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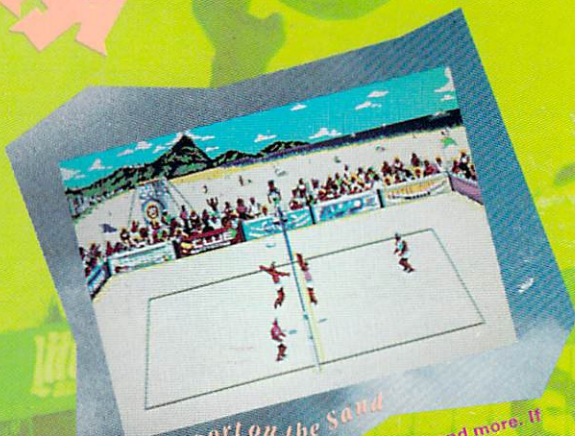


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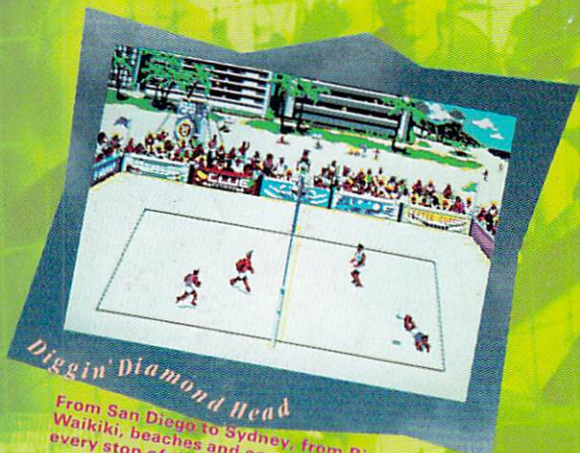
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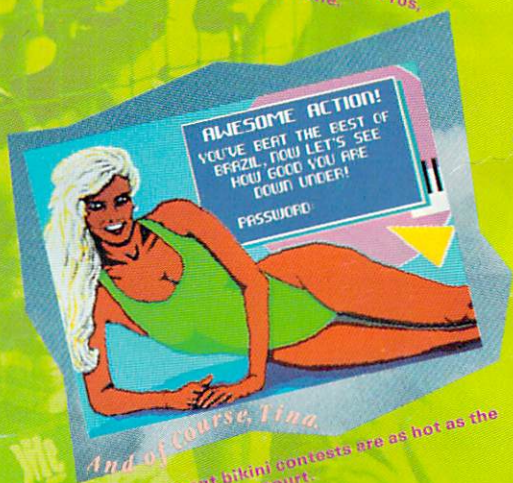
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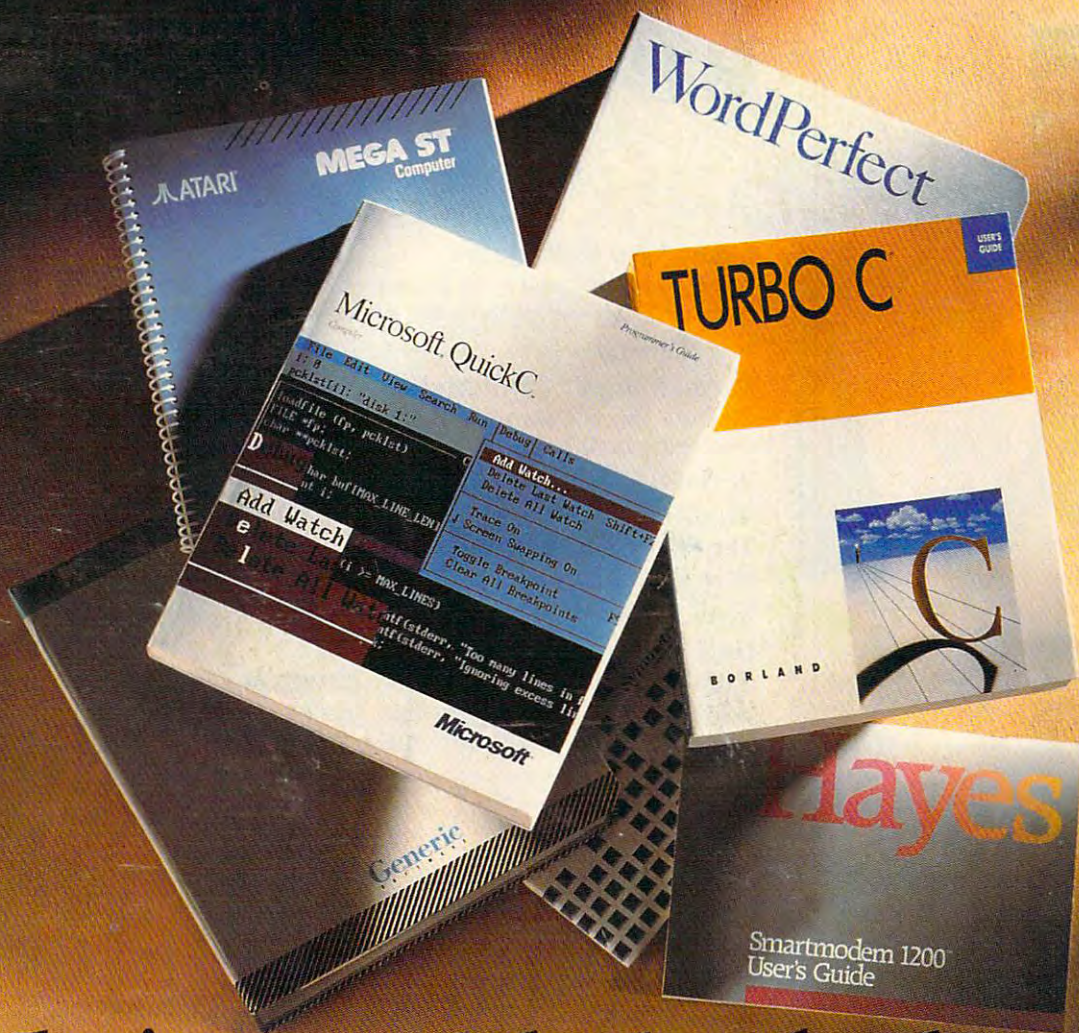
By Mike Abbot, Nana Chambers, Sinjin Smith and Randy Stoklos



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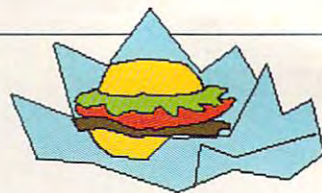
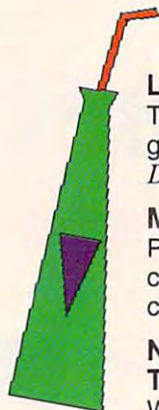
COMPUTER

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ISSUE 108

The Leading Magazine
of Home, Educational, and
Recreational Computing

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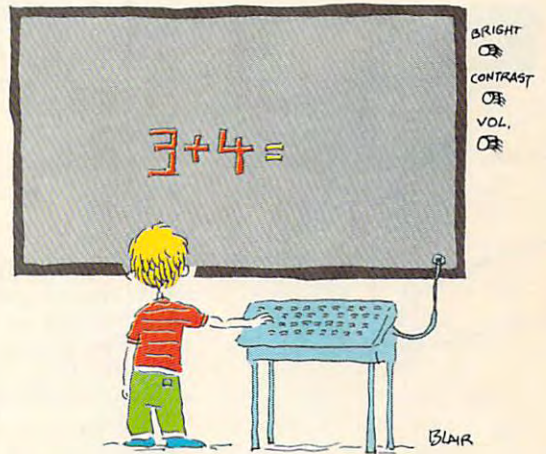
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We Know Who You Are

Encased in the frenzied activity of putting out a monthly magazine, it's all too easy for us here to lose sight of the boss of the bottom line. No, I'm not talking about The Man in New York City, the one whose name is in the staff box on page 14. I'm talking about the readers of *COMPUTE!*—you.

We've recently concluded two surveys of *COMPUTE!*'s readers. One, completed at the end of 1988, was based on an eight-page questionnaire we sent out to every *n*th subscriber. We asked 2000 readers what computers they owned, what computers they wished they owned, and what they wanted to see in *COMPUTE!* magazine. We stuck a \$1 bill in each questionnaire as a token of our appreciation. From the looks of things, we got our money's worth.

The second—a reader survey in the February issue which we asked you to fill out, clip, and mail in—was far more informal. That's the way we like to do things around here—informally. Unfortunately, it's not considered very scientific.

Yet the results of the two surveys are strangely similar. That makes me feel good—casual communication is not dead after all, even when it involves speaking to hundreds of thousands of people.

You may know who you are, but now we do, too. All for the better, I assure you, for this knowledge will make it possible for us to put the best magazine in your hands.

You're married, a touch over 40, and you own a house. You're probably a professional, an executive, or a manager; just as likely, you've seen the inside of a university, even if you don't have a sheepskin.

More of you own and use MS-DOS machines than any other kind of computer. That's not surprising, considering the numbers of IBM PC and compatible computers that have made it into homes in the past year. Our informal survey showed that 47% of you own or use an MS-DOS computer at home. The more accurate *n*th survey, however, indicated a much higher percentage of PC users. I'd agree with that survey, since Atari-8-bit owners "packed" the reader survey ballot box somewhat by responding more often, proportionately, than other machine owners. (Atari 8-bit owners have traditionally been more vocal in expressing their opinions to *COMPUTE!* magazine than any other single group.)

Commodore 64/128 owners are the second largest group of *COMPUTE!* readers, followed by (in descending order) Apple II,

Atari 8-bit, Macintosh, Amiga, and Atari ST owners.

A majority (69%) own only one computer, but a good number (31%) have at least a pair. The same number (31%) plan to add another computer this year. The machine of choice for your next purchase? An MS-DOS computer, by a slim majority. Other top contenders include the Macintosh, Amiga 500, and Apple IIc.

You're not a neophyte home computer user. Almost three-fourths of you (74%) have been using a computer in the home for at least two years. More than a fourth of you claim that you've been using computers for over five years.

What software do you own and use?

Word processors and entertainment titles top the list, with over 80% of you owning software in those categories. Spreadsheets and databases aren't too far behind. More than half of you own educational packages. You like to buy software, too, for over half (56%) bought five or more packages in the past year. A fifth of you bought more than ten programs in the past 12 months.

Nearly half of you (45%) have been reading *COMPUTE!* for less than a year, which means you've only known *COMPUTE!* since it dropped its type-in software and concentrated instead on providing news, reviews, features, and other information for the home computer user. More than three-quarters of you want to see more articles on general computer topics; you split nearly down the middle when asked if you want to see more articles specific to one particular computer.

Your favorite parts of *COMPUTE!* are "COMPUTE! Specific" and reviews, followed in close order by "New Products!," feature articles, and "News & Notes." You read this column most frequently (an assistant editor claims it's because it's the first thing in the magazine), but the other four are not far behind in popularity.

You want to see applications-oriented features most of all, and many of you are interested in programming your computer. *COMPUTE!* offers a smorgasbord each month, but its articles always show how you can use your computer. And this month's cover feature, "Learn How to Program," will undoubtedly be welcomed by many of you.

A year ago, I said that *COMPUTE!* had changed because you had. That process is ongoing. Your computer needs certainly won't remain static.

Neither will *COMPUTE!*. □

TAKE COMMAND



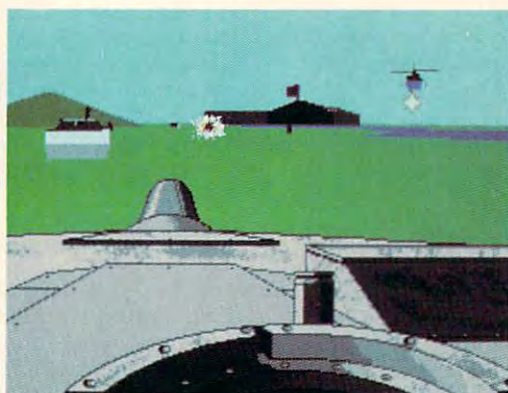
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ELECTRONIC ARTS®

news & notes

286 Christmas Winner

The Christmas season is marked by sales and promotions designed to get computers through America's front door. Traditionally, Apple and Tandy have led the way in the year-end advertising, rebates, and discounts of low-end machines aimed at potential home-computer buyers. But the big trend this past year was the growing strength of the 80286-equipped-computer market among home and small-business buyers.

According to Storeboard, a Dallas-based company that tracks retail sales of computers, 1988 holiday sales were up 6.7 percent over 1987 Christmas sales. That rise boosted computer makers' revenue 21.3 percent.

The clear winners this Christmas were 80286-based personal computers (AT-class IBM compatibles), which posted a 44-percent gain over the number of like machines sold

during the 1987 holiday season.

Sales of the Apple II rode in on the back of the IIGs to gain 184 percent in December 1988 as compared with November's sales. Still, sales across the entire Apple II line were down 50 percent from Christmas 1987, the result of changing distribution channels, price hikes, and disenchanted dealers.

"The fourth quarter has always been Apple's strongest," noted Storeboard President JoeAnn Stahel. "With price hikes and shortages, dealers had to look for alternatives."

One of those alternatives, particularly in the education market, was the bottom-end IBM PS/2 Model 25, which lists at under \$3,000. Stahel said that the computer sold like hotcakes during the holiday season, probably at Apple's expense.

Tandy lost ground with its heavily promoted 1000 SL, an 8086-based entry-level com-



puter with color monitor and 256K of RAM that sold for less than \$1,100, and its 1000 HX, the successor to the EX. Customers forsook those machines for the 1000 TL, which offers 80286 performance and 640K of RAM as standard equipment.

"The TL turned out to be a runaway best seller," said Ed Juge, Tandy's director of market planning. He attributed the shift to customers' wanting the full complement of 640K RAM in a take-home computer. Total MS-DOS sales for

Tandy were down 13 percent during the fourth quarter, but revenue remained stable. "That tells you the sales shifted from the low end to the high end," Juge said.

"Tandy has always been the barometer of what home buyers and small-business buyers are getting," Stahel said. Manufacturers like Tandy misjudged the computer-literate audience, which has moved toward AT-compatible computers as the entry-level machine.

— Peter Scisco

No One's Perfect

Long known for its business acumen and accustomed to ever-higher earnings, Apple just got a hefty dose of humility. Proving that no company is perfect, it recently announced that its second-quarter 1989 profit might fall by as much as 43 percent. Financial analysts didn't take kindly to the bad news, of course, and Apple stock lost \$4 a share on the day of the poor-profit announcement.

The falloff was caused, said Apple CEO John Sculley, by major mistakes in anticipating DRAM prices and buyers' willingness to pay higher prices for the company's Macintosh computers. About to run out of the inexpensive DRAM



chips that it had been obtaining under long-term contracts, Apple last summer bought as much as \$80 million worth of one-megabit DRAM chips at the height of the chip shortage. Soon after the purchase, chip prices began to fall. Apple reportedly paid as much as \$38 apiece for chips that are currently selling for \$23. The

company overestimated Macintosh sales and believed that chip supply would be tight through the end of 1988. The result was a very expensive inventory of DRAM.

Trying to make good on the blunder only compounded the problem. In September 1988, Apple raised prices on virtually every one of its computer products in an effort to make back some of its lost money. The upper end of the Macintosh line was particularly hard hit, seeing increases of nearly 30 percent. Buyers reacted by either shunning the Macintosh or by buying stripped-down models and then fitting third-party RAM into the machines. Either way,

chips left Apple at an even slower rate.

In a double whammy, sales of the low-end Macintosh models—those machines not affected by the price increases—were so high that Apple had to go back to the spot market to buy the 256-kilobit DRAM chips those machines required.

Apple has tightened its belt and lowered prices in response. A new hiring freeze is on, and the company's research and development budget has been cut. And, in January, Apple rolled back Macintosh prices to levels near the prices before the September increases.

— Gregg Keizer

Bring Bush to the Classroom

The lights dim, the projector motor hums sleepily, and it's time for another filmstrip—static images of outdated information, perhaps a recorded voice that plays along, and sleeping students in the last five rows of the classroom.

Up-to-date technology is replacing old-fashioned projectors. Videodiscs, for instance, offer interactive lessons with high-quality moving pictures and integrated sound. One of the newest players in the videodisc market is ABC News Interactive.

Working with videodisc manufacturer Optical Data, ABC News Interactive has released *The '88 Vote, Campaign for the White House*. The disc is a collection of film and sound clips from the ABC news archives. The package includes a *HyperCard* interface for use with a Macintosh, but the disc can also be navigated without a computer. Optical Data is developing a text-based, *AppleWorks* interface for the Apple II market.

"We're treating the videodisc like another broadcast," said David Bohrman, execu-

tive producer. "The functions that we're using to create the discs are a lot like the functions we use to put together 'Nightline' or 'World News Tonight.'"

The '88 Vote follows the recent presidential race, from the announcements of the 13 original candidates through election night in November. The *HyperCard* interface organizes images of the Bush/Dukakis battle by issue rather than by chronological order. When students click on *Prison Furloughs*, for example, they'll see a point/counterpoint presentation of the candidates' statements, the commercials pertaining to prison furloughs, and even ABC exit poll results that show how the issue affected the election's outcome.

"You understand the results of the campaign better looking at it with these stark contrasts," said Bohrman. "It's a fascinating experience. The tone of the campaign and the issues—and the focus (or the lack of focus)—is really clear."

ABC News Interactive plans to release between six and eight more videodiscs on



other current and historical issues, but it hasn't said which issues will be covered.

The cooperation between ABC News Interactive and Optical Data is a perfect marriage, according to Pamela L. Herber, corporate communications director at Optical Data. "ABC has this broad, rich collection of images, and we

know the education market, so together we're going to serve the needs of the teachers."

The '88 Vote will cost \$295 until September 30, when the price will increase to \$395. For more information, contact Optical Data, 30 Technology Drive, Warren, New Jersey 07060; (800) 524-2481.

— Heidi E. H. Aycock

Interactive Spidey, Disk-Based Dr. Doom

Spiderman's web and Captain America's shield—not to mention Doctor Doom and his henchmen—will soon be making their appearance on disk via a licensing arrangement between Paragon Software and

Marvel Comics.

Dr. Doom's Revenge, scheduled for release this spring, is an arcade anthology pitting Spidey and Cap against "Doom's Brigade," a gathering of Marvel villains including Rhino, Grey Gargoyle, Eduardo Lobo, Mysterio, Electro, Hobgoblin, Batroc, and others, including a gorilla with moves Hulk Hogan would appreciate.

A special Marvel comic accompanies each package and serves to pull in players. Spiderman and Captain America are dispatched to Latveria by none other than George Bush, who charges Webhead and Wing-

head with neutralizing a nuclear missile that Doom has aimed at Manhattan. At the Latverian lunatic's castle, Spidey and Cap face a series of arcade scenarios; each challenge is based on a particular villain's powers. If the heroes fail, Manhattan goes up in a mushroom cloud.

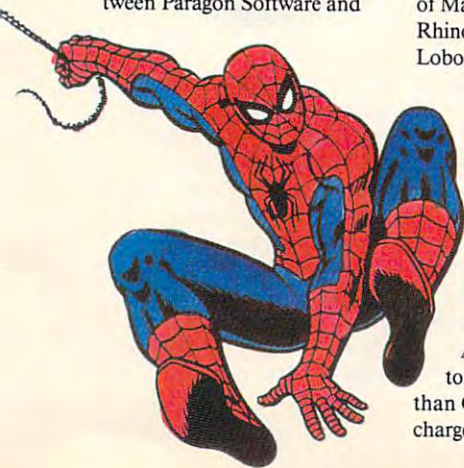
Unlike InfoComics, a comic book-format package introduced by InfoCom in 1988, *Dr. Doom's Revenge* places its emphasis on action rather than on narrative. Screens take the form of comic-book pages, with individual panels coming to life as Spidey or Cap, in turn, face their opponents.

The IBM version, previewed in EGA, is smoothly

animated, with colors that match those of a typical comic book. Rising difficulty levels add to the challenge, while subtle background animation enhances each scene. Joystick control takes some getting used to, but it can be mastered. The game's primary market will probably be younger players, although overgrown youngsters can have fun shooting webs.

While *Dr. Doom's Revenge* is purely arcade-oriented, future Paragon/Marvel releases may offer more depth of play and mood. Coming up next is the *X-Men*, those somber teenage mutants whose popularity remains intact even when their ranks change.

— Keith Ferrell



CD-ROM Is No Game—Or Is It?

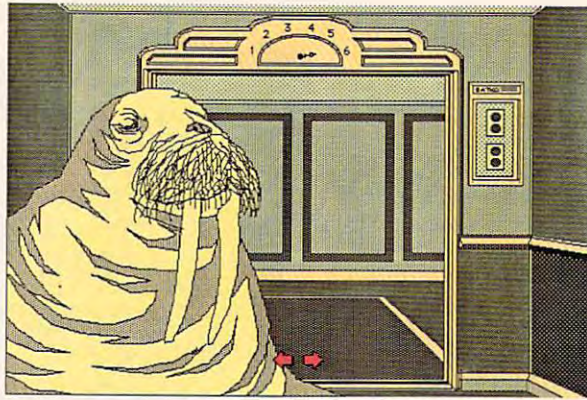
After several years of producing productivity titles like encyclopedias and developer toolkits, CD-ROM is beginning to attract entertainment-software developers.

Activision, whose titles are distributed by Mediagenic, was the first out the gate. Its *Manhole* is an interactive fantasy game based on the *HyperCard* concept. By moving the game to CD-ROM, Activision was able to enhance the screen images, add digitized voices, and include a soundtrack to complement the game.

"The technical constraints [of a disk product] affect what you can do creatively," said Sherry Whiteley, general manager of Activision entertainment.

Bob Jacob, president of Cinemaware, agreed with Whiteley's appraisal. His company released a CD-ROM version of its *Defender of the Crown* game in March. "Technically, we've gone as far as we can on disk," he said.

Cinemaware, like Activision, hired a sound studio to produce a soundtrack for its game. It also hired an actor to



narrate the words that appear as written text in the disk version.

The number of people who own CD-ROM drives is still small, but Activision and Cinemaware both regard their products as statements of support for a blossoming technology. Whiteley said that developing *Manhole* for CD-ROM helped Activision realize the technical problems associated with the new medium and that subsequent releases would build on that knowledge.

"It's a firm commitment on our part to stand behind

this new technology," said Jacob.

Activision's CD-ROM game works with Apple-compatible optical drives, while Cinemaware's operates on the MS-DOS platform. Whiteley said Activision is looking at a couple of game engines for use with MS-DOS CD-ROM drives, and it will almost certainly release a product for that format.

"Our major revenue producer is still MS-DOS disk products, and it will continue to be that way for some time," Whiteley said. Activision is watching the market carefully

to judge how CD-ROM drives are accepted. "CD-ROM can't be a mainline strategy," she said, "but the company wants to be out there with a product."

The CD-ROM versions of both games are priced close to the disk-based versions. *Defender of the Crown* on CD-ROM lists for \$69.95, compared with \$49.95 for the disk version. Activision's *Manhole* sells for \$59.95 for the CD-ROM version and \$49.95 for the disk version. "We wanted to sell to anybody who had a ROM drive," Whiteley said.

The success of CD-ROM games will depend heavily on the sales of CD-ROM drives in the market. So far, the prices of those drives have been so far above traditional hard disk prices that consumers have hesitated in taking the plunge. But Panasonic's introduction of an MS-DOS CD-ROM drive for under \$500 may weaken consumer resistance. For the people at Activision and Cinemaware, that's the break they're looking for.

"CD-ROM really is the future," said Whiteley.

— Peter Scisco

Computer, Take a Letter

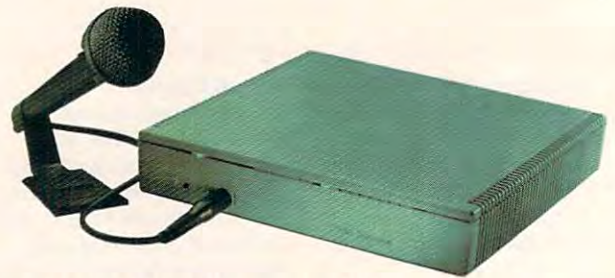
In *Star Trek IV: The Voyage Home*, everyone laughed when Mr. Scott tried to access an ordinary Macintosh just by saying *Computer*.

Everyone, that is, except for the people at Articulate Systems.

The Massachusetts-based hardware company has announced a new hardware product called Voice Navigator. Voice Navigator accepts spoken commands that Articulate Systems programs into the device. The vocabulary represents commands from the most popular Macintosh software, such as *Excel* and *HyperCard*. To accommodate more obscure programs, Voice Navigator comes with software that lets users add commands to the vocabulary.

If Mr. Scott were planning to use Voice Navigator, he would have to train it to understand his speech, brogue and all. That process doesn't take long, according to the developers; it's just a matter of repeating the commands a few times. Once it has learned Mr. Scott's voice, Voice Navigator will understand him as well as any human can. If he comes down with laryngitis, though, there's a chance the device won't recognize his voice. And Voice Navigator won't accept voice commands from other people once it's learned to listen to Mr. Scott.

Although Voice Navigator is the first voice-recognition product for the Macintosh, comparable PC-based devices have been on the market for



years. Dragon Systems, the company that licensed Voice Navigator's software, has developed several voice-recognition products. Most recently, the company announced a voice-controlled typewriter called DragonDictate, which starts out with a 5,000-word vocabulary and a 70,000-word dictionary (used when DragonDictate doesn't recognize a word). As the system encounters new words, they're added to the

vocabulary.

For now, these systems are expensive—Voice Navigator retails for about \$1,000, and DragonDictate in beta form costs about \$9,000. The technology is still being honed: You have to speak slowly to these devices, and you have to make sure that the machine has heard what you wanted it to hear. Computers can make typos with the best of us.

— Heidi E. H. Aycock

Real Computers Don't Say Hello

When a computer plays a big role in a story, the machine usually has a personality. Charming or threatening, protective or hostile, computer characters are more than wires and chips and electrical current.

But when Speer Morgan wrote his latest novel, *The Assemblers*, he concentrated on excluding personality from his computer character. "I wanted the novel to be realistic," he said.

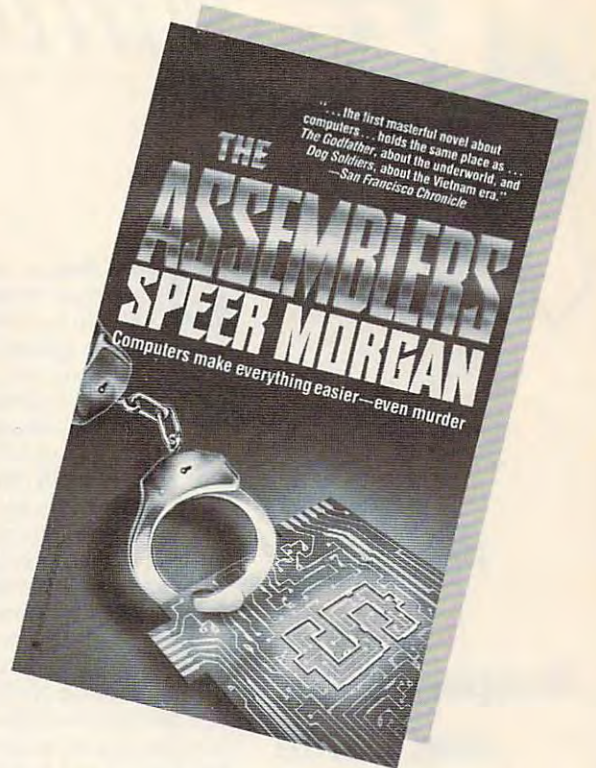
The Assemblers, Morgan's third novel, is a thriller about an online auditing company in Arkansas. How can computer auditing be thrilling? Add a few murders, a sinister satellite device of unknown origin, an estranged husband-and-wife detective team, and money—a lot of money—and then see what you get.

"I got resistance from all

fronts about trying to be realistic," he said, explaining technophobia as the cause of the criticism. Editors said the computer character wasn't dramatic enough and the story wasn't simple enough.

"It's very difficult to make a computer a dramatic character. If it's just a machine that does your bidding, then it's ultimately just a piece of furniture, dramatically. I gave the system what seems like volition, but it's not real volition—it's kind of a trick.

Morgan isn't opposed to computers, but he is concerned about what we let computers do for us, about the threat to individual privacy, and about the electronic manipulation of wealth. "My book has a little bit of a 'Hey, wait a minute—let's think about some of the uses that we're willy-nilly getting into.'"



Morgan teaches creative writing at the University of Missouri. He edits *The Missouri Review*, a literary magazine published on paper and

online through The Source.

The Assemblers has been released in paperback by Worldwide Library.

— Heidi E. H. Aycock

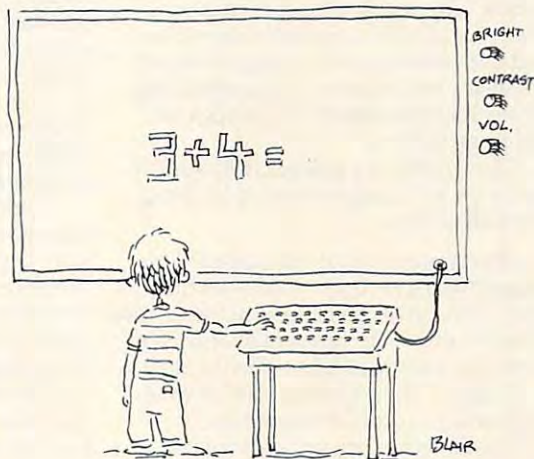
The Blackboard Future

John Sculley wants to arm educational revolutionaries, and he has already visualized the enlightening weapons of the twenty-first century.

At a forum called Education for a Competitive Economy, Sculley addressed about 1000 North Carolina business leaders and educators on the future of education in the United States.

"Revolution is something that you do with passion, that you are inspired to do because you have hope for the future," he said. "And it is nothing short of revolution that is required for our public education system."

After calling for drastic change, Sculley proceeded to show the audience what kind of tools should be available in the next century. He showed his well-known Knowledge Navigator, a booklike computer which accepts informal vocal commands and is linked to other resources around the



world. He also showed how the same kind of technology could help a child prepare a report for school.

In the demonstration, the child gives a multimedia presentation about volcanos, complete with graphics, text, sound, and film footage of an actual eruption. It's projected on what looks like a giant, bulletin-

board-sized computer screen. The child's third-grade project is more sophisticated than presentations most communications professionals can create now with large budgets and expensive equipment.

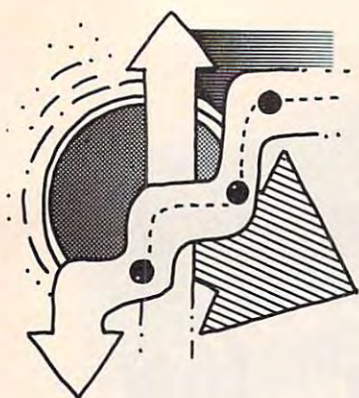
Another incarnation of this future technology is a computerized book that teaches an adult to read. A man sits

on a park bench reading his computer book. When he comes to a word he doesn't know, he asks, "What's this word?" and the computer tells him. Best of all, he can scan text into the computer, choosing what he wants to read on the spur of the moment.

All of this impressive technology was produced with special effects for Sculley's presentation, but he also showed current developments: inner-city classrooms equipped with Apple II's and Macintoshes, children who seem enthusiastic about school work, and teachers describing themselves as guides.

If Sculley has his way, school children will regard the computer as a backyard for learning, not as a machine for programming: "When we think of the computer as a cultural tool, then we can perhaps understand it better as a medium instead of a machine," he said.

— Heidi E. H. Aycock □



Power Fantasies, Moral Responsibility, and Game Design

gameplay

ORSON SCOTT CARD

Double Dragon (Arcadia). You're on assignment in the mean streets of a city. You find weapons along the way—a knife, a baseball bat, oil cans, and boulders—that you can pick up and throw. You fight your way through an array of toughs—bad girls, hoodlums both black and white, even a not-so-jolly green giant.

Into the Eagle's Nest (Mindscape). You're an American agent sent to infiltrate a Nazi stronghold. You pick up food, medicine, and ammunition along the way, trying to find and liberate prisoners held somewhere in the fortress maze.

Gauntlet (Mindscape). You are either a warrior, a Valkyrie, an elf, or a magician. You may be alone or with friends. You must penetrate an infinite underground maze, battling trolls, goblins, hobs, and wizards as you search for treasure and magical objects.

Impossible Mission II (Epyx). A mad scientist is set to blow up the world unless you penetrate his labyrinth and find the clues that will let you stop him. You are unarmed. You have to dodge the death-dealing robots or, occasionally, blow them up with mines you find along the way.

Technocop (U.S. Gold). You start out in a supercar, eventually acquiring such accessories as turbospeed, rapid-fire cannons, even nukes. You end up inside inner-city tenements, shooting—or netting—not only the bad guy you've been sent to arrest, but also any other hoodlums you happen to meet along the way.

These games are astonishingly similar. Each of the following statements is true of almost all of them:

- Everybody you kill disappears. This is a programming necessity. Otherwise the screen would quickly fill up with the corpses of your victims. The vanishing-bodies syndrome also has the pleasant effect of sanitizing the game. There's no mess left behind you, nothing to explain or clean up.

- You have to "tag up" on various items—treasure, food, ammunition, weapons, clues.

