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TEST RUN: ADAM

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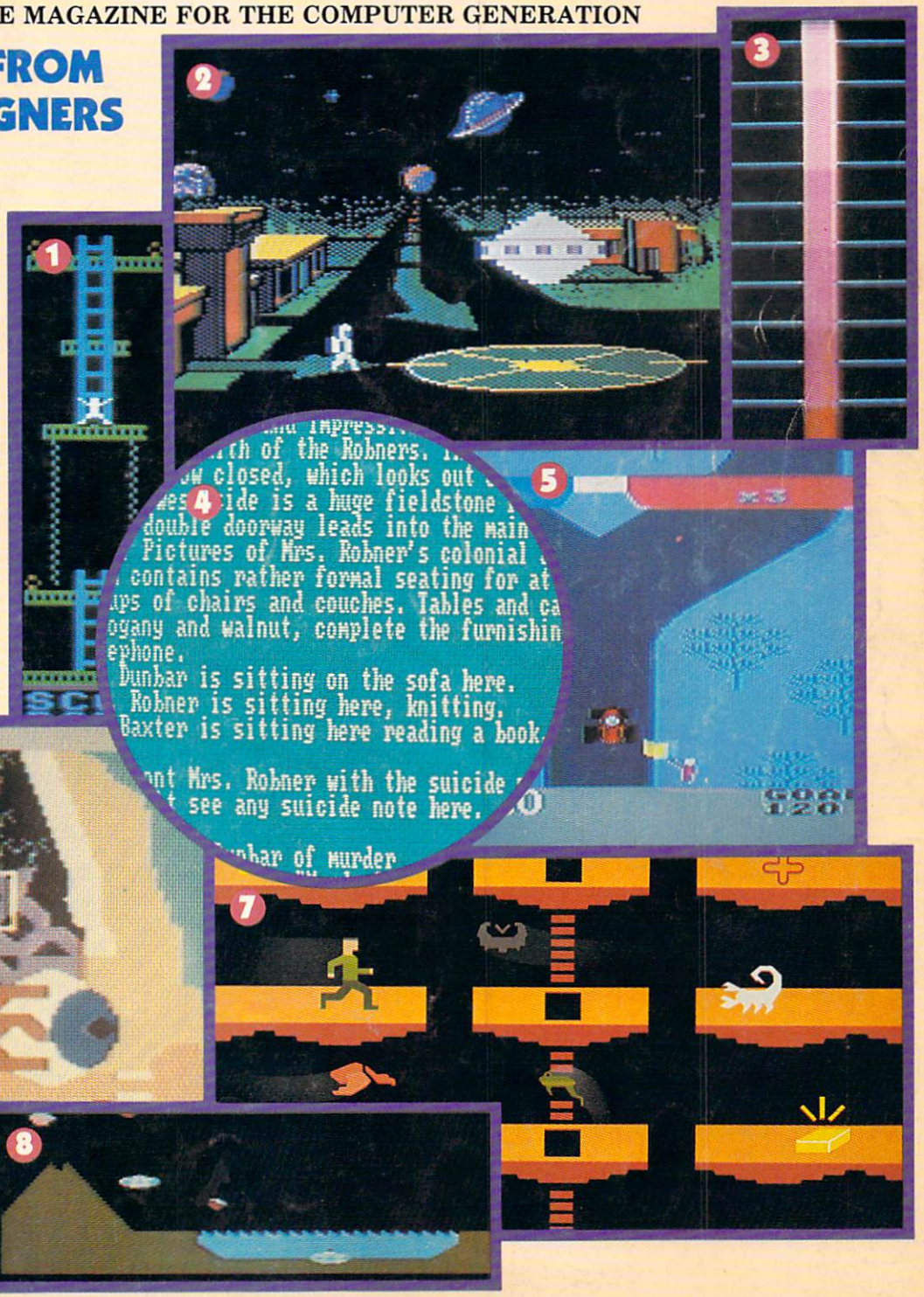
K POWER™

THE MAGAZINE FOR THE COMPUTER GENERATION

TIPS & TRICKS FROM 8 GAME DESIGNERS

ANNUAL GAME-DESIGN CONTEST!

REVIEWS: ONE-ON-ONE, STAR LEAGUE BASEBALL, DINO EGGS, PLANETFALL



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ANNOUNCING A PROUD ADDITION TO YOUR FAMILY.

The next addition to your family could be the bright little newcomer in the growing family of IBM® personal computers.

Name: PC*jr*. Weight: 12 pounds. Heritage: more than 30 years of computer experience.

"Junior" is a powerful tool for modern times. Yet it's simple enough for a child to enjoy.

BRINGING HOME BABY

It's a big day when PC*jr* comes home.

The surprises begin the moment you open the carton.

Surprise #1 is the IBM "Freeboard"—a keyboard that doesn't need a connecting cord. The Freeboard frees you to move around and relax.

Then there's the Keyboard Adventure—an instructional exercise for first-time users. It's built into the computer and explained step-by-step in the Guide to Operations. It will help anyone begin learning as soon as PC*jr* is hooked up to a TV set.

In systems equipped with a diskette drive, there's a program that lets you explore computer fundamentals at your own pace, with PC*jr* as your teacher.

And to get you off and running from the very first day, a sample diskette with eleven useful mini-programs (ranging from a spreadsheet for monthly expenses to a word game and a recipe file) is also included.

But there are still more surprises.

FAMILY COMPUTING MADE EASY

Many IBM software programs written for other IBM personal computers will run on PC*jr*. And inexpensive new ones written especially for PC*jr* are being released.

An easy-to-use diskette word processing program, for example, uses pictures as well as words to guide you along. A comprehensive IBM home budget program makes keeping track of money easier. There's also a selection of educational programs for children at home and at school.

And when the work is finished (or perhaps before), the fun can begin. Just slip in a game cartridge and stand back.

GROWING UP WITH JUNIOR

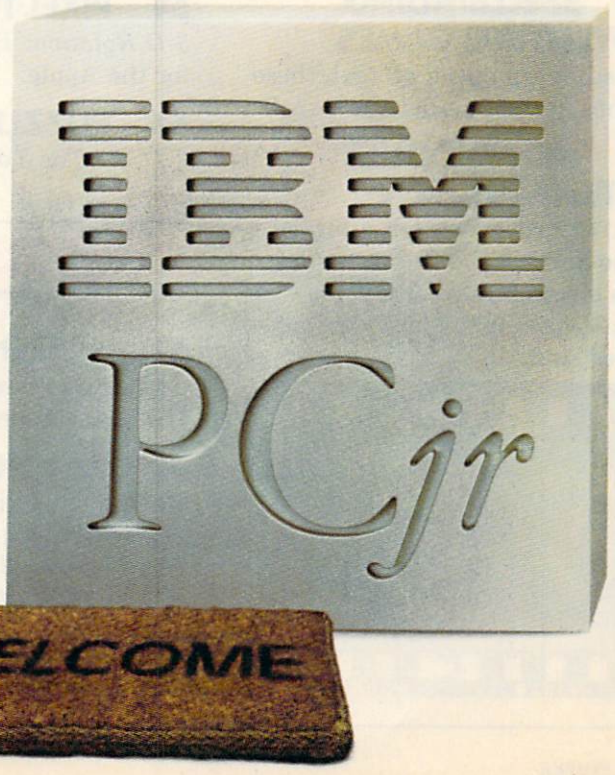
Add a printer. A diskette drive. An internal modem for telecommunications. Increase user memory from 64KB to 128KB. With these and other add-it-yourself options, even the lowest-priced PC*jr* can grow up *real* fast.

PC*jr* is a powerful tool for home, school or college. With its optional carrying case, it's a powerful tool anywhere you care to take it.

SEE JUNIOR RUN

Junior's starting model includes a 64KB cassette/cartridge unit and Freeboard for about $700. A 128KB model with diskette drive is about $1300. (Prices apply at IBM Product Centers. Prices may vary at other stores.)

Your local authorized IBM PC*jr* dealer proudly invites you to see this bright little addition to the family. For the store nearest you, just call 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.



The Chaplin character licensed by Bubbles, Inc., S.A.

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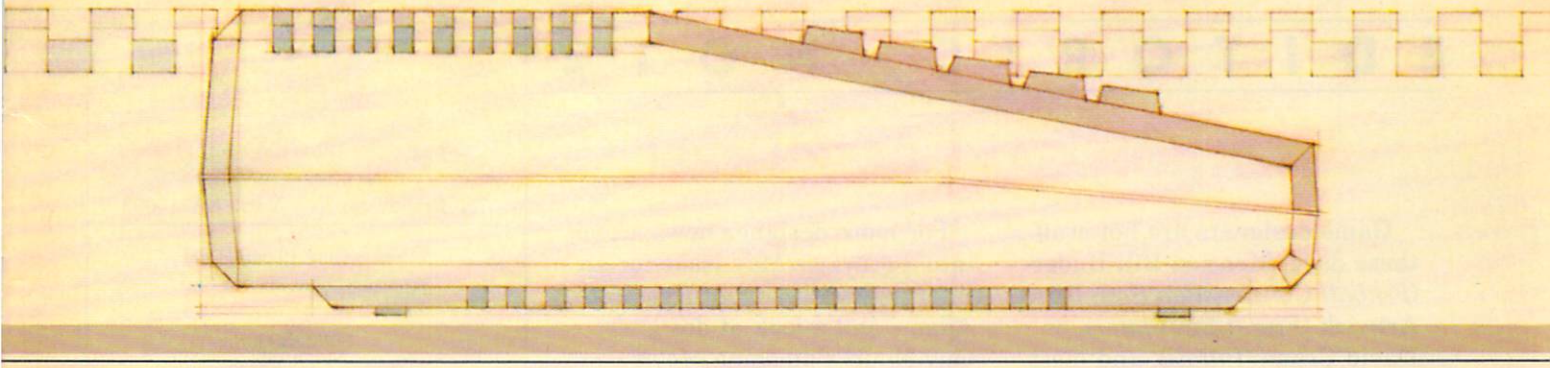
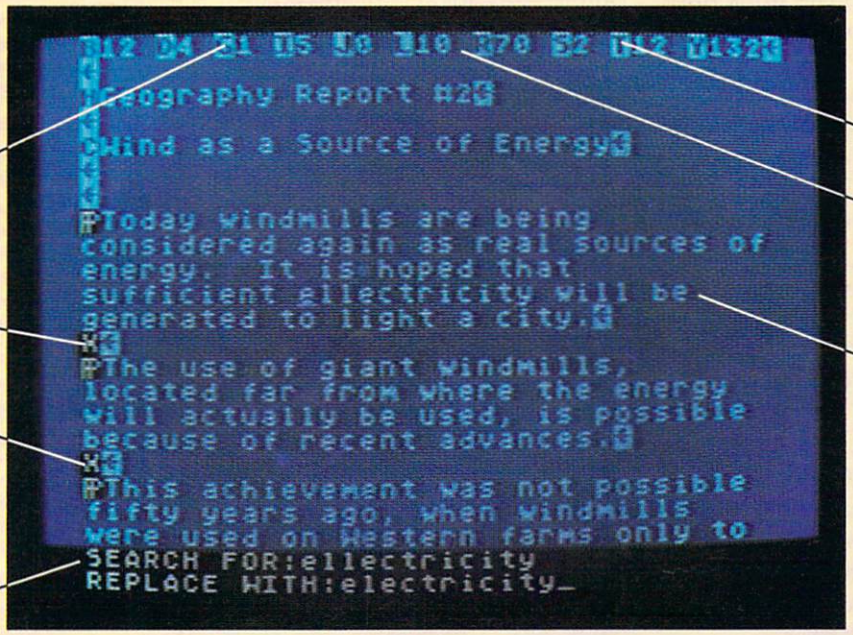


Prints with built-in format or lets you create your own: center, underline. Boldface, elongated, proportional and condensed print.

Inserts and deletes characters, lines or blocks of text.

Duplicates and moves blocks of text.

Searches for and/or replaces words or phrases, one at a time or all at once.



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Instantly reformats.

Enters text easily, with word wrap, one main menu and helpful prompts.

Creates multi-line headers and footers.

Prints double columns, form letters, multiple copies of a page or document, at the touch of a key.

Numbers pages and creates section numbers automatically.

Corrects spelling (with extra software).

Chains and merges files.

Has "print preview": you can check your copy before it's printed.

You can't find a friendlier, more powerful word processor at twice the price. New AtariWriter.™ Under $100.

Now you can do multi-featured word processing at home, simply. At a family budget price.

Our ROM-based cartridge technology means you can use new AtariWriter on any ATARI® Home Computer (even 16K) for personal and business correspondence, term papers, committee reports, mailings, etc.

It also lets you choose between cassette and disk storage systems.

One very special AtariWriter feature: you can correct as you write, without switching back and forth between Create and Edit modes.

And our memory buffer offers an "undo" command to let you change your mind, and restore text you've just deleted.

Check into our remarkable AtariWriter, and our choice of letter quality and dot matrix printers, also reasonably priced, at Atari dealers. Call 800-538-8543 for dealer nearest you. In California, call 800-672-1404.

You'll do more with Atari Home Computers.

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EDITOR'S NOTE

ATTENTION GAME DESIGNERS!

Game designers are hot stuff these days. Mention Bill Budge (*Pinball Construction Set*), Bruce Artwick (*Flight Simulator*), or David Crane (*Pitfall*), and most people know who you're talking about. To the computer generation, designers are the Mick Jaggers and Bruce Springsteens of the '80s.

If you're interested in becoming the next one, K-POWER wants to help. We sent reporter Ken Coach to find out how eight game designers got started, and whether they had any suggestions for you. They did. Their tips begin on page 24.

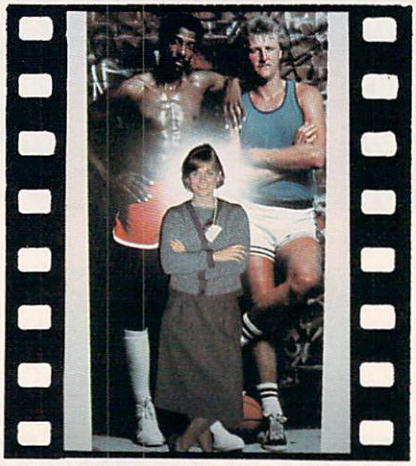
And now for some credit for all you closet computer-game designers out there! Each month K-POWER invites you (begs you!) to send your homemade programs to us. Our technical department looks over them, and we publish as many as we can (at $100 a shot for you!). Well, now we're doing even better.

This month, K-POWER announces its very first Annual Game-Design Contest. There are big prizes (see page 33!) and recognition, because winners' photos and programs will be published in future issues of K-POWER. So put on your game-design hat and let us hear from you—before August 31.

For more designer news, check into K-POWER's May issue for an interview with adventurer Scott Adams and a look at designer Guy Nouri's amazing *Movie Maker*. In June, you'll want to read "A Day with Designer Bill Budge"—by loyal fan Steve Horowitz. And coming soon is an interview with Roberta and Ken Williams (Sierra On-Line). So, stay tuned . . . and WRITE!

Anne Krueger

Anne Krueger
Editor



A.K. amidst the biggies at the Consumer Electronics Show. Story, page 39.

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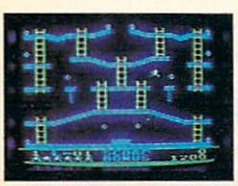
JUMPMAN'S A GREAT GAME. BUT YOU'VE GOT TO WATCH YOUR STEP.



Meet the Alienators. A fiendish bunch who've planted bombs throughout your Jupiter Command Headquarters.

Your job? Use your lightning speed to scale ladders, scurry across girders, climb ropes and race through 30 levels to defuse the bombs before they go off.

That's the kind of hot, non-stop action we've packed into the award-winning,* best-selling Jumpman,™ and into Jumpman Jr.,™ our new cartridge version with 12 all-new, different and exciting screens.

Both games force you to make tough choices. Should you avoid that Alienator, climb to the top and try to work your way down, or try to hurdle him and defuse the bombs closest to you before they go off?

If you move fast you'll earn extra lives. But if you're not careful, it's a long way down.

So jump to it. And find out why Jumpman and Jumpman Jr. are on a level all their own.

One to four players; 8 speeds; joystick control. Jumpman has 30 screens. Jumpman Jr. has 12 screens.

EPYX COMPUTER SOFTWARE

STRATEGY GAMES FOR THE ACTION-GAME PLAYER.

*1983 C.E.S. award winner.

COMPUZINE
VOLUME 1 NUMBER 3

Edited by John Holmstrom

Lots and Lots of Robots

There are a whole lot of robot shows going on, so listen up!

There's the first annual International Personal Robot Congress. This takes place in Albuquerque, New Mexico, of all places. About 4,000 robot fans will gather from April 13 to 15 to swap information, check out the latest components, and show off their electronic creations.

For more information, contact the International Personal Robot Congress, 1547 S. Owens St. #46, Lakewood, CO 80226; (303) 278-0662.

Robot lovers also will want to see The Robot Exhibit: History, Fantasy, and Reality. This show promises to be the biggest robot exhibit ever, with robots from the past and present, and previews of things to come. You'll see many of them "in action," as they walk, talk, teach programming, or speak in foreign languages.

There'll be robot toys (like the Shogun Warriors) and personal robots (those invaluable additions to the home).

The Robot Exhibit can be seen at the American Craft Museum II in New York City until May 11. After that, it travels all over the country for two and a half years. Look for it at a museum near you! —PAM HOROWITZ

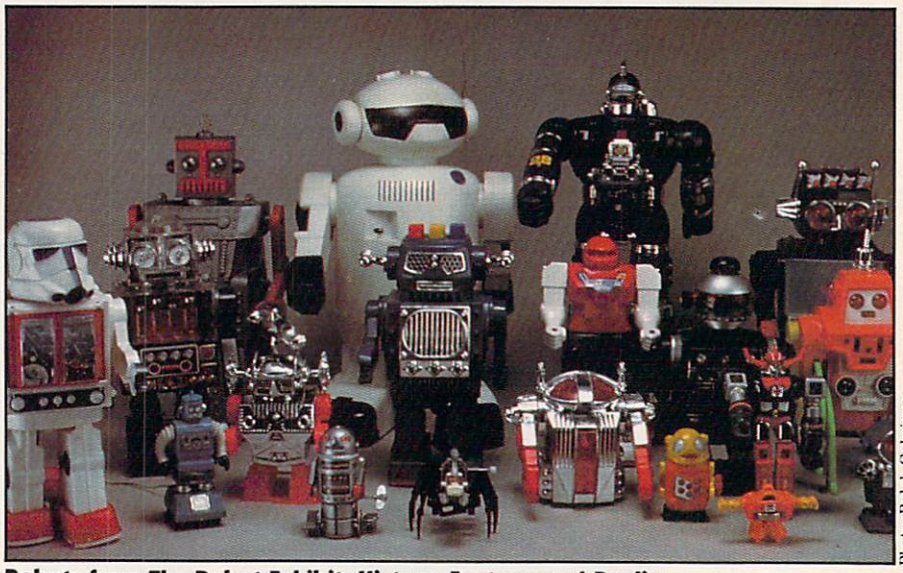


Photo: Ralph Gabriner

Robots from The Robot Exhibit: History, Fantasy, and Reality.

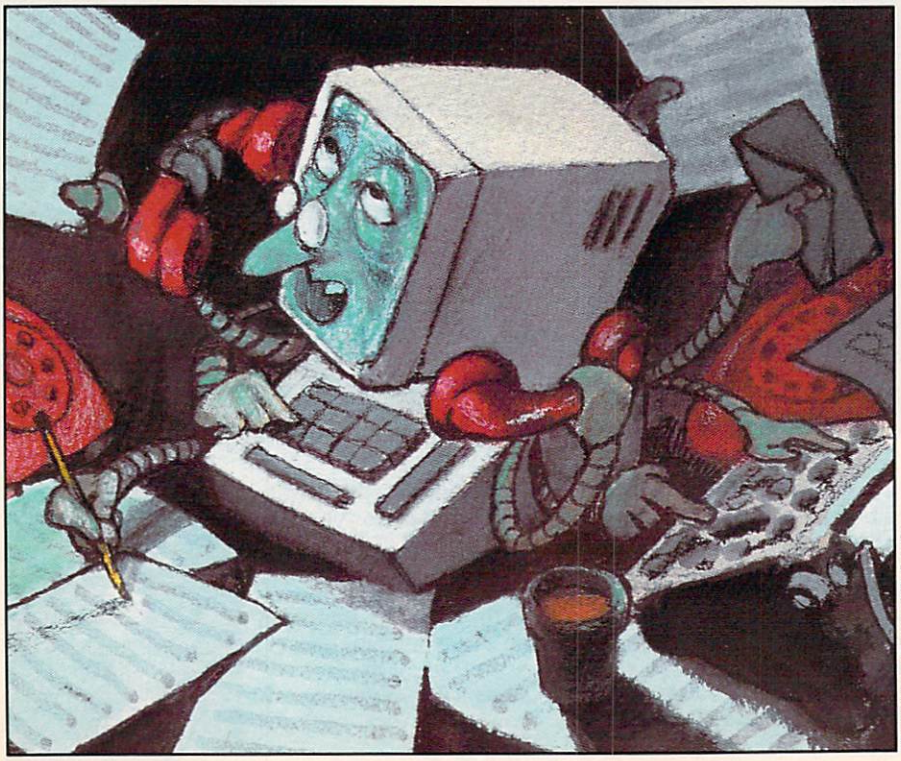


Illustration: Howard B. Lewis

Complaint Department

"Help! My garbage hasn't been picked up in *two weeks,* and the *smell* is *killing* me!"

Every day, the City of New York receives hundreds of complaints like this one—about everything from potholes to fire protection. Recently, 36 of New York's 59 community boards installed a computerized system for handling complaints.

Now when they get a gripe from somebody, it's entered in the computer under the correct category. Then the computer sends letters to the complainer and to the agency that's in charge of handling the problem. The computer also keeps track of all the complaints so the city can figure out how to spend its money better.

When you go in search of The Most Amazing Thing, don't expect to be home by dinner time.

Finding The Most Amazing Thing in the Whole Wide Galaxy isn't something you can do quickly.

In fact, you'll get so wrapped up in this computer game that you may have trouble coming back down to earth.

For starters, you get to fly, drive, bargain, eat, sleep, compose music, drill for oil, and speak 25 different languages.

Sound tough? Relax. You'll have the help of your old Uncle Smoke Bailey. He'll give you a B-liner (sort of a cross between a hot-air balloon and a dune buggy) to use on your journey. And he'll teach you about the Mire People and the strange languages they speak.

You'll visit the Metallican Auction, where you'll trade with tricky aliens. You'll shop for gadgets and gizmos to outfit the B-liner.

And you're off—in search of The Most Amazing Thing!

It will take time to find it.

But it'll be the best time you ever had.

IN SEARCH OF THE MOST AMAZING THING™ can be played on **Apple,**® **IBM,**® **Atari,**® and **Commodore 64**™ computers. To get started, see your local software retailer.

SPINNAKER™

We make learning fun.

Hardball Hardware

Yogi Berra (known for his off-beat remarks) once said that baseball was "90 percent half mental." Now that many major league baseball teams are using computers, the game is 100 percent half mental.

Yogi, the manager of the New York Yankees, doesn't use a computer, but the Yanks do. Their minor league system uses computers to compile statistics and help judge talent.

Steve Boros, the manager of the Oakland Athletics, uses his computer for pregame planning. Last year, in a game against the Detroit Tigers, he put Dwayne Murphy in to hit cleanup

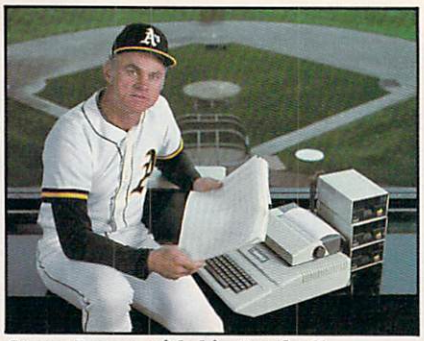


Photo: John W. McDonough

Steve Boros with his Apple II.

against pitcher Dan Petry, even though Murphy was in a terrible slump. The computer showed that Murphy handled Petry pretty well. In the fifth inning, with the bases full, Murphy hit a grand slam, breaking open a 4–4 tie. Steve Boros says, "The computer gave me the crucial information I needed to make the decision to stick with Murphy."

Meanwhile, New York Mets Manager Davey Johnson is hoping his IBM computer will help drag his team out of last place. Although major-league managers aren't allowed to use computers in the dugout or on the field, the IBM Johnson keeps in his office has helped change the Mets' infield and batting lineup.

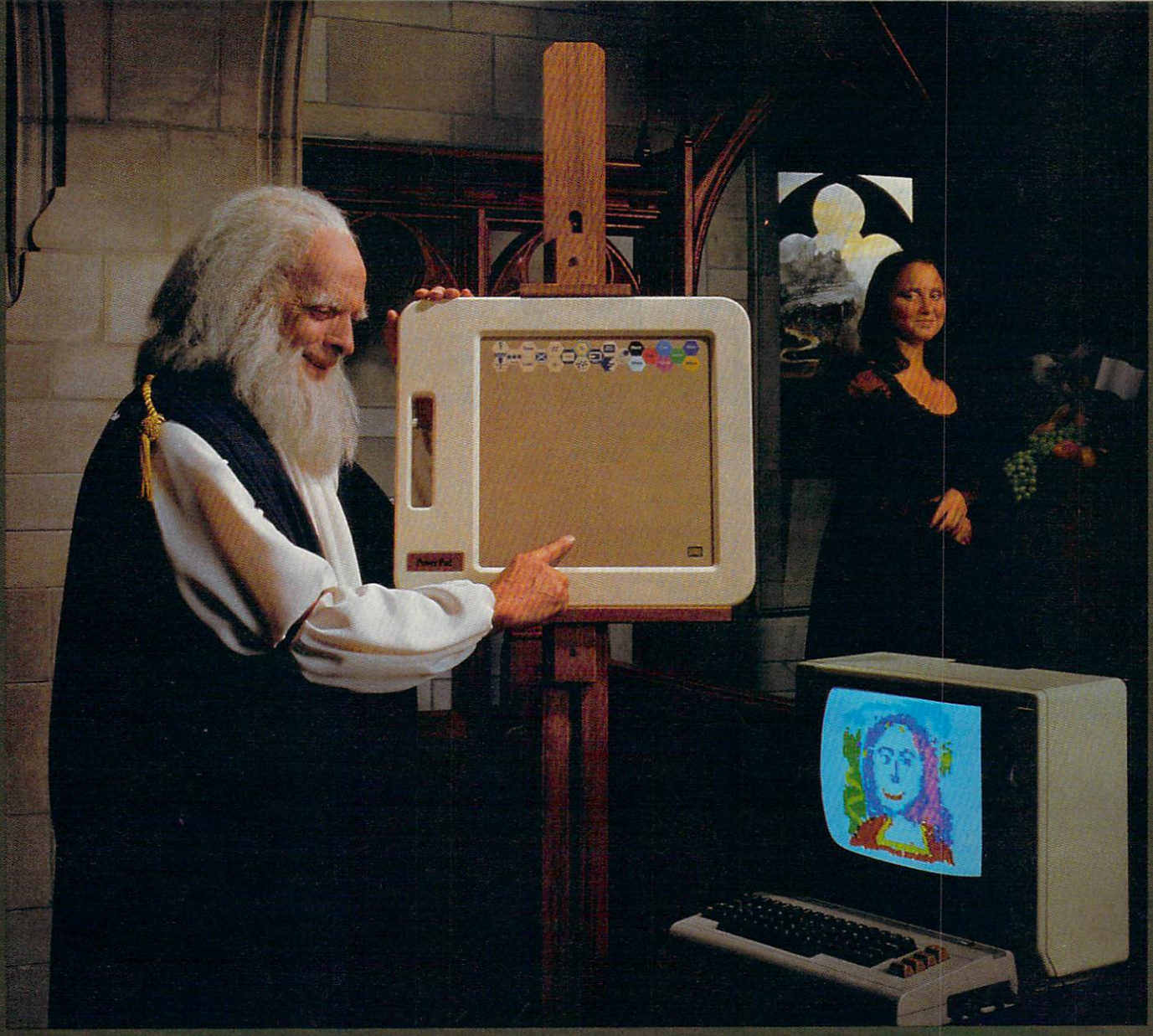
Not that baseball traditionalists should worry. Computers are changing the game, not taking it over. As Chicago White Sox Manager Tony LaRussa said, "The day computers do the managing is the day machines will be playing the game."

Silicon ALLEY

Ready for the hottest scoops from the Valley?

Kids Say The Darndest Things!

HARDWARE HOT STUFF! . . . Rumors are flying about new hardware intros. We've seen the new Commodore 264 and 364; we've seen Apple's Macintosh computer, which looks like a winner. (Have you seen its far-out advertisements on TV?); there's talk of a snazzy-looking Elan computer (which will be hitting England first); and last but not least—Amiga! The people who've brought us various controllers and the JoyBoard are hard at work on "Lorraine." In fact, the whole reason the company was founded was to create this micro. (The other stuff they sell is just a sideline to help them fund this new biggie.) The "Lorraine" (we've heard *Flight Simulator* creator Bruce Artwick is involved in this project) will be a 16-bit machine with 128K and a single floppy disk drive, according to Amiga prez David Morse. . . . **ACTIVISION RENEGADES . . .** Look for software from a new company called Trapeze in San Francisco. Andrea Benjamin, who formed the company along with some other Activision renegades, says the company will showcase some software in June. The software might surpass what's out there in visuals and sound, she told us. We'll keep you posted on what else is happening in the software fast-track—in fact, it's . . . **BYE-BYE IMAGIC** for designers Rob *"Demon Attack"* Fulop and Dennis Koble. These ex-Imagic people have broken off on their own and started a new software company. **ELECTRONIC HISTORY LESSON?!** You can bone up on historical facts when you play Electronic Arts' new *Seven Cities of Gold* game. Named for the legend that in part spurred Columbus and other explorers on to their conquests, the game is set in the age of exploration: 1492 through 1550. *Seven Cities* was designed by the zany Ozark Softscape group that also did *M.U.L.E.* for E.A. The game will be released first for Atari and will cost you around $40 . . . **ANIMATION STATION** . . . Tried out the new graphics tablet called the Animation Station from Suncom, the controller people. Looks good and is priced right . . . **KIDS SAY THE #%*@!! THINGS!** . . . Art Linkletter, who hosted "House Party" (which ran on radio and TV for 45 years), is at it again. He has written an electronic version of his "Kids Say the Darndest Things" for home computers. Ask your parents about old Art.



"Let's see how it looks with a smile, Mona."

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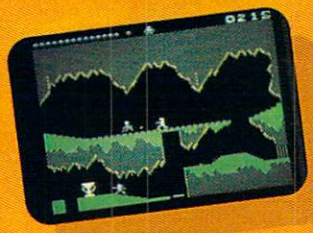
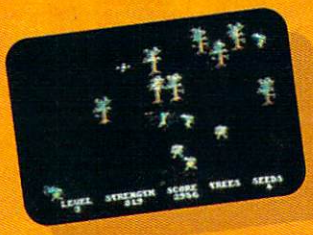
On patrol
Out of the sun comes your RAF biplane, loaded down with a deadly cargo of bombs and bullets. But watch out for the anti-aircraft guns and the enemy fighters—a hit could mean a tricky landing for repairs and ammo. **BLUE MAX:***

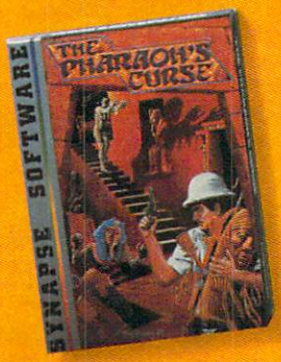


Ancient treasure
A fortune is yours for the taking. But can you avoid the ghost of Rama and the evil mummy? Are you nimble enough to leap the chasms and outsmart the booby traps between you and freedom? **The PHARAOH'S CURSE:***

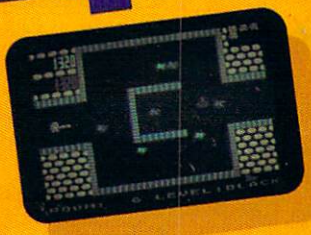


Spellbinding
Only you can restore the forest through ancient spells. Then you must march your army of enchanted trees into battle against the Troglodytes and the evil Necromancer. Who will emerge triumphant from the final conflict? **NECROMANCER:***

Take the controls
Your helicopter mission—capture vital fuel and weapons, free the enslaved masses, and finally destroy the fortress itself. Will you triumph or be crushed by the fiendish Kraalthan lords? **FORT APOCALYPSE:***



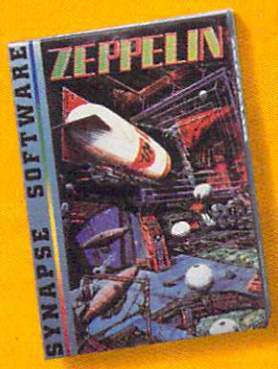
FOR YOUR C-64!



