

Stimulated, I shared my thoughts on Logo with some friends who have a young family. "Great," they said. "Where can we get it?"—a question which, three months later, remains unanswered. Nobody advertises it in your magazine—or anyone else's for that matter—and here in Hong Kong, we do not have the reference sources available to your domestic readers.

First, I tried a Logo clone in Microsoft's CD-ROM library. Bill Gates should be ashamed of that one. It is a pale shadow of the Logo I remember and has an incoherent so-called Help file to which no young mind should be exposed.

In desperation, I tried a pirated copy from our city's infamous Golden Center. Crime does not pay. Not only did it have a virus, but it refused to respond to graphics commands—a defect which some say is due to incompatible DOS versions (I have 3.2).

The worst part of the story is that none of the present generation of computer literates in this part of the world have even heard of Logo. To educate them, and others, perhaps Richard could trace the history of this unique educational tool since it was created by the National Science Foundation in 1968.

Before that, however, please tell us where we can buy it.

TED MILLER
 CHEUNG CHAU, HONG KONG

Richard Leinecker responds:
 Logo Writer is available from Logo Computer Systems, 3300 Cote Verdu, Suite 201, Montreal, Quebec, Canada H4R 2B7 (800-321-5646). There are several different packages ranging from a home version to a school version with ready-made lesson plans.

As for the history of Logo, may-

be we can go into it more fully in a future issue.

Compliments

I enjoy your publication and disks. Thanks for removing the exclamation mark from the magazine title. I am a retired engineer from the NASA space program, and while I don't care for games as such, I have gotten my money's worth from your other selections on the disks and have profited from articles in the magazine.

I look forward to more desktop publishing articles and news of new computer technologies.

HAROLD C. HALL
 HUNTSVILLE, ALA

And More Compliments

Finally, there is a magazine that covers both of the computers that I use daily as a journalist and hobbyist—the Amiga and the IBM. Although there are a few rough edges (the Amiga section in my Amiga edition is noticeably short on graphics and/or pictures, for example), it looks like *COMPUTE* is well on its way to becoming the "complete home computer resource," as your cover states.

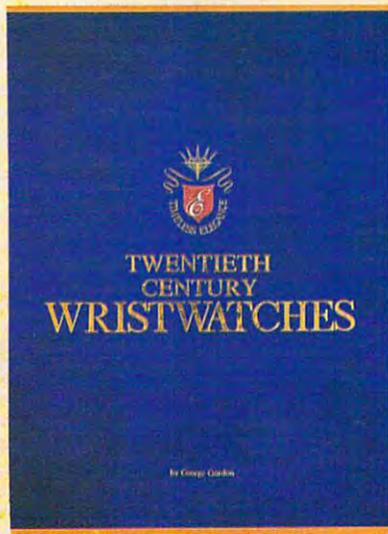
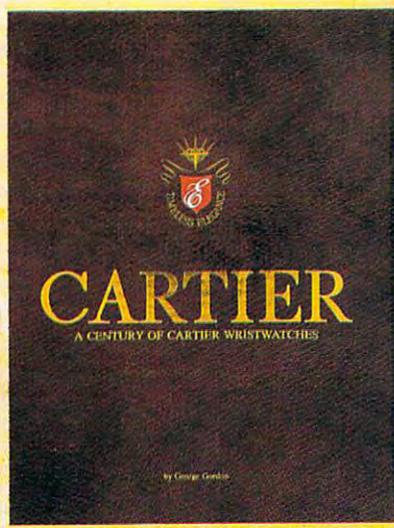
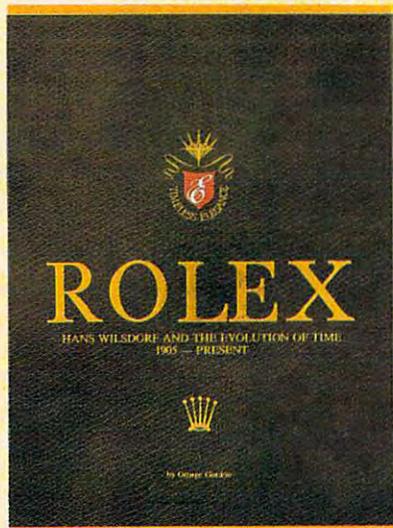
JOE VIDUEIRA
 WRITER/EDITOR VISTA MAGAZINE
 COCONUT GROVE, FL

Correction

The Software Toolworks address and telephone number (listed on page 84 of our November issue) have changed. The new address is 60 Leveroni Court, Novato, California 94949. The new telephone number is (415) 883-3000.

Do you have questions or comments? Send your letter—with your name, address, and daytime phone number—to COMPUTE Feedback, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We regret that, due to the volume of mail received, we can't respond individually to questions. We reserve the right to edit letters for clarity and length. □

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INTERNATIONAL COLLECTORS OF TIME ASSOCIATION

A new international club for collectors and dealers of wristwatches is being formed with headquarters in four cities, Milan, London, New York and Hong Kong. Called "International Collectors of "Time Association", the club's purpose is to provide an avenue for the exchange of ideas and information between wristwatch collectors.

Each chapter will have its own Board of Directors to oversee that area's activities.

Four meetings of the International Collectors of Time Association (ICTA) are planned per year. The first meeting will be in May, 1990 in Hong Kong at the Park Lane Radisson. The second meeting is scheduled for September, 1990 in London at the Churchill Hotel, followed by the third conference in New York in December, 1990. More details will be provided later, but the Hong Kong meeting will give collectors an opportunity to meet other collectors and dealers from around the world.

We want to organize meetings in Italy, Japan, France and Germany. If you would like to help organize one of these meetings, or any of the three already scheduled, please contact one of the clubs.

A magazine comes complimentary with your membership. Published in English, bi-monthly, it will contain reviews on what's happening in the wristwatch market around the world with reports on sales and auctions, and news about new products just being designed. There will also be a question and answer column for collectors and dealers, as well as a column where watches can be sold or bought. If you have any interest in writing an article for the magazine, sharing an old catalogue or have stories about yours or others' wristwatches, the editor would like to hear from you. The association plans a new book next year, and your wristwatch could be included if you so desire.

Membership fees are US\$75.00 per year. (If you require your magazine sent airmail, there is an additional US\$25 charge.)

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I want to become a member of the London, Hong Kong, New York, Milan chapter of ICTA (circle one). Enclosed is my cheque for US\$_____ to cover membership fees plus any airmail charges.
Cheque made payable to International Collectors of Time Association

I might be interested in attending the Hong Kong, London, New York meeting. 'Please send me more information.

I have an interest in writing/contributing information to the magazine.

I want to help organize one of the meetings, Location: _____

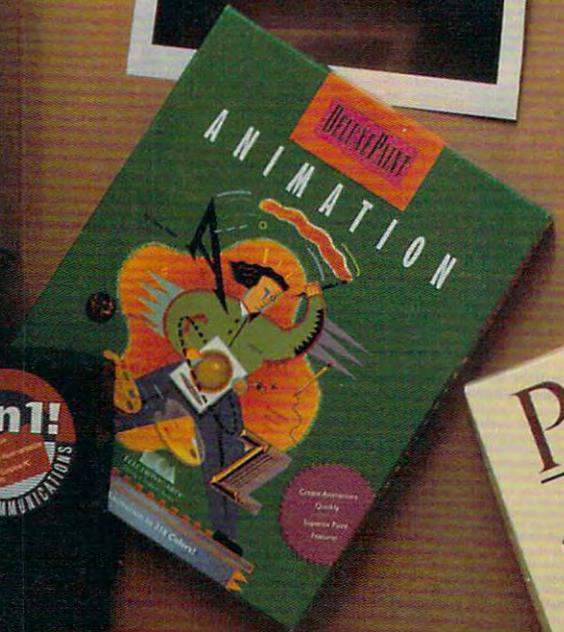
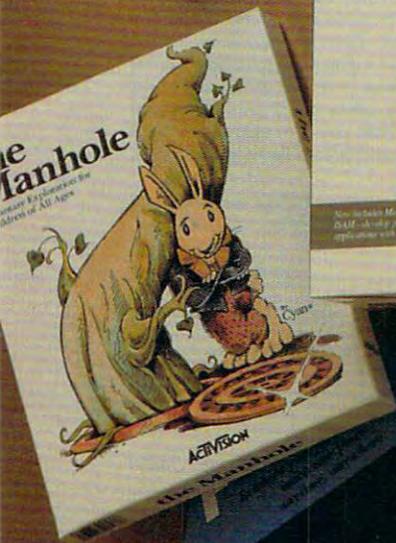
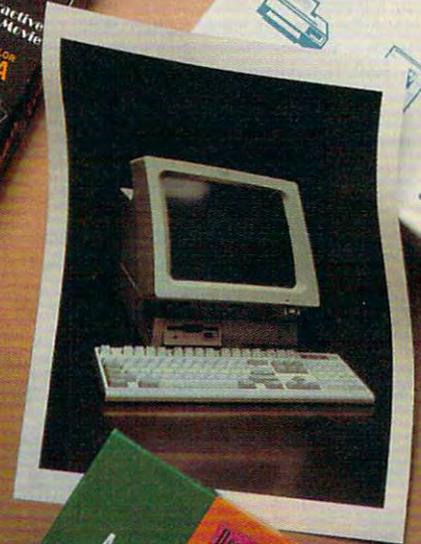
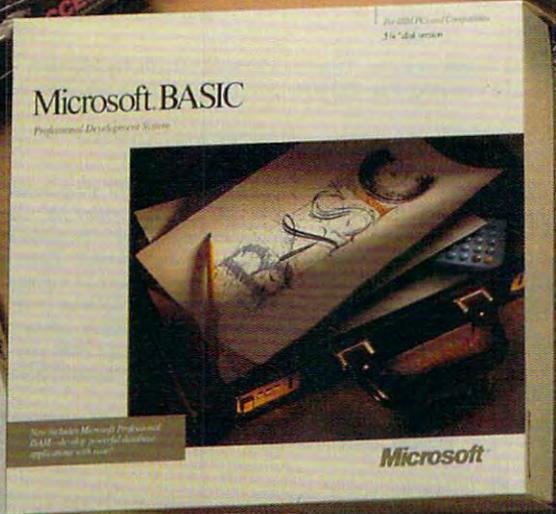
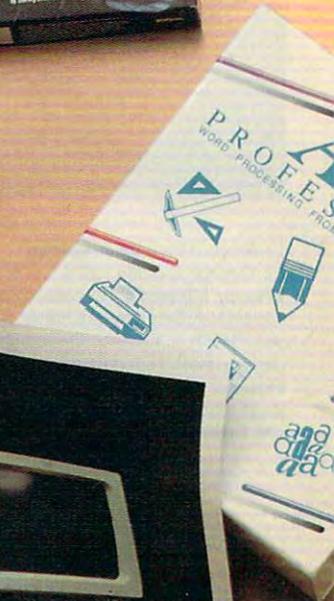
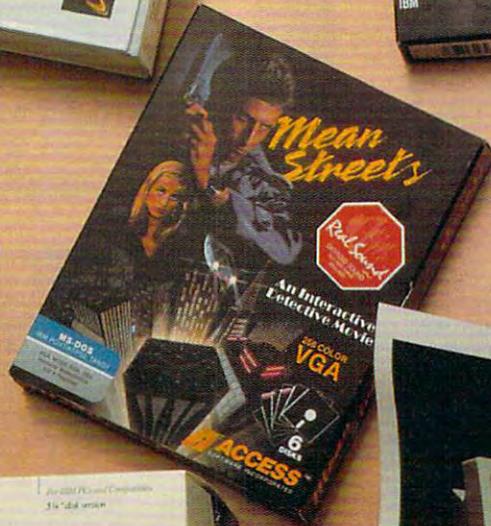
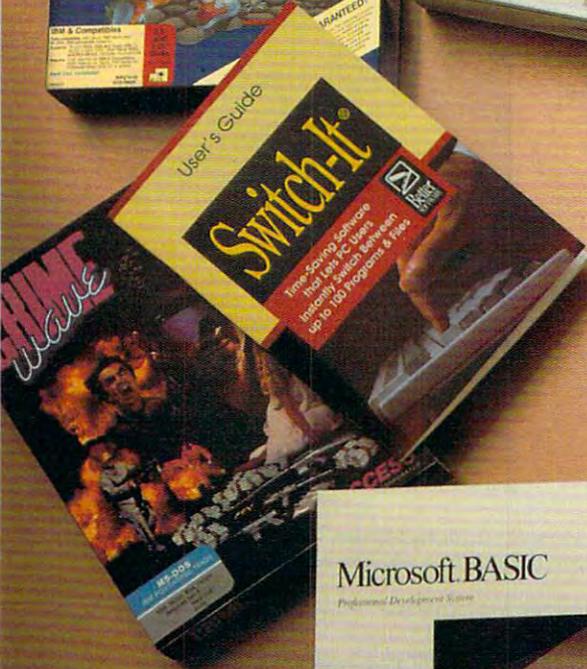
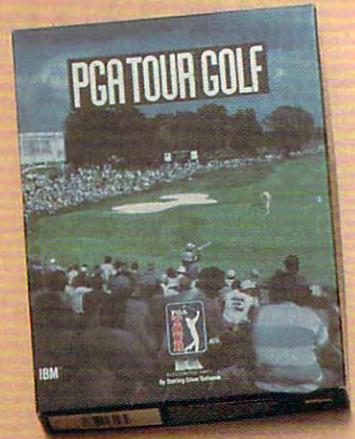
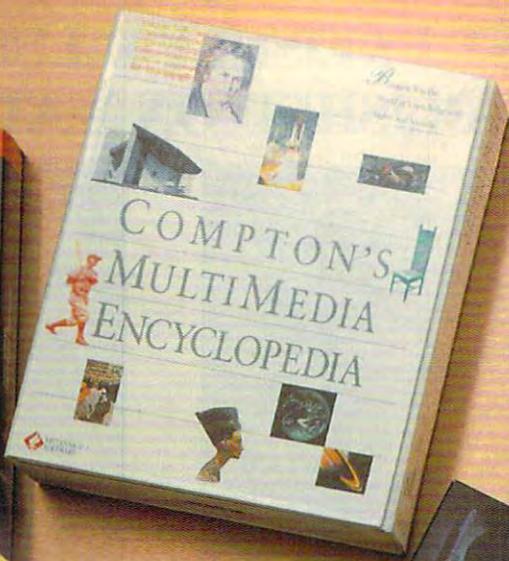
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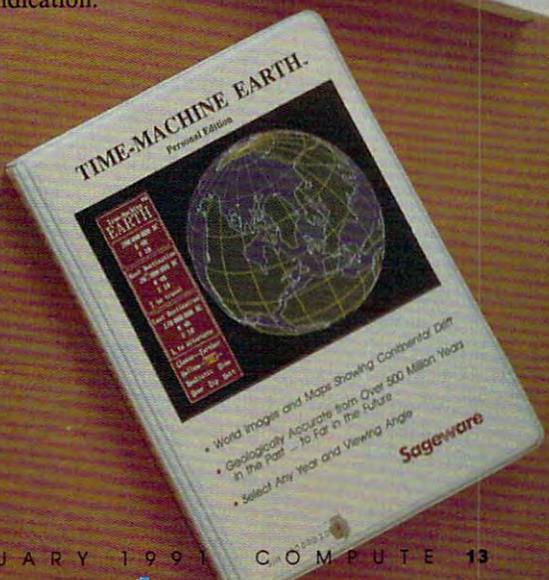
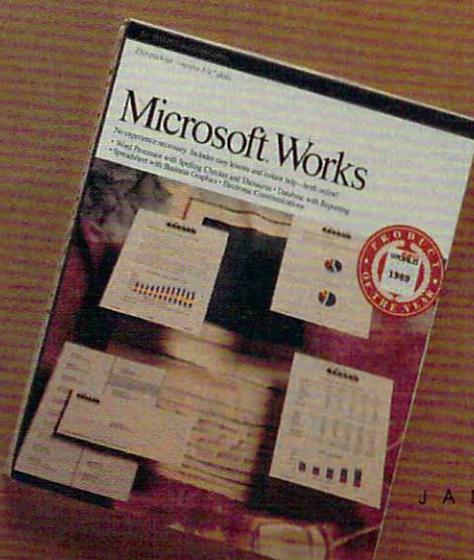
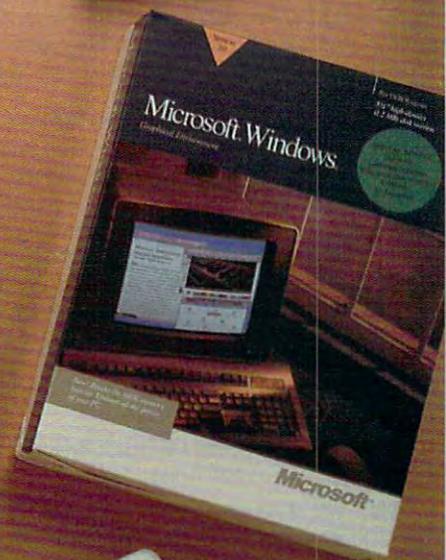
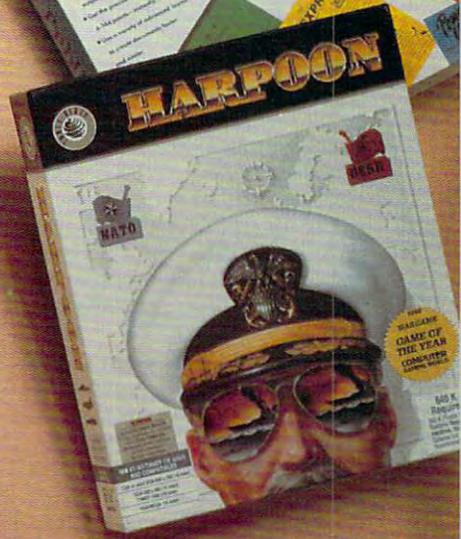
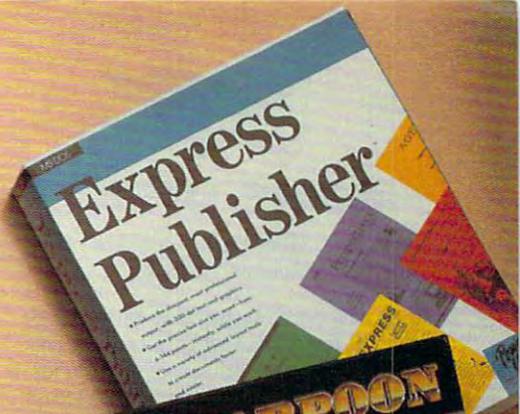
1991

COMPUTE CHOICE

AWARDS

Now in their third year, the COMPUTE Choice Awards recognize those products that best answer the home computer user's diversified needs. You'll see a favorite or two among our prizewinners. There were many worthy contenders this year, as you'll see on page 22 in the article "Honorable Mentions." And to top it all off, *COMPUTE* readers can cast their own votes by phone (see page 16) for products in the four main categories: Home Office, Entertainment, Discovery, and Technical.

We hope the COMPUTE Choice Awards will serve you as you seek products for your computing needs. Use them as a guide, as an indication. Let us put our experience on the line for you. >





HOME OFFICE

SMALL BUSINESS ORGANIZER

Microsoft Works 2.0

For new home businesses, the value of a good integrated package can't be overestimated. The comfort of a single interface provides uncomplicated access to several companion applications while it shortens the time it takes to learn any one of them. The newest overhaul to *Microsoft Works*, version 2.0, provides all of these benefits and more. Its seamless integration and powerful applications show once again why, when it comes to low-cost integrated software, this package remains king of the hill.

Beyond the program's easy-to-learn interface lies a group of applications that will serve the needs of almost any home office computer user. The word processor is hardy and boasts a spelling checker and a thesaurus, the spreadsheet is large enough for any but the most complex number-crunching tasks, the database is flexible and easy to use, and the communications module makes getting online easier than ever.

In garnering a COMPUTE Choice Award, Microsoft proves that an upgrade can be more than flash and filigree. *Works* isn't the least expensive integrated package on the market, and it lacks some features offered by its many competitors. But if you're looking for a powerful set of software that incorporates the best in PC interface design, *Works* remains the best of the lot.



WORD PROCESSING

Ami Professional 1.2b

Most people don't need a high-end desktop publishing program. They need a powerful WYSIWYG (What You See Is What You Get) word processor that includes basic desktop publishing capabilities. That's the philosophy behind the *Windows*-based *Ami Professional*, which stresses ease of use and graphics-related features. For the simple tasks for which most people use *PageMaker*—placing graphics on a page, wrapping text around graphics, and drawing rules and boxes—*Ami Pro* can easily do the job. In addition, *Ami Pro* has a generous supply of advanced layout features, including the ability to anchor graphics and sidebars to text, rotate graphics, manipulate gray scales, and create eye-popping charts.

Ami Pro doesn't neglect its word processor side, either. Its meat-and-potatoes features include a spelling

checker, a thesaurus, mail merge, and table-of-contents and index generation. More advanced word processing features include sophisticated style sheets, a first-rate table editor, a handy formula editor for simple spreadsheet operations, and extensive macro capabilities. You can even install your favorite program commands as icons on the side of the screen.

For its powerful WYSIWYG text handling and superior layout capabilities, *Ami Professional* earns this year's COMPUTE Choice Award for Word Processing.



DESKTOP PRESENTATION/VIDEO

DeluxePaint Animation

By bringing together powerful animation tools with an interface anyone can use and enjoy, Electronic Arts' *DeluxePaint Animation* has earned its plaudits as a COMPUTE Choice in the categories of Desktop Presentation/Video and Creativity.

Animation is the heart of presentation graphics, and the PC world is well served by *DeluxePaint Animation*. Its mouse-driven interface will be no mystery to anyone who has used *DeluxePaint*. Its tools and procedures are intuitive. Nearly all commands have both menu and keyboard equivalents that allow you to access important page-flipping commands while maintaining your mouse position.

DeluxePaint Animation can provide automatic page flipping, allowing you to use animated brushes to create smooth, realistic motion through a sequence of cels. And you don't have to draw all the intermediate steps in the animation process. *DeluxePaint Animation* does this for you, creating as many changes as you request between two brush shapes. Thus, you can gradually metaphorphose a chicken into an egg or a bouncing ball into text on the screen.

Imaginative people will have no trouble seeing the uses to which this program can be put. There's nothing like live action to put a point across, so this product is a natural for business presentations or catching the eye of passersby at a trade show. But the interface is simple enough to be grasped by children, who will be intrigued by the cartoons they can create.



DESKTOP PUBLISHING/GRAPHICS

Express Publisher

Desktop publishing software keeps getting more and more sophisticated. *Express Publisher* from Power Up! sports 300 dots-per-inch output on PostScript or HP-compatible printers, dot-matrix and ink-jet support, scalable fonts,

Kerning, autohyphenation, and more. But the most unexpected feature is the price tag—under \$150.

Express Publisher gets high marks for its user interface. Mouse support and pull-down menus complement an easy-to-learn icon-based command system. Import text from *Word*, *Works*, *WordPerfect*, *WordStar*, IBM DCA, or ASCII files and place it in an onscreen box. Render the text in Times, Triumvirate, or Univers typefaces (others are available at extra cost); and scale it from 6 to 144 points. The scalable AGFA Compugraphic fonts will print at your printer's highest resolution, whether you're using a \$5,000 PostScript printer or a \$500 Epson dot-matrix printer.

Liven up your boring text pages with clip-art graphics. Over 200 TIFF-format images are included. If you can't find what you need there, *Express Publisher* imports PCX, GIF, IMG, TIFF, Encapsulated PostScript, *First Publisher*, *Print Shop*, and *MacPaint*-format images. You can also draw boxes, lines, and circles using built-in tools.

Other high-end features in this low-end DTP program are text-wrapping, paragraph style sheets, and automatic text flow between columns. Best of all, this COMPUTE Choice Award winner doesn't require high-end hardware; it runs fine on a 640K XT-compatible with hard drive.



FINANCE

Pacioli 2000

The success of any business, including one run from home, rests on a solid bottom line. If you're trying to save overhead costs by doing your own accounting, *Pacioli 2000* is a solid investment.

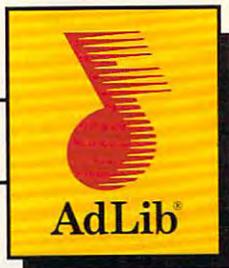
This program includes a general ledger, accounts receivable, accounts payable, billing, inventory control, purchasing, budgeting, and auditing functions—all integrated. Information entered in one module appears in others as well. The well-designed report section helps you manage the multitude of information you'll amass about your company and its vendors and customers.

Some knowledge of accounting is assumed, but you can find plenty of help (often context sensitive) when you need it. The manual and videotape are very good, and M-USA provides free technical support to registered users.

Pacioli 2000 wins a 1991 COMPUTE Choice Award for offering full-featured accounting at less than 50 bucks. Flexible enough to manage cash accounting, accrual accounting, inventory accounting, or accounting for a service-based company, this package is also rigid enough to keep you and your home office on track. ▸

Compute Magazine and Ad Lib Present:

THE SOUND



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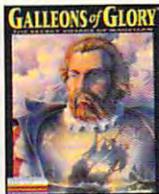
You will receive over \$200.00 worth of coupons towards the purchase of games and Ad Lib products!

Just plug the Ad Lib Music Synthesizer Card into your IBM® PC or compatible and get the kind of exciting, pulsating sounds that you're used to hearing in an arcade. Use the coupons to purchase an Ad Lib Card and add to your collection of great compatible games—so you can experience game soundtracks and sound effects with their full fidelity.

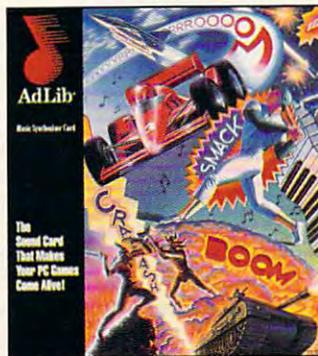
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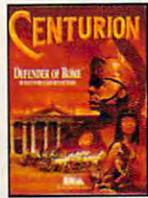
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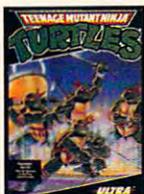
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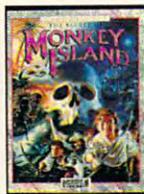
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ENTERTAINMENT

ARCADE Crime Wave

Access pushes the limits of arcade with *Crime Wave*, its second game to use digitized actors, sets, and sounds. This time around, a powerful crime syndicate controls large sections of major American cities. Now it has kidnapped the President's daughter—and it's your job to rescue her.

Like *Mean Streets*, Access's other Choice winner, *Crime Wave* features digitized, animated characters that speak to you using RealSound technology. But the story sequences are just window dressing. The heart of the game lies in its fast-action arcade sequences.

You've seldom seen graphics like this outside of the arcade. Digitized characters leap, run, and plunge across the screen unleashing a hail of bullets and rockets. You, as Lucas McCabe, crime fighter, must blow the bad guys out of existence (this game also sets new standards for graphic violence in a computer game). The graphics are photo-realistic, and the sound will have you ducking gunfire—a far cry from the bleeps and bloops most people without sound cards are used to hearing.



SIMULATION Their Finest Hour

The fortunes of aerial combat change quickly in LucasFilm's outstanding air-combat simulation, *Their Finest Hour: The Battle of Britain*. You become a participant in that aerial battlefield during the summer of 1940, when the German Luftwaffe and the Royal Air Force battled for air supremacy over the English Channel.

Sit in the cockpit of a Spitfire or Hurricane, or fight the war from the German side in a Messerschmitt Bf 109, ME 110 fighter-bomber, or any of four Luftwaffe bombers. Act as pilot, gunner, or bombardier; or switch among all three. Fly more than 50 historically accurate missions.

In addition to its numerous missions and game options, *Battle of Britain* is a winner because it puts you in the heat of the action with remarkable detail. If you fly close to a bomber, you can watch its bombs fall toward the target. Red tracer bullets leap from your machine guns, and hits on enemy planes are marked by smoke and flying debris.

This great simulation doesn't require hours of training. But its nonstop action, numerous missions, and attention to detail mean hours of fun.



WAR/STRATEGY Harpoon

Even as the Cold War ground toward its inevitable close, one of the most sophisticated war games ever produced burst upon the scene. Despite a variety of bugs in its earliest releases, *Harpoon* lifted computer strategy games to new heights, delivering a complexity and depth of play quite unlike anything else released during the year.

Taking as its venue the Greenland/Iceland/United Kingdom gap, long thought likely to be an area of strategic significance during a superpower confrontation, *Harpoon* gives players control of the ships, aircraft, personnel, and technologies that lie at the heart of modern warfare. Submarines and surface craft, fighters and bombers, and surveillance ships and planes must all be coordinated in an effort to defeat an equally well-armed enemy. A thoughtfully designed, mouse-driven interface makes issuing commands and calling for information simple.

With all bugs long fixed and additional scenario disks released and others planned, *Harpoon* should set the computer strategy standard for some time to come.



FRP/ADVENTURE Mean Streets

Mean Streets is the first game to feature both full 256-color VGA graphics and Access's patent-pending RealSound digitized music and speech. But there's a lot more to *Mean Streets* than just impressive graphics and sound.

A detective story set in the twenty-first century, *Mean Streets* puts you in the shoes of Tex Murphy, Private Investigator. At the start of the story, you learn that Professor Linsky has taken a dive off the Golden Gate Bridge. The police think it was a suicide; Linsky's daughter thinks it was murder. On your way to finding out the real story behind the prof's untimely demise, you'll drive a flying sports car, dodge bullets in arcade-style gunfights, interview thugs, and search a number of locations for clues. Three-dimensional adventure-game screens and digitized actors playing the various characters in the game make this a standout adventure game.