- When you clear out all the bad guys on one level, you move on to the next, which is harder. The game ends only when you die.

- Everybody you meet is out to kill you. No stranger can possibly be your friend.

- The bad guys are all either nonhuman or clearly antisocial types, like punks or very large fat guys with no hair or poor inner-city blacks. The moral message is clear enough: It's OK to kill people that are different

enough from you; people that are different from you are all out to kill you anyway. (Only *Impossible Mission II* makes a serious effort to avoid these moral problems—the bad guys are all machines.)

- You've got to beat the clock. If you don't move forward through the obstacle course, you'll eventually die. There's no way to win without killing or blasting *something*.

- Just as in bad TV shows, bad guys die easily and good guys keep coming back for more, at least for a while. Also, bad guys are stupid. This is a great thing for children to learn in preparation for life in the real world.

Now, some people will tell you that violent games like this will desensitize you to real violence, making it seem more acceptable. Others will tell you that these games provide a harmless outlet for aggression and are no more violent than Road Runner cartoons.

I, on the other hand, tell you that people play for their own reasons, and that games have different effects depending on the player.

But nobody can deny that there's a better chance for *Double Dragon* to skew a player's moral outlook than, say, *Breakout*. Even among the games mentioned in this column, *Double Dragon* has disturbing racial overtones, while *Technocop* is only marginally better when it depicts the police officer's task as slaughter rather than crime prevention and investigation. Both are clearly more problematical than *Gauntlet's* fantasy bad guys and *Impossible Mission's* nonhuman robot enemies.

Unfortunately, a morally questionable game is often a lot more fun to play than a morally good one. For instance, *Double Dragon* is blessed with excellent graphics, an interesting setting, a full range of motion, and simple, clear controls. *Gauntlet*, on the other hand, is graphically pathetic, at least in the IBM version—the game on which I've spent \$50 in a single day in the arcades isn't even worth putting up on the screen at home. *Gauntlet* and *Impossible Mission II* might be morally preferable, but which does my son—as nonviolent a kid as you'll ever meet—prefer to play?

Game designers don't *try* to create morally repulsive games. They're usually concentrating on programming and design problems. *Technocop's* ingenious split screen is a triumph of clear visual game design, with the lower half of the screen showing either the car's dashboard or the cop's wrist-computer display and the top half

gameplay

Can't We Have Respect and Compassion in Games?

showing the action. While they were developing this screen, I'm sure the designers weren't even *thinking* about killing.

Lack of harmful intent may absolve them of guilt, but it doesn't clear them of responsibility. That is, we mustn't brand these designers and programmers as bloodthirsty ogres. But we must remember that kids who act out the story contained in their game will be changed in some way by the experience. Games have consequences in the real world.

So what is a designer supposed to do? Suppose we sanitized the concept of one of these killing games. Let's say that as you move through the maze, lots of ugly worms and bugs come at you. You can't get past them in their bug form; you must shoot a metamorphosis pellet at them, turning them into butterflies or locusts, bright with color and life as they flutter or strut off the screen.

Would the game still be a hit?

Maybe, if it were designed with as much intelligence and visual artistry as the best of the killing games. But turning worms into butterflies would probably be viewed with disdain by the players who hunger for shoot-'em-ups.

Why? Do these players just naturally love killing?

The truth is, to the players—mostly children—these games aren't about killing. They don't know what death is. These games are power fantasies. If you're a kid, living a powerless life, it feels great to stride through a fantasy world where if anything blocks you, you can kick it out of your way. That's why this kind of game absolutely dominates in the arcades. That's why, in the days before computer games, kids played with army men or acted out cowboys and Indians. That's why my children made guns out of sticks or Legos despite our maintaining a weaponfree home. (And for those of you who think girls are immune, remember that playing with dolls is another manifestation of power fantasies: all those lovely little people, always doing *exactly* what you want.)

In other words, morally complex or mindlessly brutal, these games are what kids want—and *will have*, whether they play them on the computer or not. But that doesn't mean good game designers are absolved of responsibility. Can't they let us occasionally meet someone who isn't an enemy? Can't there be a few obstacles we can overcome without slaughter? Can't power fantasies be accompanied by some sense of respect or compassion? □

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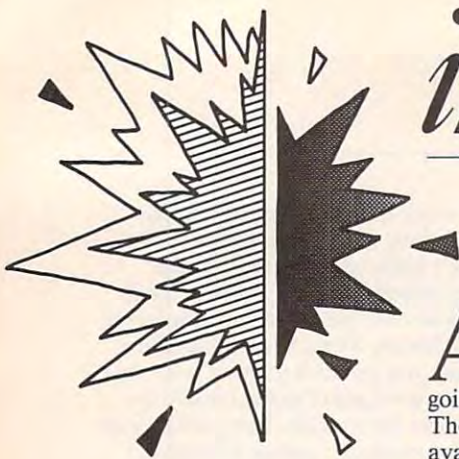
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impact

DAVID D. THORNBURG

Programming Never Died—It Just Started Talking Another Language

About ten years ago, one of the major debates among personal computer owners was whether or not we were going to become a nation of programmers. There was almost no commercial software available for personal computers; each machine came equipped with some version of BASIC, a programming language that would (it was thought) make it possible for people to create their own programs—if only they could learn to use it.

It soon became evident that, given the choice, most computer users preferred buying finished applications over creating their own. Programming became more of a hobby and less a computer survival skill.

As the computer software market flourished, the number and scope of commercially available computer programs grew so quickly that most computer users were able to find exactly what they wanted. There was no need to personally program their personal computers. Computer literacy, once defined as the ability to create programs from scratch, became the ability to use a computer, period.

But even with these developments, the computer's unique potential to be customized to meet specific needs was too powerful to ignore—the programming movement took a subversive turn. With programs like *VisiCalc* and other spreadsheet tools, personal computer users were able to create customized applications of their own by building templates. And though creating a template is different from creating a computer program from scratch, the result is the same: a customized program designed to meet one unique need.

Tools that allow for template creation are typically far easier to master than traditional programming languages. The core program (a spreadsheet or database, for example) provides the framework. Within the constraints of this framework, you can craft a specific application using a compact set of commands whose meaning is easy to grasp and whose grammar is fairly obvious. The success of this approach can be seen in the overwhelming popularity of database and spreadsheet programs. Executives and support staff who would never think of themselves as computer programmers are able to create custom templates for their work as easily as they use any other program on their computers.

But there is a price to be paid for this ease of use: While it's easy to create templates for a wide variety of applications, it's virtually impossible to create templates that

move the application very far from the underlying metaphor. In other words, applications built with a spreadsheet tool look like spreadsheets. You wouldn't design a video game using *Lotus 1-2-3*.

Such constraints, however, may not be the last word in creating easy-to-use programming tools. A relatively new class of programming languages built on the concept of objects has started showing up at the consumer level. The most popular of these at this time is *HyperCard* for the Apple Macintosh computer.

Through the use of an English-like scripting language (called HyperTalk), *HyperCard* users assign tasks to such objects as buttons and fields. Each instance of an object can perform a specific task and can be tested and refined (usually) as though it were independent from the rest of the program. The ability to construct a large application from such simple building blocks makes programming in *HyperCard* far more intuitive and easy than working with more traditional languages like C, Pascal, or FORTH.

HyperCard users can start with an application that performs some of what's required and then can add features to customize the program to specific needs. Programming in this environment is like building a structure with Tinker Toys: You can remove or add pieces at will until the desired structure is completed.

HyperCard has been available for a while, and we now have enough data to suggest that this type of environment will bring most of the advantages of programming to the many millions of computer users who want to create the occasional custom application. Several other vendors have since claimed to have created versions for other computers. To date, none of these *HyperCard*-like products supports the flexibility of the HyperTalk scripting language. While these tools do allow the creation of customized applications, they lack the tremendous freedom offered by the original product.

It appears that we want to be programmers after all. The industry is responding by providing us with tools that take the pain out of the process. If you've wanted to create a program of your own but haven't wanted to spend a year learning a formal programming language, you should explore some of the other tools available to you. You just might write a program that increases the power of your computer beyond your wildest dreams. □

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Letters

More 'Miga

On the "COMPUTE! Reader Survey," (February 1989), I found it difficult to choose only two parts of the magazine that I like the best. This is because I like most of the features and articles that you print! Since I have an Amiga 2000, the Amiga-pertinent items are most interesting to me. But I also find the generic articles helpful. For example, the articles "Money, Money, Money" and "Money and Your Spreadsheet," even though they gave me more insight into money management and spreadsheets in general. Your series on "The Elementary Amiga" early in 1988 is another example of the good stuff I have found in *COMPUTE!*. How about a similar series about the new Workbench 1.3? That would be great for me and the other Amiga owners who read *COMPUTE!*.

Patrick G. Horner
Warren, MI

Not So Choice

In "The 1989 COMPUTE! Choice Awards" (January 1989), I was very interested in reading about *Multiplan*. I certainly agree with everything you said about the program and its features. However, without cooperation from the company who sells it and furnishes support for it, sometimes the program becomes useless.

I wrote to Microsoft regarding a problem I have with the program. On page 0-31 of the manual, it says: "Your *Multiplan* Program diskette is set up so that only one copy of the *Multiplan* Program diskette can be made to a backup diskette and only one copy to a fixed disk, if you have a fixed disk." I interpret the *and* as meaning that I can have two copies. One for a diskette and one for a hard disk. When I attempted to put my *Multiplan* program on my new hard disk, I got a message that seemed to say that I couldn't make a copy.

I have never received a written answer to my letter, but on January 10, 1989, I received a telephone call from a young man who told me that the message I was getting was the copy-protect message, and I could not put the pro-

gram onto my hard disk. "Sorry it took so long to get back to you, goodbye."

Now you know that, as I look around for a new spreadsheet program for my hard disk, I will not be looking at any of those produced by Microsoft.

Edwin Mutzer
Bradenton, FL

Algebraic Search

I have been unable to find an educational program for high school Algebra I. Everywhere I've checked has them for PCs but not for Macs. Any help in this matter will be greatly appreciated.

David Franklin
Butner, NC

Try contacting *True Basic* at 45 Theodore Fremd Avenue, Rye, New York 10580. That company sells a Macintosh package called *Algebra*, which should be appropriate for a beginning student.

A Better Mix

The article "Coming Together" in the March 1989 issue of *COMPUTE!* failed to mention a very important aspect of interfacing an Atari ST with a PC compatible. Sure, *pcDitto* will turn your ST into an IBM clone, but the ST will also directly read IBM PC-format disks! This makes file transfers painless. (Note: Because of a slight difference in the way the disks are formatted, an IBM compatible cannot read an ST disk.)

I use both an Atari ST and a PC-compatible laptop. The laptop utilizes two 3 1/2-inch disk drives. Most programs are still distributed on 5 1/4-inch disks, so I use the ST equipped with a 5 1/4-inch I.B. Drive to transfer the programs to the smaller disk format.

I also use the ST setup to transfer program files from *Personal Pascal* (ST) to *Turbo Pascal* (IBM). With modification, the program is ready to run. In fact, I prefer editing program files for *Turbo Pascal* using the *Personal Pascal* program editor, even though it requires swapping computers to compile and link.

James W. Maki
Indianapolis, IN

Computer, Fetch

What's happening? Just when you think it's safe to buy a computer, poof, it becomes a closet computer (*COMPUTE!*, October 1988). Eight-bit is out; 16-bit is in.

I purchased an Atari 130XE four years ago, and no sooner did I get it figured out than your magazine suggests how I can make a pet out of my computer.

Is there no plateau where the old can exist with the new?

*Bill Silvers
South Gate, CA*

64 Solution

I thought "Editorial License" was very good in the February 1989 issue of *COMPUTE!* magazine. It hits the computer on the head about pricing for home computers. However, there is one alternative. One can purchase a Commodore 64 with a 1541 disk drive for about \$300. A Star NX-1000 printer costs \$160. An interface for the printer

can be had for \$40. GEOS comes with the disk drive. There are many good public domain programs. One can even type in a good word processor from a previous issue of *COMPUTE!'s Gazette*. That's \$500 for a complete computer with a good printer, several fonts, and near-letter-quality output. Too bad someone like K mart doesn't package something like this with good information to get someone going. Also, with user groups, it is fairly easy to get help.

The 64 is not just a game machine but, packaged correctly, would be a home machine of several genres.

*Clayton W. Dewey
Ludington, MI*

Virus Vindication

In the March 1989 "Impact," David Thornburg suggests that computer viruses come under the Fourth Amendment of the Constitution and are therefore a federal offense. It is my impression that spreading viruses is a fed-

eral offense, especially if they cross state lines. But this does not come under the Fourth Amendment of the Constitution. The Fourth Amendment protects us from unreasonable searches and seizures by state, local, and federal government. The laws against breaking and entering and theft protect us against unreasonable searches and seizures by individuals. Spreading computer viruses probably comes under vandalism or malicious mischief.

Will the threat of jail or fines discourage those who spread viruses? Probably. The average computer nerd would not do very well in jail. Even heavy fines or the threat of a lawsuit could be effective. Nothing is perfect, but this strikes me as the type of crime that punishment can deter.

*Richard Bruce
Davis, CA*

David Thornburg heartily agrees with Bruce's statements about the Fourth Amendment and is glad that Bruce took such an interest in the issue. □

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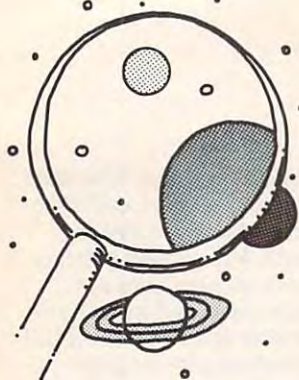
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discoveries

DAVID STANTON



What's It Going to Be? Rigid Computer Learning or Electronic, Seat-of-the- Pants Exploration?

A few years ago, I attended a presentation sponsored by a leading packager of computer-managed instruction (CMI) systems. For \$32,000 a year, the presenter said, schools could lease a network of eight dumb terminals. Those terminals would be linked to a mainframe in a nearby city. Containing hundreds of neatly organized education modules, that mainframe could track each student's educational progress and deliver to each just the right dose of math or language arts or science every day.

"At first glance, the cost might seem a bit high," the presenter admitted. He went on to explain, however, that careful planning could make the system quite cost-effective. With proper scheduling and rigid adherence to that schedule, the total cost per student hour wasn't bad at all, he assured us.

Besides, the system offered many advantages over what he apparently viewed as the haphazard education normally provided in traditional classrooms. With his CMI system, each student could work at his or her own pace. During each 20-minute session, every student would receive a perfectly balanced diet of 25-percent new material, 50-percent medium-difficulty review items, and 25-percent easy review questions.

No one could loaf either. If a child "wasted" more than a few seconds, the digital instructor would take note, later reporting the miscreant's sloth along with page after page of equally useful data.

The administrators in attendance smiled approvingly as the presenter explained how much paperwork the system could generate—individual progress reports, student-to-student analogies, teacher-to-teacher comparisons. Everything neat and clean. Everything indelibly recorded in a huge database somewhere.

The demonstrator beamed with pride as he showed us his software. I cringed. Dry drill-and-practice stuff. (Drill and practice is a necessary part of the learning process, but need it be so dull?) While the presenter read his statistics, I envisioned students working day after tedious day on such drivel. "Students using this program in District Y advanced one and one-half grade levels in one school year!" he exuded. Research had shown that his system significantly improved standardized test scores.

He mentioned several area schools that already were using the system. Others would sign on following that presentation. After all, the local cost wasn't so bad when adjusted for state aid, divided by student enrollment,

and square-rooted by minutes of actual on-line instructional time (or something like that—the math eluded me).

My mind wandered. "How many computers could \$32,000 buy? Must computer-based instruction be so intolerably dull? Couldn't students learn just as well with a less structured, more flexible approach?"

I imagined kids plugging along day after day, improving their standardized test scores and learning to hate learning. It didn't seem right. Yet arguing against such apparent progress was, and still is, a risky business. There's something reassuring about cold, hard statistics. A smile, a laugh, and an inquisitive mind are much more difficult to measure and quantify.

Anyway, our district passed on the dumb-terminal network. We'll never know the effect of that decision on test scores. We do know our microcomputer lab is always filled with eager, smiling kids.

Whether they're used to encourage individual exploration and discovery or to stuff ever-increasing volumes of facts into reluctant minds, computers *do* work as educational tools. Perhaps this fact more than any other should force us as educators and parents to more carefully analyze our attitudes toward education—what it is and what we expect from it.

How shall we use the power of computers? Should we use technology to deliver a standardized curriculum to every school in the country? With such an approach, we could be reasonably certain that every child in the nation would know Pearl Harbor Day was in December, not September. Or should we use computers to encourage creativity and individual thought and run the risk of falling behind in the statistics game?

For my part, I hope the day never comes when we begin packaging education like it's breakfast cereal—minimum daily requirements, perfectly balanced diets, never too little, never too much—with a neurotic fixation on subject matter oblivious to the humanity of teachers and learners.

The real value of educational computing does not lie in its ability to force-feed facts. The real value lies in the computer's ability to encourage creativity, facilitate personal exploration, and give students, parents, and teachers greater—not less—control of the educational process. That's the strength of educational computing, and that's why we will see increasing benefits as more and more people join the computer revolution in schools and at home. □

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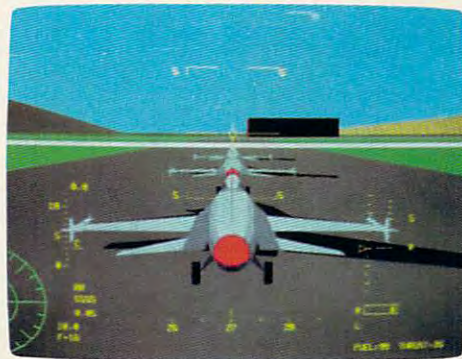
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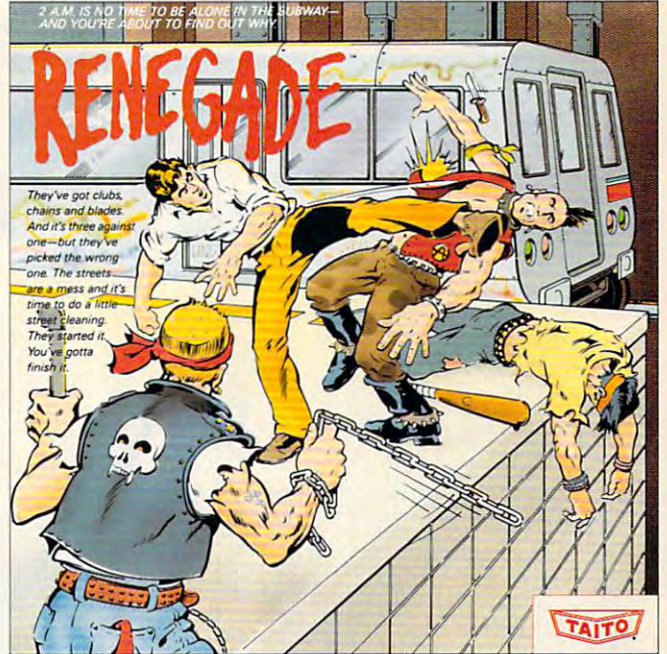
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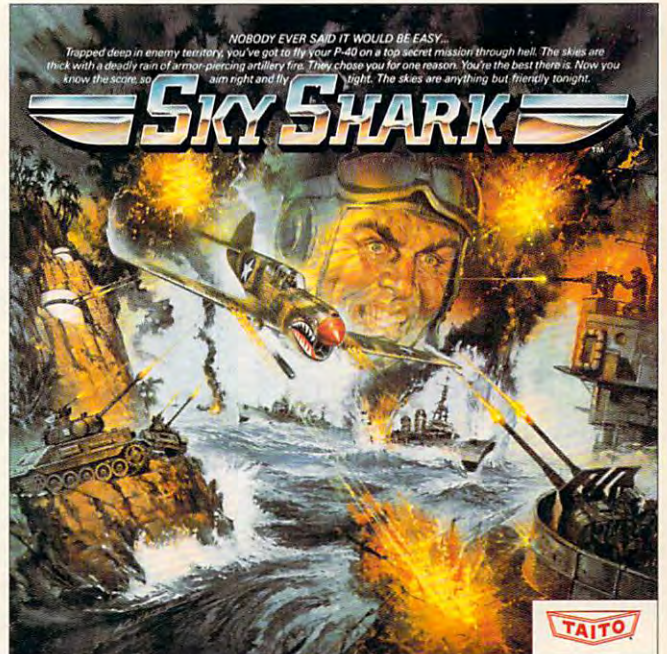
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LEARN HOW TO PROGRAM

You don't need to be a rocket scientist to program your computer. Anyone can learn how to create working, useful software. Real-life programmers show you how to get started and what to expect.

Dan Gookin

What could be better than a dog? Computers, of course. Granted, they aren't as loyal or as fun to pet, but they're still capable of doing tricks. And unlike your canine pets, computers are a lot easier to train.

Training a computer to do something is commonly referred to as *programming*. It's a big, scary term. Actually, programming a computer is almost as easy as using a computer. In some instances it's easier, because you're telling the computer exactly what you want it to do.

If you've ever felt frustration with some of the programs you use, then you're ready to program. As programmer John Ratcliff puts it, "I bought computer games and felt really disappointed—like I was being ripped off. I said, 'I can do better than this.'" And he did. John is the author of Electronic Arts' *688 Attack Sub* game for the IBM PC. If you know programming, then you can do just as John did.

You may have a problem, though—knowing where to start. Programming sounds complex. It looks even more complex. Face it, some programs look like the work of a Navaho rug maker. Maybe you're afraid of programming's complexity, or maybe you're afraid that you need to know mountains of algebra to program. Don't worry. It's not true.

You don't need to be a genius in math to program. You don't even need to know how to type. All it takes is a computer, a little time, and some creativity. John Ratcliff comments, "If you

TRAIN TO PROGRAM

Helllloooo, Computer Programming!

Programming as a hobby is relatively new; it's been around only ten years or so. Before that, it wasn't a hobby—it was a job. But with the advent of personal computers, programming has become a pastime for millions. Bruce Webster notes, "There are a lot of programmers out there. No one ever foresaw that Borland would sell 1 million copies of *Turbo Pascal*. That's a lot of people out there hacking away." So why not join the crowd?

By learning how to program your computer, you learn more about your computer. The more you learn about your computer, the more you'll get out of it. The programs you write can do things for you—in some cases, things that other programs can't (because only *you* know what you need). And then there's always the possibility that you'll sell your creations and make some money—maybe even incredible sums of money.

All of this starts when you learn about computer programming.

Computer What?

When you program, you give the computer a series of instructions, or steps, that it must follow. The computer follows those instructions to the letter (unlike your dog, the computer is *very* obedient). If you tell the computer, "Run around in a circle," it will do so. Forever. Or until you tell it to stop.

Programming is also just a fancy term for human/computer communications. To tell the computer to do something, you need to speak to it in a language it can understand—a programming language. You can't just say, "Computer, make me a piece of toast." It would be nice, and someday it may work. But not now. Instead, you can use one of the many common computer programming languages.


Programming languages are the dialects we humans use to communicate with our computers. For cultural and social reasons, we communicate using speech. Computers, though, communicate using numbers. Those numbers are the infamous 1s and 0s you've probably read about and feared. Fortunately, computer pro-

own your own computer and have free time, you have the right ingredients."

But is programming something *you* can do? Bruce Webster—author of *The NExT Book*, from Addison-Wesley, and programmer/creator of the game *Sundog*—has taught a lot of people how to program. Bruce has noticed that the people who do well are also good with story problems. "The ability to take a verbal description of a problem and then extract from it the information necessary to arrive at a solution is the essence of programming."

One thing that might come in handy is some artistic or musical talent. For some reason, musicians make better programmers than, say, mathematicians. Programming, like making music, is taking an intangible idea and making it real. Tony Garcia, assistant acquisitions manager for Epyx, a software publisher, says, "People who are into programming are into keyboard instruments. A lot of computer programmers like to do a lot of drawing and doodling. Programmers get a kick out of creating art with a PC."

But even if you're not a musician, don't give up hope. This article will introduce you to a skill that could change your life: programming your personal computer. As painlessly as possible, I'll introduce you to computer programming, the various programming languages, and how you should learn this potentially profitable hobby. And through candid comments from programming experts and learned individuals, you'll discover how to profit from teaching your computer a few new tricks.



programming languages make it possible for you to tell your computer what to do without uttering a single 1 or 0.

Programming languages come in varying degrees of sophistication. There are three levels: high, medium, and low. A *high-level* language uses command names and a structure that's fairly close to English. A *low-level* programming language more closely resembles a poetic column of three-letter acronyms and is but a hairs-breadth away from 1s and 0s. A *mid-level* language is somewhere in between.

If you're just starting to program, you'll probably want to pick an easy, high-level language—one in which you can use familiar, English-language expressions to tell your computer what to do. Programming statements such as SAVE FILE TO DISK or ADD 7 TO RESULT are common in high-level languages. To get started, you simply need to know the programming *commands* (vocabulary) and the language's *syntax* (the order of the words).

A programming language's vocabulary is never very large: The BASIC programming language has only 140 or so "words," for instance. (Compare that to the 15,000 or so English words you know, and BASIC's command list seems puny.) Learning a programming language's syntax, however, takes time and practice. In fact, forgetting a language's syntax (source of the programmer's bane, the dreaded *syntax error*) is a common mistake. A missing apostrophe, semicolon, or period can spell doom for even the best program.

Once you've mastered the commands and the syntax, the rest is just learning through practice. Computers won't blow up when you make a programming mistake. In fact, some programming languages even show you where you've made your mistake and offer corrections.

How Many Languages Are Enough?

It's nice if you speak a smattering of this or that programming language, just enough maybe to read a section of code and decipher what's going on. But how many languages do you *really* need to know?

If you're a typical programmer, you'll probably become well-versed in at least three—possibly more, if you count the myriad of spreadsheet languages, batch languages, communications macro languages, and what have you.

Here are several other popular languages.

Prolog

Prolog stands for *Programmation en logique* (programming in logic) and is perhaps the most unconventional programming language.

Prolog is very easy to learn—provided you haven't learned any other programming languages. This is because Prolog is declarative, not procedural. You describe what you want Prolog to do by giving it a set of facts, rules, relations, and queries—as opposed to telling it, "Do steps A, B, C, then D." Prolog works like a database, examining the information, then quickly coming up with a solution.

Prolog is best for expert systems, theorem proving, language analysis, and pattern matching. It's good at looking at problems and quickly coming up with solutions. Prolog programs are also capable of rewriting themselves while they run.

On the downside, Prolog doesn't handle a lot of algorithms as well as the procedural languages do. It's also rare to find a job as a Prolog programmer.

Lisp

Lisp stands for *List processing*, though if you've ever seen some Lisp code, you might have thought it was an acronym for Lots of Insidious Silly Parentheses. On the historical side, Lisp is the second oldest programming language (next to Fortran).

Lisp is easy to learn and easy to modify, and it has an incredible support environment, including the famous Programmer's Apprentice, which actually writes subroutines for you. With those tools, Lisp is the best general-purpose language on the market.

Lisp's major drawback is its lack of support in the nonacademic computer community (not to mention the awkward looks you encounter when you say that you "speak Lisp" to your computer). There are few Lisp program listings; good luck finding tutorials in magazines.

For microcomputer users, the full Lisp environment is expensive. Expect to pay around \$1,000. Even then, you probably won't be getting some of the support tools.

Fortran

The oldest computer language, *Fortran*—which stands for *Formula translator*—is good for scientific and engineering programming. Every engineer who uses a computer knows Fortran. (And practically all engineering problems have Fortran programs as solutions.)

Fortran is not swift at dealing with strings. And don't expect employers to knock down your door when they find out you speak Fortran. File processing in Fortran is almost like a spell incantation.

COBOL

COBOL (COmmon Business-Oriented Language) is used by the government and big business. Even though it's one of the older computer languages, there's still a need for COBOL programmers. Rumor has it that more source code is written in COBOL than in any other language.

COBOL is good at both file and data processing, and it handles text well, which is probably why COBOL has been more popular than Fortran. It uses a very wordy, English-like syntax. COBOL also sports a large vocabulary, about 300 words—more than any other programming language.


COBOL's major drawback is a lack of decent loop commands. It's also severely structured. There aren't very many interactive features in COBOL.

Ada

Ada is a modern programming language specifically designed to meet certain U.S. government specifications. It's named after the Countess of Lovelace, Augusta Ada Byron, who was Lord Byron's daughter and a friend of Blaise Pascal.

Ada is good to know if you want a job in certain branches of the government and the military. Missile-control and -guidance systems are written in Ada, which is good because Ada is said to be one of the most reliable languages. (The Libyans must write their missile-guidance systems in LOGO.)

The flip side of the coin is that Ada is bulky and slow. Though you can buy Ada compilers for your microcomputer, it's not really a microcomputer programming language.



A Lot of Languages

It would be nice if there were only one computer language, just as it would be nice if there were a universal spoken language. But since it doesn't pay to dwell on what is not, let's see what traits programming languages *do* share.

Computer languages are alike in that they all let you give the computer instructions. But it's not all instructions, or commands. Instead, there are some math and decision-making processes involved. (Don't panic! The math here is not that hard. As far as you're concerned, the math in a computer programming language is an extension of the basic functions you'll find on a calculator.)

Besides commands and the math, two other items common to nearly every programming language are *variables* and *control structures*.

A computer variable is the same kind of variable that you encountered in junior high algebra: It's a place where the programming language stores a value (number) or string (characters or text). The contents of the variable can be manipulated. So, as the name says, variables vary. You assign them values, or you can manipulate the values once they've been assigned.

Control structures are also common to all programming languages. There are two types: the *decision* and the *loop*.

A decision structure usually involves some type of "if" comparison. IF X=3 THEN BEEP is a good example. This type of control structure provides the computer with its processing power, allowing it to seemingly make decisions based on what you tell it.

The second type of control structure is the loop, a series of programming statements that execute over and over. These statements can go on forever if you like (the infamous *endless loop*), or you can supply a condition

whereby the loop stops. Because most of the stuff computers do is repetitive, it's a good sign if a programming language has a wide variety of looping structures.

Choosing a Language

There are four very common program-

ming languages for personal computers. You'll probably start learning to program with one of these four and then move on to something more sophisticated or specialized. But just about everyone starts with BASIC, Pascal, or C. The fourth common language, assembly language, is a little too

Help!

Writing programs is like any creative exercise. (I'm from the school that preaches programming as an art form, not a science.) Whether you're carving wood, writing a symphony, or letting your emotions run wild with a brush and some oils, you'll need more than just the basic tools. Same thing with programming.

Consider programming as working at a workbench (the computer is the workbench). Your primary tools are the programming language and your brain. Alone, these two can get the job done, but you'll find yourself doing a lot of repetitive maintenance tasks between major accomplishments.

To make the job easier, look into some programming utilities. These are small, one-purpose programs that will assist you in your programming duties. They make life easier for the programmer, which is why utilities proliferate and why programmers love them so much.

The primary utility you'll use is a text editor. Even if your programming language comes with its own editor, find a full-featured text editor.

The most popular text editor of all time is *WordStar* (the old version, not the new, *perversion*). The *WordStar*-like editor in *SideKick* is also preferred by many PC programmers. A fantastic text editor called *Brief* (from Solution Systems) was written specifically with programming in mind. *Vq* (from Golden Bow Systems) is similar to *Brief* but adds powerful disk-search features. These two packages may seem a little pricey to some beginners (upwards of \$200 each). In that case, there are many inexpensive (around \$50) text editors that will get the job done.

Aside from a good text editor, other tools or utilities you'll want to have include a debugger, the GREP utility, a file finder, a keyboard-macro programmer, and a programmer's calculator.

A debugger is the ultimate programming tool. It lets you look at your code after it's been compiled or assembled into a finished program. You can "walk through" your program a step at a time, examining how variables change and how the program changes memory and manipulates the computer. The debugger is the best way to kill those hard-to-find bugs.

MS-DOS comes with a simple debugger called *DEBUG*. *DEBUG* is good for getting started and for examining memory. But its walk-through, or *tracing*, functions are primitive and of use to only the most well-versed assembly language programmers. On the commercial side, Microsoft markets *CodeView* and Borland puts out *Turbo Debugger*, both of which offer power and features beyond *DEBUG*'s.

Some other utilities you might want to check out including the following:

GREP

A powerful file-searching utility, GREP is able to locate a string of text in any number of files. There are public domain versions of GREP for just about every computer, and Borland puts out a fast version called *Turbo GREP* with its *Turbo C* package. (Trivia buffs should know that GREP stands for Global/Regular Expression/Print. Ah, science. . .)

LIST

LIST is a shareware program that replaces the DOS TYPE command. It's ideal for viewing and searching through text files on disk.


FF or WHEREIS

Both of these utilities are good for locating a lost file on disk. FF is part of *Norton Utilities* and *WHEREIS* is a shareware program.

ProKey or SuperKey

These are keyboard-macro programs that save you repetitive typing. *SuperKey* also lets you encrypt files.

You might also look into a pop-up programmer's calculator that can assist you in translating between binary, decimal, and hexadecimal number bases. Both *PC Tools* and *SideKick* have pop-up calculators; I prefer *SideKick*'s.



much to chew for your first stab at programming.

Read on for overviews of these popular programming languages; the summaries offer opinions as to strengths and weaknesses and include an expert's advice on each language.