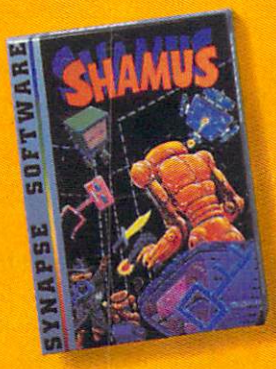
Very hot air
First the prison break, but that's only the beginning! The underground world of Zarkafir is full of surprises, from the lethal energy fields to devastating earthquakes. Can you defeat the Timelords? **ZEPPELIN.***

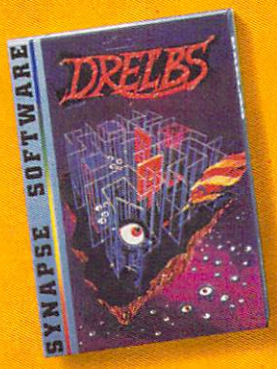
The Shadow knows
Deep in his lair the Shadow waits, protected by deadly Robo-Droids, Whirling Drones and Snap-Jumpers. Only the very strong and the very quick are ever seen again! **SHAMUS*** & **SHAMUS CASE II.***

Awesome action
Maybe you've played pinball before, but not like this! No time to think, no room to make even one mistake. Just quick reflexes, light body armor and a whole lot of luck between you and the end of the game. **SLAM BALL.***



Flip-flop
Into this miniature land comes the evil Trollaboars, determined to take over. Their screwhead tanks will surely crush the peaceful Drelbs, unless you can defeat them on the atomic flip grid. **DRELBS.***





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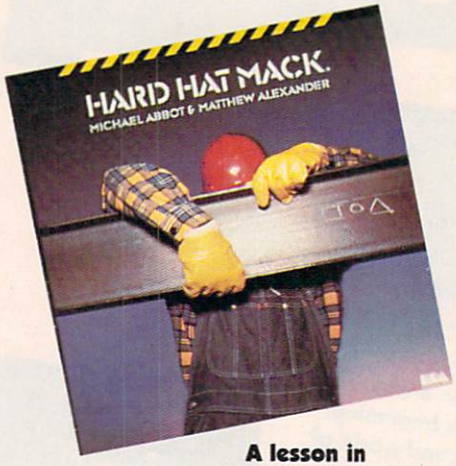
COMPUZINE
VOL. 1 NO. 3

Hard Hat Mack Attack

Hard Hat Mack, the cartoon climbing game that pits a hard-hat worker against a government goon, has been accused of misrepresenting the federal government!

Dan McCorquodale, a California state senator, sent an angry letter to the Emporium-Capwell store in Santa Clara when he noticed they were advertising the game. He complained that the OSHA character from the game was giving people the wrong impression of their friendly federal government. Emporium-Capwell responded by pulling the game off the shelves.



A lesson in political science?

OSHA, which stands for Occupational Safety and Health Administration, is the villain in *Hard Hat Mack*. The government sends a whole horde of OSHA inspectors after Mack. They cite violations and regulations in an attempt to keep Mack from finishing the building.

Electronic Arts, the company that publishes *Hard Hat Mack*, found it hard to take the accusation seriously. "*Hard Hat Mack* is only a game," said Terrylynn Pearson, public relations director for E.A. "It's not a lesson in political science."

SCROLLING IN DOUGH

Time Spent On *TIMELOST*

By Kris Austen Andrews

I wish I knew more about computers. Ever since I began working on *TIMELOST: A Computer Adventure*, everyone has had the impression that I'm a techno-wizard.

The whole thing started about a year ago. My father came to me with an idea he and a colleague, Joe Giarratano, had kicked around at lunch one day: How about combining home-computer games with a comic-strip story, so kids could get two kinds of enjoyment from one book and learn a bit of programming in the bargain?

Kris Andrews— he's *not* a wizard!

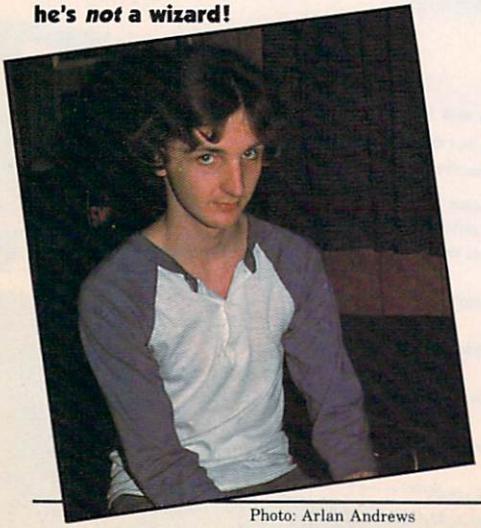


Photo: Arlan Andrews

I guess I was sort of a gimmick, to be quite honest about it. I was the "teenage whiz" behind the project. I'd always read comic books, so I figured that I'd picked up the necessary writing and artistic skills. Having worked with our VIC-20 a little bit, I also was prepared to write the Timex programs needed.

In one night I cranked out several outlines of a plot line and two fully inked pages of artwork. Putting on my best "job-interview" attitude, I went with my dad and Joe to the publisher's office, samples in hand. He liked the idea, and the contracts were soon signed.

The wheels began to turn. It didn't take long to decide that the TS wasn't enough, and that the project also warranted higher-quality specimens, like the TI-99/4A and the VIC-20. This, of course, took the programming responsibilities out of my hands, since at that time I'd never even *seen* a TI-99. I was left to slave over a drawing board for several excruciating weeks.

So now I get to sit back and take it easy and collect my royalty checks. My friends' jaws dropped when they heard the checks average a couple hundred a throw.

Sixteen-year-old KRIS AUSTEN ANDREWS *lives in Indianapolis, Indiana. He's already received the advance check for* TIMELOST, Volume Two.

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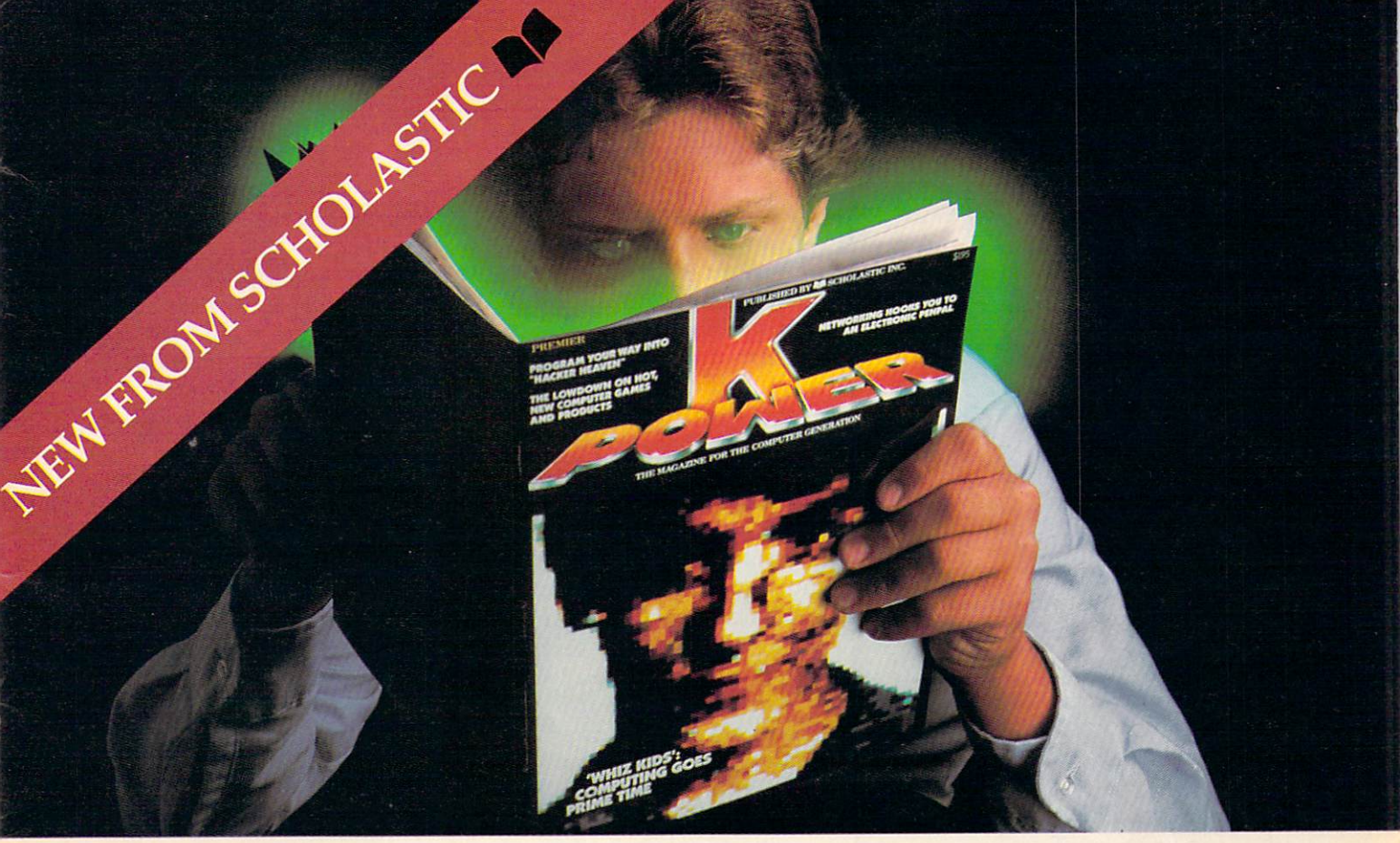

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COMPUZINE

VOL. 1 NO. 3

Confessions of a Reformed Hacker

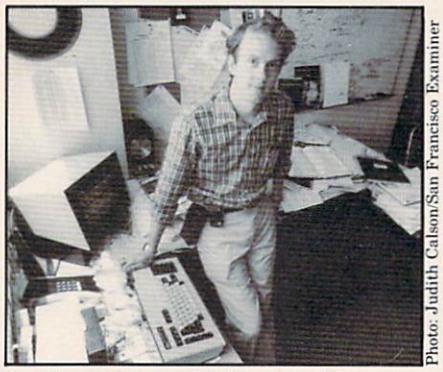

Photo: Judith Calson/San Francisco Examiner

Geoffrey's a good fellow now!

When Geoffrey Goodfellow was in the eighth grade, he was caught breaking into the system of a large computer company. Instead of punishing Geoff for his crime, the company hired him!

Geoff is a defender of good hacking. After all, his break-in was the start of a successful career in network communications research and security technology. But the 27-year-old hacker points out that "malicious meddling" is *not* good hacking. He even went before the U.S. House of Representatives to clear up some misunderstandings about the term "hacking."

He says that hackers oppose the "entry and rummaging of mainframe computer systems and networks. These types of activities are tarnishing the reputation of hackers and giving them a bad name."

He compares computer vandals to kids who spray paint on walls. "Malicious hackers want to get caught so they can be given the appreciation they're looking for. The process of getting caught adds an element of thrill."

Because he was once one himself, Geoff understands hackers whose purpose is to learn how systems work. He believes that those hackers are very bright kids who learn by experimenting. They're not to be confused with vandals who break into systems just to cause trouble. "In most cases," says Geoff, "the benign hacker wouldn't know how to go about calling up the director of a computer system and offering his services. Instead, he chooses to 'introduce himself' by meddling with the system."

But computer systems are inviting break-ins with their lack of protection, says Geoff. Administrators should have proper modem controls and safer passwords, along with system monitoring for incorrect password attempts.

"I believe the scale of the unsavory hacking problem is going to escalate as more of the technology makes its way to the mass market," he says. "There's no one easy solution to these problems. Hopefully, an increased awareness of the vulnerability of our systems will allow us to see the light—in the form of solutions—at the end of the tunnel. And, hopefully, that light won't be a train."

Computer Shooting Spree

Three teenagers in Sacramento, California, decided to get even with an Apple II that fingered them as truants, so they took some potshots at it—literally.

According to Sergeant Bob Burns of the Sacramento Police Department, the computer was used to keep attendance records at McClatchy High School. After the two teenagers (who were between 15 and 17 years old) were caught by the computer, they borrowed a couple of .22-caliber rifles from their homes and set off to shoot the computer. (*Not* a recommended practice.)

Illustration: Howard B. Lewis

At 1:00 a.m. on December 14, 1983, the two truants and a friend crawled under a wire fence that surrounds the school, and made their way to a picnic table outside the attendance office. Then they fired at least 48 rounds, blowing away the office window. They hit the computer 10 or 12 times, destroying the monitor, keyboard, and several accessories. (These are *serious* computer haters.)

The three teens were arrested for causing between $15,000 and $20,000 worth of damage. (Their parents are going to get stuck with the bill.) Sergeant Burns said they were "average, clean-cut kids, not bad kids at all. Things like that happen, unfortunately."

The upshot is that their shooting spree had no effect on attendance records. And McClatchy High School got a new computer the next day. The kids' attendance records, stored on disks in a locked cabinet, were untouched. Just goes to show: Computer crime doesn't pay.

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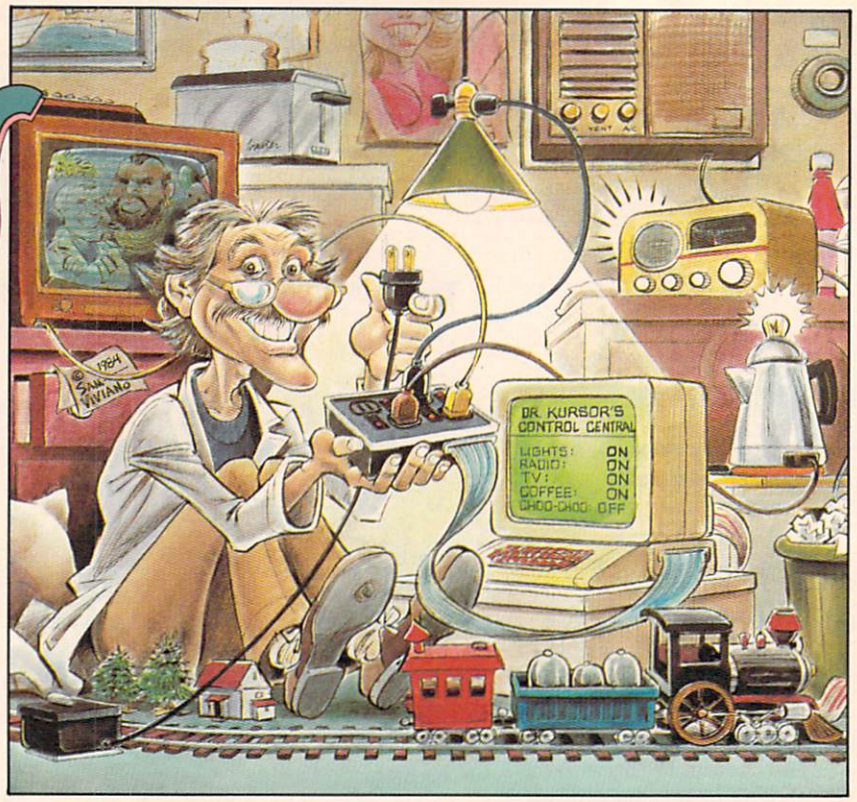


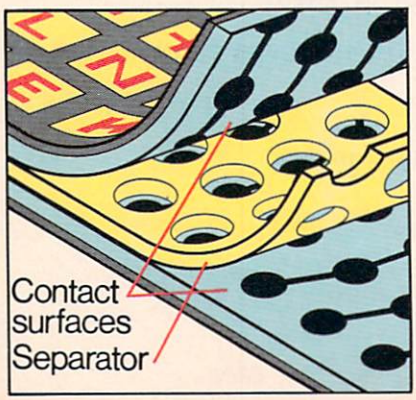
HOW CAN I USE MY MICRO TO CONTROL THE WORLD?

DR. KURSOR: Believe it or not, your computer can control lights, stereos, train sets, robots, or just about anything electrical. What you need is a special controller.

These handy controllers provide a "channel" (which is one byte wide) between your computer and the world around it. When your computer sends a byte of information to this channel, each of the eight bits acts as a signal to a different relay; they tell eight different things to turn on or off.

With a "digital to analog" (D/A) converter, you can do more than just turn things on and off. Your computer could send the number 255 (that's one byte with all bits on) to a port to turn on a light to full brightness, 127 to dim it halfway, and 0 to turn it off altogether.

Many controllers come in sets with a central controller unit that plugs into your computer. This main controller sends signals over house power lines to the other units, which can then turn things on and off all over the house.

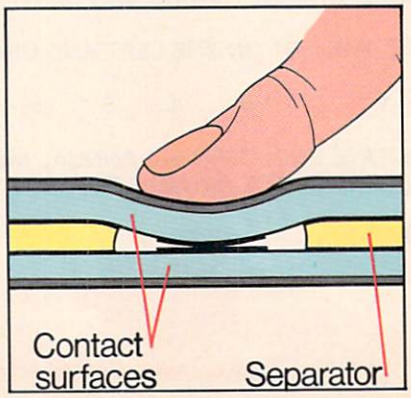


HOW DOES THE TIMEX 1000's KEYBOARD WORK?

DR. KURSOR: The Timex Sinclair 1000's keyboard is like a five-layer plastic sandwich. The top layer you type on is flexible plastic material with all the keys printed on it.

The second layer is a sheet of plastic with a printed set of round dots, one under each key, connected by horizontal lines (see diagram). The silver-emulsion dots and lines conduct electricity. A gel-like emulsion, with holes cut in it below each dot in the second layer, makes up the middle layer. The fourth layer is a similar set of dots connected by vertical lines. Completing the sandwich is an outer layer of thin, protective plastic.

Voltages are sent down the lines. Contact causes the diodes to steer that pulse back up into the computer. If the computer gets a current back on vertical line 4 when it sends current down horizontal line 2, it knows the key pressed is at the intersection of those lines.



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Diagrams: Pat Lyons Illustration: Sam Viviano

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Writing the ideal computer game— What would YOUR game be like?

(JODI) I would make something that would help you educationally. And I also like when you have to solve a mystery.

(SCOTT) I would make one of those games where you shoot people down and get points for doing different things. You could play against your friends or against the computer.

(DAN) I think the most important thing is variety--that it doesn't get boring. If I made one, it would have a lot of different characters, scenes, actions, and things to do. It would be almost like a short movie where the characters are doing different things in different scenes. It would be hard to master because there are so many scenes.

(STEVE) There would always be something that the person is trying to discover. The random or great number of levels could never be mastered or would take quite a long time. With most adventure games today, once you solve it there is nothing to go back to.

(TOM S.) You would want to come back and play it again and again. Different things would happen every time instead of the same thing. It would be a game that you could keep going as far as you can go and never win. I like that. After you win, you just start over again--but at a higher level.

(TOM P.) It would never get boring because there would always be something new. Kind of like a really sophisticated adventure game that could combine good graphics and sounds, and, of course, it would have to be fun.

(ERIC S.) You could keep playing it without memorizing it. And it would be able to be expanded. Once you memorize one part, you could draw into another. It would be impossible to

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Scott Moskowitz, 9
Toledo, OH

Steve Horowitz, 16
Dan Horowitz, 14
Westport, CT

Eric Saberhagen, 13
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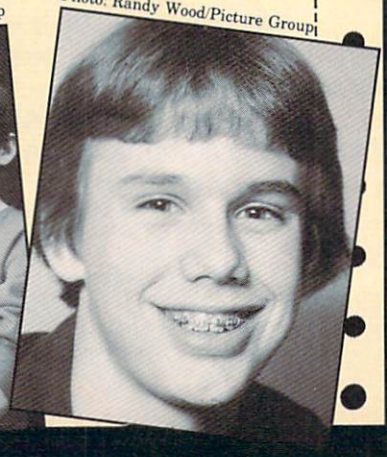

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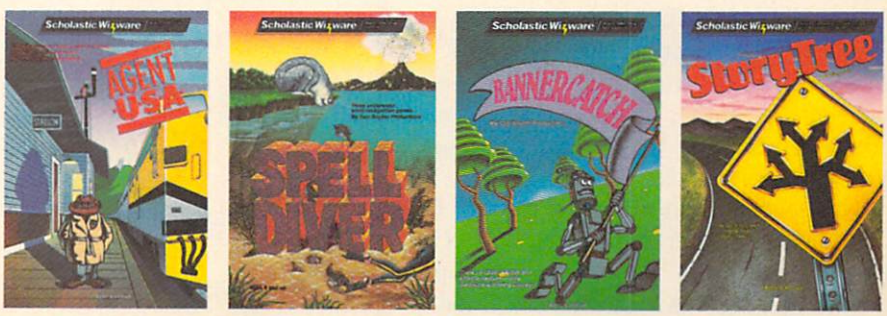

Agent U.S.A., Spelldiver, Bannercatch designed and developed by Tom Snyder Productions, Inc. Story Tree designed and developed by George Brackett. • Agent U.S.A., Spelldiver, Bannercatch available for Atari 800/1200/XL. Commodore, Apple, IBM versions available soon. • Story Tree available for Apple.

Photo: Steve Wort/Picture Group

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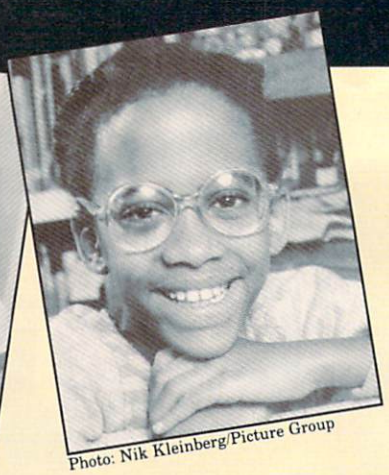

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Eric Fisch, 14
St. Paul, MN

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Miami, FL

Dara Cook, 9
Tuckahoe, NY

win! When a game just stops when you're doing so great it's kind of depressing.

(ERIC F.) The game would be challenging and there would be something for all levels of players. There would also be a lot of graphics, animation, and sound used in my game.

(JILL) It would have to be challenging and one that you'd want to play again and again. And when you solve it, it wouldn't be all over!

(DARA) It would have a lot of graphics and sound in it. Also, you could change levels if you got too good at one level, and you could play against the computer if you didn't have another player.

Wanna Chat? Try a BBS

Unlike a dull party, which seems to go on forever, an electronic bulletin-board system can be logged off as easily as you logged on. There's no better way to hook up with strangers. (And some of these networkers will be *strange*!) We've assembled a few of the wildest BBSs from *The Computer Phone Book* for you to check out the next time you're on-line. Keep in mind that BBSs come and go all the time, and the phone numbers may change.

Any bulletin board is a potpourri of personalities, but the main character behind the scenes is the "sysop" (systems operator). This is the person who set up the board, operates it, and controls it. The best way to find out more about the BBS is by "chatting" with the sysop or by taking a look at the bulletin board names and subjects.

Names like "PatVac" and "Mines of Moria" usually are signs of a funky sysop. When you log-on to "PatVac," you'll be asked if you're A VAGRANT OR A LOON? (In other words, are you a new user or a registered I.D. holder?) When you log-on to the outer-space "UFONET" board, the sysop asks, WHERE ARE YOU BEAMING FROM?

The sysops' names are even more bizarre. "Tamerlane of the Rings" created "The Mines of Moria," while the "Comnet-80" sysop is "Goonhilde the Computer." (An assistant named Goonhilde will chat with you when "Goonhilde the Computer" is out to lunch.)

"Sourcevoid Dave" has become a networking celebrity with "The Old Colorado City Electronic Cottage." The electronic town contains an Opera House for downloading software; the Poker Table information bank; a post office system, where callers can send and receive messages; and the Town Hall, which is a sounding board for general topics.

Science fiction fanatics can log-on to the "Caverns of Appleville," creative writers will like "The Notebook," and movie maniacs can hook up to "Dickenson's Movie Guide." There's even a bulletin board for trivia buffs, called "Limericks BBS."

Here are the phone numbers to use to go on-line with these off-the-wall bulletin-board systems.

PatVac (213) 306-1172
Mines of Moria (408) 688-9629
UFONET (303) 278-4244
Comnet-80 (216) 645-0827
The Old Colorado City Electronic Cottage (303) 632-3391
Caverns of Appleville (312) 267-2066
The Notebook (305) 686-4862
Dickenson's Movie Guide (913) 432-5544
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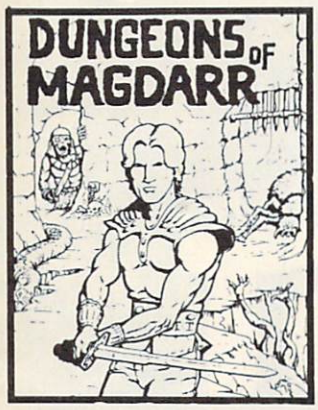

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BAG-IT-MAN - The ultimate arcade game for TRS80C or MCD64. This one has three screens full of BAGS OF GOLD, CARTS & ELEVATORS TO RIDE IN, MINE SHAFTS, and TWO NASTY GUARDS. Great sound and color and continuous excitement.

Available On: TRS80C 32K, CMD64

TAPE $19.95 DISK $24.95

QUEST - A different kind of Graphic Adventure, it is played on a computer generated mape of Alesia. You'll have to build an army and feed them through combat, bargaining, exploration of ruins and temples, and outright banditry! Takes 2 - 5 hours to play and is different each time.

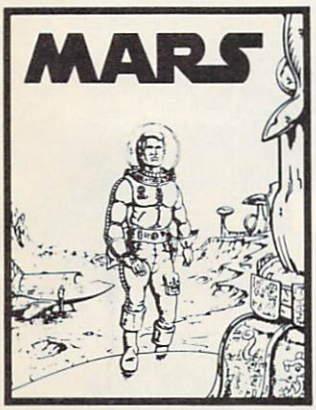
Available On: TRS80C 16K, CMD64, VIC20 13K, MC10 16K, TI99 (EXT. BASIC), IBMPC

TAPE $14.95 DISK $19.95

STARFIRE - If you enjoyed StarRaiders or StarWars, you will love Starfire. It is not a copy, but the best shoot-em-up, see them in the window space game on the CMD64 or TRS80C. The fantastic graphics will put you right in the control room as you hyperspace from quadrant to quadrant fighting the aliens and protecting your bases.

Available On: TRS80C 16K, CMD64

TAPE $19.95 DISK $24.95



MARS - Your ship crashed on the Red Plane and you have to get home. You will have to explore a Martian City, repair your ship, and deal with possibly hostile aliens to get home again. This is recommended as a first Adventure. It is in no way simple - playing time normally runs from 30 to 50 hours, but it lets you try out Adventuring before you battle the really tough ones. Full Graphics Adventure.

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The 60-hour course is made up of four programs, each with an accompanying manual. And every program has three levels of difficulty. Which means students can push themselves just as far as they want to go.

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The Owlcat S.A.T. programs can also be purchased as a 15-hour course for students with limited time to study. (Check price listing on this page.)

IT'S LIKE PLAY – THAT WORKS!

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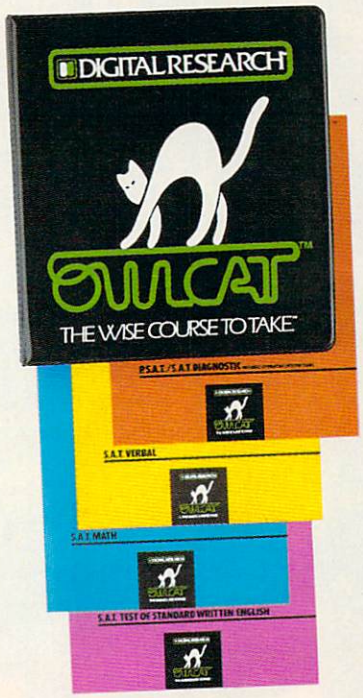

Owlcat teaches students to follow instructions. It familiarizes them with the kinds of questions they'll face on the S.A.T.s. And it helps diagnose and strengthen areas of weakness by reviewing and correcting wrong answers at the end of every section.

That's not all, either. The verbal discs include an Owlcat Dictionary for instant definitions. And all the discs have special "cheers" messages to provide encouragement. Plus a unique audio-visual clock that trains students to work within tight time restrictions – just as they will on the actual exams.

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S.A.T. 15-hour course
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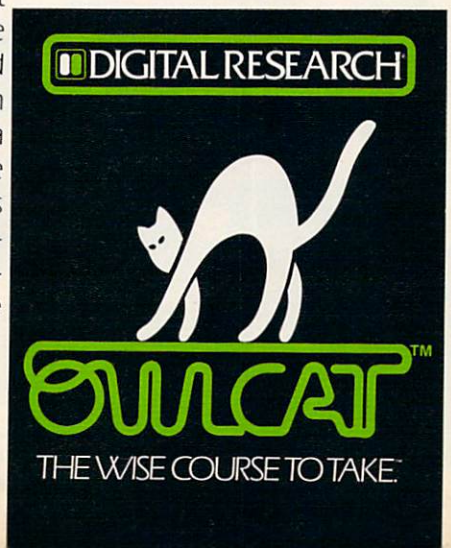
9 discs and 4 manuals **$249.95**

P.S.A.T. Diagnostic Pre-Test . . . **$19.95**

Available for IBM® PC, Apple,® and Commodore 64.™
In color or monochrome.



To order or learn more about the Owlcat S.A.T. Preparatory Course, dial **800-227-1617 ext. 400** (in California, **800-772-3545 ext. 400**) toll-free.

Whether you're getting ready to take the S.A.T.s yourself – or care about someone who is – it could be the wisest move you'll ever make.

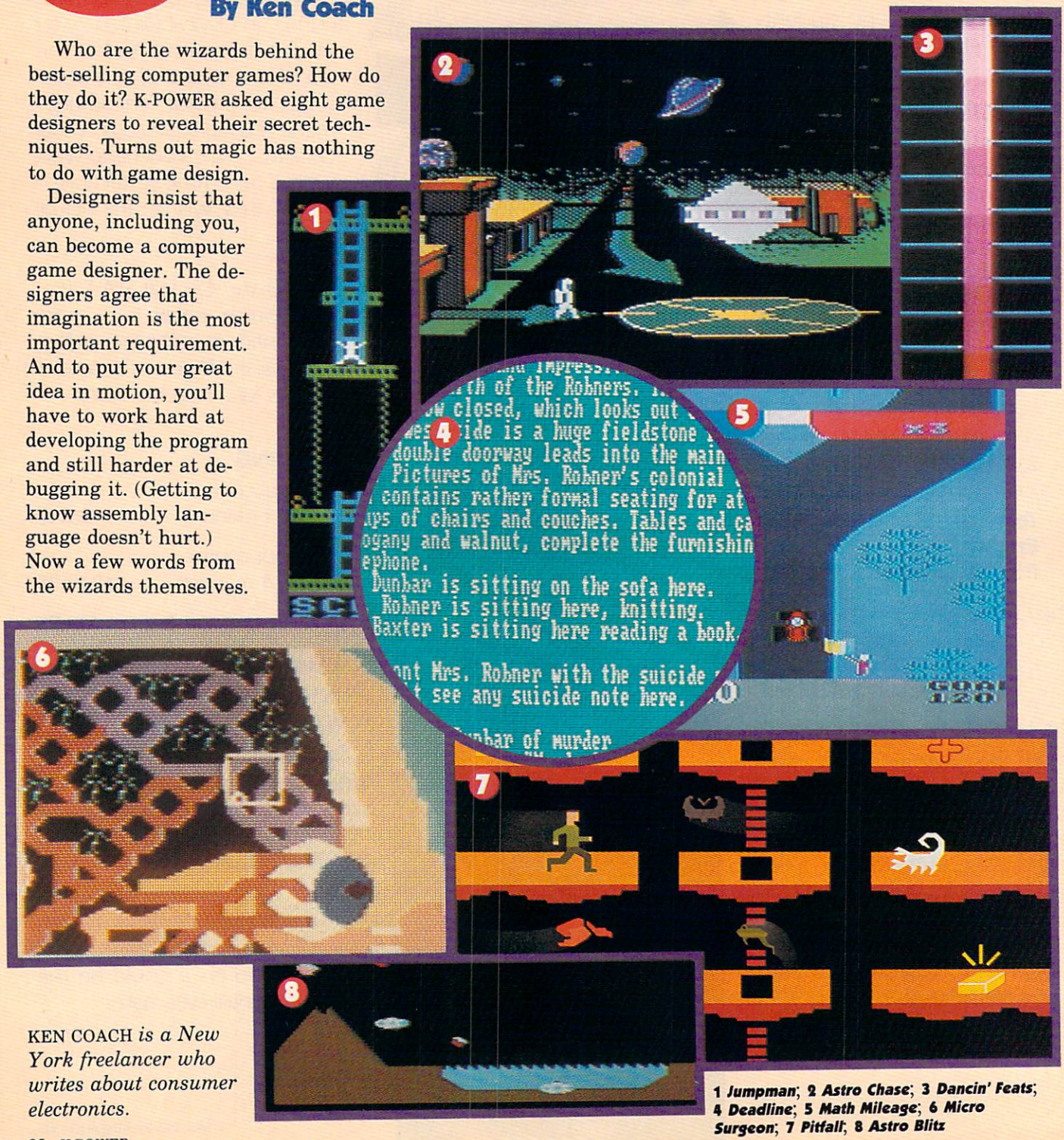
8 TIPS & TRICKS FROM GAME DESIGNERS

Successful game-design wizards tell how they create top-notch computer games. Their secret? A combo of imagination, patience, and debugging.