SPORTS PGA Tour Golf

The key to any sports simulation lies in its ability to mimic the real thing. Most golf games pin their hopes on copying famous courses and offering PC duffers a choice of clubs. Some go so far as to

include wind and other environmental factors. *PGA Tour Golf* does all of these things and goes one better: It puts you on the professional tour, where you play against the big boys.

Graphically, the game is a pleasure to watch. That pleasure is enhanced with fly-by views of each hole, accompanied by a tip from a top PGA golfer. Beginning at the pin, the camera rolls back down the fairway toward the tee, illuminating the approach to the green and the hazards that threaten your success.

But it isn't the graphics that bring *PGA Tour Golf* its COMPUTE Choice Award. It all goes back to realism, the hallmark of any great sports simulation. Whether you chip in from 13 yards out, punch the ball low out of the rough, or putt the ball from the fringe of the green, this game captures every stroke.

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- Crime Wave
- Their Finest Hour
- Harpoon
- Mean Streets
- PGA Tour Golf

DISCOVERY

- the Manhole
- Super Solvers Midnight Rescue
- Time Machine Earth
- Compton's Multimedia Encyclopedia
- DeluxePaint Animation

TECHNOLOGY

- Windows 3.0
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- The Complete Communicator
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THE OTHERS FOLLOW IN OUR TREADS.

With sound so real and speed so blistering, *Stunt Driver*™ makes other race car challenges seem like driving with a learner's permit.

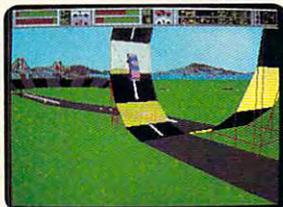
Take the wheel of your classic '66 Shelby Mustang and get set to take off with *Stunt Driver*, the only racing simulation that delivers the blazing speed of real stunt car driving surrounded by full digitized sound. Set against a background of stunning 3-D graphics, you'll roar up loop-the-loops, spiral through corkscrew jumps, and blast off launch ramps. Whip through your choice of nine perilous courses or design your own challenge with the built-in track editor. *Stunt Driver* alone allows you to custom calibrate speed, acceleration, traction and braking settings for both you and your opponents.

Recap the excitement with Video Instant Replay, featuring fast forward, slow-motion, step frame and reverse playback.

Once you've raced *Stunt Driver*, you'll know why it's the racing challenge to which all others aspire.



Down shift and hit the gas! You'll need plenty of speed to clear that open drawbridge!



You can almost feel the gut-wrenching G-forces from the loop.



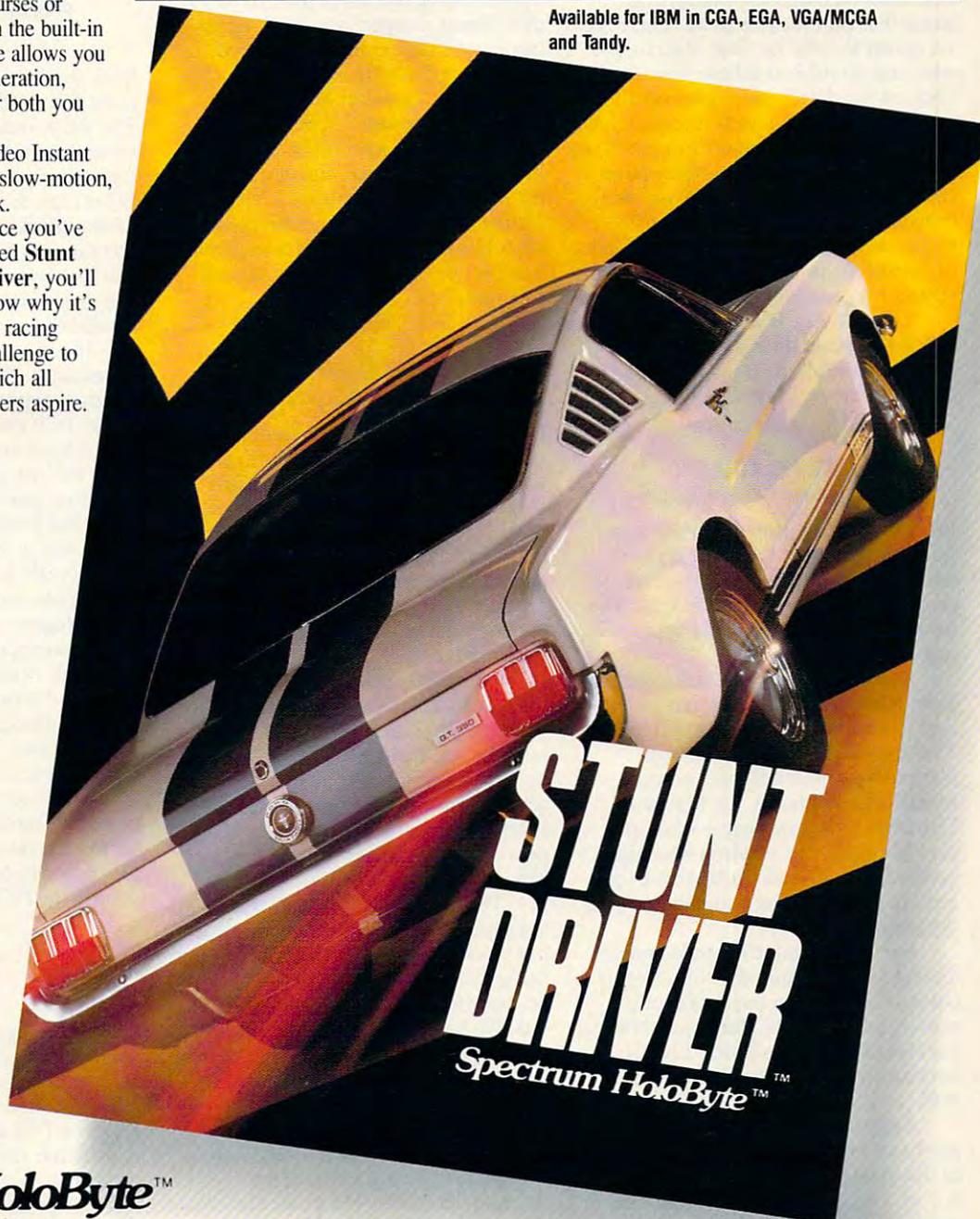
The recorder mode plays back the action from numerous camera sites.

Screens shown are IBM EGA. *Stunt Driver* © 1990 Sphere, Inc. All rights reserved. *Stunt Driver* and Spectrum HoloByte are trademarks of Sphere, Inc. Other trademarks are owned by their respective holders.

Stunt Driver Vs. The Competition

	Test Drive III™	Stunts™	Stunt Driver™
Sense of Speed (Frame Rate)	slow	average	FAST
Digitized sound effects and PS/1 sound support	no	no	YES; from the internal speaker or with sound cards.
Can design own track	no	yes	YES; plus 9 pre-designed courses
Maximum number of computer opponents	2	1	3
Two player Head-to-Head mode	no	no	YES; via serial cable or modem connection.
Interactive demolition with opponents (Bumping allowed)	no	no-instant death	YES

Available for IBM in CGA, EGA, VGA/MCGA and Tandy.



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DISCOVERY

CHILDREN
the Manhole

Imagine a computer-created world so large you could explore it for months without becoming bored. Add a network of secret passageways; a variety of quirky, yet endearing characters; a seemingly endless supply of surprising details; and a point-and-click interface even a four-year-old can master. Wrap it all in state-of-the-art graphics and punch it up with support for the popular sound boards.

The result might well be *the Manhole* from Activision—a delightful game that isn't really a game. There are no points to tally, no final objective to win, and no rules to follow. You just click on the object you want to examine or the direction you want to explore. A hallway with several doors can take you to a mountain range, an underground river, or a dragon's lair. Click on the dragon's remote control, and the TV shows pictures of other locations. Click on one of the pictures, and you'll be instantly transported there.

Like *Alice in Wonderland* (on which this program is loosely based), *the Manhole* is both grand in scope and devilishly clever in its details.



YOUNG ADULT

Super Solvers Midnight Rescue!

Problem solving is one of the hardest skills to teach, and arguably, it's best left to human instructors. However, *Super Solvers Midnight Rescue!* from The Learning Company soundly squelches that argument.

Among its many strengths, the program has a wonderful plot that will appeal to even the most reluctant readers. The town of Shady Glen has been plagued by a practical joker named Morty Maxwell (a.k.a. the Master of Mischief). The only people who can stop Morty are the children who make up the Super Solvers Club. And all you have to do to become a member is boot the program.

Solving the game's puzzle and defeating Morty require the collecting of clues, which in turn requires careful reading and analysis. But quick reflexes are also called for, as Morty's robot henchmen try to keep you from your task.

Super Solvers Midnight Rescue! deserves its high praise. It enhances some of the most important skills your kids will ever have to learn—reading comprehension and logical reasoning.



ADULT

Time Machine Earth

The PC, it has been said, is a window on the world. This strikingly original and little-known program offers a window on all the faces our world has shown throughout hundreds of millions of years of history—and projects those faces billions of years into the future.

Our planet's features, *Time Machine Earth* teaches, are in constant motion. Huge tectonic plates shift and grind as continents tear apart from one another, resulting in vast land masses grumbling their way toward new configurations. *Time Machine Earth* makes tectonic movement come alive, giving you the opportunity to move through eons, viewing the world from a variety of different perspectives. Shifting plates can be overlaid, continents viewed close-up or from far out in space, with the Earth as a solid or hollow globe.

An easy-to-use interface makes travel through time simple. Good, if brief, documentation includes a reading list for further exploration. *Time Machine Earth*, available in both personal and classroom editions, breaks (almost literally) new ground in educational software.



REFERENCE

Compton's MultiMedia Encyclopedia

Long touted as one of the great potential products of the computer revolution, electronic encyclopedias began to come of age in 1990. The most notable of these, *Compton's MultiMedia Encyclopedia (CMME)*, combines text, sound, photos, and other graphics to produce an interactive educational experience that is delightful as well as informative.

Complete on a single CD-ROM disc, *CMME* provides a variety of tools for harvesting its treasures. The index reveals topics by key words, by concept, or by reference. Leave a bookmark to retrace your research trail. Notes can be taken, pictures can be viewed, and snippets of great music or notable speeches can be played.

The price of the product, along with the sophisticated hardware required to use it, virtually ensures that for the time being *CMME* will reside in classrooms or, more likely, libraries and media centers. We hope students will be able to use the product individually, rather than as a group, for *CMME* is at its best as a self-paced learning tool. With its variety of approaches to the body of information it contains, *CMME* is all but inexhaustible, helping to fulfill the promise of both the electronic encyclopedia and CD-ROM itself.



CREATIVITY

DeluxePaint Animation

DeluxePaint Animation was a double COMPUTE Choice winner this year—a first in our history. This is a rare program that offers the same kinds of benefits to business, creative artists, students, and children. To see how this super application can make you a winner, too, read the description under the Desktop Presentation/Video headline.



TECHNICAL OPERATING ENVIRONMENT/SYSTEM

Windows 3.0

With the release of 3.0, Microsoft has finally delivered on *Windows'* potential. The latest version of this operating environment is a full-featured graphical user interface complete with sculpted 3-D buttons, full-color icons, and masterful multitasking. Microsoft used graphic artists to design 3.0's interface, and it shows. The well-chosen colors and dithering support create varied and subtle shades.

Windows' improvements start with installation. Now a single version of the program supports 8086, 80286, and 80386 PCs; and the setup process is streamlined and simple. Although *Windows* will run on an 8088-/8086-based machine, you really need a 286 or 386 to tap the program's power. With an 80286 and at least one megabyte of memory, *Windows* can multitask *Windows* applications and run almost any DOS program. With an 80386 and at least two megabytes, *Windows* can multitask *Windows* and DOS applications, and it can even run DOS programs in resizable windows.

Windows 3.0 wins the COMPUTE Choice Award for best operating environment because of its superb interface, powerful features, and excellent support for multitasking. An afternoon with this program will convince you that *Windows* is the PC's future.



UTILITY Switch-It

Imagine being able to switch among your word processor, spreadsheet, database, and a game by simply pressing a key. That's the magic of *Switch-It*, an amazing TSR that uses just 27K of RAM.

Unlike most context-switching programs, *Switch-It* is a breeze to install and a pleasure to use. At setup, *Switch-It* searches your hard disk for applica-

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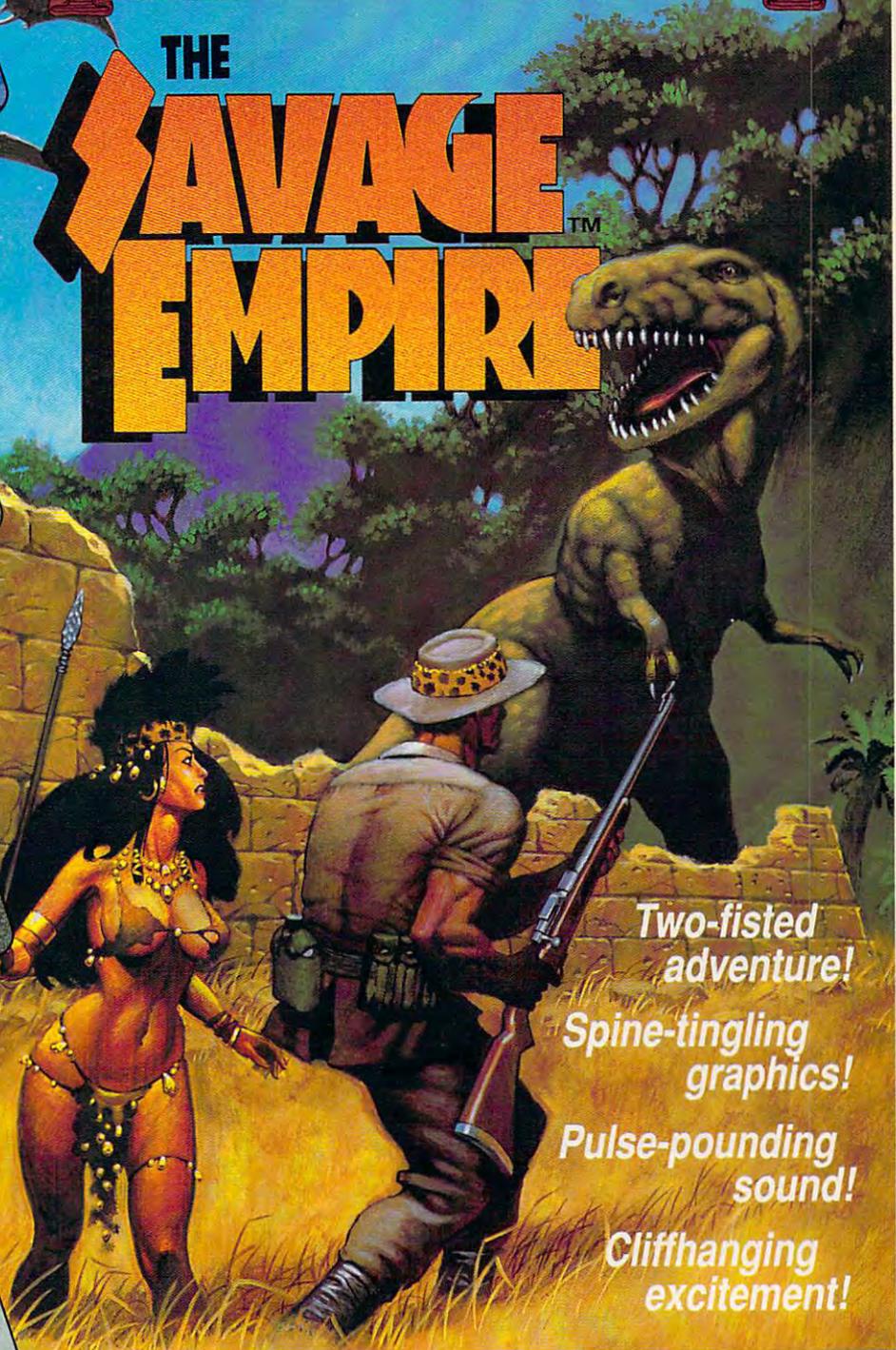
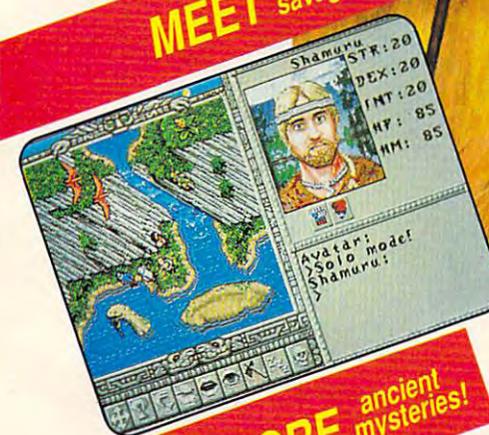
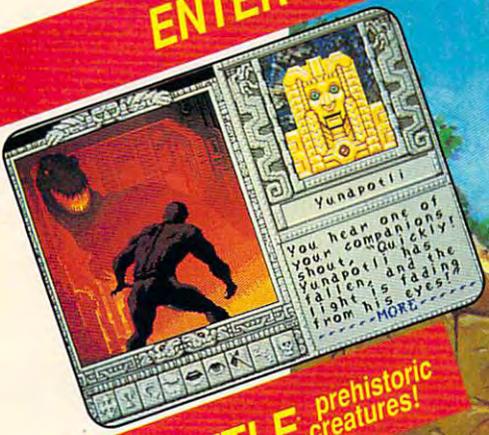
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tions with which it's familiar and automatically installs them. To install other programs, you simply use *Switch-It's* fill-in-the-blanks setup screens. After your programs have been installed, press *Switch-It's* hot key, and you'll see a menu listing your programs. You can select programs by using the cursor keys or by pressing the first letter of the program's name.

If stopping off at the menu slows you down too much, *Switch-It* also lets you assign a hot key for each application so you can move to it instantly. As icing on the cake, *Switch-It* lets you cut and paste between applications and recall recent commands from any DOS prompt.

Switch-It can breathe new life into PCs and ATs and offer them much of the power of multitasking environments like *DESQview* and *Windows*. And that makes it a sure winner.

ADD ON/PERIPHERAL

The Complete Communicator

Economy of space, finance, and function are crucial to a successful home office. The Complete Communicator (TCC) addresses all three areas. Combining telecommunications, voice mail, and fax capability on a single board, TCC turns one expansion slot into a total office communications center.

It's an easy center to operate. TCC's software lets you run communications in either foreground or background, taking advantage of various memory configurations and hardware setups. A 2400-baud modem gives you access to online services and computer-to-computer communication. Voice-mail capabilities include multiple mailboxes, time-and-date stamping of messages, and remote message retrieval. Fax capabilities include 9600-baud transmission, multiple fax transmissions with custom cover sheets, and timed transmission to take advantage of off-peak rates.

This multiplicity of function in a single product exemplifies the sort of value home office workers appreciate. The complete home office needs more products like The Complete Communicator.

STAND-ALONE HARDWARE

PS/1

With the introduction of the PS/1, IBM gave home computing its biggest push in years. Big Blue told the world that computers belonged in the home and put in place a strategy to get them there.

Aggressively marketed through major retailers, the PS/1 is designed to satisfy fundamental home computing needs. The machine comes complete in

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Crime Wave

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(800) 851-2917

Harpoon

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Three-Sixty
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Suite 380
Campbell, CA 95008
(408) 879-9144

the Manhole

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Activision
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* Requires IBM PC or 100% compatible, 512K RAM and EGA or VGA. Joystick recommended. ¹ If adequate use of this product fails to improve your child's spelling grades, Britannica Software will exchange it for another product of equal value or refund your money completely. See package for details. © 1990, Britannica Software, Inc.

HONORABLE MENTIONS

Small Business Organizer

AlphaWorks 2.0, Alpha Software; *PC File 5.0*, ButtonWare; *Personal Office*, Top Ten Software; *Top Priority*, Power Up!

Word Processing

LetterPerfect, WordPerfect; *PC-Write Lite*, Quicksoft; *Word for Windows*, Microsoft; *WordPerfect 5.1*, WordPerfect; *Wordstar 6.0*, WordStar International

Desktop Presentation/Video

Autodesk Animator, Autodesk; *Charisma*, Micrografx; *DrawPerfect 1.1*, WordPerfect; *Show Partner F/X*, Brightbill-Roberts

Desktop Publishing/Graphics

Arts & Letters, Computer Support; *Avagio*, Unison World; *Corel Draw 1.2*, Corel Systems

Finance

Lotus Spreadsheet for DeskMate, Lotus Development; *Money Matters*, Great American Software; *TurboTax*, ChipSoft; *Wingz* (PC version), Informix Software

Arcade

The Game of Harmony, Accolade; *Ishido*, Accolade; *Welltris*, Spectrum HoloByte

Simulation

A-10 Tank Killer, Dynamix; *Indianapolis 500: The Simulation*, Electronic Arts; *Railroad Tycoon*, MicroProse

War/Strategy

Action Stations, Conflict Analytics; *Bandit Kings of Ancient China*, KOEI; *Centurian*, Electronic Arts; *Tank*, Spectrum HoloByte; *Their Finest Hour*, Lucasfilm Games; *Wolf-pack*, Broderbund

FRP/Adventure

Bad Blood, Origin Systems; *The Colonel's Bequest*, Sierra; *Hero's Quest*, Sierra; *Ultima VI*, Origin Systems

Sports

Hardball II, Accolade; *Jack Nicklaus Unlimited Golf*, Accolade; *Keith van Eron's Pro Soccer*, Microplay Software; *Monday Night Football*, Data East

Children

The Playroom, Broderbund

Young Adult

The New Print Shop, Broderbund; *Super Solvers Outnumbered*, The Learning Company

Adult

Home Lawyer, Meca Ventures; *Software Toolworks World Atlas*, Software Toolworks

Reference

Grammatic IV, Reference Software

Creativity

Arts & Letters, Computer Support; *Autosketch*, Autodesk; *Music Studio 3.0*, Activision; *The New Print Shop*, Broderbund

Operating Environment/System

DR DOS 5.0, Digital Research

Utility

PC Tools Deluxe 6.0, Central Point Software; *PrintVision*, Bloc Publishing; *Take Charge!*, Departmental Technologies

Add On/Peripheral

Canon Bubble Jet 10e printer, Canon; HP DeskJet 500, Hewlett-Packard; Hewlett-Packard LaserJet III, Hewlett-Packard; Practidisk UMFC Plus/2.88MB drive, Practical Computer Technologies

Stand-Alone Hardware

Atari Portfolio, Atari; Sharp PC-6220 laptop, Sharp; Tandy 1100FD laptop, Tandy; Toshiba 1000SE laptop, Toshiba

Programming Language

Borland Turbo C++, Borland International; *Power BASIC*, Spectra

a single box and can be set up by a novice in less than an hour. An easy-to-use interface helps relax those new to computers, while the inclusion of a 2400-baud modem should make telecommunications available to a larger audience than ever before. Technical support itself is delivered via the modem.

The PS/1's 10-MHz 286 processor may not represent the cutting edge of CPU technology, but it's powerful enough to run all but the largest MS-DOS programs. The chip also matches Bill Gates's criteria for entry-level multimedia machines; while IBM has announced no multimedia enhancements for the PS/1, few industry watchers doubt that such announcements will be forthcoming.

It's the seriousness with which IBM and its retail partners have approached the growing home market that earns the PS/1 a COMPUTE Choice Award. Computers—and IBM—are coming home again—this time to stay.



PROGRAMMING LANGUAGE

Microsoft BASIC 7.1

BASIC used to be the Rodney Dangerfield of programming languages—it didn't get any respect. But Microsoft has changed that by developing and consistently improving *QuickBASIC* and, most recently, by releasing *Microsoft BASIC 7.1*, a BASIC intended for professional programmers and serious enthusiasts.

BASIC 7.1 has everything you could want in a top-end programming language. Professional tools are on a par with or better than those Microsoft offers C, Assembler, and Pascal programmers. To hit just a few of the high spots, *7.1* comes with *Programmer's Workbench*, an application development environment that combines the best of *QuickBASIC*, Microsoft's *M* editor, and a project manager; the latest version of Microsoft's *CodeView Debugger*, with support for extended memory; a full-blown ISAM library for heavy-duty database applications; and complete OS/2 support.

In addition to an exceptional development environment, *BASIC 7.1* provides many improved compilation tools. Now you can selectively include or exclude object libraries, and the compiler is fully optimizing. The improvements in both size and speed make the code produced by this compiler as lean and mean as that created with almost any other product. BASIC is back, and *Microsoft BASIC 7.1* is a landmark product that will garner the respect this excellent language deserves.

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resemblance to today's Stealth bomber. **Were the Allies saved by Hitler's blunder?**

As you'll read in the 224-page historical manual, Hitler's demand for a blitz bomber delayed deployment of the Me 262s as fighters.

In *Secret Weapons of the Luftwaffe*, you can reverse that decision. And pit these

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CONVERSATIONS

K E I T H F E R R E L L

Jan Davidson is a teacher. The fact that she does her teaching today from the office of the company she founded, rather than from the head of a class, hasn't altered her deep commitment to her profession. You feel that commitment, a concern for students and a love of learning, both in Davidson's software and in conversation with her.

Davidson's awareness of learning as an environment, as a continuum, shows in her products. Software designed to introduce basic skills also prepares students to use higher-order thinking skills. It's all part of Davidson's vision of education and educational software.

"*Math Blaster Plus* and *Math Blaster Mystery*," she says, "cover the gamut of math from basic knowledge through analysis, synthesis, and evaluation. In the new *Math Blaster Plus*, we go through and teach them the facts, and then we have problems where they have to use these facts."

Throughout, the products are designed to help students transfer newly acquired skills to the real world. "In *Math Blaster Mystery*," Davidson says, "we help kids break word problems into simple steps. Find out what the problem is asking for, identify the information and equations needed to answer it, and find the answer. These are higher-order thinking skills, and the computer is an effective tool for teaching these skills. I don't sit down and say I'm only going to cover analysis in this product and synthesis in this one. I try to get as much out of each product as I possibly can."

Is one curriculum—math or English, for example—better suited for translation to software than another? "I don't think so. Our math products have been successful not because math is easier to do than spelling or reading, but because people subconsciously associate computers and math. As a parent, I may think, 'Gee, computers may help Johnny with math.' But I don't realize how effective they can be in getting Johnny to read. Computers involve reading."

Davidson speaks from experience. "My son learned to read on the computer because he wanted to play with it. Instead of 'See Dick run,' it was 'Press space bar.' To use the computer, you need to read. You can develop some wonderful language-arts products and draw the kids in and get them reading, thinking, and problem solving, without their realizing how much they're learning."



Jan Davidson

Davidson's products are themselves designed to be used by students, parents, and teachers. "All of our products have editors in them," she says. "We get the students writing, as well as reading. Our reading programs, for example, have tools that students can use to write their own stories and essays, as well as read them."

To use tools such as writing, certain basic levels of educational ability are required. Davidson's products deliberately address all levels of thinking, from drill and practice to problem solving and analysis. The drill-and-practice aspects of Davidson's software may be the most widely known, however, addressing an area too often undervalued by educational theoreticians. By addressing basic skills, Davidson feels, you prepare students for the challenges and delights to be found in the exercise of higher-order

skills. You can't, as it were, take an apple from a tree until you can climb the tree.

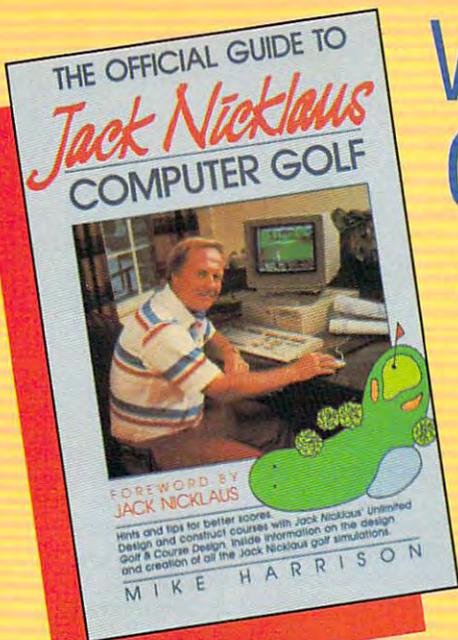
"Think of learning as a continuum," Davidson says, "a gradual process. You go through stages, starting with some very basic things like the ability to recall specific information, then go on to comprehension, application, analysis, and evaluation. All these points need to be covered in education. But the one thing I've found is that you can't bring out higher-order thinking skills if you don't have the lower ones. You've got to have something to think with before you can think. You've got to have a basic vocabulary, be able to read at a certain level, have basic language and math skills to be able to do the analysis, synthesis, and evaluation that are so important to higher-order thinking skills."

And technology can take part throughout the learning process?