BASIC

BASIC is the first language for about 90 percent of all programmers. Why? Because it's very easy to learn. Also, as Tony Garcia, Epyx's assistant acquisitions manager, points out, "BASIC usually comes with the computer you buy." He adds, "BASIC's instructions are easily mastered."

BASIC, an acronym for Beginner's All-purpose Symbolic Instruction Code, was developed at Dartmouth College in the 1960s to teach programming to business and other non-science majors. Due to the efforts of Bill Gates at Microsoft, BASIC eventually became the de facto language for all microcomputers. In fact, because of its popularity on microcomputers, probably more programs are written in BASIC than in any other computer language.

BASIC is a good, general-purpose language. It's not too sophisticated, yet it's capable of performing just about any imaginable feat. Thanks to Microsoft, BASIC now contains tons of sound-and-graphics routines, making it suitable for just about anything.

BASIC is best at *string handling*—the ability to manipulate text. (Other programming languages really balk at the idea of dealing with text.) BASIC is not really bad at anything. However, its lack of a well-defined structure can make for sloppy code. "I've seen people who start with BASIC and develop almost irreversible bad habits," comments professional programmer Bruce Webster, a self-admitted Pascal fan.

Pascal

Pascal was created to help teach stu-

dents computer programming. It solved most of the problems associated with BASIC—primarily BASIC's lack of structure. Pascal is very structured, which makes it an excellent first programming language.

Pascal, named after the French mathematician Blaise Pascal, is a good, general-purpose language. About the only thing it does poorly is string handling. Other than that, Pascal can get just about any job done.

Bruce Webster is a Pascal enthusiast who has taught the language to hundreds of students at Brigham Young University. "I really think Pascal is the best initial programming language. It teaches you good concepts and good habits. When you know Pascal, it's easy to move on to other languages when you're ready. And you take the good habits you learned along with you."

Morgan Davis, creator of the programs *Proline* and *MouseTalk* and co-author of the book *Mastering the Apple IIgs Toolbox*, disagrees with Webster. "Writing a program in Pascal is like having a mother hen hovering over you, watching your every move, making sure you don't screw up. For example, C assumes you know what you're doing, whereas Pascal puts all these restrictions on you."

Over the years, the original Pascal language has been modified to deal with some of its shortcomings. Hardcore Pascal programmers would probably blame Borland for most of these modifications. The company's *Turbo Pascal* added numerous extensions to Pascal and provided the language with the consistency and punch it was lacking.

C is the ultimate computer language. This is by way of acclamation more than by any official labeling. All the experts agree on this one.

Morgan Davis says, "C is one of the best and most flexible languages around." John Ratcliff, programmer of *688 Attack Sub*, comments, "The whole world is going to C." Tony Garcia puts it best when he says, "The hottest language is C. It's an interesting language that allows porting over

to another machine. For example, you can take the C code that you did on one computer and move it over to another computer, changing only the machine-specific information. C is what everyone is learning."

Unlike BASIC or Pascal, C is a mid-level language. It's not quite as English-like as either BASIC or Pascal, but it's still well above the grunts and squawks of assembly language. Today almost all the major software applications are written in C. And if you plan on writing programs for the UNIX or OS/2 operating systems, learn C. *Sundog* creator Bruce Webster agrees. "If you're interested in a job, learn C. Learn Pascal first for good programming techniques and then switch to C."

For all its strengths, however, C isn't a good first computer language. If you want to learn C, study Pascal or BASIC first. After that, C comes naturally (more or less).

Assembly

Assembly language is but one notch above the 1s and 0s, the *machine language* that your computer's microprocessor speaks. But rather than using numbers, assembly language uses two- to five-letter mnemonics to represent the programming instructions understood by your computer's microprocessor.

There isn't just one assembly language. Instead, there are several, one for each microprocessor. There is 8086 assembly language for IBM PCs and compatibles; 68000 assembly language for the Macintosh, Atari ST, and Amiga; and 6502 assembly language for the Commodore 64 and Apple II computers. All assembly languages are similar in concept, and if you learn one, picking up another isn't hard.

Assembly is the hardest programming language to learn because it's so far removed from the way humans think. Once you understand the basic concepts and realize that you're working directly with your computer's microprocessor and memory, though, assembly can be fun.

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naturally speaks, the programs you write will run faster than programs written in any other language. "If you're going to write a professional computer game, you're going to have to write it in assembly language," says John Ratcliff.

The downside of fast assembly language programs is that it takes ten times longer to write an assembly language program than it would take to write a program using another language. Why? Because with assembly language you're working from the ground up. You, the programmer, write the math and save-to-disk routines. Sure, you'll get some help from some prewritten routines inside the computer's ROM and from DOS, but not much.

Lately, the feeling among

programming professionals is that you should learn and use C for most of your programming. According to these experts, assembly is only appropriate for rewriting those parts of a program which are running too slowly. (Assembly language can be merged with most other languages for speed optimization.) In other words, knowing a smattering of assembly never hurts.

Where to Begin?

Now the questions really start. Where should you go to learn and study? What about that Great American Program you want to write?

Your first job in learning a programming language is to pick one. After that, there are two directions you can take: self teaching or formal instruction. On these two methods, the experts disagree.

Self teaching is best if you're motivated or curious about programming. "Learning on your own is a lot better than learning in class," says Morgan Davis, author of *MouseTalk*. "You end up doing a lot more discovery, and you learn a lot more than by taking notes or reading a book. You experience all aspects. It's more of a personal discovery."

Tony Garcia works with dozens of programmers. "Almost every programmer at Epyx is self-taught. They may have gone to college, but that's not where they learned it." When asked whether or not formal instruction was even necessary to get a programming job, Garcia said, "You don't need to start out in a class at all. We [at Epyx] don't care if they've gone to school or not. If they code well, they get the job."

So how do you learn on your own? When you take home your programming language, sit down and read the tutorial. If you like doing the exercises and find you take to it right away, then you're perfect for self teaching. If you're frustrated, take a course.

Besides the tutorials that come with the programming language, you should also scour your local bookstore for computer programming books. There are two types: references, which

Make Money Programming

Why hide your programming gems? If you like the programs you write, someone else probably will, too. So why not sell your work?

The problem with selling your programs is finding people to buy them. Having a good product is only half the battle. Getting that product to the marketplace is where most programmers fall short. Fortunately, there are things you can do to get an edge on the competition.

Once your program is ready to go (certainly a relative term in the software biz), there are ways to market it: Sell to a commercial publisher or market the program yourself.

Selling to a commercial publisher isn't as easy as it used to be. Notes *Sundog* author Bruce Webster, "The software market is very competitive. Budding programmers are going to have a hard time competing. Companies are pouring millions of dollars into software development." But Bruce wants you to take heart. "If you're serious and have something that's hot, the best thing to do is to find a software house to market it. Find a small software company. If you go to a large house, you're going to have a lot of people ahead of you."

Tony Garcia looks through piles of program submissions every day as part of his job as assistant acquisitions manager at Epyx. He suggests that potential software authors submit a good, professional presentation—not necessarily a finished product, but something that has a nicely detailed write-up. To those new to programming, he recommends, "Let the publisher know it's your first project. Most people feel intimidated when sending out their first project. It's important to let the publisher know that."

An example of one who succeeded, John Ratcliff, who sold his *688 Attack Sub* simulation to Electronic Arts, recommends that would-be software authors put a lot of energy into their product. "Finish a great amount of the software to prove that you can do it. That means a lot to the industry."


Marketing the software yourself is the hardest road. Ratcliff recommends that every budding programmer write *shareware* (software that you distribute for free and then hope the users pay a registration fee for at some later date). "It's a great way to experiment. You're not going to make any money, but your name gets around."

Morgan Davis, who has been running a shareware business for four years, agrees. "If you have a decent product, but you're a small-time developer, shareware is a great outlet," says Davis. "Once your shareware has been out and around, approach a real software house and see if they want to pick it up. The fact that you're getting exposure can open up other doors."

But actually making money with shareware is hard. "A few people have done very well with shareware. Most have done poorly," comments Bruce Webster. "It's a very easy way to put your stuff out and get feedback, but not a good way to make a living—except for a few."

Generally speaking, shareware doesn't work. Only a small percentage of people turn in the fee. "I get a \$10 check in the mail every few months or so and people send me nice letters: No one pays for it, but they all know about it," says John Ratcliff.

Nearly all the experts agree that shareware is the best way to get your name out there and known. "It's a great way to get your work out and be recognized by the community," comments Tony Garcia. "The concept is great and I'd like to see more success from it. It gives any programmer a lot of visibility."



contain a list of your programming language's commands (the good ones will have thorough examples), and tutorials, which show you the ins and outs, the ropes of programming in your chosen language. Bruce Webster notes, "It helps to have a good book. There are skills and techniques you can learn from books, but the creativity is something you have to do on your own."

Taking formal instruction helps avoid some of the problems you may encounter when you go the do-it-yourself route. Also, when you teach yourself, you have no one to call if you have a problem or question. "It really helps to have someone help you get through the basic concepts; otherwise there's always a high frustration level," says Webster.

Programming classes also help you avoid wasting time reinventing the wheel. There are lots of programming tricks out there—more than all the books could possibly list. You'll learn these tricks when you take programming classes. You won't learn them sitting at home, where you could agonize over a problem some programmer solved in the 1950s.

688 *Attack Sub* programmer John Ratcliff points out that while school doesn't teach what's necessary to write a computer game, it does offer the background you need to write a program. "Taking a course is extremely valuable," he adds. "Everybody needs to be exposed."

Not everyone agrees, however. "You can't learn what you need to learn in schools," says Tony Garcia, of Epyx. "They teach flow charting, which is good, but not practical. The good programmers are the ones who taught themselves. Because they've taught themselves, they're naturally creative people. When you're learning on your own, it sparks ideas that learning in school wouldn't. [Learning by yourself is] a more frustrating

environment, but it gives you more creativity."

If you decide to take a formal programming class, there are several sources to explore. One of the most obvious is the store where you bought your computer or software. Classes are also taught by local adult-education schools or by community colleges. These institutions are usually less expensive than universities; night classes are the norm and are often only a month long. This fits perfectly with most people's work schedules.

And, of course, there are always the local colleges and universities. The courses may be more expensive than those at community colleges, but chances are they're more thorough and you'll have a wider selection to choose from.

Choosing a place to learn programming may end up being a moot point in the near future. "I think the logic and analysis skills necessary for programming should be taught at the grade-school level," says Bruce Webster. "I don't want to see them teach programming for programming's sake. I want to see them teach them logic and analysis—how to solve a problem, which is the essence of programming."

But, before getting excited, keep in mind that programming isn't for everyone. "If you find programming frustrating, then it's probably not for you," says John Ratcliff. However, he adds, "You don't need to be a programmer to get the most out of a computer. You can do artwork, animation, music for the software—and more—and you don't need to program."

No matter where you go or how you do it, learning to program gives you something else to do with your computer—and you learn more about your computer in the process.

And if you get good (cross your fingers), you'll soon discover that training your computer can be far more rewarding than teaching your old dog a few new tricks. □

Dan Gookin is a famous (at least in San Diego) programmer, writer, and editor. He is currently the editor of *ComputerEdges*, a computer magazine distributed in his hometown.

Programming Products

Brief

\$200.00
Solution Systems
541 Main St.
Suite 410
South Weymouth, MA 02190-9907

CodeView (part of *Macro Assembler*)

\$150.00
Microsoft
16011 NE 36th Way
Box 97017
Redmond, WA 98073-9717

FF (part of *The Norton Utilities*)

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Peter Norton Computing
100 Wilshire Blvd.
Ninth Floor
Santa Monica, CA 90401-1104

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Vernon D. Bueg
456 Lakeshire
Daly City, CA 94015

PC Tools

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Beaverton, OR 97006

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SideKick

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SuperKey

\$99.95

Turbo Debugger

(part of *Turbo Assembler*)
\$149.95

Turbo GREP (part of *TurboC*)

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Scotts Valley, CA 95066

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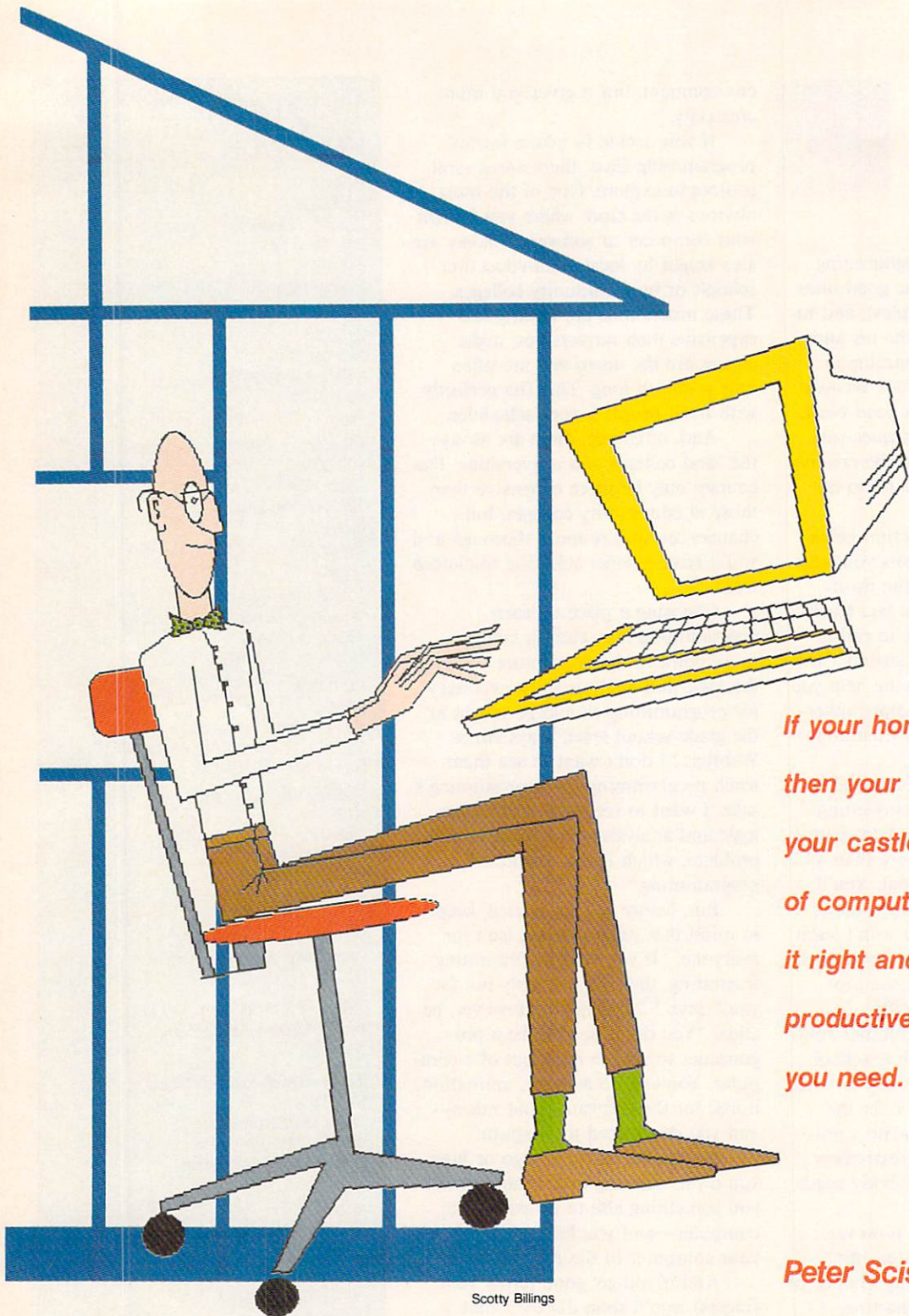
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Varies
WHEREIS is available in various public domain and shareware versions.

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MicroPro
33 San Pablo Ave.
San Rafael, CA 94903

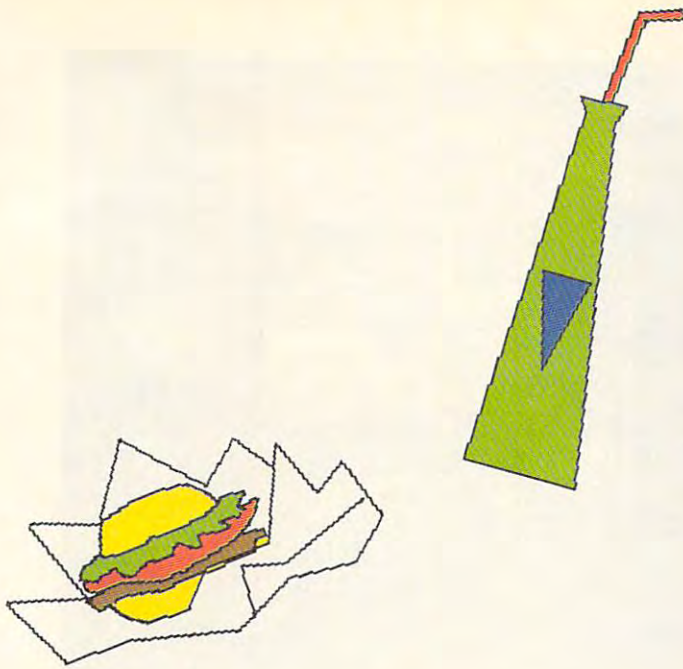


Scotty Billings

*If your home is your castle,
then your home office is
your castle keep, the place
of computing refuge. Equip
it right and you'll have the
productive workplace
you need.*

Peter Scisco

Make Yourself Co



The MacTable puts an Apple on your desk in just the right place and leaves room for peripherals as well.

Your wrists feel like you've been arm wrestling André the Giant. Your neck's as stiff as a Buckingham Palace guard. Your eyes are burnt to cinders and the electric charges leaping from your monitor could power a small city for a month. You thought computing at home would be fun. Nobody ever told you it would make you nightblind and nervous.

If that litany of ills has a familiar ring, don't despair. Whether you're running a business out of your home, moonlighting away from the office, or using your machine for education and games, there are steps you can take to keep your home computer fires burning—without burning out.

Start at the Top

When it comes to a desktop, you can keep it simple or shoot the works. Your computer doesn't care whether it sits on a desk made of imported rain forest bubinga wood, a \$20 card table, or a sheet of plywood nailed to sawhorses—provided, of course, that the desk is stable and there's room for the equipment. But the right desk setup can mean a lot to you.

A lot of department stores sell ready-to-assemble (RTA) computer desks for anywhere from \$80 to \$200. Assembling the desks requires patience, the ability to read pictographic assembly instructions, and a few simple tools, like a hammer and a screwdriver. The RTA furniture look ranges from white laminate (if your tastes run to modern) to oak and teak veneers (for the more traditional palate). You should be able to find a style and a material to suit the look you want as well as perform the function you need.

O'Sullivan Industries, for example, offers a line of computer stations ranging from simple desks to hutches (with shelving space for books and software) to work centers (with room for a printer and supplies) in prices ranging from \$114.94 to \$189.95.

Most computer tables you find in stores seem designed for IBM PC and compatible computers. They offer space for a keyboard and system unit and, on some of the higher-priced models, raise the monitor to a shelf at eye level. But if you own a Macintosh, with its enclosed monitor, such an arrangement might not suit you. Macintosh users are forever complaining about stiff necks caused by staring down at their monitor.

One answer is the MacTable, available from Scandinavian Computer Furniture (ScanCo) and also from Apple. Designed specifically for the Macintosh and Apple IIGs, the MacTable uses four platinum gray surfaces that tilt so you

uncomfortable



A wraparound computer work center keeps your equipment close at hand and offers shelter for all your components.



A computer desk with overhead storage for books and disks offers efficient use of space without breaking the bank.

can adjust the viewing angle for your monitor and the working angle for your keyboard and mouse.

No matter what kind of desk you buy, build, or barter for, your keyboard should be about 30 inches off the ground—low enough so that you can hold your elbows loosely at your sides at about a 90-degree angle. If you keep your arms stiff and your wrists bent to make up for a misplaced keyboard, you might fall victim to Carpal Tunnel Syndrome (CTS). Your median nerve and the tendons that open and close your hand are housed in the carpal tunnel. Prolonged pressure on the tendons (from awkwardly bent wrists, for example) can cause numbing sensations and, in the worst cases, permanent weakness in your hands. Putting your keyboard at the right height, pausing to rest your hands, and refraining from really hitting the keys will help you avoid the potentially debilitating effects of CTS.

A Place for Everything

Now that you have your desk, you have to figure out where to put it. If you're lucky, you have a spare room you can use for your electronic workshop. Chances are, though, that you'll be sharing space with the rest of the family. Computers have been crammed into kitchens, loaded into laundry rooms, and assimilated into attics across the country. Every space has its idiosyncrasies, but there are some common precautions you should take when setting up your system.

If your computer space is in the dining room or kitchen, take pains to guard against spilled food and drink. One product you might consider, especially if young children use the computer or if you're a sloppy drinker, is the SafeSkin, from Merritt Computer Products. This clear plastic sheath fits like a second skin over your keyboard so that you never have to remove it—even when you're typing. Your best bet, of course, is not to eat or drink while hunched over your computer. But this is America, where people munch hamburgers while negotiating a merge into freeway traffic—nobody expects you not to eat at your desk.

If you're working in an attic and you don't have central air conditioning, think about installing a window unit.

Attics can get insufferably hot during the dog days of summer, and excessive heat will melt your computer's brain as sure as a skillet melts grease.

And Everything in Its Place

So you're in your room. You think the desk might look good against the far wall, with the morning sun coming in at your back and warming your shoulders as you whack the keys. You'll put some plants on the sill, a couple of posters on the wall—maybe an extra reading chair and a bookshelf for your software and manuals.

Sounds great until the sun strikes your monitor and the glare hits your eyes like a faceful of lye. Blinded but not beaten, you move your desk so that the light from the window doesn't strike the screen so directly. That's better. But now you notice that the overhead light glancing off the monitor causes spots on your retina. You slip on your Wayfarers. Now it's so dark you can't see the keyboard.

Take heart. Exchange that overhead light for a desk lamp or floor lamp that casts an indirect light on your monitor. A floor lamp is good for most purposes; a desk lamp will help with detail work like reading corrections from a rough draft or scrawls from a checkbook.

If the glare from the monitor still burns your eyes—and the jury is still out on what harmful effect, if any, can result from prolonged exposure to computer monitors—invest in an antiglare screen. You can pay from \$25 to \$100 for a screen, depending on whether you want mesh or glass. SherMark Products makes the Anti-Glare Magnification Screen for the Macintosh, which cuts glare *and* magnifies the screen image—a real boon for tired eyes. The Professional Glare/Guard, from Lyben Computer Systems, costs \$100, mounts with Velcro strips, and is said to eliminate almost all very-low-frequency and extremely-low-frequency electromagnetic radiation emanating from a computer monitor. Tandy sells a nylon mesh screen for its color monitors for \$24.95. Keep an eye peeled for closeout sales and clearances at local computer dealers; you may be able to pick up an antiglare screen for a fraction of its full price.

If you decide not to buy a screen, there are some simple rules to follow while working at your computer that will help alleviate eyestrain. The most important is to give your eyes a break. Staring at any object for prolonged periods strains the eye muscles because they remain focused at the same distance. Get up from your desk every hour or so and stare out the window at something in the distance. Make an effort to look up every once in a while and look at something across the room.

Also, place your monitor in a place where you don't have to strain to see it. If you're looking straight ahead, with a slight downward angle (not as much as you get with an unsupported Macintosh, but not looking toward the ceiling, either), you'll alleviate neck and back strain. If you don't have a monitor stand, you might want to consider a product like the Amiga 500 Command Center, from Ketek (\$99.95 and \$149.95), which not only raises the monitor to a comfortable viewing height, but also supplies space for an external disk drive, a hard drive, or floppy disks. A deluxe version even includes a surge protector, power strip, and fan.

Absolutely Shocking

Even if summer doesn't solder your circuits, winter can bring its own brand of misery to silicon city. During the cold months, the heated air inside your house is drier than most natural deserts. The lack of humidity leads to static buildups which, if discharged to your computer, could fry chips faster than Lays. Static electricity may be a slight annoyance to you when you touch a doorknob or shake a hand, but it's your computer's worst nightmare.

To protect yourself and your machine, discharge any static before you sit down by first touching a grounded metal object. Curtis Manufacturing Company sells the Touch Me First Static Mat, which sits beneath your keyboard or system unit, for \$39.95. The mat dissipates static buildup and presents a metal strip that you can press before you hit the keys.

Any computer store will sell static cloths and sprays that you can use to wipe off your computer and rid the beast of ugly static. Some computer users have been known to wrap antistatic clothes-dryer sheets in towels and lay them across their machines to soak up any stray static, but there's no evidence that this practice works effectively.

The static in your house isn't the only electrical menace you have to deal with. The power that comes in from the utility company can disturb the inner workings of your computer with surges, brownouts, and blackouts. For around \$15 you can pick up a power strip at a local hardware store that can serve as your first line of defense. Plug your computer, printer, and other peripherals into the power strip and then plug the strip into the wall. The strip contains a circuit breaker that will take the brunt of the punishment should you get a spike from the folks at the power plant.

If you really want to guard against bad juice, you might want a line conditioner. Some conditioners include telephone jacks so that you can filter your modem and phone lines as well as your power lines. A line conditioner is your best defense against rogue watts and amps.

The last word on power is simple common sense: If there's a thunderstorm in your immediate area, unplug your computer from the wall outlet. A lightning strike can travel through your house and into your computer before you can say *burnt toast*. Don't overload outlets with extension cords, and make sure all plugs are grounded properly.

Not only will this help prevent electrical mishaps, but it will help prevent fires as well.

The Big Dust-Off

If you spill a soda into your keyboard or drop a sandwich into your printer, chances are you'll see the damage right away. Less obvious, but just as potentially damaging, is dust. The malignant motes that make you break out the feather duster every few weeks can wreak havoc on sensitive computer chips. Take the time to cover your equipment with a dust protector when you're not using it. Protectors range from inexpensive plastic covers to antistatic vinyl shields. If you want something a little classier, CompuTogs sells canvas covers in natural (with brown trim) or gray (with black trim).

A search of computer stores or mail-order catalogs will reveal small vacuums with attachments that you can use to suck the dust out of your favorite electronic toy. Put one of these to work, add a dust cover, and your computer could lead a long, clean life.

Home, Sweet Home

Constructing a home for your personal computer requires a little planning and a healthy dose of common sense. You can take advantage of a host of products designed to help you master your environment or follow a few simple guidelines to build your own comfort zone. In the end, you'll save yourself from a lot of physical aggravation. Your computer may be the best machine you ever bought, but it will never match the machine that runs it. □

Peter Scisco is an assistant editor with *COMPUTE!* who's getting ready to equip the huge computer room in his new used house.

Companies Mentioned

Computer Furniture

O'Sullivan Industries
1900 Gulf St.
Lamar, MO 64759
(417) 682-3322

ScanCo
P.O. Box 3217
Redmond, WA 98073-3217
(800) 722-6263
(206) 481-5434 (within the
state of Washington)

Glare Screens
Lyben Computer Systems
1050 E. Maple Rd.
Troy, MI 48083
(313) 589-3440

Sher-Mark Products
521 E. 83rd St.
Suite 2R
New York, NY 10028
(212) 249-0494

Tandy
1800 One Tandy Center
Fort Worth, TX 76102
(817) 390-3011

Electrical Equipment

CompuTogs
P.O. Box 19728
Greensboro, NC 27419
(919) 292-9060

Curtis Manufacturing
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Jaffrey, NH 03452
(603) 532-4123 in state
(800) 548-4900 out of state

Ketek
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- Variable Budgeting By Month	YES	NO	YES	YES
Automatic Transactions	YES	YES	YES	YES
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- All Months On One Report	YES	YES	YES	YES
- Budgeted Financial Results	YES	YES	YES	YES
- Actual Compared to Budget	YES	YES	YES	YES
- Actual Compared to Prior Month	YES	NO	NO	NO
- General Ledger Report	YES	YES	NO	NO
- Accountant's Trial Balance	YES	NO	NO	NO
- Net Worth Computation	YES	NO	YES	YES
Inquiry Reports				
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- Account Analysis	YES	YES	YES	YES
- All Transactions with Party	YES	YES	YES	YES
- Cash Requirements Forecast	YES	YES	YES	YES
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Graphics	YES	NO	YES	YES
Fiscal Year Support	YES	NO	YES	YES
Optional Password Protection	YES	NO	NO	YES
Financial Calculator	YES	NO	YES	YES
- Prints Amortization Schedules	YES	NO	YES	YES
- Prints Accumulation Schedules	YES	NO	YES	YES
Mail List Manager	YES	NO	YES	YES
- Prints Address Labels	YES	NO	YES	YES
- Prints Index Cards	YES	NO	YES	NO
- Prints Telephone Directory	YES	NO	YES	NO
- Mail Merge with Word Processor	YES	NO	YES	YES
Check Writer	YES	YES	YES	YES
- Prints Laser Checks	YES	YES	YES	NO
- Prints Any Pin-Feed Check	YES	NO	YES	YES
Personal Income Tax Estimator	YES	NO	YES	YES
Pop-up Note Pad	YES	NO	YES	YES
Pop-up Math Calculator	YES	NO	YES	YES
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THE MULTILEVEL WORLD OF HYPERMEDIA

You've got to pay a parking ticket at town hall, so prepare yourself for a trip through the looking glass: belligerent secretaries, stairways that lead nowhere, and doors labeled with hieroglyphics.

But look: In the lobby there's a computer running an information system called *HyperFind*. Several departments are listed on the screen. You grab the mouse and click on the parking department. The screen shows a brief description, with digitized pictures of the traffic clerks and buttons you can click for more information.

Click the To Pay Parking Tickets button and the next screen tells you how to pay by check, how to pay by mail, and when late fees are assessed. Finally, the screen tells you the cashier's room number and shows you a map of town hall with the best route indicated in red. There is also a button that, if selected, takes you to a screen explaining the appeals process. If you want, you can return to the opening

Pick the right package to peek into the strange, fascinating world of hypermedia, where buttons bypass dead ends and information crystalizes into new patterns.

screen and take an entirely different route through city tax information or a police officer directory.

What happened to the bureaucracy? What happened to the angry secretaries and the labyrinthine hallways? Hypermedia, that's what happened. You found your way—down a path you selected yourself, not down a general-purpose pathway—to the place you needed to be. Because of the computer, you didn't have to wander around or follow a guided tour through departments you'd never care to hear about.

Hypermedia applications let you store and retrieve many kinds of information, including sound and graphics. They resemble databases but are much more flexible. Information is stored in *nodes*, and you retrieve information through *links*: pathways between associated nodes. Hypermedia-applications designers try to offer as many links as are practical between nodes of information. When you clicked on a button

Heidi E. H. Aycock

in the parking ticket example, you traveled a link to another information node. Ideally, you could create links as you go; realistically, you would need a very powerful computer to keep track of your movements.

For your personal computer, you have your choice of several hypermedia products ranging from the simple to the complex. You've probably already seen several kinds of hypermedia: outline processors, free-form information managers, and online tutorials.

The easiest way to explore the possibilities of hypermedia is to find a versatile package that isn't too complicated. If you have a specific project in mind, however, you can save yourself time and trouble by choosing a simple program tailored to your needs. An intricately woven application, for instance, calls for a sophisticated hypermedia program. Of course, your computer will dictate your choice in some cases. What follows are descriptions of several different programs, with a view of their structures and the tasks they're best suited for.

HyperCard

HyperCard is probably the best-known hypermedia package on the market. Since Apple Computer began bundling the program with its Macintosh computers in the fall of 1987, *HyperCard* has become the hypermedia software for the Macintosh.

HyperCard is based on a file-card metaphor. It stores information in fields on cards and then collects the cards into stacks. You navigate through the data by clicking buttons that activate links between one card and another.

A scripting language, HyperTalk, expands the range of *HyperCard* beyond its simple metaphor. For an example of how powerful a *HyperCard* application can be, look at *Focal Point II*, from Mediagenic's TenPointO division. This business-oriented stack keeps track of appointments, telephone contacts, product development, and electronic mail. Each card in the stack is linked to others, not only allowing movement from one card to the other, but also updating information changed on one card across all related cards.

Besides its scripting language,

Imagine someone
handing you tools
and wood
and telling you to
build anything
you want.

HyperCard distinguishes itself with a quick-search function. The program has gained a reputation for finding information quickly.

Although it's easy to use, *HyperCard* can be daunting. Imagine someone handing you a box of tools and a stack of wood and saying, "Here—build anything you want." Unlimited possibilities may sound terrific, but creating something from scratch is hard work. Many computer users have an added handicap: They've never seen a *HyperCard* stack before, so they can't even imagine what to build.

A good way to overcome this hurdle is to experiment with established stacks. Get an idea of what a stack can do. Look at the underlying structures. Make some changes and study the effects. If you belong to a user group or a telecommunications service, you can

probably find more stacks than you'll ever need.

Tutor-Tech

Tutor-Tech, hypermedia for Apple II computers, is a carefully defined, but limited, program. As its name implies, it's best suited for designing educational applications.

Like *HyperCard*, *Tutor-Tech* is designed around a card-and-button metaphor. You create cards and link them to other cards, and you create buttons to represent the links. Some cards can give information about a topic, leading students from one issue to another through sequential links and letting them explore independently through supplementary links. Other cards can pose questions—true/false, multiple choice, or fill-in-the-blank—with each possible answer accompanied by a button that leads to a reinforcement or remedial response.