By Ken Coach

Who are the wizards behind the best-selling computer games? How do they do it? K-POWER asked eight game designers to reveal their secret techniques. Turns out magic has nothing to do with game design.

Designers insist that anyone, including you, can become a computer game designer. The designers agree that imagination is the most important requirement. And to put your great idea in motion, you'll have to work hard at developing the program and still harder at debugging it. (Getting to know assembly language doesn't hurt.) Now a few words from the wizards themselves.



1 *Jumpman*; 2 *Astro Chase*; 3 *Dancin' Feats*; 4 *Deadline*; 5 *Math Mileage*; 6 *Micro Surgeon*; 7 *Pitfall*; 8 *Astro Blitz*

KEN COACH *is a New York freelancer who writes about consumer electronics.*

RANDY "JUMPMAN" GLOVER

Randy Glover sits down with graph paper as soon as he gets an idea for a game. He thinks of what objects will be seen in the game and from what view. The 29-year-old designer of Epyx's *Jumpman* also keeps in mind the limitations of the machine he's working on.

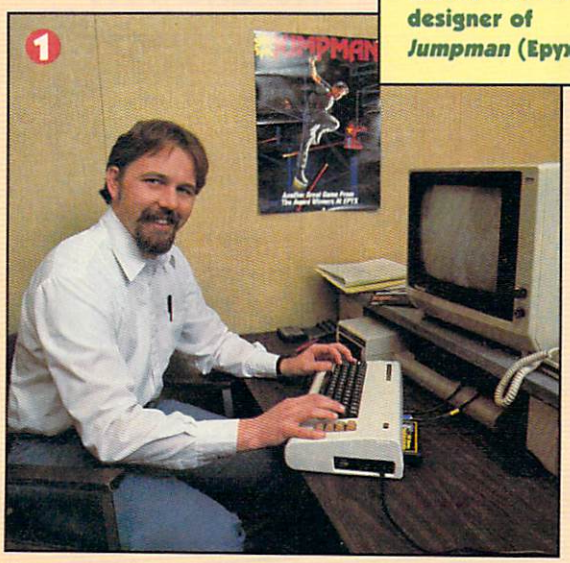
"Sometimes you run into things you thought you could do but just can't. Other times you're able to pull off things you thought you couldn't do."

But before you do anything, you have to get to know your machine, advises Randy. He says a lot of people try to design games without understanding the machine they're working on. He also recommends studying math to help with the complicated machine codes. His other advice: Avoid graphics when you first enter the world of game design. "Understand the logic of games first. Start with simple things, like tic-tac-toe or checkers."

As a staff designer Randy says he gets ideas for games in two ways. One is an idea that he personally likes. He may like a certain style of play and find that there isn't a game that really takes advantage of it. Or he may have a number of pieces of ideas that he can string together as an original idea.

Sometimes, though, the company outlines what kind of a game it wants and what elements should be in it. The designer then has to try to make it work. Randy says this may seem to restrict his "creative license" but usually the result is a better and more popular game.

"Understand the logic of games first. Start with simple things, like tic-tac-toe or checkers."



RANDY GLOVER, 29, designer of *Jumpman* (Epyx)

FERNANDO "ASTRO CHASE" HERRERA

Coming up with a juicy game idea is difficult, admits Fernando Herrera, but there are possibilities everywhere. "Anything you see can be related to a possible game. Look around and collect ideas and then mentally put some spice in them. Think of absurd ideas . . . let your imagination go wild."

Fernando was the first winner of the Atari Star Award for an educational program called *My First Alphabet*. The 40-year-old programmer (now with First Star Software) is always on the lookout for marketable ideas and says that you should be too! It's all right to use an existing playing concept only if you can do it differently and better.

"I believe programming is more of an art than a science," says Fernando. This programmer began using computers only a few years ago. "In any art, it's important to learn some technique to develop the skills related to the art, but imagination is the most important thing for any artist."

Fernando also says the best programs are the ones that can be played without knowing anything about a computer. "Make the interaction [between computer and player] natural, so you press the right key or move the joystick without even thinking."

"It's important to know your computer inside and out. If you do, it's a tremendous advantage. Otherwise, it can be an obstacle."

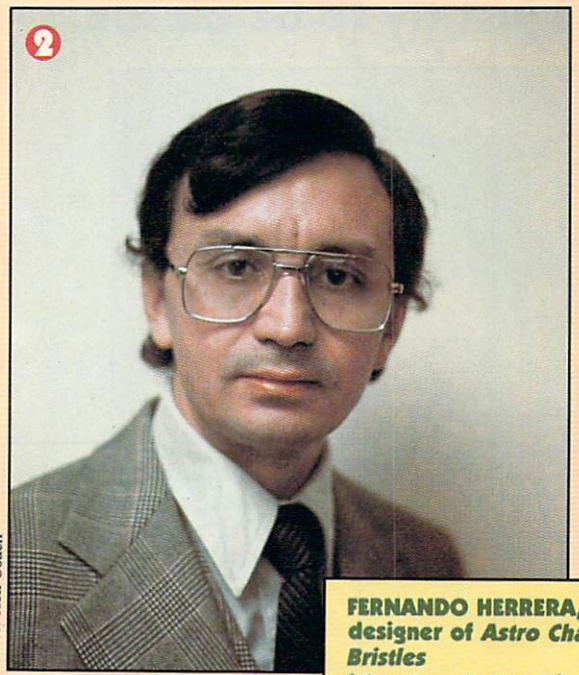


Photo: Ken Coach

FERNANDO HERRERA, 40, designer of *Astro Chase*, *Bristles* (First Star Software)

CHRIS "DANCIN' FEATS" CHANCE

Chris Chance says all his games come to him in the shower, and usually right out of the blue. "Every time I look at a situation," he says, "and try to put a game to it, it always seems a little bit dull. I just try to be bizarre, so that nothing like that has ever been done before."

Chris is a 24-year-old freelance programmer and the designer of Softsync's *Dancin' Feats*. He spent two years programming for Atari prior to this. All of his computer knowledge was picked up at home.

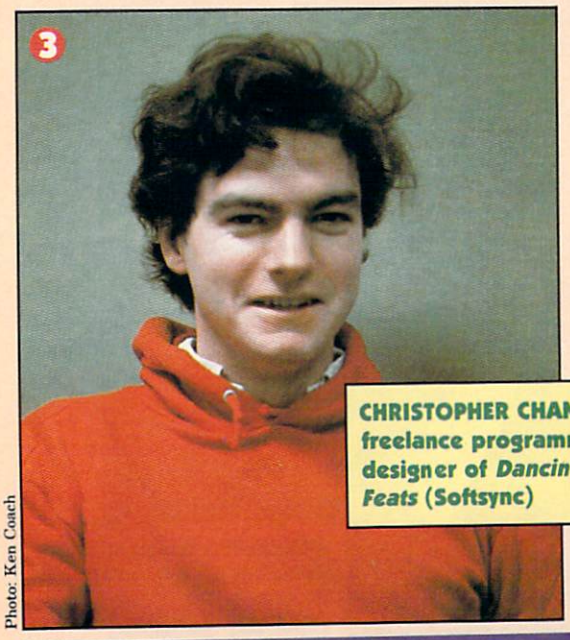
The toughest and most boring part of game design for Chris is the last five percent of the game. "You can work for three months and get 90 percent of the game, and then you'll have to work another three months just to do that last little bit, just to tie all those loose ends together. I think that's the point at which a lot of people just give up."

Even if your first game doesn't turn out the way you'd like, Chris says, it can give you ideas for other games. He recommends studying as many other games as you can. Studying program listings can also help you learn some of the shortcuts and tricks.

Chris has a trick that makes the Atari screen look like the computer isn't hooked up and the TV set is between channels. Enter the following five lines at the beginning of a program and you'll have an interesting background screen:

```
10 GRAPHICS 7
20 Y=PEEK(560)+5+256*PEEK(561)
30 POKE Y,192
```

"I just try to be bizarre."



CHRISTOPHER CHANCE, 24, freelance programmer, designer of *Dancin' Feats* (Softsync)

Photo: Ken Coach

MARC "ZORK" BLANK

Marc Blank says the first step in writing an adventure game is coming up with a good story. He identifies three elements in a good adventure game: story, puzzle, and character. The story and characters must have quality, and the puzzle should be fair, but hard. "If it's too easy, it won't be interesting," says Marc. "A good adventure game should be challenging, not obvious . . . something you think about in the shower."

"I don't think a single game ends up the way it was first conceived," Marc says. His advice for adventure-game writers is to first come up with a good story and then define the game environment. Marc uses a map to help him keep it straight.

"The most important and yet most intangible aspect of a good adventure game is based on involvement," he added. "The rewards are different than those of a regular arcade game. In an adventure game, you must have a personal stake. More effort may be required but you get more out of it."

The 29-year-old vice president of Infocom and designer of the *Zork* series and *Deadline* compares an adventure game to a novel, in that it's generally improved with a number of rewrites. It's unlike a novel because the author never has complete control; the person who plays the game is the main character. Getting the players really involved in the action, he says, is super important.

Marc wrote the original *Zork* in 1977 when he was working in a computer-science lab at MIT. It was written on a mainframe computer and then transferred to the various micros.

"A good adventure game should be challenging, not obvious . . . something you think about in the shower."

MARC BLANK, 29, vice president of Infocom, designer of *Zork* series and *Deadline* (Infocom)

MARCIA "MATH MILEAGE" BURROWS

A lot of Marcia Burrows' game ideas come to her in her sleep. She keeps a pen and paper at her bedside to jot them down, and from there she might work out the ideas on graph paper to see if they look good. Then she'll see what it looks like on the screen.

This freelance designer created *Math Mileage* for CBS Software without even knowing BASIC. She learned FORTRAN and 502 machine language—and sold her first game—before she even owned a computer. Marcia says that game players want a lot more control over what's happening on the screen. She, like the others, thinks that a game has to be challenging but not discouraging. There always should be a way to get a feeling of accomplishment. Marcia also avoids ideas that are too violent or sexist.

If you're interested in designing a game, Marcia recommends that you learn as much as you can about computers—but not only computers. "Even though it's fun to crawl inside a computer and play with its potential, it's really important to look at other aspects of your life as well. That's where ideas for programs will come from."

"Even though it's fun to crawl inside a computer and play with its potential, it's really important to look at other aspects of your life as well."

5

MARCIA BURROWS, 37, freelance designer, creator of *Math Mileage* (CBS Software)

RICHARD "TRUCKIN'" LEVINE

When Richard Levine comes up with a new game idea, he jots down as many things as he can think of to put into it. His challenge is to see how much he can squeeze into one game.

A computer game should be complex and difficult to master but, at the same time, easy to learn, Richard says. Richard, a game designer at Imagic and designer of *Micro Surgeon* and *Truckin'*, thinks that sound is *very* important in game design, too.

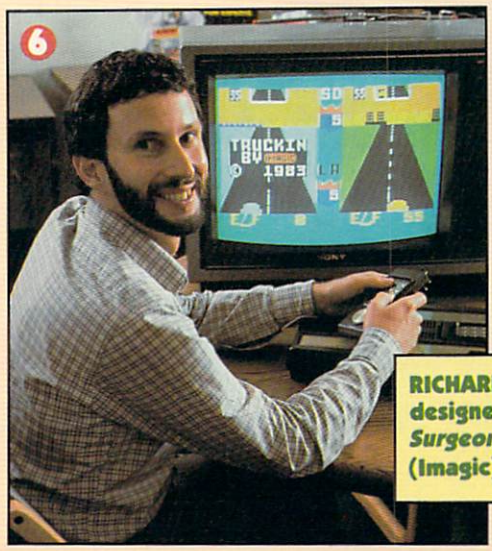
"The sound should be exciting and fit with the action. And it musn't be obtrusive or annoying," he told K-POWER.

Richard says you should begin with a game design where you're manipulating only a few characters on the screen. Eventually, you'll have to learn assembly language. He says the more high-level languages you can master, the better. But he advises that you round out your skills in other areas, too.

"You'll have to decide at the outset whether the game will depend on graphics or playability, and set in advance what percentage of memory each will take," says Richard. He's quick to point out that a game often doesn't turn out the way a programmer imagines, simply because there isn't enough memory to pull it off.

And Richard has some advice on debugging. "When I write too fast, I have to spend more time debugging. Take your time writing a game, and do it right the first time."

"When I write too fast, I have to spend more time debugging. Take your time when writing a game, do it right the first time."



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RICHARD LEVINE, 31, designer of *Micro Surgeon, Truckin'* (Imagic)

DAVID "PITFALL" CRANE

Once David Crane gets stuck on an idea, he just starts experimenting with the computer. By creating an interesting picture or a unique way of using the joystick, he sometimes can create a new game concept.

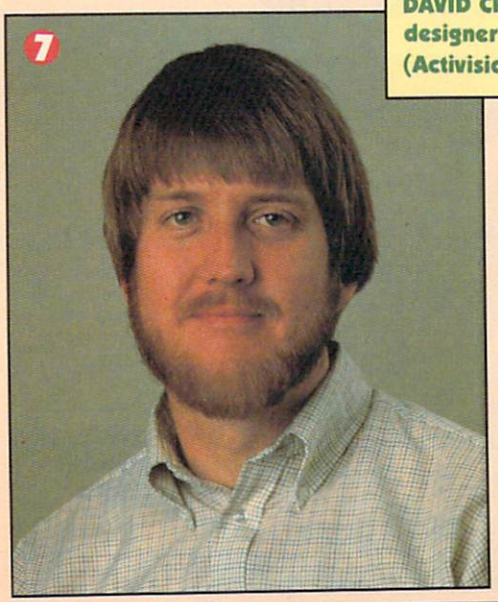
"Just start banging the keys," David says, "and see what happens. Then get intimate with your computer. Get to know as much about it as the person who designed it."

David bounces his ideas off other designers at Activision (he's one of the five founders of the company). Then he sits down at the computer and spends about a day drawing graphics and deciding how he wants the game to look. After that, it's hours and hours of programming in the assembly code. Creating *Pitfall* took endless hours of hard work.

"BASIC is a good native language for you to master, because the commands are easy to understand. Then you can translate your game into other languages," David says.

But success isn't easy, says the 30-year-old designer of nine games. "The problem is that everyone who has a computer fancies himself a game designer, just as everyone who owns a guitar wants to be a rock star," says David. "There is nothing wrong with that if you remember that success is a long, hard road."

"The problem is that everyone who has a computer fancies himself a game designer just as everyone who owns a guitar wants to be a rock star."



DAVID CRANE, 30, designer of *Pitfall* (Activision)

TOM "ASTRO BLITZ" GRINER

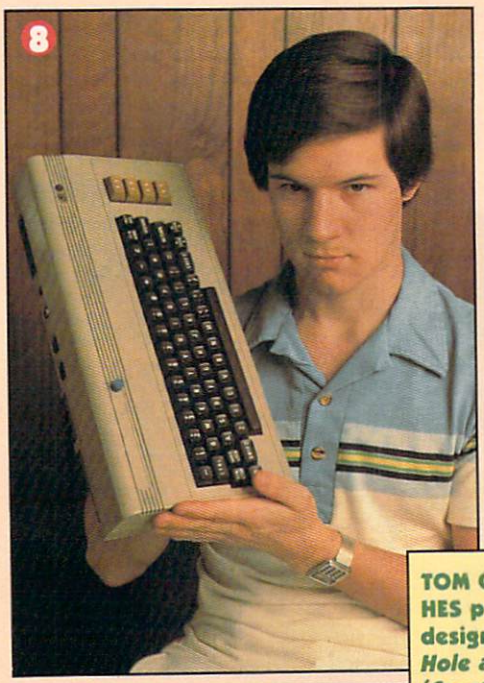
When 18-year-old Tom Griner has an idea, he begins with the most unique part of the game he hopes to create. "Sometimes I find that what I've got in mind won't work. Then there's no point in doing any more work on the game."

Graphics are important to Tom, but he points out that good graphics design won't sell a game for very long. Tom, a four-year veteran of computer-game design, kept this in mind when he was designing *Black Hole* and his newer game, *Astro Blitz*. Tom is under exclusive contract to HES. But before signing on with them, he wrote five games for Creative Software.

A truly popular game needs to have well-designed game play, he says. Also, players shouldn't have to wait for things to happen, and the movements should be smooth. He also says that the game speed can't be so fast that it's frustrating or so slow that it's boring.

And you'll have to learn assembly language. "Start with something simple that you know how to do in BASIC. Learn how to do it in assembly language, and then use that routine in your BASIC programs. From there you can add more routines." k

"Start with something simple that you know how to do in BASIC. Learn how to do it in assembly language, and then use that routine in your BASIC program."



TOM GRINER, 18, HES programmer, designer of *Black Hole* and *Astro Blitz* (Creative Software)

PROGRAMMING FOR PROFITS

K-POWER heard you've designed a program that's a sure winner. Now you'll have to put it in the right hands. Selling homemade software isn't impossible—but it's not a piece of cake, either. If your program has what it takes, there are quite a few software companies that want to look at it. Try the following:

Atari Program Exchange P.O. Box 3705
Santa Clara, CA 95055 (800) 538-1862

This service offers you an excellent chance to sell your program. Atari Program Exchange (APX) sells user-written programs to the public through a quarterly catalog. But before you send your software, write or call for submission forms. All of the programs are reviewed, and the best ones are chosen by APX. Freelancers receive royalties, along with the chance of winning a prize. And, if Atari thinks that your program has real potential, they'll add it to their own product line.

Broderbund Software 17 Paul Dr.
San Rafael, CA 94903 (415) 479-1170

According to Kay Wayland, administrative assistant for product development, Broderbund is searching high and low for freelance software authors. Broderbund currently receives up to 20 freelance programs weekly and actually published four in the past year. But they're always looking for more! She recommends that you call or write for an author's kit before sending in your creation.

Datamost 8943 Fullbright Ave.
Chatsworth, CA 91311 (213) 709-1202

Sixty percent of Datamost's programs are written by freelancers. They certainly want you to contact them about your new masterpiece. Send them your program or, better yet, first get a nondisclosure statement from them. This protects you from having your program marketed without your permission. According to Dale Kranz, Datamost's director of marketing services, you'll get a reply within two weeks. Right now, Datamost receives 10 to 20 freelance submissions each month, and publishes at least 10 a year.

Datasoft 19808 Nordhoff Pl.
Chatsworth, CA 91311 (213) 701-5161

This software company also welcomes your freelance submissions. Jean Stedman, project manager, says that Datasoft receives about 15 programs each month. Their freelance submissions account for about five percent of their new products each year.

Epyx 1043 Kiel Ct.
Sunnyvale, CA 94086 (408) 745-0700

This company would love to see your program, says Susan Wright. But before you send it, write or call for an author's packet to get all the necessary papers and information. Otherwise, they'll send your program right back. Epyx receives 10 to 20 freelance submissions every month.

Electronic Arts 2755 Campus Drive
San Mateo, CA 94403 (415) 571-7171

Electronic Arts is truly an outside-artist publisher, says David Evans, director of talent. This company is always looking for programs from freelancers, he says. In 1984, the software company plans to market nearly 40 new titles and 85 percent of these will be written by freelancers. Evans says programmers should contact Stephanie Barrett, product administrator, in writing, or call with ideas.

Sirius Software, Inc. 10364 Rockingham Dr.
Sacramento, CA 95827 (916) 366-1195

Sirius wants your software, says President Jerry Jewell. This software company uses about one freelance submission every two months out of the 15 to 20 they receive each week. Jewell recommends that you get your idea copyrighted before sending it to him. And he would ultimately like freelance software designers to work with Sirius from the time the idea is conceived. In the past year, about half of Sirius' programs were created by freelancers.

Strategic Simulations 883 Stierlin Rd. Bldg. A-200
Mountain View, CA 94043 (415) 964-1353

Strategic Simulations knows that there's lots of talent out there, and they are always happy to hear from you. Pamela Parada, assistant to the president and marketing director, says to write or call for an authors' kit (for info on terms, submission requirements, nondisclosure forms, royalty structure, etc.). She says that up to 85 percent of their programs are freelance submissions.

Synapse Software 5221 Central Ave.
Richmond, CA 94804 (415) 527-7751

Mail your program into Synapse, or if you live close by, just stop in. According to Kelly Jones, vice president of programming, about 20 to 25 percent of their software ideas are generated by freelancers. They receive about two freelance programs per week, and out of the 20 programs used this year, four came from freelancers.

—BERNADETTE GREY

STAR REACH

REACHING FOR THE STARS

An arcade-style space game designed for the Apple

By Steve Horowitz

Some people say serious hackers don't play computer games. Untrue! But playing games almost always leads to wanting to design your own. After getting some programming under my belt, I was struck with that urge to put away the packaged games and create my own. With three years of Apple game-playing experience behind me, I set forth to write my own arcade game. That's how *Star Reach* was born.

I wrote *Star Reach* in Applesoft because coding the entire game in Assembler would have taken too long. What I made is more of a retrieve-and-dodge-'em game than a shoot-'em-up. You're the spaceship pilot whose mission is to collect care packages from home that have been dropped for you on the moon's surface. You use the right and left arrow keys to move from side to side; the "A" and "Z" keys to navigate up and down. Pressing the space bar stops the ship, and it drops the package if you're over the base.

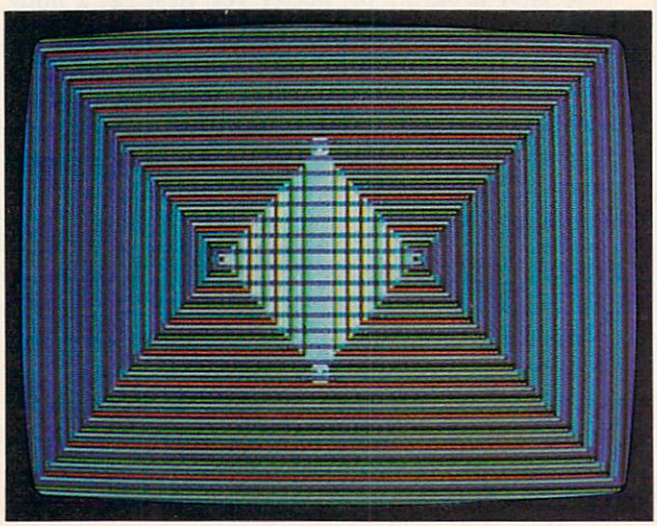
Colliding with enemy missiles that are whizzing by or with the mountainous craters on the lunar landscape causes you to lose one of your three ships. After returning to the space base with two packages, you earn one bar. Ten bars (safely transporting 20 care packages) earns you a graphic display and congratulations. You can easily alter what the congratulatory message says. Based on my experience with *Star Reach*, the following is what I would tell someone interested in designing their own game.

STEP 1: IDEAS

The first requirement for any game design is to have a basic idea of what you want to happen in your game. Your original idea probably will go through many changes, so don't be too specific when you begin. It's also a good idea to draw a few pictures of what the screen will look like during various stages of the game.

STEP 2: ROUTINES

After you have some idea of what the game will do and how it will appear, you should separate the various actions into individual routines. For example, to indicate the movement of a ship, you'll need to develop a routine that can read and decode the keyboard or joystick. This routine will move the ship according to whatever direction was given. At the same time,



you'll jump to various routines, checking for collisions and looking for boundaries or for objects to retrieve.

Try to develop one routine that moves the ship, and program it to call other subroutines to perform the tasks mentioned above. Even though it may seem as if a lot of things are happening at one time, everything moves so fast that the only noticeable thing is the motion of objects on the screen. As your game progresses, look for places where your original idea can be improved. And remember that many things won't work as practically as they did in theory.

STEP 3: SHAPES

Star Reach uses standard Applesoft shape tables with the XDRAW command. The entire background was created using HPLOT statements. When the program starts up, it first checks a memory location to see if the shapes are already in memory. If they are, it doesn't bother to load the shapes from disk again. Next, the program goes to the main routine, which is the mover. This routine looks at the keyboard to see if a key has been pressed. If so, it jumps to the routine that decodes the keypress into a direction.

While the main routine operates, it jumps to another routine each time the ship is drawn to see if it has collided with anything. If a collision occurs, it checks to see if it was with the missiles, the mountains, or one of the two care packages. The explosion routine takes place when the missiles or mountains are struck; one ship is then eliminated. If a care package is touched, it disappears, and a variable is set to show that the ship now contains a package. After the ship has either moved or been redrawn in the same place because no direction was given, the missile location is updated and the missile is moved. Even if the ship doesn't move, the missile will continue to travel.

STEP 4: MISSILES

The missile's location is determined by the y-coordinate of the ship plus a random offset. The random offset is necessary because it gives the missile a chance to hit the ship during its upward movement. The coordinate of the missile is also checked to make sure it appears below the base and above the mountains. If the ESCAPE key is pressed at any time, the program will pause until another key is pushed. Pressing the space bar causes the program to determine if the ship is over the base. If it is, it then keeps the ship on the screen (thus decreasing flicker) while it checks to see whether it should jump to a subroutine.

Another technique used in *Star Reach* is the keyboard-reading routine. To keep the program going, don't have it wait with a GET statement. Instead, PEEK at location -16384 and check if the number is greater than 127. If it is, then a key has been pressed and the number in location -16384 is the numeric value of the key that was pressed. After reading the keyboard, always do a POKE-16368,0. This will clear the keyboard strobe.

If you want to change the number of bars you need to win to get the graphics display finale and the congratulatory message, do this: LIST 690. Change the BR=10 to BR= whatever number you want. This will make the game easier or more difficult "to win." To get more practice runs in, you can change the program so that you have unlimited ships. To do this, take out line 1020; also in line 50 change POKE 0,0 to POKE 0,3. The rest of the line should stay the same.

APPLE/*STAR REACH*

II plus or IIe • 32K RAM • color TV or monitor optional

```
10 IF PEEK(24801) <> 193 THEN PRINT CHR$(13);CHR$(4);"
BLOAD SHAPES,A24800"
20 POKE 232,224:POKE 233,96
30 HGR:SCALE= 1:ROT= 0:HCOLOR= 7:POKE -16302,0
40 HCOLOR= 4:HPLOT 0,0:CALL 62454:HCOLOR= 7
50 POKE 0,0:POKE 1,0:POKE 2,0:POKE 3,0
60 REM   ===CREATE BACKGROUND===
70 HCOLOR= 6:HPLOT 0,0 TO 278,0 TO 278,191 TO 0,191 TO
 0,0
80 HPLOT 2,11 TO 278,11
90 HPLOT 90,1 TO 90,10:XDRAW 1 AT 4,10:XDRAW 1 AT 34,1
0:XDRAW 1 AT 64,10
100 REM  ===DRAW TRIANGLE===
110 HCOLOR= 5:HPLOT 97,8 TO 99,8 TO 99,6
120 HCOLOR= 6:HPLOT 102,8 TO 104,8 TO 104,4 TO 102,4 T
O 102,8
130 HCOLOR= 5:HPLOT 107,6 TO 107,8
140 HPLOT 109,8:HPLOT 109,7:HPLOT 97,7
150 HCOLOR= 6:HPLOT 114,3 TO 114,4:HPLOT 114,7 TO 114,
8
160 REM  ===MOUNTAINS===
170 Q = 172:FOR P = 0 TO 276 STEP 2:AD = INT(RND(1) *
7) - 3:IF P > 22 AND P < 48 THEN QO = Q:GOTO 210
180 IF P > 154 AND P < 181 THEN QA = Q:GOTO 210
190 Q = Q + AD:IF Q < 156 THEN Q = Q + 2 * ABS(AD)
200 IF Q > 180 THEN Q = Q - 2 * ABS(AD)
210 IF P / 56 = INT(P / 56) THEN READ CC:HCOLOR= CC
220 HPLOT P,191 TO P,Q:HPLOT P + 1,191 TO P + 1,Q
230 NEXT P:POKE 4,QO:POKE 5,QA
240 HCOLOR= 5:FOR T = 20 TO 35:HPLOT 278,T TO 239,T:NE
XT T
250 HCOLOR= 4:FOR T = 23 TO 32:HPLOT 274,T TO 242,T:NE
XT T
260 XDRAW 4 AT 21,QO:XDRAW 4 AT 153,QA
270 XDRAW 1 AT 64,10
280 X = 247:Y = 19:XX = 259:QO = PEEK(4):QA = PEEK(5):
POKE -16368,0:SM = 3
290 REM  ===MOVEMENT ROUTINE===
300 GOTO 370
310 OX = X:OY = Y:X = X + XI:Y = Y + YI
320 REM  ===CHECK BOUNDARIES===
330 IF X < 7 THEN X = 7
340 IF X > 255 THEN X = 255
350 IF Y < 7 THEN Y = 7
360 XDRAW 1 AT OX,OY
370 XDRAW 1 AT X,Y
380 CO =  PEEK(234):IF CO <> 80 THEN 760
390 IF ZZ = 1 THEN 460
400  REM    ===RANDOM Y OFFSET FOR MISSILE===
410 YR = INT(RND(1) * 18) + 1:IF YR <= 5 THEN 410
420 IF INT(RND(1) * 2) = 1 THEN YR = -YR
430 YY = Y + YR:IF YY < 55 THEN YY = 55
440 IF YY > 156 THEN YY = 156
450 REM  ===MISSLE R-L & L-R===
460 IF ZZ = 1 THEN XDRAW SM AT MO,ME:GOTO 480
470 XX = (SM = 3) * 259:ZZ = 1
480 XDRAW SM AT XX,YY
490 CO = PEEK(234):IF SM = 3 AND CO <> 28 OR SM = 2 AN
D (CO < 24 OR CO > 25) THEN 890
500 MO = XX:ME = YY
510 XX = XX - SM * 40 + 100
520 IF XX < 1 OR XX > 240 THEN XDRAW SM AT 682 - SM *
221,YY:SM = 2 + (SM = 2):ZZ = 0
```

```
530 REM  ===READ KEYBOARD===
540 P =  PEEK(-16384):POKE -16368,0:IF P < 135 THEN 31
0
550 IF P = 149 THEN XI = 4:YI = 0:V = 1
560 IF P = 136 THEN XI = -4:YI = 0:V = -1
570 IF P = 193 THEN XI = 0:YI = -4:V = -2
580 IF P = 218 THEN XI = 0:YI = 4:V = 2
590 IF P = 155 THEN GET A$
600 IF P <> 160 THEN 310
610 XI = 0:YI = 0
620 REM  ===DROPPING OFF BOX?===
630  IF Y > 19 OR X < 235 THEN 310
640  IF BO = 0 AND BA = 0 THEN 310
650 IF BO = 1 THEN XDRAW 4 AT 237,32:BO = 2
660 IF BA = 1 THEN XDRAW 4 AT 253,32:BA = 2
670 IF (BA <> 2 OR PEEK(3) <> 2) AND (BO <> 2 OR PEEK(
2) <> 2) AND (BA <> 2 OR BO <> 2) THEN 310
680 REM  ===MAKE BARS===
690 BR = PEEK(1) + 1:IF BR = 10 THEN 1110
700 HCOLOR= 5 + (BR / 2 <> INT(BR / 2))
710 T = BR * 9 + 111:HPLOT T,2 TO T,9 TO T + 2,9 TO T
+ 2,2
720 POKE 1,BR
730 XDRAW 4 AT 237,32:XDRAW 4 AT 253,32:XDRAW 4 AT 21,
QO:XDRAW 4 AT 153,QA
740 BA = 0:BO = 0:POKE 2,0:POKE 3,0
750 GOTO 310
760 REM  ===COLLISION ROUTINE===
770 OX = X:OY = Y:XI = 0:YI = 0
780 IF Y > 43 THEN 820
790 IF ABS(V) = 1 THEN X = X - (V * 2)
800 IF ABS(V) = 2 THEN Y = Y - (V * 2)
810 GOTO 360
820 REM  ===PICKING UP BOX?===
830 IF BO = 1 THEN 850
840 IF X >= 19 AND X <= 23 AND Y > QO - 10 THEN XDRAW
4 AT 21,QO:BO = 1:GOTO 390
850 IF BA = 1 THEN 920
860 IF X >= 151 AND X <= 155 AND Y > QA - 8 THEN XDRAW
 4 AT 153,QA:BA = 1:GOTO 390
870 GOTO 920
880 REM  ===ENDING ROUTINES===
890 XDRAW 1 AT X,Y:XDRAW SM AT XX,YY
900 XDRAW 5 AT X,Y
910 GOTO 930
920 XDRAW 1 AT X,Y:XDRAW SM AT MO,ME:XDRAW 5 AT X,Y
930 FOR J = 1 TO 1000:NEXT J
940 REM  ===SHIP'S CRASHED===
950 IF BA = 2 THEN POKE 2,BA
960 IF BO = 2 THEN POKE 3,BO
970 IF BA = 1 THEN XDRAW 4 AT 153,QA
980 IF BO = 1 THEN XDRAW 4 AT 21,QO
990 WS = PEEK(0)
1000 IF WS = 1 THEN WS = 2:XDRAW 1 AT 4,10:GOTO 1030
1010 IF WS = 2 THEN 1040
1020 WS = 1:XDRAW 1 AT 34,10
1030 XDRAW 5 AT X,Y:POKE 0,WS:POKE 1,BR:POKE 4,QO:POKE
 5,QA:CLEAR:GOTO 280
1040 HOME:TEXT
1050 VTAB 10:HTAB 3
1060 PRINT "DO YOU WANT TO TRY AGAIN? (Y/N)";:GET A$
1070 IF A$ = "Y" OR A$ = "y" THEN CLEAR:GOTO 10
1080 IF A$ <> "N" AND A$ <> "n" THEN 1050
1090 HOME:END
1100 REM  ===FINAL DISPLAY===
1110 HGR:HCOLOR= 5:POKE -16302,0
1120 TX = 0:TY = 0:TP = 278:TT = 0
1130 TK = 278:TJ = 191:TH = 0:TF = 191
1140 HY = HY + 1:IF HY = 4 THEN HY = 5
1150 IF HY = 8 THEN HY = 0:GOTO 1140
1160 HCOLOR= HY
1170 HPLOT TX,TY TO TP,TT TO TK,TJ TO TH,TF TO TX,TY
1180 TX = TX + 2:TY = TY + 2:TP = TP - 2:TT = TT + 2
1190 TK = TK - 2:TJ = TJ - 2:TH = TH + 2:TF = TF - 2
1200 IF TX <> 192 THEN 1140
1210 FOR J = 1 TO 800:NEXT J
1220 HOME:TEXT:VTAB 11:HTAB 2
1230 PRINT "CONGRATULATIONS! YOU GOT 10 BARS!"
1240 VTAB 15:HTAB 2
1250 PRINT "DO YOU WANT TO PLAY AGAIN? (Y/N)";:GET A$
1260 IF A$ = "Y" OR A$ = "y" THEN CLEAR:GOTO 10
1270 IF A$ <> "N" AND A$ <> "n" THEN 1240
1280 HOME:END
2000 DATA 1,2,6,5,7
```

k

STEVE HOROWITZ, *16, worked all last summer as a consultant for a software development company. He divides his spare time between programming and playing hockey in Westport, Connecticut.*

. . . AND DON'T FORGET THE SHAPE TABLES!