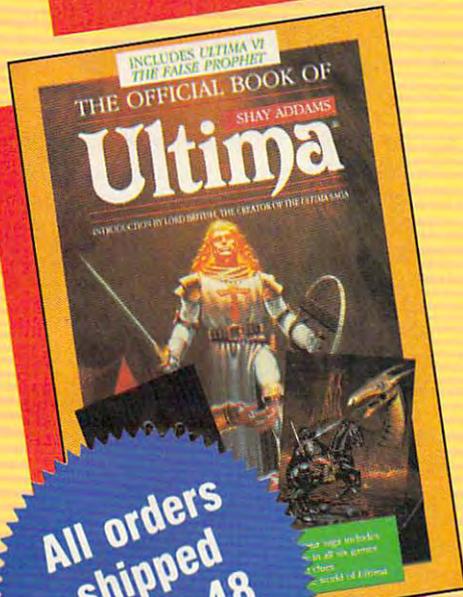
"The computer can play a role at all levels of that spectrum," Davidson says, "both with lower-order thinking skills as well as the higher-order skills. There's a case to be made for educational software at all levels." And Davidson has developed products that fit all along this continuum.

Davidson doesn't see these levels as segregated. "*Word Attack* was developed because I was trying to teach Melville," she says. "The kids didn't have the vocabulary for it. The software was one way of getting them up to speed in the vocabulary so we could do the fun, higher-order thinking skills with it. The highest of the higher-order thinking skills is writing, and you can't write without a vocabulary. You can't function in our society without the basic skills."

A generation of students—and their parents—who've moved with the help of Davidson's software from basic skills to reading Melville and solving complex mathematical problems have reason to be grateful that Jan Davidson moved from classroom to boardroom . . . without leaving the profession of teaching behind. □



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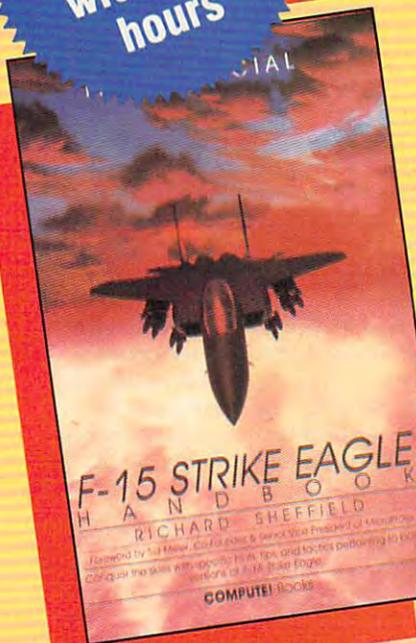
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Math Castle

Having fun and doing math usually don't mix. But with *Math Castle* there's a perfect mix of having fun blasting aliens and good, fundamental math practice and learning. This whole-number game has so many options that the needs of a wide range of students are served. And every teacher knows that individualized instruction increases learning.

You can jump right in and play without spending hours reading a manual. The basics include 12 levels of play, selection of any or all of the four operations, and the choice of regular or learning mode. To protect your castle from an onslaught of aliens, you must correctly answer problems. A laser beam zaps the enemy, and you're safe a little while longer.

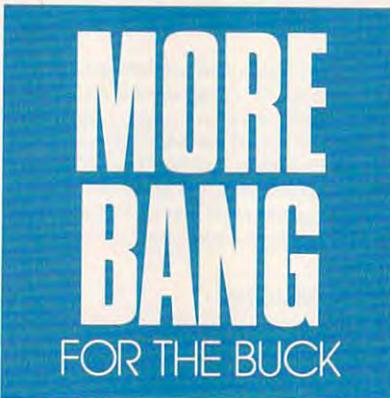
For those who want to take full advantage of the advanced benefits (like advanced levels and user-defined problems), it's as easy as pressing F1. Then, all you have to do is cursor through the options that the program offers.

Go ahead—use the fun and excitement of *Math Castle* to get your kids hooked on math. They'll be reaping the rewards for years to come.

Pharaoh's Tomb

Do you crave exotic adventure? Then get ready for *Pharaoh's Tomb*.

This first adventure of Nevada Smith, an apprentice archaeologist, will keep you intrigued and on the edge of your seat for hours. Through diligent research Nevada has discovered the location of a huge underground pyramid containing treasures beyond belief. But the ancient scrolls also warn of unspeakable dangers and traps. Here's your chance to prove yourself. Nothing will stop you now!



This arcade/adventure game presents 20 uniquely dangerous levels that are riddled with ingenious puzzles and traps. No two levels have the same danger, so you experience incredible variety from level to level. You can save your game to disk and resume play later. And if you finish, you might qualify as an all-time best explorer on the high-score list.

For an escape into a world of unknown dangers, don't switch on the television; put *Pharaoh's Tomb* in the drive and take the road to adventure.

WordMaster

No matter which word processor you're currently using, you'll want to give *WordMaster* a try. It offers all the features of the big-name programs, including multiple windows, easy block editing, and drop-down menus. It even has automatic macro recording for one-stroke control of multiple

commands and text.

Working with *WordMaster*, you can use easy menus or mnemonic keystroke commands for every operation. If you can't remember a command, the program offers context-sensitive help. You'll be able to use the full range of type styles offered by your printer and display bold, italic, or underlined type in different colors on your monitor.

WordMaster supports the most popular printers, including the Hewlett-Packard LaserJet. If you like, you can customize the program for other printers. There's no spelling checker built into the program, but you can check your documents with Borland's *Turbo Lightning* right from the menu. (*Turbo Lightning* is commercial software that must be purchased separately.)

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Every MS-DOS machine is shipped with power that most of us don't know about or use. It's the ability to write batch files that make our computing tasks easier. Unfortunately, some things were left out. And that's what *COMPUTE's PC Productivity PowerPak* gives you—the things that were left out. This is a sample collection of 4 of the 38 utilities found in that package.

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Math Castle



Pharaoh's Tomb



WordMaster



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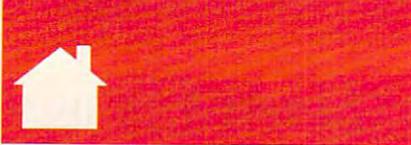
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JOEY LATIMER

Since 1988, my word processor of choice has been *WordPerfect*. The program is packed with useful features, such as a spelling checker, thesaurus, and print spooler, and gives me quick access to the various type styles and graphics supported by my printer. While *WordPerfect* is an excellent word processor, it's not for everyone. The program doesn't run well on floppy-only systems, requires a minimum of 384K of free memory, and can be overwhelming to typists interested only in creating short, simple documents. Now WordPerfect Corporation has a solution for folks who don't need a powerhouse word processor. *LetterPerfect* is a scaled-down version of *WordPerfect* 5.1, with a feature list and price tag that will please the casual writer.

FFICE



Gone from *LetterPerfect* are *WordPerfect* features many people rarely use, such as sorting, math calculations, and number columns. Still present are all the commonly used functions, including graphics and text integration, spelling checker, easy font selection, and the friendly thesaurus. The features carried over from *WordPerfect* into *LetterPerfect* work basically the same, but some have been scaled back. The spelling checker in *LetterPerfect*, for instance, checks only the entire document, while *WordPerfect*'s checker lets you check a word, phrase, or page, as well as a document. *WordPerfect*'s print spooler lets you queue several printing jobs and continue typing while your documents print. *LetterPerfect*, on the other hand, will only print your current document, and it makes you wait until it has finished printing before you can move on. Minor differences like these aside, using *LetterPerfect* is just like using *WordPerfect* 5.1.

LetterPerfect comes with six 5¼-inch and three 3½-inch disks, a reference guide, keyboard overlays for six different PC keyboard designs, and a quick-reference pamphlet. Also included is *WordPerfect Shell 3.0*, a DOS shell that lets you launch and switch between multiple applications and cut and paste text between them. Installing *LetterPerfect* on my hard drive was easy and took only about ten minutes. *LetterPerfect*'s installation procedure was replete with helpful prompts and hard to mess up. The only problem I encountered was with the XT-style keyboard overlay. It seemed that every time I tried to type, my palm would hit the overlay and send it whirling onto the floor. A little double-sticky tape solved that problem.

LetterPerfect works on any PC compatible with 330K of free memory and one 720K or two 360K floppy drives, making it an ideal choice for

use on laptops or older PCs with limited memory and disk storage. While the program will work with a text-only display card, you'll need CGA, EGA, VGA, or Hercules graphics to use the page-preview feature. In addition, *LetterPerfect* will run on a network. I tested it using a 640K turbo XT system with EGA graphics, an Epson 24-pin printer, and a hard drive.

When you first glance at *LetterPerfect*'s editing screen, you'll notice the program's user interface closely resembles that of *WordPerfect* 5.1. The bottom line of the screen displays the name of the file you're working on, as well as the page number, line, and the cursor's position on the page. Across the top of the screen is a pull-down menu bar. Mouse users can just point at the selection they want and click the mouse button; laptop owners and others without pointing devices can

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What to Look for In a Home PC

If you're in the market for a home computer, here are some helpful guidelines to getting the most out of your investment.

The Right Software

Look for software that is already set up and ready to use. After all, you don't want to have to learn how to use a database just to catalog your stamp collection or set up a spreadsheet to figure interest charges. Software should be easy to use and designed specifically for the home. So you can, for instance, keep an inventory of your possessions for insurance purposes. Or make a detailed schedule for a vacation or business trip, with a list of things to bring along. Or plan meals—selecting recipes, then making a grocery list based on the number of people you're serving.

And, of course, you'll want software to help you manage your finances. Like an automatic checkbook register to do all the math for you, and then itemize your expenses for easy budgeting. And a program to manage your stock portfolio. And when you're thinking about a new house or car, you'll want a loan scheduler to find out exactly what your payments will be. Essentially, you need easy-to-use software to help you manage your finances now, so you can plan ahead for your financial future.

Of course, your home computer should be PC compatible, so you can run programs from the office as well as tens of thousands of other personal, entertainment and home education programs.

Getting Up and Running

The right computer should be so convenient that you'll use it all the time. And your system should be compact and quiet to fit well into any home environment. A definite plus is a feature that turns off the screen when not in use, keeping the computer both energy efficient and ready to use with the touch of a key.

Plus, you need to consider the keyboard. A top-of-the-line business system keyboard will make for easier, effective entry of information.

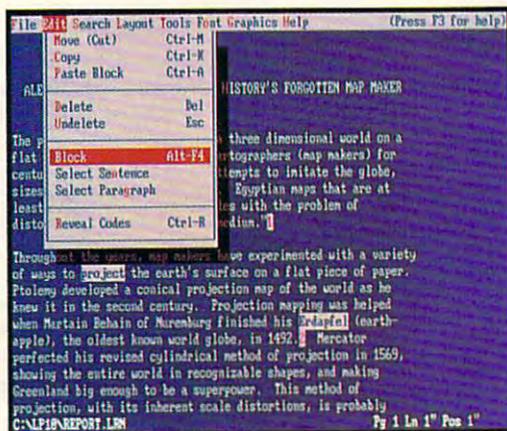
Stretching Out

Finally, you need to be able to expand whenever you're ready. Look for built-in digital audio and joystick ports so you can take advantage of a wide range of game and home education software.

Fortunately, there is a computer that meets all these requirements: the Tandy® 1000 RL home computer. To learn more about home computing and the many benefits of putting a Tandy 1000 RL in your home, please stop by any participating Radio Shack store, dealer or Computer Center at your convenience for a personal demonstration.

select menu items using the Alt, cursor, and Enter keys. *LetterPerfect* also lets you use *WordPerfect*-style function keys to choose options. I found this the fastest way to access *LetterPerfect*'s features.

LetterPerfect has an extensive online help function. To get instant information, all you have to do is press F1 or pull down the Help menu and then select the topic you need help with from an alphabetized list. You'll find the help function especially useful if you don't thoroughly un-



Pull-down menus make memorizing function key assignments unnecessary.



LetterPerfect's Reveal Codes option shows you all formatting commands.

derstand a feature. It will also keep you from having to scrounge around trying to find the reference guide for simple questions. If, after checking the onscreen help and the reference guide, you're still unable to solve a problem, *WordPerfect* has a toll-free customer support line that operates Monday through Friday from 7 a.m. to 6 p.m. Mountain time. If you have a problem in the evening, there's another support number, but it's a toll call. When I called these lines, I was greeted by friendly and knowledgeable support people who helped me solve my problems in a matter of minutes.

Using *LetterPerfect*'s graphic features, you can draw

lines around sections of your document and import and edit graphic images. *LetterPerfect* will only directly import files in the WPG (WordPerfect Graphics) format, but you can use the included conversion utility to port most popular graphic formats, such as PCX, PIC, HPGL, EPS, and TIFF, to WPG. Once an image has been converted, you can view, size, edit, or invert it and then place it into the

document you're working on. You can place borders around graphic images and wrap text around them. This makes it possible to place your letterhead design at the top of correspondence, as well as create simple but professional-looking newsletters and forms.

LetterPerfect has an outliner function that I found especially helpful when working on school papers

and articles such as this one. When you activate the outliner, *LetterPerfect* will automatically insert Roman numerals, letters, and numbers in your document, depending on which level of the outline you're currently typing.

The manual included with *LetterPerfect* is well illustrated with clearly written step-by-step instructions. There are nine tutorials you can work through to learn how to use most *LetterPerfect* functions and a complete reference section detailing each command individually. The thorough index and table of contents make finding references easy. Appendices cover topics such as error messages, ASCII conversion, embedded codes, graphics conversion, network installation, and troubleshooting. *LetterPerfect* never crashed while I was using it, and when I did encounter an error, I found the manual's explanations of possible errors and solutions very helpful.

I used *LetterPerfect* to compose this review. After using it for a few days, I decided that I enjoyed using it much more than *WordPerfect* 5.0. The program's mouse support (also present in *WordPerfect* 5.1) won me over.

LetterPerfect contains most of the great features of *WordPerfect* that millions have come to know and love, yet it dispenses with the high price tag. Thanks to its compact size, it can be used on laptops and other systems that can't run the high-end word processors. Whether you're new at word processing or a seasoned professional, *LetterPerfect* is a solid choice. It's priced right, easy to use, but still capable of producing high-quality output.

Ease of Use ★★★★★
Documentation ★★★★★
Features ★★★★★
Innovation ★★★★★

LetterPerfect

IBM PC and compatibles with 330K free memory, one 720K or two 360K disk drives; graphics adaptor required for page preview—\$229

Package includes five 5¼-inch and three 3½-inch disks, keyboard templates, a 441-page reference manual, a 51-page *WordPerfect Shell* manual, and an 8-page quick-reference guide.

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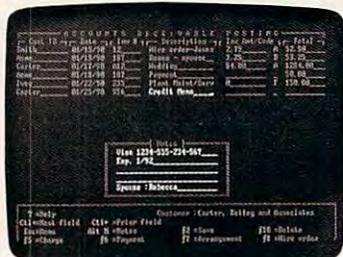
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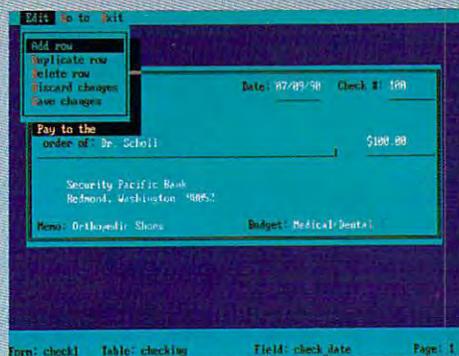
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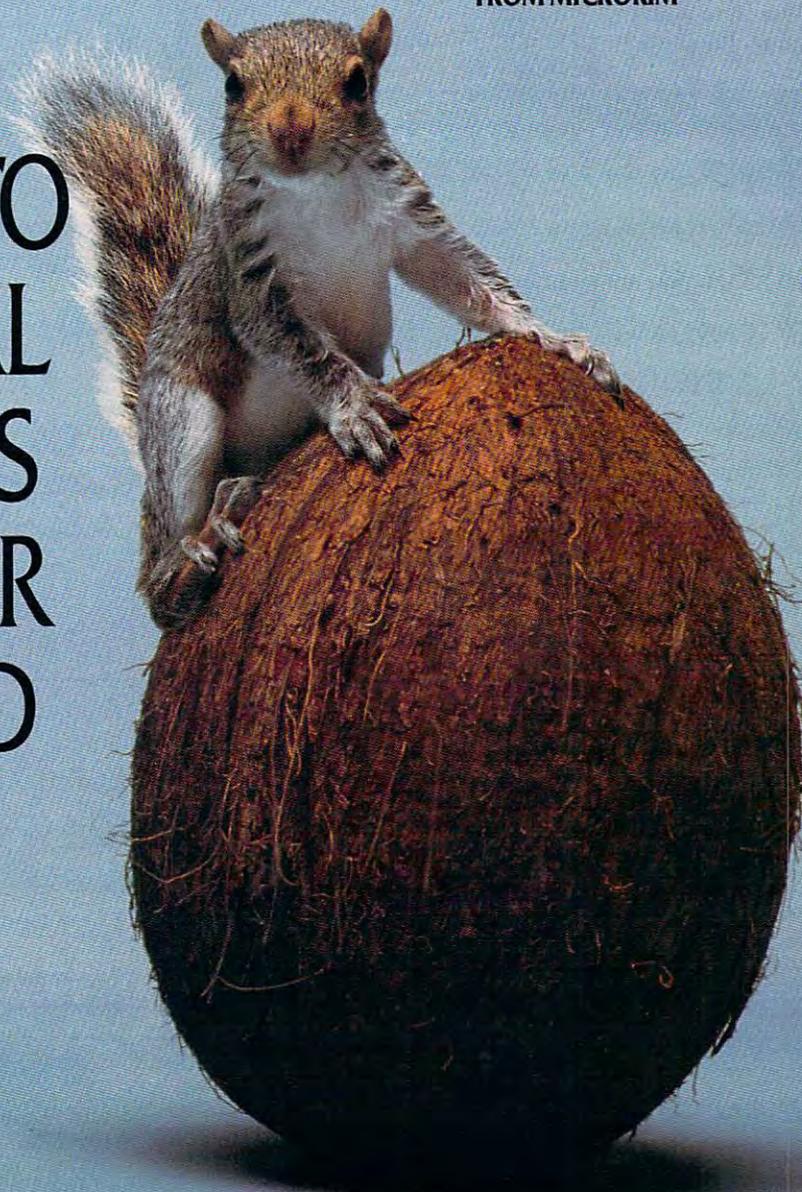
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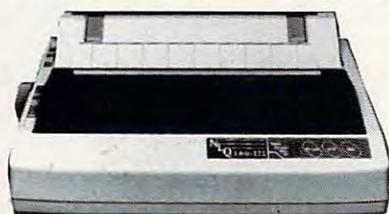
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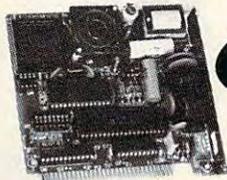
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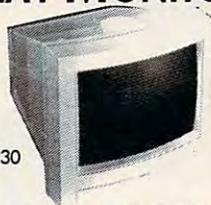
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THE ART OF Small Business

If you've ever thought of becoming an artist but you're uncomfortable smearing paint or uncoordinated with a Conte crayon, there's still hope. You can supply your own commercial art and design work at a low cost and learn about computer art in the process.

But before you dive into commercial art with a product like *Draw-Perfect* or *Charisma*, you need to put aside the idea that you have no talent. With computerized art products, nearly all the work is done for you. After you've mastered a few simple techniques, you'll be generating all the logos, letterheads, and business forms you need. And, as you'll discover, it can be a lot of fun. Unlike most areas of computing, art is practically mistake-free.

Logology

The company logo is one of our culture's most ubiquitous art forms. Peo-

CREATE YOUR OWN COMPANY LOGO, LETTERHEAD, OR BUSINESS FORM

ple even wear clothes with the labels on the outside to show off the logos of the companies that made them. Logos have increasing value in our postliterate society because they don't require that the consumer be able to read. If they're seen often enough, they can be recognized instantly. And in international business, logos have the added advantage of overcoming language barriers.

Start with a logo. It's the foundation on which you'll build the other forms of your business communication; your letterhead will show your

logo prominently, as will your business forms. When you sponsor softball teams, their uniforms will sport your logo.

There are several different strategies for creating a logo, but the best strategy is to incorporate the name of the business. The big corporations can get away with abstract logos, like Transamerica's (which looks like an arrangement of six hockey sticks). But I'm assuming that your home or small business isn't as large as Transamerica. Therefore, you should consider name recognition as well as logo recognition.

The possibilities based on company name are name only, name with meaningful graphic, and name with abstract graphic. To create these logos, I'll use the latest version of *Draw-Perfect* from WordPerfect. It's one of a number of options available at a moderate cost to the home or small business. It not only offers outstanding

R O B E R T B I X B Y

graphics for printouts but also has presentation graphics and the ability to use macros both within its own environment and under *WordPerfect's Shell*. In addition, its graphics are directly transportable to *WordPerfect*, the best-selling word processor of all time. It comes with dozens of pieces of clip art which you can use with your *WordPerfect* documents, and you can also use the *WordPerfect* clip art in *DrawPerfect*.

DrawPerfect is far from the only software of its kind in this price range. You could also use *Arts & Letters Graphic Editor*, *Corel Draw* (both operate under *Windows*), or *GEM Artline*.

For the purposes of this article, we'll make up the name of a company. Since many small businesses are engaged in "massaging information," Baker and Rogers Publishing is a likely name for a company that provides a broad range of services including writing, typesetting, and layout (all of which are performed in *WordPerfect*).

Because she's the creative force in the company, Baker volunteers to create the logo, which must meet the strict standards of Rogers, who's a real stick-in-the-mud. The partners see this as a perfect pairing because they compensate for each other's shortcomings.

The Name Game

Baker sits down at her AT and starts *DrawPerfect*. To begin, she simply writes the name of the company in several different typefaces. (Some of the available typefaces are shown in Figure 1; as you select each typeface, you see an example of it in the box at the upper right.) She takes a critical look at the resulting text, remembering that she has to please not only herself but also her partner and her company's customers, whose preferences are much closer to her partner's than her own. With this in mind, she passes over the script options and chooses WP ROMAN, the last one shown in Figure 2.

Her next step is to size the text large enough to work with. Since all these programs work with outline fonts, there's no reason to stick with the skimpy text. You'll have much more control if you make the text fill the screen and then size it smaller for use. Size is an option on the Edit menu.

The text looks handsome by itself, but it's not very distinctive. It's all too obvious that very little work has gone into it. These are Baker's options at this point:

- To rotate the text or distort it in some other way (such as stretching it horizontally or vertically)
- To change the text's appearance by altering its color or fill
- To copy the text and distort the copy

DrawPerfect text is just text. There are a limited number of ways you can distort the actual letters. *Arts & Letters* and similar graphics-based packages let you alter the letters on the screen because the individual letters are treated as clip art once they appear on the screen. *DrawPerfect* does let you select certain text attributes, such as hollow letters, before the text appears on the screen.

To create her first logo, Baker creates the text in outline letters and then copies and rotates them. Next, she creates a white rectangle and the text one last time—this time in front of the rectangle (Figure 3).

To create the second type of logo—a name with a meaningful graphic—Baker could look through her collection of clip art and call up a drawing of a book, computer, or laser printer to use as a background for the name. Creating a name-plus-abstract-design logo would also be fairly simple to design, involving no more than working with the drawing tools in *DrawPerfect* and creating something pleasing to the eye. ▸

Figure 1: Available Typefaces in *DrawPerfect*

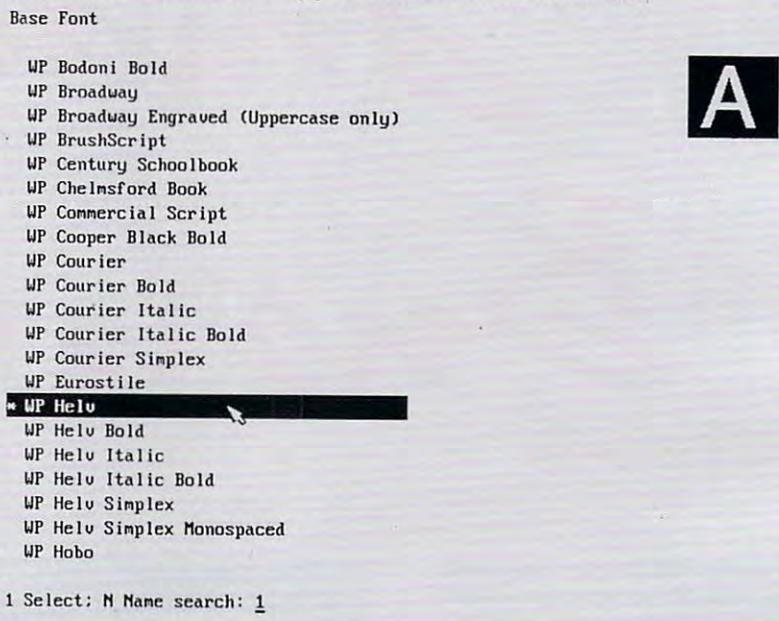
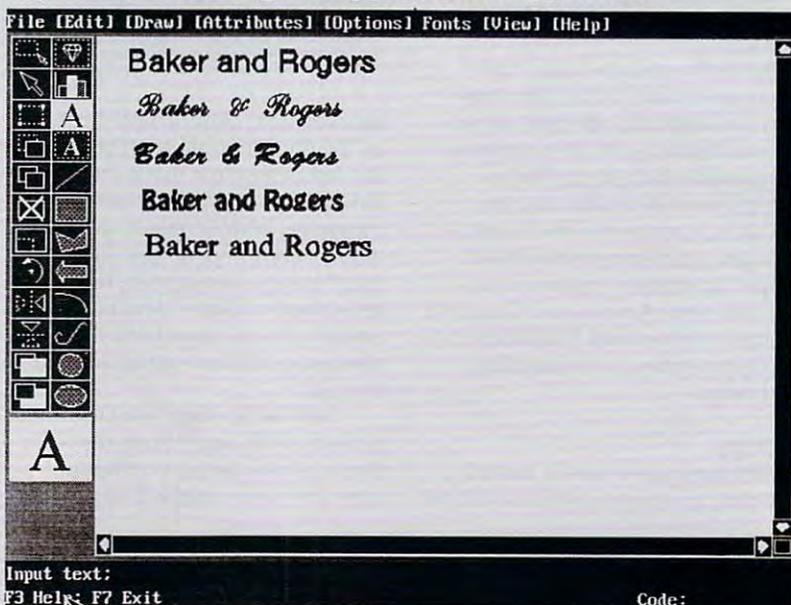


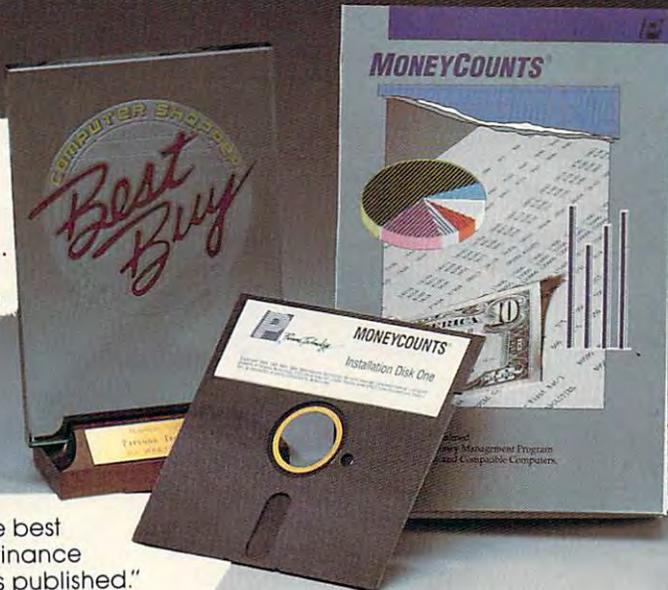
Figure 2: Choosing an Appropriate Typeface



- To enhance the text by drawing a box around it or by placing rules above and below it

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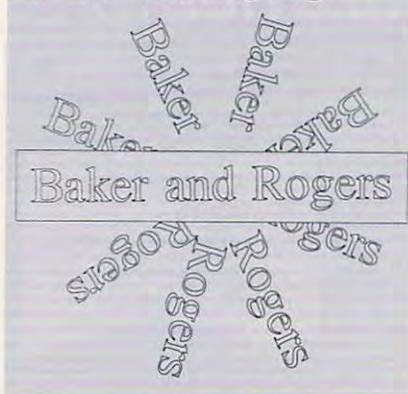
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Figure 3: Rotating Text for an Eye-Catching Logo



Form Fitting

Assuming that Rogers approved of the logo, Baker has a new project in mind: She plans to apply the logo to the many business forms used by the tiny company. She'll start with a letterhead to represent her business. Once the letterhead is designed, she can print out a single sheet and take it to a print shop for reproduction, print out the sheets herself as they're needed, or turn the letterhead into a WPG graphic and import it into a *WordPerfect* style. WPG graphics can also be converted into other file formats for other word processors, such as *Ami Professional*, *WordStar*, and *Microsoft Word*.

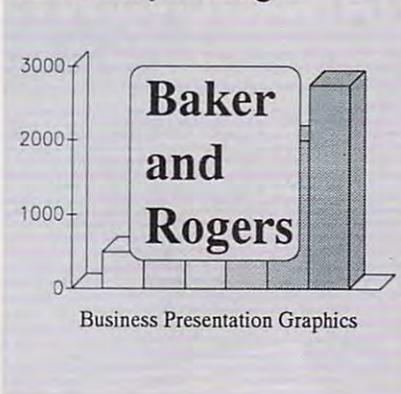
We'll assume that Baker has chosen the first option. Laser printer toner is expensive enough that it's usually less expensive in the long run to use the laser printer for composition work and a professional printer for actual reproduction.