Teachers will appreciate *Tutor-Tech* because it's easy to use and because it records the progress of each student. The program also features links to videodisc and speech synthesizer output, expanding *Tutor-Tech*'s possibilities beyond the computer screen.

Tutor-Tech is a good example of a simple hypermedia package, designed for one purpose: developing focused educational tools for home or school. It is not, however, a powerful package. You can't create complex lessons, develop powerful data-storage applications, or brainstorm about a problem. For those tasks, you need a different program. ▶

The Next Generation

On the Apple IIgs, *HyperStudio* promises to be the next contender in the hypermedia race. Like *HyperCard*, *HyperStudio* is designed around a simple metaphor: Buttons link text, graphics, and sound. You can create text and graphics in the program or import these elements from other packages.

Sound digitizing is one of the program's most impressive features. Besides *Sound Shop* digitizing software, the package includes a digitizing card, a microphone, and an external speaker with a built-in amplifier. With these tools you can create full-blown audio files. *HyperStudio* comes with sample stacks so that you can get an idea of the program's capabilities.

Another new program, Silicon Beach Software's *SuperCard* for the Macintosh, adds drawing tools and autotrace to *HyperCard*'s graphics features. *SuperCard*'s improvements are more profound than added graphics tools, however. For building applications, the program opens up more programming elements than does *HyperCard*. While buttons are the main elements that trigger links in Apple's program, *SuperCard* also lets you build custom menus. And because any card element can have a script, any element can act as a button. *HyperCard* also limits your workspace to the standard card size, but *SuperCard* lets you open any of seven standard Macintosh windows. You can control dialog boxes, create new tool palettes, and design stand-alone applications.

Guide

Guide, the first commercial hypermedia program for microcomputers, is a good example of a versatile application. More sophisticated than *Tutor-Tech* or *HyperCard*, *Guide* is great for creating intricate networks of links and nodes. *Guide* is available for the PC and the Macintosh.

To visualize how *Guide* works, imagine that you're reading this article on a computer screen. You'd like a concise definition of *node*, so you select the word and something like a Post-It note pops up with the definition you want. After you've read further, you decide that you want to look at the *HyperCard* section again. Select the word *HyperCard* and you return to the passage you want. If you want more detailed information about *Guide's* educational uses, you click on the word *educational*—the article is replaced by a list of applications developed by college professors using *Guide*. Each link not only leads you to different information, but is also a different kind of link.

Creating applications with *Guide* is easy. Enter the text of the document, select the items you want linked to other information, and choose the kind of link you want from a pull-down menu, adding information when necessary. This process isn't nearly as intuitive as procedures used in less complicated packages, but you can learn it quickly.

Accessories to the program create stand-alone hypermedia documents that can be read by people who don't own *Guide*.

Although *Guide* is almost as easy to use as *HyperCard*, it's more powerful for many tasks—particularly for developing annotated documents or online instructional materials. It's also more expensive, so steer clear of it if you just want to dabble in hypermedia.

MaxThink

For hypermedia experiments on the PC, try *MaxThink*. One in a series of hypermedia tools, it's a reasonably priced, hyper-powered outline processor particularly useful for fiddling around with new ideas and problems.

Most outline processors incorporate hypermedia concepts. Sublevels of information collapse into main levels just as some nodes fold into other

You can toss ideas into the computer, mix them up, and come up with new possibilities.

nodes. But *MaxThink* doesn't just help you build hierarchical outlines; it also reorganizes topics in 12 formats, giving you new ways to look at your ideas. You can shuffle the list, move major headings to new groups of sub-headings, reorder the list according to different priorities, and so on.

Another useful feature, the REF command, generates an alphabetical word-frequency list. You can click on any word in the list and *MaxThink* will take you to each occurrence of that word in your outline. Use REF to cross-reference concepts in your outline.

Anyone who uses brainstorming as a problem-solving technique will see the benefits of *MaxThink*. Writers, managers, and designers can toss ideas into the computer, mix them up, and come up with a wide variety of possibilities.

Imagine you're trying to decide whether or not to plead guilty to that fictitious parking ticket. Load *MaxThink* and list the possible advantages and disadvantages. Shuffle the list and the possibilities take on new implications. Order and reorder your topics to get a new view of the problem.

One of *MaxThink's* most interesting features is its manual, a Neil Larson manifesto on thinking styles and the uses of hypermedia. Larson, company founder and programmer of *MaxThink*, explains how the program works, mechanically and philosophically, so you understand *why* as well as *how* to use each command.

MaxThink isn't instantly intuitive like *HyperCard* or *Tutor-Tech*, so it's hard to learn at first. But if you stick with the manual and spend some time following Larson's examples, you'll be an ace brainstormer in no time.

If you like *MaxThink* and enjoy Larson's style, check out the other programs in the series, such as *Houdini* and *HyperLink*.

Gathering the Links

The hypermedia world is still underpopulated, but it's quickly filling up with authoring tools, organizational aids, and even computerized fiction. Hypermedia lets you customize pathways into large data resources, expanding your information horizons. In the meantime, though, just pay that parking ticket before the hypertensive cops come after you. □

Heidi E. H. Aycok, assistant editor with *COMPUTE!*, is a hypermedia person in a linear world.

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Such capacities elevate the database far above, say, the file cabinet, to which it is sometimes likened. File cabinets mainly hold information arranged by rough categories, and data searches may require extensive labor to locate all relevant material. Databases hunt down information in a trice. With little effort on your part, you can exploit these programs to keep track of addresses, club memberships, home possessions, and collections grown past human memory. If you have a small business, databases can be invaluable, not only to organize information about customers, inventory, and invoices, but also to uncover patterns of sales, print out monthly statements, and generate other kinds of documents.

Of Fields and Farms

The biggest obstacle to new database users is the nomenclature. As always, exposure to the vocabulary helps, but at the start, at least, the terms seem distinctly bland and slippery. So, if you'll gird yourself, we'll plunge in.

Most databases are not mere lists of items, but rather, lists of bundles of items. One item acts as the linchpin, and the others describe it. For instance, a name is the crucial entry in a mailing list. An address, phone number, and, often, other information relate to it.

Hence the two main elements of a database: *records* and *fields*. A record is the whole bundle of information about the central item. In a mailing list, a record might include the following items: *Whitney Blake, 101 Paramount Court, Playa del Mar, California 99999*.

A field is a building block of the record. This record has five fields: name, street, town, state, and zip code. More specifically, a field is the smallest part of a record you can search for, sort by, and otherwise manipulate.

Finally, the entire collection of records is called a *file*.

Agriculture provides a convenient metaphor for visualizing these concepts: The file is like a large, fertile plain, and each record is a farm within it. Each farm in turn has several fields, with a different crop in each.

How Files Relate

Database managers come in two fundamental types: *flat-file* and *relational*.

In flat-file databases, you work with one collection of records at a time. The file is a self-enclosed world. While it can be a large world, it remains sealed off from others. These programs are generally simple and easy to learn, and they may suit you well if you know that all your data will fit into one format.

Figure 1. Defining the Warranty field.

Figure 2. Entering a record.

Figure 3. Selecting a columnar layout.

Figure 4. The schematic of the columnar layout.

Name	Proof of Ownership	Price Paid	Date of Purchase	Current
Food processor	Receipt	179.95	04/08/84	100.00
Mountain bike	Receipt	419.00	06/15/88	380.00
Answering machine	Receipt	179.00	04/01/86	100.00

Figure 5.
The widened column.

Name	Proof of Ownership	Price Paid	Date of Purchase	Current Worth	Date of Est.
VCR	Receipt	\$200.00	11/07/87	\$140.00	12/10/88
Decorative Pot	Receipt	\$420.00	01/03/88	\$480.00	01/01/89
Cedar talking stick	Receipt	\$225.00	05/21/88	\$400.00	02/13/89
Copier	Lost	\$625.00	09/13/86	\$400.00	10/29/88
Wall hanging	Receipt	\$185.00	06/10/87	\$300.00	11/02/88
Crystal stemware	Receipt	\$219.95	07/30/84	\$200.00	05/19/87
Food processor	Receipt	\$179.95	04/08/84	\$100.00	06/01/87
Mountain bike	Receipt	\$419.00	06/15/88	\$380.00	12/30/88
Answering machine	Receipt	\$179.00	04/01/86	\$100.00	10/01/88

Figure 6.
The layout with dollar signs.

Field List	Sort Order
<div style="border: 1px solid gray; padding: 2px;"> Place of Purchase Date of Purchase Serial Number Price Paid Warranty Proof of Ownership Current Worth Date of Est. </div>	<div style="border: 1px solid gray; padding: 2px;"> Proof of Ownership Current Worth </div>
<input type="button" value="Clear"/> <input type="button" value="Move"/> <input type="button" value="Sort"/> <input type="button" value="Unsort"/> <input type="button" value="Exit"/>	
<input type="radio"/> Ascending Order <input checked="" type="radio"/> Descending Order	

Figure 7.
Issuing the double-level sort command.

Name	Proof of Ownership	Price Paid	Date of Purchase	Current Worth	Date of Est.
Decorative Pot	Receipt	\$420.00	01/03/88	\$480.00	01/01/89
Cedar talking stick	Receipt	\$225.00	05/21/88	\$400.00	02/13/89
Mountain bike	Receipt	\$419.00	06/15/88	\$380.00	12/30/88
Wall hanging	Receipt	\$185.00	06/10/87	\$300.00	11/02/88
Crystal stemware	Receipt	\$219.95	07/30/84	\$200.00	05/19/87
VCR	Receipt	\$200.00	11/07/87	\$200.00	05/19/87
Food processor	Receipt	\$179.95	04/08/84	\$140.00	12/10/88
Answering machine	Receipt	\$179.00	04/01/86	\$100.00	10/01/88

Figure 8.
The result of the sort.

Relational databases can juggle information from more than one file at a time. Their file borders are permeable. It's a significant capacity, since two files will often relate to each other, yet resist fusion. In business, for instance, a customer file will contain fields such as Address and Phone Number, while an invoice file will hold fields such as Date of Sale and Account Balance. The first two fields deal with individuals, the second two, with billing. If you try combining them, you lose the central reference point and cause confusion, which is not the point of a database. Yet often you may want information about a particular customer to be linked to information in the invoice file. A relational database allows you to associate disparate information from several files, yielding a major boost in power.

There's no better way to unshroud the mysteries of a database than to build a simple file yourself. The process is surprisingly easy, requiring no knowledge of math and few complex conceptual tricks. As an example, we'll construct a basic home-inventory database for keeping track of possessions.

Step 1 Make the Outline

Begin by thinking about what you're trying to do with this database file. Each record will center on one possession, and the database should serve many purposes based on the fields you create. For insurance claims, the database should include fields like Date of Purchase, Price Paid, Proof of Ownership, Current Worth, and Date of Estimation, which shows when you last estimated the item's value. In case of theft, a serial-number field will provide important information. And, for repairs, fields like Place of Purchase and Warranty can be helpful.

Sometimes a second consideration arises: when to subdivide a field. In general, fields should comprise the smallest particles of data you would ever need to recover. Thus, you'll make Place of Purchase a single field, though you could conceivably break it down into fields for city, state, and zip code. Because these criteria just aren't important for such a database, you don't need to break this one field into smaller elements. In a mailing list, however, such items become much more critical, and you should definitely make them separate fields.

Step 2 Define the Fields

Run your database program. Once inside it, you begin by defining the fields. You define fields by naming

them and by indicating their type. You've already named the fields on paper in your outline. Just type them into the program. (Since this article is, by nature, quite general in its instruction, refer to your own database program for information on how to create, name, and type individual fields.)

The most common field types are *Text*, *Number*, and *Date*, but you may have others, such as *picture* and *calculation*. Field types tell the database program how to handle the data in future operations. For instance, if you were sorting records by date, the software would ordinarily place 04/06/88 before 10/30/84, since 04 precedes 10. However, if the program knows the field is a date, it can check the year first and sort properly. The field type also tells the program which text trappings to assign to entries, so prices, for instance, can appear with dollar signs and commas.

A text field normally includes alphabetic and numeric characters. A number field may allow letters, yet, in sorting and calculation, the program may heed only the numbers. Thus, the Serial Number field in your first database poses a modest quandary: Should it be a text or number field? The serial number looks like a number, but it is plainly just an identification tag, not a quantity. Moreover, serial numbers commonly include letters. So, it makes more sense to type this field as text. The decision may not matter much here, but it could prevent grave mix-ups in other databases. In Figure 1, several fields have already been defined and text has been selected as the type for the Warranty field.

Step 3 Enter Data

Now fill in the records with the real meat of the database. Database programs vary, but the one used for this article lists the fields on the left and provides space for data entry on the right (see Figure 2). Each screen shows one record, and you type in the material field by field. When you've finished one record, you move to the next, type in more data, and so on until the end. It's not fascinating labor, but once you've finished, you never need to do it again. Now you see the database take shape. Don't worry if your information is too long for the boxes on the screen; all of your data is being stored and you can adjust the layout later.

Step 4 Change the Layout

The layout you're using now is like an index card, one record to a screen. If

you printed the database in this layout, you would get a series of discrete clumps of information. This layout is fine for many purposes, but it doesn't allow an at-a-glance comparison of data. To scan the database quickly, you need to arrange information in a columnar layout. Columns also lend themselves to some useful operations and prepare the material for a tabular report. To change the arrangement of your file, call up your layout choices and choose Columnar (see Figure 3).

The database has ten fields—a lot of information to squeeze into a single page. Rather than try to print the entire record on one sheet of paper, you can instead generate reports to serve different purposes. Each report, then, omits some of the fields, as appropriate. The key is to focus on possible uses for each report.

For instance, suppose a fire guts your house. When you deal with the insurance claims agent, it won't much matter where you bought your possessions or whether they had a warranty. The crucial items will be proof of ownership, price paid, date of purchase, current worth, and the date of estimation. In fact, only proof of ownership and current worth are indispensable (but current worth is often speculative, and the item's original price, date of purchase, and date of its last estimation are all relevant to that speculation).

In this fire scenario, you'll compile a report from these fields, entering each into the layout, in this order: Name, Proof of Ownership, Price Paid, Date of Purchase, Current Worth, and Date of Estimation. The software lets you select existing fields and shift their order in the columnar layout. Just issue a command and the schematic layout spreads out before you (see Figure 4).

Step 5 Format the Report

The new layout comes into the world in a rather raw state, so you must manipulate the formatting.

First, the entry *Answering machine* has too many characters, so it doesn't quite fit into the Name column. You can eliminate this defect by simply stretching the Name column. Now *Answering machine* tucks neatly onto one line (see Figure 5). Moreover, the wider column makes room for fuller descriptions of other objects. For instance, you can add the word *crystal* before *stemware* and *cedar* before *talking stick*.

The table has a second weakness. The Price Paid and Current Worth columns refer to amounts of money, but they lack dollar signs. Issue the

dollar-sign formatting command for number fields, and the figures now stand forth in proper regalia (see Figure 6).

Step 6 Sort the Database

We could print right now, but the data is arrayed randomly. Order matters even in a minuscule file like this one; in a voluminous file, order is critical.

It's easy to list your information in useful sequence by sorting. The basic rule is *Sort the most important field first*. In this insurance-claim report, the most important field is Proof of Ownership. Without that information, you might not be able to collect any money. In this file, you've indicated presence or absence of proof with the words *Receipt* and *Lost*. To place *Receipt* items before *Lost* ones, conduct a descending sort on the Proof of Ownership field. This command will begin with the letter nearest the end of the alphabet, placing *Receipt* items above *Lost* ones.

Although this sort is important, it lacks finesse. A second-level sort will be even more useful. The next most important item is Current Worth. You want to arrange your possessions in order of potential loss. To place the most valuable items at the top, you can again employ a descending sort, from highest to lowest replacement cost (see Figure 7).

Most databases perform these powerful, multilevel sorts easily. You can refine an order down to very small details. For example, if you were listing all the baseball players in the National League, you could sort first by team, then by position within the team, and finally by batting average within the position—a triple sort. Even your recent double sort clarifies the list substantially (see Figure 8).

Step 7 Print It

If you had several pages, you would add a header or footer, and perhaps you would alter the font or type size of the database report. Regardless of how the report looks, the database has taken the information you supplied and has served it up on a silver platter.

Reputations linger, and databases may remain terra incognita for some time yet. Meanwhile, you can have them working hard for you. They're certainly ready for it. □

Dan McNeill is a freelance writer who specializes in computer topics. His last article was "Order from Chaos: Spreadsheets and Your Money," in the February issue.

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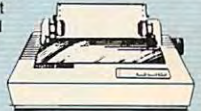


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Lycos Computer Marketing & Consultants

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Cables Optional

CITIZEN

180 D

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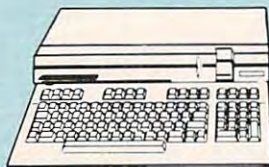
Apple Compatible

COMMODORE

\$424⁹⁵

128 D

- 128K Std.
- 3 Mode Operation
- 1-64: Runs 64 software.
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LASER 128

Take a look at the Laser 128 Apple-compatible computer, and beginning with its built-in disk drive and 128K RAM of memory, you start to feel that this machine was designed with you in mind.

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Colt PC	\$669.95

Call for system pricing.
* Limited Quantities

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Compatible with Apple Software.

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LASER

Turbo XT Model II

Outperform the conventional PC/XT competition with Laser's Turbo XT-II. The Laser provides everything you expect from an XT plus such standard features as 4.77/10 MHz speed, 102 key enhanced keyboard, security lock and a clock/calendar with battery backup. Laser's compatibility is guaranteed through a 150W power supply, four accessible drive slots, (1 360K 5.25 standard) 8 I/O expansion slots, parallel centronics and RS 232 interfaces, 640K RAM standard, (expandable to 1.6 MB) along with a CGA video card already installed. Introduce yourself to the new generation XT through Laser's Turbo XT-II.



\$629⁹⁵

Monitor Optional
FCC Approved

LASER XTE

If you are about to pick a personal computer for your home or office and you need to be one step ahead of the competition, choose the Laser Compact XTE. The Compact XTE features the same standard equipment as the Compact XT, however, 640K RAM and a monochrome/CGA/EGA video card is supplied. You won't beat its performance or extraordinary low price.



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AMSTRAD

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Step into a new era of convenience and control with Amstrad's exciting new PPC 640 portable computer. The PPC 640 features 640K RAM, full sized AT 101 keyboard, Hayes compatible modem, an 8086 processor (8MHz) and your choice of either one or two 3.5" 720KB disk drives.

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\$769⁹⁵

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T-1000 Laptop

Pick up on the T-1000 and you'll go far. Give yourself desktop PC power wherever you need it. Toshiba's T-1000 includes 512K RAM, one built-in 720KB 3.5" disk drive supertwist LCD display with CGA capability.



\$799⁹⁵

COMMODORE COLT



Monitor Optional
FCC Approved

PC/XT

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PC1640 DDC



\$899⁹⁵

Color Monitor Included!
FCC Approved

AMSTRAD

The Amstrad PC1640 DDC will bring out the genius in you. You have full support with 640K RAM, CGA/Hercules graphics, 8 MHz clock speed, plus parallel, serial and joystick ports. Amstrad includes MS-DOS & Basic, GEM desktop and GEM paint to provide for your computing needs. Convenience is supplied through two 360K 5.25" disk drives, clock/calendar and a 2-button mouse. The Amstrad PC1640 DDC is a stroke of genius, put it to work for you.

CITIZEN

Mate/12 AT

World class competition in an 80286 PC/AT from Citizen. One MB RAM is standard, along with 2 serial and 1 parallel port, EGA video card and keyboard switchable 6.25/12.5 MHz for full PC/AT compatibility. Citizen also includes added features such as, switchable 150 watt power supply, 1.2 MB 5.25" floppy drive, MS-

DOS-GW Basic software to provide for your immediate computing needs. Leave the competition behind with the Citizen Mate 12 Plus.

\$1349⁹⁵

Monitor Optional
FCC Approved



METRA

286-12 PC/AT

The Metra 286-12 PC/AT is a computer you will immediately appreciate. State of the art features such as 12 MHz (0 wait state) or 6 MHz mode, 640K RAM, 8 expansion slots, 7 DMA channel supports and on board Ni-Cd battery back-up are quickly setting the Metra apart from the competition. There are 4 reasons to choose the Metra 286-12 for your computing needs. First, the Metra operates with PC-DOS, MS-DOS, OS/2 and UNIX. Second, the Metra comes with a 48 hour complete system burn-in. Third, the 286-12 complies to FCC class B design



requirements. And last, is the importance of the AMI bios, which the Metra has incorporated on board. Call us today for more details on the exciting Metra opportunity.

\$1039⁹⁵

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Call for Apple Listings

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5-1/4

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SSDD	\$6.95
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DSD	\$4.95
3.5	
Maxell:	
SSDD	\$11.50
DSD	\$17.95
Bonus:	
SSDD	\$10.95
DSD	\$13.95

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DSD	\$12.95
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SSDD	\$9.95
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buyer's guide

Word Processors

Do you have a blockbuster novel simmering on the back burner of your brain? Are your trash cans filled with unfinished letters that had just a few too many mistakes? Is your thesaurus always too far away? Whether you're composing a sweeping saga or a simple note, there's a word processor in this buyer's guide that can lead you to literary greatness.

Caroline D. Hanlon

Bank Street Writer Plus

Broderbund
Apple II, IBM PC and compatibles
\$79.95

This word processing program for adults and children contains a 60,000-word spelling checker and a thesaurus. Single-key commands can be created to save time, and function keys can be programmed to perform multistep commands. Other features include automatic formatting, boldface, and underline.

Better Working WordPro

Spinnaker
Commodore 64
\$39.95

WordPro from the Better Working series by Spinnaker features a turbo-load-and-save cartridge to speed disk access. It contains text-editing and formatting commands such as margin setting, indentation, centering, highlighting, underlining, double columns, search and replace, headers, footers, and document chaining. A 100,000-word spelling checker is included, and the program supports more than 100 printers. Documents created with *WordPro* can be used with *FilePro 64*, also from Better Working.

DeluxeWrite

Electronic Arts
Apple IIgs
768K required
\$79.95

Color graphics from *DeluxePaint II* or *DeluxePrint II* can be imported into this word processor. The images can be cropped, flipped, and resized to fit the layout. Word processing features include headers, footers, page numbering, indentation, and a 90,000-word spelling checker. The program uses a mouse-and-windows interface with keyboard shortcuts. A *DeluxeWrite* and *DeluxePaint II* combination can be purchased for \$129.95.

Dynamic Word

Microlusions
Amiga
\$199.95

This word processor for the Amiga includes a speller and a thesaurus, and it features file compatibility with most systems. Other features include multitasking, multiwindowing, support for multiple fonts and sizes, desktop publishing-like layout, online help, and table-of-contents and index generation. The program can also perform calculations and has a screen-editing mode for programmers.

Easy Working: The Writer

Spinnaker
Apple II, Commodore 64, IBM PC and compatibles
80-column card required for the Apple
\$9.95

The package includes a 100,000-word spelling checker, disk management, chapter heads, footnotes, preview option, onscreen help, linked text, and automatic page numbering.

Excellence!

Micro-Systems Software
Amiga
\$299.95

Excellence! is a word processor published by the same company that introduced *Scribble!*, also for the Amiga. *Excellence!* includes a spelling checker with more than 90,000 words, a 70,000-word thesaurus, indexing, table of contents, math calculation within the document, 1-4 columns, spell checking while you type, grammar checker, PostScript, Clipboard, color text, and support for IFF and ASCII files. It also contains standard word processing features such as windowing, hyphenation, footnotes, WYSIWYG editing, macros, and as many as 120 fonts in a document. Technical support is provided for registered users.

Fleet System 2+

Professional Software
Commodore 64
\$59.95

Fleet System 2+ includes a 90,000-word spelling checker, a built-in thesaurus, a database, and a word processor derived from *WordPro*. The word processor supports on-screen pop-up menus, text scratch pads, custom printer drivers, and multiple drives. It also has mail-merge capabilities. The spelling checker can check four pages in less than a minute, and 10,000 words can be added to the dictionary.

Fleet System 4

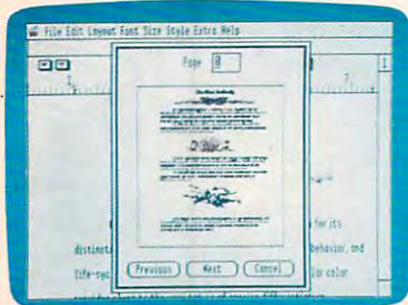
Professional Software
Commodore 128
\$79.95

This word processing package for the 128 contains all the features of its Commodore 64 counterpart, *Fleet System 2+*, plus context-sensitive help screens, RAM-expansion support, and support for four disk drives. *Fleet System 4*'s speller can check ten pages in less than 45 seconds.

Fontmaster II

Xetec
Commodore 64
\$49.95

Fontmaster II for the Commodore 64 features 65 editing commands, 30 fonts, a font editor and creator, 80-column preview of text, headers, footers, page numbering in Arabic or Roman type, underlining, proportional spacing, and an onscreen display. This word processor can read and write PRG and SEQ text files and merge data with form letters. It can also edit right to left for foreign languages. A backup disk is included.



Use *DeluxeWrite*'s Page Preview to see what your document will look like after it's printed.

FullWrite Professional

Ashton-Tate
Macintosh
\$395.00

FullWrite is a full-featured word processor that also includes page-layout capabilities. Graphics can be created with the *MacDraw*-like drawing program. Other features include a notepad, outliner, spelling checker, and thesaurus.

GEOS Writer 64

Timeworks
Commodore 64
GEOS required
\$39.95

GEOS Writer 64 is a word processing system that is compatible with GEOS. Icons, dialog boxes, and windows are used for the user interface. Features include WYSIWYG preview mode, built-in special-effects fonts, a mail-merge function, two-way printouts, search and replace, document chaining, help screens, and a 100,000-word spelling checker.

geoWrite 2.1

Berkeley Softworks
Commodore 64
\$59.95

GEOS, the popular Macintosh-like operating system for the Commodore 64, contains the *geoWrite 2.1* word processor, a text grabber, *geoMerge*, *geoSpell*, and *geoLaser*. *geoWrite 2.1* features headers, footers, margins to eight inches, justification, centering, and search and replace. The text grabber converts text from other programs to GEOS format for modifications such as changing the font styles and adding graphics. The mail-merge program, *geoMerge*, creates form letters and merges data lists with documents. It can also be used to print product inventories and price tags. *geoSpell* has a 96K dictionary and allows words to be added to a personal dictionary. With *geoLaser*, documents can be printed on the Apple LaserWriter with near-typeset quality.

geoWrite Workshop 128

Berkeley Softworks
Commodore 128
GEOS 128 required
\$69.95

This program contains all of the features of *geoWrite 2.1* and GEOS 2.0 for the 64 plus support of the advanced features of the 128, including an 80-column display.

KindWords

The Disc Company
Amiga
512K, Kickstart 1.2 required; 1MB recommended
\$99.95

This WYSIWYG word processor can handle documents up to 22 inches wide and reads *Textcraft* and *Textcraft Plus* files. The whole spelling checker, which contains 90,000 words, can be loaded into memory. Editing features include an undo option, up to 15 lines for headers and footers, justification, centering, and find and replace. Graphics from IFF files and Amiga paint programs can be imported to *KindWords* and displayed in 4, 8, or 16 colors. Up to 15 fields can be merged into form letters. There are a variety of font styles and sizes available, as well as SuperFonts for printing in high resolution on inexpensive printers. The program is compatible with all Amiga printer drivers.

MacWrite II

Claris
Macintosh
\$249.00

MacWrite II retains the simplicity of the original *MacWrite* and adds more than 50 new features. It runs three to five times faster than the original program and checks spelling as much as ten times faster. Headers and footers show on the page, multiple columns are supported, and you have more control over leading, type styles, and type sizes. Other features include mail merge, style-sensitive searches, and user-defined formats that can be stored in a menu.

Microsoft Word

Microsoft
IBM PC and compatibles, Macintosh
\$450.00 (IBM)
\$395.00 (Macintosh)

This word processing package features an outline processor to help organize thoughts and ideas, a dictionary, and a thesaurus. Style sheets can be used to establish page formats, and the WYSIWYG display can include special character formats. As many as eight windows can be open at one time.

Microsoft Write

Microsoft
Macintosh
\$195.00

Compatible with *Word*, *Microsoft Write* is a compact word processor that features an 80,000-word spelling checker. Other features include multiple-column formatting, footnotes, automatic search and replace, cut and paste between documents, and a selection of type sizes and styles. Sixteen documents can be opened onscreen at one time.

MouseWrite

Roger Wagner Publishing
Apple II
80-column card required; mouse recommended
\$149.95

MouseWrite is designed for ProDOS 8 machines, but it also runs on the Apple IIgs. In addition to the standard editing tools, this program features a search-and-replace function with a wildcard option. It also features soft hyphens and hard spaces, zoom, print spooling, mail-merge capabilities, and a telecommunications module. There is a glossary for command entries and a 61,000-word spelling checker. More than one document can be edited with the split-screens option. The program includes 15 custom fonts. *MouseWrite* is compatible with *AppleWorks* and is not copy-protected.

MultiScribe

StyleWare
Apple IIgs
\$99.95

One of the main features of *MultiScribe* is its 80,000-word spelling checker. There is also a thesaurus which requires 768K of RAM. The word processor uses a Macintosh Finder-like screen display for opening files, and three windows can be opened at one time for editing or viewing documents. Featured commands include select all, zoom, and clear document. *MultiScribe* executes draw commands and accepts images from most Apple graphics software. The program reads *AppleWorks* files and is not copy-protected.

Nota Bene

Dragonfly Software
IBM PC and compatibles
512K recommended
\$495.00

Nota Bene is an advanced word processor that combines speed with the flexibility to edit and print long documents. It uses a database

for free-form or structured text with Help files and Lotus-style menus. The program includes a variety of styles and formats, plus editing commands, sort features, mail merge, math capabilities, page layout, libraries and a spell checker, a thesaurus, special characters, and programming aids.

PaperClip

Batteries Included
Distributed by Electronic Arts
Apple II, Atari
\$59.95

PaperClip provides a variety of standard word processing features and more specific options for each machine. A global search and replace automatically changes words and phrases. Horizontal scrolling allows documents to be as wide as 250 columns, and the program offers an 80-column video display so that the complete page can be viewed. Word processing features include columns, tabs, built-in arithmetic functions, headers, footers, automatic page numbering, personalized form letters, mailing-label and mailing-list capabilities, and printer commands for underline, and boldface. *PaperClip* for the Apple provides macros and one-command access to the disk utility menu. The Atari version has dual windows for transfer of text between files, macro commands, Spellpack, and automatic Save.

PaperClip III

Batteries Included
Distributed by Electronic Arts
Commodore 64/128
\$49.95

This third version of the Batteries Included word processor features editing tools such as Instant Phrases, which allows users to save typing time by assigning commonly used phrases or words to a specific key. The column-editing feature allows users to move, delete, sort, and add columns of text. Formatting features include automatic generation of a table of contents and a built-in outliner. *PaperClip III* also contains a 40,000-word, expandable dictionary and built-in telecommunications capabilities. The 128 version supports 80-column mode and documents with up to 499 lines. It includes a command for stripping hard returns from a downloaded text file. The flip side of the 128 disk contains the spelling-checker dictionary and printer files.

PFS:Write

Software Publishing
IBM PC and compatibles
512K required
\$199.00

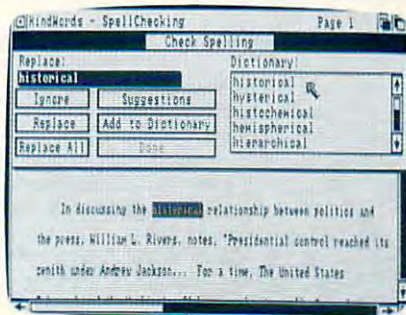
The first word processor in the PFS line, *PFS:Write* can be used to generate form letters and documents. Data tables, graphs, and additional information can be added from other programs in the series (such as *PFS:Report* and *PFS:Graph*). The word pro-

cessor is currently marketed as *PFS:Professional Write*, Version 2.0. People who own *PFS:Write* can upgrade to *PFS:Professional Write 2.0* for \$50.00.

Pocket Writer II

Digital Solutions
Commodore 64/128
\$59.95

This word processor supports search and replace, mail merge, 40 and 80 columns, side scrolling, global formatting, and a variety of formatting codes. The display is WYSIWYG, and the program offers 15 printer files. Enhanced versions for the 64 and 128 are available on one disk for \$59.95.



KindWords' whole 90,000-word spelling checker can be loaded into memory at one time.

ProWrite

New Horizons Software
Amiga
512K and Kickstart 1.2 required
\$124.95

A WYSIWYG word processor, *ProWrite* helps users combine IFF color graphics with text. The text features include superscript, subscript, flexible tab settings, multiple-line headers, footnotes, five page-numbering styles, and paragraph formatting (left, center, right, or full justification). Up to eight documents can be open at one time. The program also offers a variety of font styles and sizes. Both mouse and keyboard input is accepted. Version 2.0 features sideways printing, a built-in 95,000-word spelling checker, resizing capability for graphics, print merge, and support for HAM pictures. It also features a command to accumulate and display a count of the number of characters, words, lines, paragraphs, pictures, and pages that are in a document.