Line 10 of *Star Reach* loads an Apple shape table from your disk into memory. To create this table, enter the Apple's built-in monitor, type the shape-table values directly into the computer's memory, then store them onto your program disk. Here's how.

First, type `CALL -151`. This puts you into the monitor. You can tell 'cause you get an * prompt instead of the regular] or >.

Then type the first memory location you'll be storing into (60E0), a colon, and the eight values shown below on the line beginning with 60E0 (make sure you put spaces between the values, just the way I have). Press RETURN. Continue by typing `60E8: A3 00 DC 00 49 49 49 09 <RETURN>`

and so on until you've entered the last line (the one starting with 6230). If you make a mistake, go back and retype the line. Check your work by typing the first memory location (60E0) and pressing RETURN over and over to display all the values you've entered.

When you're done, type 3D0G to return to BASIC. Then type

```
BSAVE SHAPES,A$60E0,L$152
```

This'll save the shape table directly onto your disk, ready to be used when you RUN *Star Reach*.

—S.H.

```
60E0- 05 C1 0C 00 60 00 82 00
60E8- A3 00 DC 00 49 49 49 09
60F0- 2D 0C 0C 0C 0C 0C 3C 38
60F8- 3F 3F 3F 3F F7 AE 15 15
6100- 15 0D 0C 1F 1C 0D 0D 0C
6108- 1F 1F 1F 1C 0D 0D 0D 0D
6110- 5C FB 1F 1F DD 2B 0D 0D
6118- 0D 0D 0D AF 2A 2D 0E 3F
6120- 3F FF DB DB 0B D8 3B 3F
6128- 1E 2D 2D FD DB 32 0D 6C
6130- 49 49 49 49 49 31 1F F4
6138- 9B DB DB DB DB DB 1B 00
6140- 49 49 08 58 49 09 18 08
6148- 58 49 49 09 18 1C 36 27
6150- 3C 36 27 3C 36 27 24 3F
6158- 96 2A F5 D3 D3 D3 DB DB
6160- DB 00 48 09 08 18 08 18
6168- 08 0D 18 36 25 2C 36 25
6170- 2C 36 25 2C 36 2E 25 08
6178- 18 38 B7 92 92 DB DB DB
6180- DB DB 00 49 09 08 58 49
6188- 0D FC 6C 0C 18 1F 6C FC
6190- 4D 59 B1 30 0D 24 96 DA
6198- 36 0D 24 DE 93 27 08 18
61A0- 08 18 08 18 28 4D 91 32
61A8- 5F 0A 1F 48 DF DB DB 30
61B0- 66 4D 49 F1 9B D2 9B DB
61B8- DB DB 03 00 49 09 08 D8
61C0- 12 FC 24 20 98 23 60 09
61C8- 18 4C 68 19 0D 68 AA 0A
61D0- 8E 17 48 16 16 30 FE BA
61D8- FB 1F 24 10 1F 68 6B 88
61E0- 12 0C 98 2B 48 12 24 20
61E8- 20 FC 08 18 B0 36 17 B8
61F0- 6E FE DB 0B 18 20 6C 08
61F8- 18 36 35 0E D8 32 D6 9B
6200- 13 0D D8 68 49 49 49 C9
6208- 0C 18 20 DF DB DB D2 9B
6210- 92 08 18 08 18 68 49 49
6218- 49 09 18 08 D8 1B 18 6F
6220- 92 92 12 18 4D 09 08 D8
6228- 1F 4C DE 92 9B DA DB DB
6230- DB 00
*
```

Computer Graphics: Lauretta Jones

Got a game program that'll fry our eyeballs? An idea for one, maybe? How about a graphic simulation of the "Big Bang" . . . with sound?! Well, if you've got a better program, or you're working on one, get it together and let us take a peek. We need the excitement.

Show us the best game you can design and if we think it's as good as you do, maybe we'll give you an Apple IIe, complete with everything. Or a modem. Or cash. Maybe some software. Or even some of that stuff we keep in our computer closet (you'll have to win to find out what it is).

To win, send us a copy of your game on a disk or cassette (it can be in any computer language, by the way). And a listing or a printout. The whole game should be no longer than 300 program lines.

It'd be great if you could send us a sketch of what your game looks like (a photo of the screen would be even better). Don't forget instructions (so the less intelligent among us can figure out how to play it), a short explanation of its theme and concept, and its title.

The computer crew and editorial staff of K-POWER will be judging your submissions. We'll be looking for games that are original, well-programmed, exciting, good-looking, and just plain fun. So, go ahead! Make our day! Try to win K-POWER's first annual game-design contest. **k**

PRIZES:

GRAND PRIZE—An Apple IIe with 64K! System includes computer, tilt-screen green phosporus monitor, disk drive with controller, 80-column card, and a pair of game controllers.

SECOND PRIZE—A phone modem for your computer—AND—a conversation, via modem, with a top game designer.

THIRD PRIZE—$100 worth of computer software.

ALSO—If we publish your program, you'll win $100.

RULES:

1. All entries must be received by K-POWER by August 31, 1984, to be eligible.
2. Send all entries to: K-POWER's Annual Game-Design Contest, c/o Scholastic, 730 Broadway, New York, NY 10003.
3. Any material sent to K-POWER will not be returned unless accompanied by a self-addressed envelope with sufficient postage.
4. Submission of printout or listing grants permission to publish game in K-POWER (for which we'll pay you $100 whether you win another prize or not).
5. Void where prohibited.

COLECO'S ADAM:

A HANDS-ON REVIEW

BY ROBIN RASKIN

What does a toy company know about making computers? A lot, if Coleco's innovative new machine, ADAM, is any indication. Besides being the first reasonably priced, all-in-one package home computer system, ADAM is the first home machine to:

- Use digital data packs instead of audio tape or floppy disks;
- Offer a letter-quality printer as part of the package;
- Have the personality of a word processor rather than a programmable computer on power-up.

Even though ADAM came into the computer market with lots of bad press and many technical problems, it's basically a good system at a really low price.

For about $750 you'll get a memory console with the digital data pack mechanism and the ColecoVision cartridge slot, two joysticks with numeric keypads, 80K of memory, a keyboard, and to top it all off, a daisy-wheel printer. But, as my wise father repeatedly warns me, "There's no such thing as a bargain!" So, let's pick apart an ADAM, rib by rib, and see how it fares.

With ADAM, you can say bye bye typewriter. Turn it on and you're instantly in electric typewriter mode. Press the ESC/WP button and ADAM becomes a word processor. There's nothing to load; it's all built in. With the word processor, *SmartWRITER*, loaded into memory, you've got about 32K of memory left. That's about 18 pages of double-spaced text—enough for most homework uses.

SmartWRITER's a cinch to use. Six HELP messages appear on the bottom of the screen corresponding to the six SmartKEYS at the top of ADAM's keyboard. They're all you'll need to control most word-processing options, including text moves, prints, saves, and margin settings. All other word-processing keys are separate from the rest of the keyboard. *SmartWRITER* doesn't make you memorize a unique set of commands.

ADAM'S APPLESOFT:

ADAM's SmartBASIC is modeled after Applesoft BASIC. You'll be able to type in most programs with only slight modifications. I liked its easy-to-use, excellent high-resolution graphic capabilities (16 colors, 256 × 192 maximum resolution). I've been told ADAM has a three-voice, five-octave sound range, but these aren't readily available to the user programming in SmartBASIC.

Coleco's digital data pack looks just like an audio cassette tape but acts differently, and can store 256K. The data pack is faster than the audio cassette. It automatically fast forwards and rewinds rapidly to disk files. You won't have the same kind of trouble loading programs as you might with standard cassette-based computers. It's a lot less expensive than the floppy disk—

Photo: Stephen Shames

What you see is what you get, for about $750.

a good price/performance tradeoff although inserting and removing the digital data pack was sometimes awkward.

PRINTER:

One of ADAM's brightest features is its high-print quality daisy-wheel printer. Similar printers would cost about $300. At 120 words per minute, it takes about four or five minutes per page. That's a lot faster than most typists but much slower than most daisy-wheel printers.

Letter-quality printers are extremely loud in general. But ADAM's is so loud, you might get your neighbors pounding on your door! Also, for some strange reason, the printer houses the computer's main power supply. If your printer goes haywire, your computer is out for the duration!

CHASSIS & KEYBOARD:

ADAM's big appeal is its port for ColecoVision cartridges. The chassis houses two system-reset buttons, one for the ADAM's computer and one for ColecoVision cartridges. The ADAM keyboard combines efficient design and excellent performance. It's easy to use, and is as responsive as many of the higher-priced keyboards I'm used to. It's connected to the main chassis with a long coil so you can use it in the position most comfortable for you.

Although the documentation for the word processor is well written, easy to use, and quite complete, SmartBASIC's documentation is poor. Coleco should start over from scratch. Fortunately, the SmartBASIC manual has undergone thorough, page-by-page revision with errors cleared up and an index added.

ON THE WAY:

ADAM is new, and there are many kinks that must be worked out. Loads of entertainment and education software have been promised from hot companies like Electronic Arts, Synapse, Infocom, and Activision. At January's Consumer Electronics Show in Vegas, Coleco introduced a new disk drive, modem (300-or 1200-Baud direct-connect), and 64K memory expander among others. Signs like these bode well for ADAM's success. **k**

ROBIN RASKIN *likes climbing mountains almost as much as digging into the innards of a new computer.*

FOR HACKERS ONLY

ADAM's really two computers in one—a Z80 with 64K RAM and a traditional ColecoVision game machine with 16K RAM. It's sort of a strange combo because only one computer's available at a time. You can't play games while someone enters a term paper. And you can't access the superb ColecoVision sound and graphics while programming with SmartBASIC.

The architecture of ADAM's Z80-microprocessor chip makes it suitable for advanced programming languages such as C, Pascal, FORTRAN, PL/I, COBOL, or LISP. Already, Coleco has announced production of a personal CP/M operating system developed jointly with Digital Research. This sets ADAM apart from other machines, like the Apple and the VIC, that are based on the 6502 microprocessor—a simple and powerful chip, but a poor host for compiled programming languages.

Most manufacturers build BASIC into personal computers. ADAM doesn't count on BASIC to create the essential personality of the machine. It touts its built-in typewriter instead. The idea is that millions of people want to use, not program, microcomputers. ADAM is the first home computer that is more useable than programmable.

ADAM's digital data pack (DDP) is organized a lot like a floppy disk. ADAM loads files after consulting the directory that lists the tape's contents. Automatic fast forward and fast rewind make it much quicker and easier to use than a cassette tape. It took ADAM one minute and nine seconds to save a one-line BASIC program. That same program took 37 seconds to load and just five seconds to delete. These times are slow by many standards (wouldn't it be nice if everyone had a Winchester disk?).

Coleco's DDP is the computer's primary technical innovation. Its best-known forerunner is probably the DECtape developed at MIT's Lincoln Laboratories in the mid-60s, and used extensively on DEC's PDP-8 computers. The current equivalent is DECtape-II, sometimes used on inexpensive LSI-1 computers, also from DEC.

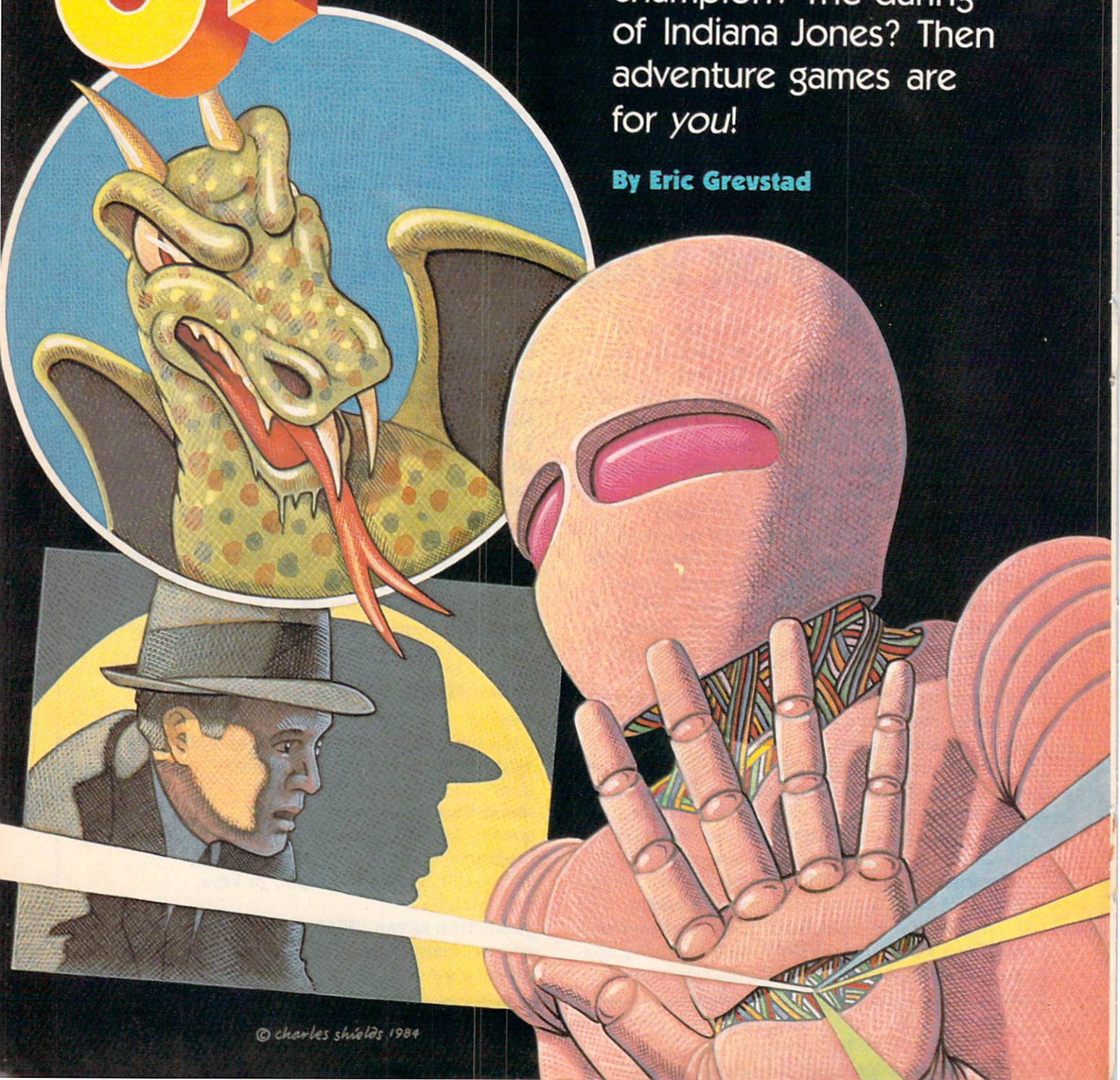
VITAL STATS:

MEMORY: 80K (will be expandable to 144K)
USER MEMORY AVAILABLE IN BASIC: 26K
TEXT DISPLAY: 31 char × 24 lines;
GRAPHICS: 16 colors, 256 × 192 (maximum resolution)
SOUND: 3 voices, 5-octave range (for packaged programs)
KEYBOARD: Typewriter style, 75 keys, 6 SmartKEYS
SUGGESTED RETAIL: $750, includes letter-quality printer, main chassis, keyboard, 2 joysticks with numeric keypads. —R.R.

SPELLBOUND!

Do you have the logic of a crossword-puzzle champion? The daring of Indiana Jones? Then adventure games are for *you*!

By Eric Grevstad



If your parents only knew what kinds of computer games you're playing these days, they probably wouldn't believe it.

"Adventure games? You mean you *read* them?" they'd ask.

"No explosions? No *wacka-wacka* munching sounds?" they'd ask.

"And you have to *type* to play them?" they'd ask.

Yes, your parents are certainly in for a few surprises.

What's even more shocking is that adventure games are elbowing arcade clones right off the best-seller lists. In fact, some people have even gone so far as to call the text-adventure game company Infocom the "Beatles of computer games" because it's consistently on top of the sales charts.

To understand the appeal of adventures, you have to go beyond joysticks and shoot-'em-ups. Most popular adventure games are like interactive novels in which *you're* the main character and *you* decide what to do on every page. You decide whether to open the door or look for a window, to fight or make friends with the bad guys. There are hundreds of moves—and hundreds of mistakes—you can make, but with the logic of a crossword-puzzle champion and the daring of Indiana Jones, you'll be able to reach the happy ending.

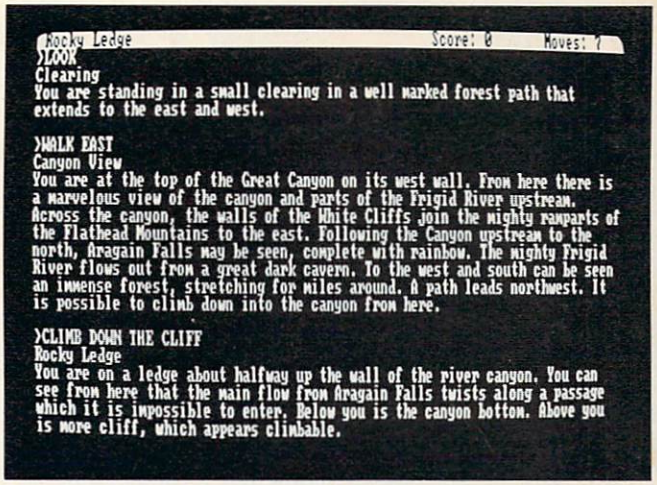
Canny Commands

To be a good adventurer, you have to communicate with your computer. You talk to an adventure game by typing commands and pressing ENTER or RETURN. You don't need to move a joystick or press the fire button. If the words you use are in the program's vocabulary, you'll get results. (Failure and death, incidentally, count as results.)

For instance, a typical adventure might tell you, "You are at the front door of a castle." Typing OPEN DOOR (or EXAMINE DOOR) might bring the response "The door is locked." Your challenge then is to find a way around that obstacle—BREAK DOOR? KNOCK ON DOOR? Try INVENTORY; maybe you're carrying a key (UNLOCK DOOR?) or an ax (CHOP DOOR?).

On the other hand, the program said, "You are at the *front* door." *Real* adventurers know to read between the lines. Maybe you should GO AROUND CASTLE and look for a back door. Or do you want to enter the castle at all? Maybe it's full of treasure. Or, maybe it's full of guards who slaughter unwelcome visitors.

Either way, you're probably starting to see the possibilities—and to see why most adventures hold players spellbound for 30 to 40 hours before the last puzzle's solved. If it weren't possible to save games on disk or tape and pick up where you left off, adventurers might never get any food or sleep.



Zork I: The Great Underground Empire

Up from Dungeons

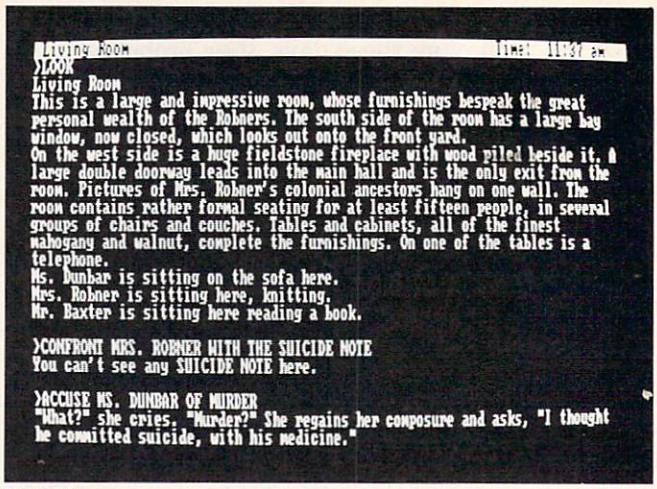
The idea of exploring a strange and dangerous world, and learning its rules along the way, goes back to the role-playing game Dungeons & Dragons. In D&D, players challenge a combined author and referee, known as the dungeon master—"All right, you drew your sword and killed the troll;" "Sorry, you've got the chest but you can't open it." The first computer adventurers were Will Crowther and Don Woods of Stanford University, who wrote a D&D–style game called *Colossal Caves* on a DEC PDP-11 minicomputer in the mid-'70s.

Colossal Caves soon became known generically as *Adventure*. By 1978, Scott Adams of Orlando, Florida, had used the word for the first in a series of TRS-80 microcomputer games. Today available for other computers and spruced up with graphics, Adams' programs are still entertaining micro owners and CompuServe subscribers—as is the original *Adventure*, a classic despite its text-only format and simple two-word commands.

Words, Pictures, Addiction

Adventures are getting more sophisticated every day. Infocom, a Cambridge, Massachusetts, firm staffed by MIT programming experts, has defended the text-adventure tradition since its legendary *Zork I* came out in 1978. Its more recent games, such as the mystery thriller *Deadline* and the sci-fi epic *Suspended*, have been acclaimed by such authorities as *The New York Times Book Review*.

The Dark Crystal



Deadline

Text programmers pride themselves on huge vocabularies and games that understand complex sentences. Other adventure authors, including Sierra On-Line's Roberta and Ken Williams (*Time Zone, The Dark Crystal*), like short descriptions and high-resolution screen displays of each room or location on an adventure's map. Whether text- or graphics-oriented, all adventures have the same appeal: a labyrinth full of novel places, perils, and puzzles to be conquered, and rewards far beyond the final rescue of the princess or solving of the murder.

Those rewards—ad-libbing your way through a hundred tricky situations, knowing you've unraveled a master programmer's most diabolical riddles—make adventures more than mere games. **k**

ERIC GREVSTAD *is news editor of* 80 Micro, *a TRS-80 users' magazine.*

The Adventure BASICs

Adventures rely a lot on logic and on cause and effect—what happens next, what happens if you do this instead of that, and so on. Some of the commercial adventures out there fill up to six disks of complex programming, but you can write a simple one with only a few lines of BASIC.

The following is no *Colossal Caves*, but it uses only three statements—PRINT, to show information on the computer screen; INPUT, to accept instructions from the keyboard; and IF . . . GOTO lines, branching to different displays depending on input.

```
10 PRINT"You are in a meadow."
20 PRINT"There is a swamp to the east
and a castle to the west."
30 PRINT"Which way should you go?"
40 INPUT A$
50 IF A$="East" GOTO 80
60 IF A$="West" GOTO 90
70 GOTO 30
80 PRINT "You fall into quicksand and
drown!":END
90 PRINT "You reach the castle, defeat
the tyrant, rescue the king, and win
treasure!":END
```

Lines 10 and 20 describe your situation, line 30 asks for your command, and line 40 waits for it. The program's vocabulary is limited to two answers; if your command matches one of them, line 50 or 60 will jump to the appropriate display. Line 70 is an error-trapping routine; it'll repeat line 30's question until you enter one of the two valid responses.

Of course, this is about the smallest adventure possible—a single fork in the road, an upside-down "Y" on a flowchart. BASIC will let you write more sophisticated programs, with more GOTO's for more forks in the road (four choices instead of two—for instance, NORTH and SOUTH as well as EAST and WEST). GOSUB, the round-trip equivalent of GOTO's one-way ticket, lets you branch to a whole scene or adventure within the adventure, and then return to the main path. At the very least, you can follow most commercial programs and write an adventure that understands the abbreviations E and W for EAST and WEST.

Most of all, line 90 is just too skimpy. What about the dragon, the moat, and the wizard?

—E.G.

IT'S SHOWTIME!

Two K-NET reporters capture the hype and hoopla of the Las Vegas Consumer Electronics Show. They tell it like it is!

By Steven & Daniel Horowitz

Each year in January, to ward off mid-winter blues, electronics manufacturers, retailers, and the press fly off to lovely Las Vegas, Nevada.

This meeting of minds is called the Consumer Electronics Show (CES), and the general public isn't invited. Manufacturers tout new and under development products to retailers who're shopping for new stuff for their stores.

K-POWER sent K-NET reporters Steven (16) and Daniel (14) Horowitz to take a look-see at computer products, and to describe the hype and hoopla. Steve and Daniel had to wade their way through tons of other consumer electronics, like telephone, audio, stereo, and other equipment, to bring back this report of what was hot in the computer arena.

Daniel: The Consumer Electronics Show is like an electronic carnival for executives. On opening day I rode a crowded bus to the convention area. Most of the people on the bus were men wearing dark three-piece suits. Almost all of them had moustaches, and it was hard to tell one from the other.

Inside the enormous convention hall were thousands of visitors (about 90,000 to be more precise) from around the world. I looked at the hall from the entrance and knew immediately that this was going to be one of the greatest experiences of my life. I felt like I was entering electronic wonderland. Music blasted, lights flashed, and every exhibit looked like a color kaleidoscope. The whole thing was mind-blowing!

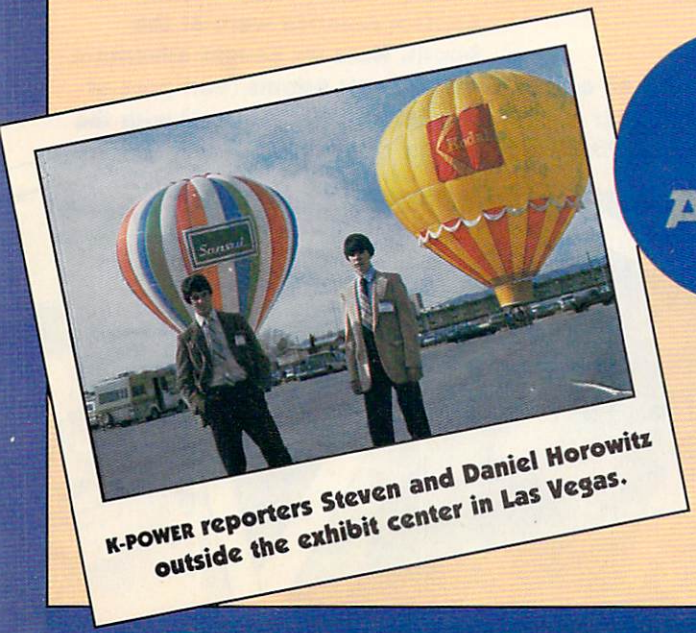
There were many booths (maybe too many). Most of the booths were super, and each one tried to outdo the others. The name of the game was "big;" each major manufacturer tried to be the "biggest" and the "best." The Coleco ADAM booth, which was my favorite, had a "show" every half hour which could have been called "The Birth of ADAM."

Steven: When I caught my first glimpse of CES, I couldn't believe my eyes. The whole thing was incredible! All around were hundreds of booths designed to attract attention.

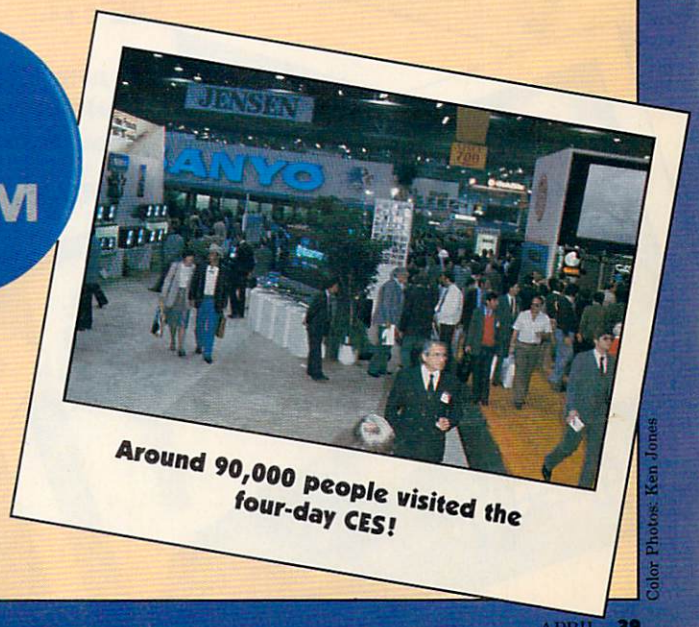
Companies (like HesWare) used celebrities like Leonard Nimoy and Minnesota Fats as a drawing card. (Leonard is HesWare's spokesperson. The *Minnesota Fats' Pool Challenge* is a new HesWare C 64 game.)

I thought the most innovative piece of new software came from Apple's booth (the company's first time at the CES). It was Bill Budge's *Mouse Paint*, which is an Apple II program that uses the window technique. →

STEVEN *and* DANIEL HOROWITZ *are computer lovers who live in Westport, Connecticut.*



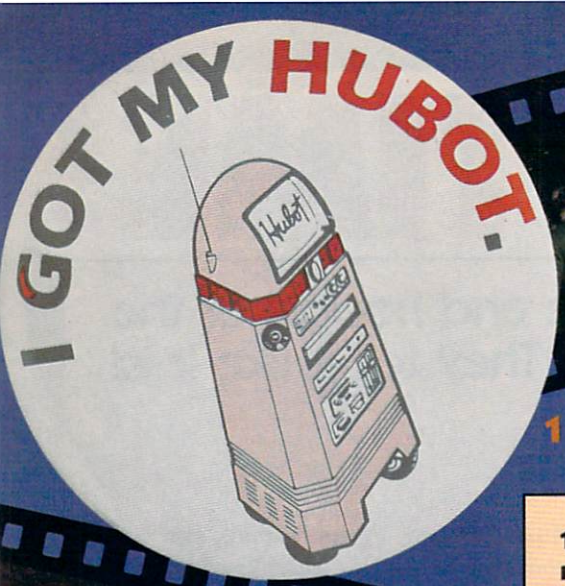
K-POWER reporters Steven and Daniel Horowitz outside the exhibit center in Las Vegas.