To turn the logo into something that can be easily altered, Baker chooses the Area Selection option, selects the entire logo, and groups it—turning the logo into a single object that can be moved and stretched. She enters the full name and address of the firm and tries different arrangements of name, address, and logo, easily sliding the elements of the letterhead around on the page until they look just right. Her final solution is only one of an infinite number of pleasing arrangements.

Charismatic

DrawPerfect is one of a small number of non-*Windows*-based draw programs. Most draw programs are designed to operate under *Windows*. One of the first of the *Windows* programs was *Graph Plus* from Micrografx. When it came time to update *Graph Plus*, Micrografx decided it was time to come up with a sexier name as well, and *Charisma* was born. *Charis-*

Figure 4: Completed Text-Plus-Graphic Logo

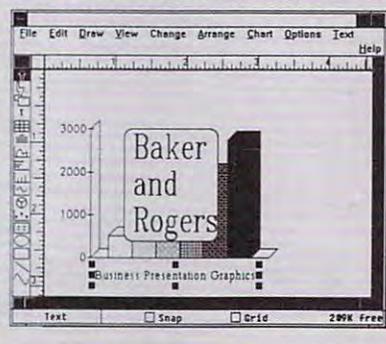


ma, like *DrawPerfect*, is designed to create presentation graphics, which means it has a built-in facility to display computer screens as if they were slides. Both products can create files that can be turned into real slides for use with a projector. And both can create a number of different graph types based on values provided through links with a spreadsheet program or entered through a spreadsheet-like interface.

Figure 4 shows a text-plus-graphic logo for Baker's company. To create this design, a graph was made using the graphing utility from *Charisma*, and a rounded rectangle was created that frames the name. It was filled with solid white, and the words *Baker and Rogers* were superimposed on top of it in the Times Roman font. (In addition to its outline fonts, *Charisma* uses the fonts available in Baker's Star Laserprinter 8 II with LincPage PostScript emulation. *DrawPerfect* relies on its own outline fonts.)

Figure 5 shows the logo as it appears on the *Charisma* screen. As you can see, *Charisma* is slightly less WYSIWYG than *DrawPerfect*. However, because of its reliance on *Windows*, *Charisma* is easier to use if you've had some experience with other *Windows*-based graphics programs.

Figure 5: Chart and Logo on Charisma Screen



Abstract Art

You've seen the name-only and name-with-meaningful-graphic logos. The last category is name with abstract graphic. It's a fun category, but anyone seriously interested in abstract design will warn you that it isn't to be taken lightly. Because your design can go anywhere or be anything, there's a real danger it will be misinterpreted.

Let's begin with a squiggle. If you repeatedly select Duplicate from the Arrange menu, move the duplicate squiggle slightly to the right, and select Rotate Left 90 Degrees from the Change menu, you should be able to create a bale of wire. Although at first glance the drawing appears random, it tends to draw the eye, and upon closer examination you can see that there's a subtle organization in the design. In fact, you can see that it *is* a design, not just random markings.

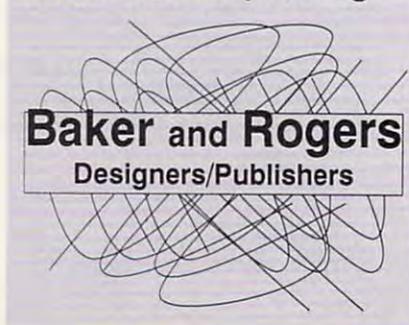
The next step is to add the company name. This time, the Times or Times Roman fonts would be inappropriate because they're traditional fonts with a classic beauty. To use them here would be like putting Mona Lisa's face on a portrait by Picasso. For this logo, seek out something with a more modern appearance, such as Helvetica, as shown in the final logo (Figure 6) or another sans serif font such as AvantGarde.

Extending Your Reach

Your commercial art projects don't have to be limited to logos and letterheads; *Charisma* and *DrawPerfect* are excellent programs for creating business presentations for sales meetings or trade shows. Graphics from each product can be converted into slides by a commercial slide service or you can run a slide show on the computer with a projection monitor.

And in addition to saving you money, these programs can entertain your creative side in the midst of a day of drudgery. Taking a graphics break can help keep you interested and alert and add extra creativity to your bread-and-butter work. □

Figure 6: Completed Name-with-Graphic Logo



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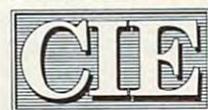
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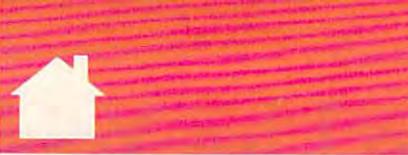


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WORKPLACE

D A N I E L J A N A L

I recently attended a conference for professional speakers and asked the well-dressed woman on my left what business she was in.

"I speak about visual communications," she said. "Is that like overhead slides and transparencies?" I inquired. "No. It has more to do with presentation skills," she said. "Oh, so you help people deliver speeches," I deduced. "No. I help people present themselves properly in corporate communications situations," she said, further clouding the issue. "Oh, so you write marketing reports and employee newsletters," I said. "No. Different kinds of corporate communications," she insisted. "What kind of communications situations?" I asked, feeling that I was getting colder rather than hotter answers. "At the dinner table," she responded. "Oh, so you tell people which fork to use with which course," I guessed. "That's it!" she exclaimed.

Did this woman know what business she was in? Undoubtedly. Did she have the ability to tell people what business she was in? Undoubtedly not.

I had to ask a series of questions to find out what services she provided and how I could benefit. I was being polite because I was in an awkward situation.

Your prospects probably won't be as polite.

If they don't understand what business you're in, they won't bother to ask follow-up questions. They'll just assume what you have is *not* what they want.

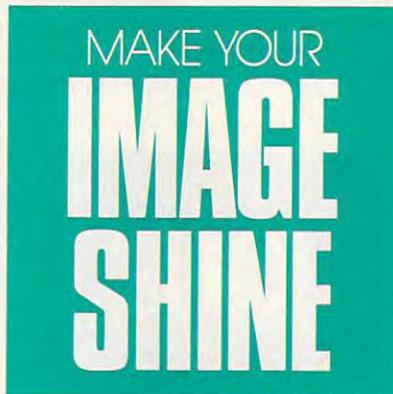
To make sure this doesn't happen to you, tailor your positioning statement so that everyone will know immediately what service you provide.

A person could say, for example, that she's an accountant. The prospect would learn very little from that statement. Instead, she could say, "I'm an accountant who specializes in small businesses." That targets her market specifically.

She also could've chosen any of

these areas: personal income-tax planning, large corporations, freelance writers, and actors.

Here are a few more vague professions and more descriptive statements: desktop publisher (design and produce newsletters), personal services manager (walk dogs and buy groceries), marketing specialist (write direct-mail pieces to increase sales), financial consultant (sell stocks).



Do your prospects really understand what services you provide? Here are a few exercises to fine-tune your message. These exercises will help you create a positioning statement for your company so you can clearly communicate your ideas.

What image do you want to pop into people's minds when they hear your company's name? Write three things that come to mind. Now which of those three statements is the one that clearly identifies your company? Practice reading the statement aloud until it sounds right and rolls off your tongue easily. Then get feedback from your peers and family. However, don't ask if they understand it. Chances are they'll say yes so they won't offend you. A better way to get feedback is to ask them to tell you what business you're in. That way, you'll get a more informed view.

This statement is the basis for your verbal contact with prospects—in person and on the phone. If you follow these steps, you'll be able to get

your message across clearly.

Although it pays to be clear and specific, you should avoid being so specific that you risk limiting your employment possibilities. According to lawyer Alan Foneberg, when people meet a lawyer at a party, they ask, "What kind of law do you practice?" The reply is usually a one-word answer such as matrimonial, civil, or criminal. Foneberg says this is the wrong approach because you'll be typecast and the prospects will think you perform *only* that function when most lawyers are generalists who can perform many tasks.

Instead, Foneberg advises lawyers to respond, "What kind of lawyer do you need?" That way, people can say they've had a run-in with the landlord and need to halt the eviction process or whatever. The lawyer can then arrange a meeting for the new clients.

Home office workers can use this tactic as well. Let's look at two sample dialogues.

Prospect: What do you do?

Home office worker: I type term papers.

Prospect: (To herself) Oh well, I guess he can't do marketing reports. They're probably too specialized for him anyway. (To the home office worker) That sounds nice. Good luck.

In this case, the home office worker limited his approach, and the prospect didn't realize he could also type marketing reports. Result: a lost sale.

For him to make the sale, the conversation should flow like this.

Prospect: What do you do?

Home office worker: I type. Do you need any typing done?

Prospect: I have a 40-page marketing report with tables and graphs. Can you handle that?

Home office worker: Sure. Tell me about the report.

The home office worker can then discuss terms and fees and close the deal.

By following these steps, you'll be able to get your message across clearly and attract new clients. And that's the first step toward a successful business. □

JOIN THE AIR FORCE AND SEE THE WORLD'S MOST EXOTIC TERMINALS.



the desire and the aptitude, you could become a part of it.

You'll receive not only the highest-quality technical training, but guaranteed hands-on experience. Use equipment and technology so advanced, it may be years before the rest of the world even reads about it.

But there's much more to the Air Force than mainframes and megabytes.

We offer equally exciting opportunities in today's most sought-after fields. Electronics.

Medicine. Aircraft mechanics. Communications. Over 200 careers in all.

Plus the chance to pick up college credits or even an Associate of Applied Science degree in the fully-accredited Community College of the Air Force.

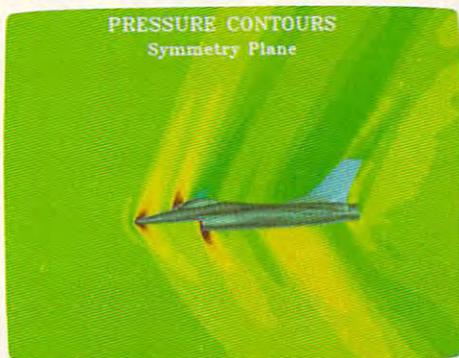
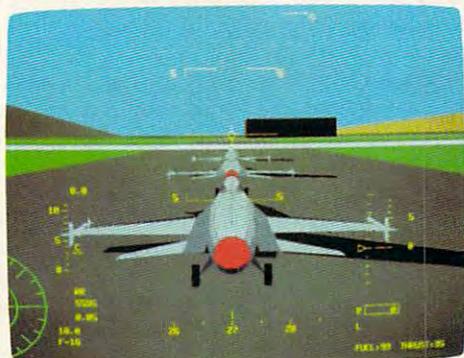


Terminals that push pilots beyond their limits. Terminals where dogfights are played out with sweaty realism.

Terminals where futuristic aircraft designs are modified in just seconds.

It's all part of the most sophisticated computer technology in the world.

And if you have



Interested? Give us a call at 1-800-423-USAF. You'll find there are some terminals where futures get off the ground.

AIM HIGH.



Systems that revolutionized the computer industry!

All backed by Northgate® support and service that's unmatched by any other company!

There are a lot of copy-cat "slim-line" systems out there, but don't be confused. These are the ORIGINAL SlimLine systems from the pioneer of this trend-setting technology: Northgate.

In just under a year, SlimLine has become our most popular system. And with good reason. Only SlimLine gives you full 286, 386SX™ and 386™ DX power in a package only 4.25" high and 16.5" square.

Now... four new SlimLine systems! "Northgate for 1991" features a SlimLine family that offers more choice than ever before: SlimLine 286/12, 386SX/16 and 20 MHz.

Our new powerhouse 386/33 rounds out our complete range of systems.

Northgate SlimLine Common Features:

- Small footprint SlimLine case with room for two exposed and one internal half-height devices
- Intel® and Weitek® math coprocessor support
- 150 watt power supply
- Clock/calendar chip rated at five years
- Front mounted reset and high/low speed controls
- MS-DOS 4.01 and GW-BASIC installed
- On-line User's Guide to MS-DOS 4.01
- FCC Class B Certified
- 1 parallel and 2 serial ports
- Built-in VGA video adapter
- Built-in IDE hard drive and floppy disk controllers
- Five open expansion slots (three 16-bit full length, two 8-bit half-length)

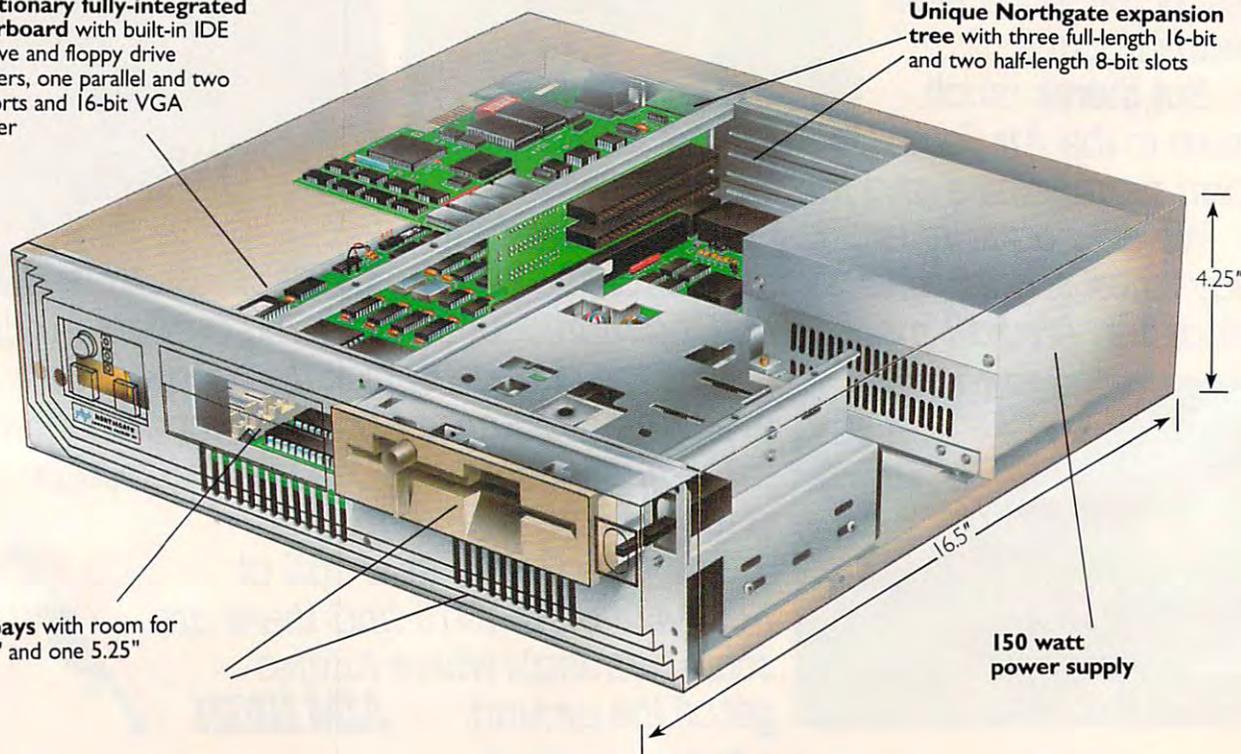
Here's how we put full power into a performance package only 4.25" high!

Revolutionary fully-integrated motherboard with built-in IDE hard drive and floppy drive controllers, one parallel and two serial ports and 16-bit VGA controller

Unique Northgate expansion tree with three full-length 16-bit and two half-length 8-bit slots

Drive bays with room for two 3.5" and one 5.25" device

150 watt power supply



Here they are...the Northgate family of Super SlimLines.™ One format, four sensational systems—take your pick!

NEW! SlimLine 286/12 MHz

Ideal entry level system for use as network terminal or stand alone system for office and home use. Excellent for word processing, simple spreadsheet and light graphics programs.

- Intel® 80286/12 MHz processor
- 1.2Mb and 1.44Mb floppies
- 2Mb of RAM on motherboard
- 12" VGA gray scale monitor
- 40Mb hard drive
- OmniKey® keyboard

\$1699⁰⁰ Or as low as \$60⁰⁰ per month*

NEW! SlimLine 386SX/16 and 20 MHz with 64K cache

No ordinary SX! Northgate engineered these systems with 64K cache memory to allow you to run Microsoft Windows and other 32-bit software at quick cache-enhanced speeds. Handles database management, graphics and spreadsheet applications with ease. Choose 16 or 20 MHz models.

- Intel 80386SX 16 or 20 MHz processor
- 1.2Mb and 1.44Mb floppies
- 2Mb of RAM on motherboard
- 12" VGA gray scale monitor
- 40Mb hard drive
- OmniKey keyboard
- 64K SRAM read/write-back cache
- Microsoft® Windows™ 3.0 and mouse

386SX/16 **\$1999⁰⁰** Or as low as \$70⁰⁰ per month*

386SX/20 **\$2199⁰⁰** Or as low as \$75⁰⁰ per month*

The system that started it all ... SlimLine 386/20 MHz!

SlimLine 386/20 zips through complex spreadsheets, moderate programming needs, desktop publishing and other demanding applications.

- Intel 80386/20 MHz processor
- 12" VGA gray scale monitor
- 4Mb of RAM on motherboard
- Microsoft Windows 3.0 and mouse
- 40Mb hard drive
- 1.2Mb and 1.44Mb floppies
- OmniKey keyboard

\$2499⁰⁰ Or as low as \$85⁰⁰ per month*

NEW! SlimLine 386/33 MHz powered up with 64K cache!

Now for the first time ever, you can get award-winning Northgate Elegance™ performance in our SlimLine case! SlimLine 386/33 is ideal for speeding through processor-intensive tasks like desktop publishing, CAD/CAM, large database and business programming applications.

- Intel 80386/33 MHz processor
- 1.2Mb and 1.44Mb floppies
- 4Mb of RAM on motherboard
- 12" VGA gray scale monitor
- 64K SRAM read/write-back cache
- Microsoft Windows 3.0 and mouse
- 40Mb hard drive
- OmniKey keyboard

\$2899⁰⁰ Or as low as \$105⁰⁰ per month*



Standard SlimLine Upgrades (Add to the base system price)

Hard Drives	12" Gold Star VGA Gray Scale 640 x 480	Gold Star 14" VGA Color 640 x 480	Panasonic 14" VGA Color 1024 x 768	NEC 3D 14" VGA Color 1024 x 768
40Mb IDE	\$ 0.00	\$300.00	\$ 400.00	\$ 650.00
80Mb IDE	\$200.00	\$500.00	\$ 600.00	\$ 850.00
100Mb IDE	\$300.00	\$600.00	\$ 700.00	\$ 950.00
200Mb IDE	\$600.00	\$900.00	\$1000.00	\$1250.00

Call for latest pricing and custom configuration specifications.

"Northgate stops at nothing to please its customers!" *PC Magazine* Sept. 25, 1990

- NEW 60-Day No-Risk Trial—if you aren't 100% satisfied, return it!
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- For your convenience, we accept VISA, MasterCard and Northgate's Big 'N' card. We offer leasing and financing options, too!
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CALL TOLL-FREE 24 HOURS EVERY DAY **800-548-1993**

New ... fax your order toll free! 800-323-7182

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"We hear you!"

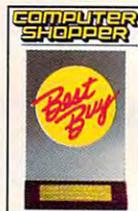
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Northgate® Elegance™...

The industry's highest rated 386™ and 486™ systems!



When we say Northgate manufactures the highest-performing, best-supported computer systems in the world ... it's a fact. Industry experts and customers worldwide agree!

In test after test, Northgate Elegance systems perform flawlessly. After the competition has been put through the same demanding paces, only Elegance 386 and 486 emerge as the winners.

And here's the proof! Northgate has won four *PC Magazine* Editors' Choice Awards, two *Computer Shopper* Best Buy Awards and received *InfoWorld's* Number One and Number Two Products of 1989.

PLUS AT PRESS TIME ... Northgate received word from *Computer Shopper* that Elegance 486/25i won a 1990 Best Buy Award. That makes an unprecedented **FOUR YEARS IN A ROW** Northgate received *Computer Shopper's* prestigious honor!

We'd be fooling ourselves (and underestimating you) if we thought you'd buy based on performance alone. That's why Northgate has a corporate commitment to customer service that's equally impressive. No puffery here...

"...Northgate stops at nothing to please its customers." *PC Magazine* September 25, 1990

- ◆ Free delivery to your office or home.
- ◆ **NEW 60-Day No-Risk Trial!** To serve you better, Northgate has doubled its No-Risk Trial period to 60 days.
- ◆ **Full parts and labor warranties:** 1 year on systems; 5 years on *OmniKey*® keyboards.
- ◆ **Overnight shipment of replacement parts—** at our expense.
- ◆ Northgate's unique 24-hour toll-free technical support leads the industry—most needs are met with just one call!
- ◆ **Free on-site service** to most locations if we can't solve your technical needs over the phone.
- ◆ **Northgate makes state-of-the-art power affordable!** Charge your purchase to your Big 'N' card, VISA or MasterCard. Ask about financing and leasing options, too!
- ◆ Call Northgate before you decide to buy elsewhere. You'll be amazed at our new low pricing!

“What WordPerfect® is to software support, Northgate is to hardware, and there are even a few things WordPerfect could learn from the folks in Minneapolis.”

Bernie Zilbergeld
Bay Area Computer Currents
August 14, 1990

Select desktop or optional vertical power case.

Northgate's elegant desktop case features 5-bays with room for 3 exposed and 2 internal half-height devices. Comes with 200 watt power supply. For greater expansion capabilities, choose our vertical 7-bay powerhouse with a 220 watt power supply.

Northgate Page Mode 386/20 MHz

As a cost-efficient, dependable network file server, Page Mode has no equal. Its reliability is confirmed by Novell® certification and by users of office networks every day. Northgate boosts performance of this 386/20 workhorse through the use of an efficient page mode memory management scheme. Other performance features include:

- ◆ Intel® 80386/20 MHz processor
- ◆ 4Mb of RAM (expandable to 16Mb)
- ◆ 40Mb hard drive
- ◆ 1.44Mb and 1.2Mb floppy drives
- ◆ 16-bit VGA video adapter
- ◆ Eight expansion card slots
- ◆ One parallel and two serial ports
- ◆ MS-DOS 4.01 and GW-BASIC installed
- ◆ Microsoft® Windows™ 3.0 and mouse
- ◆ 14" VGA gray scale monitor
- ◆ OmniKey keyboard
- ◆ FCC Class B Certified

\$2499⁰⁰ Or as low as \$85⁰⁰ per month*

Northgate Elegance 386/486 Common Features:

- ◆ American-made motherboard
- ◆ RAM expansion up to 8Mb on motherboard (16Mb total RAM with 32-bit memory card)
- ◆ 16-bit VGA video adapter
- ◆ One parallel and two serial ports
- ◆ MS-DOS 4.01 and GW-BASIC installed
- ◆ Microsoft® Windows™ 3.0 and mouse
- ◆ FCC Class B Certified

Northgate Elegance 386/25 & 33 MHz

The best in their respective classes! Both are ideally suited for managing large databases (over 1000 records), full-time business accounting, multitasking and other demanding applications.

Northgate gives you a powerful standard configuration including high-speed 64K RAM cache and 4Mb of RAM. Take a look at everything you get:

- ◆ Intel® 80386/25 or 33 MHz processor
- ◆ 4Mb of RAM
- ◆ 40Mb hard drive
- ◆ 64K SRAM read/write-back cache
- ◆ 3.5" 1.44Mb and 5.25" 1.2Mb floppy drives
- ◆ 16-bit VGA adapter
- ◆ 14" VGA gray scale monitor
- ◆ OmniKey keyboard
- ◆ Novell Certified

25 MHz **\$2999⁰⁰**
Or as low as \$105⁰⁰ per month*

33 MHz **\$3299⁰⁰**
Or as low as \$115⁰⁰ per month*



Northgate Elegance 486/25 and NEW 486/33 MHz ISA

In addition to receiving an Editors' Choice and 1990 Computer Shopper Best Buy Award, Elegance 486/25i outscored all competitors in InfoWorld Magazine's 1990 reviews of 486 systems. Elegance "leads the pack by a comfortable margin", they said. "It offers impressive performance, exceptional expandability and it is tops in support and value."†

NOW! Northgate introduces the next generation—Elegance 486/33 ISA. Both systems are ideal for heavy-duty business applications like full time database management, CAD/CAM, financial planning, accounting and programming. Includes:

- ◆ Intel 80486/25 or 33 MHz processor
- ◆ 4Mb of RAM
- ◆ 40Mb hard drive
- ◆ 64K SRAM read/write-back cache
- ◆ 3.5" 1.44Mb and 5.25" 1.2Mb floppy drives
- ◆ 16-bit VGA video adapter
- ◆ 14" VGA gray scale monitor
- ◆ OmniKey keyboard
- ◆ Novell Certified (486/25)

25 MHz **\$5199⁰⁰**
Or as low as \$180⁰⁰ per month*

33 MHz **\$5799⁰⁰**
Or as low as \$200⁰⁰ per month*

Standard Upgrades (Add to the base system price)

Hard Drives	14" NEC VGA Gray Scale 800 x 600	Gold Star 14" VGA Color 640 x 480	Panasonic 14" VGA Color 1024 x 768	NEC 3D 14" VGA Color 1024 x 768
40Mb IDE	\$ 0.00	\$300.00	\$ 400.00	\$ 650.00
80Mb IDE	\$200.00	\$500.00	\$ 600.00	\$ 850.00
100Mb IDE	\$300.00	\$600.00	\$ 700.00	\$ 950.00
200Mb IDE	\$600.00	\$900.00	\$1000.00	\$1250.00

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Replace your "mushy" keyboard with the crisp touch Northgate® *OmniKey*!



Look...
12 F-keys
on top AND
LEFT!

OmniKey/ULTRA PC Computing Magazine's Most Valuable Product Of 1990!

PC Computing said: "keyboards don't get any better than this."† And it's no wonder! *OmniKey/ULTRA* gives you twice the features of ordinary keyboards! You get 12 F-keys on left—PLUS 12 switchable Special Function (SF)-keys on top. And, the greatest touch in keyboards.

See for yourself ... use one for 60-days RISK FREE! If you aren't convinced it's the best, return it. We'll refund every penny!

Look! More exclusive features!

- ALPS click/tactile mechanical key switches
- Interchangeable CTRL, ALT and CAPS LOCK keys
- Switchable right asterisk and backslash keys
- Exclusive period/comma lock key locks out these <>, locks punctuation in
- Repeat rate select key lets you change from 3-120 CPS from inside DOS or a program
- Unmatched compatibility with IBM®-type systems
- Lifetime quality double-injected keycaps
- FCC Class B certified
- Industry-leading five year warranty

Now! ONLY **\$129⁰⁰**
FOB Minneapolis, MN

OmniKey/102 with F-keys on the left

First keyboard to get back to the basics! 12 F-keys on left for fast one-hand combination commands. Readers of *Computer Shopper* named *OmniKey/102* their "Best Buy."



- Northgate's original 102 key design
- 12 function keys on the left
- Interchangeable ALT, CAPS LOCK, and CTRL keys
- Large L-shaped ENTER key
- Calculator-style numeric keypad with added equals key
- Five year warranty
- 60-day no-risk trial
- Separate inverted T cursor control pad
- Unmatched compatibility with IBM-type systems
- ALPS click/tactile mechanical key switches
- FCC Class B certified

OmniKey/102 ONLY **\$89⁰⁰**
FOB Minneapolis, MN

Inventory Reduction...Quantities Limited!



OmniKey/101
with F-keys
on top and
20% smaller
footprint

- Enhanced 101 key layout
- Interchangeable left CAPS LOCK and CTRL keys
- Calculator-style numeric keypad with added equals key
- Separate inverted T cursor control pad
- ALPS click/tactile mechanical key switches
- Unmatched compatibility with IBM-type systems
- FCC Class B certified
- 10-day no-risk trial
- One year warranty

OmniKey/101-I ONLY **\$69⁰⁰**
FOB Minneapolis, MN

HOURS: Mon. - Fri. 7 a.m. to 12 a.m.; Sat. 8 a.m. to 4 p.m. Central. Dealer and distributor prices available. Se habla español por su conveniencia.

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COMPUTER
SYSTEMS**

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Circle Reader Service Number 252

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www.commodore.ca

You can afford award-winning Northgate® performance!



Northgate makes it easy for you to own award-winning 286, 386™ and 486™ computer systems ... just say "charge it" to your Northgate Big 'N' credit card.

It's easy! Simply fill in the Big 'N' information form and send it to Northgate for prompt attention. Once you're approved, call our systems consultants, toll-free, to select the Northgate that's right for you.

Northgate leases systems too! Choose from flexible terms up to five years. It's never been easier to get high-performance Northgate systems than it is right now!

Fill out and return this form today!

Call Northgate Now!
800-548-1993

HOURS: Monday - Friday 7 a.m. - 8 p.m. CST
Circle Reader Service Number 250

NORTHGATE COMPUTER SYSTEMS
7075 Flying Cloud Drive, Eden Prairie, MN 55344

OPEN YOUR CREDIT CARD ACCOUNT BY FILLING OUT THE APPLICATION BELOW.

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

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

- JOINT CREDIT with another person. Complete entire application.
 INDIVIDUAL CREDIT complete only individual section.
 INDIVIDUAL CREDIT but rely on income of another. Complete entire application.