Scribble!

Micro-Systems Software
Amiga
\$99.95

Using the mouse-controlled, pull-down menus of this word processor, writers can size windows, work with more than one window at a time, or scroll among screens. Editing functions include character formats such as bold, italics, and underline. The program

has a mail-merge feature to combine documents with address lists and a spelling checker to correct mistakes. The word processor can be used with other programs from Micro-Systems: *Online!*, *Analyze!*, and *BBS-PC!*.

SpeedScript

COMPUTE! Publications
Commodore 64/128
\$11.95

SpeedScript is a word processor written in-house at COMPUTE! Publications and published on disk and as a type-in program in magazines. It allows users to write, edit, format, and print documents of all sizes, from letters to novels. Margins, page length, spacing, page numbers, headers, and footers can be changed or added to the document. Formatting features include pagination, underlining, and centering. Graphics can be added to the text, and the files can be linked to print one continuous document. This word processing program uses about 6K. The 64 version is available on disk with all of the *SpeedScript* utilities.

Sprint

Borland
IBM PC and compatibles
\$199.95

Sprint includes a customizable user interface, a 220,000-word thesaurus, and a spelling checker. The program can be driven completely by menus or by function keys which can be customized by the user. Context-sensitive online help is also available. Up to 24 files can be stored in memory at once, with as many as six windows open on the screen. Standard word processing features include hyphenation, headings, footnotes, cross references, tables of contents, and indexing. The program also features more advanced tools such as ligatures, automatic kerning, style sheets, line drawing, bulleted or numbered lists, and side-by-side or snaking columns. The program supports more than 350 printers—dot-matrix, daisywheel, laser, and typesetter—and a variety of text formats such as ASCII, IBM DCA, *WordPerfect*, *WordStar*, *Microsoft Word*, *DisplayWrite*, and *MultiMate*. Sorting and searching procedures can be used with the mail-merge option. The autosave function saves all work in the background as it is typed to guard against power failures or accidents. The macro language and compiler allow developers to modify the applications for individual uses.

Superscript

Precision Software
Commodore 64/128
\$59.95 (128)
\$49.95 (64)

Superscript includes a spelling checker, macro features, and support for an assortment of printers. Documents can be merged with



data files created by *Superbase*, a database. The 128 version of *Superscript* can reside in memory with *Superbase*.

Term Paper Writer

Activision
Distributed by Mediagenic
Apple II, Commodore 128, IBM PC and compatibles
\$49.95 (Apple)
\$39.95 (Commodore)
\$52.95 (IBM)

Term Paper Writer employs four major steps to help students write term papers. First, the notetaker is used to collect and organize information on the subject. The outliner sorts the information into groups and prepares an outline. Writing is assisted by the word processor, which supports boldface, underline, centering, and a spelling checker. Footnotes can be added on each page, and the bibliography is compiled automatically from the notes. The IBM version includes 5¼- and 3½-inch disks.

Textomat-64

Abacus
Commodore 64
\$29.95

Textomat-64 supports form letters, document chaining, block operations, and printer setups. It allows 80-column lines with horizontal scrolling. Documents as large as 24,000 characters can be stored in memory, and longer documents can be created through chaining. Onscreen commands include editing, formatting, merging, and utilities.

TextPro

Abacus
Amiga
\$79.95

This intermediate-level word processor offers onscreen formatting, automatic hyphenation, and 30 user-definable function keys. IFF-format graphics can be imported to the text, and any section of the screen can be saved or printed. Printer drivers for many of the popular dot-matrix printers are included. The package isn't copy-protected.

VizaWrite Classic

Progressive Peripherals and Software
Commodore 128
\$89.95

A full-featured word processor for the 128, *VizaWrite Classic* contains editing and formatting options such as justification, indentation, boldface, underline, search and replace, super- and subscript, and newspaper-style columns. Text is highlighted for editing, and commands are displayed on the screen. Frequently used words can be added to the built-in spelling checker, and the glossary can be used to merge words into the text. *VizaWrite Classic* can merge name-and-address lists from any sequential file created by a database. Numbers from the built-in calculator can also be added to the text. A printer profile system allows control of any RS-232

or parallel printer. The program can print near-letter-quality fonts on dot-matrix printers.

Volkswriter Deluxe Plus

Lifetree Software
IBM PC and compatibles
\$99.00

Volkswriter Deluxe Plus features onscreen tutorials. Word processing tools include multiple fonts, automatic reformatting, mail-list merging, and onscreen formatting plus a 100,000-word spelling checker. *Volkswriter 3* text can be imported. The program supports more than 200 printers. It's not copy-protected.

Volkswriter 3

Lifetree Software
IBM PC and compatibles
\$295.00

Volkswriter 3 is a full-featured word processor offering automatic hyphenation, style sheets, automatic envelope printing, mail merge, sorting, and math routines for calculating and invoicing. There is a 170,000-word spelling checker, plus a temporary dictionary available while typing. Utility programs include conversion programs, a DOS shell, and editors for the spelling and hyphenation dictionaries.



MacWrite II's WYSIWYG display accurately shows column layouts and font choices.

Webster's New World Writer II

Simon and Schuster
IBM PC and compatibles
\$169.95

A menu-driven word processor, *Webster's New World Writer II* is directed toward writers who need more than the basics of word processing but not all the trimmings found in the high-end, professional packages. This program contains functions to control margins, spacing, justification, tabulation, headers, and footers. It uses a paragraph format rather than a page format, and three formats can be stored at one time. Other features include word counts, page counts, setting marks in the text, drawing boxes and lines, adding nonprinting comments to text, and an *oops* command for restoring deletions. With the typewriter mode, the printer can be set to print each letter as the user types. The pro-

gram supports most dot-matrix printers and the HP LaserJet. The main feature of *World Writer II* is the 1 million-word thesaurus and spelling checker. The thesaurus cross-refers the words, and the spelling checker operates at four levels, based on the typist's spelling abilities. A RAM-resident outliner, *Outliner+*, is also included in the package although it runs separately from the main program.

Wordbench

Addison-Wesley Publishing
Apple II, IBM PC and compatibles
\$189.00 (Apple)
\$149.00 (IBM)

Wordbench is organized into six writing modules—such as word processor, outline generator, and note-taker—and seven desktop tools, including a spelling checker, a thesaurus, and a reference organizer. The outliner and note-taker can be used together to brainstorm and create an outline for a document. While writing the text with the word processor, the reference organizer aids in tasks such as recalling reference sources and formatting footnotes. The program is menu driven and accepts text from other sources.

WordPerfect

WordPerfect
Amiga, Apple II, Atari ST, IBM PC and compatibles, Macintosh
\$329.00 (Amiga and ST)
\$179.00 (Apple)
\$395.00 (IBM and Macintosh)

Designed originally for the IBM PC, this word processor contains a thesaurus and a spelling dictionary. Word processing features include automatic formatting, footnotes, endnotes, automatic paragraphing, outline numbering, indexing, table-of-contents creation, and five newspaper-style or parallel columns. A List Files option permits file operations such as rename, delete, and print without leaving the program. Math columns can be added to documents and automatically calculated. The merge feature can be used along with user-defined macros for special functions. Multiple documents can be printed, and the program works with more than 200 printers. The package includes a color-coded template.

Wordstar 2000 Plus

MicroPro
IBM PC and compatibles
\$495.00

The *Wordstar 2000 Plus* edition offers advanced word processing features such as automatic paragraph reformatting, page preview, indexing, and file locating. Graphics can be imported to the text as can line and box drawings. Thirty-two fonts are available for printing. More than one window can be opened at one time, and help screens can be called from within the program. In addition to the word processing applications, this package also features *Telmerge*, a telecommunications package; a 550,000-word thesaurus derived from *Roget's II*; a dictionary of 40,000



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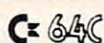


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words; and an outlining program. Additional utility programs can design and print tables, reports, charts, invoices, labels, and forms. *Wordstar 2000 Plus* supports dot-matrix and laser printers.

Word Writer 128

Timeworks
Commodore 128
80-column display required
\$49.95

Word Writer for the 128 offers a built-in 90,000-word spelling checker, a thesaurus with over 60,000 synonyms, an outliner to organize notes, a full-function calculator, and print-preview mode to display the document as it will be printed. Word processing features include search and replace, tabbing, automatic page numbering, document chaining, headers, footers, superscript, subscript, scrolling, and disk cataloging. Over 1000 words can be added to the dictionary while the program is being used, and text can be highlighted on the screen for underline, boldface, or italics. This program can also be used with *Data Manager 128*, *Swiftcalc 128*, and other Sylvia Porter-series programs, as well as GEOS.

Word Writer 3

Timeworks
Commodore 64
\$39.95

This word processor for the Commodore 64 contains an 85,000-word spelling checker, a thesaurus with over 60,000 synonyms, an outline processor, and an 80-column print-preview mode that displays the document in

80-column format before it's printed. The menu-driven program features search and replace, automatic page numbering, document chaining, page skip, scrolling, color control, merging, centering, and a multifunction calculator. Text can be printed with underline, boldface, italics, superscript, and subscript. *Word Writer 3* is GEOS compatible and can be used with *Data Manager 2* or *Swiftcalc*. The program operates in 40-column mode.

WriteNow for Macintosh

T/Maker
Macintosh
\$195.00

WriteNow combines a user-friendly interface like the one found in *MacWrite* with word processing features such as multiple columns, a ruler for formatting paragraphs, footnotes, and automatic numbering. Version 2.0 adds fixed line spacing from 1 to 99 points; character, word, and paragraph count; case change; odd, even, and reverse-order printing; handling of trailing spaces; and smart quotation marks. The program also contains mail-merge and networking capabilities, a 100,000-word spelling dictionary, cursor-key support, decimal tables, and the ability to import and export text and graphics.

Writer's Choice Elite

Activision
Distributed by Mediagenic
Apple IIs
\$89.95

Writers can combine text and graphics to illustrate documents with *Writer's Choice*

Elite. The image-grabber feature allows graphic images to be imported to the document without leaving the program. Text can be either red or black and highlighted in yellow, green, red, or blue. Graphics can be added to the headers and footers, and the documents can be printed in 16 colors. The program includes a variety of type styles and sizes for text. Sixteen windows can be opened to view and edit more than one document at a time. Other features include a mouse interface, pull-down menus, ruler formatting, local rulers for paragraph or section formatting, and integration with *AppleWorks*.

XyWrite III Plus

XyQuest
IBM PC and compatibles
\$425.00

XyWrite III Plus is an advanced word processor that integrates text preparation with formatting. It contains standard word processing functions such as editing, searching, sorting, defining and moving text, and math calculations. In addition, there are numerous formatting features, such as text alignment, justification, automatic hyphenation, character and print modes, footnotes, headers, automatic numbering, page length and width, and line spacing. The program supports mail merge, columns, and fill-in forms. There is a 100,000-word spelling dictionary and a thesaurus. A redlining feature allows the user to keep track of all additions and deletions so the finished document can be compared to the original. □



Publishers of Word Processors

For more information, contact the publishers listed below.

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Addison-Wesley Publishing
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BASIC

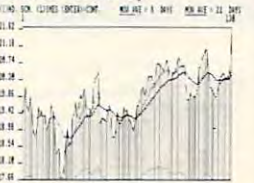
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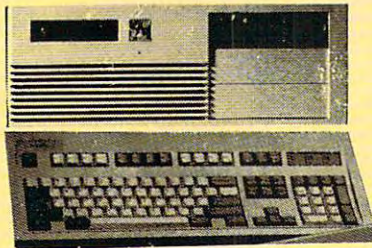
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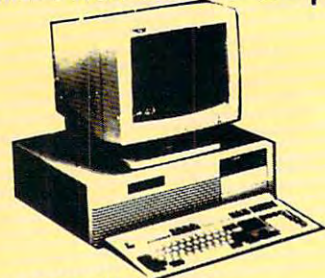


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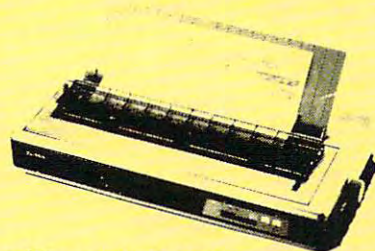
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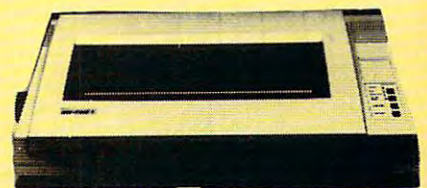


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MS-DOS

It all started with Atex, the professional minicomputer-based word processing and typesetting system that's used by almost everyone in the publishing industry—*COMPUTE!*, the *New York Times*, the *Washington Post*, *Newsweek*, and a list of about 700 others.

When the IBM PC appeared in 1981, David Erickson, who helped design Atex's word processing software, wrote a fast, streamlined text editor for the new micro. He modeled the command structure on Atex's.

John Hild, a friend of Erickson's at Atex, was so impressed with the PC word processor that he dashed off a 120-page manual for it. Hild and Erickson started selling copies of *XyWrite I* for \$50 each. Before long they were making enough money to leave Atex, and *XyQuest* was born.

XyWrite's development continued to reflect its Atex origins. At the top of a list of professional features is its near-perfect file compatibility with Atex typesetting systems. Because most professional writers, especially journalists, need to communicate with Atex systems, *XyWrite* has long been a popular word processor with the pros.

XyQuest has had some trouble broadening *XyWrite's* popularity beyond the circle of professional writers, though.

XyWrite has the well-deserved reputation of being the fastest text cruncher around, but it also has a reputation for being difficult to learn. Although most seasoned *XyWrite* users would claim that it's the easiest of programs to use, the myth persists.

There have been some noteworthy attempts to bring the *XyWrite* mystique to the masses. One of the best is David H. Rothman's book *XyWrite Made Easier: Revised and Expanded for XyWrite III Plus* (1988; TAB Books, 13311 Monterey Lane, Blue Ridge Summit, Pennsylvania 17294; 717-794-2191; 375 pages; \$21.95). The lion's share of this volume is dedicated to detailed descriptions of the way *XyWrite* experts have customized their favorite word processor. *XyWrite Made Easier* is a must for *XyWrite* tinkerers.

Another useful *XyWrite* extra is Herb Tyson's software add-in *EasyXy* (Mount Vernon Economics, 6028 Redwood Lane, Alexandria, Virginia 22310; 703-960-5357; \$75). *EasyXy* consists of a completely redesigned menu system that makes *XyWrite's* power more accessible to first-time users. Also included in the package is Tyson's mouse menu system, which is a perfect match for *EasyXy's* menus.

Not wanting to miss the let's-make-*XyWrite*-easier boat, *XyQuest* recently released its own *A La Carte* menus for *XyWrite* (*XyQuest*, 44 Manning Road, Billerica, Massachusetts 01821; 617-671-0888; \$30 upgrade for registered *XyWrite III* users; \$445 with *XyWrite III Plus*). This extensive add-in equips *XyWrite* with a vast menu system that frees the novice from remembering commands.

XyWrite pros may find the *A La Carte* menus a hindrance, preferring *XyWrite's* own speedy commands and help system. In fact, *XyQuest*

itself sees its new menu system simply as a means to get more people to try *XyWrite*.

If you've put off trying *XyWrite* because of its difficult-to-learn reputation, *A La Carte*, *EasyXy*, or *XyWrite Made Easier* can make getting to know the program nearly painless. And after you've gotten your feet wet, you may find yourself in the company of thousands of *XyWriters* who are, to quote Richard Bach, author of *Jonathan Livingston Seagull* and veteran *XyWriter*, "charmed by the lightning system's glitter and fire."

High Noon

There may be a showdown brewing. There's a new word processor in town, poised to go head to head with *XyWrite*.

Computerease made its reputation designing PC products that make Atex-to-PC communications easier. Its newest offering, *Word Mover* (Computerease, 654 Metacorn Avenue, P.O. Box 170, Warren, Rhode Island 02885; 401-245-1523; \$150), combines the best word processing features of the company's previous tools with some new functions.

Word Mover is *XyWrite*-file-compatible, which means that its files can be read by Atex systems as easily as *XyWrite's*. And, to make communication even easier, the program has a built-in telecommunications module. Document tracking, another high-end feature, rounds out the package.

Word Mover has much of *XyWrite's* configurability and power. You can redefine the keyboard, screen colors, printer-definition files, and most other aspects of the program.

The program's features include an online spelling checker, built-in mouse support, a menu structure that you can customize with the program's

in-board function programming language (FPL), and several user-selectable help levels.

Part of *Word Mover's* power as a telecommunicator comes from its ability to translate files on the fly. You can, for example, translate a file from *Sprint* format to *Word Mover* format as you download it.

These features are impressive, but there are some caveats, too.

Word Mover is flexible, but you'll have to get your hands dirty to take advantage of its power. For example, although the program can be configured for almost any printer, you may have to do the fine-tuning yourself.

Word Mover's spelling checker presents no alternatives for misspelled words; it simply stops at each word that isn't in its dictionary and asks you whether it's OK. Busy writers will want a spelling checker that provides best guesses for misspellings. And many writers will want a thesaurus, too.

It's true that you could buy an add-in dictionary and thesaurus, but you might be spending something near *XyWrite's* street price of \$250 by that time, and *XyWrite* has a turbo-charged spelling checker and thesaurus built in.

Although *Word Mover* has some features that *XyWrite* users might envy (such as integrated telecommunications and mouse support), this new entry isn't likely to win any converts away from *XyWrite*. It is, however, an attractive choice for writers who need *XyWrite* file compatibility and require a measure of *XyWrite's* power but can't afford *XyWrite's* price.

Don't Panic

"I know I've got a virus," my friend shouted. "CHKDSK shows that nearly a third of my disks contain a hidden file of zero bytes.

"What else can it be?" he continued. "I know about DOS's hidden system files, IBMDOS.COM and IBMBIO.COM, but those files aren't on

these disks. And no utility that shows hidden files displays these mysterious files. I'm doomed."

To find the source of this phantom file, I began running CHKDSK on my disks. I soon found the offending message—*0 bytes in 1 hidden files.*

I consulted two DOS experts, but they were as surprised as I was at the presence of this mysterious file. Two days later I stumbled on the origin of this baffling nonexistent file and learned something very interesting about one of DOS's quirks.

DOS stores files in directories. In each directory, each file has an entry that contains the filename, its extension, an attribute byte, time and date information, the starting cluster number of the file, and the file's size.

The names of a directory's subdirectories are stored in entries just like filenames. How does DOS tell the two apart? The attribute byte is the key. This byte encodes information about the type of directory entry: normal, read-only, hidden, system, volume label, subdirectory, or archive.

If an entry is a subdirectory, the subdirectory bit in the attribute byte is set. If the file is hidden, the hidden bit is set, and so on.

Now, perhaps the most interesting bit in the attribute byte is the one for volume label. Each disk can have one volume label only, so the bit is used only once per disk. DOS doesn't want the volume label to appear as a filename in directory listings, so it sets the hidden bit, too.

When you run CHKDSK, that program counts files and subdirectories. If the subdirectory bit is set, the entry is a subdirectory; otherwise, it's counted as a file. Since the volume label isn't a subdirectory, CHKDSK erroneously thinks it's a file. And because the volume label is merely a name and not a true file, it doesn't have a length—it's zero bytes long. Voilà!

If you see that mysterious message, don't panic—your system doesn't have a virus; CHKDSK just has a case of the sniffles.

— Clifton Karnes

64 & 128

It will come as no surprise to anyone who has followed the Commodore 64/128 over the past couple of years that the market has become oriented almost totally toward entertainment software. Part of this, of course, has to do with the machine's age: By now, there's enough variety in productivity software to suit anyone who chooses to leap aboard. Companies have little reason to release yet another package in these areas.

There are other reasons, though. For the past couple of years, as Commodore has been concentrating on the Amiga and MS-DOS markets, the company has tried, publicly, to dump the Commodore 64/128. The company might have looked, instead, at Apple Computer's example: Apple not only continued to support the Apple II line, but also added machines because of the line's popularity. Not until very recently has Apple seemed to want the Apple II to disappear.

The major reason for the entertainment orientation, however, can be construed positively rather than negatively. When the Commodore 64 first appeared, its 64K of memory, special music chip, and superb graphics capabilities were derided by those who felt serious computers were text-only machines, but the rest of the market took the Commodore features to heart. Before long, the Commodore 64 became the machine of choice for first release of new entertainment software. The reason was simple: graphics, animation, color, and sound were all available, so the Com-

modore 64 became, in effect, the first serious alternative to the arcades.

Yes, it proved to be a reasonably good applications machine as well. I wrote two books on my Commodore 64, using one 1541 drive and a 12-inch, black-and-white television. I know of two people who ran small companies with the machine. Educational programs abounded, as the price made it attractive to schools. But the Commodore 64 remained, first and foremost, a games machine because it more than fulfilled its original promise of strong graphics and good sound. And as the predominance of games software for the machine now demonstrates, it's still an excellent machine for this purpose.

GeoWrite Fight

Tired of *geoWrite*? Now you've got a choice in GEOS-compatible word processors. Timeworks (444 Lake Cook Road, Deerfield, Illinois 60015; 312-948-9200) has released *GEOS Writer 64* (\$39.95), a new word processor for the Commodore 64. Timeworks is well known in the Commodore market, for such successful applications as *Word Writer 3*, *Swiftax*, and *Sylvia Porter's Financial Planner*.

GEOS Writer 64, as its name suggests, runs under GEOS. As such, it's the only real competition for *geoWrite Workshop*. Why anyone would bother competing with the built-in GEOS word processor is difficult to determine until you realize that *GEOS Writer 64* is different. The Timeworks package is a considerable improvement over the original *geoWrite* and should provide a good alternative for users of *geoWrite Workshop* and *GEOS 2.0*. It supports mouse, joystick, or keyboard input and offers considerable control over formats, headers, footers, cutting, and pasting.

The major difference between this program and the standard GEOS word processor is that its onscreen text isn't graphics-oriented. Its dis-

play isn't as snazzy as *geoWrite's* and *geoWrite Workshop's*, and it isn't WYSIWYG (although you can preview a page in *Writer 64* with its Show Full Page feature). On the plus side, though, the program is noticeably faster.

For GEOS users who found typing in *geoWrite* slow and laborious, *Writer 64's* speed will be a delight. To be sure, the program harks back to the olden days, when post-typing formatting was the norm (*PaperClip* is the most obvious example here), but since the Commodore 64 is a fundamentally slow machine, this system does speed things up.

GEOS Writer 64 offers full compatibility with *geoWrite*, *geoPaint*, and other GEOS packages. You can import fonts from *FontPack Plus*, add graphics from *GeoPaint*, and so on. You can also check the document using *geoSpell*, but since *GEOS Writer 64* includes a faster, 100,000-word spelling checker, this step is unnecessary.

And Other Fights

Technocop, looks at the future of crime fighting. As a member of the elite Enforcers squad, you try to rid the world of a mob known as DOA (Death On Arrival).

Armed with an .88 Magnum pistol, a topnotch criminal radar detector, and an optional-to-the-hilt VMAX Twin-Turbo Interceptor, you clean out 11 scuzzy-looking tenement buildings. You shoot your way through layers of flunkies to capture the heavies.

The game is divided into two distinct portions. In the first, you race along the highway, avoiding other vehicles or blowing them off the road with your machine gun, hydraulic wheel ram, rapid-fire cannon, or tactical nukes (your weaponry improves further into the game). At seemingly regular intervals, your car automatically pulls off the road, and the second part of the game begins. Here, you battle bad guys inside one of the buildings. To raise your rank from Grunt to Technocop, you have a lot of death to deal out. *Technocop*

sells for \$39.95 and is published by Epyx, 600 Galveston Drive, Redwood City, California 94063; (415) 368-3200.

While we're on the subject of arcade-style games, let's look at three relatively new packages.

Victory Road, from Data East (470 Needles Drive, San Jose, California 95112; 408-286-7074), is the sequel to *Ikari Warriors*. You battle Stonehead and his unsightly army as you fight your way through a series of increasingly depressing screens. Each is filled with nasty and unsavory things wishing to dine upon your flesh, and each level even has a superdemon just in case you get cocky. Game control is straightforward, and the action is fast and deadly. *Victory Road* (\$29.95) is a good translation from the arcades.

Avantage has chipped into the arcade scene with *Jet Boys*. You enforce the law on Saturn by fighting the Mega-beasts, a group of pug-ugly beasts who have captured a nuclear reactor on one of Saturn's moons. You must deactivate the reactor before the Mega-beasts destroy it and the whole planetary system. Standing in your way is an entire multitude of antisocial types. You fly over lava columns and the like with a jet-pack, and you improve your weapon by collecting pods. On each level, there's a Megabeast that you must destroy. Graphics are strong and gameplay is fast (too fast for my aging fingers, but fine for those in good health). *Jet Boys* costs \$14.95, and you can contact Avantage at 550 South Winchester Boulevard, San Jose, California 95128; (408) 296-8400.

Also from the arcades is Arcadia's *Double Dragon* (\$34.99). Here, as arcade fans already know, brothers Billy and Jimmy Lee rescue Billy's girlfriend Marian. Marian has been kidnapped by the Black Warriors, minions of the Shadow Boss. Billy and Jimmy get to use their martial arts expertise along with any weapons they might find—baseball bats, oil drums, and so on—to free Marian from their enemies' evil clutches. *Double Dragon* is fine as an arcade game, but one of its more interesting aspects comes from

its programming. In order to include all the options from the arcade, the programmers decided to use two sprites rather than one for each animated character, a technique that results in a small line across the middle of each character. The line doesn't impede play, though. Arcadia products are distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, California 94404; (415) 571-7171.

Finally for this month, Accolade has released *Grand Prix Circuit*, a Formula One racing simulation. Fans of Accolade's *Test Drive* will feel right at home with this game, since control of the car is largely the same. In fact, *Grand Prix Circuit* might well be considered *Test Drive* minus the boredom of the mountain road. In *Grand Prix Circuit*, you race against other drivers (not the cops, as in *Test Drive*) on eight different tracks. Three cars are available—Ferrari, Williams, and McLaren—for races in Brazil, Monaco, Canada, Detroit, Britain, Germany, Italy, and Japan. Pit stops are crucial, as is timing your driving perfectly. *Grand Prix Circuit* is certainly among the best race games available. For more information, contact Accolade, 550 South Winchester Boulevard, Suite 200, San Jose, California 95128; (408) 296-8400.

— Neil Randall

school kids. Apple IIs are solidly entrenched in grades 9 through 12, for much the same reason that K-8 computers usually sport the Apple II logo—quality educational software.

Because of its power, the top-of-the-line Apple IIGs is an ideal machine for the high school classroom. And although higher-level educational software has been long in coming, IIGs-specific packages are beginning to show up. One such program, and a topnotch one at that, is Sensei Software's *Geometry*.

First developed for the Macintosh, *Geometry* for the IIGs retains much of the original's flavor, for it, too, offers an easy-to-use interface, pull-down menus, mouse support, and bitmapped graphics. The three-disk package is not copy-protected, so the program can be installed on a hard disk or ramdisk with little trouble. A ramdisk is particularly useful, since the program frequently goes to disk during a session—the electronic disk cuts down on wasted time. A minimum of 512K of RAM is suggested by Sensei, putting the program within reach of almost every IIGs owner, but 768K is a more realistic requirement.

Geometry follows the standard high school course curriculum and, in fact, is best used as a complement to existing textbooks or classwork rather than as a stand-alone package. Organized in textbook fashion, with a table of contents, over 350 problems and their solutions, and even a bookmark-like way to save your place, *Geometry* uses the computer's unique abilities as much as possible. Turn pages by clicking on the bottom dog-eared, or shift to another chapter by pulling down a menu. Click on the highlighted terms (marked in color, naturally), and you see an example. Enter an incorrect value in a problem, and the program tells you it's wrong. Solve the problem, and the computer congratulates you just as quickly—no more waiting for the teacher to scrawl answers on the blackboard.

The program uses graphics extensively to illustrate concepts; animation helps demonstrate some of the prob-



People sometimes forget that Apple II computers are almost as important to high schoolers as they are to elementary-

lems. For all its visuals, though, *Geometry* is not a flashy program. With chapters titled "Congruence," "Areas of Polygons," and "Similarity" (my favorite), this package is meant to educate more than entertain. Studying any of the many proofs is enough to convince the browser that this is serious stuff.

Though it's more comfortable in a classroom setting, *Geometry* would make an ideal buy for any parent whose child is hitting the books hard in high school. As an electronic textbook, the IIGs makes a good study companion.

Geometry is published by Brøderbund, 17 Paul Drive, San Rafael, California 94903; (415) 492-3200; \$79.95.

Time to Fight

Battles of Napoleon—a recently released computer war game from SSI, the preeminent publisher of computer war games—is as much a construction kit as it is a simulation. Not only can you refight four key battles in Napoleon's career—Borodino (1812), Auerstadt (1806), Quatre Bras (1815), and Waterloo (1815)—but if you have the inclination, you can reconstruct virtually any conflict from the era or even manufacture fictitious struggles to explore what-if scenarios.

The complexity of *Battles of Napoleon* is evident as soon as you begin to pore through the two manuals. If you're a newcomer to war games, the jargon will distress you; if you're comfortable with such terms as *melee*, *operation points*, and *zones of control*, however, you'll feel right at home.

Like many SSI games, *Battles of Napoleon* puts you in charge of an almost bewildering array of units, each requiring your orders and attention. Unlike some computer war games, which try to duplicate reality by letting you give only general orders (and which then force you to watch as your subordinates royally screw things up), *Battles of Napoleon* allows you to tactically direct individual units. One suggested addition to the package would be a

paper map, so that the entire battlefield's terrain could be taken in at a glance rather than seen in screen-sized chunks.

You can take command of either side—French or Allied—and duke it out with the computer. One nice touch lets you choose the computer's strategy, in effect handicapping it if you feel a bit nervous about losing.

The construction-kit aspects of *Battles of Napoleon* are impressive. You can create scenarios, armies, and maps and then deploy the forces and set victory conditions. It's even possible to change the game at its basest level by altering the actual logic of battle. Want to double the deadliness of rifle fire? Simple. Want to turn one unit into hand-to-hand-combat fanatics? Easy.

Battles of Napoleon gives you a chance to forget the modern world as you try to imitate one of the world's most famous military commanders (or grind his armies into the dust). Military history buffs and war-game aficionados will find much here to educate and entertain them. Others not so inclined will find themselves in over their heads trying to fill Napoleon's shoes.

Battles of Napoleon runs on any Apple II, is available only on 5¼-inch disks, and costs \$49.95. Contact SSI at 1046 North Rengstorff Avenue, Mountain View, California 94043; (415) 964-1353.

Tax Time

It's only weeks away. April 15, the deadline for filing federal income tax returns, strikes fear into even the stoutest hearts. Searching through receipts, collecting forms, and calculating taxes is a job best left for the organized. Or for those with a personal computer and tax-preparation software.

Apple II owners have a wide choice of programs, ranging from the venerable *Tax Preparer*, from Howardsoft, to Softview's graphics-oriented *TaxView*. All tax packages, though, have certain strengths and weaknesses. Some are too complicated; others work only on the IIGs. One tax-prep

package that's simple to use, and which works on every Apple II, is Timeworks' *Swiftax*. (*Simple*, of course, is a relative term when the IRS is involved.)

Requiring only 128K and filling three 5¼-inch disks (if you want a 3½-inch version, you have to mail in a card), *Swiftax* guides you through the maze of tax frustration.

Forms are the backbone of any tax return and, thus, any tax-prep package. *Swiftax* offers the most common, including Forms 1040, 1040A, and 1040EZ, and Schedules A (itemized deductions), B (interest and dividend income), C (profit or loss from business or profession), and SE (computation for Social Security self-employment tax). Most people will be satisfied with the forms *Swiftax* offers, although the omission of Form 8283, required if you make charitable contributions of more than \$500, is unfortunate.

Filling out the forms is a matter of answering *Swiftax*'s questions and entering numbers in the proper spaces. One of the program's most impressive features links forms, schedules, and attachments to Form 1040. As you use linked forms, their totals are automatically placed on the correct line on the 1040. This feature really cuts down on the duplicate calculations and paperwork you endure if you do your taxes by hand.

Good print quality is as crucial to computerized tax programs as good handwriting is to the paper-bound preparer. *Swiftax* is adequate, though not as dazzling as some of its competition—especially *TaxView* for the IIGs, which prints the actual forms, not just the values.

You can print on regular paper, then transfer the figures to the actual forms by hand, but that's a waste of good computing power. You can also print to the actual forms, which means you must first collect them (the best are those in single-sheet form, usually found at your local post office; those forms bound into the packet you receive in the mail from the IRS sometimes tear when you remove them, or bind in the printer). Once you have multiple copies of everything you need, you must align

the form and the print ribbon. Even then, be ready for several tries before the page comes out perfect.

Still, *Swiftax* is highly recommended. The menu system is comfortable, and although the disk access is substantial (and slow when you're using 5¼-inch drives), the wait is worth it.

Swiftax is published by Timeworks, 444 Lake Cook Road, Deerfield, Illinois 60015; (312) 948-9200; \$69.95.

—Gregg Keizer

AMIGA

Byte by Byte, the little Texas developer with a big 3-D animation product, may be the first developer to successfully make an Amiga product the industry standard in its field. *Sculpt-Animate 4-D* (\$499.95) is the enhanced version of *Sculpt-Animate 3-D*. Byte by Byte hasn't really added an extra spatial dimension (anyone interested in making ray-traced images of glass hypercubes?), but the program runs faster than it used to.