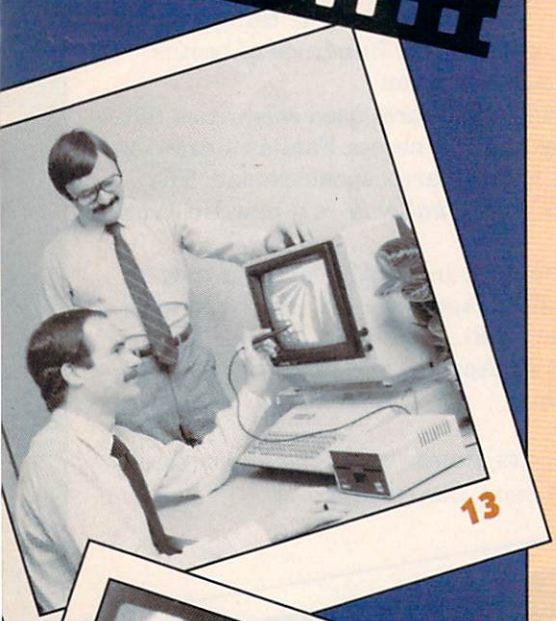


Around 90,000 people visited the four-day CES!

Color Photos: Ken Jones

I GOT MY HUBOT.





1. We saw Hubot. It's a home robot with a built-in TV from a new company called Hubotics. Nolan Bushnell (in the middle with the beard) of Atari, *Pong*, Chuck E. Cheese Pizza Time Theater fame, was hanging around the Hubotics booth. He's president of the robot company called Androbot and looked to be checking out the competition.

2. A big gorilla was a major attraction at the jungle-inspired Leading Edge booth. We put on safari hats to have our pictures taken. Luckily, that photo didn't turn out.

3. The Commodore booth was always packed with people trying to take a look at the new 264 and 364 computers. The computers looked good, but they're not going to make everyone happy because they don't have the sprites or the music capabilities of the C 64.

4. Activision was showing all of its Atari VCS and home computer games, along with the new *Pitfall II*. We met designers David Crane (*Decathlon* and *Pitfall*) and Al Miller (*Robotank*) at the booth.

5. SubLogic had a new game for Atari, Commodore, and Apple by designer Bruce Artwick: *Flight Simulator II*. We watched the demo and it looked exactly like *Microsoft Flight Simulator* for the IBM. It should be great!

6. Yu-Can software was at the show giving away great-looking pins.

7. We were too excited to relax, but the Synapse Stress Reduction System still looked pretty good to us. It's a biofeedback system, *relax*, that hooks up to your computer.

8. Adventure International announced its licensing team-up with Marvel Comics. Spiderman, Spiderwoman, The Hulk, and Captain America were at the booth. Here we caught adventure writer Scott Adams (and prez of Adventure International) with the Spider duo.

Color Photos: Ken Jones

4

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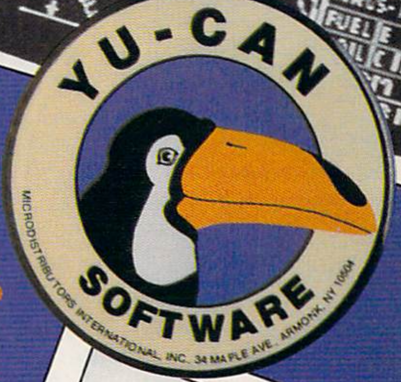


6

9. We took a crack at using the new Alphacom 81 80-column thermal printer. (For use with Commodore, Atari, Apple, and TI.) We printed out a Mickey Mouse and were duly impressed with the printer's capabilities (and low price)!

10. Eric Podietz and Guy Nouri (partners at Interactive Picture Systems) were roaming the show. They're the creators of the innovative *Movie Maker* published by Reston Computer Corp. It's a GREAT animation program for the Atari.

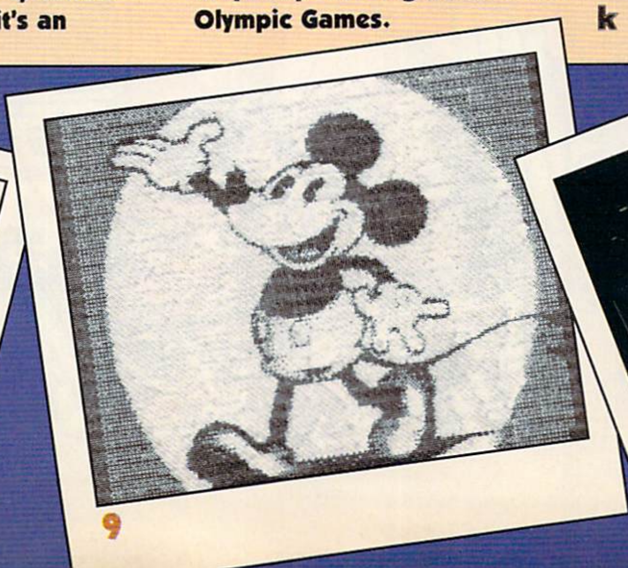
11. The outside of Electronic Arts' booth sported a giant picture of Larry Bird and Dr. J to hype their *One-on-One* game. E.A. also was showing a new Atari game called the *Seven Cities of Gold* which has 3-D graphics and involves exploring and discovering the new world. Looks like it has excellent potential.

12. Sierra On-Line introduced a new game for the IBM PC, called *King's Quest*. We think it's an amazing breakthrough in computer adventures because of its 3-D effects. Instead of just typing commands, you control your figure with the joystick. The man can swim, walk, run, and hide behind trees, and also bow to the king. We met designers Roberta and Ken Williams there.

13. Steven Gibson, an ex-Atari designer, joined Koala Technologies at CES to demo his new light pen. (Called the Gibson Light Pen, appropriately enough.) The pen was rumored to be pretty expensive but looked great. You could even do limited animation with it.

14. Some big booths had two stories with stairs leading to the second level. Atari had a gigantic and very busy booth. In it were their home computer games like *Mario Bros.*, *Crystal Caverns*, *Joust*, and *Moon Patrol*. Atari also introduced a light pen for their home computer at the show. And, they're sponsoring the Summer Olympic Games. k

7



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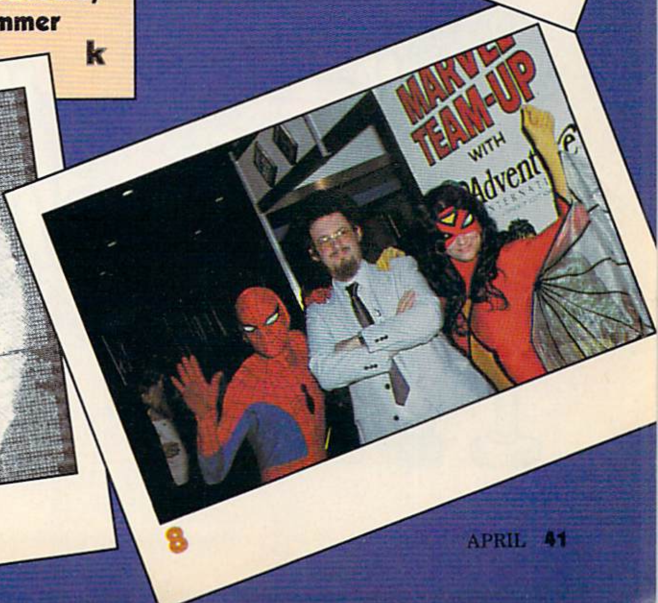


8

THE 1984 CUSTOM COMPUTER SHOW

K-POWER is proud to bring you an EXCLUSIVE—the winners of the Fur Hat, Minnesota, Custom Computer Show!

By Ken Weiner

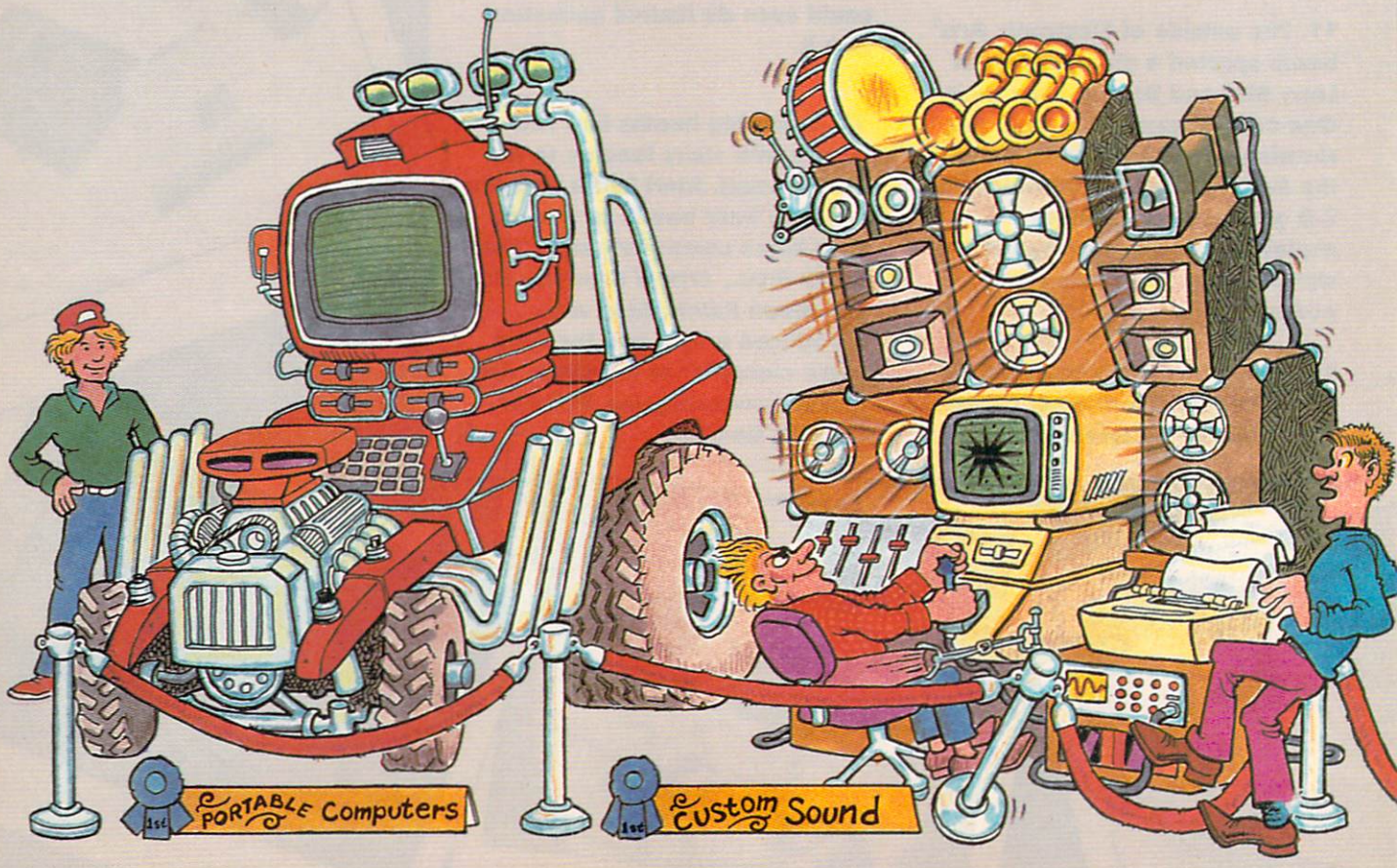
You've heard of custom cars, custom vans, and custom stereos, but did you know about *custom computers*? Not content with ordinary mass-produced computers, many imaginative hackers spend all their spare time soldering, welding, painting, and polishing in their basement workshops. From their sweat and toil, computers with individuality and imagination are born.

Every year, computer customizers from all over the U.S. gather in Fur Hat, Minnesota, to compare notes, swap components, and compete for prizes. K-POWER visited the Fifth Annual Custom Computer Show, and we are proud to introduce the top finalists to our readers.

FIRST PRIZE, PORTABLE COMPUTER DIVISION

Bill Fractal's Four-Wheel-Disk-Drive-Computer-Jeep

When Bill goes off on a three-day jaunt to his mountain hideaway in Pokerface Ridge, Virginia, he doesn't bother packing his personal computer into his jeep. His personal computer *is* his jeep! This baby is built rugged and reliable, with four disk drives, and a souped-up mainframe welded to the jeep's subframe. There's also a fuel-injected, turbocharged V-8 under the keyboard. This computer has horsepower and memory to spare! Bill added a thermal printer for those cold nights in the mountains.



FIRST PRIZE, SOUND SYSTEMS DIVISION

Fred Bitsby's Masterblaster

For those who want more realism in computer games, sound systems are very important. Nothing is more disappointing than blowing up an alien spaceship and then hearing the pathetic little sound effects most computers have. Fred's Masterblaster takes the sounds from his ADAM computer and juices them up with synthesizers, feeds them through 1,000-watt amplifiers, and blasts the noise over 12 humongous loudspeakers. When Fred blasts an alien invader, the windows rattle, the floor shakes, and the neighbors call the cops!

FIRST PRIZE, ROBOT DIVISION

Eric Pixel's custom-built robot, Herman II

Herman II became an early favorite in the robot competition when he cooked an eight-course dinner for the judges. Everyone agreed that Herman II deserved first prize when he tap-danced and sang "New York, New York." Although Herman II is content to live and work for the Pixel family in Paramus, New Jersey, he has a secret ambition: "I want to be an actor. I have written several letters to Steven Spielberg. He told me he would keep me in mind for the next *Star Wars* movie, if there is one."

Eric told us that Herman II was a big improvement over Herman I. "Herman I stole the family car and Dad's credit cards," Eric said, "and we never saw him again."

FIRST PRIZE, BODY AND PAINT DIVISION

Billy Pascal's Dungeons and Dragons

If you're a Dungeons and Dragons fanatic, you'll flip your helmet over *this* cabinet! We asked Billy where he got the inspiration for his masterpiece. "I've played all the sword and sorcery software there is. I've even written a few games, too. When you're as devoted to it as I am, it's only natural to want to play in the proper environment. So I built a cabinet that's an exact stone-by-stone replica of a 12th-century Gothic castle. Then I built a dragon that breathes real fire, and an authentic suit of armor. Even my trusty steed is a purebred stallion, whose lineage can be tracked back to the days of King Arthur. The only detail I cheated on was the princess. She's my kid sister."

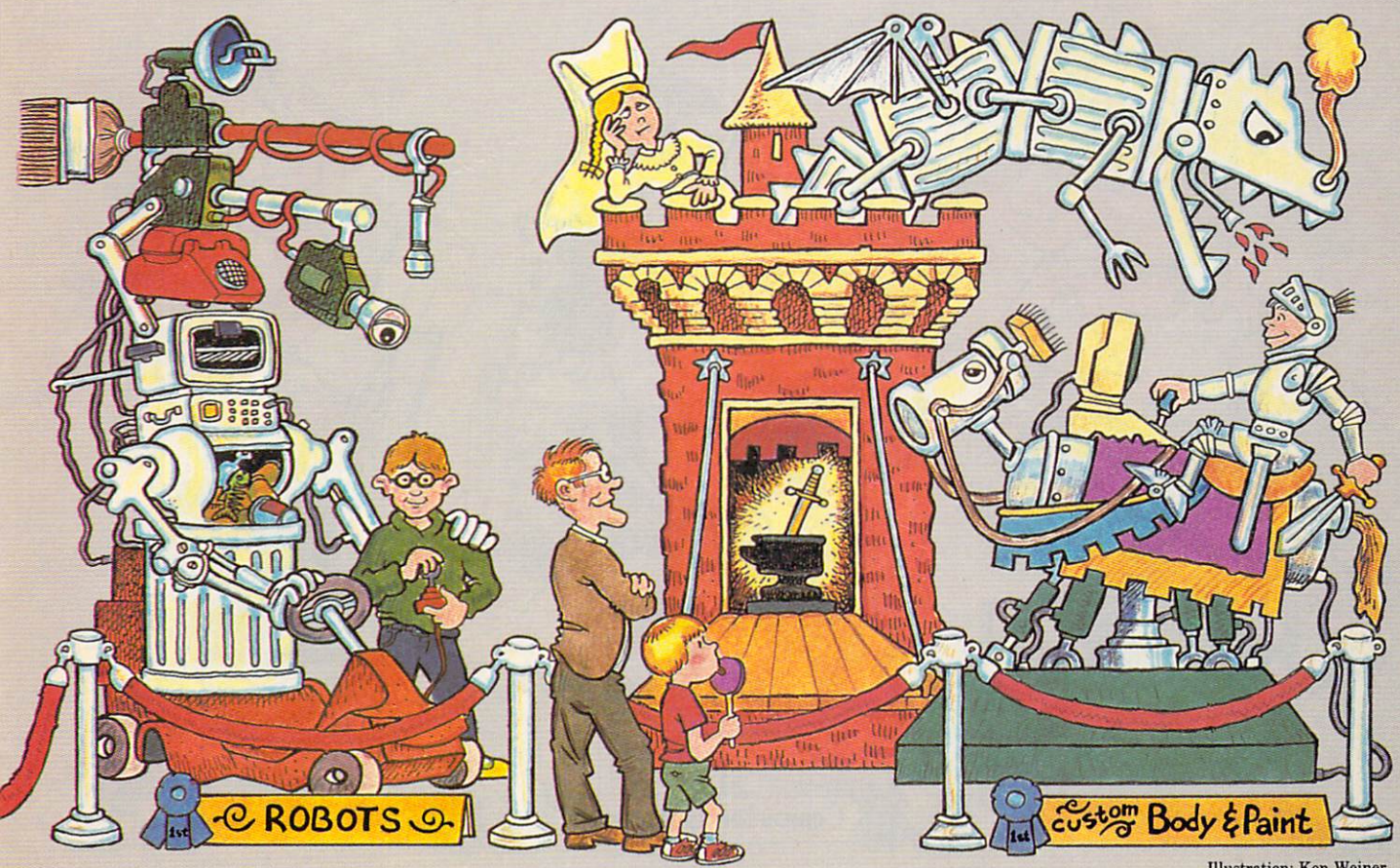


Illustration: Ken Weiner

FIRST PRIZE, SPORTS DIVISION

Bob Bargraph's Surf-Computer

Bob Bargraph is a world champion surfer who rides the toughest waves in the world. He invented the Surf-Computer (which is a video camera, water modem, special monitor, and microcomputer mounted on a surfboard) to help him find the perfect wave.

Bob explained to K-POWER why he invented the Surf-Computer: "When you're catching a 30-foot monster wave at Waikiki, one little mistake can mean surfer soufflé for the sharks. The Surf-Computer picks out the perfect wave, charts the course, and advises the surfer when to 'hang ten,' 'shoot the tube,' or 'wipe out.' The only drawback of the Surf-Computer is the long extension cord I have to use."

HONORABLE MENTION, SPORTS DIVISION

Stephanie Univac's Ski-Machine

The Ski-Machine is the most advanced homemade computer simulation we've ever seen. The player wears a pair of special electronic skis and watches a computer-graphics simulation of a very challenging ski trail. Special hydraulic motors built into the skis simulate actual skiing trouble spots, like ski jumps, ice patches, hidden rocks, out-of-control ski novices, long lines at ski lifts, and even *trees*.

Stephanie suggests that only experienced skiers take up the challenge of the Ski-Machine. However, for those who don't measure up to the challenge, there's a built-in first-aid program for sprained ankles and broken legs.

FIRST PRIZE, COMPUTER GRAPHICS DIVISION

Vincent Van Logo's Compu-Artist

This custom computer is a real departure from the ordinary graphics systems around these days. Compu-Artist creates works of art directly on canvas with real oil paint! You can draw an original masterpiece with the keyboard, a joystick, or a touch-tablet attachment. The computer also can scan famous masterpieces, like the *Mona Lisa*, and reproduce them brush stroke for brush stroke. Unfortunately, Vincent couldn't demonstrate the Compu-Artist for us. He's serving five to 10 years in jail for art forgery. k

KEN WEINER's *comic strips and cartoons have been published in* Video Games, Stop!, *and* Wacky World.

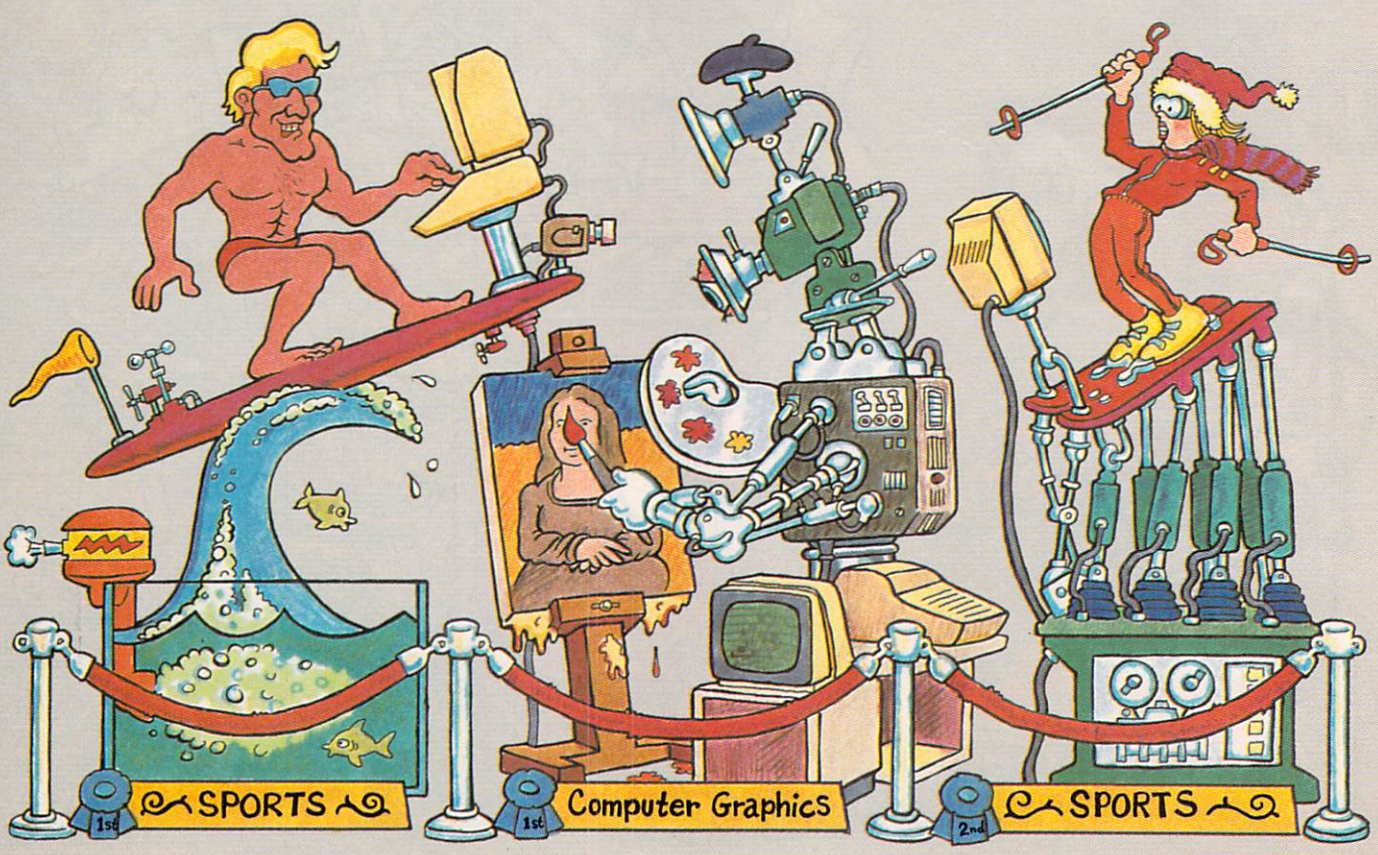


Illustration: Ken Weiner

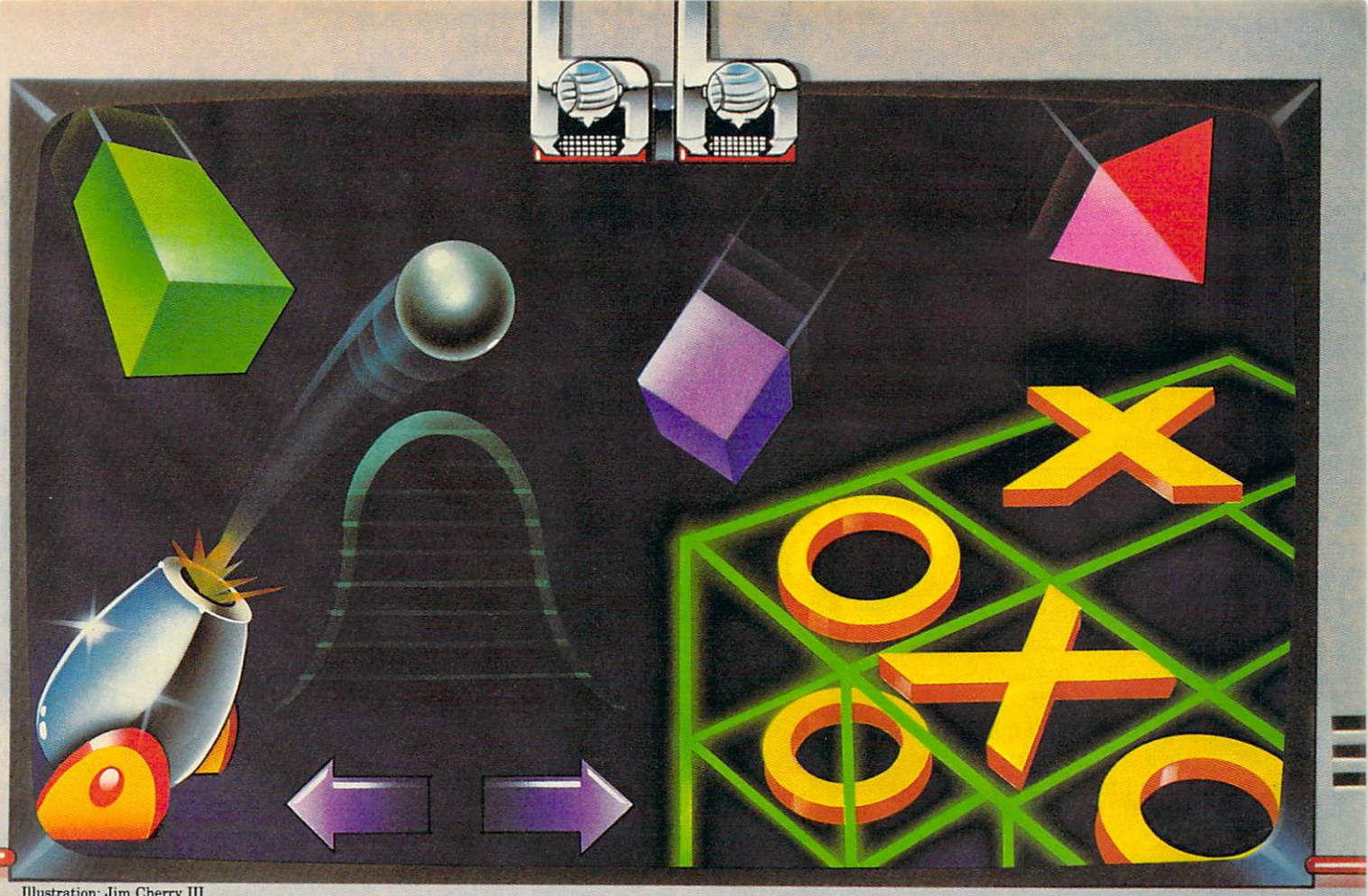


Illustration: Jim Cherry III

HACKER HEAVEN

APRIL

PROGRAMS Page 46	PIXEL THAT! Page 54	PUZZLE POWER Page 55
What's an amazing *Output Subroutine*? Or *Dueling Cannons*? Take a peek at this month's program section and find out.	Take a look at polyhedrons from almost any angle with hi-res *3-D Rotation*.	Try an old favorite with a new twist, *3-D Tic-Tac-Toe*. Play a friend!

Output Subroutine

By Rich Uhlig

"What the . . .?"

That's what your friends will say when they see the amazing *Output Subroutine* in action in your next program.

It's short and simple, but it really adds a kick to the drab and dreary text portions of your programs. Just replace PRINT commands with this little subroutine and words will appear to blossom from the middle of your screen and flow into formation.

So, get rid of plain PRINT commands! Add a little spice to your life and plug in the *Output Subroutine* instead.