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

NOTICE TO WISCONSIN APPLICANTS
You must disclose your marital status:
 married
 unmarried
 legally separated

a. Personal Information

NAME _____ HOME PHONE (____) _____
 SOCIAL SECURITY NUMBER _____ DATE OF BIRTH ____/____/____
 PRESENT ADDRESS _____ CITY _____ ST _____ ZIP _____
 DATE OF RESIDENCE MO. _____ YR. _____ BUY RENT OTHER
 PREVIOUS ADDRESS _____
 EMPLOYER _____ DATE OF EMPLOYMENT MO. _____ YR. _____
 MONTHLY GROSS SALARY \$ _____ BUSINESS PHONE (____) _____
 PREVIOUS EMPLOYER _____ DATES OF EMPLOYMENT _____ TO _____
 Income from alimony, child support or separate maintenance payments need not be disclosed if you do not wish to have it considered as basis for repaying the obligation.
 ADDITIONAL MONTHLY INCOME \$ _____ SOURCE _____

b. Credit Information

PLEASE TELL US IF YOU HAVE: CHECKING ACCOUNT (Y/N) _____ SAVINGS ACCOUNT (Y/N) _____
 BANK LOAN (Y/N) _____ HOW MANY? _____ VISA (Y/N) _____ HOW MANY? _____
 MASTERCARD (Y/N) _____ HOW MANY? _____ FINANCE COMPANY LOAN (Y/N) _____ HOW MANY? _____
 DEPT. STORE CHARGE CARD (Y/N) _____ HOW MANY? _____ CREDIT UNION ACCOUNT (Y/N) _____ HOW MANY? _____
 OTHER MAJOR CHARGE CARDS (Y/N) _____ HOW MANY? _____

c. Joint Applicant's Personal Information

JOINT APPLICANT'S NAME _____ HOME PHONE (____) _____
 SOCIAL SECURITY NUMBER _____ DATE OF BIRTH ____/____/____
 ADDRESS _____ CITY _____ ST _____ ZIP _____
 DATE OF RESIDENCE MO. _____ YR. _____
 JOINT APPLICANT'S EMPLOYER _____ DATE OF EMPLOYMENT MO. _____ YR. _____
 MONTHLY GROSS SALARY \$ _____ BUSINESS PHONE (____) _____
 NAME AND ADDRESS OF NEAREST RELATIVE NOT LIVING WITH YOU _____
 RELATIONSHIP _____

d. Self-Employment Information

BUSINESS NAME _____ BUSINESS PHONE (____) _____
 TYPE OF BUSINESS Proprietorship Partnership Corporation IN BUSINESS SINCE _____
 YOUR ANNUAL INCOME FROM BUSINESS Gross \$ _____ Net \$ _____
 PERSONAL BANKER'S NAME _____ BANKER'S PHONE (____) _____

e. Customer Authorization

I authorize Northgate Computer Systems or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct of the best of my knowledge and belief. There are costs associated with the use of this credit card. To obtain more information about these costs, call us at 1-800-548-1993 or write to P.O. Box 59080, Minneapolis, MN 55459-0080.

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

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

APPLICANT'S SIGNATURE _____ DATE _____

JOINT APPLICANT'S SIGNATURE _____ DATE _____

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

BUYER'S SIGNATURE _____ DATE _____

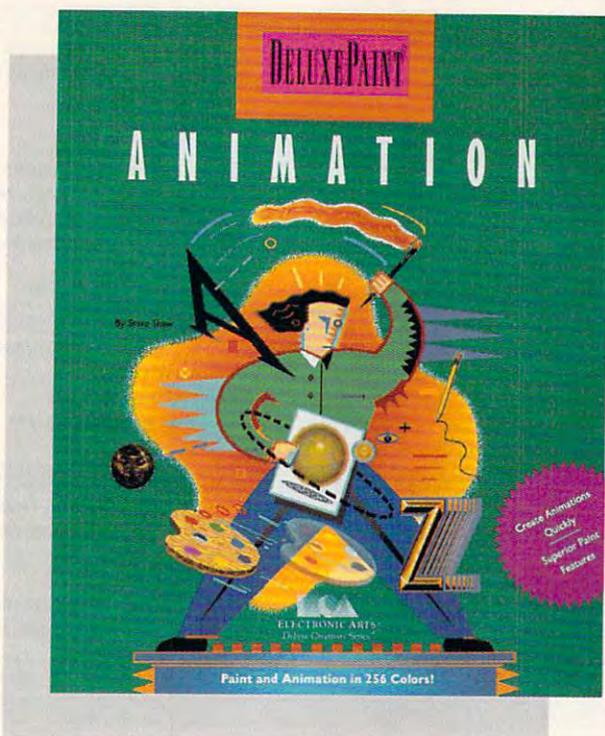
*This is a credit application. Upon approval, a credit agreement will be sent to you for your signature. This agreement must be signed and returned to activate your account.

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DISCOVER



COMPUTE CHOICE

WAYNE N. KAWAMOTO

MANIPULATE OBJECTS AND MAKE THEM COME TO LIFE IN THIS REMARKABLE ANIMATION PROGRAM

Animation makes anything possible. Elephants can fly, wooden puppets can come to life, rabbits can make wisecracks, and pitiful coyotes can spring resiliently back after being run over, blown up, and hurled down from precipitous heights.

Now *DeluxePaint Animation* from Electronic Arts gives you the power of the computer to create stunning animation sequences that rival Saturday-morning cartoons. The program's animation tools and first-rate paint will unleash your imagination.

I don't consider myself an artist (years ago I did design the back cover of my junior high school yearbook), but with this program and a reasonable investment of time, I could create animations that impressed me and everyone that I roped into watching them.

The basic idea behind animation is to create a series of frames, or *cels*, that differ slightly. If you rapidly view these frames in sequence, they create the illusion of motion. Everybody has seen cartoon flip books—the concept is the same on the computer and, for that matter, in the production of commercial cartoons.

DeluxePaint Animation (DA) allows you to paint and manipulate objects on individual frames. It will also create in-between frames, the ones needed to complete the illusion of motion between images.

At the most basic level, you can sequence the screens frame by frame and draw the different pictures. But you'll really want to take advantage of *DA's* powerful animation tools.

DA features an animation technique called *animpainting*. Here the

RY

computer automatically sequences frames while you draw. For example, if you want to show a ball moving around, you draw a ball, get into anim-painting mode, and just move the ball with your mouse as you want to see it in your cartoon. *DA* will automatically flip the frames as you draw, so when you replay the cartoon, the ball will fly around exactly as you drew it.

You can also create *animbrushes*. These are animated sequences that you can insert into other cartoons. This particular feature came in handy when I wanted a rotating planet in an outer-space animation that I was making. After first creating an endless looping cartoon of the spinning planet, I saved the entire sequence as an animbrush. When I put together the full cartoon with all of the elements, which included comets and moving galaxies, I merely inserted the animated planet into the scene.

DA includes some professionally created animbrushes—detailed birds, fish, and human figures. You can blend these moving figures into your own cartoons, almost as if they were animated clip art.



Manipulate objects any number of ways.



You can also use a variety of commands to have *DA* animate your images in delightfully impressive ways.

To change one object into another, you can produce transformations with the metamorphose animbrush. You create or select two objects and tell *DA* how many frames you want for the change; *DA* will provide all the in-between frames. The tutorial shows you how to make an amazing sequence in which an egg gradually turns into a chicken. The resulting animation is surprisingly smooth, even though you have very different shapes and colors.

With move commands, you can tell *DA* to move objects anywhere, rotate them, and even make them look as if they're flying toward or away from the screen. Using a Cartesian coordinate system (remember Algebra 1A in high school?), you can tell *DA* to move an object so many spaces, along any combination of axes and within a given number of frames. The results are images that go virtually anyplace on the screen, tumble, and even move away while gradually diminishing in size. The possibilities for movement are endless. You can even make your objects bounce and fall naturally as if they were real objects.

The program can also do color-cycling animation, in which sequences of color create the illusion of motion. Use this feature to make colorful movie marquees and falling snow.

You can also animate figures against scrolling backgrounds that are wider than your viewing screen. The characters can appear to walk along a street or through a changing forest. You cannot, however, create scrolling backgrounds in *DA*; you have to use the companion product, *DeluxePaint II Enhanced*.

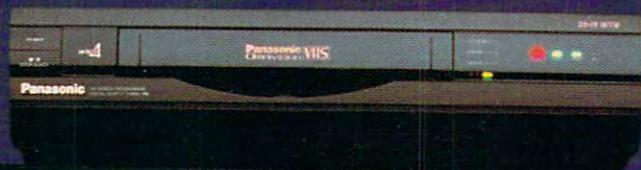
Three-dimensional effects can simulate the view from the cockpit of a plane, which is very much like the view in most flight simulators. *DA* can generate a moving horizon and land, and it even lets you do barrel rolls in your plane.

Besides being an animation program, *DA* is an excellent paint program. Bearing a strong resemblance to its cousin, *DeluxePaint II Enhanced*, *DA* has inherited virtually all the paint features and the easy interface. ▶

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Although I had never worked with *DeluxePaint* before, I found painting with it easy and the results impressive.

You can paint in 256 colors, which may at first seem overwhelming, but the interface lets you view all the colors at once for easy selection. Since subtle differences in hue can be hard to tell apart, I really liked the color-matching tool, which determines what color you have already painted with. All you do is select the tool and click on the color that you want to match in your drawing, and then *DA* automatically loads that color for your brush.

You can create impressive 3-D figures in the perspective mode. Here you position a vanishing point to which all of your objects will be oriented. As you create shapes to form the final object, *DA* alters them to fit your perspective.

You can also create stencils to mask areas of your drawings. Like electronic masking tape, the stencils allow you to color tricky areas without having to worry about painting over something else.

Of course, *DA* features the requisite array of painting tools you would expect in a high-end paint program. With these tools, you can create circles, curves, rectangles, and gradients of color; fill areas; adjust brush sizes; and magnify areas for more detailed drawing. I liked using the right and left buttons on my mouse to control different colors. This kind of control makes drawing and erasing easy. Another handy feature is the ability to alter brush sizes as you draw.

DA also provides a play utility that allows your friends to play your animation on their computers. A conversion utility lets you import pictures in other paint formats, and a camera function will take pictures of graphic screens so that you can use them in *DA*.

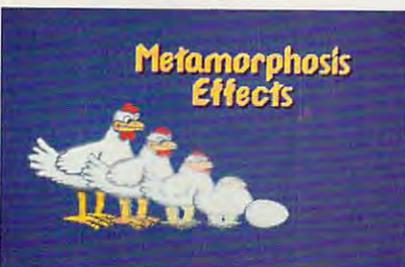
I don't know what *DA*'s actual limits are, but I created animation that had at least ten different elements simultaneously moving. Birds fly with flapping wings, figures walk or dance, titles rotate and grow in size, pie charts "fly together," balls bounce away in the distance, images transform into other objects—the effects are endless.

The program turned out to be a lot of fun. I created a pretty decent picture of Flounder, the fish from Disney's *The Little Mermaid*. After saving this as a brush, I animated him against a blue ocean backdrop. Seeing Flounder wink and swim around en-

chanted my four-year-old daughter.

Inspired by an article that discusses how directors use computer animation to preview special effects in movies and because I happen to be something of a Trekkie (both generations), I made a cartoon of the opening sequence from "Star Trek."

My final cartoon was complete with moving planets, shooting stars, and, of course, an Enterprise starship that jumped to warp speed. All I needed was Captain Jean Luc Picard's opening narration.



Create remarkable transformations with the program's metamorphose animbrush.



You can insert animbrushes (animated sequences) into other cartoons.

Generally, the results are excellent, but don't expect classic Disney quality. With some work you can probably get results similar to the limited animation shown on children's Saturday-morning television. The professionally created examples included with the program, particularly the mermaid and the spinning King Tut, are truly spectacular.

You can use *DA* to develop attractive sales and point-of-purchase demos, illustrate educational concepts, and preview sequences before filming them. But I think that this program is, most of all, a colorful, animated screen full of fun.

Prepare for some investment of time to get started. It takes a while to really get the animation concepts down. The interface and screens are intuitive and easily understood, particularly if you've used paint programs before. The program relies on a

mouse, and you can use keyboard shortcuts.

The thick 295-page manual is very well written, considering that the writers had to explain an entire paint program and then the animation features. The manual's only drawbacks are, first, that it asks you to use some features before it explains them and, second, that some icons are hard to read. But overall, it gives excellent step-by-step examples and starts you on your way.

The hardware requirements are steep. You must have a VGA monitor and card and a mouse. *DA* runs the program in the 256-color, 320 × 200 VGA mode. Also, the manufacturer recommends that you have at least a 286-based computer or faster, and you must have a hard drive to hold the program's three megabytes of data. (Actually, the manufacturer encourages you to have five megabytes of free hard disk space.)

With *DA*, the PC now has animation power comparable to that of the Amiga and Macintosh. *DA* is an outstanding choice if you're looking for an animation program. There's another highly regarded animation program called *Autodesk Animator* that's also a *COMPUTE!* Choice (see January 1990 *COMPUTE!*); it is, however, more expensive.

For those of you familiar with the older animation program *Fantavision*, *DA* belongs to an entire new generation that can handle more elements, avoid distorting objects when rotating, and give you a real 256-color paint program to draw with. Comparing *Fantavision* with *DA* is like comparing the MS-DOS text editor *Edlin* with a high-end word processor.

DeluxePaint Animation is an excellent program. It not only gives you comprehensive paint and animation capabilities, but it also makes using them fun and easy.

Ease of Use	★★★★
Documentation	★★★★
Features	★★★★
Innovation	★★★★

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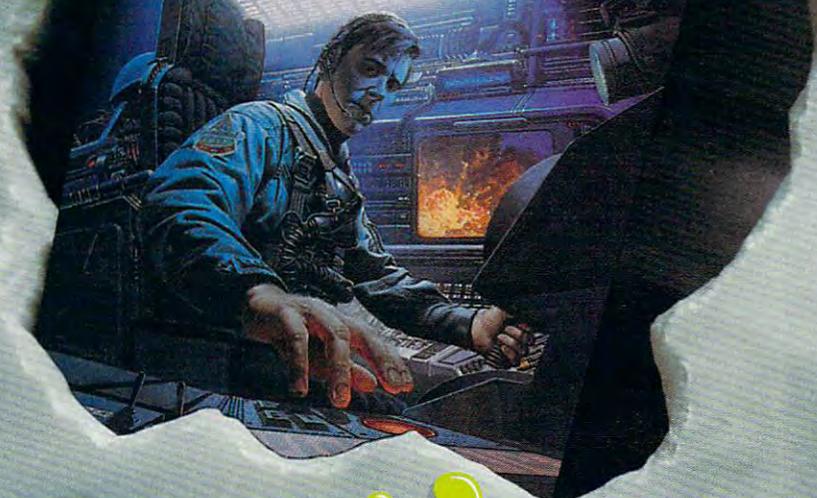
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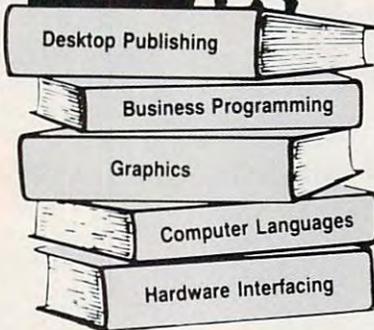
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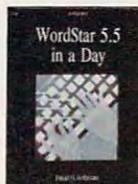
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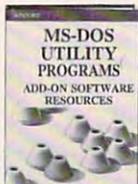
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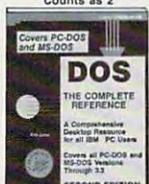
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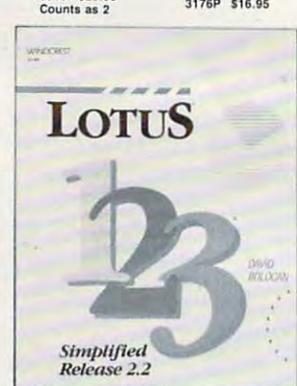
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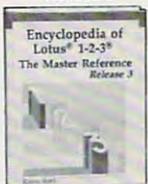
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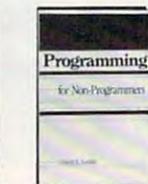
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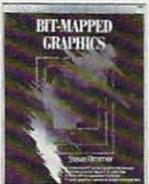
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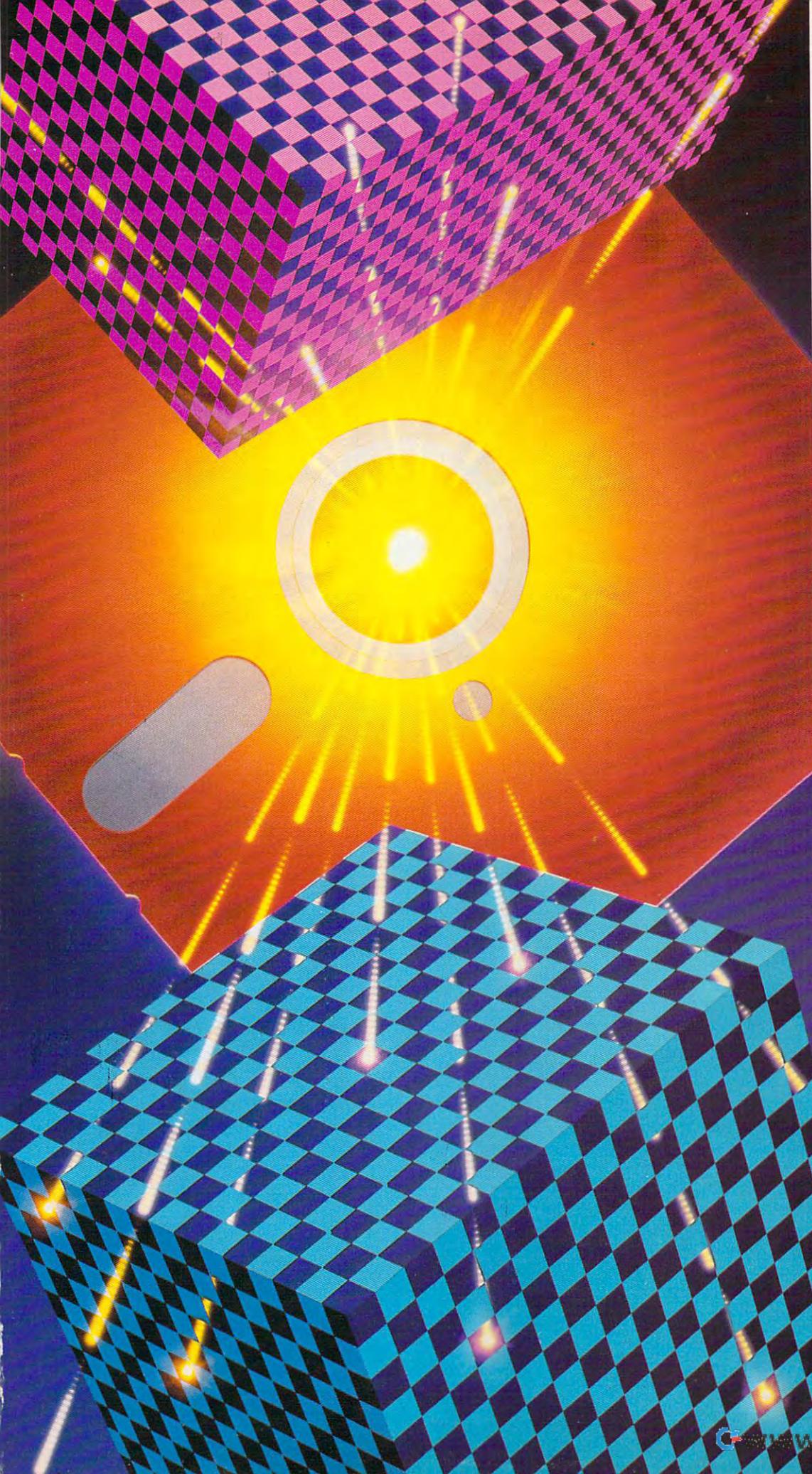
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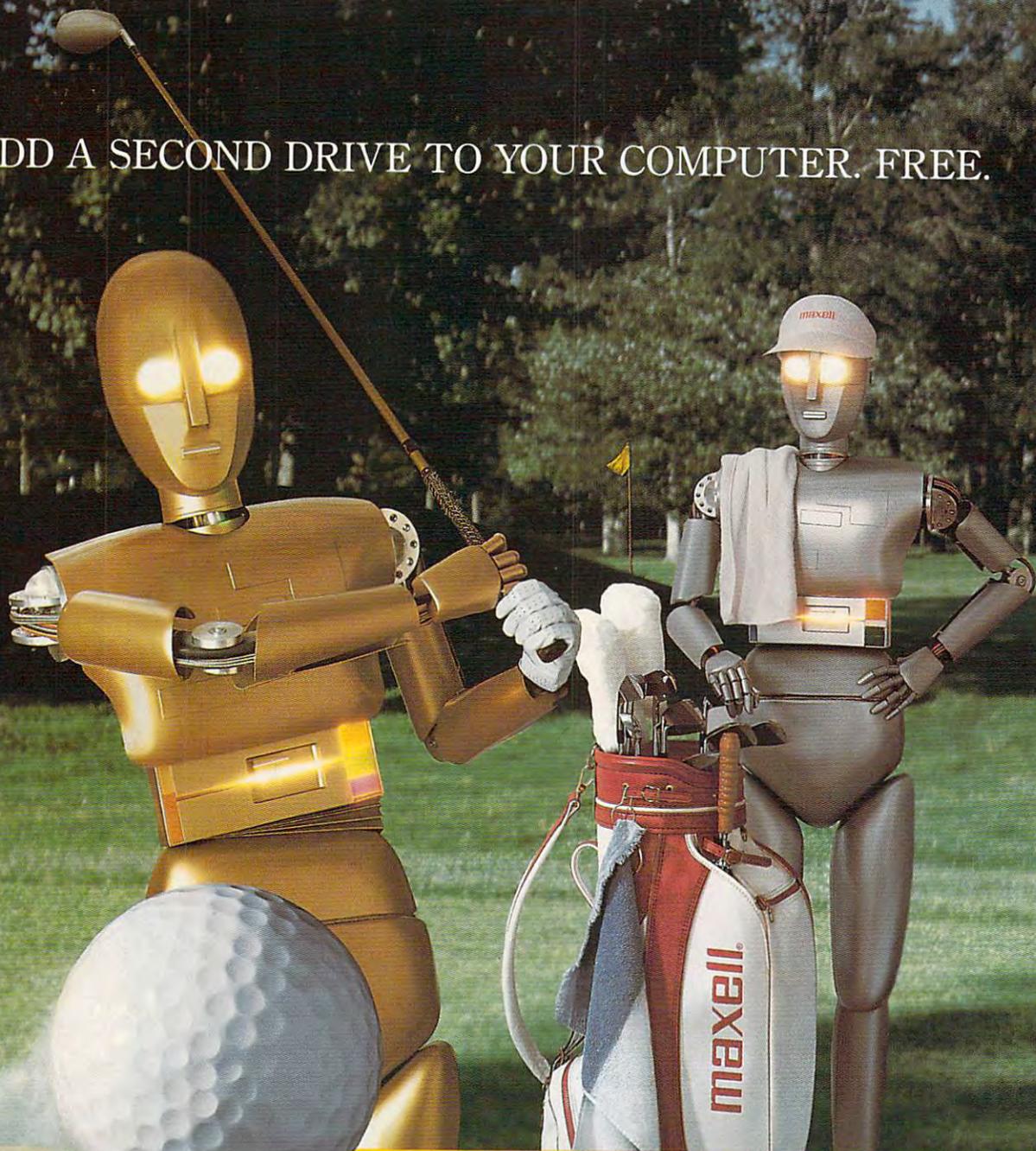


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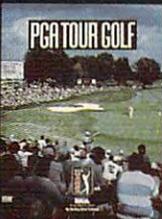
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THE WORLDS OF ELECTRONIC GAMES

OMNI AND COMPUTE LOOK AT AN ENTERTAINMENT REVOLUTION

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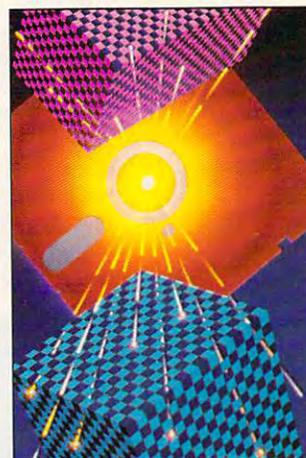
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Electronic games grow more sophisticated every year. This special section looks at some of the exciting interactive worlds available today, and some that might be available tomorrow.

THE PAST, PRESENT, AND FUTURE
OF ELECTRONIC GAMES

ELECTRONIC WORLDS WITHOUT END

BY KEITH FERRELL

They're everywhere! In less than two decades—remember *Spacewar* and *Pong*?—interactive electronic entertainment has become a global fact of life. In coin arcades, in living rooms, and increasingly on portable game units, electronic play has never been more popular, more sophisticated, or more widespread.

It's easy to understand why. Today's electronic games, whether played on computer, dedicated game console, or coin-operated unit, are more than just diversions. Good ones become gateways to worlds we might otherwise never visit. The best achieve something like art.

Basically the appeal of inter-

active electronics is twofold. First, video and computer games draw on our sense of fun, our need for play. More subtly, the games appear at least to provide some long-desired control over the television screen. This point might be argued by those dedicated gamers—and their parents, spouses, and friends—who spend dozens of hours locked in electronic interplay. Who's in charge—game or gamer? Interactive addiction, indeed, might well be a subject for investigation.

Rarely has an addiction been so appealing. Through interactive electronics, we can journey to the far future or the distant past, achieve athletic greatness, become armchair generals out to change the course of history, challenge our eye-hand coordination, simulate high-tech aircraft and vehicles, play games that teach while they entertain.

We are reaching a point where interactive electronics can re-create, to one degree or another, virtually *anything*.

It didn't start out that way. In the Seventies, when the first video games were introduced, many thought the new entertainment media would be a flash in the pan. The first hint that video games had struck a responsive chord with the public came when those early arcade machines began jamming—from an overload of coins!

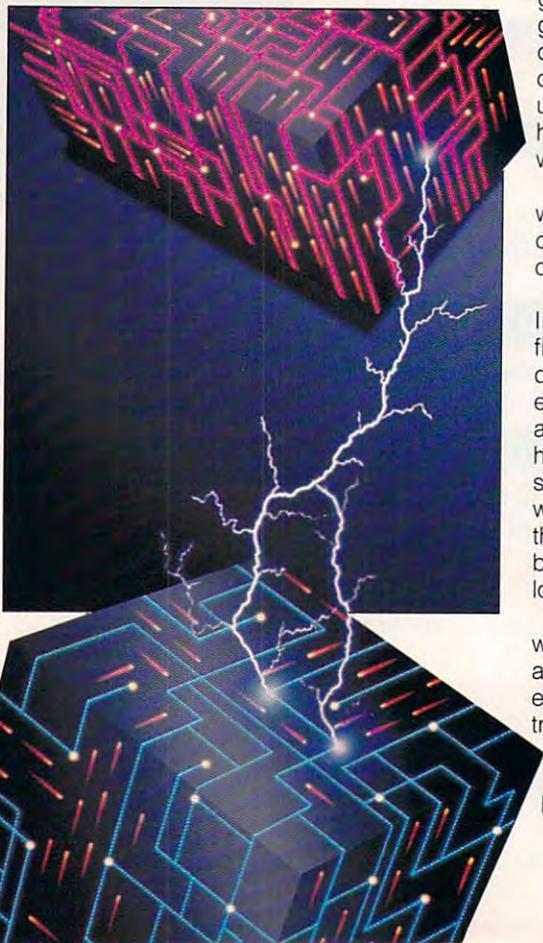
What worked in arcades worked even better at home, as Atari found with its phenomenally successful Atari 2600 cartridge console. Millions of consoles and tens of millions of games moved into households almost overnight.

At the same time, many households embraced early personal computers, notably the Commodore 64, the Apple II, and early IBM PCs. While the computers ostensibly served higher purposes than entertainment—word processing, financial management—the platforms immediately attracted the talents of game designers.

What the entertainment marketplace giveth, that same marketplace taketh away. By 1984 the initial video game boom had collapsed cataclysmically, with dozens of companies going bankrupt as quickly as they'd flourished. Legend has it that millions of Atari cartridges, unwanted by retailers or the public, were buried in a desert landfill somewhere in the American West. Informed analysis suggested at the time that the video game boom was over, its flash-in-the-pan nature having simply taken a little longer to play out than was first suspected.

You can't keep a good entertainment medium down, though. The computer software side of the industry never shrank as much as the cartridge side, and excellent disc-based games continued to appear throughout the Eighties. Nor was the cartridge environment as dead as the analysts thought. By 1987 a new name was making noise in the field of video games: Nintendo. By 1990 Nintendo had not only revived the video game market, it had nurtured that market to a size and scope far beyond even Atari's heyday. Nintendo clothing, Nintendo books, Nintendo television, even Nintendo cereal have all appeared over the past three years as

We are reaching a point where interactive electronics can re-create virtually anything.

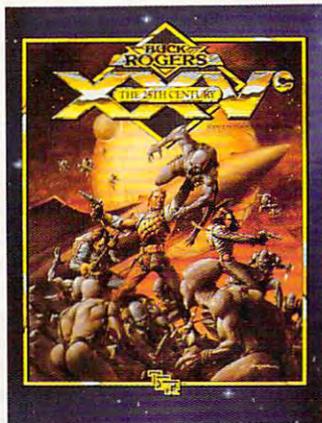


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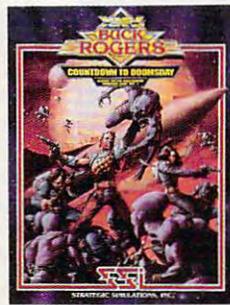
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Earth's future is in your hands! Look for these games at book, computer, hobby and comic stores everywhere.