According to Scott Peterson, Byte by Byte's president, the company planned to release a Mac II version of *S4-D*'s scene-editing module, *Sculpt 4-D*, in March. Later in the year, Byte by Byte will release the animation module, *Animate 4-D*. Total price for the Mac II version will fall between \$500 and \$5,000—depending on what configuration of features you choose—but it will be a more powerful and flexible product that will include such esoteric 3-D good-



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Jordan vs Bird: One on One	30	20
Questron II	40	26
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Three Stooges	35	23
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Ultima IV or V	60	39
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ies as texture/bump mapping and Renderman support. Since there's nothing like *SA4-D* on the Macintosh right now, Byte by Byte should have the market to itself.

But that's not the most interesting news. Byte by Byte also plans to bring out *SA4-D* for Silicon Graphics' Iris series of computers. You know the ones—the 3-D workstations that cost from \$16,000 to \$140,000 and are popular with the professional computer graphics effects crowd. The Iris version of *SA4-D* will use the same kernel that the Amiga and the Macintosh versions use and will also be file-compatible with those versions.

Peterson envisions a cost-effective animation environment in which many artists use *SA4-D* to create objects and scenes on plain Amiga 500s and then move files to an Iris for high-powered rendering. It will be interesting to see whether the big animation studios start buying Amiga 500s in 100-unit lots. The Disney studio that tossed its first Amiga in the trash because it didn't live up to expectations is reportedly interested in such a system.

With all this high-end activity, Byte by Byte promises not to abandon the Amiga. "We like the machine," said Peterson, "and we'll support it as long as Commodore stays afloat." Keep rowing, West Chester.

Contact Byte by Byte at Arboretum Plaza II, Suite 150, 9442 Capital of Texas Highway North, Austin, Texas 78759; (512) 343-4357.

Disk-a-zines

Caught up on your Amiga reading? When you're tired of reading printed articles, check out one of the several Amiga magazines on disk. These include *AMnews* (P.O. Box 1389, Guerneville, California 95446; 707-887-9708; \$14.95), a three-disk set of articles, music, art, programs, and animation; *AX* (9276 Adelphi Road, Adelphi, Maryland 20783; 301-439-1151; \$14.95 each), a slickly produced publication that ap-

pears at irregular intervals; and *Jumpdisk* (1493 Mountain View Avenue, Chico, California 95926; 916-343-7658; \$9 per issue, \$66 for 12 issues), which is especially strong on games. That list doesn't mention the occasional Amiga disk magazines from Canada, Britain, and Germany which can sometimes be found at Amiga dealers' or at user group meetings.

Fishing for ARExx

Give credit to Software Visions (P.O. Box 33119, Framingham, Massachusetts 01701; 800-527-7014) for one of the few new ideas in database management.

Software Visions developed *Microfiche Filer* (\$99), a database program like no other. *Microfiche Filer* data is organized like information on the microfiche cards you find in libraries—a condensed sheet of text and pictures over which you drag a magnifying glass to locate information. The interface is so intuitive that even people allergic to databases like to use it. *Microfiche Filer* is especially useful as a picture catalog because it can manage and display any kind of Amiga IFF files.

Where *Microfiche Filer* doesn't quite measure up is in raw power. Software Visions has corrected this problem with the release of *Microfiche Filer Plus* (\$179). Among the new features are instant, as-you-type field calculations; more sophisticated picture handling, with auto-reduction and color remapping in all Amiga screen formats; better printing; and a comprehensive *ARExx* interface.

ARExx is a programming language developed by William S. Hawes (P.O. Box 308, Maynard, Massachusetts 01754; 508-568-8695; available separately for \$49.95). *ARExx* is simple and compact, easy to learn, and easy to run—in short, an ideal language for new or occasional programmers. While you can learn the basics of programming with *ARExx* and use it to create stand-alone applica-

tions, it's intended primarily as a macro or scripting language. That's how you can use its power with *Microfiche Filer Plus*.

You can write *ARExx* macros which perform a series of *Microfiche Filer Plus* operations. For example, your macro, which you type directly into *Microfiche Filer*, could import a mailing list into the applications from another Amiga program, sort the list by a specified field in each record, then prompt you to set up your printer for mailing labels. This is the sort of programming power that has always been offered by mainstream database managers like *dBase III* but has been lacking on the Amiga.

That's not all *ARExx* can do. You can use the language to extend the capabilities of any compatible program or device. At the December World of Commodore show in Toronto, Software Visions demonstrated a video catalog using *Microfiche Filer Plus* and *ARExx* to control a videodisc player through an Interactive Microsystems MediaPhile infrared controller.

People scanned through the *Microfiche Filer Plus* database to select information for display from the videodisc. Then, with a single keystroke, the segment from the videodisc popped up on the Amiga monitor (routed through the Amiga via a genlock). The programmer, Ron Currier, claimed he spent less than an hour writing the *ARExx* macros to control *Microfiche* and the MediaPhile.

If more Amiga applications and hardware support *ARExx*, it will become far easier for ordinary Amiga users to build custom systems. The ideal, of course, is for all computer devices and programs to talk to each other—and to you, the user—with complete fluency. It might (and should) happen first on the Amiga.

Hyper-Amiga

Here's an open question to the Amiga developer community: Why hasn't a program like

HyperCard been developed for the Amiga?

HyperCard, for those unfamiliar with it, is an easily programmable database loosely based on an index-card metaphor. Included are basic word processing, paint program, report-generating, and hypertext capabilities, along with HyperTalk, the best object-oriented-like programming language yet devised.

People who have never tried programming and probably wouldn't even make an attempt with a relatively simple language like *ARExx* (which is in fact quite similar to HyperTalk) can master HyperTalk quickly and create their own applications or databases (called *stacks* in *HyperCard* lingo) with a few hours of study. Educators like *HyperCard* because it makes small, custom applications easy to develop. Developers use *HyperCard* to act as software front ends for hardware such as scanners, to provide additional program capabilities such as report generation, or to create online help.

As one of the most flexible and easy-to-use packages ever written, *HyperCard* has made a big splash in the Macintosh software world. Over the last 18 months, it has been an important factor in the recent surge of Macintosh sales. (It doesn't hurt that Apple ships a free copy of *HyperCard* with each new Macintosh computer sold.)

But the program has notable shortcomings; it lacks color, true multitasking, multiple screens, resizable cards, real animation, high-quality music, and video compatibility—all problems that are hard for the Macintosh to overcome but easy for the Amiga. A canny Amiga developer could take the *HyperCard* concept and improve it in ways the Apple won't be able to achieve for a year or more. In fact, if any developer is doing that, I'd like to hear about it.

Write to me with information of interest to the Amiga community care of *COMPUTE!*, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

— Steven Anzovin

Watching Apple move into the business world is like watching your best friend join an exclusive sorority. Slowly but surely, she spends less time with you and more time with her new buddies. You don't spend enough money for her, you don't drive the right kind of car, and you don't shop at the *really* chic stores.

Apple's been spending more time in the business sector, developing network tools, moving into a high-end platform, and paying homage to UNIX and Ethernet. What's in it for us? Does Apple have a free day to do lunch with the home users?

Probably not. Even January's price cuts weren't very friendly. After introducing the 68030 Macintosh SE at the same price as the 68000 SE's, Apple had to make some changes. The company lowered the price of its most powerful SE from \$5,069 to \$4,369; prices on three Mac II configurations fell by anywhere from 9 to 16 percent (the biggest decrease was applied to the most expensive system). Prices on some memory-expansion kits and some hard disk drives were also lowered. But did Apple drop prices at our end of the spectrum? Hardly. The Mac Plus is still \$1,799, and the one-megabyte SE with a 20-megabyte hard disk drive holds steady at \$3,898.

Apple said lower component costs account for the price reductions on the most powerfully configured systems. That doesn't explain why the low-end machines weren't affected.

Even though prices are high, Apple's first-quarter sales

rose by less this year than last year—35 percent in 1989 versus 57 percent in 1988. On January 27, after the decreased profits were announced, Apple's stock prices plummeted to 37%, dropping by just under 10 percent while the rest of the market rose by 1½ percent.

Gloat if you wish.

Even More Super

Silicon Beach has shipped version 2.0 of *SuperPaint*, the first graphics package to combine painting and drawing tools. In the computer-graphics world, paint features are based on bitmapped graphics, and draw features are based on object-oriented graphics. Each has its strengths—you get cleaner laser printing with object-oriented graphics but more control over detail with bitmapped graphics.

The new *SuperPaint* offers more power and more user control. On the Paint side, Silicon Beach has added an adjustable airbrush with control for dot size, pattern, and paint flow; AutoTrace, which converts bitmapped pictures into object-oriented pictures; and custom tools, which you can create and add to the Toolbox.

A Bezier tool has been added to the Draw layer of *SuperPaint*. This tool draws curves based on points that you define. Another set of improvements adds hairlines, arrowheads, and dashed lines to your choice of line styles. Version 2.0 also allows multiple fonts and type styles in a single text block.

There are new features that improve the package as a whole. You can define the size and orientation of your documents, allowing multipage files and horizontally oriented pages. You can edit graphics in reduced view. SuperBits, which has replaced LaserBits, edits bitmapped graphics in the Draw layer. TIFF-file-format support and color page preview are also available in the new package.

SuperPaint 2.0 retails for \$199. It's available to registered users for \$50. If your *SuperPaint* program was bundled with one of Microsoft's

packages, you also qualify for the \$50 upgrade.

The really hot package from Silicon Beach is *SuperCard*, one of the highlights of the Macworld Expo. Just as *SuperPaint* is an enhancement of the Claris standbys *MacDraw* and *MacPaint*, *SuperCard* leaps from the platform that *HyperCard* built. You can convert all of your *HyperCard* stacks to *SuperCard* easily, so your old files will be compatible with the new program format. You may wonder why you didn't start the stacks from scratch, though, once you see how *SuperCard* works. You can read more about it in "Nodes and Buttons and Links! Oh My!," (page 34).

Contact Silicon Beach Software at 9580 Black Mountain Road, Suite E, P.O. Box 261430, San Diego, California 92126; (619) 695-6956.

Claris Expo

Look—there's a spelling checker in your graphics program and everything but the typist in your word processing package.

At January's Macworld Expo, Claris announced an upgrade to one of its best sellers and promoted several new packages.

MacDraw II's new features include a spelling dictionary, so now you can check words in your graphics files just like you check them in your word processor documents. Another new feature lets you annotate *MacDraw II* files with computer sticky notes; they work much like the yellow ones you find attached to paper documents. There are lots of other improvements—a slide manager for presentation files, a millimeter scale on the ruler, more command-key equivalents, and more—so the upgrade is substantial.

MacDraw II 1.1 is due out in February and retails for \$399. Registered owners of *MacDraw II* can upgrade for \$30, and registered owners of the original *MacDraw* can upgrade for \$200. If you bought *MacDraw II* after January 1, 1989, you're eligible for a free

upgrade.

Enough about upgrades. What's new from Claris?

New is *MacWrite II*. The program retains the simplicity of the original *MacWrite* but sports more than 50 new features, according to Claris. You'll get more done with *MacWrite II*, since it runs three to five times faster than the original and checks spelling as much as ten times faster. A more WYSIWYG approach will also make document creation easier and more productive: Headers and footers show on the page, multiple columns are supported, and you have more control over leading, type styles, and type sizes. If you're working at home, *MacWrite II* now makes more sense, because its new mail-merge feature will let you flood clients with form letters and correspondence. Even heavy-duty writers will find *MacWrite II* appealing; nearly every Mac writer wants to search for fonts, styles, and sizes. For fast access to formats, you can stick as many as 30 in a menu and use them as styles.

Don't think of this new package as a mere upgrade of the original *MacWrite*. From Claris' description, it's a completely new animal, in competition with *WriteNow* 2.0 and *Microsoft Write*.

MacWrite II, due out by the time you read this, retails for \$249. If you own *MacWrite* 5.0, you can upgrade for \$65; other versions of *MacWrite* can be upgraded for \$75.

Outside the home computer user market, Claris introduced three other products at the Macworld Expo: *Claris CAD*—a \$799, two-dimensional computer-aided-design program for engineers, drafters, and designers—and two entries in the new SmartForm series, *SmartForm Designer* (\$399) and *SmartForm Assistant* (\$49). Directed at the business market, *SmartForm Designer* lets you create applications, requisitions, and forms. *SmartForm Assistant* lets you fill in those forms on the computer.

Contact Claris at 440 Clyde Avenue, Mountain View, California 94043; (415) 960-1500.

—Heidi E. H. Aycock ▸

Epyx has just launched its *Battleship*, a translation of the popular paper game, for the ST. You can play against the computer or another person. After you've placed your ships on a 24 × 24 grid, they never appear onscreen again—the computer keeps track of where they are.

In Salvo mode, you can take as many as 24 shots per turn (depending on how many ships are still afloat). Hits are indicated at the end of the turn. If you turn off Salvo mode, you can take as many as 4 shots.

Besides a bigger board and more ships than you find in the traditional game, Epyx's *Battleship* includes graphics enhancements that make the game more interesting but which don't affect play much. As ships sustain damage, for instance, the destruction shows onscreen, getting progressively worse until the ships sink, leaving nothing but a life preserver. Games can be played very quickly, and the computer opponent is devilishly good.

The game costs \$29.95, and you can contact Epyx at 600 Galveston Drive, Redwood City, California 94063; (415) 368-3200.

Brøderbund (17 Paul Drive, San Rafael, California 94903-2101; 415-492-3200) has translated its 8-bit karate hit *Karateka* (\$29.95) to an Atari ST version. You control the hero as he fights opponents and rescues the princess from the evil Akumo's castle. Joystick control is poor, with punches and kicks scattered indiscriminately, but the keyboard control works surprisingly well. Except for some

enhanced graphics and sound, however, this game differs little from the earlier version. If you've mastered the original, this version will present little challenge.

Game Maker

STOS, The Game Creator is BASIC especially designed for writing games. The language itself is somewhat old-fashioned: It requires line numbers (no labels); it limits IF statements to a single program line (usually, program lines equal several screen lines); and it doesn't allow such elements of structured programming as DO, procedures, or multiline functions. Computed GOTOs are allowed, as are REPEAT UNTILs and WHILE/WENDs.

Where this language really shines, though, is in the support it provides for writing entertainment software. As many as 15 software sprites, a music track, and menu polling are all supported via interrupts, so including these features in your program doesn't appreciably slow it down. *STOS* is not a GEM program, but it supports menus, windows, file selectors, and a mouse.

Interestingly enough, because *STOS* does not work under GEM, many of GEM's limitations are bypassed. Windows are automatically redrawn with a variety of custom borders. Menus can also be customized, as can the file selector. Except the menu selections, messages are not supported, so there's no simple way to tell whether the user has clicked on a window. Scroll bars, move bars, and so on don't exist on windows.

STOS comes with accessories to design sprite images, music, icons, and fonts. Different fonts can be installed in each window. The sprite commands include MOVE, ANIMATE, and collision detection. Once started, these commands run in the background and don't interfere with your program. You can even set up a path for the sprite to follow and have it change animation sequences automatically. Loading multiple screens (in *DEGAS* or

NEOchrome format) is just a command away, as are vertical and horizontal screen scrolling and swapping, enlarging, and shrinking sections of the screen. The manual is poorly organized, but it has an excellent quick-reference card. The product is distributed on three single-sided disks and includes three complete games and a runtime package. Contact Antic Software, 544 Second Street, San Francisco, California 94104; (415) 957-0886.

Invading Aliens

Better Dead than Alien, from Electra (distributed by Discovery Software, 163 Conduit Street, Annapolis, Maryland 21401-2512; 800-342-6442; \$34.95), is a superb game in the *Space Invader/Galaxians* family.

You control a small base that moves horizontally and vertically. Waves of aliens march across the screen and drop bombs on you. Periodically, several aliens will break off and dive at you. You score more points for destroying the aliens if they're diving. Being hit by a bomb or an alien uses up energy, and when the energy is gone, the game is over. You can partially recharge by cutting down on your firing rate for a while, but this tactic is dangerous.

Each of the well-animated waves of aliens is different from the others, and the waves are interspersed with segments where you must destroy meteors. Other segments pit you against huge, menacing aliens, which can withstand many hits before they die. Every so often, a tone sounds and one of the aliens begins to glow green. Destroying that alien releases a special weapon pill, which you can catch if you're fast. These special weapons include such things as shields, double ships, rapid fire, and high-powered lasers. Most of the time, you lose these special weapons when you move to the next section.

On completion of each section, you get a code word; entering that code word immediately takes you to a more difficult level. The game also

includes a two-person, simultaneous mode. It's quite a bit easier to play with two people cooperating because you have twice as much firepower.

The final high point of this game is its sound. If you do well, you'll be treated to scattered applause; do particularly poorly and you'll be heckled. This game is highly recommended and tremendously addictive.

Gee, Plus

A very useful program from Codehead is *G+Plus* (said *Gee Plus*, not *Gee Plus Plus*), which retails for \$34.95. This program replaces GDOS, the portion of the ST's operating system that must be loaded when you need very-high-quality printed output. A variety of programs use GDOS, including *Publisher ST* (TimeWorks), *WordUp* (Neocept), and *Easy-Draw* (Migraph). Unfortunately, GDOS slows graphics operations on the ST quite a bit. It's also rather inflexible: The file that describes the fonts and printer drivers (ASSIGN.SYS) must be loaded when you boot your machine, it must reside in the root directory, and it can't be changed without rebooting. This file (and the fonts associated with it) are different for each GDOS application, which means that you must typically reboot each time you want to use a different program.

G+Plus loads when you boot, and not only does it allow you to change ASSIGN.SYS files whenever you wish, but it also has an editor so you can associate the correct ASSIGN.SYS file (which no longer needs to be called ASSIGN.SYS) with the proper application. When the application is loaded, *G+Plus* will automatically load and activate the right font-description file. It can even find the font-definition file in a folder so that you don't clutter up your root directory. *G+Plus* does not slow down your ST, and it even has a mode which speeds up redrawing of the Desktop. Once you've tried *G+Plus*, you'll never use GDOS again.

— David Plotkin □

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Each month, "Fast Looks" offers up snapshots of some of the most interesting, unusual, or important software and hardware for the IBM PC and MS-DOS, Commodore 64/128, Apple II, Amiga, Macintosh, and Atari ST lines of personal computers. Get the last word on what's new—here, fast, first.

L.A. Crackdown

You're head of a two-man surveillance team charged with infiltrating the illegal operations of the Pacific Shipping Company, gathering enough evidence to make an arrest stick, and apprehending the company's owner and his henchmen. To aid you in the enterprise, the Drug Enforcement Agency has provided you with a sophisticated surveillance van, and the L.A.P.D. is loaning out one of its newest rookies.

That's the premise of *L.A. Crackdown*, the newest entry in Epyx's Master Collection line of simulations. The game's clever concept, ease of use, well-designed game screen, colorful and nicely animated graphics, and sound effects make it an attractive package for computer owners interested in police surveillance.

Still, there are some flaws. Meaningful discoveries seem to be the result of trial and error, not the products of logical deduction or even user intuition. Also, the canned conversations between rookies and other characters are repetitious. Loading time for these dialogues on the Commodore 64 using a 1541 disk drive is often excessive, but it's relieved somewhat by Epyx's *Vorpal* fast loader.

Despite these shortcomings, *L.A. Crackdown* is a pretty good simulation of police methods. And it's a lot less expensive than buying your own surveillance van and equipment—safer, too.

—LP

Apple II with double-hi-res graphics card—\$39.95
Commodore 64/128—\$39.95
IBM PC or compatible with CGA or better, color monitor, and DOS 2.11 or higher—\$39.95

Epyx
600 Galveston Dr.
P.O. Box 8020
Redwood City, CA 94063
(415) 368-3200

LEGO TC Logo Starter Pack

Children have been playing with LEGO bricks for years. Parents have been stepping on LEGO bricks for just as long. Now, with the LEGO TC Logo Starter Pack, parents get their chance to build a LEGO model—one that can be programmed to move.

Combining LEGO bricks with a computer is a graceful, simple concept: Build a model, give it commands, and then step back to see if it does what you've told it to do. The learning skills required are developed through fun and curiosity.

It's easy to set up LEGO TC Logo. Install the interface card, use the ribbon provided to connect the control box to the interface card, and then plug the box into an outlet. Long connector wires give your constructions room to move.

Anyone above age 9 can use LEGO TC Logo. The logical lessons teach sequential order in programming. This is a singularly and spectacularly successful product. An IBM version is scheduled for release this spring.

—NR

Apple IIe, IIgs—\$500;
LEGO Systems
555 Taylor Rd.
Enfield, CT 06082-3298
(203) 749-2291

SimCity

SimCity lets you walk a mile in the mayor's shoes. The game simulates the growth and decay of a city.

Start from scratch with raw land or choose a scenario such as San Francisco after an earthquake, Tokyo after a monster attack, or Hamburg, Germany, during World War II firebomb raids.

In developing your city, you bulldoze the landscape and then set up residential, commercial, and industrial zones. Link those zones to a power plant; then build roads and mass-transit systems. Sounds complicated, but it's as easy as grabbing an icon and clicking on the map. Sound effects accompany your growing city as traffic patterns develop and trains run along your newly laid tracks.

You don't win this game as you win action games. Every development eats up city funds, prompting you to raise revenues. Watch your budget and keep tabs on your Evaluation, which tells you whether the citizens think you're doing a good job.

SimCity reflects the fundamentals of city planning, with every decision and factor influencing others. Commercial zones, for instance, depend on the size of residential zones. If you want to learn even more, the manual includes a historical perspective on city development and a bibliography.

— HA

Amiga—44.95
Commodore 64/128—\$29.95
Macintosh—\$49.95

Maxis Software
953 Mountain View Dr.
Suite 113
Lafayette, CA 94549
(415) 376-6434

Abrams Battle Tank

Sixty tons of steel under your feet can make you feel invincible. That's a bad, bad mistake if you're playing *Abrams Battle Tank*, Electronic Arts' new tank simulator. *Abrams* puts you in command of a single M1A1 Abrams, the Army's front-line tank, and drops you into combat situations where every hill and vale hides legions of enemy armored vehicles and infantry, and the skies are filled with unfriendly helicopters.

Inside your tank, you move among three stations—commander, gunner, and driver—to direct, fire, and move your vehicle. There's a lot to do (you're acting all the parts) and even more to watch for. Spotting enemy targets at long range is imperative, for the first

shot often decides the battle. At night you have an advantage, since the Abrams is equipped with a thermal range sight that "sees" in the dark.

You control the tank from the keyboard (a joystick can be used to maneuver and fire the beast). Neither the screen readouts nor the controls are complicated, although keypresses must be quick.

Abrams is a mix of simulation and game. It provides a feel for life and death inside a modern tank yet doesn't overwhelm you with all the dirty little details of tank warfare. Don't expect complete realism—single tanks don't take on waves of enemy armor—but do expect a rousing good time.

— GK

IBM PC and compatibles—\$39.95 for 5¼-inch disk; \$44.95 for combo pack, which includes 3½-inch and 5¼-inch disks

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

Contributing to "Fast Looks" this month were Heidi E. H. Aycock, Gregg Keizer, Len Poggiali, and Nancy Rentschler.



Samna has beaten everyone, including Microsoft, to the punch by releasing *Ami*, the first full-strength MS-DOS word processor to run under the Windows graphics environment. In a world where graphics translate to ease-of-use, this word processor has you producing professional-looking documents right away. But that performance comes at a price.

By using Windows as its shell, *Ami* avoids the command line interface common to most MS-DOS word processing packages. Rather than learning various key combinations to set margins, define text blocks, print, and perform other tasks, the *Ami* user can control these features by pointing and clicking with a mouse (highly recommended, although it's possible to move around in Windows from a keyboard). All things considered, such a graphics interface makes *Ami* easy to learn and to use.

There is, however, a big disadvantage to such an interface: the high cost of the hardware needed to present a friendly face to the user. By selecting Windows as its environment, Samna leaves a significant number of potential users out in the cold. Consider *Ami*'s

basic hardware requirements: a 286-based (AT-class) machine or better; EGA, VGA, or a Hercules-monochrome graphics card; one high-density drive for either a 1.2-megabyte 5¼-inch or a 1.44-megabyte 3½-inch floppy disk; 640K of RAM, with extended or expanded memory for improved speed; and at least a 10-megabyte hard drive (which, by the way, isn't mentioned on the box).



Ami is different from other IBM PC word processors—it does Windows.

If you're already working under Windows, you can dive right into *Ami*'s main features, which are impressive. Take, for example, the 26 style sheets, or templates, that come with the system. You'll find a preset style sheet to fit almost any writing project. If you use this feature, you'll no longer have to worry about document layout. Tabs, margins, fonts, paragraph alignment, and columns are all defined by the style sheet you choose.

Every *Ami* document must be referenced to one of these style sheets. If you don't see a template you like, you can modify a style sheet or create your own. But if you're a new user and you want to get up and running in a hurry, it's hard to beat the predefined templates. The memo style sheet, for example, lets you include all of the traditional memo headings (To, From, Date, and Subject) when the screen comes up. All you have to do is fill in the blanks. Other predefined style sheets include letters, reports, proposals, overheads, newsletters, press releases, and books. Several options are generally available in each category.

Windows users will recognize *Ami*'s Frames feature, which lets you define a frame, or box, anywhere on the page and fill it with graphics or text. Frames can be made transparent or opaque, and text will automatically flow around them just as in expensive desktop publishing programs.

With *Ami*, you can enter text in either of two modes. In Layout mode,

you type the text directly into the style sheet. What you see is what you get here—down to fonts and frames. Unfortunately, the system gets a bit sluggish in Layout mode when text is entered quickly. Those with faster fingers might prefer the Draft mode.

If you hit the wrong key and manage to change the layout or erase something by mistake, *Ami's* Undo Function will cancel your last operation and restore the screen. This handy tool is especially useful when you're first learning the program because it encourages you to experiment and take chances, knowing all the while that your mistakes can be easily corrected. And if you get totally lost, context-sensitive help is available.

Once you have created a document, Windows makes handling files a breeze. Getting and Saving are handled quickly from the File Menu. The Document Management System lets you rename, copy, move, or delete a file with a click of the mouse.

Ami's 130,000-word spell-checker works quite well. When I checked the spelling in this review, the program always offered the correct word in its list of alternatives—no matter how badly I had misspelled.

As impressive as *Ami's* features are, however, the program's power is limited by what is left out. For example, there's no thesaurus. Nor is there any mention of macros for frequently used words or phrases. Also among the missing are automatic envelope printing, a way to perform mathematical calculations, an address database, mail-merge functions, and adequate file linking for joining several files or chapters together and printing them with consistent headers and footers. For a package that constantly talks about increasing your productivity, *Ami* lacks some of the more basic productivity capabilities found in other word processors like *WordPerfect* (versions 4.2 and 5.0) and *XyWrite III+*.

Some of these capabilities will be included in a more powerful version of the package, called *Ami Professional*, which has yet to be released. Buyers of *Ami* receive a \$100 coupon they can use toward their purchase of *Ami Professional*—and they can keep their original *Ami* software.

While I'm among the first to agree that we desperately need a standard, workable interface in the MS-DOS world, I'm not ready to accept less powerful software to get it. The Windows interface is attractive and easy to use, but if important program features have to be omitted so that the software will

run efficiently in that environment, then I'll stay with a more powerful, more traditional word processor.

If you're already working in the Windows environment, *Ami* is certainly a step up from *Windows Write*. Also, if you need to produce professional-looking documents in a hurry and you don't need features like mail merge and file linking, then *Ami's* short learning curve and style sheets are hard to beat. But if you're looking for a powerful, full-featured word processor in the medium-price range, you'll be better off with a text-based system. *Ami* may have been the first full-blown Windows-based word processor out of the block, but I'm going to whistle it for a false start.

— Richard Sheffield

Ami

For . . .
IBM PC AT with 640K of RAM, MS-DOS 3.0 or better, one high-density drive, and a 10-megabyte (minimum) hard drive—\$199

From . . .
Samna
5600 Glenridge Dr.
Atlanta, GA 30342
(404) 851-0007

And . . .
Runtime version of Microsoft Windows included; version available for 360K 5¼-inch and 720K 3½-inch floppy disk drives; mouse recommended; *Ami Professional* scheduled for summer 1989 release.

 **Caveman Ugh-lympics**

Wham! Wham! Wham! In face, Thag!

Just one of the more intimate moments in *Caveman Ugh-lympics*, a hilarious game that parodies computer sports entertainment as it puts your joystick skills to the test.

If you've had your fill of computerized Olympic events, try the six Ugh-lympian contests on for size. How about the Mate Toss? Or the Dino Vault? Each prehistoric event is good for some grins; most are surefire ways to stress out your joystick and your pulse rate.

The scene is simple, just like the athletes. Long before the Greeks got together to flaunt their laurel leaves, cave dwellers gathered to beat up each other, run from animals, and hurl themselves over carnivores. Six Ugh-lympians have come from all corners of the ancient globe to play (or fight): Vincent, Gronk, Glunk, Thag, Ugha, and the



Best your opponent with the dread overhead smash in *Caveman Ugh-lympics*.

only cavewoman, Crudla. Except for Vincent, who's good at nothing, and Gronk, who's good at everything, each of the contestants is strong in two events. Choose Vincent or Gronk to handicap or give an advantage to one of the six possible players.

The first bout, Mate Toss, lets you spin your mate like a hammer and then throw him or her through the air. Joystick dexterity comes in handy here (as in all the events), as you must quickly twist the stick to make your ugly athlete twirl. After your mate has soared to an undignified landing, he or she gives you an instant evaluation: thumbs down, thumbs up, or a simple shrug.

The next contest, Dino Race, sets you atop a steed who's nearly as stupid as you. Spur your dino to make it run and whack its back to leap boulders, all the while judiciously applying the club to its head to make it pick up the pace. Miss the jumps and you spill off the dino; bash it too many times and it gets confused.

Fire Making requires even more joystick agility as you rub sticks together, blow sparks into fire, and bop your opponents on the head. Funny stuff.

Clubbing is the boxing of bygone days. No subtlety here—just an out-and-out bash. Club high, club low, club in face. Point up in the air (“Look, Halley’s Comet!”) and your too-dumb-to-live opponent pauses and stares, leaving you an opening for the dreaded overhead smash.

The Saber Race takes its theme from the old TV show “Run for Your Life.” Fall behind and you're lunch for the biggest kitty this side of the La Brea tar pits. Reach the finish line and you can climb a tree and shout insults at the cat below (wait—no, you can't . . . language hasn't been invented yet).

The last trial is the Dino Vault, where you try to spring over a slobbering meat eater. Set the height of the dino, run, plant your pole, and let go to sail over its head to the rock mat below. Screw up and you'll end up in the ra-

vine or in the carnivore's mouth.

Caveman Ugh-lympics' cartoon-style graphics enhance the feeling of frivolity but are nevertheless quite impressive. Characters are substantial, unlike the tiny figures featured in some sports software, and they flail their arms and roll their heads with enthusiasm. Distinguishing your athlete from your opponent is troublesome only in the Saber Race, where a mixup can spell disaster.

As in most Commodore 64 games, the sound and music are more than adequate. The sound effects—the bops, bumps, and blows—are good, and the mood music sets the scene without getting in the way.

Gameplay is pretty traditional: lots of joystick moves, a few button presses. The balance between making the joystick moves too tough and requiring at least some physical coordination is good. A sense of rhythm is probably the best trait you can have if you hope to get into the *Caves of Fame*.

Caveman Ugh-lympics is, without a doubt, a scream. Solo play is boring, but bring in another player and the room will echo with shouts and laughter. It's strictly Three Stooges-style humor, the prehistoric equivalent of fingers in the eyes and pies in the face. Violent? Sure. Realistic violence? No way.

The stars circling heads and crosses over eyes are right out of Saturday-morning cartoons. Clubbing your opponent has about as much connection with reality as Wile E. Coyote taking that long fall into the canyon. Twelve-year-olds will love this game for the simple action and frenzied joystick handling. Forty-four-year-olds will love it for the same reasons, although some may claim that they laugh because *Caveman Ugh-lympics* pokes fun at sports-event software.

Don't believe them.

Run Ugha, run! Big cat behind you!
— Gregg Keizer

Caveman Ugh-lympics

For . . .
Commodore 64—\$29.95

From . . .
Electronic Arts
1820 Gateway Dr.
San Mateo, CA
(415) 571-7171

And . . .
An IBM PC—and-compatibles version is scheduled for a May release; no price has been set.



The New Talking Stickybear Alphabet

Stickybear is the computer world's goodwill ambassador to the country of children. A perennial favorite, this cuddlesome character has been smoothing a lot of rough road, helping all he can with math, language, spelling, and reading.

And, thanks to the Apple IIGs, Stickybear has now become a good friend to teachers, too. *The New Talking Stickybear Alphabet*, the newest addition to the Weekly Reader software line from Optimum Resource, brings exciting graphics and unique, realistic sounds to a classic package and, in the process, piques the interest of young children as few other programs do.

The Apple IIGs is just the right tool to transform an educational program like *The New Talking Stickybear Alphabet* into an exceptional learning experience. An acrobat tumbles across the screen and does double flips. A gopher scoots underground across the screen and pops up every few inches. A tiger lets out a fierce roar, and a cow moos so realistically it will make you reach for a glass of milk.