Seventeen-year-old RICH UHLIG *lives in Toledo, Ohio, and teaches computer classes at CP and You, a local Computer Learning Center.*

BASE VERSION (APPLE)/*OUTPUT SUBROUTINE*

II plus or IIe • 32K RAM

```
10 HOME
20 VT = 1:A$ = "THIS IS A SHORT DEMONSTRATION OF HOW E
ASY IT IS TO USE THIS SIMPLE SUBROUTINE IN YOUR OWN PR
OGRAMS. LIST THE PROGRAM AND LOOK AT ..."
40 GOSUB 1030
50 VT = 10:B$ = "LINES 10-170 TO SEE":GOSUB 2010
80 VT = 11:B$ = "HOW TO PRINT LINES, OR":GOSUB 2010
110 VT = 14:B$ = "LINES 1000-2100 TO":GOSUB 2010
140 VT = 15:B$ = "SEE THE ROUTINES.":GOSUB 2010
170 END
1000 REM  -- OPTIONAL LINE BREAK SUBROUTINE --
1010 REM  ** USE THIS IF YOU WANT THE OUTPUT SUBROUTIN
E TO BE ABLE TO
1020 REM  HANDLE LINES THAT ARE LONGER THAN YOUR COMPU
TER'S SCREEN IS WIDE**
1030 IF LEN(A$) <= 40 THEN B$ = A$:A$ = "":GOSUB 2010:
RETURN
1080 Y = 40:FOR X = 2 TO 41
1100 IF MID$(A$,X,1) = " " THEN Y = X - 1
1120 NEXT X:B$ = LEFT$(A$,Y):A$ = RIGHT$(A$,LEN(A$) -
Y - 1)
1150 GOSUB 2010:VT = VT + 1
1170 GOTO 1030
2000 REM  -- HERE'S THE OUTPUT SUBROUTINE --
2010 M = LEN(B$)
2020 IF M / 2 <> INT(M / 2) THEN B$ = B$ + " ":M = M +
 1
2050 FOR N = 1 TO M / 2
2070 VTAB VT:HTAB 21 - N:PRINT LEFT$(B$,N);RIGHT$(B$,N
);
2090 NEXT N
2100 RETURN
```

TEXAS INSTRUMENTS/*OUTPUT SUBROUTINE*

TI-99/4A • 16K RAM

```
10 CALL CLEAR
20 A$="THIS IS A SHORT DEMONSTRATION OF HOW EASY IT IS
 TO USE THIS"
30 A$=A$&" SIMPLE SUBROUTINE IN YOUR OWN PROGRAMS. LIS
T THE PROGRAM AND LOOK AT ..."
40 GOSUB 1030
50 B$="LINES 10-170 TO SEE"
60 GOSUB 2010
80 B$="HOW TO PRINT LINES, OR"
90 GOSUB 2010
110 B$="LINES 1000-2080 TO"
120 GOSUB 2010
140 B$="SEE THE ROUTINES."
150 GOSUB 2010
170 END
1000 REM  -- OPTIONAL LINE BREAK SUBROUTINE --
1010 REM  ** USE THIS IF YOU WANT THE OUTPUT SUBROUTIN
E TO BE ABLE TO
1020 REM  HANDLE LINES THAT ARE LONGER THAN YOUR COMPU
TER'S SCREEN IS WIDE**
1030 IF LEN(A$)>27 THEN 1080
1040 B$=A$
1050 A$=""
1060 GOSUB 2010
1070 RETURN
1080 Y=28
1090 FOR X=2 TO 29
```

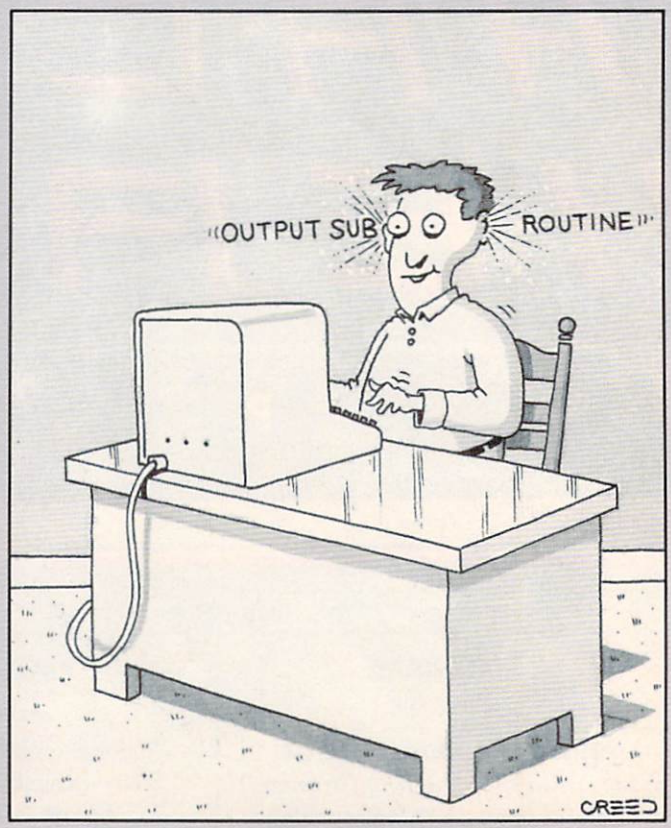


Illustration: Chris Reed

programmer s

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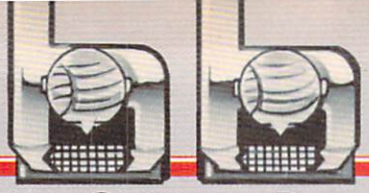



```
1100 IF SEG$(A$,X,1)<>" " THEN 1120
1110 Y=X-1
1120 NEXT X
1130 B$=SEG$(A$,1,Y)
1140 A$=SEG$(A$,Y+2,LEN(A$))
1150 GOSUB 2010
1160 GOTO 1030
2000 REM  -- HERE'S THE OUTPUT SUBROUTINE --
2010 M=LEN(B$)
2020 IF M/2=INT(M/2) THEN 2050
2030 B$=B$&" "
2040 M=M+1
2050 FOR N=1 TO M/2
2060 CALL CLEAR
2070 PRINT TAB(15-N);SEG$(B$,1,N);SEG$(B$,M-N+1,M);
2090 NEXT N
2100 RETURN
```

TIMEX SINCLAIR /*OUTPUT SUBROUTINE*

1000, 1500, & 2068 • 2K RAM

```
10 CLS
20 LET VT=1
30 LET A$="THIS IS A SHORT DEMONSTRATION OF HOW EASY I
T IS TO USE THIS SIMPLE SUBROUTINE IN YOUR OWN PROGRAM
S. LIST THE PROGRAM AND LOOK AT..."
40 GOSUB 1030
50 LET VT=10
60 LET B$="LINES 10-170 TO SEE"
70 GOSUB 2010
80 LET VT=11
90 LET B$="HOW TO PRINT LINES, OR"
100 GOSUB 2010
110 LET VT=14
120 LET B$="LINES 1000-2100 TO"
130 GOSUB 2010
140 LET VT=15
150 LET B$="SEE THE ROUTINES."
160 GOSUB 2010
170 STOP
1000 REM--OPTIONAL LINE BREAK SUBROUTINE--
1010 REM**USE THIS IF YOU WANT THE OUTPUT SUBROUTINE T
O BE ABLE TO
1020 REM  HANDLE LINES THAT ARE LONGER THAN YOUR COMPU
TER'S SCREEN IS WIDE**
1030 IF LEN A$>32 THEN GOTO 1080
1040 LET B$=A$
1050 LET A$=""
1060 GOSUB 2010
1070 RETURN
1080 LET Y=32
1090 FOR X=2 TO 33
1100 IF A$(X)=" " THEN LET Y=X-1
1120 NEXT X
1130 LET B$=A$( TO Y)
1140 LET A$=A$(Y+2 TO )
1150 GOSUB 2010
1160 LET VT=VT+1
1170 GOTO 1030
2000 REM--HERE'S THE OUTPUT SUBROUTINE--
2010 LET M=LEN B$
2020 IF M/2<>INT (M/2) THEN LET B$=B$+" "
2030 IF M/2<>INT (M/2) THEN LET M=M+1
2050 FOR N=1 TO M/2
2070 PRINT AT VT,16-N;B$( TO N);B$(M-N+1 TO )
2090 NEXT N
2100 RETURN
```

MODIFICATIONS FOR OTHER COMPUTERS

ATARI/*OUTPUT SUBROUTINE*

400, 600XL, 800, & 800XL • 16K RAM

Use the base version, with the following alterations: In lines 1030 and 1080, change 40 to 38; in line 1080, change 41 to 39. Also, change lines 10, 1100, 1120, 2020, and 2070 to read as follows:

```
10 DIM A$(120),B$(120):PRINT CHR$(125)
1100 IF A$(X,X)=" " THEN Y=X-1
1120 NEXT X:B$=A$(1,Y):A$=A$(Y+1)
2020 IF M/2 <> INT(M/2) THEN B$(M+1)=" ":M=M+1
2070 POSITION 20-N,VT:PRINT B$(1,N);B$(M-N+1)
```

COMMODORE/*OUTPUT SUBROUTINE*

Commodore 64

Use the base version, with the following alterations: Add line 30:

```
30 A$ = A$ + "BROUTINE IN YOUR OWN PROGRAMS. LIST THE
PROGRAM AND LOOK AT ..."
```

Also, change lines 10, 20, 2070, and 2080 to read as follows:

```
10 PRINT CHR$(147):FOR X = 1 TO 25:CUR$ = CUR$ + CHR$(
17):NEXT X:VT = 1
20 A$ = "THIS IS A SHORT DEMONSTRATION OF HOW EASY IT
IS TO USE THIS SIMPLE SU"
2070 PRINT CHR$(19);LEFT$(CUR$,VT-1);
2080 PRINT SPC(21-N) LEFT$(B$,N);RIGHT$(B$,N);
```

VIC-20 • 5K RAM

Use the changes given above for the Commodore 64. Then change 40 to 22 in lines 1030 and 1080; change 41 to 23 in line 1080; and change 20 to 11 in line 2080.

IBM/*OUTPUT SUBROUTINE*

PC • 64K RAM

Use the base version, with the following alterations: In lines 1030 and 1080, change 40 to 80; in line 1080, change 41 to 81. Also, change lines 10 and 2070 to read as follows:

```
10 CLS:WIDTH 80
2070 LOCATE VT,41-N:PRINT LEFT$(B$,N);RIGHT$(B$,N)
```

RADIO SHACK/*OUTPUT SUBROUTINE*

TRS-80 Color Computer • 16K RAM

Use the base version, with the following alterations: In lines 1030 and 1080, change 40 to 32; in line 1080,

change 41 to 33. Also, change lines 10 and 2070 to read as follows:

```
10 CLEAR 500:CLS
2070 PRINT @ VT*32-16-N,LEFT$(B$,N);RIGHT$(B$,N)
```

TRS-80 Model III • 16K RAM

Use the base version, with the following alterations: In lines 1030 and 1080, change 40 to 64; in line 1080, change 41 to 65. Also, change lines 10 and 2070 to read as follows:

```
10 CLEAR 500:CLS
2070 PRINT @ VT*64-31-N,LEFT$(B$,N);RIGHT$(B$,N)
```

TRS-80 Model 4 • 16K RAM

Use the base version, with the following alterations: In lines 1030 and 1080, change 40 to 80; in line 1080, change 41 to 81. Also, change lines 10 and 2070 to read as follows:

```
10 CLEAR 500:CLS:PRINT CHR$(15)
2070 PRINT @ VT*80-40-N,LEFT$(B$,N);RIGHT$(B$,N)
```

TEXAS INSTRUMENTS/*OUTPUT SUBROUTINE*

TI-99/4A • 16K RAM • TI Extended BASIC

Use the base version, with the following alterations: First, use a double colon (::) instead of a single colon to separate multiple statements on a single numbered program line. So, for example, you would change line 50 to read

```
50 VT = 10 :: B$ = "LINES 10-170 TO SEE" :: GOSUB 2010
```

Second, in lines 1030 and 1080, change 40 to 28; in line 1080, change 41 to 29. Third, change + to & in line 2020. Fourth, add line 30:

```
30 A$=A$&" SIMPLE SUBROUTINE IN YOUR OWN PROGRAMS. LIS
T THE PROGRAM AND LOOK AT ..."
```

Finally, change lines 10, 20, 1100, 1120, and 2070 to read as follows:

```
10 CALL CLEAR
20 VT=1 :: A$="THIS IS A SHORT DEMONSTRATION OF HOW EA
SY IT IS TO USE THIS"
1100 IF SEG$(A$,X,1)=" " THEN Y=X-1
1120 NEXT X :: B$=SEG$(A$,1,Y) :: A$ = SEG$(A$,Y+2,LEN
(A$))
2070 DISPLAY AT (VT,15-N):SEG$(B$,1,N);SEG$(B$,M-N+1,M
)
```

Dueling Cannons

By Jonathan Franklin

Photo: Sarah Kortum

You stare at the mountain before you, knowing the enemy lies just beyond. You wait. Suddenly a cannonball appears high above the mountain's peak and descends . . . toward you. The missile screeches by your head and explodes, leaving a crater just feet away.

Now it's your turn. The mountain is high, but you can get a shell over if you set your cannon's angle just right—about 75 degrees. You'll need a lot of gunpowder, too. About nine bags.

The ball explodes out of the cannon and makes an arc in the sky. A tiny puff of smoke on a crag near the mountaintop tells you that you misjudged—a dangerous mistake.

Seconds later, a small speck soars across the sky above you, hangs for a moment, then falls, getting closer and closer and . . .

JONATHAN FRANKLIN, *17, attends Phillips Exeter Academy in New Hampshire.*

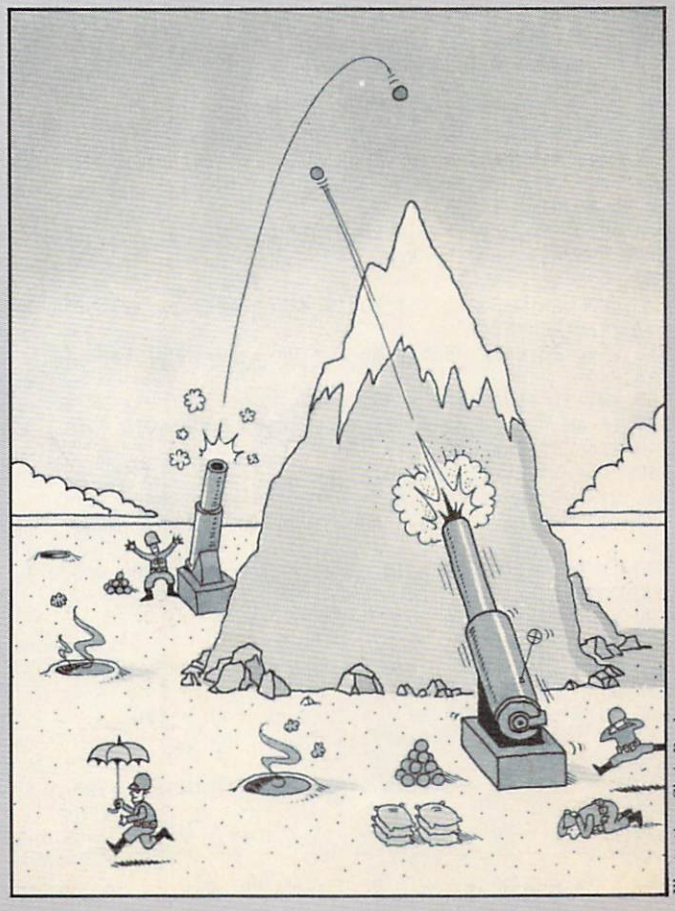
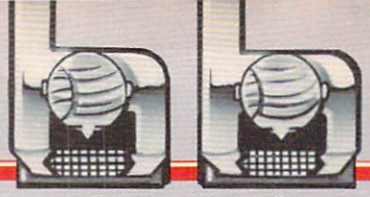


Illustration: Chris Reed



0-45
50-90 95-130

P R O G R A M S

APPLE/*DUELING CANNONS*

II plus or IIe • 32K RAM • color TV or monitor optional

```
10 TEXT:HOME:PI = 3.141593 / 180
20 DIM YY(280),SQ(100),AX(100),AY(100),B(1)
30 N$ = "D U E L I N G  C A N N O N S"
40 VTAB 13:HTAB 8:FOR I = 1 TO LEN(N$):PRINT MID$(N$,I
,1);:NEXT I
50 FOR I = 0 TO 1:VTAB I * 4 + 11:HTAB 1:FOR J = 0 TO
39:PRINT "*";:NEXT J:NEXT I
60 FOR X = 1 TO 100:SQ(X) = (X / 10) * (X / 10):NEXT X
70 HGR:HOME:POKE 34,22
80 INVERSE:VTAB 21
90 PRINT SPC(4);"ANGLE: 0";SPC(5);"WIND: 0";SPC(4);"AN
GLE: 0";SPC(4)
100 PRINT SPC(4);"BAGS : 0";SPC(16);"BAGS : 0";SPC(4)
110 HCOLOR= 1:NP = 0:IV = 0
120 P = RND(1) * 20 + 139:HG = RND(1) * 70 + 25
130 FOR I = 0 TO 279:YY(I) = P:NEXT I
140 FOR I = 159 TO P STEP -1:HPLOT 0,I TO 279,I:NEXT I
150 FOR I = 121 TO 159:HX = SIN(((I - 120) * 4.5 + 180
) * PI) * HG
160 YY(I) = HX + P
170 HPLOT I,HX + P TO I,166:NEXT I
180 WIND = INT(RND(1) * 10):IF RND(1) > .5 THEN WIND =
 -WIND
190 VTAB 21:HTAB 24:INVERSE:PRINT ABS(WIND):NORMAL
200 HCOLOR= 3:IF WIND = 0 THEN 240
210 HPLOT 119,10 TO 159,10
220 IF WIND > 0 THEN HPLOT 119,10 TO 132,5:HPLOT 119,1
0 TO 132,15:GOTO 240
230 HPLOT 159,10 TO 139,5:HPLOT 159,10 TO 139,15
240 B(0) = RND(1) * 15 + 60 - 5 * ABS(WIND)
250 B(1) = RND(1) * 15 + 205 + 5 * ABS(WIND)
260 FOR I = 0 TO 1:HPLOT B(I) - 3,P TO B(I) - 3,P - 5:
HPLOT TO B(I) + 3,P - 5
270 HPLOT TO B(I) + 3,P:HPLOT TO B(I) - 3,P - 5:HPLOT
B(I) - 3,P TO B(I) + 3,P - 5
280 HCOLOR= 2:NEXT I
290 HCOLOR= 0:FOR I = 1 TO IV:HPLOT AX(I),AY(I):NEXT I
300 PRINT CHR$(7)
310 VTAB 23:CALL -868:HTAB 5 + NP * 24:INPUT "ANGLE? "
;A$
320 AN = INT(VAL(A$) * 10) / 10
330 IF AN < 5 OR AN > 175 THEN GOSUB 1000:GOTO 310
340 VTAB 21:INVERSE
350 HTAB 11 + 24 * NP:PRINT SPC(5);
360 VTAB 21:HTAB 12 + 24 * NP:PRINT AN:NORMAL
370 VTAB 23:CALL -868:HTAB 5 + 24 * NP:INPUT "BAGS? ";
BG
380 IF BG < 1 OR BG > 40 OR BG <> INT(BG) THEN GOSUB 1
000:GOTO 370
390 VTAB 22:INVERSE
400 HTAB 11 + 24 * NP:PRINT SPC(5);
410 VTAB 22:HTAB 12 + 24 * NP:PRINT BG:NORMAL
420 VTAB 23:CALL -868
430 BG = BG * 10:IF NP = 1 THEN AN = AN + 180
440 PY = P - 5:PX = B(NP):IV = 0
450 IV = IV + 1
460 X = BG * IV * COS(AN * PI) / 10 + B(NP) - WIND * S
Q(IV)
470 Y = BG * IV * SIN(AN * PI) / 10:Y = P + (NP - (NOT
 NP)) * Y + 16 * SQ(IV)
480 IF X < 3 OR X > 276 OR Y < 0 THEN 650
490 IF Y > P + 7 THEN 510
500 IF X > B(NP) - 5 AND X < B(NP) + 5 THEN 570
510 YM = (ABS(PY - Y) / ((ABS(PX - X)) + 0.0001)) * SG
N(Y - PY)
520 ST = SGN(X - PX):RN = X - PX:CC = 0
530 IF N = 1 THEN CC = RN:RN = 0:ST = -ST
540 L = PX + CC:M = PY + YM * ABS(CC)
550 IF YY(L) < M THEN 610
560 CC = CC + ST:IF ABS(CC - RN) > ABS(ST) THEN 540
570 HCOLOR= 3:K = PEEK(-16336):K = PEEK(-16336):HPLOT
X,Y
580 PX = X:PY = Y:AX(IV) = X:AY(IV) = Y
590 IF YY(X) < Y THEN L = X:M = YY(X):GOTO 610
600 GOTO 450
610 IF ABS(X - B(0)) < 4 OR ABS(X - B(1)) < 4 THEN 660
620 IF X < 3 OR X > 276 THEN 650
630 HCOLOR= 0:FOR I = 1 TO 25:BX = L - 3 + RND(1) * 6:
BY = M + RND(1) * 3:HPLOT BX,BY
640 K = PEEK(-16336):POKE -16336,0:NEXT I
650 NP = 1 - NP:GOTO 290
660 HCOLOR= 3:FOR I = X - 10 TO X + 10 STEP 2:HPLOT I,
P - (RND(1) * 10) TO X,P:FOR J = 1 TO RND(1) * 5 + 5:K
 = PEEK(-16336):NEXT J:NEXT I
670 VTAB 23:HTAB 5:PRINT "DO YOU WISH TO CONTINUE? <Y/
N>";
680 GET A$:IF A$ = "" THEN 680
690 IF A$ = "Y" THEN 70
700 TEXT:HOME:END
1000 PRINT CHR$(7);SPC(4);"BAD VALUE!":FOR DL = 1 TO 3
00:NEXT DL:RETURN
```

ATARI/*DUELING CANNONS*

0-45

400, 800, & 800XL • 32K RAM • color TV or monitor optional

```
10 GRAPHICS 18:POKE 82,0:PI=3.141593/180
20 DIM YY(320),SQ(100),AX(100),AY(100),B(1),LINE$(7),R
$(1):TR=656:TC=657
30 PRINT #6;"      DuElInG":PRINT #6;"       CaNnOnS"
40 FOR I=1 TO 100:SQ(I)=(I/10)^2:SOUND 0,I,10,6:NEXT I
50 FOR I=1 TO 75:SOUND 0,RND(0)*100,8,10:SOUND 1,RND(0
)*200,8,12:SETCOLOR 4,RND(0)*15,10:NEXT I
60 SOUND 0,0,0,0:SOUND 1,0,0,0
70 IV=0
80 GRAPHICS 8:COLOR 1:SETCOLOR 1,0,14:SETCOLOR 2,12,2:
SETCOLOR 4,13,8:POKE 752,1
90 PRINT CHR$(125);"ANGLE: 0        WIND: 0    ANGLE:
0"
100 PRINT " BAGS: 0                    BAGS: 0"
110 COLOR 1:NP=0:P=RND(1)*20+139:HG=RND(0)*50+25
120 FOR I=1 TO 319:YY(I)=P:NEXT I
130 FOR J=160 TO P STEP -1:PLOT 0,J:DRAWTO 319,J:NEXT
J
140 FOR I=141 TO 179
150 YY(I)=SIN(((I-140)*4.5+180)*PI)*HG+P
160 PLOT I,YY(I):DRAWTO I,159:NEXT I
170 WIND=INT(RND(1)*10):IF RND(1)>0.5 THEN WIND=-WIND
180 POKE TR,0:POKE TC,22:PRINT ABS(WIND);
190 IF WIND=0 THEN 230
200 PLOT 140,10:DRAWTO 180,10
210 IF WIND>0 THEN PLOT 140,10:DRAWTO 153,5:PLOT 140,1
0:DRAWTO 153,15:GOTO 230
220 PLOT 180,10:DRAWTO 167,5:PLOT 180,10:DRAWTO 167,15
230 B(0)=RND(1)*20+60-5*ABS(WIND)
240 B(1)=RND(1)*20+240+5*ABS(WIND)
250 FOR J=0 TO 1:PLOT B(J)-3,P:DRAWTO B(J)-3,P-5:DRAWT
```

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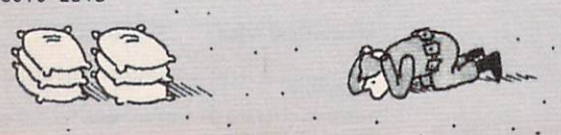
```
0 B(J)+3,P-5:DRAWTO B(J)+3,P:DRAWTO B(J)-3,P-5
260 PLOT B(J)-3,P:DRAWTO B(J)+3,P-5:NEXT J
270 COLOR 0:IF IV THEN FOR J=1 TO IV:X=AX(J):Y=AY(J):P
LOT X,Y:PLOT X+1,Y:PLOT X+1,Y+1:PLOT X,Y+1:NEXT J
280 SOUND 0,0,0,0:SOUND 1,0,0,0
290 POKE TR,2:PRINT CHR$(156);:POKE TR,2:POKE TC,1+27*
NP:PRINT "ANGLE?";:GOSUB 2000:AN=Z
300 IF AN<5 OR AN>175 THEN GOSUB 1000:GOTO 290
310 POKE TR,0:POKE TC,6+27*NP:PRINT "      ";
320 POKE TR,0:POKE TC,6+27*NP:PRINT AN;
330 POKE TR,2:PRINT CHR$(156);:POKE TC,2+27*NP:PRINT "
BAGS?";:GOSUB 2000:BG=Z
340 IF (BG<>INT(BG)) OR BG<1 OR BG>40 THEN GOSUB 1000:
GOTO 330
350 POKE TR,1:POKE TC,6+27*NP:PRINT "      ";
360 POKE TR,1:POKE TC,6+27*NP:PRINT BG;
370 POKE TR,2:PRINT CHR$(156);
380 BG=BG*10:IF NP=1 THEN AN=AN+180
390 PY=P-5:PX=B(NP):IV=0
400 IV=IV+1
410 X=BG*IV*COS(AN*PI)/10+B(NP)-WIND*SQ(IV)
420 Y=BG*IV*SIN(AN*PI)/10:Y=P+(( NOT NP)*-1+NP)*Y+16*S
Q(IV)
430 IF X<3 OR X>316 OR Y<0 THEN 610
440 IF Y>P+7 THEN GOTO 460
450 IF X>B(NP)-5 AND X<B(NP)+5 THEN 520
460 YM=(ABS(PY-Y)/((ABS(PX-X))+1E-04))*SGN(Y-PY)
470 ST=SGN(X-PX):RN=(X-PX):CC=0
480 IF N=1 THEN CC=RN:RN=0:ST=-ST
490 L=PX+CC:M=PY+YM*ABS(CC)
500 IF YY(L)<M THEN 570
510 CC=CC+ST:IF ABS(CC-RN)>ABS(ST) THEN 490
520 COLOR 1:PLOT X,Y:PLOT X+1,Y:PLOT X+1,Y+1:PLOT X,Y+
1
530 SOUND 0,20+Y/4,10,6:SOUND 1,21+Y/4,10,6:SOUND 0,0,
0,0:SOUND 1,0,0,0
540 PX=X:PY=Y:AX(IV)=X:AY(IV)=Y
550 IF YY(X)<Y THEN L=X:M=YY(X):GOTO 570
560 GOTO 400
570 IF ABS(X-B(0))<4 OR ABS(X-B(1))<4 THEN 620
580 IF X<3 OR X>316 THEN 610
590 COLOR 0:FOR J=1 TO 25:BX=L-3+RND(0)*6:BY=M+RND(0)*
3:PLOT BX,BY:SOUND 0,RND(0)*100,8,10:SOUND 1,RND(0)*20
0,8,12
600 NEXT J
610 NP=1-NP:GOTO 270
620 COLOR 1:FOR J=X-10 TO X+10 STEP 2:PLOT J,P-(RND(0)
*10+10):DRAWTO X,P:FOR DEL=1 TO 50:NEXT DEL
630 SOUND 0,RND(0)*255,8,6:SOUND 1,RND(0)*255,8,8:NEXT
 J:SOUND 0,0,0,0:SOUND 1,0,0,0
640 POKE TC,5:POKE TR,3:PRINT "DO YOU WISH TO CONTINUE
 <Y/N>";:INPUT R$:IF R$(1,1)="Y" THEN 70
650 GRAPHICS 0:POKE 82,2:END
1000 POKE TR,3:POKE TC,15:PRINT CHR$(253);"BAD VALUE";
:FOR DEL=1 TO 500:NEXT DEL:PRINT CHR$(156);:RETURN
2000 CO=0:LINE$="0":OPEN #1,4,0,"K:"
2010 GET #1,A
2020 IF A=155 THEN Z=INT(VAL(LINE$)*10)/10:CLOSE #1:RE
TURN
2030 IF (A>45 AND A<58) AND A<>47 AND CO<6 THEN PRINT
CHR$(A);:LINE$(LEN(LINE$)+1)=CHR$(A):CO=CO+1:GOTO 2010
2040 IF A=126 AND CO>0 THEN PRINT CHR$(A);:LINE$=LINE$
(1,LEN(LINE$)-1):CO=CO-1
2050 GOTO 2010
```



IBM / *DUELING CANNONS*

PC or PCjr • 64K RAM • Color Graphics Adapter (PC) • color TV or monitor optional • Advanced BASIC (PC); Cartridge BASIC (PCjr)

```
10 KEY OFF:CLS:SCREEN 1,0:COLOR 8,0:PI=3.141593/180
20 FOR X=1 TO 14:KEY(X)ON:ON KEY(X) GOSUB 4000:NEXT X
30 DIM YY(320),SQ(100),AX(100),AY(100),B(1)
40 FOR I=0 TO 1:LOCATE (11+I*4),1:PRINT STRING$(40,42)
;:NEXT I
50 N$="D U E L I N G  C A N N O N S"
60 LOCATE 13,8 :FOR I=1 TO LEN(N$):PRINT MID$(N$,I,1);
70 SOUND RND(1)*3000+1000,.5:NEXT I
80 FOR DL=1 TO 500:NEXT DL
90 FOR S= 3000 TO 900 STEP -10:SOUND S,S/4000:NEXT S
100 CLS:SDD=80:GOSUB 1000
110 FOR I=1 TO 100:SQ(I)=(I/10)^2:NEXT I
120 IV=0
130 FOR I=1 TO VAL(RIGHT$(TIME$,2)):X=RND:NEXT I
140 LOCATE 21,5:PRINT"ANGLE: 0";SPACE$(5);"WIND: 0   A
NGLE: 0"
150 LOCATE 22,5:PRINT"BAGS:  0";SPACE$(15);"BAGS:  0"
160 NP=0:P=INT(RND*20)+139:HG=INT(RND*50)+25
170 FOR I=1 TO 319:YY(I)=P:NEXT I
180 LINE (1,P)-(319,159),3,BF
190 FOR I=141 TO 179
200 YY(I)=INT(SIN(((I-140)*4.5+180)*PI)*HG)+P
210 LINE (I,YY(I))-(I,P),1:NEXT I
220 WIND=INT(RND*10):IF RND*100>50 THEN WIND=-WIND
230 IF WIND=0 THEN 280
240 LOCATE 21,23:PRINT ABS(WIND);
250 LINE (140,10)-(180,12),1,B
260 IF WIND>0 THEN LINE (150,8)-(135,11),1:LINE -(150,
14),1:GOTO 280
270 LINE (170,8)-(185,11),1:LINE -(170,14),1
280 B(0)=RND*20+60-5*ABS(WIND)
290 B(1)=RND*20+240+5*ABS(WIND)
300 FOR I=0 TO 1:LINE (B(I)-3,P-6)-(B(I)+3,P),2,BF:NEX
T I
310 FOR I=1 TO IV:PSET(AX(I),AY(I)),0:NEXT I
320 SOUND 150,3
330 GOSUB 3000:LOCATE 23,5+23*NP:PRINT "ANGLE? ";:GOSU
B 4010:AN=Z
350 IF AN<5 OR AN>175 THEN GOSUB 2000:GOTO 330
360 LOCATE 21,11+23*NP:PRINT SPACE$(5);
370 LOCATE 21,11+23*NP:PRINT USING "###.#";AN;
380 GOSUB 3000:LOCATE 23,5+23*NP:PRINT "BAGS? ";:GOSUB
 4010:BG=Z
400 GOSUB 3000
410 IF BG<1 OR BG>40 OR BG <> INT(BG) THEN GOSUB 2000:
GOTO 380
420 LOCATE 22,11+23*NP:PRINT SPACE$(5);
430 LOCATE 22,11+23*NP:PRINT BG;
440 BG=BG*10:IF NP=1 THEN AN=AN+180
450 PY=P-6:PX=B(NP):IV=0
460 IV=IV+1
470 X=BG*IV*COS(AN*PI)/10+B(NP)-WIND*SQ(IV)
480 Y=BG*IV*SIN(AN*PI)/10
490 IF NP=0 THEN Y=P-Y+16*SQ(IV) ELSE Y=P+Y+16*SQ(IV)
500 IF X<1 OR X>319 OR Y<1 THEN 670
510 IF Y>P+7 THEN 530
520 IF X>B(NP)-5 AND X<B(NP)+5 THEN 590
530 YM=(ABS(PY-Y)/(ABS(PX-X)+.0001))*SGN(Y-PY)
540 ST=SGN(X-PX):RN=(X-PX):CC=0
550 IF N=1 THEN CC=RN:RN=0:ST=-ST
560 L=PX+CC:M=PY+YM*ABS(CC)
```

```
570 IF YY(L)<M THEN 630 ELSE CC=CC+ST
580 IF ABS(CC-RN)>ABS(ST) THEN 560
590 PSET (X,Y),1:SOUND 37,0:SOUND (450-Y)*4,.5
600 PX=X:PY=Y:AX(IV)=X:AY(IV)=Y
610 IF YY(X)<Y THEN L=X:M=YY(X):GOTO 630
620 GOTO 460
630 IF ABS(X-B(0))<4 OR ABS(X-B(1))<4 THEN 680
640 IF X<1 OR X>319 THEN 670
650 SOUND 37,0:FOR SD=1 TO 100:SOUND RND*909+37,1:SOUN
D 37,0:NEXT SD
660 FOR I=1 TO 25:BX=L-3+RND*6:BY=M+RND*3:PSET(BX,BY),
0:NEXT I
670 SOUND 37,0:NP=1-NP:GOTO 310
680 FOR SD=1 TO 50:SOUND RND*100+37,10
690 FOR DL=1 TO RND*10:NEXT DL:SOUND 37,0:NEXT SD
700 SDD=8
710 FOR I= X-15 TO X+15 STEP 3
720 LINE (I,P-INT(RND*15))-(X,P),INT(RND*3)+1
730 GOSUB 1000:NEXT I
740 FOR K=X-13 TO X+13 STEP 2
750 LINE (K,P-INT(RND*5)-22)-(X,P),INT(RND*3)+1
760 GOSUB 1000:NEXT K
770 LOCATE 24,5:PRINT "DO YOU WISH TO CONTINUE? <Y/N>
";
780 A$=INKEY$:IF A$="" THEN 780
790 CLS:IF A$="Y" OR A$="y" THEN 120
800 SCREEN 0,0:WIDTH 80:KEY ON:END
1000 FOR SD=1 TO RND*SDD+1:SOUND RND*100+37,10
1010 FOR DL=1 TO RND*10:NEXT DL:SOUND 37,0:NEXT SD
1020 RETURN
2000 GOSUB 3000:BEEP:LOCATE 23,5:PRINT"BAD VALUE!";
2010 FOR DL=1 TO 500:NEXT DL:GOSUB 3000:RETURN
3000 LOCATE 23,1:PRINT SPACE$(39);
4000 RETURN
4010 CO=0:L$=""
4020 A$=INPUT$(1):A=ASC(A$)
4030 IF A=13 THEN Z=INT(VAL(L$)*10)/10:RETURN
4040 IF (A>45 AND A<58) AND A<>47 AND CO<6 THEN PRINT
CHR$(A);:L$=L$+A$:CO=CO+1:GOTO 4020
4050 IF A=8 AND CO>0 THEN PRINT CHR$(29);" ";CHR$(29);
:CO=CO-1:IF CO>0 THEN L$=LEFT$(L$,LEN(L$)-1) ELSE L$="
"
4060 GOTO 4020
```

MODIFICATION

COLECO/*DUELING CANNONS*

ADAM • 80K RAM • color TV or monitor optional

Use the Apple version, with the following alterations: Omit lines 270, 300, and 320. Add lines 2000–2060:

```
2000 c = 1:l$ = "0"
2010 GET a$:a = ASC(a$)
2020 IF a = 13 THEN z = INT(VAL(l$) * 10) / 10:RETURN
2030 IF a > 45 AND a < 58 AND a <> 47 AND c < 6 THEN l
$ = l$ + a$:c = c + 1:PRINT a$;:GOTO 2010
2040 IF a <> 163 THEN 2010
2050 IF c = 1 THEN l$ = "0":GOTO 2010
2060 l$ = LEFT$(l$,LEN(l$)-1):c = c - 1:PRINT a$;:GOTO
 2010
```

Finally, change lines 20, 40–50, 70–100, 120–150, 170, 190, 210–260, 310, 350–370, 400–420, 480, 570, 620–640, 660, 670, 690, and 1000 to read as follows:

```
20 DIM yy(256),sq(100),ax(100),ay(100),b(1)
40 VTAB 13:HTAB 3:PRINT n$
50 FOR i = 0 TO 1:VTAB i * 4 + 11:HTAB 1:FOR j = 0 TO
30:PRINT "*";:NEXT j:NEXT i
70 HGR:HOME
80 VTAB 20:HTAB 13:PRINT "WIND: 0":VTAB 21:HTAB 0
90 PRINT "ANGLE: 0";SPC(11);"ANGLE: 0"
100 PRINT SPC(1);"BAGS: 0";SPC(12);"BAGS: 0"
120 p = RND(1) * 20 + 139:hg = RND(1) * 70 + 25
130 FOR i = 0 to 255:yy(i) = p:NEXT i
140 FOR i = 159 TO p STEP -1:HPLOT 0,i TO 255,i:NEXT i
150 FOR i = 107 TO 147:hx = SIN(((i - 106) * 4.5 + 180
) * pi) * hg
170 HPLOT i,hx + p TO i,159:NEXT i
190 VTAB 20:HTAB 19:PRINT ABS(wind)
210 HPLOT 107,10 TO 147,10
220 IF wind > 0 THEN HPLOT 107,10 TO 120,5:HPLOT 107,1
0 TO 120,15:GOTO 240
230 HPLOT 147,10 TO 134,5:HPLOT 147,10 TO 134,15
240 b(0) = RND(1) * 15 + 55 - 5 * ABS(wind)
250 b(1) = RND(1) * 15 + 185 + 5 * ABS(wind)
260 FOR i = 0 TO 1:FOR j = b(i) - 3 TO b(i) + 3:HPLOT
j,p-5 TO j,p:NEXT j
310 VTAB 23:HTAB 0:PRINT SPC(30);:VTAB 23:HTAB 20 * np
:PRINT "ANGLE?";:GOSUB 2000:an = z
350 VTAB 21:HTAB 7 + 19 * np:PRINT SPC(6);
360 VTAB 21:HTAB 7 + 19 * np:PRINT an;:HTAB 0
370 VTAB 23:HTAB 0:PRINT SPC(30);:VTAB 23:HTAB 20 * np
:PRINT "BAGS?";:GOSUB 2000:bg = z
400 VTAB 22:HTAB 7 + 19 * np:PRINT SPC(6);
410 VTAB 22:HTAB 7 + 19 * np:PRINT bg;
420 VTAB 23:HTAB 0:PRINT SPC(30);
480 IF x < 3 OR x > 254 OR y < 0 THEN 650
570 HCOLOR = 3:HPLOT x,y
620 IF x < 3 OR x > 254 THEN 650
630 HCOLOR = 0:FOR i = 1 TO 25:bx = l - 2 + RND(1) * 4
:by = m + RND(1) * 2:HPLOT bx,by
640 NEXT i
660 HCOLOR = 3:FOR i = x - 10 TO x + 10 STEP 2:HPLOT i
,p - (RND(1) * 10) TO x,p:NEXT i
670 VTAB 23:HTAB 1:PRINT "DO YOU WISH TO CONTINUE? <Y/
N>";
690 IF a$ = "y" OR a$ = "Y" THEN 70
1000 VTAB 23:HTAB 0:PRINT CHR$(7);SPC(10);"BAD VALUE!"
;SPC(10);:FOR dl = 1 TO 1000:NEXT dl:RETURN
```

3-D Rotation

Hotshot Effects Made Easy

By Peter Cockcroft and John Jainschigg

Admiral Akbar, Supreme Commander of the Rebel Forces, gestured with one webbed claw toward the high-res image of the forest planet that floated, glimmering, above the computer console. The admiral pressed a key, and the projection seemed to rotate on its axis. Details that had been hidden on its farther side came slowly into view as it turned . . .