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Before long, home entertainment systems will let us write, produce, direct, and star in our own movies.

the company achieved billions of dollars in sales each year.

Those sales made clear an important point: Interactive entertainment had become a fixture of the modern household and would remain so. In 1991, there are more approaches to interactive entertainment than ever before. Nintendo continues to dominate the cartridge scene, although its dominance faces stiff competition from Sega and NEC. Sega's Genesis system boasts a more powerful processor and more sophisticated graphics and sound than Nintendo's, while NEC's TurboGrafx offers a CD-ROM (compact disc, read-

only memory) drive whose storage capacity is enormous. New systems such as SNK's Neo-Geo continue to ring changes on the basic game console format.

Portability is another area of excitement, again defined by Nintendo. The company's GameBoy achieved perhaps the clearest codification of interactivity's popularity when, on a recent edition of *Real Life With Jane Pauley*, a child was shown playing with a GameBoy in the back of the covered wagon in which his family was experiencing a "frontier" vacation. As far as video games go, you *can* take them with you—and you may not be able to get away from them. Atari, NEC, and Sega are all mounting efforts to challenge Nintendo in the portable gaming marketplace.

I'll admit a prejudice right here: I think the best, most exciting games around are developed for personal computers. (Having said that, I'll also own up to my own interactive entertainment bias: I use a fast 386 PC with super VGA graphics, an NEC CD-ROM drive, and Ad-Lib soundboard with speakers attached. Now, *there's* an entertainment system.)

The best PC games are elegantly programmed, taking advantage of the machine's power and minimizing its vulnerabilities in order to enhance the electronic illusions being created. Indeed, some games are far more elegantly programmed than the business software for which the PC is primarily intended. Word processor and spreadsheet designers and programmers could take more than a few pages from the book of game maestros.

Today even education dances to an increasingly electronic, interactive beat. Educational software is often as entertaining as game software, with the added benefit that you're improving your mind as you play. Many games, in fact, have serious educational underpinnings, presented with distinct points of view.

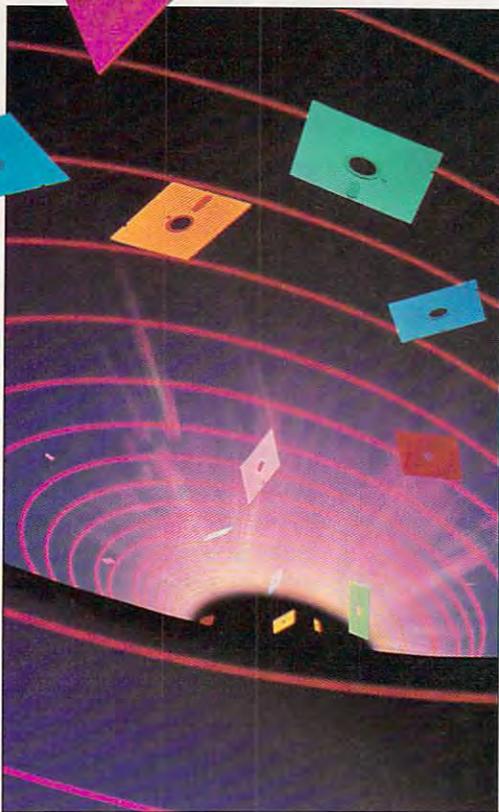
That's a thumbnail sketch of today's worlds of electronic games. Diverse and diverting, the games have spread throughout the world and show no sign of retreating.

And tomorrow?

The skills learned over the first decade of interactive entertainment's life will serve as the foundation for the next generation of games. Programmers' toolboxes now contain thousands of routines and shortcuts. Just as film, recorded music, and television have libraries of effects, so will the entertainment software industry continue to add to its collection. Don't be surprised to see many interactive effects actually mirroring familiar film techniques. Before long, home entertainment systems will let us write, produce, direct, and star in our own movies.

The software itself, both on disc and on cartridge, will grow more sophisticated. The distance between electronic reality and the real world will continue to shrink. Already we're seeing sports games that simulate everything from the influence of a breeze on a baseball to the effect of blades of grass on a golf ball's lie. Historical games incorporate social and political factors in warfare simulations. Simple arcade adventures are hardly simple anymore, with action mov-

CONTINUED ON PAGE 86



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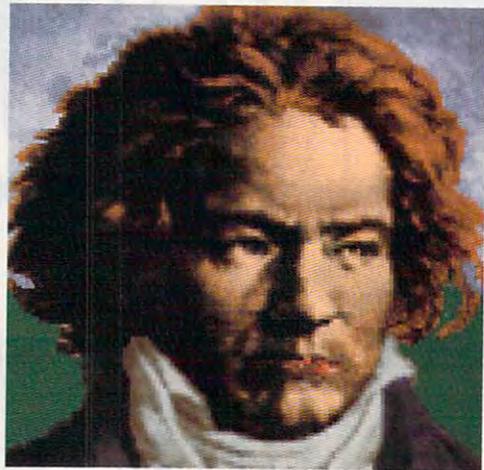
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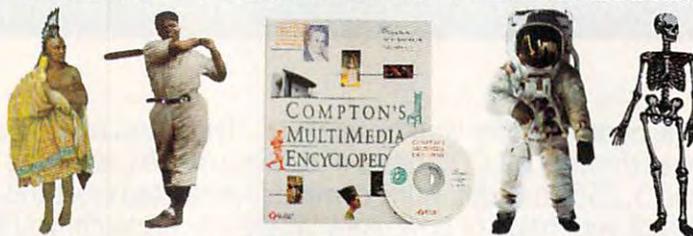
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REALMS OF ADVENTURE

From dungeons and dragons to galaxies
far, far away, computer
games provide a wide world of fantasy

BY KELLEE MONAHAN





Who goes there?" bellows the Dungeon Master. "I, the brave knight. I have come to defeat the Red Dragon, he who has robbed and pillaged the countryside. I've come to reclaim his lair's treasure, of which he is undeserving." The spell is cast and you enter the world of game role playing. The forces of evil stand before you. What will you do? This is medieval legend in the remaking. Role-playing gamers can journey to worlds of gothic horror, wild West adventure, or epic saga.



The more you know about the historical period you're playing in, the better off you are. Gary Gygax, a Chicago insurance broker, designed the first role-playing game, *Dungeons and Dragons*, in 1974. Now the game and publishing company TSR provides fantasy adventures for some 10 million players worldwide. Frank Beuttell, a TSR executive, says, "In spite of the economy, business is strong. People would rather do without other things before giving up their hobby."



interactive adventure games take you around the world—and beyond. Clockwise, from upper left: Starship pilots race for the hangar in Origin's *Wing Commander*. Spectrum HoloByte takes off with *Flight of the Intruder*, based on the Stephen Coonts novel, and *Student Driver*, fulfilling every Sunday driver's fantasies. Broderbund combines entertainment and astronomy education in *Where in Space Is Han Solo?* And the company's *Carmen Sandiego* will be a Saturday-morning television program.

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appearance in print — from the February 1935 issue of AMAZING Stories.

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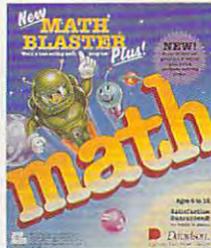
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SOFTWARE SELECTION GUIDE

Key to Colors:

- Ages 3-7
- Ages 7-10
- Ages 10-13+

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You've got the children. You've got the computer. Now you can bring the two together and turn leisure time into learning time with software that's fun! The Learning Adventure Computer Club takes the work out of software selection for you. We review hundreds of computer programs for youngsters — invite children like yours to test them — then select only the ones that combine active fun with measurable learning in:

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How the Club Operates:

Try your first computer program FREE for 15 days at no risk or obligation. Just select the software package of your choice, fill out the coupon and mail it today. We'll send you the program you select. If you are pleased with the program, you'll pay for it at the Charter Members' price of just \$9.95 plus shipping and handling, a savings of up to \$50.00 off the retail price.

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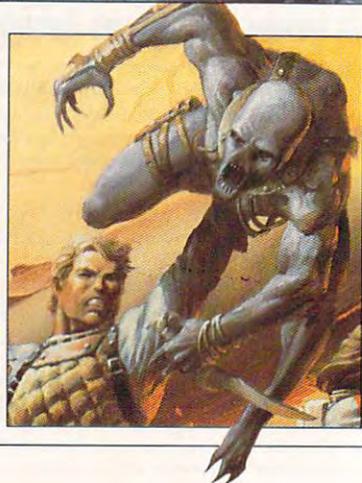
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YES! Please send me the program I have indicated below to preview for 15 days at no risk or obligation. I may return the program after 15 days and have no further obligation. If I am pleased with the program, I'll pay for it at the special new member price of only \$9.95 plus \$2.95 shipping and handling, and enroll as a new member under the terms outlined on this page. As a new member, I need to buy just 3 more selections at regular club prices in the next year and may cancel any time thereafter.

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1. Please send me item number _____ to preview. (Please fill in identification number of program shown above.)
2. AGE of child (check one):
 3-7 7-10 10-13+
3. Computer you own and size of disk required (check one):
 IBM/Tandy & Compatibles with 5 1/4" disk drive
 IBM/Tandy & Compatibles with 3 1/2" disk drive
 Apple II Family & Compatibles with 5 1/4" disk drive
4. Child's name _____
 Child's birthdate: Month _____ Day _____ Year _____
5. Please check below if you have a:
 Printer Modem Color Monitor
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Buck is not

the only one concerned about the future: TSR has other worlds in mind.

With half a million new gamers annually, high technology is a constant interest for TSR. "We are looking to future applications of CDs with filmlike effects, computer bulletin boards, and virtual reality," says TSR West's creative director, Flint Dille. Players can even help clean up the world in which they role-play. "Buck displays an environmentalist approach from the darkest side," says Dille.

GAMES THAT TEACH ARE MORE FUN THAN EVER

LEARN AND PLAY, PLAY AND LEARN

The computer has long been viewed as a boon to the educational process, and educational software designers are making the most of it. Many educational software publishers are taking lessons from computer game designers, using entertainment techniques to make learning more appealing to students.

Entertaining educational games and products span the classroom curriculum. Publishers such as Britannica Software, Davidson and Associates, The Learning Company, and Broderbund use software to make math, language arts, social studies, and the sciences more accessible to today's students, both at school and at home.

The engagement offered by interactivity serves as a spur to study. At the most basic—and in some ways most important—level, that of drill and practice, the computer offers an unexpected advantage over human teachers. The software doesn't get tired, processors don't lose patience; an educational program is able to continue working with a student long after a human teacher would tire or grow impatient.

But drill and practice isn't everything, merely the foundation on which everything else rests. What do software designers build on top of drill-and-practice sessions? Problem solving, analysis, deductive reasoning, word problems, real world situations, and more—all of it educational and all of it disguised as play.

Consider The Learning Company's latest entry in its *Super Solvers* series: *Challenge of the Ancient Empires!* Using techniques familiar from ar-

cade games, *Challenge's* designers pit players against mysteries involving ancient treasures and lost civilizations. In the midst of arcade sequences, students also find themselves solving mysteries, putting together puzzles, and making decisions.

Davidson and Associates has produced a long-running series of educational software products aimed at coordinating students' mastery of basic

Educational entertainment remains in its infancy, yet those companies that have made a commitment to the field are assembling an array of tools and techniques that will serve them well as technology evolves.

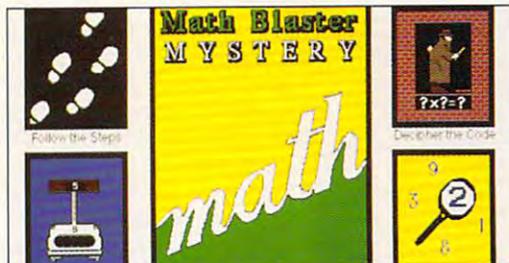
Oddly—or perhaps not so oddly—the technologies that have the strongest hold on the minds of the young have yet to make much of an effort to provide educational entertainment



Challenge of the Ancient Empires! (left) and *Math Blaster Mystery* (below) let kids play while they learn.

vocabulary and math skills and translating those skills into higher-order thinking. *Math Blaster Mystery*, for example, helps students make the transition from fundamental math skills to applying those skills to real world problems.

Britannica Software's *Revolution '76* attempts nothing less than a re-creation of the American Revolutionary War, couched in the form of a game but filled with interesting facts and insights. Even young players discover very quickly the human, fiscal, and emotional side of the war for independence, as well as its political and military nature.



for their players. Nintendo, Sega, and NEC doubtless know which side of the market their bread is buttered on, yet it would be refreshing, and probably profitable, for the big video game companies to offer at least an occasional educational cartridge. □

DIFFERENT CULTURES PLAY DIFFERENT GAMES. OR DO THEY?

THE GAMING GLOBE

BY BOB LINDSTROM

North America, Europe, and Japan have all embraced electronic games. But not the same games, or even the same style of games.

Let's hear it for Mom, apple pie, and joysticks. The video game and computer game are uniquely American inventions. And today, nearly 30 percent of American households own video games. In 1990 Americans bought \$5 billion of video game systems and cartridges. Much of this video game excitement must be credited to Japan-based Nintendo. The company's domestic subsidiary has sold 25 million Nintendo Entertainment Systems (NES) to American homes.

Interestingly enough, 50 percent of those games are being purchased by adults, and not just to keep the kids quiet. "There is a change in awareness about video games among adults," says Nintendo Gamemaster Howard Phillips. "Just as cartoons used to be just for children, animation is now seen as entertainment for adults as well as kids. Video games also used to be considered 'kid stuff,' but video entertainment is for everybody."

The computer game precursors of video entertainment have always targeted adults. It's one of the reasons that American game designers remain the international champs of computer simulation software such as flight simulators, urban simulations, and other "you are vicariously there" illusion makers.

"In Europe the computer game industry was much more youth oriented than in the United States. In the States the disc-based IBM PC market attracted a much more mature audience looking for more mature games," explains Sid Meier, vice president and cofounder of MicroProse Software, Inc.



Meier notes that the next generation of video game systems may well be a growing source of adult entertainment in the future. And older gamers seem poised and ready to confirm Meier's theory.

"There is an opening for a standard game machine with the power to do simulations and the household penetration to be a commercial force," Meier says. "Then you'll see cartridge-based simulations with a lot more sophistication."

Japanese students stand in line up to five hours to be the first to buy new games for the Nintendo Entertainment System (called the Famicom in Japan). Stores are asked to sell cartridges only during after-school hours in order to stem the waves of school absenteeism accompanying the release

of popular games. Role-playing enthusiasts snapped up 1.3 million copies of the latest installment of the *Dragon Quest* series in a single day in early 1990. And Japanese fans of the American-born *Ultima* game series clamor for *Ultima* comic books, compact discs, and a cartoon series appearing on Japanese TV.

There is a virtual video game mania in Japan, according to Corey Sandler, coauthor of Bantam Books' *The Ultimate Unauthorized Nintendo Game Strategies* series. Last year in Tokyo's Akihabara district, which has a concentration of consumer electronics stores, Sandler found "lines of children aged ten to fifteen that went on two deep for about four blocks. In the Japanese style, it was completely order-

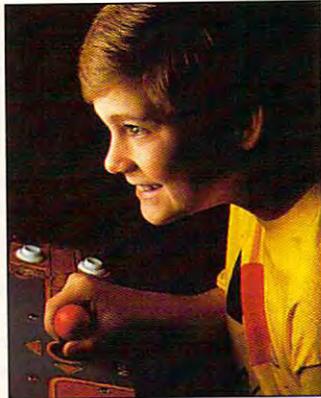


ly. When I got to the front, I found it was kids waiting to buy Nintendo's *Super Mario Brothers 3*."

Children don't have a monopoly on video game compulsion, though. "Adults are also involved with video games in Japan," Sandler notes. Japanese players can download new products directly from the manufacturer to their home systems. All that is needed is a telephone connection and a credit card.

Which games are most popular? "The video games we get here reflect what's been successful in Japan," says Sandler. "But the most popular game categories are role playing, baseball games, and, of course, the classic arcade action games."

As in the United States, Nin-



tendo reigns in Japan as the most popular video game system. In 1990, NEC's TurboGrafx-16 (known as the PC Engine in Japan) approached NES's sales. Nintendo will counterattack with its powerful next-generation Super Famicom, and the video game system "wars" will intensify throughout 1991.

Industry observers believe that the pitched battle will rage in the United States in late 1991 with Nintendo, NEC, and Sega's Genesis as the principal combatants.

Depending on their generation, Americans perceive the United Kingdom and Europe as the birthplace of the enduring popularity of the Beatles, or the cradle of profound Western art and literature. Just don't look for much that is enduring or deep in British and European video game culture. "It's a lot of sizzle and no meat," explains game designer Chris Roberts, a Briton who is director of new technology for Origin Systems in Austin, Texas, and designer of Origin's *Wing Commander* spaceflight simulator. "In the United Kingdom and Europe, we don't go for great strategy games, or

deep and complex games. It's very flashy graphics, great sound, and arcade action," says Roberts.

In the hit-driven European marketplace, a game for the popular Commodore Amiga or Atari ST computer may sell 100,000 copies during its first month of release; "then it will be dead," says Roberts. As a result, European designers favor arcade games that are fast to create and provide the maximum in "quick, instant gratification."

In the quest for buyer gratification, however, the Europeans have become the masters of breathtaking computer game spectacles. Products such as Britain-based Psygnosis' *Shadow of the Beast I and II* boast exotically detailed artwork, stunning animation, and ear-torching Euro-rock musical scores.

Unlike the United States, Europe has not taken cartridge-based game systems like the NES to its Old World heart.

"Since the Europeans are very sensitive to the quality of sound and graphics, not that many people want to buy Nintendo-looking games," comments Roberts. Game players who have fried their eyes on the sizzling graphics of the Amiga or Atari aren't interested in the less colorful visuals of the NES.

"But the new sixteen-bit machines may make inroads in the United Kingdom and Europe," says Roberts. The graphic quality and competitive pricing of these systems, compared with computer system price and performance, may attract Europeans, who traditionally have limited disposable income. □

SCIENCE-FICTION GAMES MAKE THE MOST OF COMPUTER TECHNOLOGY

FAR STARS AND DISTANT WORLDS

Science fiction and interactive electronics are made for each other. There's something, after all, science-fictional about interactive games themselves, about the act of plugging yourself in to an artificial world over which you exert total control.

For a while it looked as though electronic SF might consist solely of dueling space-

craft. *Spacewar*, one of the first successful arcade games, pitted starships against each other in a universe filled with gravity wells, stars, and black holes. *Asteroids*, not long after, made the universe simpler and struck a more popular chord: Give players a spacecraft and weapons, then let them blast away to their hearts' content. Arcades and video game consoles have gone far with this basic approach.

SF on computers, however, has become more sophisticated. In the mid-Eighties, for example, Electronic Arts' *M.U.L.E.* provided players with a more challenging universe, letting them dispatch robots to explore and establish

trade. *Elite*, from Firebird, created a vast starscape, populated it with warriors and pirates, and sent players forth to live or die electronically.

Some companies have even specialized in SF software. Texas-based Interstel built an entire gaming universe around its *Starfleet* series. Fans of hard-core space combat flock to Omnitrend's products, notably the *Breach* line. In *Breach* you assume the role of a leader in an elite military outfit: Dropped into dangerous situations, it's up to you to command your troops, accomplish predefined missions, and keep yourself alive so that you can fight again.

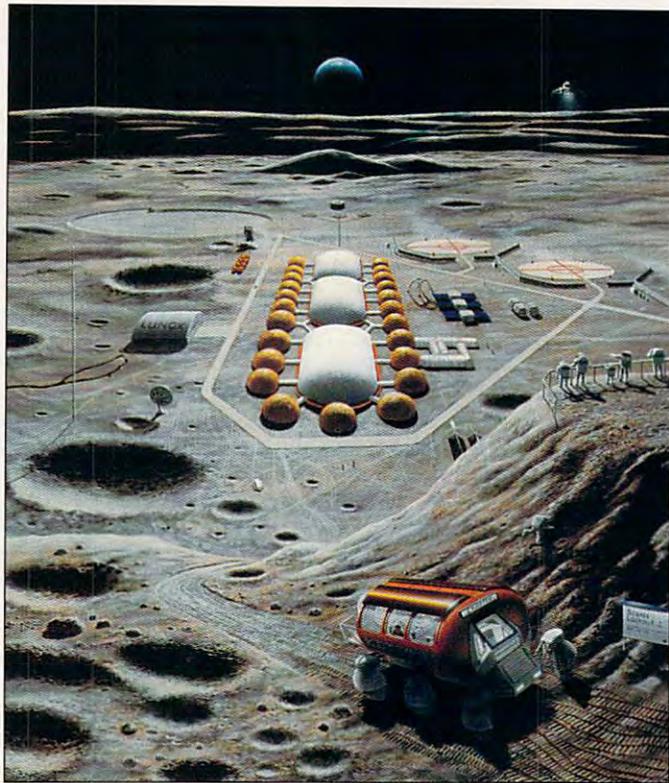
Software companies continue to hone their skills in the creation of science-fictional universes. Electronic Arts' *Starflight* series offers players hundreds of worlds ripe for exploration and exploitation, along with a galaxywide mystery to be solved. *Midwinter* from Microplay puts you in a post-apocalypse world, challenging you to save civilization.

Virgin Mastertronic's *Overlord* gives you the tools to rebuild worlds and create a galactic empire. Sierra On-Line's *Space Quest* series gives interstellar adventure a satirical twist. Access Software makes deadly future streets come alive in games such as *Crime Wave* and *Countdown*. And Origin's *Wing Commander* brilliantly reinvents spaceship combat in a game that screams for a fast PC and a good sound system.

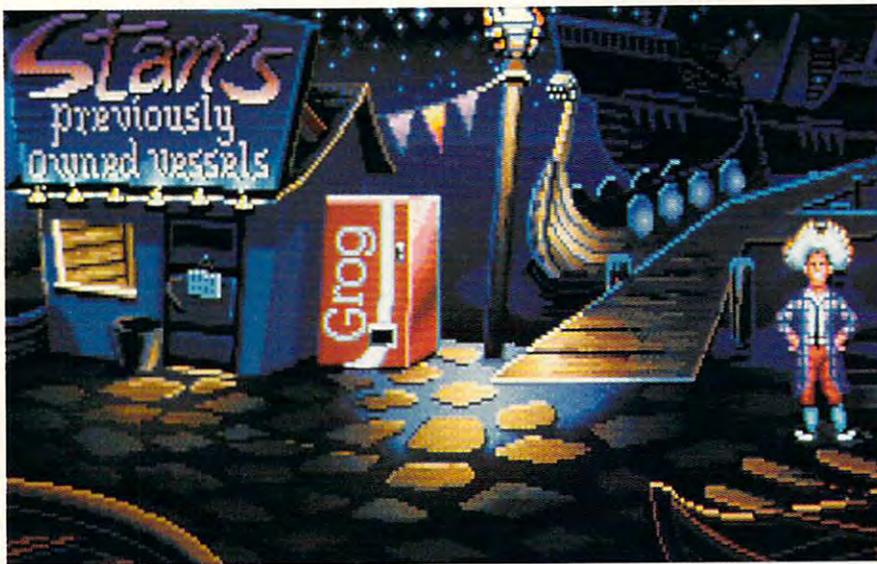
In recent years some science-fiction writers' literary works have made the transition from printed page to electronic screen. *Omni* contributors Wil-



B.A.T. (above) provides danger and adventure in time, while *Moonbase* (right) takes a hard look at exploiting the harsh lunar environment.



THESE PIRATES HAVE TONGUES AS SHARP AS THEIR SWORDS.



Lucasfilm™ Games' swashbuckling new graphic adventure lets you trade insults with some of the saltiest seamen to ever sail the seven seas.

In *The Secret of Monkey Island*,™ you'll sling one-liners with a fast-talking used ship salesman, a sarcastic swordmaster, a wisecracking corpse, and a prisoner whose breath would stop a horse. You'll also hunt for buried treasure, chase after a beautiful woman, and—perhaps—unravel one of the twistiest plots in the history of adventure gaming.

You're short, broke, clueless and friendless.

And you've just arrived on Méléé Island seeking fame and fortune. Explaining to anyone who'll listen that you want to be a pirate.

Being the easy-going types they are, your new pirate pals invite you into the club. Just as

soon as you've completed three *tiny* trials.

Among other things, you'll need to sedate some piranha poodles, burglarize the governor's mansion, and do business with the scum of the earth. And if that's not enough, you'll have to figure out whether the 300-pound voodoo priestess covets your rubber chicken, fetid fish, pack of breath mints, or...

If the brigands don't grab you, the graphics will.

Lucasfilm Games set today's graphic standards with games like *Loom* and *Indiana Jones and the Last Crusade*. Now *The Secret of Monkey Island* ups the standards a few more notches with

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has been improved even more. So have our sound effects, which are backed by a captivating calypso and reggae music track.

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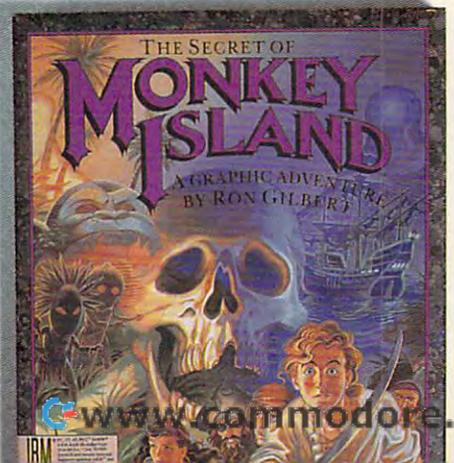
Or send a self-addressed, stamped disk mailer to: Monkey Demo, PO Box 10228, San Rafael, CA 94912.



So act fast, think fast, and enter fast. Because while playing *The Secret of Monkey Island* is an adventure, winning the Treasure Hunt is a real trip.

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The Secret of Monkey Island is available for IBM and 100% compatibles in 16-color EGA and 256-color VGA versions. Visit your retailer or order directly with Visa/MC by calling 1-800-STARWARS (in Canada 1-800-828-7927). * and © 1990, LucasArts Entertainment Company. All rights reserved. IBM is a trademark of International Business Machines, Inc. 3M is a trademark of 3M Corp. AdLib is a trademark of AdLib, Inc. Cruise prize arranged with the "Fun Ships" of Carnival Cruise Lines, The Most Popular Cruise Line In The World, ship's registry: Bahamas and Liberia.

William Gibson and George Alec Effinger have seen their works become interactive computer games. Interplay transformed Gibson's *Neuromancer* into an interactive environment that captured many of the novel's cyberpunk details. Effinger himself worked with Infocom (a di-

bytes of data, imagery, and sound on a single disc. With that sort of capacity you can look forward to games that talk, images that are animated with almost lifelike movements, and even worlds whose visual richness approaches that found in a television program.

with the increasing respectability of interactive entertainment as an art form, will go a long way toward attracting better storytellers.

As interactive electronic media become more widespread, and their capabilities more supple, we may see whole

Crashing
suns and
exploding
spacecraft are
all in a
day's work
in *Star Control*.



vision of Mediagenic) on the creation of *Circuit's Edge*, an electronic version of the future Middle East he writes about in such novels as *A Fire in the Sun*. What, one wonders, might a Larry Niven or Frederik Pohl produce if teamed with the right programmer?

New technologies, of course, will make electronic SF even more convincing. CD-ROM offers the vast storage capacity of a CD, making it possible to store hundreds of mega-

Further down the technological highway we can expect virtual reality games that will let you essentially "step into" your computer screen, or fool you into thinking you've done so. Imagine sitting in your favorite easy chair and having it transformed as if by magic into the center seat of the starship *Enterprise*. Can *Star Trek: The Next Generation's* holodeck be far behind?

The appeal and possibilities of the new technologies, along

new approaches to storytelling and world building. Science fiction creates myths for a technological world; interactive SF may well use technology itself to underpin those myths. Look for the next renaissance in SF to flow, at least in part, from interactive electronics as well as the printed page and film.

Science-fiction games are indeed growing up with computer and video game technology. Next stop, the stars.... □

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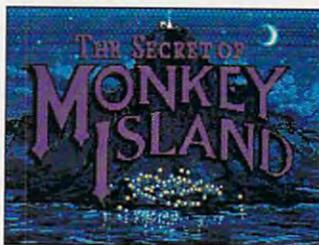
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INTERACTIVE ELECTRONIC VOYAGES OF DISCOVERY ATTRACT ARMCHAIR ADVENTURERS

EXPLORATION GAMES



Pirates! (top) sends you forth to conquer the Caribbean, while *The Secret of Monkey Island* (bottom) offers more humorous explorations.



The impulse to explore is as old as the human race. It's an impulse that's been eagerly adopted by developers of entertainment software.

Take a video or computer monitor. Place a character or a vehicle on it. Let the player know there's an electronic world awaiting discovery, and watch what happens. That old human impulse comes into play, and via keyboard, joystick, or mouse, the exploration begins.

Some of the earliest computer and video games were built around the explorative urge. Fantasy role-playing games such as Origin's *Ultima* or Nintendo's *Zelda* draw as much on the desire to see what's around the next corner as they do on the desire to face dreadful monsters or cast powerful spells. Just as much of the most popular fantasy literature is quest based—heroes on a journey through unfamil-

iar territory—so does much of electronic fantasy take the quest as its theme.