The program comes on two 3½-inch disks and includes a brief but informative manual. Also included are a poster of the *Stickybear* family and stickers, which will delight young computer users. Instructions are also included for the installation of the program onto a hard disk.

There are three basic games to play with *The New Talking Stickybear Alphabet*. All are easy to learn and use. The first game is Alphabet. A child presses any letter on the keyboard and Stickybear appears, says the letter, and recites a word beginning with that letter. An animated picture, such as a flying airplane, then illustrates the word. The child can see two examples for each letter in the alphabet.

The next game is Letter Hunt. Stickybear is in control here. He says a letter and then gives the child unlimited time to find that letter on the keyboard. When the child presses the correct key, an animated graphic describes a word that begins with that letter. If the child presses an incorrect letter, Stickybear again shows the letter requested, in upper- and lowercase form, and repeats its name. If the child still can't find the correct letter, the program moves on, but it later returns to the problem letter. Of course, children can press the space

bar on their own to move on to another letter.

Fast Letters is the third game. Stickybear says the name of any letter that the child presses. Unlike Letter Hunt, however, the child is in complete control of the program and can move at his or her own pace.

Adults may find Fast Letters and Alphabet a bit frustrating because children tend to want to see the same thing over and over. When children have control over the program, as in these two selections, adults should sit quietly and keep their hands off the keyboard. Let the child set the speed of play.



The New Talking Stickybear Alphabet lets kids explore letters and words with animated graphics and colorful sound.

The program's sound quality—especially as it recites letters and words—is a vast improvement from the robotic-sounding voices of the past. *Stickybear* is articulate with each letter, especially at the word level. The only letters that are difficult to distinguish are the *v* and the *b*. They sound very much alike, with the emphasis on the long *e* vowel. The only place where this problem makes the program difficult, however, is in the Letter Hunt game.

The manual is written with parents and nonteachers in mind. The writers do an excellent job of explaining the program's operation as well as its goals and objectives. They go on to suggest enrichment activities that parents can direct to enhance their child's learning of the alphabet and to improve their child's vocabulary skills.

Early childhood education has become a hotly debated topic in recent years. No one doubts the importance of stimulating young minds to prepare them for a high-technology world. The argument revolves around the pressures put upon children to learn and compete. *The New Talking Stickybear Alphabet* proves that some educators are working hard to provide an opportunity to enhance learning at an early age while at the same time making the ac-

tivity fun, interesting, and age-appropriate.

— Nancy Rentschler

The New Talking Stickybear Alphabet

For . . .
Apple IIgs—\$49.95
IBM PC and compatibles—\$49.95

From . . .
Optimum Resource
10 Station Pl.
Norfolk, CT 06058
(800) 327-1473

And . . .
IBM version, available on 5¼- and 3½-inch disks, requires the 3½-inch format and optional sound board.

King's Quest IV: The Perils of Rosella

Few text and graphics adventures can claim more fans than the King's Quest series. The kingdom of Daventry, where these stories take place, is an inviting, comfortable place where kings, queens, knights, ladies, dragons, and unicorns combine to sweep away the problems of modern life. It takes only a few minutes at the keyboard for King Graham and Queen Valanice to capture your heart.

King's Quest IV: The Perils of Rosella continues the story. Having regained the three treasures of Daventry (*King's Quest*), rescued Valanice from the treacherous Hagatha (*King's Quest II*), and defended his kingdom from the wizard Manannan and his magical dragon (*King's Quest III*), Graham decides that it's time to pass on his adventurer's cap.

King's Quest IV begins with a ten-minute cartoon in which King Graham attempts to do exactly that. But just as he flings his cap into the air toward his heirs, he falls to the ground, seriously ill. Is this the end of the valiant king? Can nothing be done to help him?

Tears well up in Rosella's eyes as she contemplates her father's impending death. She yearns for guidance. Suddenly, Fairy Genesta appears in the Magic Mirror. She tells Rosella of Tamir, an island fraught with dangers but blessed by the presence of a tiny, life-giving tree. She will help Rosella find the tree, but first the princess must help vanquish Lolotte, an evil fairy who has stolen Genesta's magic necklace. It seems even fairies suffer occasional

misfortune.

Genesta has become increasingly weak since the loss of her necklace and its dangling talisman. Unless the magical charm can be recovered soon, she will lose all her powers and die.

Faced with an opportunity to help her father and save Genesta, Princess Rosella places her own life in jeopardy and accepts the call of duty. Little does she know what dangers lie ahead on the island of Tamir and elsewhere. Nor can we, as game players, claim any special insight into Rosella's future. Nevertheless, our course is clear. We must cast our fears aside and go forth. What self-respecting twentieth century knight or lady could refuse such a noble venture?

Thus begins a pleasurable journey through frightening forests, into dangerous oceans, and along peaceful beaches. Take your imagination and your humor along. You'll need both as you search for clues in abandoned castles and neglected graveyards. Consider, for example, the words on my favorite tombstone:

Dr. I. Letsome

When people's ill they come to I
I physics, bleeds, and sweats 'em!
Sometimes they live. Sometimes
they die.
What's that to I?

I. Letsome

Don't assume anything during your travels. Locales may change from visit to visit. What was there once may be gone later. Some creatures only come out at night. Others appear at unpredictable intervals. Rosella's perils are complex and involved. If possible, take along as many friends as will accept the challenge.

I played the IBM version, which runs effectively with any popular graphics card/monitor configuration. However, the characters and settings really come alive only when viewed on an EGA or, better yet, VGA monitor. In addition to outstanding graphics, *King's Quest IV* offers an outstanding soundtrack for those fortunate enough to own the proper equipment. The standard mediocre PC sound just won't do.

For those who demand excellent audio in their computer gaming, *King's Quest IV* incorporates drivers for many popular sound add-ons, including Ad Lib and IBM music cards and the Roland MT-32 Multi-Timbre Sound Module. I was fortunate enough to have access to the Roland board and MIDI interface. At \$550, this 32-voice music synthesizer isn't cheap—but it's definitely impressive. With it, you'll hear

songs and sound effects in full stereo. The game takes full advantage of music add-ons by incorporating 40 minutes of original music into the nine 5¼-inch floppy disks that comprise the program.



The adventures in the kingdom of Daventry continue in *King's Quest IV: The Perils of Rosella*.

The introductory cartoon to *King's Quest IV*, for example, is enhanced by a lyrical tune that accentuates the evolving drama. Later, an allegedly bad minstrel performs a surprisingly good rendition of "Greensleeves" on his lute. When misfortune strikes Rosella, an entire symphony laments her death. Without a special music card, you'll miss out on all these subtleties. But with the Roland MT-32 installed, you'll enjoy 40 minutes of the best sound available on any computer disk anywhere.

With its three megabytes of code, its 3-D graphics, and its unmatched sound capabilities, *King's Quest IV* sets a gaming standard others will be hard-pressed to match, much less surpass. Incidentally, don't be too proud to consider purchasing Sierra's hint book. Even the most experienced adventurer, like King Graham, can occasionally use a bit of help.

— David Stanton

King's Quest IV: The Perils of Rosella

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IBM version for 256K machines also available—\$49.95; Amiga version scheduled for May release—\$49.95; Macintosh version scheduled for summer release—\$49.95; Roland MT-32 Multi-Timbre Sound Module—\$550

 **Pinstripe Presenter**

When it comes to business, a picture is worth a thousand bucks. At least that's what business-graphics software publishers have discovered. These pricey programs, which convert cold spreadsheet data to attractive charts, are perennial best sellers among business-computer power users. Spinnaker Software wants to bring graphics power to a wider segment of the market with *Pinstripe Presenter*, a low-cost chart maker.

Almost anyone who needs quick, good-looking graphics but has little or no graphic-design savvy will find *Pinstripe Presenter* easy to use. It includes a number of chart types, including word, organization, pie, area, line, and table, as well as vertical, stacked, and horizontal bar with two- and three-dimension options. Each chart type is predesigned; all you have to do is enter the proper data and print the result. The program does all the work of chart creation, including laying out titles, positioning elements, and choosing colors.



Pinstripe Presenter brings business-presentation graphics to the home.

If you need to customize the basic chart or if you're just feeling artistic, you can use *Pinstripe Presenter's* drawing tools. As with any drawing tool, you're better off using a mouse rather than the keyboard to make your modifications. You can also embellish your presentation with images from a clip-art library. For an especially dramatic effect, you can layer several elements—a bar chart over a map, for example. You can also save the chart design you've created as a template for future charts.

Business-graphics programs live or die on their ability to import data from *Lotus 1-2-3* and compatible spreadsheet programs. *Pinstripe Presenter* has no problem in that regard; it accepts both *1-2-3* and *Symphony* data. Just set the chart type—bar or pie, for example—in *1-2-3* or *Symphony* and then save as many charts as you need from your

worksheet. *Pinstripe Presenter* will recognize these chart files and import them, with all titles and ranges intact, then restyle the charts to suit the parameters you've set, within *Pinstripe Presenter*, for that chart type.

What goes in must come out, and *Pinstripe Presenter* does a good job with output.

The program drives standard Epson and IBM graphics printers, but also outputs files in PostScript format so that your charts can be printed with the high-quality resolution allowed by that page-description language.

Since graphics are meant to be presented in color, *Pinstripe* has drivers for the HP Paintjet, the popular color inkjet printer; and the Polaroid Palette Plus Film Printer, for making color slides and instant prints. The program can also use MAGICorp's network of slide-making service bureaus: You send the files to the nearest bureau via modem and MAGICorp returns the slides the next day.

Pinstripe Presenter's slide-show module, Screen Director, lets you display charts on the computer screen. You can show each new graphic by hitting a key or automate the process by defining the order and length of time you want to show each chart.

There's some heavy competition in the business-graphics arena, including Software Publishing's *Harvard Graphics*, which has been around for a few years and has gone through several evolutionary stages. In a head-on features comparison, *Pinstripe Presenter* comes up a bit short.

Spinnaker has made an honest effort to make *Pinstripe* simple to use, but I didn't find it as easy to get into as *Harvard Graphics*. The layers of menus you must move through to get to a particular function remain on the screen; this is meant to show you where you've been and how to get back, but it also clutters the work area. The menus themselves aren't especially intuitive, so you will definitely have to read the manual—but that's typical for most MS-DOS applications. *Pinstripe* does offer online help to get you past any sticking point.

Some of the more unusual types of data graphics, such as *x/y* graphs, high/low-close charts, and error bar charts, can't be produced automatically with *Pinstripe Presenter*. Nor are its printed results quite as elegant as the ones produced by *Harvard Graphics*. In fact, some options, such as three-dimensional horizontal bar charts with four or more values, produce downright ugly charts. (Of course, any package will produce

ugly charts if you give it the right information. Perhaps we should ban three-dimensional charts from business graphics altogether.)

One feature not included in *Pinstripe Presenter* which, judging by most of the business charts I've seen, is an absolute necessity: a spelling checker.

Still, the program does most of the other things that *Harvard Graphics* does, but at a significantly lower cost. With a little practice, you can make the standard word, pie, and bar charts required for business reports with a minimum of fuss. In most cases, that's all the typical user of a business-graphics package needs.

— Steven Anzovin

Pinstripe Presenter

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 **Life & Death**

Let me tell you right off the bat: You'd never want me to operate on you. I have a hard time clipping my nails and getting splinters out of my feet.

But thanks to *Life & Death's* computer-simulated doctor/instructor, David Lindstrom, and the wonderfully automated hospital staff at Toolworks General, I'm progressing rapidly in my surgical residency. I may have lost a few dozen patients, but I'm progressing.

Software Toolworks' *Life & Death* comes complete with three disks, a message beeper, several pieces of printed material, some rubber gloves, and a face mask—all you need to begin your residency.

Donning the mask and gloves, I set about copying the disks onto my hard drive and leafing through the printed material. *Let's see—an orientation memo to all first-year residents from Dr. Lindstrom, an operating-procedures manual, an excerpt from Anatomy and the Surgical Technique, and a handsome booklet containing "A Brief, Bloody History of Surgery." Must have been written by an Englishman.*

The manual, subtitled "Running
www.commodore.ca

Life & Death on Your IBM PC/XT/AT or Compatible,” explains the system requirements and installation procedures. You can use a mouse, keyboard, or joystick—all work well.

When the program started, I found myself in the Abdominal Ward of Toolworks General Hospital, looking down a long hall. Standing at a desk was an attractive nurse named Monica Pierce, who asked me to sign in.



Playing doctor in *Life & Death* is a cut above other simulations.

I wanted to hang around and talk to Monica, but she informed me (in cartoon captions) that I had a phone message. Using the beeper that comes with the game (a paper decoder wheel, printed to look like a beeper, which acts as copy protection), I called Dr. Naylor at his car phone and was asked to look at one of his patients. “He’s in Room 2, the second door on your right,” Nurse Pierce told me as I spilled coffee on my pants. The next thing I knew, I was off to treat my first patient!

Entering the room, I discovered a male patient in his mid-30s lying motionless on the bed. Using the mouse to point at a clipboard at the end of the bed, I clicked and the patient’s chart appeared on the screen. *Uh huh . . . I see . . . I see. The patient suffers from several symptoms, including abdominal pain, nausea, vomiting, diarrhea, high fever, and loss of appetite.* I began to feel around his abdomen. “Ouch!” he screeched from the speaker of my PC clone. “Yikes!” This surprised the heck out of me, since I’d never heard my PC talk before. But my surprise faded when I realized I had a suffering patient in my care. It was up to me to ease his affliction.

I consulted my copy of *Anatomy and the Surgical Technique* and determined that my patient had acute appendicitis. I recommended an operation. Soon the operating room was ready to roll and I was standing in front of a patient and a slew of foreign-look-

ing instruments. They looked pretty sharp. “Aren’t you going to put the patient under first?” one of my assistants asked.

Of course, I thought, then—whoops! I accidentally stuck the patient in the side with the scissors. My PC screamed.

A very angry Dr. Lindstrom appeared on the screen: “I am outraged at your unbelievable incompetence! Report to medical school at once.”

At medical school, I learned how careless it was to start cutting the patient without first putting him under. But I got another chance. I didn’t want to blow it again, so I carefully read all the documentation before seeing my next patient. It didn’t help. I only x-rayed the patient when I should have operated. I made many more careless mistakes in medical procedure (sometimes resulting in the death of patients), went back to medical school, and, with newfound knowledge, treated more people. I soon understood that at Toolworks General you learn through direct experience. Once I had a few successes under my belt, I found myself on the honor roll—even after I’d lost several patients!

Life & Death’s graphics are very detailed in CGA mode, make good use of four colors, and provide some slight humor. The sound effects, coming out of my computer’s little speaker, sounded like digital samplings of actual voices and added a stunning realism to the program—especially when a patient *really* hurt. The point-and-click user interface worked very smoothly—much more smoothly than my own trembling hands.

As it says on the box, don’t use this program if you’re faint of heart! The blood looks real. Even though I knew it was only pixels, it made me a little queasy to look into the abdominal cavity of a patient. But Dr. Lindstrom says I’m going to make a fine surgeon, someday. *Now, if I can only trim this hang-nail. . .*

—Joey Latimer

Life & Death

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Steel Thunder

A jet fighter primed for Mach 2 combat is sleek and sexy. A tank, 60-plus tons squatting on the ground, is, well, a tank. No wonder, then, that it’s only now that modern ground-combat simulations are hitting the computer-gaming scene. Most of us would rather soar with the eagles than slog through the mud. Accolade’s *Steel Thunder*, the first tank simulation/game on the shelves, hopes to change those opinions. The game has its work cut out for it.



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Steel Thunder introduces you to the world of modern, high-tech land warfare. You can roll onto the battlefield in an M1A1 Abrams, an M3 Bradley Fighting Vehicle, or either of two versions of the Patton Tank: the updated M60A3 or the old standby, the M48A5. You can take the driver’s, gunner’s, or commander’s position. Taking the commander’s position won’t always free you from the other jobs, however, because flying metal shards might take out one of the other crew members.

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MODEM OWNERS: You can order on-line from our IBM Shop via the CompuServe, GEnie and www.commodore.ca

You begin your career as a corporal on a quick training mission. After you've qualified for battle, you are sent to the front in Cuba. (Why we're fighting in Cuba is never explained—odd place for a tank battle.) A particular vehicle is recommended at the start of each mission, but you can take a different one. You are also told which rank you will be promoted to should your mission be successful, as well as which medals may be awarded.

Before you hit that dusty trail, however, you must select a crew. Pick your gunner, loader, and driver from a list of candidates. The list rates each crewman on various aspects of his job. You'll have to make tradeoffs: The fastest loader may fatigue quickly, for example. Careful attention to crew selection, especially when choosing the loader, will increase your chances of success.

Once the mission has begun, operating the tank from the commander's position can be confusing. But by using the Command Override controls, you can "slave" the main turret to follow your field of view, which makes aiming easier.

The graphics in *Steel Thunder* suit the purpose but are hardly state-of-the-art. Some of the targets appear as representational icons rather than real-looking images. Infantry troops are symbolized by three stick figures holding hands. Still, the silhouettes do contain information: You can judge their direction of movement, and they do get larger as you close in.

It's well worth your time to read the fine instruction manual. In fact, you'd be hard-pressed to get your tank rolling without following the book's startup procedure. You can't just turn the key and drive it off; quite a few systems need to be powered up or adjusted. You should also pay special attention to the manual's "Strategy and Tactics" section, which offers valuable tips that will increase your chances of hitting your targets.

Several successful missions and promotions will graduate you to more dangerous battlegrounds. After Cuba comes Syria, followed by West Germany. Only those with the rank of major and above are trusted with duty on the West German front.

Steel Thunder is very playable and a lot of fun during the learning process. But once you have mastered the controls and learned a few tricks (like stopping to shoot while hidden by smoke), the missions become somewhat repetitive. After the learning phase, you'll quickly move up the ranks. Most of the

game's complexity comes from learning to operate the tank and the various weapons. The use of terrain and cover do not enter into the game because all of the fighting takes place in flat, open spaces.

Steel Thunder is an excellent foray into the relatively unexplored field of tank warfare. The new weapons and systems carry a lot of appeal. But serious war-simulation gamers will require another level of difficulty to keep their interest.

— Richard Sheffield

Steel Thunder

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Commodore 64/128—\$29.95

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Jigsaw

For a change of pace, power down that laser cannon, holster that revolver, and hide that six-pack of hand grenades. Try solving a computerized jigsaw puzzle instead. It'll be fun. Really.

Well, maybe a quiet encounter with a jumbled picture isn't everybody's idea of a rousing good time, but if you like puzzles, you'll enjoy Britannica Software's *Jigsaw!*

Using pictures from its image library or artwork imported from other graphics packages, *Jigsaw!* creates puzzles by dividing the picture into squares and shuffling the squares into new positions. You solve the puzzle by choosing a square and then choosing the position to which it should move, swapping pieces until they're all in the right place.

It's an easy game, so easy that the manual is no more than a brochure that describes menu commands. Simply choose Open from a menu, select a picture from the list of images, and click anywhere on the picture to jumble the puzzle. That's all you need to know to start playing.

Several options affect the difficulty of each puzzle. For example, you can choose how many squares the picture should be divided into. You could, for example, create an easy puzzle by dividing the picture into 16 fairly large pieces; but to really challenge yourself, you could divide the picture into 64 small pieces.

To further handicap yourself, you can turn down the sound, disabling a bell that signals if you've placed a piece correctly. You can also jumble the puzzle before you see the properly assembled picture, like solving a real jigsaw puzzle without first seeing the package.

These options make *Jigsaw!* appropriate and competitive for a wide range of ages and skills. A young child could put together a 16-piece picture with the sound on, for example, while an older child could put together the same picture from 32 pieces with the sound off, effectively giving the younger child a head start.

Most of the pictures in the image library are stunning, like the hibiscus flower or the angelfish. Some are whimsical, like the cartoon of Albert Einstein or the alphabet picture. The more complicated the artwork, the harder the puzzle is to solve. I spent a long time trying to find two swapped pieces in the hibiscus flower. The puzzle looked solved, but it wasn't quite right.

Although they're a ready-made challenge, you're not limited to the pictures included with *Jigsaw!*. You can bring in files from other graphics packages, such as *Deluxe Paint II* and *PaintWorks Gold*. (I did experience some problems importing images from an older version of *Deluxe Paint II*, but *PaintWorks Gold* worked just fine.) You can even digitize pictures and turn them into puzzles. After you save the picture as a screen image from your graphics package, you can open it in *Jigsaw!*.



Put the pieces back together with *Jigsaw!*

Solving jigsaw puzzles is difficult enough, and I would have appreciated a feature that lets you grab several pieces together and swap them with several others. As the program stands, you can only swap one piece at a time, a bother when you find that 12 pieces are one position to the left of where they should be.

So what's wrong with this picture? Well, if you're a real jigsaw puzzle buff,

Jigsaw! is only half the game. Part of solving a jigsaw puzzle is matching the shape of the piece as well as—or instead of—matching the color of the piece. After all, what's more challenging than a one-color puzzle? And I've even known puzzle whizzes who assemble the pieces upside down just to take away the picture clues. *Jigsaw!*'s breaking the picture into squares eliminates this part of puzzle fun.

So don't buy this software thinking it simulates those 1000-piece Ravensberger beauties or 500-piece Springboks. *Jigsaw!* can entertain at several different skill levels, especially if you or your children like puzzles for the sheer fun of seeing what the picture looks like in the end.

— Heidi E. H. Aycock

Jigsaw!

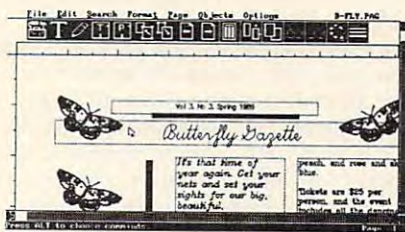
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column, three column, and blank (for your own custom formats). You can modify any of the standard formats or use them as templates.



With *Pages* you can become a desktop publisher without breaking the bank.

Pages lets you type directly onto the page or bring in text from *Microsoft Works*, *Microsoft Word*, *WordPerfect 5*, *WordStar*, or *Lotus 1-2-3*. Unfortunately, it discards all attributes such as bold, underline, and italic. Text flows automatically through the pages, and you can remove text from boxes or change the order in which text flows through the boxes. By loading multiple files or articles, you can create fairly complex newsletters.

If you type in text, the screen scrolls automatically. A search-and-replace feature helps you locate specific portions of your text. Even *Ventura* and *PageMaker* can't do that.

You get four typefaces to work with: Modern (a sans-serif type that resembles Helvetica), Roman (a serif type similar to Century Schoolbook), Script, and Decorative (an Old English style). Font sizes range from 6 to 126 points. Contrary to expectations, the typefaces look rougher on laser printers than on dot-matrix printers. Because *Pages* can't use downloadable or cartridge typefaces, laser-printer users may not be satisfied with the type quality.

To control *leading*, the space between lines of text, you manipulate three big *T*'s, sizing things up by eye. This system is intuitive and good for beginners, but advanced users will find it inaccurate.

Pages rounds out its text-layout features with a large array of drawing tools, including lines, rectangles, rounded rectangles, circles, arcs, and pie slices, as well as 32 fill patterns. You can also load bitmapped graphics from *PC Paintbrush*, *The Print Shop*, *GEM Paint*, and *MacPaint*, or you can use any *PFS: First Publisher* clip art.

One of *Pages*' strengths is that it allows you to edit pictures inside the program. You can zoom in and edit them dot by dot, reverse their color, rotate them 90 degrees, or flip them horizontally or vertically. This strength is

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7A

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Pages

Everybody wants to be a desktop publisher but not everyone has what it takes—the money for a top-flight program like *Ventura Publisher* or *PageMaker*. If your computer budget is the Slim Whitman of your household financial chorus, a new program called *Pages* can provide an inexpensive way for you to produce your own desktop-published pages—but be prepared to sacrifice some speed and to deal with display irregularities.

Unlike the big desktop publishing programs, *Pages* doesn't run under a graphics environment such as GEM or Microsoft Windows. It uses its own interface, which looks somewhat like *Microsoft Works*. Almost every command can be accessed from the row of icons along the top of the screen.

Because *Pages* is object oriented, all text and graphics are placed inside boxes. You can put boxes on top of boxes, change the order of boxes, or duplicate a box once or several times—a feature especially useful in creating multiple images on a page.

The program includes four standard page layouts: single column, two

undermined, however, by the program's inability to automatically wrap text around graphics.

When you get ready to print, you'll discover more uncommon options in *Pages'* bag of tricks. The program supports a wide range of dot-matrix printers and the LaserJet Plus, Series II, or compatible laser printers. And not only can you print to a printer, you can also create a .DCX file (similar to a .PCX file), which lets you manipulate an entire page like one picture; or you can create a file for the Intel Communications Co-Processor, a combination modem/fax board.

The excellent manual is easy to follow. It includes a complete tutorial and instructions for creating forms, business cards, and invitations. An onscreen help index complements the manual.

Pages' technical problems focus on the display. The publisher admits there are incompatibilities with certain brands of EGA and VGA graphics cards. My experience under EGA and VGA was that the mouse pointer disappeared in text mode, making it extremely difficult to highlight text. Also, the program works only in monochrome on EGA and VGA. Further, the program runs sluggishly, even on an AT-compatible computer.

Compared with other programs in the same class, *Pages* is harder to learn than *PFS: First Publisher* or *Newsroom*. It does, however, offer you much more power over page design. And while it compares well to *Publish-It Lite!* in features, it's not as fast, nor are its fonts as good; however, *Pages* can print from laser printers, while *Publish-It Lite!* cannot.

Overall, *Pages* has enough power to be a truly useful desktop publishing program for users concerned with price. But the rough edges could prove aggravating to fledgling publishers looking for a high-performance engine in an economy package.

— Daniel Will-Harris

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A version that will preserve word processing attributes and include advanced font support for LaserJet and PostScript printers is planned for a summer release; a Macintosh version is also planned.

Address Book Plus

When it comes to managing something simple, like addresses, most popular databases handle like Sherman tanks on a bicycle path, forcing you to navigate special codes and utility menus for the most elementary tasks. Then, when you want to add, edit, sort, or print, you're locked into additional menus or sequences that make the software more enigma than engine.

Power Up Software has avoided that top-heavy clumsiness with its streamlined *Address Book Plus (ABP)*. This package easily manages and prints addresses, whether for bulk mailings or individual birthday greetings. For my money, it's the software of choice for keeping any kind of address list—of friends, professional associates, or extended family.

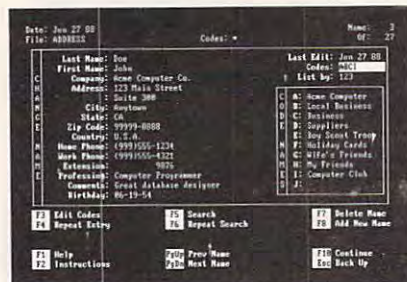
This program is fast, with a lickety-split versatility in search, update, and sort modes. If I want to print an envelope, for example, *ABP* can kick one out, including a return address, in six keystrokes.

When you start *ABP*, a file called ADDRESS loads automatically and shows the date, filename, and number of existing and available records. You can browse, edit, delete, print, import, or export your records with a few keystrokes. To edit, for example, press Enter to bring up a particular list on a scroll screen. Then open any record by moving the cursor to the pertinent data line and hitting Enter again. You may enter or create a new file by pressing the F4 key.

Adding and editing records is made easy with a quick-search function. Just hit a letter key and you're instantly at that alphabetic section of your address directory. There's a function key to search specific character combinations. And each time a new name is added or an old one is altered, *ABP* revises the date.

In addition to these functions, you may filter your address list in seconds (by coded subgroup) or order it by name, company, zip code, profession, comments, date, or birthday. You can print your lists on a variety of paper sizes for popular address books, rotary files and index cards, mailing labels, and envelopes. A set of "list by" codes lets you print your business associates by company, professionals by professions, or friends by names. You can even print your own white pages or yellow pages, which are organized by profession like a city telephone book.

If you import information from word processors or databases, *ABP* precludes the need to reenter current data. (If you have phone numbers with liberal spaces and parenthetical area codes, however, you may wind up, as I did, with the last phone digit missing.) The program works with Epson, Hewlett-Packard, and Okidata laser printers as well as with conventional printers. If you want to print address books, your printer must produce compressed type of 15–20 characters per inch.



Address Book Plus provides versatility and speed in a well-focused package.

Perhaps the program's neatest utility is a letter-code filter that lets you print up to ten subgroups from the main list—letting you cull whatever smaller data pool you stipulate. If, for example, you want to print a directory of your friends, your spouse's friends, business contacts, and club members all at once, just filter the list with the pertinent codes.

Listings allow a company name, three phone numbers, a three-line address, a profession, birthday, and comments. *ABP* is a perfect system for flexible business mailings to sales contacts or vendors; it handles all but bulk mailings in the multithousands just fine. A 640K-equipped computer will hold as many as 1500 names and addresses per file (256K machines permit only 300).

The number of files you can use is limitless. If you grouped files by state, for instance, *ABP* could conveniently handle up to 75,000 addresses. But managing discrete groups of addresses is so easy with *ABP* that you will probably opt for one master file with coded subgroups.

ABP comes with a file of toll-free telephone numbers of airlines, rental-car agencies, and hotels. It also includes a pen, three spiral binders, and a black leather DayTimer pocket address book with 100 sheets of tractor-feed paper that fit the book.

This is the easiest name-and-

autobiography of Henry Pu Yi? Do you know the year Mickey Mouse was born? (In case you're wondering, the answers are Ingrid Bergman, *The Last Emperor*, and 1928. You can figure out the other 1997 questions yourself.)



With your *Ticket to Hollywood* in hand, you're ready to conduct your own star search.

Correct answers earn you points and recharge the energy bar at the bottom of the screen. You use up energy each time you move to another map or decade. If you lose all your energy, you're temporarily thrown out of the game.

For each 25 points you earn, you receive a lead to help you find the director. These include such arcane references as *The Lady in Black*, Lloyd Wright's Design, and See Hollywood Tudor. You can usually figure out the leads from the Hollywood Scenes card, which gives a brief historical description of each location.

Once you've deciphered a lead, you can go directly to the director's location, where the director will ask you a superquestion. If you answer the superquestion correctly, you'll receive a clue to a star's identity. These cinematic snippets include such obscure things as *Star's Wife Wrote E.T.*, *Red Dust* Star in Court, and *A Salt Lake Inspiration*.

Once you've gathered enough clues to guess the star's name, you can go to the Walk of Fame on Map 5 to type in your answer. If you're right, you go back to the beginning to start the whole process over again—until you've discovered each of the 25 stars.

It's a lot of work, so here are a few tips to make the game go faster. Watch your spelling when answering the director's superquestion—it has to be letter-perfect. To aid your spelling and jog your memory, you might want to pick up a book like *Leonard Maltin's TV Movies and Video Guide* or *Halliwel's Filmgoer's Companion*. (These are two of the best film reference books around.)

After you have deciphered the lead

and are ready to find the director, it's also a good idea to move to the decade you know best. That way you'll have a better chance of answering his questions.

Overall, the game is very playable. The elaborate structure adds interest to what could have been just another trivia game. It takes anywhere from 20 minutes to three hours to uncover a star, so finding all 25 stars is a real challenge. If you have a short attention span (or you need a break for a quick double feature), the game automatically saves your progress when you quit. The selection of questions is also quite good and well within the mainstream of Hollywood film.

My major complaint with the program is that, even with 2000 questions, many of the same ones keep popping up—sometimes twice in a row. That may make it easier to score points, but it also makes the game far less interesting.

Despite this one problem, *Ticket to Hollywood* will please most movie fans. Rate this one two thumbs up.

— David English

Ticket to Hollywood

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 An Apple IIgs version is scheduled for a March 1989 release.



Writer 64

Commodore 64 users who work under Berkeley Softworks' GEOS already have a sturdy entry-level word processor in *geoWrite*, a program bundled with the operating system. But if that serviceable package doesn't meet your needs, you have an alternative: *Writer 64*, a prose puncher that sacrifices a what-you-see-is-what-you-get display for speed, grace, and performance.

Writer 64 and *geoWrite* share many similarities, but there are some important differences. For instance, you set left and right margins and tabs in *geoWrite* by pointing and clicking on a horizontal ruler, which remains at the

top of the screen. With *Writer 64*, you set margins by entering specific values in a dialog box that appears when you select Margin from the Page menu or enter the appropriate keyboard equivalent; you can't tell what your settings are by simply looking at the screen.

A more noticeable difference between the two word processing systems is that *Writer 64*, unlike *geoWrite*, doesn't display fonts or special text styles while you're in the editing mode. Instead, text attributes are designated by @. Whenever you move the cursor onto one of these symbols, the specific attribute it represents (underline or italic, for example) is listed in a Status Box at the top of the screen. The result is faster operation because, unlike *geoWrite*, *Writer 64* doesn't have to redraw the entire screen after certain operations. All of the text on *Writer 64*'s editing screen appears in the same font and size. This uniformity allows rapid scrolling and cursor movement throughout any single section of a *Writer 64* document.