These memorable graphics from the movie *Return of the Jedi* were produced by high-speed computers and sophisticated animation techniques. But the BASIC on your home computer is powerful enough to handle the math and logic needed to display and manipulate simple three-dimensional images.

First, you have to be able to draw pictures of 3-D objects in perspective on your two-dimensional computer screen. By "projecting" each point in the object onto the screen, you can create an illusion of depth.

The subroutine at line 3000 converts the 3-D coordinates of a point (X, Y, Z) into corresponding 2-D coordinates (XP, YP) for plotting on the screen. The size of the object and the distance between you and the screen are worked into this calculation.

Making something rotate in three dimensions is an impressive feat, but the calculations are simple. The subroutine at line 2000 rotates points (X, Y, Z) around the X, Y, and Z axes in turn.

You can use the object supplied or input X, Y, and Z coordinates for points and lines making up your own. Then the program asks you how far (in degrees) you want to rotate the object around each axis, the scale at which you want to view the object, and the distance between you and the screen.

For the object we've designed, scale values from 1 to 3 and distance values from 50 to 5000 work best; but play around with other values, too.

PETER COCKCROFT *attends Stuyvesant High School in New York City. Ever since he discovered 3-D graphics, he has been wandering around chanting sine and cosine tables and wearing cardboard glasses with red and green lenses.*

JOHN JAINSCHIGG, *technical editor of* K-POWER, *is the guy they come to when Peter's chanting gets too loud.*

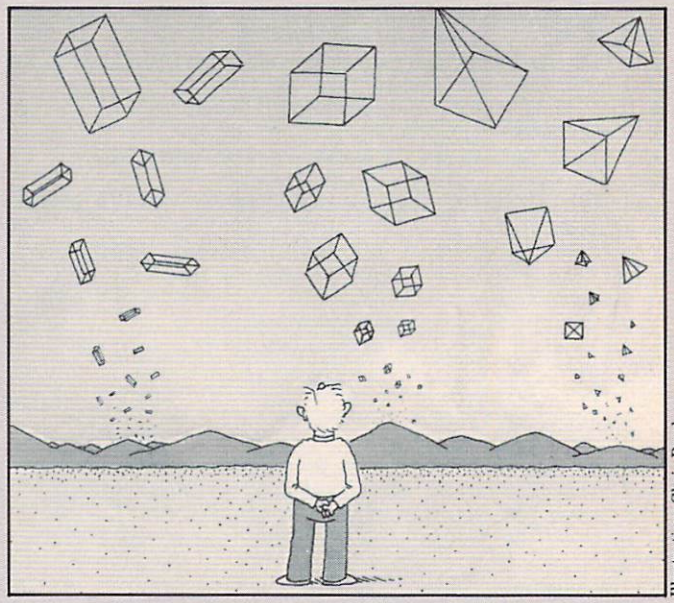


Illustration: Chris Reed

APPLE/*3-D ROTATION*

II plus or IIe • 32K RAM

```
10 HGR:HGR2:TEXT:HOME
20 HTAB 18:FLASH:PRINT "3-D DEMO":NORMAL
30 VTAB 8:PRINT "WORK WITH OBJECT SUPPLIED:" TAB(30) "
PRESS (1)":VTAB 10:PRINT "CREATE YOUR OWN OBJECT:" TAB
(30) "PRESS (2)"
40 GET A$:IF A$ <> "1" AND A$ <> "2" THEN 40
50 HOME:J = 1:IF A$ = "1" THEN DIM A(63,3):NL = 40:GOT
O 240
60 DIM A(100,3),XP(100),YP(100):HGR
70 HOME:VTAB 21:PRINT "ENTER ";:INVERSE:PRINT "X Y Z";
:NORMAL:PRINT " COORDINATES TO PLOT;":INVERSE:PRINT ">
X Y Z";:NORMAL
80 PRINT " TO DRAW FROM LAST POINT;":INVERSE:PRINT "E"
;:NORMAL:PRINT " TO ERASE (GO BACK ONE STEP); ";:INVER
SE:PRINT "@";:NORMAL:PRINT " TO EXIT";
90 FLASH:PRINT "SEPARATE DATA WITH SPACES";:FOR DE = 1
 TO 2000:NEXT DE:NORMAL:VTAB 24:HTAB 1:PRINT SPC(30);:
VTAB 24:HTAB 1
100 INPUT X$:IF X$ = "" THEN 70
110 IF LEFT$(X$,1) = "@" THEN 270
120 IF (LEFT$(X$,1) = ">" OR LEFT$(X$,1) = "E") AND J
= 1 THEN HOME:VTAB 22:HTAB 6:PRINT CHR$(7);"ERROR. NO
PRIOR POINT PLOTTED!":FOR DE = 1 TO 1000:NEXT DE:GOTO
70
130 IF LEFT$(X$,1) = "E" THEN J = J - 2:S = 3:D = 5000
:GOSUB 1000:J = J + 1:GOTO 70
140 TF = 0:IF LEFT$(X$,1) = ">" THEN X$ = RIGHT$(X$, L
EN(X$) - 1):TF = 1
150 C = 0:M = 1:X = 1:X$ = X$ + " "
160 IF MID$(X$,X,1) = " " THEN A(J,C) = VAL(MID$(X$,M,
X - M)):M = X:C = C + 1
170 X = X + 1:IF X = LEN(X$) THEN 190
180 IF C < 3 THEN 160
190 HCOLOR= 3
200 X = A(J,0):Y = A(J,1):Z = A(J,2):S = 3:D = 5000:GO
SUB 3000
210 IF TF = 1 THEN HPLOT TO XP,YP:A(J,3) = 1:GOTO 230
```

```
220 HPLOT XP,YP:A(J,3) = 0
230 J = J + 1:GOTO 70
240 HOME:FOR I = 1 TO NL:READ X$:IF LEFT$(X$,2) = "TO"
 THEN A(J,0) = VAL(RIGHT$(X$, LEN(X$) - 2)):A(J,3) = 1
:READ A(J,1),A(J,2):GOTO 260
250 A(J,0) = VAL(X$):A(J,3) = 0:READ A(J,1),A(J,2):J =
 J + 1:READ A(J,0),A(J,1),A(J,2):A(J,3) = 1
260 J = J + 1:NEXT I
270 HGR:S = 3:D = 5000:GOSUB 1000
280 HOME:VTAB 21:PRINT ">X=";RX;" >Y=";RY;" >Z=";RZ;"
S=";S;" D=";D
290 PRINT "CHANGE X, Y, Z, S, OR D?"
300 VTAB 23:PRINT "(@ TO QUIT, OR JUST <RETURN> TO DIS
PLAY)";:GET Q$
310 IF Q$ = CHR$(13) THEN GOSUB 1000:GOTO 280
320 IF Q$ = "@" THEN HGR:HGR2:TEXT:HOME:END
330 VTAB 22:PRINT SPC(80);:VTAB 22:PRINT "CHANGE ";Q$;
" BY HOW MUCH (+ OR -)";:INPUT AD
340 RX = RX + AD * (Q$ = "X"):RY = RY + AD * (Q$ = "Y"
):RZ = RZ + AD * (Q$ = "Z"):S = S + AD * (Q$ = "S"):D
= D + AD * (Q$ = "D")
350 GOTO 280
1000 POKE 60,0:POKE 61,32:POKE 62,255:POKE 63,63:POKE
66,0:POKE 67,64:CALL -468:HGR:HCOLOR= 3:IF J = 0 THEN
RETURN
1010 POKE -16299,0:POKE -16302,0
1020 SX = SIN(RX / 57.3):SY = SIN(RY / 57.3):SZ = SIN(
RZ / 57.3)
1030 CX = COS(RX / 57.3):CY = COS(RY / 57.3):CZ = COS(
RZ / 57.3)
1040 FOR I = 1 TO J
1050 X = A(I,0):Y = A(I,1):Z = A(I,2):F = A(I,3)
1060 GOSUB 2000:GOSUB 3000
1070 IF F = 0 THEN HPLOT XP,YP
1080 IF F = 1 THEN HPLOT TO XP,YP
1090 NEXT I
1100 POKE -16300,0:POKE -16301,0:RETURN
2000 REM  ROTATE ROUTINE
2010 REM  ROTATION AROUND THE X-AXIS
2020 YN = CX * Y - SX * Z:Z = SX * Y + CX * Z:Y = YN
2030 REM  ROTATION AROUND THE Y-AXIS
2040 XN = CY * X + SY * Z:Z = -SY * X + CY * Z:X = XN
2050 REM  ROTATION AROUND THE Z-AXIS
2060 XN = CZ * X - SZ * Y:Y = SZ * X + CZ * Y:X = XN
2070 RETURN
3000 REM  PERSPECTIVE DISPLAY ROUTINE--
3010 REM  TAKES X,Y,Z --> RETURNS XP,YP
3020 IF Y + D = 0 THEN D = 1
3030 A = D * S / (Y + D)
3040 XP = X * A:YP = Z * A:XP = XP + 140:YP = YP + 80
3050 IF XP > 279 OR XP < 0 THEN XP = 279 * (XP > 279)
3060 IF YP > 191 OR YP < 0 THEN YP = 191 * (YP > 191)
3070 RETURN
4000 DATA -4,3,0,-2,3,-3,TO 2,3,-3,TO 4,3,0,TO 2,3,3
4010 DATA TO -2,3,3,TO -4,3,0,-4,-3,0,-2,-3,-3
4020 DATA TO 2,-3,-3,TO 4,-3,0,TO 2,-3,3,TO -2,-3,3
4030 DATA TO -4,-3,0,-4,3,0,-4,-3,0,-2,3,-3,-2,-3,-3
4040 DATA 2,3,-3,2,-3,-3,4,3,0,4,-3,0,2,3,3,2,-3,3
4050 DATA -2,3,3,-2,-3,3,-10,0,0,-4,0,0,4,0,0
4060 DATA 10,0,0,4,-5,-10,10,-5,-4,TO 10,-5,4
4070 DATA TO 4,-5,10,4,5,-10,10,5,-4,TO 10,5,4
4080 DATA TO 4,5,10,4,-5,-10,4,5,-10,10,-5,-4
4090 DATA 10,5,-4,10,-5,4,10,5,4,4,-5,10,4,5,10
4100 DATA -4,5,-10,-10,5,-4,TO -10,5,4,TO -4,5,10
4110 DATA -4,-5,-10,-10,-5,-4,TO -10,-5,4
4120 DATA TO -4,-5,10,-4,5,-10,-4,-5,-10,-10,5,-4
4130 DATA -10,-5,-4,-10,5,4,-10,-5,4,-4,5,10
4140 DATA -4,-5,10
```


3-D Tic-Tac-Toe

By K-POWER's Resident Hacker

Spock invented *3-D Tic-Tac-Toe*. You see, being a Vulcan and all, he got real frustrated dealing with McCoy and all the rest of those illogical humans all the time. He thought up this program so he could play his computer and regain his sanity.

K-POWER's Resident Hacker stole the idea and converted it so you can play a friend. He figured you didn't need the therapy.

RADIO SHACK/*TIC-TAC-TOE*

TRS-80 Color Computer • 32K RAM • Extended Color BASIC

```
10 DIM BX(3,3,3),BY(3,3,3),P(3,3,3):PCLEAR 4
20 CLS:VT=1:L$="3-D TIC-TAC-TOE":GOSUB 1000:VT=5:L$="U
SE ARROW KEYS TO MOVE CURSOR ON":GOSUB 1000
30 L$="ROW OR COLUMN. USE SPACE BAR TO":GOSUB 1000:L$=
"MOVE FROM BOARD TO BOARD. TO":GOSUB 1000
40 L$="REGISTER A MOVE, PRESS <ENTER>.":GOSUB 1000:L$=
"PLAY CONTINUES UNTIL ALL SPACES":GOSUB 1000
50 L$="ARE FILLED. YOU THEN EARN ONE":GOSUB 1000:L$="P
OINT FOR EACH GROUP OF 3 IN A":GOSUB 1000:L$="ROW IN A
NY DIRECTION.":GOSUB 1000:GOSUB 2000
60 FP=1-RND(2):PMODE 4,1:PCLS:SCREEN 1,0:B=1
70 FOR Y=40 TO 140 STEP 50:C=1
80 FOR X=50 TO 155 STEP 35:IF X<155 THEN FOR R=1 TO 3:
BX(B,R,C)=X+10+R*17:NEXT R:C=C+1
90 LINE(X,Y)-(X+51,Y-39),PSET:NEXT X
100 CO=0:R=1:FOR Z=Y TO Y-39 STEP -13:CO=CO+17:IF Z>Y-
39 THEN FOR CI=1 TO 3:BY(B,R,CI)=Z-6:NEXT CI:R=R+1
110 LINE (35+CO,Z)-(140+CO,Z),PSET:NEXT Z:B=B+1:NEXT Y
120 LINE (100,168)-(140,168),PSET:C=27:GOSUB 3000
130 M(1)=1:M(2)=1:M(3)=1:DX=77:DY=34:GOTO 240
140 A$=INKEY$:IF A$="" THEN 140
150 IF A$=CHR$(13) THEN IF FP THEN 260 ELSE 310
160 M(1)=M(1)-(A$=CHR$(32))
170 M(2)=M(2)-(A$=CHR$(94))+(A$=CHR$(10))
180 M(3)=M(3)-(A$=CHR$(9))+(A$=CHR$(8))
190 FOR I=1 TO 3:IF M(I)=4 THEN M(I)=1 ELSE IF M(I)=0
THEN M(I)=3
200 NEXT I
210 DX=BX(M(1),M(2),M(3)):DY=BY(M(1),M(2),M(3))
220 IF DX=SX AND DY=SY THEN 140
230 LINE (SX-21,SY+4)-(SX-8,SY-5),PRESET:LINE -(SX+18,
SY-5),PRESET:LINE -(SX+5,SY+4),PRESET:LINE -(SX-21,SY+
4),PRESET
240 LINE (DX-21,DY+4)-(DX-8,DY-5),PSET:LINE -(DX+18,DY
-5),PSET:LINE -(DX+5,DY+4),PSET:LINE -(DX-21,DY+4),PSE
T:SX=DX:SY=DY
```

```
250 SOUND DX,1:GOTO 140
260 IF P(M(1),M(2),M(3))<>0 THEN 220
270 LINE (DX-8,DY-4)-(DX+4,DY+3),PSET:LINE (DX+17,DY-4
)-(DX-20,DY+4),PSET
280 P(M(1),M(2),M(3))=ABS(FP)+1
290 FP=NOT FP:C=C-1:IF C=0 THEN 360
300 GOSUB 3000:GOTO 140
310 IF P(M(1),M(2),M(3))<>0 THEN 220
320 CIRCLE(DX-2,DY),13,,.25
330 P(M(1),M(2),M(3))=1-FP
340 FP=NOT FP:C=C-1:IF C=0 THEN 360
350 GOSUB 3000:GOTO 140
360 REM END GAME/COUNT ROWS
370 P1=0:P2=0:CLS:VT=1:L$="COUNTING POINTS ...":GOSUB
1000
380 FOR Q=1 TO 3:FOR X=1 TO 3:FOR Y=1 TO 3:FOR Z=1 TO
3
390 IF Q=1 THEN A(Y,Z)=P(X,Y,Z)
400 IF Q=2 THEN A(Y,Z)=P(Y,Z,X)
410 IF Q=3 THEN A(Y,Z)=P(Z,X,Y)
420 NEXT Z:NEXT Y
430 IF Q=1 THEN GOSUB 4010:GOSUB 5010:GOSUB 6010
440 IF Q=2 THEN GOSUB 5010:GOSUB 6010
450 IF Q=3 THEN GOSUB 6010
460 NEXT X:NEXT Q
470 FOR X=1 TO 3:FOR Z=1 TO 3:A(X,Z)=P(X,Z,Z):NEXT Z:N
EXT X:GOSUB 6010
480 FOR X=1 TO 3:FOR Z=1 TO 3:A(X,Z)=P(X,4-Z,Z):NEXT Z
:NEXT X:GOSUB 6010
490 IF P1>P2 THEN W$=" O,":LO$=" X":W=P1:L=P2 ELSE IF
P2>P1 THEN W$=" X, ":LO$=" O":W=P2:L=P1
500 IF P1=P2 THEN 540
510 CLS:VT=1:L$="THE WINNER ...":GOSUB 1000:L$="IS PLA
YER "+W$:GOSUB 1000
520 L$="WITH A TOTAL OF"+STR$(W)+" POINTS ...":GOSUB 1
000:GOSUB 2000
530 L$="TO "+LO$+"'S":GOSUB 1000:L$="MERE"+STR$(L)+" P
OINT(S).":GOSUB 1000:GOSUB 2000:GOTO 550
540 CLS:L$="A TIE, EACH OPPONENT HAVING":GOSUB 1000:L$
="ACCRUED A TOTAL OF"+STR$(P1)+" POINTS.":GOSUB 1000
550 L$="DO YOU WANT TO PLAY AGAIN? (Y/N)":GOSUB 1000
560 A$=INKEY$:IF A$="" THEN 560
570 IF A$="Y" THEN RUN ELSE END
1000 M=LEN(L$):IF M/2<>INT(M/2) THEN L$=L$+" ":GOTO 10
00 ELSE FOR N=1 TO M/2
1010 PRINT@VT*32-16-N,LEFT$(L$,N);RIGHT$(L$,N):NEXT N:
VT=VT+1:RETURN
2000 PRINT@483,"PRESS ANY KEY TO CONTINUE.";
2010 A$=INKEY$:IF A$="" THEN 2010 ELSE CLS:RETURN
3000 IF FP THEN XA=140:YA=100:DA=10 ELSE XA=100:YA=140
:DA=-10
3010 LINE (XA,168)-(XA-DA,158),PRESET:LINE (XA,168)-(X
A-DA,178),PRESET
3020 LINE (YA,168)-(YA+DA,158),PSET:LINE (YA,168)-(YA+
DA,178),PSET
3030 RETURN
4000 REM CHECK LINES
4010 FOR A=1 TO 3:C1=0:FOR B=1 TO 3:C1=A(A,B)+C1:NEXT
B:GOSUB 7000:NEXT A:RETURN
5000 REM CHECK COLUMNS
5010 FOR A=1 TO 3:C1=0:FOR B=1 TO 3:C1=A(B,A)+C1:NEXT
B:GOSUB 7000:NEXT A:RETURN
6000 REM CHECK DIAGONALS
6010 C1=A(1,1)+A(2,2)+A(3,3):GOSUB 7000:C1=A(1,3)+A(2,
2)+A(3,1):GOSUB 7000:RETURN
7000 P1=P1-(C1=3):P2=P2-(C1=6):RETURN
```

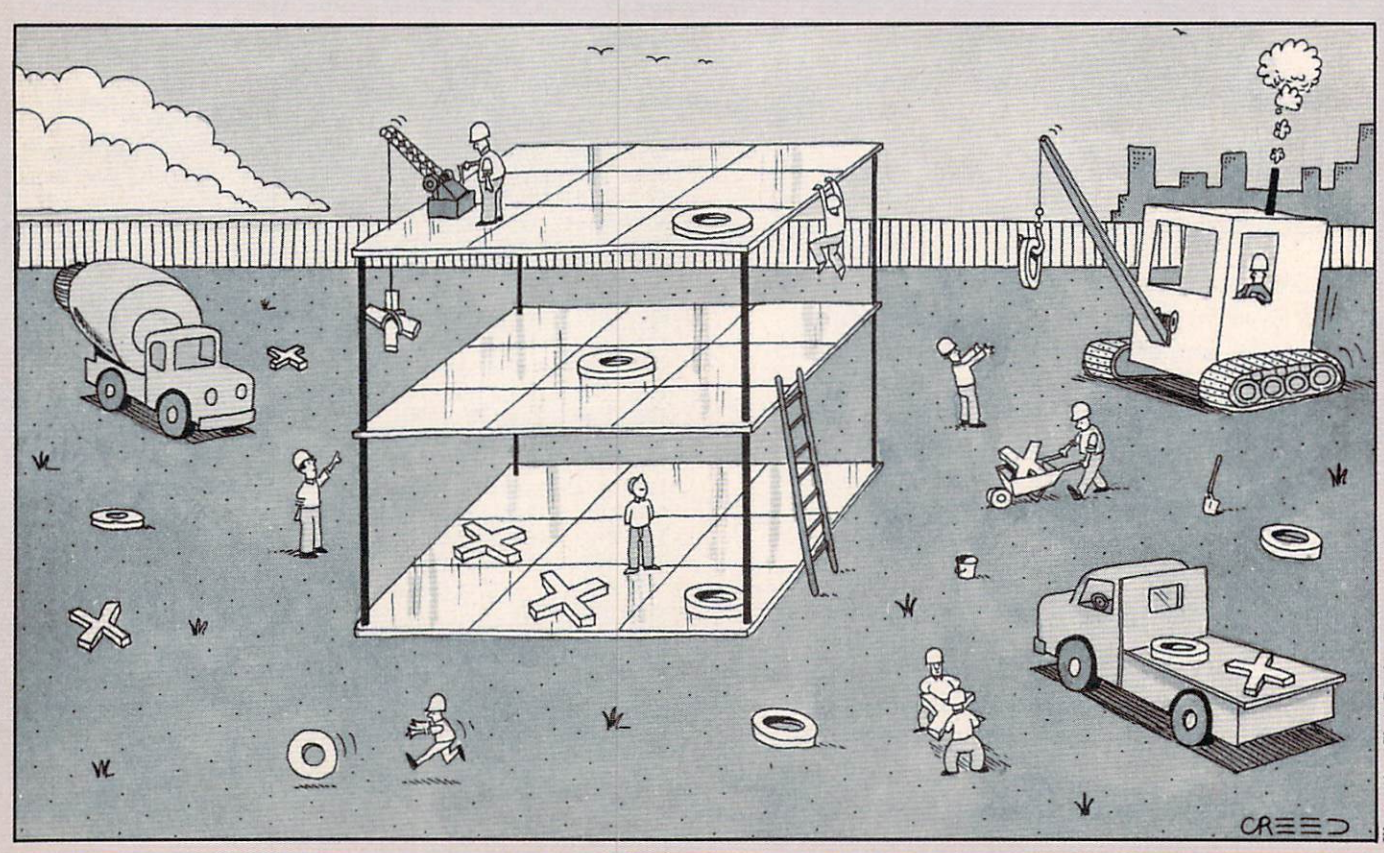
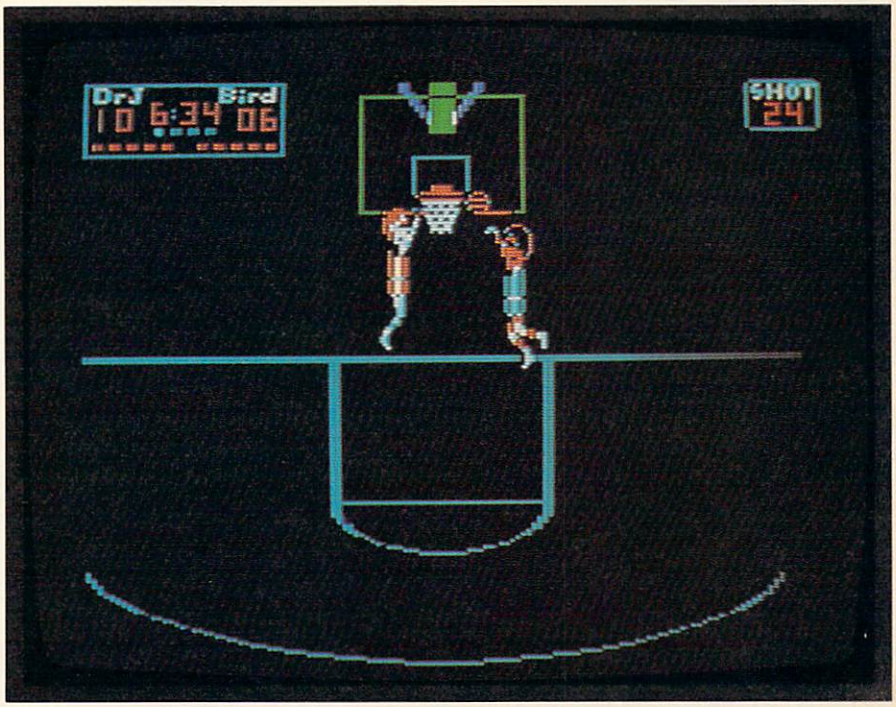


Illustration: Chris Reed

ONE-ON-ONE 9

HARDWARE REQUIREMENTS: *Apple II/II plus/IIe, 48K (disk); joystick(s); Mockingboard (optional)*
MANUFACTURER: *Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171*
PRICE: *$40*



One-on-One, by Eric Hammond (with help from Julius Erving and Larry Bird), unquestionably rates as one of the best sports-simulation computer games around.

First off, you're given the choice of playing as Bird or Dr. J. This is one of the game's most interesting and innovative aspects. You take on their strengths and shooting percentages. For example, Dr. J can drive faster toward the basket, while Bird does better under the boards. My playing technique made Dr. J the clear choice because I tend to steal and make fast breaks.

The game supports one or two players. Offense uses the joystick, and defense plays from the keyboard. The game also allows the use of two joysticks by means of a special adapter. I wasn't fortunate enough to explore this option, but found keyboard control to be pretty good.

Using joystick or keyboard, you move your player up, down, left, and right. The fire button initiates jumping, shooting, spinning, stealing, fouling, etc. The players respond remarkably rapidly in smooth, flicker-free animation.

Many details add to the realism of *One-on-One*. A lot of running and frequent use of the action control, for example, lowers a player's physical condition. As he gets increasingly tired (indicated by a bar graph on the bottom of the screen), speed, aim, and precision deteriorate. Hot and cold streaks are also included. Once you're hot, you can shoot from anywhere on the court and score. But when you're cold, you might be better off taking a time-out. The three time-outs you get per game help to replenish your strength.

Four skill levels are included, from "Park and Rec" up to "Pro." At higher levels, play speeds up, computer opponents become tougher, and fouling is taken more seriously. If the ref catches you "reaching," "hacking," "traveling," etc., he'll appear on the screen and penalize you accordingly.

What really makes *One-on-One* special are the small touches it's been endowed with. First and foremost is instant replay. Periodically, certain exceptional plays are picked out and shown over again in slow motion. Another touch is the massive roar from the "crowd" that greets every basket. Last (and certainly not least), players are rewarded for slam dunks with a shattering backboard and a shower of glass.

One-on-One is one of the most riveting games I've ever played. The attention to detail is really impressive. You'll never find *this* game in the bottom of a closet under smelly socks.

MATT DAVIS, *16*
New York, New York

THE RATINGS

K-POWER reviewers base their ratings on a 1–10 scale, with a 10 being that rare piece of software that's too outstanding for words. The lower end of the scale is reserved for the dogs that shouldn't have left the assembly line. Enough said.

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Accounting Pack	$49.00	$39.00	$29.00
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Tape	$69.00	$49.00	$34.00
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Tape	$44.95	$34.95	$22.00
Disk	$49.00	$39.00	$27.00
Total Label 2.6			
Tape	$24.95	$18.00	$12.00
Disk	$29.95	$23.00	$15.00
Programmers Helper (Disk)	$59.00	$39.00	$29.95
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Crush-Crumble-Chomp	$29.95	$24.95	$19.95
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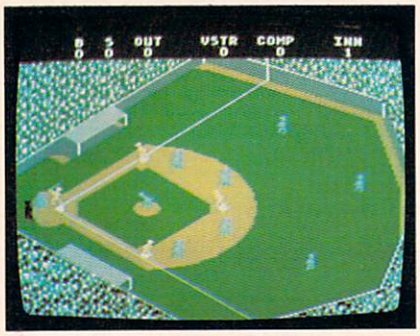
STAR LEAGUE BASEBALL 9

HARDWARE REQUIREMENTS: *Atari 400/800/1200XL, 32K (disk and cassette); also available for Commodore 64 (disk and cassette); joystick(s)*
MANUFACTURER: *Gamestar Inc., 1302 State St., Santa Barbara, CA 93101; (805) 963-3487*
PRICE: *$31.95*

It's the bottom of the ninth and "Slugger" McGee is up to bat againt the famous "Heat" Muldoon. The score is tied and the frenzied fans are screaming wildly. Every eye in the stadium is on McGee. Here's the pitch . . . and it's a flamin' fast ball down the middle. Slugger takes his swing. It's a hit! It's got the height, it's got the speed, it's going, going, going, gone!! Slugger trots around the bases to the cheers of the crowd.

If you've always wanted to be a baseball hero, here's your



chance. In *Star League Baseball*, you use the joystick to control a variety of batters, pitchers, and fielders. The visiting team can be played by either a friend or your computer (who, by the way, never makes errors).