Some quests are more realistic. *Seven Cities of Gold*, an early title from Electronic Arts, re-created the Spanish exploration of the New World. A couple of years later, MicroProse broke new ground with *Pirates!* which took as its universe the Caribbean during the great days of fighting sail, of buccaneers and colonial governments, shifting alliances and intrigues. *Pirates!* appealed to that exploring impulse, providing players with the tools—ships and crews, maps and winds—to set sail in search of treasure and danger.

Empire, a classic war game, combines military strategy and confrontation with world exploration. Upon beginning the game you are confronted with a screen completely blackened, save for a single square. From that square you dispatch ground, air, and sea forces, uncovering a bit more of the world's nature at each turn. Continents and islands reveal themselves gradually, as does, eventually, the location of the enemy.

Exploration need not take place in a huge world or on a global stage. *Maniac Mansion*,

from Lucasfilm Games on disc and Jaleco on Nintendo cartridge, presents players with a mysterious old house filled with slightly dotty, slightly dangerous residents. Poke around the mansion and discover secret passages, dreary dungeons, and startlingly interactive rooms.

In its most recent releases, Lucasfilm continues to mine exploration. *Loom* is a simple fantasy, set in a world where the very nature of reality must be woven—or unraveled. *The Secret of Monkey Island* is more lighthearted.

Players assume the role of Guybrush Threepwood, an earnest if somewhat foolish young man out to seek his fortune in a world filled with puns, sight gags, and silliness.

Among the most unusual exploring games is one currently under development by Infogrames in France. This is a haunted house game, one that takes place in the dark. As currently planned, the game will present players with a blank screen, challenging them to navigate through the haunted house by way of sound effects.

As computer and video game technology grows, we can expect much more complex and sophisticated exploration games. Imagine, if you will, re-creating the voyages of Drake, the Antarctic journeys of Scott, the flights of Lindbergh.

Other explorers, real and imaginary, call out to our imaginations. Who knows what we might find? Before long, you may face a character deep in an unexplored region of your computer and say, "Dr. Livingstone, I presume?" □

TAKE OVER THE WORLD.



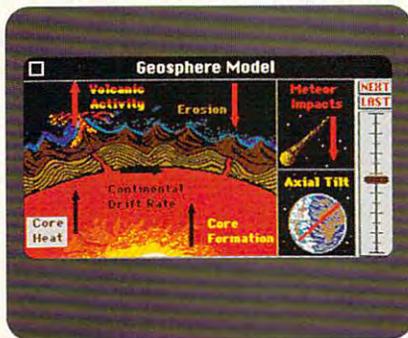
You get seven world scenarios plus unlimited random planets. So you'll never be strictly earthbound.



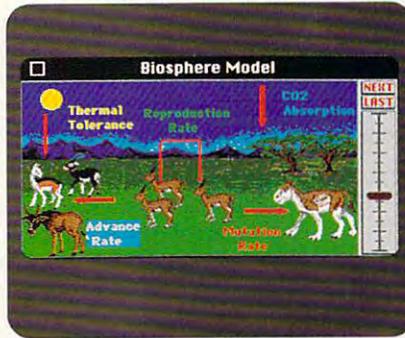
Mess with the world and it becomes an unhappy place to live. When you're smiling, though, the whole world smiles with you.



SimEarth plays all your favorite cataclysmic hits. Including volcanos, meteor strikes, earthquakes, and continental drift.



Find out what precisely makes your world tick. And what'll make it stop ticking.



Use your animal instincts and your planet will thrive, producing a rich abundance of life.



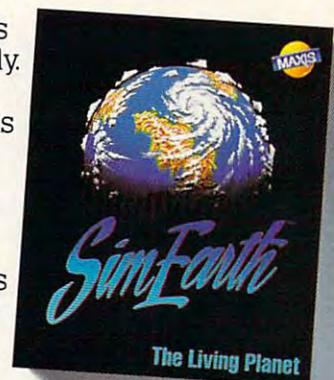
Make the wrong decision and you could wipe out life as you know it. Hey, nobody said the job was going to be easy.



The only way to follow an act like SimCity®-1990's runaway Number One game—is to think globally. The result is SimEarth.™

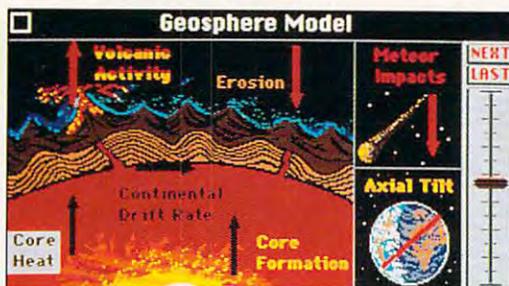
Instead of a city to run, SimEarth gives you the reins to the entire planet. Evolution, continental drift, climate, atmosphere, hurricanes, nuclear fallout, acid rain, civilization, and a bunch of other disasters. All the cool stuff you need to rule the world.

Play SimEarth to the end of time. About 10 billion years or so, give or take a millenium. Getting raves everywhere, SimEarth is indeed destined to take over the world.



GAMES CAN GIVE YOU THE POWERS OF A GOD, A PRESIDENT, A BILLIONAIRE BUILDING WORLDS

In Sid Meier's *Railroad Tycoon* (top), your world is the burgeoning frontier, your task the establishment of a successful railroad. *SimEarth* (bottom) gives you whole worlds to play with, entire ecosystems to explore.



Sit in front of a computer screen long enough and it becomes a world in itself. A growing number of game designers are taking advantage of that to create games in which players build self-contained worlds.

"Environment" games give players the opportunity to control some aspect of a world's development, whether ecological, social, or industrial. Max's *SimCity*, perhaps the most famous example of this type of game, provides players with undeveloped land and the tools to turn that land into a thriving metropolis—or a polluted, overpopulated nightmare. Running a growing city is no more easily achieved in a computer

world than in reality.

Designer Chris Crawford, whose *Balance of Power* translated superpower tension into a tense software experience, recently released *Balance of the Planet* through Accolade. This time Crawford's turf is the global environment itself, with players forced to make choices between ecological concerns and civilization's needs.

Sid Meier, whose MicroProse games such as *Red Storm Rising* and *F-15 Strike Eagle* helped define state-of-the-art military simulators, has turned to more peaceful pursuits with *Railroad Tycoon*. Players are transported to the early days of steam-powered transportation, provided with capital, and challenged to build a successful rail empire.

The team that designed *SimCity* set themselves the largest of all possible tasks in *SimEarth*: Create a simulation of an entire world. Their starting point was the Gaia theory proposed by James Lovelock and Lynn Margulis, which, put very simply, views a planet as

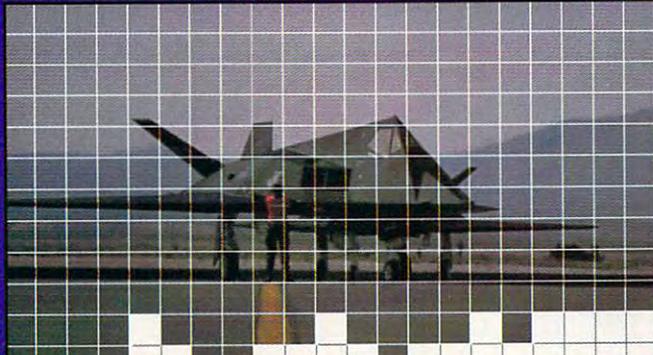
a single organism. In the game this vision becomes a living electronic entity as you guide the transformation of worlds—Earth among them, but also Mars and others—from primordial matter to thriving ecospheres.

From macrocosm to microcosm, there's a school of thought that argues that electronic life can be created, or at least considered. Cellular automata—software representations of living, evolving life forms—are already replicating in computers around the world, producing some very surprising offspring. Mathematician and science-fiction writer Rudy Rucker has created one of the most engaging cellular automata programs, called, appropriately enough, *Rudy Rucker's Cellular Automata*.

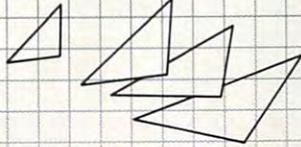
What all of these programs have in common is a sense of consequences, of the effect of decisions and actions on a larger world. Make the wrong decision and you have to live with its ramifications throughout the rest of the game. Make the right decision and watch its consequences flower. The best world-building games give latitude to "right" and "wrong" decisions, just as the real world does.

There's a fine line, obviously, between world-building games and educational software, but it's a line that many designers happily tread. By making learning "painless," environment games pass along quite sophisticated lessons to their players. Because the programs are malleable—your worlds reflect your choices—you are your own teacher. That's a learning experience to be savored—and enjoyed. □

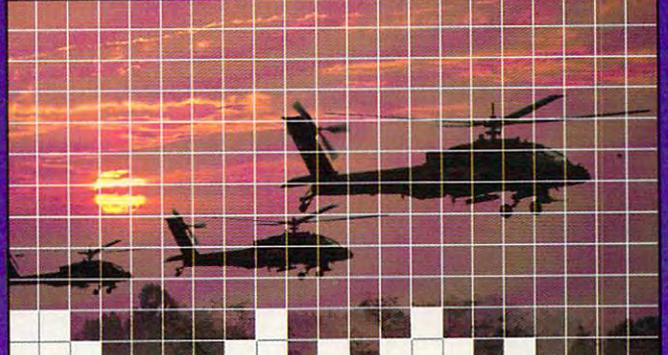
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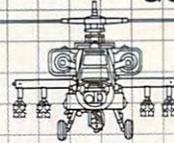
F-117A NIGHTHAWK



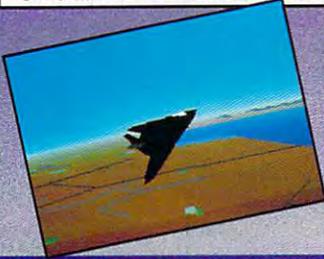
Piloting **F-117A Nighthawk Stealth Fighter 2.0** is fantastic, but it's no flight of fancy. It's a thoroughly-researched, sophisticated simulation of America's radar-elusive jet. New scenarios (including Iraq), more powerful weapons and even better graphics than in **F-19**, the game the Software Publishers Association voted Simulation of the Year in 1989.



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DARKLANDS



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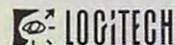
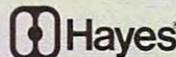
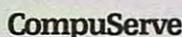
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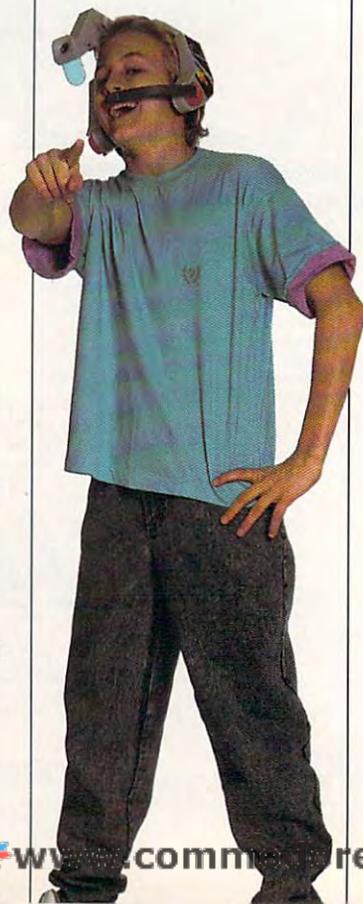


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**Imagine
an interactive
universe
where people
meet
electronically
from
throughout
the world.**

CONTINUED FROM PAGE 62

ing in an increasing number of dimensions, using more vivid graphics and sound effects than those Atari players of a decade ago could imagine.

The software will grow smarter as well. Artificial intelligence has become an increasingly popular aspect of some games. Future entertainment software will quickly and effectively learn your gaming preferences, structuring its own responses accordingly.

The video game console, the coin-operated arcade machine, and the personal computer won't be the only media for interactive entertainment. Some form of interactivity will be built into future televisions themselves. As the tube becomes smarter, acquiring more and more of the characteristics of a computer, it's only logical that interactive entertainment be added to TV's traditional passive entertainment delivery.

On-line telecommunications services such as Prodigy, GENIE, and CompuServe are experimenting with new approaches to entertainment. Look for large on-line games to become even more popular and assume new roles. One can imagine whole interactive universes where people meet electronically from across the world to play together.

New storage media such as CD-ROM will add dramatically to the size of the games available to us. As data storage devices become less expensive and more widely distributed, game designers will leap at the opportunity to extend their visions with more convincing images and sounds.

Speaking, as it were, of sounds, you'll probably be talking to your games before too many more years pass. While the bulk of the research effort into speech recognition and synthesis technology is aimed at the business marketplace, business advances have a way of being turned into entertainment opportunities. Some games are already "talking;" in another five years you might find yourself training your favorite simulator to respond to your own words.

And that's just a glimpse. Travel back in time a decade or so and ask someone playing *Pong* or *Spacewar* what the future of video games held, and the speculation would doubtless be too conservative by half. As is, undoubtedly, my own.

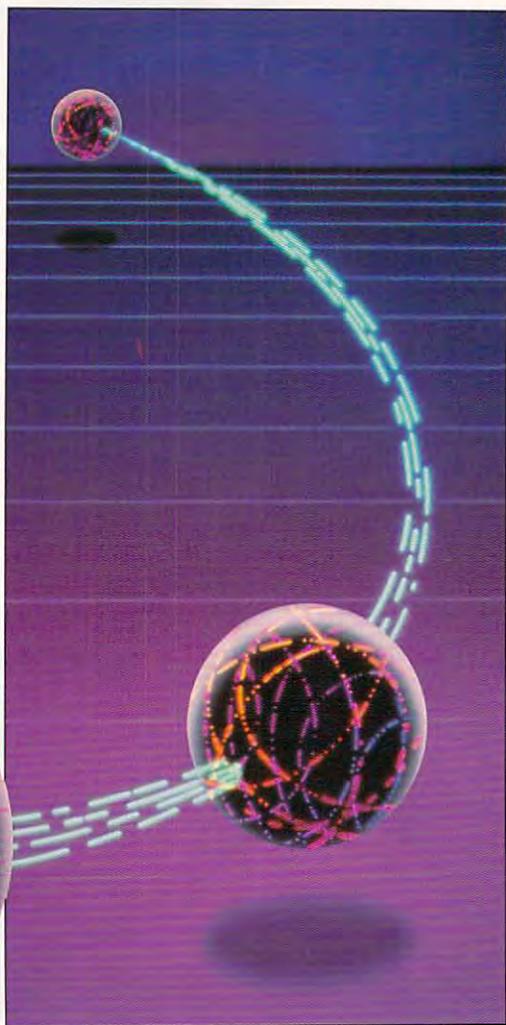
Interactive entertainment will continue to grow and prosper. As the technology becomes more widespread, via consoles, computers, and smarter televisions, there's a chance that we'll see interactive entertainment become the largest of all the entertainment industries.

There are opportunities and delights in such a future—who wouldn't want, for an hour or two, to drop into a convincing alternate world, to display skills and live through experiences the mundane world denies us?

There may be traps as well. The interactive addictions I spoke of early in this piece may become a reality. Some teachers see video games as further lowering an already low literacy rate. The most popular games tend to be the most violent. Some games carry an increasingly sexual content. How far can games go?

The resolution of that and other, related questions will take years, and each resolution will in turn produce new questions, new areas of excitement and concern.

It is clear, though, that far from being a flash in the pan, interactive entertainment has become part of the firmament of popular world culture. It is here to stay, ready to transport us, electronically, to interactive worlds of entertainment without end. □





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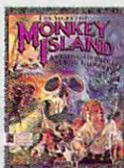
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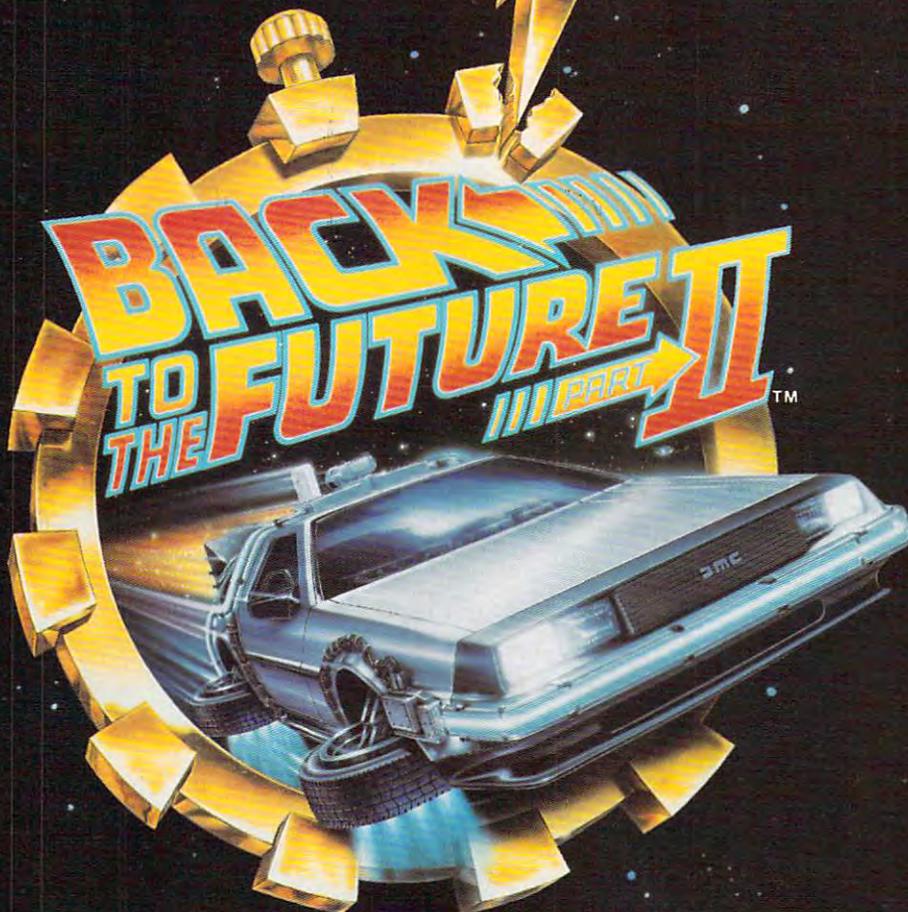


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PC VIEW

C L I F T O N K A R N E S

We tend to think of PCs as high-powered calculators, but they're much more than that—they're expert communicators. And because they're natural communicators, PCs tend to form groups, linked together in networks.

Put any group together, and you have a society. PCs, not surprisingly, have tended to form societies that mirror human ones.

Not only is communication the main requirement for a society, but you could even argue that society *is* communication. Different societies offer different ways of communicating those things important to the society—food, shelter, emotional support, and information. The lines of communication—how much of what goes where—determine the texture and quality of a society.

In primitive societies, for example, communication lines are often one-way. Tribute and valuables flow in one direction—toward the leader—and orders flow in the other—toward the workers.

Which brings us to the fundamental question about societies: What is the purpose of a society, and what is the individual's role in it?

A quick look at history shows that humanity has demonstrated three major social structures. In the first, the society exists to serve a single leader. Individuals in this kind of society are unimportant. Until recently, almost every society on earth followed this philosophy. Pharaohs, kings and queens, and military dictators all head these kinds of societies.

The second structure says that the society as a whole is the important entity. Individual

members are, as individuals, unimportant. Communism is the best example of this kind of organization.

The third type of organization holds that the individual is all-important and that society exists to serve its individual members. Most western democracies follow this philosophy, at least to some degree.

All this may sound pretty far removed from the world of computers, but it isn't. Each of these societies has a computer-based counterpart.

Most personal computers, certainly home and small-business machines, form groups using the third, democratic, model of society. When you use a modem to connect to an online service, such as CompuServe, GENie, Delphi, Prodigy, or a local BBS, you're part of a democratic network. You're the one in control. If the network works for you, great. If it doesn't, you can simply log off.

Networking isn't mandatory; it's vol-

untary. This was the earliest type of PC society, and it's still the largest.

Recent changes in PC organization, however, have begun to mirror the other types of societies. And even home and small-business users will see pressure in the future to move to these other, more restrictive organizational structures.

The second type of society, in which the group is all-important, is reflected in the organization of many LANs (Local Area Networks). An administrator controls which programs are run and how they're customized. LANs can make sharing peripherals, programs, data, and messages easier, but they can also strip members of their individual rights.

To see the first type of society—the dictatorship—you can look at the way PCs are handled in some mainframe environments. When a PC is relegated to serving as little more than a terminal, information, the gold of

the computer age, flows to the mainframe, and orders, from the mainframe to the PC.

You may be surprised to learn that you can now buy PCs without floppy disk drives. These machines are the fruit of this type of society. Without a floppy drive, the only way to get programs or data into your PC is from the mainframe.

When PCs are networked into a democratic society, the result can be one of the greatest benefits of the computer revolution. Computers linked in communistic or dictatorial systems, on the other hand, may be productive parts of larger, efficient systems; but something is lost when personal computers stop being *personal*. □





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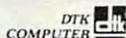
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Starter System

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Starter System

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FEEDBACK

QUESTIONS FROM OUR READERS

Austin Cooler

I recently purchased an Austin 386. I'm thrilled with the speed, but now I have a problem playing games: The machine is too fast! I need some way to slow down my machine when I'm using it for fun. Is there a utility that can solve this problem?

KATHY MORRIS
AUSTIN, TX

You can slow the Austin to 8 MHz with the Ctrl-Alt-minus key combination.

Most PCs and XT's with multiple speeds have a key combination or DOS command that changes the speed of the processor, while most 286 and 386 machines accomplish this with a "turbo" switch on the front panel.

There are some programs whose only function is to turn down the gas on fire-breathing PCs to make gameplay possible. One of these, Whoa!, appeared on the May 1988 COMPUTE!'s PC disk.

If you have any other technical questions, Austin has a very responsive technical support staff available at (800) 752-4171.

Release Me!

Sometimes when I'm programming, I'd like to turn off the memory-resident programs I've loaded because they keep me from accomplishing certain tasks. How do you clear these programs from the computer's memory without rebooting?

EDMOND RYAN
FISHKILL, NY

You could buy a commercial TSR manager like POPDROP, or you could pick up a shareware or freeware program that does about the same thing. COMPUTE!'s PC Magazine subscribers are in luck. The January 1990 disk featured a series of programs specially designed to work with TSRs, and two of those programs, Mark and Release, can be used to install and remove any TSR.

Virtual Drives

I've seen references to ramdisks in several computer magazines. What exactly is a ramdisk, and how is it used? Does it require special memory?

EDWARD DANSKER
BLOOMFIELD, CT

It's possible to use large amounts of extra RAM memory as a simulated disk drive. In fact, since the price of RAM chips has dropped drastically over the past few years (notwithstanding recent price hikes because of a RAM shortage), ramdisks have become quite popular. A ramdisk is very fast—even faster than a hard drive. Unfortunately, anything stored in a ramdisk is lost when you turn off your computer. Therefore, a ramdisk is best used for temporary storage.

You don't need special memory for a ramdisk; you only need special software known as a device driver. This can be found on your DOS master disk with the name RAMDRIVE.SYS or VDISK.SYS. Put the file on your boot disk and modify your CONFIG.SYS file. Add the line `DEVICE=C:\SYS\RAMDRIVE.SYS size sectorsize` entries to your CONFIG.SYS file.

The first parameter, `DEVICE = \path \RAMDRIVE.SYS`, tells your PC where to find the device driver. It assumes you have created a subdirectory called `SYS` and copied `RAMDRIVE.SYS` to it.

The second parameter, `size`, tells your computer how much memory to reserve for the ramdisk. `Sectorsize` tells the PC how many bytes to reserve for each sector. This can be either 128, 256, or 512. The final parameter, `entries`, specifies the number of directory entries the ramdisk can hold.

If you have extended memory, appending the `/E` switch tells the PC to use extended memory for the ramdisk. Thus, the entry `DEVICE = C:\SYS\RAMDRIVE.SYS 128 256 64 /E` tells the system to create a 128K ramdisk in extended

memory using 256-byte sectors and having a maximum of 64 directory entries. Once you've modified and saved your CONFIG.SYS file, reboot, and the ramdisk will automatically be created.

Once the ramdisk is created, it can be used like any other type of drive. You can't DISKCOPY a ramdisk, but you can copy individual files to or from it. This can be very useful for computers without a hard drive. If you own a PC with only floppy drives and you want to use a ramdisk, add the following lines to your AUTOEXEC. BAT file.

```
COPY A: \COMMAND.COM d:
SET COMSPEC=d: \COMMAND.COM
```

Replace the `d:` in these commands with the correct drive specification for the ramdisk (DOS usually assigns the letter `C` to a ramdisk on a one- or two-drive system). The first command copies the `COMMAND.COM` file to the ramdisk, and the second tells DOS to look for it there. With `COMMAND.COM` in the ramdisk, you'll never see the message Insert disk with `COMMAND.COM` in drive A again.

A 3½-Inch Edsel?

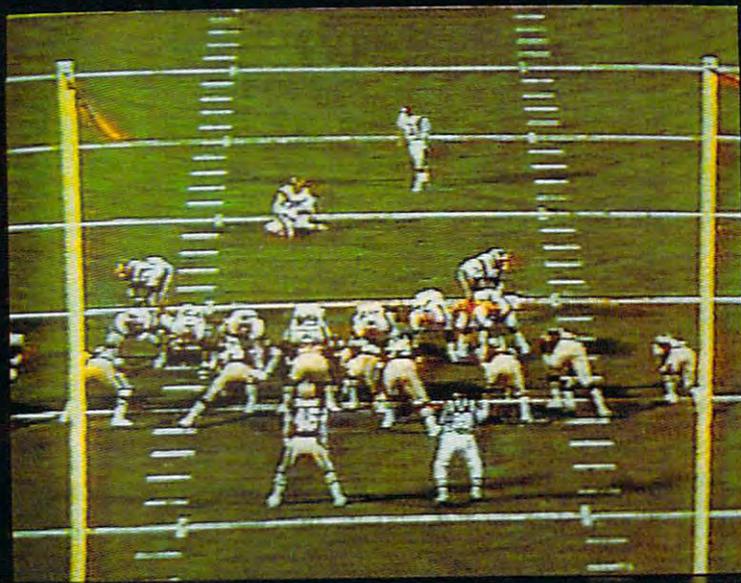
While I am happy with my Tandy 1000HX and particularly its 3½-inch drive, I am frustrated that most software is only available on 5¼-inch disks. Is the 3½-inch disk catching on, or are we 3½-inch owners stuck with an Edsel?

ROBERT REINAUER
BAINBRIDGE ISLAND, WA

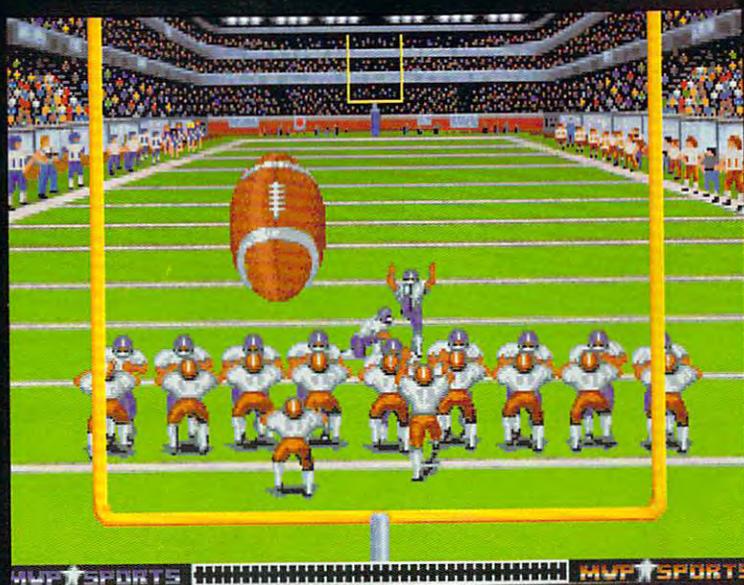
I wouldn't speak too harshly about the Edsel. Have you priced one lately? The 3½-inch drive is very popular. Most software manufacturers provide 3½-inch versions of their products (no one would be foolish enough to completely write off the huge Tandy market). Stores, however, have a problem with shelf space.

continued on page PC-8

Two ways to play an American tradition.



Play the Tape.



Then Play the Game.

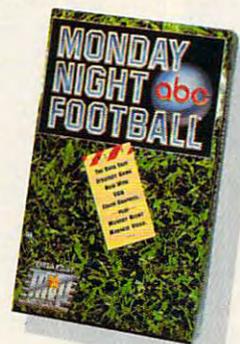
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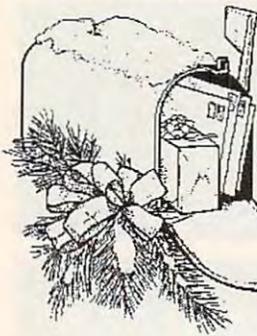
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PC-WRITE	WO 101	(3 disks) The benchmark package with mail-merge and spell checking!
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BRADFORD	WO 107	Letter quality output from dot-matrix in over 35 fonts - recommended
WORDPERFECT MACROS	WO 108	Over 80 macros for WordPerfect 5.0
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WRITER'S HEAVEN	WO 116	Accessories for PC-Write versions 3.0 and up
PC-WRITE MACROS	WO 117	100 macros for this popular word processor - automates tasks with a
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PHOENIX WP	WO 121	Good, robust and simple word processor with power as required!
WORD PROCESSING FOR KIDS	WO 122	A wordprocessing program with all the basics designed just for kids!
TRIOLOGY	WO 123	Integrated word processor client database/mailing system
CLICHE FINDER	WO 129	Search any ASCII file for cliché or hackneyed words or phrases!
INTEXT EUROPEAN	WO 134	Word processing in English and a second language. European version
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SAGEWORDS	WO 146	Word processor with superior memory management, multitasking, pull-
		down menus, block operations, multi-window cut and paste and more!
PC-WRITE LITE	WO 147	(2 disks) A simpler version of PC-Write, easier to use, faster, and easier
		on available memory. Ideal for laptop computers!
WILL-POWER OF ATTORNEY MAKER	WO 149	Instructions and Templates to help you write your own legal documents!
WEED	WO 151	Text file purgator. Removes lines of specified text.
GALAXY LITE	WO 152	The power & sophistication of GALAXY (WO 106), but easier to use and
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EDUCATIONAL

History, Geography, Languages...