Sections are part and parcel of *Writer 64*. It organizes documents into sections, which in turn make up a file (each file can include as many as 120 sections, with each section containing up to 7424 characters). Depending on the fonts and type styles used, each section equals 2–5 pages of text. Within a file, sections are numbered consecutively; you can access them by using the Next Section or Goto Section commands in the File menu. Other File menu selections let you dump a text file to disk as a sequential ASCII file (useful for telecommunications or conversion to other word processing formats), insert *geoPaint* graphics into your text, or print your document.

Writer 64 offers most standard editing functions through its Edit menu. You can mark blocks of text for cutting, copying, or pasting; you can also search and replace text strings. The Edit menu also contains a Check Spelling option that uses the program's built-in 100,000-word dictionary to check your documents for incorrect spelling before printing.

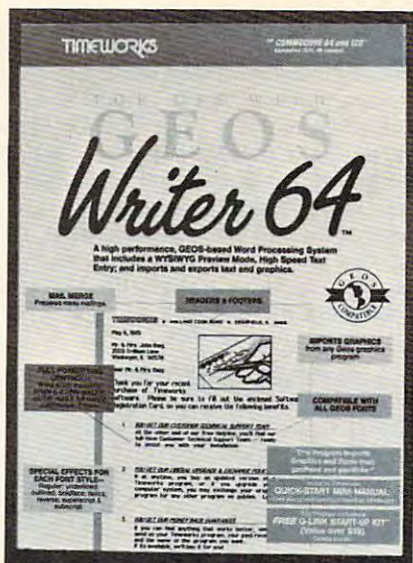
To control paragraph indentions, centering, justification, page breaks, and tabs, you use the Format menu. For margins and spacing parameters, you use the Page menu. The Style menu lets you select various fonts and assign special attributes to your text. All standard GEOS fonts are compatible with *Writer 64*, and the available text styles include bold, underline, italics, outline, subscript, superscript, and reverse.

Writer 64's Special menu lets you

create headers and footers for your documents and chain separate files together for printing with sequential page numbers. You can also place merge marks into your text where you would like data from another file inserted—a simple way of personalizing form letters by merging them with an address list.

If you want to gain even more speed, most of the editing, style, and formatting commands have keyboard equivalents, which are listed alongside the corresponding menu selections. These quick keys also appear on help screens and in the quick reference section of the *Writer 64* manual.

Before you print your document, you can fine-tune it further by previewing it on the screen. Simply select Show Full Page or Show Reduced from the Page menu. The full-page view displays all of the fonts, text styles, and graphics exactly as they will appear on the printed page. Unfortunately, to get an idea of what the entire page looks like, you must use the Show Reduced option, which displays an illegible but accurate graphic representation of the page. Only when the text appears on an oversized page can it actually be read, and then



Writer 64 runs under GEOS and features spell-check and merge capabilities.

you can see only about one-eighth of the page at a time. When you're satisfied with your document, you can print a fast mode (essentially a printout of

your editing screen), a draft mode (which reproduces all fonts and style attributes with a single pass of the printhead), or a quality mode (for the final copy on printers with near-letter-quality capability).

Writer 64 performs most of the functions of *geoWrite*, *geoMerge*, and *geoSpell*. Whether it's a better choice for you depends on how much you're taken with *Writer 64*'s faster display speed. If *geoWrite*'s display delays don't bother you, there's little reason to change to *Writer 64*. But if you find those delays unbearable, you might want to switch. In either case, GEOS users benefit from finally having a word processing choice.

— Bob Guerra

Writer 64

For . . .
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Digi-View Gold

The differences between Digi-View 3.0 and Digi-View Gold are so minor that one might call NewTek's latest release *Déjà-View*. The major change makes Digi-View Gold plug-compatible with the Amiga 500 and Amiga 2000. (It can also be used with the Amiga 1000, but a gender changer is required to hook it to the A1000's nonstandard parallel port.) Some parts of the software have also been refined, as has the dithering algorithm which gives Digi-View images such clarity.

Like its predecessor, Digi-View Gold turns the image from a video camera into a color Amiga picture in any of the Amiga's display formats, including hold-and-modify (HAM), which allows 4096 colors on the screen at the same time. It works by means of a hardware and software combination: The hardware component is a composite-video-to-RGB encoder interface box about the size of a Chunky bar that plugs into the Amiga's parallel port. The program's image-processing software controls the encoder functions and lets you modify the Digi-View Gold scans in some amazing ways.

To use Digi-View Gold, you must have a source of monochrome or color-composite video (standard TV-type video) generated by a camera. VCR video won't work with Digi-View. NewTek recommends (and sells) an industrial monochrome CCTV camera, Panasonic's WV-1410, noted for its resolution and clear picture. Digi-View Gold creates color pictures from a black-and-white camera image by scanning the image three times, once for each of the video primary colors—red, green, and blue—using a plastic color-filter wheel. The wheel, included in the package, hooks onto the camera's tripod mount hole (or you can use Velcro tape) so that the lens focuses through the appropriate color filter.

If you're reluctant to pay \$240 for the Panasonic or a similar CCTV camera, you can get started with your own camcorder and trade up later. But keep in mind that you'll start with poorer pictures. If you use a monochrome camera other than NewTek's recommended model, make sure it outputs 2:1 interlace video, not random interlace—Digi-View can't handle random interlace. (The WV-1140 has an internal switch that lets you flip back and forth between the two types of interlace.)

To start, hook up the camera to any composite monitor and use the monitor image to aim and focus the camera on the subject (a photograph of

a rose, for example). You can use your Amiga monitor for this; just switch the monitor to composite and plug the camera into the video-in jack in the back of the monitor. For best color fidelity, illuminate the subject with fluorescent rather than incandescent lighting. Once you have the image positioned, load the Digi-View Gold software, switch your monitor to RGB, and hook up the camera to the Amiga through the interface box.



You can plug Digi-View Gold right into your Amiga 500 or 2000 for processing video images.

Upon loading, the software will ask you what kind of scan format and screen format you plan to use. You can choose any screen format, two levels of overscan, and whether you'll be digitizing in gray scales or color. Next, choose Digitize from the menu bar. If you scan in color, you'll take three scans, turning the color-filter wheel each time so that the camera takes a picture through the appropriate filter. Leave the subject stationary until the scanning process is complete. (You can experiment with distortion by moving the subject during the scan, creating some interesting effects.)

Digi-View Gold combines the three images into one full-color image and then dithers the colors to smooth out any banding, fringing, and other scanning residue. In interlace HAM mode, the picture looks just like regular TV—sharp, clear, and with thousands of colors.

You can print your scans, save them as IFF files (compatible with Amiga paint and desktop publishing programs), or save them as raw RGB data for later processing. The raw RGB files contain enough information to display more than 2 million colors on the screen. The Amiga currently doesn't have a display mode that can handle that many colors, but future image processing boards for the Amiga may offer that capability.

Digi-View's image-processing capabilities are limited but powerful. You can change the brightness, contrast, and sharpness of the scan, adjust the RGB setting of any or all of the colors, and use the complements of all the scanned colors to create color negative images. For desktop publishing, you can choose to digitize in only a few colors or adjust the scanning process for line art.

In the final analysis, owners of Digi-View 3.0 really don't need to upgrade to Digi-View Gold because the improvements are small, if welcome. But if you're still using Digi-View 1.0 or 2.0, or if you're just getting into digitizing, you should definitely grab this package; it's the best video digitizer currently available for the Amiga or any other personal computer.

— Steven Anzovin

Digi-View Gold

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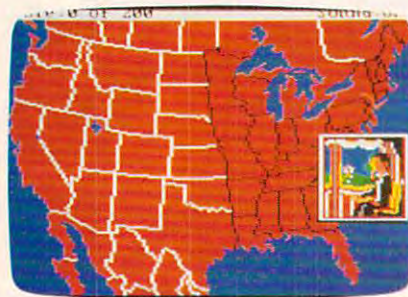
Sierra has released a new 3-D adventure game designed to be educational and entertaining. *Gold Rush!* recreates life in the 1850s and simulates Americans' historical movement to the California coast in search of fortune.

Players must travel by one of three ways from New York to California; each journey has unique perils. One way west is by ship to Panama, then through the jungles of the isthmus (there was no Panama Canal), and finally by ship to California. Another way across the country is by stagecoach, canal boat, steamer, and wagon train. A third option is to sail around Cape Horn and then on to California.

Gold Rush! is now available for IBM PCs and compatibles on five 5¼-inch and two 3½-inch disks in the same package. The game supports CGA, EGA, MCGA, VGA, and Hercules monochrome graphics. *Gold Rush!* will soon be available for the Apple II, Macintosh, Atari ST, and Amiga. The IBM version has a suggested retail price of \$39.95.

Sierra, P.O. Box 485, Coarsegold, CA 93614

Circle Reader Service Number 200.



Travel across the U.S. in search of gold in *Gold Rush!*.

British Roots

Origin has released *The Ultima Trilogy*, a collector's edition of *Ultima I*, *II*, and *III*. The set contains the three original Ultima role-playing adventures, auth-

ored by Richard Garriott (Lord British).

The trilogy chronicles the Triad of Evil and the battle to free the world of Britannia from its grasp. *Ultima I—The First Age of Darkness* features the battle against the creatures from Mondain the Wizard's lair that are stalking the kingdoms of Sosaria. In *Ultima II—The Revenge of the Enchantress*, players enter the time doors and confront the fury of Minax the Enchantress, Mondain's forgotten apprentice. The third game in the trilogy, *Exodus: Ultima III*, features the Great Earth Serpent, which has awakened from a long sleep. Players must lead a party of adventurers to save Sosaria.

The package also contains a play-book, a reference guide, and maps. The suggested retail price is \$59.95.

Origin, 136 Harvey Rd., Bldg. B, Londonderry, NH 03053

Circle Reader Service Number 201.

Play It Again, PC

With Activision's MS-DOS version of *The Music Studio 3.0*, you can create original compositions and orchestrate playback, taking advantage of your computer's sound capabilities.

The program lets you modify tempo, note duration, instruments, and volume. Edit options include cut, copy, paste, and undo functions; a hold-and-slide technique that allows a change in individual note durations; inserting, copying, and moving blocks; replacing instruments; lengthening and shortening durations; and transposition up/down in one step. You can also change key signature, tempo, and staff type anytime during a song. Advanced MIDI capabilities provide exact playback of what was originally recorded, assignable MIDI presets, 16 MIDI channels, a metronome for MIDI recording, and modifiable MIDI parameters; in addition, they allow for the ability to change instruments during MIDI input.

Mickey McLean

The Music Studio 3.0 requires 512K of RAM on IBM PC-and-compatible computers, including the Tandy 1000 series. The program includes Tandy DeskMate runtime software and requires MS-DOS version 3.2 or higher; a CGA, Tandy 16-color, EGA, VGA, or Hercules monochrome card; and a Tandy or other Microsoft-compatible mouse or a Tandy joystick. Available in both 3½-inch and 5¼-inch disk formats, the program carries a price tag of \$99.95.

Activision/Mediagenic, 3885 Bohannon Dr., Menlo Park, CA 94025
Circle Reader Service Number 202.

Nag Nag Nag

Gramma Software's new program for the Amiga reminds users of up to 99 events a day. *Nag Plus 3.0* is a memory-resident program that can synthesize sounds using the Amiga voice and sound hardware.

Make one-time entries of events such as birthdays; the program places them in a perpetual calendar. Events or appointments can be edited up to two years in advance. The program can remind the user with a screen flash, a computerized voice, or with any one of 24 different sounds. A report generator prints a list of each day's appointments and can search the appointment database for individual records by using a key word. *Nag Plus 3.0* can also dial the computer's modem.

Additional features include a text editor, an online help facility, and an ARexx port for initiating any timed event or action. *Nag Plus 3.0* has a suggested retail price of \$79.95.

Gramma Software, 17730 15th Ave. NW, Suite 223, Seattle, WA 98155
Circle Reader Service Number 203.

International Incident

Two of the world's sports superpowers meet on computer ice in Electronic Arts' new sports/action game for the Commodore 64/128, *Powerplay Hockey: USA vs. USSR*.

Players can choose from three skill levels and decide whether to play one-

www.commodore.ca

on-one or five-on-five team competition. Defensive and offensive moves such as slap shots, drop passes, and body checks can be executed. Fights can break out if the action becomes too intense.



The USA and USSR square off in *Powerplay Hockey*.

Playing options in this one- or two-player game include the choice of representing either the American or the Soviet team. At the end of each period, the Stat screen shows attempted shots and goals scored for each player. Variable period lengths of 2, 8, or 20 minutes can be selected. The game has a suggested retail price of \$24.95.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404

Circle Reader Service Number 204.

For Apple-noids

Taito Software has released an Apple II and IIGS conversion of the arcade game *Arkanoid*.

The game is set in outer space, where a player's survival depends upon penetrating complex walls by firing lasers and energy balls from a maneuverable spacecraft. Players must battle their way through 33 screens of graduated difficulty.

The Apple version of *Arkanoid* requires a mouse and 64K of memory on the Apple II. Apple IIGS owners need 512K of memory. The suggested retail price is \$29.95.

Taito Software, 267 W. Esplanade, Suite 206, North Vancouver, B.C., Canada V7M 1A5

Circle Reader Service Number 205.

Murder Mystery

Agatha Christie fans can now solve a murder mystery on their IBM PC or Apple II with *The Scoop*, from Spinnaker Software. The game is based on an Agatha Christie story and on members of the London Detection Club.

Set in London during the 1930s, *The Scoop* lets you assume the role of a *Daily Courier* reporter assigned to cover the mysterious murder of Geraldine Tracey. Rival reporters at the *Morning Star* have a head start on the case. To beat them to the story and solve the crime, you must work quickly to question witnesses, follow suspects, and search for clues. But be careful: The killer might like to get rid of a troublesome reporter.

The game uses graphics and text to tell the story. Menus help you interrogate suspects, eavesdrop on conversations, search rooms, and gather evidence. Over 30 animated characters and more than 80 locations can be found in the game.

The Scoop for the IBM PC and compatibles requires CGA; a 512K version that supports EGA or VGA graphics is also available. The game also comes in an Apple II version. All versions sell for \$39.95.

Spinnaker Software, One Kendall Sq., Cambridge, MA 02139

Circle Reader Service Number 206.

Learn A to Z on a PC

Optimum Resource, publisher of Weekly Reader Software, has released *The Stickybear Alphabet* for MS-DOS computers. The program features three activities designed to complement and encourage alphabet learning in children ages 3 to 6.

The first activity, Alphabet, displays an animated scene illustrating the letter the child has pressed. In Letter Hunt, children find a requested letter on the keyboard, and then an animated scene appears. The third activity, Fast Letters, allows children to select any letter to appear on the screen along with Stickybear.

The Stickybear Alphabet is available on both 3½-inch and 5¼-inch disks and runs on the IBM XT, AT, PS/2, and compatibles. It requires 512K of RAM and a 3½-inch floppy drive or two 5¼-inch drives with DOS 3.0 or greater. The program supports EGA, MCGA, VGA, or Tandy 16-color graphics. Users can also install the program on their hard disk. The speech capability requires an Echo Board; the program can be used without speech.

The suggested retail price is \$49.95. Lab packs, which include five sets of program disks and an instruction manual, are available for schools at a sug-

gested retail price of \$85. Versions of the program have been previously released for the Apple II and Commodore 64/128 (*Stickybear ABC*).

Optimum Resource, 10 Station Pl., Norfolk, CT 06058

Circle Reader Service Number 207.

Padding a Mouse's Life

Curtis Manufacturing has announced the addition of the Curtis Mouse Pad to its computer accessory line. The pad can be used with any hand-held mouse. Its continuous laminate construction and nonslip surface are designed to maximize accuracy, control, and response, and extend roller-ball life.



The Curtis Mouse Pad carries a lifetime warranty.

The Curtis Mouse Pad measures 8 × 9½ inches and has a suggested retail price of \$6.95.

Curtis Manufacturing, 30 Fitzgerald Dr., Jaffrey, NH 03452

Circle Reader Service Number 208.

Stay Dry Diving

Macintosh users can explore the ocean floor with *MacScuba*, a scuba-diving simulator from Paradise Software. Designed by divers, the program can be enjoyed by experienced divers as well as by those who have never dived.

The program allows for multilevel decompression and no-decompression dives, using the U.S. Navy Dive tables as a guide for decompression stops and surface-time intervals. Users have complete control of the dive, from obtaining neutral buoyancy with the buoyancy-compensator device to releasing the weight belt in an emergency ascent to the surface.

A marine database comes with the program to explain the creatures encountered while you're exploring. Users can also search a sunken pirate wreck for treasure. The amount of treasure brought to the surface determines the player's score.

The program runs on the Macintosh Plus, SE, or Mac II equipped with two 800K floppy disk drives or one floppy disk drive and one hard disk. A color version for the Mac II is being developed. The suggested retail price is \$49.95.

Paradise Software, P.O. Box 50996, Phoenix, AZ 85076

Circle Reader Service Number 209.

Road Rally

Computer users can now experience the simulation of a famous road rally. The *Lombard/RAC Rally* is a joint venture between British entertainment software manufacturers Mandarin and Red Rat Software and the Lombard/RAC Rally team.

Players battle four distinct driving scenarios (road, forest, mountain, and night) from behind the wheel of a 300-horsepower Group A Ford Sierra RS Cosworth. Excellent driving skills are required as players encounter steep de-

scents and hairpin curves.

The game is available for the Atari ST and the Amiga for the suggested retail price of \$39.95. An IBM-and-compatibles version that supports CGA and EGA graphics is planned.

Top 10 Software, 40308 Greenwood Way, P.O. Box 1450, Oakhurst, CA 93644

Circle Reader Service Number 210.

Mac Music

Electronic Arts has released *Deluxe Music Construction Set*, version 2.5, for the Macintosh II, 512, and SE. This expanded version offers enhancements that make it more functional to professional musicians.

New features include staccato and legato, which enhance the playback performance on high-end MIDI equipment. The program also offers improved text handling for lyrics or score notes. Users can select a text item and have the program locate it by stave, measure, and

distance from the left edge of the measure. When the length of a measure is being adjusted, the text is automatically adapted to stay within its boundaries.

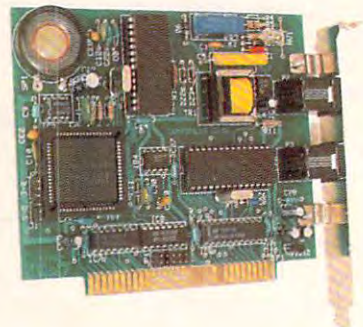
Deluxe Music Construction Set has a suggested retail price of \$129. Owners of *Deluxe Music Construction Set 2.0* can upgrade for \$30 and the program's Instrument disk. *Deluxe Music Construction 1.0* owners can upgrade for \$50 and the front cover of the product manual.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404

Circle Reader Service Number 211.

Internal Affairs

Supra, manufacturer of the SupraModem 2400 external modem, has announced the availability of the SupraModem 2400i internal modem for IBM PC-and-compatible computers.



The SupraModem 2400i internal modem is 100-percent Hayes-compatible.

The half-card modem is Hayes-compatible and supports asynchronous operation at 2400, 1200, and 300 bits per second. It supports COM ports 1-4 and is compatible with Bell and CCITT communication protocols and Soft-Klone's *Mirror II* communications software. Other features include compatibility with popular IBM telecommunications software, auto-answer and autodial, memory for storing the user's custom modem configuration and most-often-used telephone number, and an adjustable-volume speaker.

The entire package, including modem, *Mirror II*, a quick-reference card, a telephone cable, and manuals, sells for \$149.95.

Supra, 1133 Commercial Way, Albany, OR 97321

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Amiga Gold

Gold of the Realm, a graphics adventure game, is now available for the Amiga.



Search for hidden treasure in *Gold of the Realm*.

Players must search within a castle's twisted corridors and dark passages for a legendary treasure guarded by wizardry and mysterious foes. Clues and objects can be found within the realm to help players in their quest.

Features include animated graphics,

digitized sound, and MIDI-compatible music. There are three levels of difficulty and over 300 different screens, with four castles to explore.

A color monitor and a joystick are required. The suggested retail price is \$39.95.

Magnetic Images, P.O. Box 17422, Phoenix, AZ 85011

Circle Reader Service Number 213.

Monitor Chameleon

Applied Technologies has released The Color X-Tender, a new monitor extension cable that allows users to change the background color of any digital (TTL) RGB screen.

The six-foot cable can change the background color on application programs that do not allow color changing. It works with any IBM PC or compatible with CGA or EGA graphics capabilities, and on Commodore 128, Apple II, Macintosh, Atari, and other computers with digital RGB capabilities. The

background-color feature does not work with multisync/multiscan monitors. The retail price is \$39.95.

Applied Technologies, Computer Products Division, Lyndon Way, Kittery, ME 03904

Circle Reader Service Number 214.

Amiga Chef

Meggido Enterprises has released two cookbook programs for Amiga users, *Desserts Cookbook* and *Variety Cookbook*. Each program contains over 150 recipes in ASCII format. All recipes are edited for home-style quantities, with optional versions available for institutional cooking. All recipes have been nutritionally analyzed.

The list price for these products is \$14.95 each. A three-ring binder to hold printed recipes is available for \$25.00 for each title.

Meggido Enterprises, P.O. Box 3020-191, Riverside, CA 92519-3020

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levitations



Programmer's Ensemble: Loud Hawaiian Shirts, Pocket Protectors, HP Calculators, Pizza, and Stupid Tricks

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one from your insurance agent or realtor. Either of those will indelibly brand the bearer as an irredeemable geek for life. Pick up a foreign job with an incomprehensible company name. Any German company whose name ends in *fabrikwerk* will do the job nicely, regardless of whether the company is involved in the production of semiconductors or schnitzel.

Maintain a proper diet. When asked if you're interested in going out for a meal, always suggest pizza. Don't worry about the time of day. Suggesting a double pepperoni with anchovies at seven in the morning tells people that you're so absorbed in the art of programming that you've lost all track of time. If forced to dine at establishments specializing in French nouvelle cuisine (literal translation: *small portions*), stand firm. When your waitperson rolls up the dessert cart to present the fresh kiwi flan, Linzer tort, and cherry kirsch cheesecake, look him or her in the eye and ask for a Twinkie with a scoop of Haagen Dazs. Your work area should always be cluttered with a half-dozen empty cups of coffee and a wall of empty cans from any caffeine-bearing beverage.

Acquire appropriate accessories. For reasons as closely guarded as the original formula of Coca-Cola, ace programmers have an overwhelming fondness for Hewlett-Packard calculators. Truly dedicated bit-twiddlers have even attempted to have HP-16Cs surgically implanted in their forearms. Forget about learning how to actually program the things, but do take the time to master the rudiments of basic arithmetic operations. Most Hewlett-Packard calculators use a delightfully unambiguous, but decidedly perverse, mode of entry called *Reverse Polish Notation*. To the uninitiated in RPN, such a calculator will be proof enough that you're an advance scout for an alien invasion force.

Flow charting, the process of creating pictorial diagrams to outline the logical flow of programs, now qualifies as a lost art in most organizations. Purchase a dozen flow-chart templates, preferably made of clear green plastic. Don't bother creating any flow charts with them, though—using them conspicuously as bookmarks is enough.

Programming and musical taste. The programming subculture embraces an embarrassing diversity of acceptable musical tastes. Real programmers can stomach just about anything, from Serbo-Croatian carillon medleys to Def Leppard. What you lis-

ten to is not as important as what you use to listen. As Marshall McLuhan opined, "The medium is the message." The only acceptable means of musical reproduction for programming hotshots are compact disc and digital audiotape players. Special dispensation and additional points for style have been granted to a few individuals who have opted for Edison wax cylinder machines.

One thing to avoid. Never come within arm's length of a functional computer equipped with a programming language. You might be asked to knock out a few lines of code if you come too close to such a machine. If you use a micro yourself, the system should be left disassembled on your desk, with a soldering pencil and volt ohmmeter casually placed on top of the motherboard. If anyone asks what's wrong, answer that you're adding transputing support to the hardware. If offered the use of someone else's machine, haughtily decline the offer of anything less than a 30-MHz 68030- or 80386-based system. If you work in a corporate mainframe environment, bury your terminal under a pile of printouts.

Amazing the natives. Most microprocessors have commands in their repertoire that don't function as originally intended and are therefore not referenced in standard reference works and programming texts. You can use these undocumented commands to effectively boggle the minds of your programming associates. Purchase copies of the original design specifications of your favorite microprocessor from Intel, Motorola, or Zilog and memorize a few choice undocumented opcodes. The next time someone turns the conversation to machine-level programming, wait for the appropriate moment to start waxing poetic about the virtues of using _____ (*insert favorite undocumented opcode here*). Hold firm against the blank stares and your friends will inevitably yield to self-doubt. After having searched in vain for your pet opcode in every available programming reference guide, someone will try it anyway and be completely flabbergasted when it successfully executes. When tastefully executed, this gambit is usually sufficient to raise one's status among programmers at least to junior deity. After that, you can spend your time philosophizing about the big opcode in the sky, forget about programming, and run for president of your local computer user group, or, if you're unqualified for that high position, for Vice President of the United States. □

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ARLAN LEVITAN



You, Too, Can Look Like a Programmer

As the theme of this issue might tend to suggest, programming is back in vogue. While there are doubtless many who would claim that programming has never gone out of style, a bit of self-indulgent retrospective will firmly establish that, like the performance of the stock market, the popularity of hobbyist programming tends to move in somewhat spastic, but predictable, cycles.

Back in the early seventies, assuming you hadn't electrocuted yourself while putting together an Altair or Imsai kit, programming a microcomputer meant using a series of toggle switches to enter low-level machine code instructions into your system. Careful hours of manipulating the switches allowed you to turn the LEDs of the front panel display on and off at will. The process was much less interesting and far more tedious than the actual assembly of the machine. Programming was something you did after the fact, since there had to be *some* reason for spending \$3,000 for the thing.

The development of the BASIC programming language and its widespread diffusion into microcomputers made it possible to perform valuable tasks with personally written programs. Almost anyone could master a score of commands in a few hours and then proceed to ruin a formerly rock-solid marriage by burning three months of free time trying to find the last bug in a biorhythm or hangman program. The widespread use of BASIC even affected the fundamental underpinnings of our concepts of space and time by completely redefining the meaning of the phrase *five more minutes*.

In the late seventies and early eighties, it became clear that BASIC was no longer "in" and that assembly language was far too obtuse for most computer hobbyists. Thus the ranks of computer hobbyists split into two groups: those who wanted to write programs and those who wanted to use those programs and influence what should be written in the future.

I have a confession to make: Although most of my friends elected to keep coding, I haven't written what I'd consider to be a *real* program in more than seven years. Now that programming is back in style, I'm not even sure I want to. I spent more hours than I care to think about knocking out code between 1965 and 1980. My corporate programming experience culminated in writing a pleasantly elegant control program in IBM 370 assembler for a mainframe online application. While the experience was quite satis-

fying, it did tend to produce a negative sort of programming tunnel vision. As my project was nearing completion, I woke up one morning and realized that I had virtually seceded from the human race for half a year. The gentle approach of spring, the bloom of fresh morning glories, the joyful chirp of the robin, and the attendant Motor City ritual of playing chicken on Woodward Avenue with careless pedestrians had passed by me unnoticed.

By the time I got involved with microcomputers, the only programming I had interest in was NBC's Thursday night lineup. I was far more curious about the hardware and the human dynamics of the emerging industry itself.

With peer pressure building on all fronts, it's getting harder and harder to "just say no" to learning to program in C or some other fashionable language. There has to be an easier way out. Why spend endless hours looking for bugs in DO loops and IF statements when the resplendent charisma of a software guru can be yours with a minimum of effort? In computer programming, as in life and art, form often follows function. Careful cultivation of an appropriate image can lodge you in the annals of any organization's programming legends without your turning out a single line of functional code. All that's required is to heed Levitan's Helpful Hints for Simulated Power Programming Prowess.

Maintain an appropriate wardrobe. The shirt (or blouse) is the programmer's most profound fashion statement. While this may be pushing things in temperate zones with chilly winters, Hawaiian shirts are a must. Fortune 500 employees are not excluded from this imperative, since button-down models with French cuffs are available from finer mail-order haberdasheries serving the programming public (such as Crunch's of Bond Street). Well-heeled yupsters may opt for more costly Polynesian or Maltese print fabrics instead. For those sultry summer days that roast most executives' tootsies, acquire several pairs of formal sandals made from cut-down wingtips.

Plastic pocket protectors are difficult to effectively utilize since they've become closely affiliated with nerdism. This association has resulted more from lack of careful selection than from actual use. A protector from some prestigious electronics firm may keep you pigeonholed in a low-level engineering job, but it's a far better choice than

continued on page 86

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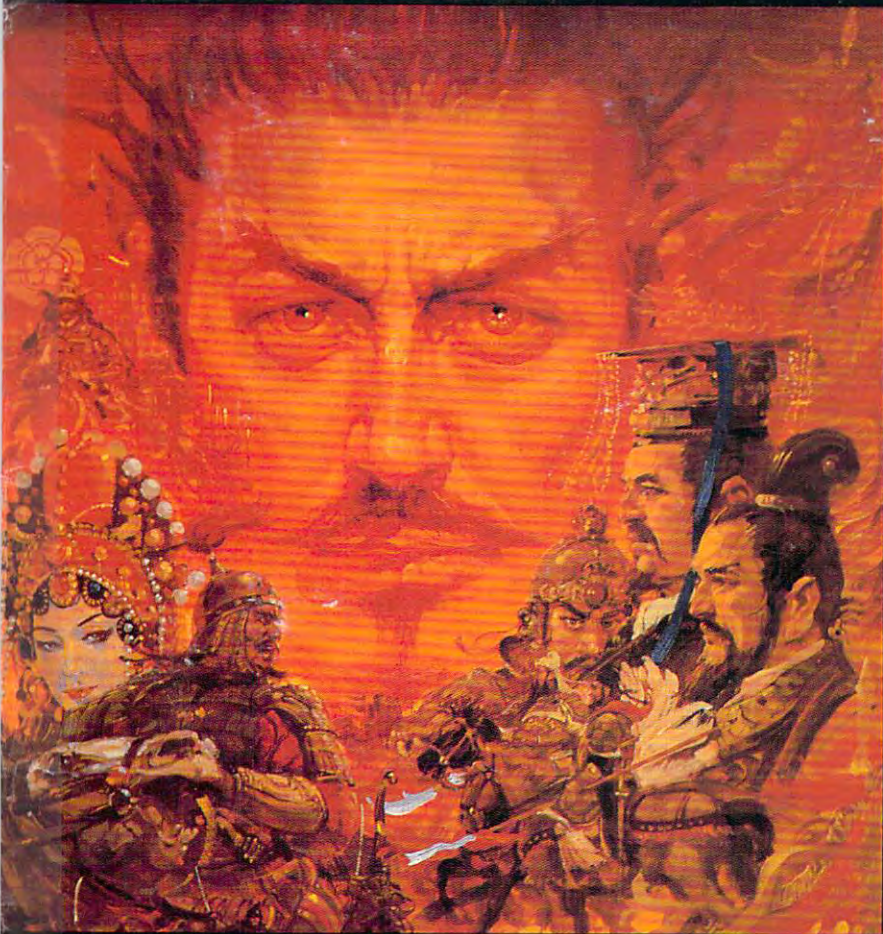
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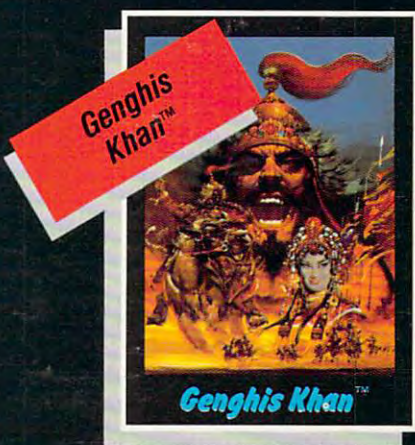
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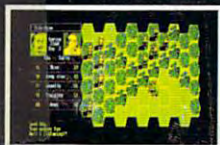
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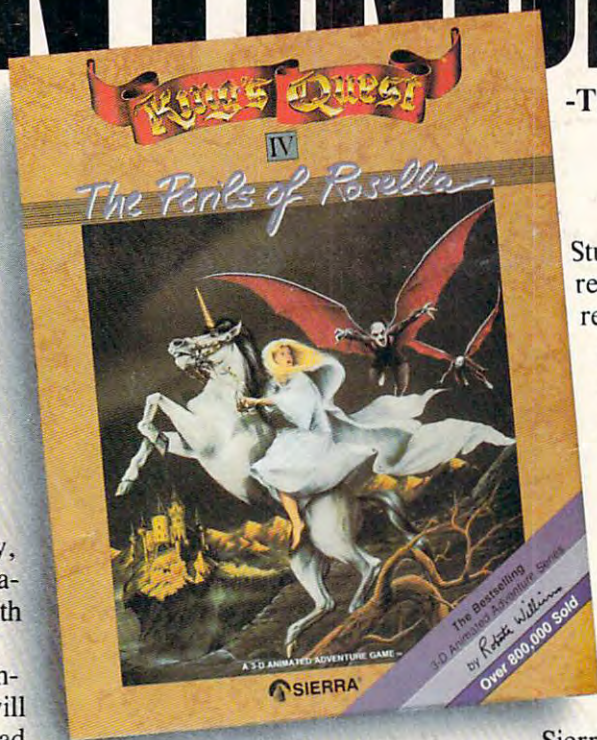
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