AMY'S FIRST PRIMER	ED 101	Routines for pre-schoolers with alphabet, counting, shapes and color.
FUNNELS & BUCKETS	ED 103	Basic math principles. Children solve problems in an arcade environment.
MATHPAK	ED 106	Lessons & tutorial in basic and higher math!
AMANDA'S LETTER LOTTO	ED 109	Learn the alphabet for 8 months old children.
SPANISH	ED 112	(2 disks) Quality language tutor, beginner to advanced.
ALGEBRA	ED 113	Both integer and real computations - 1st class!
EZ-SPELL	ED 117	Spelling checker.
BIBLE-Q	ED 119	Bible quiz for 1-3 players.
RE-SCHOOL ED	ED 120	ABC fun keys, Clock & Mouse game, BabyMath, Animal Arithmetic.
KID'S STUFF	ED 122	Hangman word game, Mosaic design game, Shooting Gallery game.
GEOGRAPHY	ED 123	WorldMap, Geochron, States and Capitals game.
TEEN ED 1	ED 124	Math, Trigonometry, Geometry, Biology, Circularity, Pi, Morse Code.
FRENCH I	ED 130	French for beginners - great!
GERMAN I	ED 132	An introduction to German.
THE PRESIDENTS	ED 142	(2 disks) Biographical and quiz system on all the US Presidents.
WORDSTALK	ED 148	(2 disks) Entertaining word game, solves crosswords, cryptograms etc.
GOOGOL MATH GAMES	ED 149	Primer in basic math for pre-school and primary school youngsters.
PC BASIC PRIMER	ED 150	New! Menu-driven Basic tutor for beginners.
SAN MATEO SOFTWARE	ED 153	18 educational games from the San Mateo Office of Education.
BRANDON'S LUNCHBOX	ED 157	A collection of educational programs for pre-schoolers.
DOS LEARNING SYSTEM	ED 159	An excellent tutor for DOS, recommended for newcomers.
SCHOOL-MOM	ED 167	A back-to-basics educational tool for children ages 4-14. (CGA req'd)
U.S. POPULATION DATABASE	ED 170	U.S. Census Bureau data on population from 1790 to the present!
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XYSE	ED 174	(2 disks) Mathematical functions in graphic form.
BILL'S DRILLS	ED 182	Complete basic math tutorial. (Basic req'd)
MATH & LOGIC FOR KIDS	ED 183	Challenge the thinking skills of kids from preschool to 6th grade.
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SPANISH QUIZZLER	ED 194	Learn Spanish vocabulary with this fun game for 1-4 players.
GERMAN QUIZZLER	ED 195	Another good foreign language quiz - this one for Germans.
50 STATES	ED 196	Trivia questions in geography in a variety of categories for 1-4 players.
WORD WHIZ	ED 199	Intermediate vocabulary quiz. A great way to improve your vocabulary!
SAVE THE PLANET	ED 202	Demonstrates the complexity of climate changes.
MATHUP	ED 204	Match equations with answers in this "concentration" style game.
VOCAB	ED 205	Vocabulary game for 1-4 players, fun way to improve your vocabulary!
PLAY N LEARN	ED 211	Introduce youngsters to the basics of computers and numbers.
KINDERMATH	ED 213	Basic Math for the Kids! Three levels of difficulty. (CGA req'd)
SPELLBOUND	ED 214	Excellent spelling tutor. Animated graphics. (Color req'd)
PC-PRIMER	ED 216	An excellent tutorial for beginning computer users.
THE ANIMATED ALPHABET	ED 219	(4 disks) Animated alphabet tutor for preschoolers! (EGA req'd)
CE BOOK	ED 222	Delight the little ones in your family! Generate personalized coloring books. Produce a story with the child as the character.
THE NIGHT SKY	ED 224	(4 disks) A planetarium on your PC! Set the date for accurate plotting of Heavenly Bodies. 24,000 stars! (CGA, HD req'd)
MEMORY MASTER	ED 225	Improve your memory with proven memory training techniques.
BATES DIRECTORY OF U.S. LIBRARIES	ED 226	(2 disks) Simple-to-use database of nearly 9,000 U.S. libraries. Tells the population base of each library system! (HD req'd)
VOCABULARY ROOTS	ED 229	A great way to gain a better vocabulary!
PC-TEST	ED 232	Create, modify, print, merge, split and administer multiple choice tests.
CLASSROOM JEOPARDY	ED 233	The popular TV game show for the classroom! A great educational tool!
BATTLE PIECES	ED 234	Herman Melville's poetry presented in multi-media by William T. Thornberg II. Include images by Leonardo DaVinci.
READABILITY PLUS	ED 236	Writing style analyzer which looks for sentences and words that are not appropriate for your intended audience.

GRAPHICS

Design, Draw, Animate, Clip...

PC-KEY DRAW	GR 101	(4 disks) Now version 3.53 with hyperdraw of this magical drawing art program with tutorial. Library and many demo files - recommended.
FINGERPRINT	GR 103	Flexible Here or CGA pairing program - includes animation feature!
DANCADD3D	GR 106	(2 disks) The best there is for 3-D wireframe with all conceivable options
PRINTSHOP GRAPHICS	GR 108	3 additional libraries, over 200 additional pictures-requires PrintShop
PRINTMASTER GRAPHICS	GR 109	3 additional libraries for PrintMaster
IMAGE_3D	GR 116	For serious wire-frame 3D - this menu-driven CAD is a must!
WP/IMPCCP CLIP ART	GR 119	(11 disks) Art for PageMaker and WordPerfect 5.0 in PCC format. 300 dpi
FIRST PUBLISHER GRAPHICS	GR 121	(3 disks) Full of pictures and symbols for First Publisher in PCX format
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PAINTER'S APPRENTICE	GR 161	Drawing application similar to MacPaint and PC Paintbrush. (EGA req'd)
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PCX CLIP ART I	GR 165	(10 disks) A great collection of clip art in PCX. Import to WordPerfect, PageMaker, Ventura. 1st Publisher, etc.
FIRST PUBLISHER DIGITALIZED ART	GR 175	Check full of images to First Publisher.
RUBICAN PUBLISHER	GR 180	(3 disks) At last! Full featured desktop publishing in shareware! Utilizes existing WP to produce documents. Text only. (HD req'd)
COMPLETE COOPER GRAPHICS	GR 181	Clip art in Old & New PrintShop, Printmaster and First Publisher formats. 300 images on each disk! Most complete set on the shareware market!
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MR BILL	BU 102	(2 disks) Ideal for general billing, invoices, Reports, audit trail etc
FORM LETTERS	BU 103	Standard business letters suit most common situations
PC-PAYROLL	BU 106	(3 disks) The 1990 Edition! Menu-driven with reporting package.
CFA LEDGER	BU 108	(3 disks) Superior GL system with exhaustive documentation.
LOAN AMORTIZATION & PROSPECT	BU 109	Ideal for businesses or individuals
FLOWCHARTER	BU 112	Excellent for producing flowcharts of project steps and workflow
ACS IN CONTROL 12 PACK	BU 118	(2 disks) The ULTIMATE in prospect client/customer tracking
POS CLOUTIE	BU 120	Prepare and submit cost estimates and bid proposals
SOLVEIT	BU 126	Another nice form generator - sophisticated but easy to use
FORUM	BU 127	Comprehensive financial calculator - 29 menu-driven calculations
EXPRESS READ & RUN	BU 128	Technician's superb portfolio manager
PCBILLING	BU 148	An easy to use billing program for small business applications
FFRUSH CHECK	BU 154	(2 disks) Excellent checkbook manager from Expressware
PAYROLL USA	BU 156	(2 disks) Another great payroll program from Anthiste Systems
SBAS GENERAL LEDGER	BU 157	V 1.5 A double-entry general ledger package for the small business!
GENERAL LEDGER LITE	BU 158	V 1.3a Menu-driven, mouse-compatible double entry system with multiple years. 1999 accounts done files and complete documentation. Input questionnaire data, analyze results, and format reports!
INVENTORY	BU 165	Complete & easy customer statements!
FAST STMT WRITER	BU 168	Fast & Easy customer invoices!
FAST INVOICE WRITER	BU 169	Fast & Easy customer invoices!
BILLPOWER PLUS	BU 176	(2 disks) Expanded version of BU 142 (HD req'd)
MULTITRACK	BU 178	(2 disks) A full-featured tickler with a pop-up alarm! (HD req'd)
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SKEDUL PHZ	BU 253	Easy to use, all-purpose schedule system.
PHONE	BU 256	Client name, address, phone database prints labels and reports.
COMPLETE SALES AUTOMATION SYS	BU 259	Sales estimates, quotations, point-of-sale invoices, mailing lists, etc.
MALZIP	BU 260	(11 disks) A powerful relational data base. Even has built in database of all USA postal towns!
DAYO	BU 261	(19 disks) Complete business package! Menu, clock, setup, inventory, point-of-sale, pricing, AR/AP, general ledger, payroll and more!
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MANAGING PEOPLE	BU 269	A comprehensive program designed to make you a better manager. To



GAMES

Chess, Planes, Adventures...

JET FLIGHT SIMULATOR	GA 101	Stimulating and fast-paced fun!
3-D CHESS	GA 103	Fantastic 2D and 3D play with many levels and game save facility
PINBALL COMBO	GA 104	Compress 3 super pinball games, varying in complexity
DUNGEONS & DRAGONS	GA 105	A classic for you adventurers!
POKER & ULTIMA 21	GA 116	Best poker we've seen, plus casino blackjack.
GAMBLER'S DISK	GA 121	All the casino thrills - blackjack, slots, baccarat, solitaire, tutor included
MONOPOLY WITH GRAPHICS	GA 127	An old favorite cleverly programmed for absorbing family fun!
DIAMOND MASTER BASEBALL	GA 132	A very in-depth and statistical approach to baseball for experts
PC PRO GOLF	GA 139	(2 disks) A must for the polling fraternity - good graphics
EGA TREK	GA 140	Superb Star Trek game for EGA - fight the Klingons and Romans.
MAZE	GA 142	Stiller's incredible mind boggler - get a LENGTHY mental challenge!
BEYOND THE TITANIC	GA 143	First class adventure from Apogee Software - rousing!
KINGDOM OF KROZ/TREK TRIVIA	GA 144	Excellent Apogee offerings for Star Trek and adventure fanatics
PC-JIGSAW 1.10	GA 146	Jigsaw puzzle simulation - hours of intriguing and exhilarating fun!
EGA SORRY	GA 150	Immensely popular version 2.0 of this classic game. For EGA card only
CAPTAIN COMIC	GA 158	The best in stunning color! Mario Biondi's baseball for experts
CYRUS EGA CHESS	GA 161	A challenging opponent for chess if you have EGA to show fine detail
MORAFFS EGA/VGA PINBALL	GA 172	Here's a high class pinball for high resolution!
MILLE BORNES	GA 178	Now you can play this great card game against the computer.
YACHT RACING SIMULATOR	GA 180	Challenging and fun for the serious sailor - or a sandblaster! (CGA req'd)
DULLES TOWER	GA 181	Ever wonder what it's like to be an Air Traffic Controller?
RISK	GA 183	The classic game of world domination. (CGA req'd)
BASS TOUR	GA 184	The latest version of a great fishing simulator! (EGA req'd)
SCRABBLE	GA 188	THE program for Scrabble buff! (EGA req'd)
RETURN TO KROZ	GA 196	20 levels, 35 new creatures, traps, spells and hazards!
BLACKJACK!	GA 199	Blackjack game/tutor. Rules of play and strategies. (EGA req'd)
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BATTLESHIP	GA 236	"Search and destroy" / Play computer, or play by modem! (EGA req'd)
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LEONG	GA 246	Supports SUPER-VGA and Hercules. CGA, EGA, and VGA!
VIDEO BLAKIAK	GA 253	Solitaire board game. Move across a grid and avoid pitfalls. (EGA)
RAILROAD	GA 254	Play blackjack and learn basic strategy. Works with any monitor!
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UNASS	GA 256	Three different playing styles to test your skills!
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BACCARAT	GA 277	Play the game popular among the rich and famous. (EGA req'd)
PHARAOH'S TOMB	GA 278	The next generation computer game! Addictive game with superior graphics we expect from Apogee. (CGA req)
CAVES OF THOR	GA 279	Imagine KROZ with advanced graphics, improved game play, flowing rivers, and fantastic sounds! (CGA req'd)
ROCK N' ROLL TRIVIAL MATTERS	GA 280	TRIVIA Game cover Rock and Roll topics from the '50s through '80s.
ISLANDS OF DANGER	GA 281	SOME UNIQUE features: demo mode and easy level for beginners. Runs on any monitor, can be played in one player mode.
AHL'S BASIC COMPUTER ADVENTURES GA 282	GA 282	THE HIGH QUALITY TEST ADVENTURES with great game play and sound effects too! (req BASIC)
DUNJAX	GA 284	High quality side-view ACTION adventure game. Shoot and levitate your way through massive underground labyrinth filled with hazardous traps and relentless creatures. (CGA req'd)



DATABASE MANAGEMENT

dBase, Files, Routines...

PC-FILE 5.0	DA 101	(3 disks) (3 disks) New version 5.0 of the dBase killer! Full-featured and state-of-the-art DBMS. Many new features - highly recommended.
WAMPUM	DA 105	Latest version of this legendary dBase III/IV compatible clone.
FILE EXPRESS	DA 106	(2 disks) Powerful package for data storage and manipulation.
GRAPHTIME II	DA 108	(2 disks) dBase, Wampum, Lotus and Multiplan compatible graphing
WYNDFIELDS	DA 110	3 disks squeezed onto one - mouse supported and easy window menu!
JAGER MANAGER	DA 111	A convenient information manager with database, dialing and calendar
FILEBASE	DA 113	An uncomplicated, semi-sophisticated, user-friendly database package!
PC-FILE 8B	DA 114	(3 disks) Direct access to dBase III Plus files.
PC DATA CONTROLLER	DA 117	Simple yet powerful database. Great if you're just getting started.
DATA-PLUS	DA 120	(2 disks) dBase III/IV compatible, but 80% faster! Over 1 billion records.
DBTOOLS	DA 132	Enhancement package for dBASE III (or any dBASE interpreter). Popup menus, windows, sound control, etc. 23 functions in all!
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BIOBASE	DA 135	Telephone name, address, notes database. Menu-driven, easy to use.
ZEPHYR	DA 138	Another Ward Moody triumph! A fully relational, Fox Pro-compatible database system for non-programmers. It's fast!
MAIL BASE	DA 139	Mailing label program with small user-defined database.



SPREADSHEET & UTILITIES

Templates, Macros, Utilities...

PC-CALC	SP 101	(3 disks) Superb 123 clone - interacts with PC-FILE-
EZ-SPREADSHEET V 521	SP 102	Simple to use but powerful system - ideal for beginners - one of the best
AS EASY AS... 3.01	SP 103	Loaded with features, and compatible with 1-2-3 files, this one has all the bells and whistles!
LOTUS MACROS	SP 104	Save tedious work with these short cuts for use with 1-2-3.
LOTUS TEMPLATES	SP 106	If you use Lotus, you'll love these ready-made applications!
CUBICALD	SP 109	This powerful 3-dimensional spreadsheet lets you view data in a new light.
123 POWER WORKSHEETS	SP 110	(2 disks) Powerful worksheets - worth having if you use Lotus!
MISCALC PLUS	SP 111	(3 disks) Spreadsheet - reads, writes Lotus files, needs OEM
WHITLING WORKSHEETS	SP 112	(2 disks) Excellent budgeting tools for Lotus 1-2-3
LOTUS LEARNING SYSTEM	SP 115	(2 disks) Good, basic tutorial to learn Lotus 1-2-3 (1-2-3 req'd)
BEGINNING 1-2-3 TUTORIAL	SP 116	Worksheets and tutorial for the novice 1-2-3'er (1-2-3 req'd)
ADVANCED 1-2-3 TUTORIAL	SP 117	Designed for someone who has worked through the basics (1-2-3 req'd)
INCOME WK7	SP 118	Lotus WK file calculates income statements.
REAL ESTATE TEMPLATES	SP 119	Purchase analysis, yield, buyer qualification, etc. for use with 123, Symphony, and As Easy As.



UTILITIES

Disk & Program Management...

DESK COMMANDO	UT 101	Superior to SideKick. Menuing, tree support, calculators, appointments, 1
LINCOMATIC BANNER	UT 105	Design and print large banners - hundreds of uses at home and work!
POWERMENU	UT 115	Superb hard disk menu organizer with windowing
ALT	UT 119	Power of SideKick, Superkey and Norton Utilities all in one package.
EZ-COPY-LITE	UT 120	GREAT floppy duplicator - PROFESSIONAL utility for mass copying!
KARPC/PKARC	UT 126	Latest version of this great file compression/extraction tool.
MENU MATIC	UT 129	The LATEST version of this menuing package from BC Enterprises
ARCHIVER	UT 142	Makes archiving and unarchiving a breeze with pull-down menus.
ANADISK	UT 145	HD menu with multiple windows - use batch files to run your programs.
HD-TEST	UT 146	The ultimate utility! Analyzes, inspects, edits, repairs & copies diskettes.
HARD DISK BACKUP	UT 154	The most thorough hard disk tester available in shareware.
MASTER MENU	UT 155	One of the most comprehensive utilities for backing up your hard disk!
TURBO COPY	UT 156	Full-featured hard disk menu application.
SERIAL FILE COPY	UT 157	Format/copy/verify diskettes fast!
SAM'S MENU	UT 172	Transfer files between computers using the RS232C serial ports.
TIMERUN	UT 175	Simple calendar generator.
ARCAID	UT 205	Screen blanker, password protection, user-customized colors and menu
ARCAD	UT 208	file prompts, 216 applications from the Main Menu. (HD, CGA req'd)
LHARC	UT 217	A marvelous utility that allows you to automatically execute a program or DOS command at a pre-selected future date and time.
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Circle Reader Service Number 182



FEEDBACK

continued from page PC-4

They tend to stock what is most popular without giving much thought to hardware market share.

In a few years the situation may be reversed. Make your dealer aware that he's losing sales because he isn't stocking 3 1/2-inch products.

If you accidentally purchase a 5 1/4-inch version, contact the company right away and let it know what happened. Most software publishers will replace disks for just the cost of postage and handling (some will do it free).

Tales from Decrypt

I understand that there is a program called RCRYPT that can be used to encrypt a file. I would like to know how it works, how to use it, and what kind of files you would use it with.

KIRK LESLIE
ENOREE, SC

Encryption is used to make text and database files unreadable by spies, co-workers, and family members. Your letter awakened the 007 in all of us at COMPUTE. We searched long and hard for the RCRYPT program you mentioned and were unable to produce it. However, if you are interested in encrypting files, there are several options open.

It is fairly simple to write a BASIC program that encrypts a file. Here's one named CRYPT.BAS written in QuickBASIC.

```
SS=COMMAND$
FOR I = 1 TO LEN(SS)
  IF MID$(SS,I,1)="" THEN
    GOTO PROCESS
  END IF
NEXT
? "MUST FOLLOW PATTERN"
? "CRYPT filename key"
END
```

```
PROCESS:
FILES="" : CRYPT=0 : I=0
DO UNTIL AS = ""
  I=I+1
  AS=MID$(SS,I,1)
  FILES = FILES + AS
LOOP
```

```
DO UNTIL AS<> ""
  I=I+1
  AS=MID$(SS,I,1)
LOOP
```

```
DO UNTIL AS = ""
  AS=MID$(SS,I,1)
  I=I+1
  CRYPT$=CRYPT$+AS
LOOP
```

```
CRYPT=LEN(CRYPT$)
OPEN FILE$ FOR BINARY AS #1
A=LOF(1)
FI$="ENCRYPT"
OPEN FI$ FOR OUTPUT AS #2
I=0
*The encryption happens here
FOR J = 1 TO A
  SS = INPUT$(1,#1)
  SS=LEFT$(SS+" ",1)
  I=I+1
  IF I > CRYPT THEN I=1
  M=ASC(SS)
  N=ASC(MID$(CRYPT$,I,1))
  T$=CHR$(M XOR N)
  PRINT#2,T$;
NEXT
CLOSE
```

This program uses a keyword to encrypt a file. The keyword can be as long as DOS will accept (provided that there are no spaces) or as short as a single character.

The exclusive OR operator (XOR) alters the bits in the bytes that make up the file to make them unreadable. Since the encryption is one level more difficult than simple letter substitution, it would be quite difficult to crack without the key, unless there are a lot of spaces in the text. Wherever a space appears in the text, a letter of the keyword will show through; if there are several spaces in a row, the entire keyword will be exposed.

If you wanted to make it more difficult still, you could run CRYPT twice. To make the program itself more powerful, you could alter the keyword each time the program cycles through it, or you could write a routine that XORs a second keyword with the first (the second keyword could be built into the system or provided on the command line). You might also write a routine that scrambles the characters in the file after they've been encrypted.

The complexity of the encryption depends on the value of the data and the savvy of the person from whom you're hiding it. The KGB

and NSA can probably crack any code, while your spouse might be discouraged by a simple letter-substitution code.

The syntax for the command that's generated when this file is compiled is

CRYPT filename key

When you run the program, the encrypted file will be named ENCRYPT. Make a backup of the original, delete it, and then rename ENCRYPT to the original filename. To decrypt the file, use the same command, filename, and key. The file written to ENCRYPT will be your original file. If someone attempts to decrypt the file with the wrong code, the resulting ENCRYPT file will be gibberish.

Unfortunately, you can't simply run CRYPT on ENCRYPT. Unless ENCRYPT is very short, the program will fail and only part of the file will be decrypted.

Another alternative is ARC's encryption option (/g), which encrypts files while they're being compressed (simply compressing a file will make it virtually unreadable). PC Tools Deluxe includes an encryption utility called PC Secure.

Many applications allow you to protect documents. WordPerfect, for example, lets you assign a password to files. You can't read a password-protected file with a text editor.

Most encryption programs work on the minicomputer, mainframe, and LAN level, where system protection is a top priority. Passwords and lockout keys seem to work well for PCs, so file encryption has not been an important area of PC software development.

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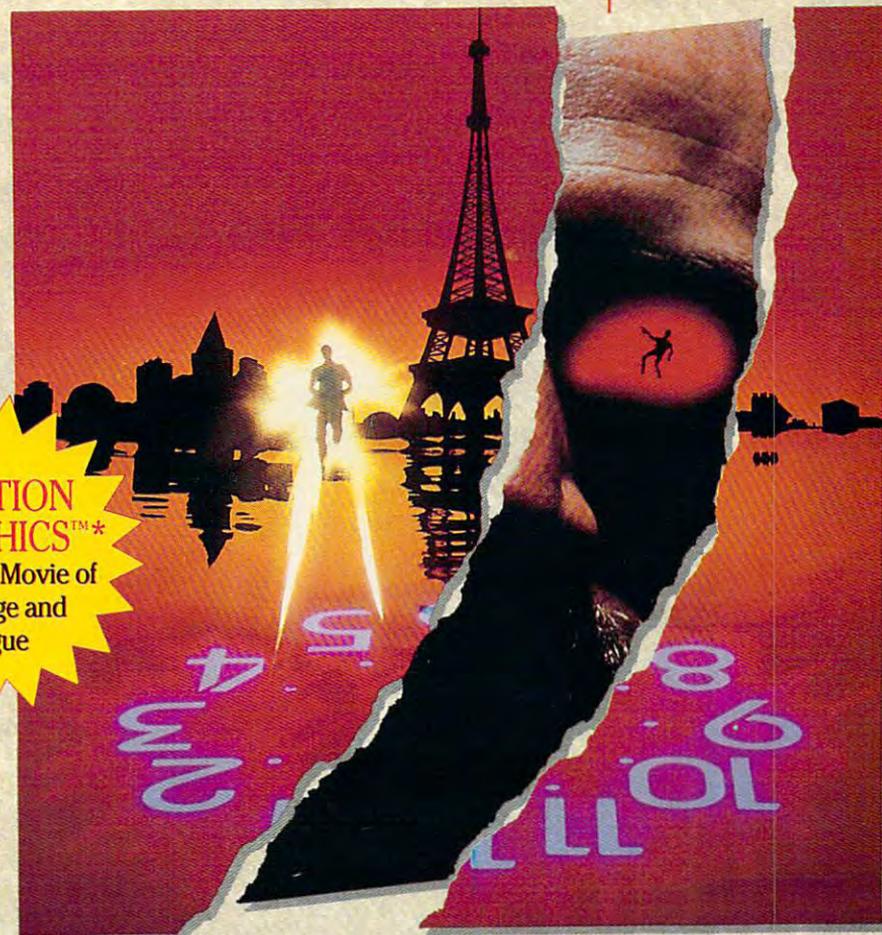
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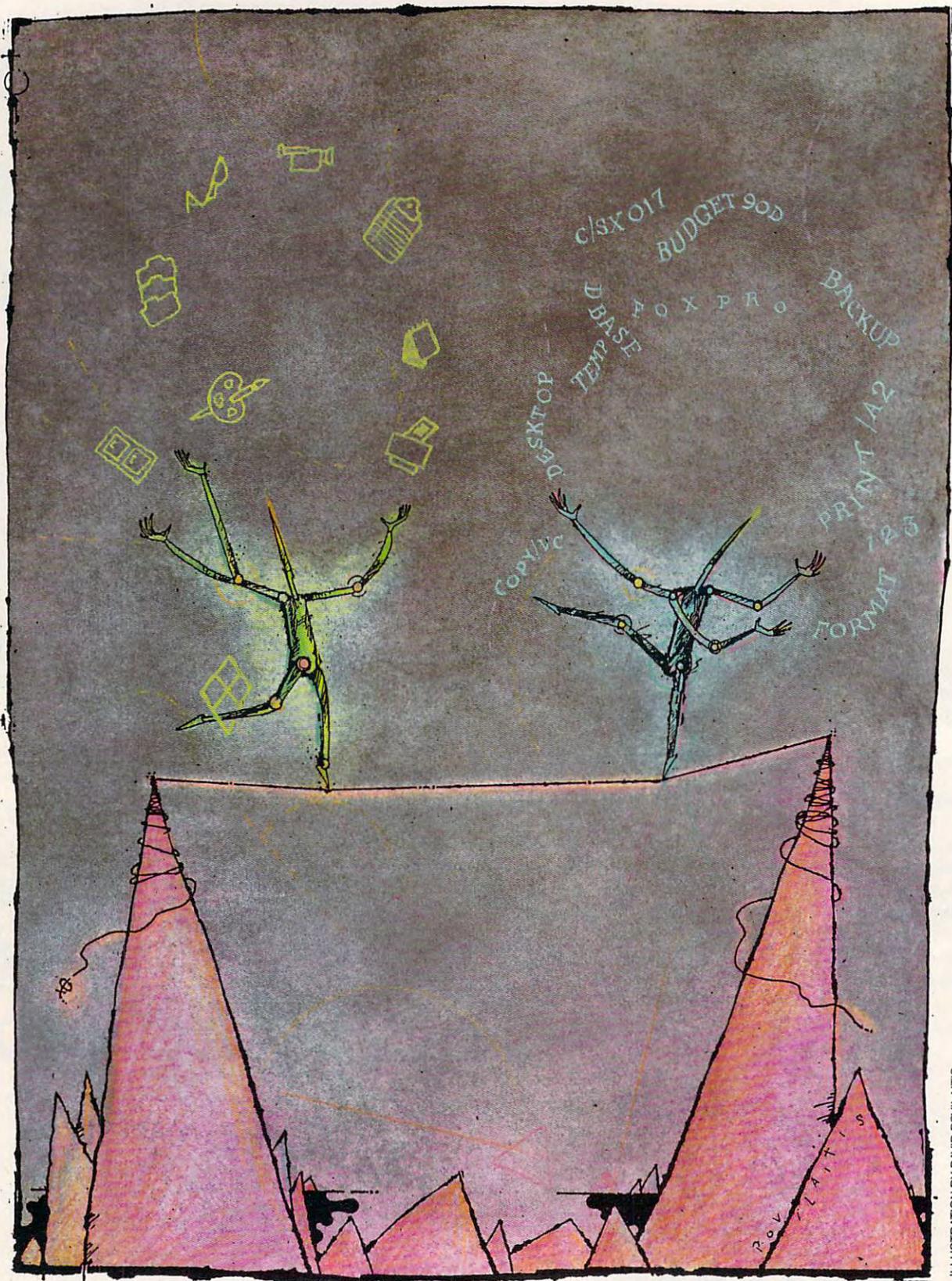


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Windows and DESQview go Head to Head