The screen shows a detailed view of a baseball stadium, complete with dugouts and fans. At boot-up, you're given the choice of practicing, or playing. Take my advice and use the batting practice option—it takes awhile to get a feel for hitting.

To start the game, you must pick your team of hitters and pitchers. A liner hits average distances consistently, while sluggers go for the fences. For pitchers, you've got a choice between "Heat" Muldoon or "Curves" Cassidy. (Each throws eight different kinds of pitches.)

Players at bat and the opposing team in the field are all joystick controlled. After you get used to it, the system is as natural as using a catchers' mitt or your own throwing arm.

It's just one of the ways that Gamestar did a fantastic job of bringing realism to computer baseball. You feel as if you're really playing in the major leagues. There's a seventh-inning stretch complete with music and the option to send in "Knuckles" Flanagan to relieve Muldoon or Cassidy. (After seven innings they're programmed to lose their "stuff." "Heat's" fast ball slows down, and "Curves' " throw loses its twist.) After you've picked your team, you're even asked to rise for the national anthem, while a picture of Old Glory flashes on the screen.

Star League Baseball is the best baseball game I've seen for the Atari. The graphics and animation are fantastic. The sound, though sparse, is well done and used in just the right places. Though the game is very easy to learn, it's difficult to master and you have to play an almost perfect game in order to beat the computer. You won't play it once and put it on the shelf, any more than you would play one game of real baseball and call it a season.

STEVE HOROWITZ, *16*
Westport, Connecticut

RETURN TO PIRATE'S ISLE 7

HARDWARE REQUIREMENTS: *TI-99/4A (cartridge)*
MANUFACTURER: *Texas Instruments, P.O. Box 53, Lubbock, TX 79408; (800) TI-CARES*
PRICE: *$39.95*

If you've been aching for an exceptional challenge in a text/graphic adventure, here's your game. In *Return to Pirate's Isle*, you're an ambitious adventurer on a mission to discover and store 13 hidden treasures. On

your journey you've got to venture through some fairly exotic and treacherous locations, and you're confronted with innumerable dangers and dead ends that supposedly require only logic and cunning to overcome. (Easier said than done!) Be alert and study each situation carefully. You never know whether death or wealth awaits you.

Your typed-in commands consist of either one or two words, such as: CLIMB ROCK, LOOK DOWN, or DROP HAMMER. Once you get used to the lingo, communication with the computer is fairly simple because of the game's substantial vocabulary.

It's an exciting, challenging journey that tests your resourcefulness and patience. As you investigate your surroundings, you'll

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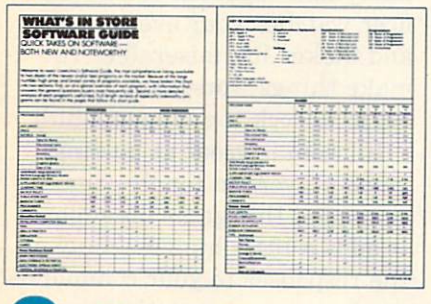

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find items that can help you with various tasks. But, only a certain amount of equipment may be carried at a time, so you may need to pick out only items vital to your mission.

Before attempting *Return to Pirate's Isle*, decide whether you want to tackle this complex adventure. It's an excellent cartridge with beautiful color graphics, but isn't recommended for the timid novice.

TOM PETERSON, *14*
Vancouver, Washington

DINO EGGS 7

HARDWARE REQUIREMENTS: *Apple II/II plus/IIe, 48K (disk); also available for Commodore 64 (disk); joystick*
MANUFACTURER: *Micro Fun, 2699 Skokie Valley Rd., Highland Park, IL 60035; (312) 433-7550*
PRICE: *$40*

"EXPLORING THE PREHISTORIC PAST VIA TIME WARP—YOU INFECT THE DINOSAURS WITH COMMON MEASLES—ACCIDENTALLY CONDEMNING THEM TO EXTINCTION! OVERCOME WITH REMORSE—YOU DEVOTE YOURSELF TO RESCUING THE ENTIRE DINOSAUR POPULATION. YOU CAN DO IT!—FOR YOU ARE TIME MASTER TIM! USING YOUR TIME WARP—YOU CAN FIND AND CARRY DINO EGGS AND DINO BABIES SAFELY INTO THE 21ST CENTURY! THE DINOSAURS LIVE AGAIN IN OUR FUTURE! THANKS TO YOU—TIME MASTER TIM!"

After the mission is defined in *Dino Eggs*' opening credits, Tim heads on his way into the Mesozoic Era. Cliffs appear, with boulders, eggs, and wood under the ledges. He leaves the comfort of the time warp, jumps over crevasses, and runs along ledges. Knocking a boulder over the edge, he finds nothing underneath.

Uh-oh . . . the screen says, "DINO MOM COMING—START A FIRE." To scare her away, Tim piles some wood and starts a blaze. Now that that's taken care of, he jumps over a proto-snake, kicks over another boulder, and finds three dinosaur eggs. Tim carries them to the time warp where he can send the eggs to the future before his time runs out.

Tim then continues his search. But, oh no! The fire has gone out and . . . SMASH! Dino Mom literally puts her foot down to end the kidnapping of her babies. But, never fear, Tim still has two more lives and (if you're good enough) 10 levels of difficulty to proceed through.

Similar to other climbing games (like *Hard Hat Mack*), *Dino Eggs* has some special touches. It's ideal for novices. The instructions are clear and the game proceeds at your own pace. The graphics and sound also are excellent. The story line, although different, is perhaps the weakest point. The game takes place in the distant past instead of, like most games, the future. Tim's actions are human-like, not futuristic, unique, or superhuman. Instead of using laser beams, he lights a fire; instead of flying, Tim walks and jumps. If Time Master Tim could transport some 21st-century speed and excitement with him into prehistory, I could recommend this game more highly.

STEPHANIE KAUFMAN, *17*
Denver, Colorado

PLANETFALL 8

HARDWARE REQUIREMENTS: *Apple II/II plus/IIe, 32K (disk); also available for Atari 400/800, 32K (disk); Commodore 64 (disk); IBM PC, 48K (disk); TI-99/4A, 32K (disk); and TRS-80 Models I/III, 32K (disk)*
MANUFACTURER: *Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138; (617) 492-1031*
PRICE: *$49.95*

You're a member of the prestigious Stellar Patrol, warping around the far reaches of the galaxy. But life is far from glamorous in this text adventure. As an ensign seventh class, you're assigned to floor-scrubbing duty in one of the space cruiser's many hallways. An obnoxious officer watches your every move and makes life miserable. To make things worse, explosions begin to rock the cruiser's hull.

Infocom is great at putting game players in tough situations, but this game does more. It adds a little humor. Many of the responses to your commands are funny, and sometimes even sarcastic. And when you get to an abandoned planet after escaping from your doomed cruiser, you meet up with a hilarious robot named Floyd. You'll soon discover that this helpmate isn't always so helpful. He's much more interested in playing games like "hider and seeker." Though a frustrating character to deal with, Floyd gives the

game a lot of personality.

The object of the game isn't immediately clear. You roam the planet with your newfound friend and investigate ruins. It takes a little looking to discover what you have to do.

The extremely detailed descriptions of all the locations are first-rate. The lack of graphics is never a problem because the text is much more informative than a picture could ever be. And the computer accepts complex sentences, which allows for all sorts of possibilities. One of the great things about *Planetfall* is that it can respond to many of the crazy things you type in. Sometimes the only way out of a situation is through an off-the-wall command.

Planetfall is unlike many text adventures. It offers more than just a challenging trip into a fantasy world; it also offers a lot of laughs.

PAUL AND DAVID SCHOEMAN, *14*
New York, New York

BLUE MAX

HARDWARE REQUIREMENTS: *Atari 400/800, 32K (disk and cassette); 1200XL, 64K (disk and cassette); also available for Commodore 64 (disk and cassette); joystick*
MANUFACTURER: *Synapse Software, 5221 Central Ave., Richmond, CA 94804; (415) 527-7751*
PRICE: *$34.95*

Your entire squadron has been destroyed, and it's up to you to reach the enemy city and bomb three designated targets within it. Max Chatsworth is your name, but your mates call you "Blue Max," after the medal the Axis powers are offering to anyone who shoots down your plane.

Reaching your targets isn't easy. As you fly over a river valley (the first scenario), enemy planes attack and massive anti-aircraft guns shoot from below. You'll score if you bomb bridges and buildings. Rack up more points by hitting moving targets such as boats or vehicles.

To get to the next scenario, the road to the city, you have to bomb a number of specially

marked targets. That's not an easy task when enemy guns are blasting away at the sky around you.

When (and if) you get to the city, you must hit the three marked targets to complete your mission. Along the way, you'll find friendly runways so you can land, refuel, and repair your plane.

You maneuver your plane with a joystick. You can ascend, descend, bank left, bank right, drop bombs, fire your machine gun, and land. And you better get good at it, because you've got only one plane (a real disadvantage). Once you crash, it's all over.

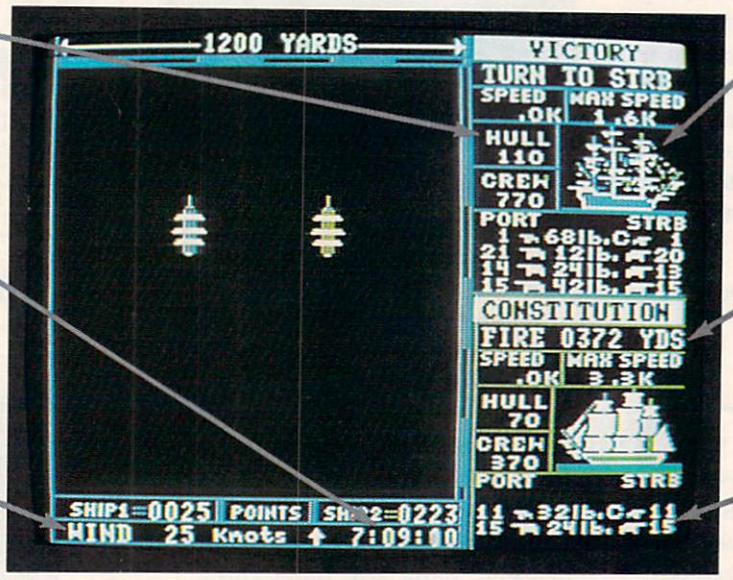
Blue Max is definitely exciting and should hold your attention for quite a while. The combination of sound and 3-D graphics makes you feel like you're really in the driver's seat of a World War I fighter plane. Once you take off, there's never a dull moment as you fly through unfriendly skies as Blue Max.

DANIEL HOROWITZ, *14*
Westport, Connecticut

TAKE THE HELM IN *BROADSIDES*

It's the 18th century, and you're the captain of one of the greatest sailing ships in history.

By James Delson



This measures hull damage. When it reaches zero, you're sunk.

Games start at 6 a.m. and end at 6 p.m. (Game time is much quicker than real time.)

Here's the wind speed . . . and its direction.

This ship's taking a beating. Look at the sails.

Your orders appear here.

This is the firepower you're carrying.

Imagine commanding a crew of gallant sea warriors in battle against fearsome enemies, the wind billowing your sails, the reek of gunpowder filling your nostrils, the heavy thud of cannon shot shaking the decks beneath your feet.

Now the glorious days of mighty sailing ships can be relived in an Apple game called *Broadsides* (48K disk). Produced by Strategic Simulations, Inc., the leader in the field of sophisticated war and strategy computer games, *Broadsides* is the most accurate reproduction of ship-to-ship combat you can find.

In *Broadsides,* you're the captain of the ship of your choice. You issue orders to your crew (the most disciplined on the high seas), engage in sword fights with enemy sailors, and pilot your vessel across the sea, trying to outmaneuver and sink the enemy.

When the game begins, your computer becomes a shipyard. If you don't feel like using any of the vessels on the disk (such as the *Constitution* or the *Bonhomme Richard),* you can "build" your own. You select from a menu to decide the size of your crew and ship, the number and caliber of your cannons, your loading speed, the ship's turning time, and the accuracy of your snipers. (Snipers come into play when the two ships engage in the game's boarding scenario.) After creating your ship, you can do battle against some of the mightiest ships in history (captained by a friend or by the computer).

JAMES DELSON *writes about movies and computer games for several national magazines.*

Screen Shots: William P. Gallagher

SHIP-BUILDING TIPS

I've played *Broadsides* more than 100 times, and have experimented a lot in the ship-building mode. Here are some of the tricks that have helped me considerably. They'll help you on your way to becoming the next ruler (or scourge) of the seven seas.

1 Borrow a library book about great sea battles and build the ships described in one famous encounter. See how the battle was fought in real life, then try to change history by using your own strategy.

2 Build ships for yourself *and* the computer if the computer is consistently beating you. Balance play by lowering the computer's shot value, raising your hull points, or changing the number of guns.

3 Set up a target-practice game to learn to shoot well. You build a gunless ship for the computer and then try to sink it as quickly as possible. For more precise firing, set up a two-player game so you can maneuver both ships.

4 Keep a written record of the ships you've built. You can use the good ones again and make sure you don't use the failures a second time.

5 Use paddles, if you have them. They're better than the keyboard or joysticks for ship control.

6 Learn to be patient. You can inflict greater damage by holding your fire until the precise moment for a rake, or a full broadside.

7 Use your imagination. Create fantasy battles (like a small ship with two 42-pound guns against a big ship with 12 six-pounders). —J. D.

TIPS FROM THE ADMIRAL

Here are nine pointers from *Broadsides'* designer Wayne Garris.

1 When learning to play, use the shipbuilding option to create vessels with high hull points and a few light cannons for yourself and the computer. This way, you can learn to sail without being blasted out of the water.

2 To stand a better chance against the computer, try to knock out a number of guns on one side of the computer's ship. It's programmed to try to use its better side, so it will then turn and try to face you with its other broadside. Wait until its stern is to you, then rake it with chain shot to knock out its sails. By alternately shooting at the weaker side and the sails, you'll keep the computer ship turning its weaker side to you.

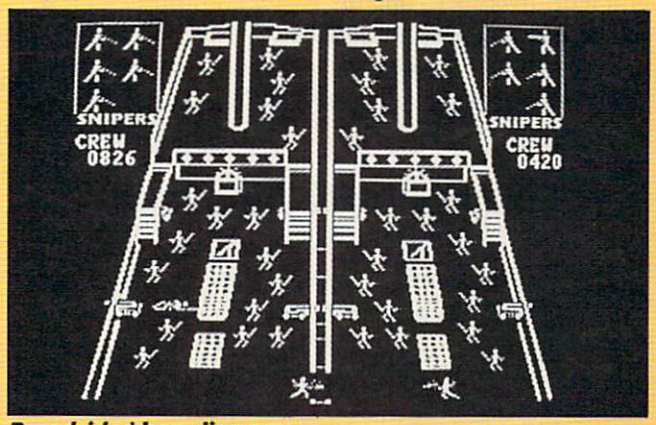
3 The computer generally gets in the first shot as soon as the game starts. To even things up, pause the game as soon as you set its pace. Release the pause, set the range, and shoot back.

4 To judge firing range while playing against the computer, put the game in pause, then use a ruler to get accurate distance.

5 Don't turn your ship into the wind. This will slow it down and stop it, giving your enemy an easy target. Turn with the wind, but only after planning where you'll try to go. Only turn into the wind if you're shooting at the enemy and can keep blasting away while halted.

6 Use chain shot only for firing at sails. But don't try to shoot them out completely. Once the enemy's sails have been reduced to below 50 percent of their original strength, the ship will begin to lose steering control. At that point the sails also become harder to damage.

7 Eliminate enemy snipers first. Aim one more sniper at the enemy's snipers than he's firing at yours. Then, aim extra snipers at his crew.



***Broadsides'* boarding screen.**

8 You can repair hull damage by disengaging ships from battle. The enemy will lose the points he got for hitting you, and your ship can regain up to 10 hull points.

9 If you're in danger of being defeated, keep breaking off contact to disengage and reengage. At least you can get a draw. —J.D.

What should you look for in personal

Before you go looking for personal computer software, you should know what personal computer software looks like.

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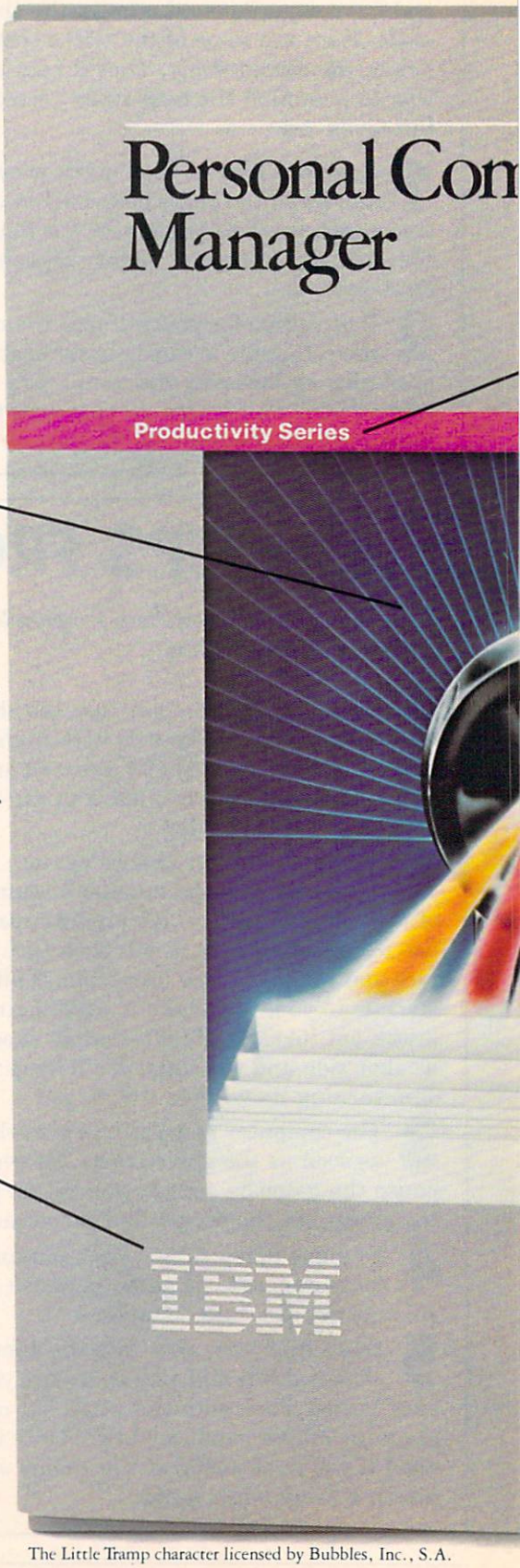

The Little Tramp character licensed by Bubbles, Inc., S.A.

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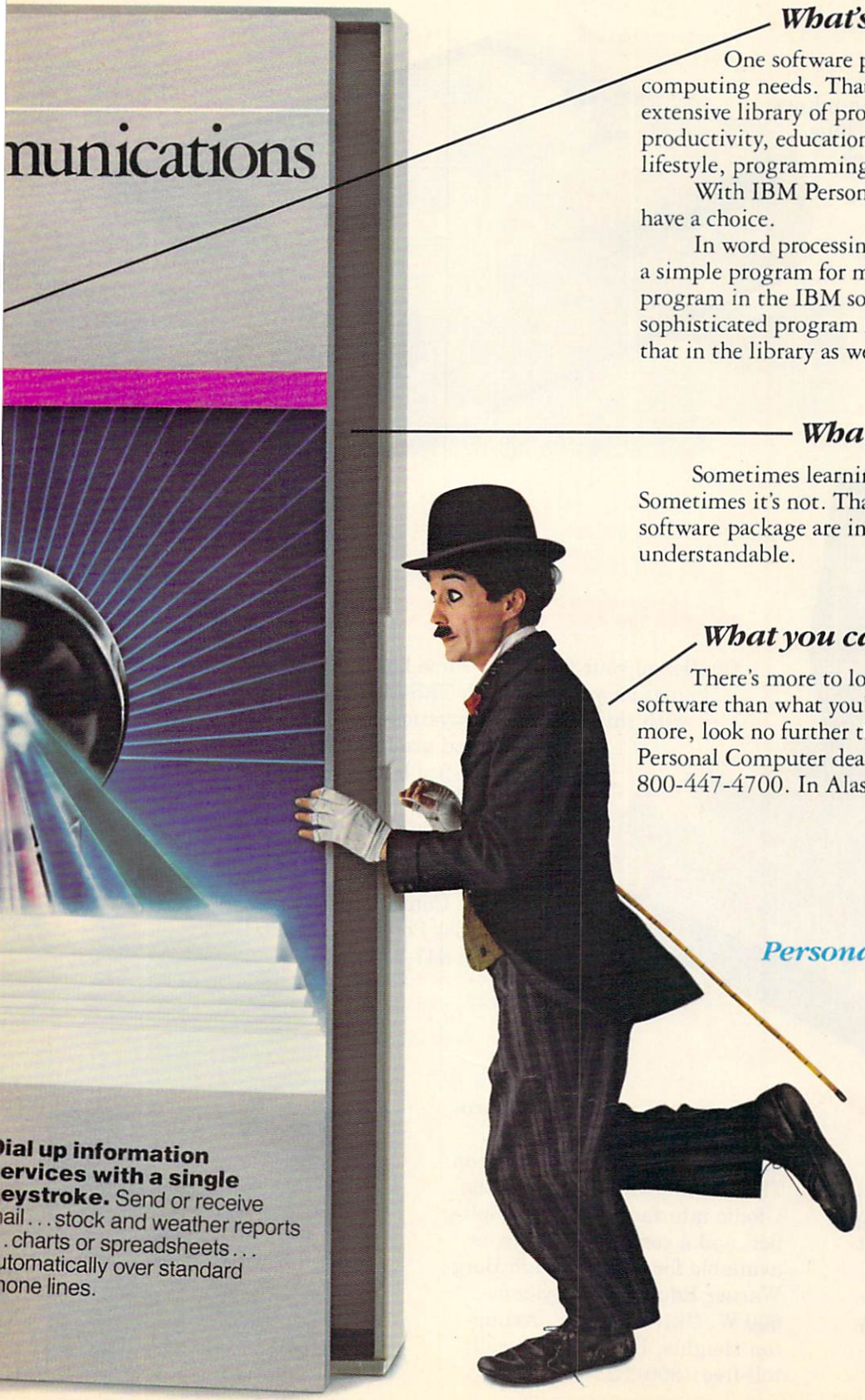

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Jumping for joysticks

Challenge your friends to some hot computer games on your Apple II, TRS-80, or IBM PC with this new line of joysticks. Wico's Computer Command group features dual independent-fire buttons, arcade-sized steel shaft handles, and the choice of spring-return or free-float modes. The joysticks are priced at $49 and can be purchased at computer stores. Contact: Wico Corp., 6400 W. Gross Point Rd., Niles, IL 60648; (312) 647-7500.

Computer talk

One of the nice things about computers is that they don't talk back. At least not until now. Apple users can give their computers a voice with the Ufonic Speech Composer program featuring a 2,000-word vocabulary and a human-like voice. The Ufonic system can be added to programs you write or to unprotected software that you own. Unfortunately, talk is not cheap. The system, which includes the Ufonic interface card, an amplifier, and a connecting cable, is available for $495 through Borg-Warner Educational Systems, 600 W. University Dr., Arlington Heights, IL 60004. Or call toll-free: (800) 323-7577.

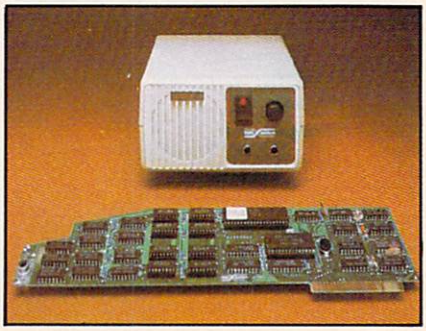

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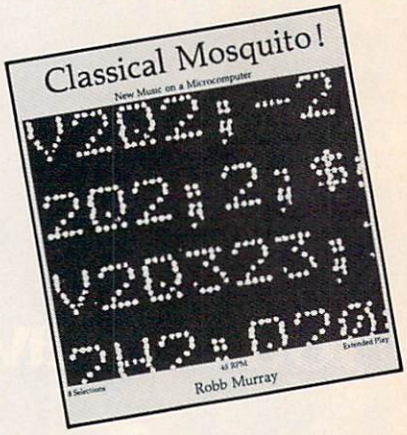
Photo: Curtis Washington

Micro-music mania

Making music with micros is simple with all the new music software, but composer Robb Murray takes the cake. Robb didn't just play music on his computer—he composed an original record. "Classical Mosquito!" is a 45 r.p.m. recital of original classical works composed entirely on his TRS-80. The record is available for $4 at select stores or by writing Robb Murray at 444 St. James Pl., Chicago, IL 60614; (312) 975-8020.



Disk-o bags

Floppy-disk users with a flair for fashion will enjoy these trendy rubber-tread bags. The 7- by 8-inch pouches come in assorted colors. Just slide in a piece of cardboard for extra floppy protection. The bags are priced from $8 to $10 at many department stores, or through the manufacturer: Walker Products, 110 Capp St., San Francisco, CA 94110; (415) 863-2839.

Photo: Curtis Washington

A light touch

Lighten up on those keyboard commands! The Tech-Sketch light pen lets you work directly on the computer screen, creating graphics on your Apple, Atari, and Commodore without even touching the keys. In addition to drawing and filling in your own figures, you can use shapes preprogrammed in the accompanying software. Tech-Sketch and its paint-sketch software is priced at $39.95. A super-sensitive light pen model is available for $119.95. This pen can control the cursor from as far as six inches from the screen. Both light pens are available through Tech-Sketch, Inc., 26 Just Rd., Fairfield, NJ 07006; (800) 526-2514.

For a clean machine

No matter how often you use your computer, it's bound to collect dust. Dust and static build-up can mess up your computer's circuitry and your carefully keyed-in information. Cut down static and dust with very little effort by using ACL's Staticide Wipes. A box of 24 towelettes costs $5 and can be purchased at computer or office-product stores. For information, contact the manufacturer: ACL, Inc., 1960 E. Devon Ave., Elk Grove, IL 60007; (312) 981-9212.

Photo: Curtis Washington

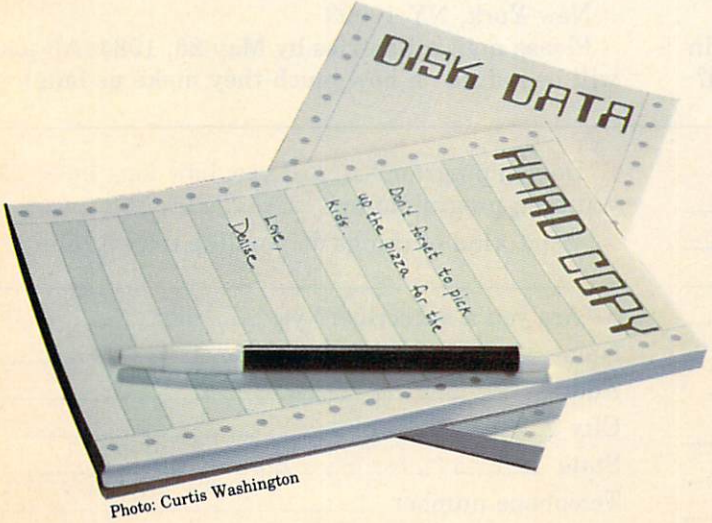


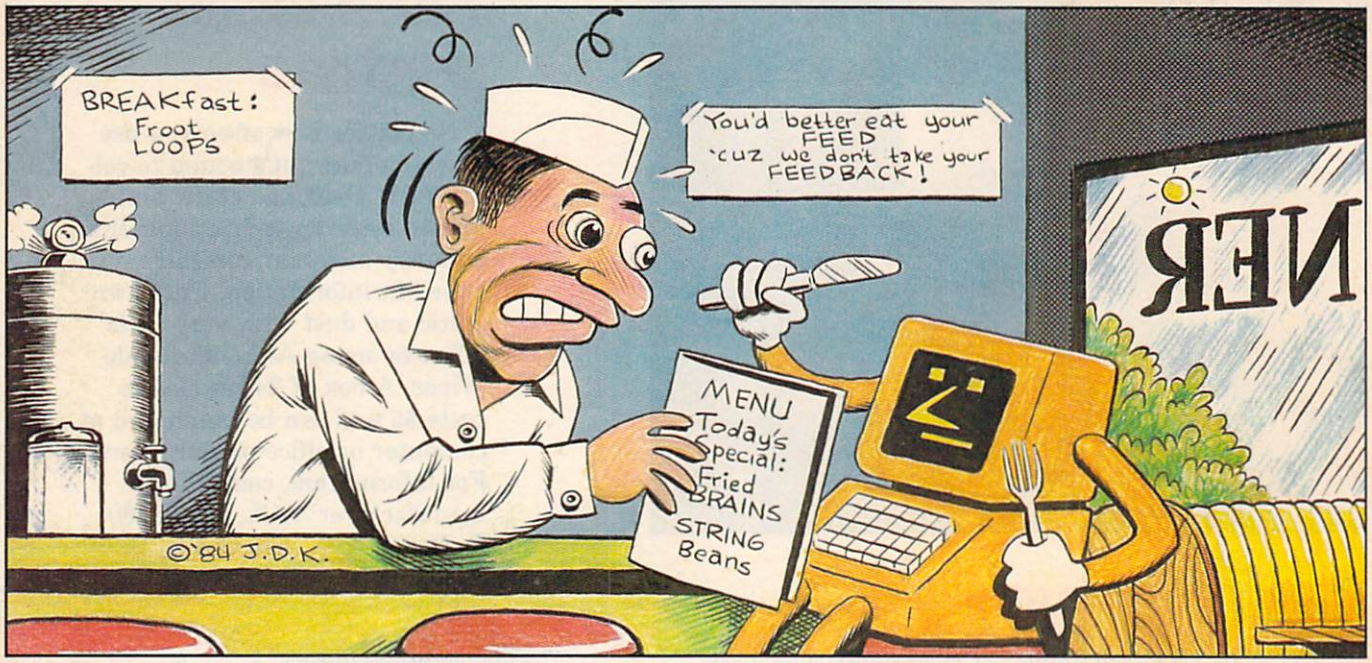
Photo: Curtis Washington

Forget-me-notes

Just because your computer has a 64K memory doesn't mean *you* do. Write yourself reminders with these computer-motif memo pads. Each of eight different designs costs $3. The memo pads are available at stationery stores and gift shops or through Computer Personals, P.O. Box 376, Southampton, PA 18966; (215) 947-6175.

CONTEST

MAKE ME LAUGH!!!



A computer goes into a diner. The guy behind the counter says, "We've never had a computer in here before!"

The computer answers, "Well, I just came in for a little byte!"

Pretty bad, huh? Well, it's obvious there aren't many good computer jokes around. In fact, K-POWER called up all of your favorite comedians for their favorites, and nobody had any!!! Not Steve Martin, not Eddie Murphy, and not even Uncle Floyd. (Actually, Don Rickles had one, but we can't print it in a nice magazine like this.)

That's why we're calling upon you, our faithful readers, to come up with some funny computer jokes. How many computers does it take to screw in a light bulb? Why did the computer cross the road? What happened to the computer after it was washed up on a desert island?

We'll print any and all jokes that make us laugh—and the 10 best ones will win prizes!!! We'll give away K-POWER T-shirts, free subscriptions, and stuff from around the office that we couldn't give away anywhere else (like those awful educational programs they call games—you know the ones we mean).

Just fill out this questionnaire and send it to:
K-POWER MAKE ME LAUGH!!! CONTEST
c/o K-POWER, 730 Broadway,
New York, NY 10003

Please mail all entries by May 25, 1984. All jokes will be judged on how much they make us laugh.

MAKE ME LAUGH!!! CONTEST

1. My computer joke is: _____

_____

_____

_____

2. I am a male ____ female ____ Age ____
3. Tell us about K-POWER:
   a) Best section: _____
   b) Favorite article: _____
   c) Favorite program: _____
   d) Other comments: _____
4. Do you program? ____ If yes, how long have you been programming? _____
5. What kind of things do you like to program?

_____

6. Are you a subscriber? yes ____ no ____

Name _____

Address _____

City _____

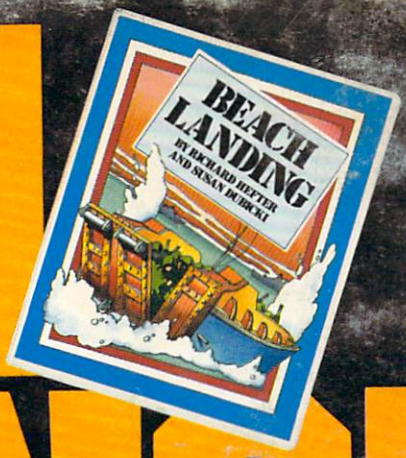
State _____ Zip _____

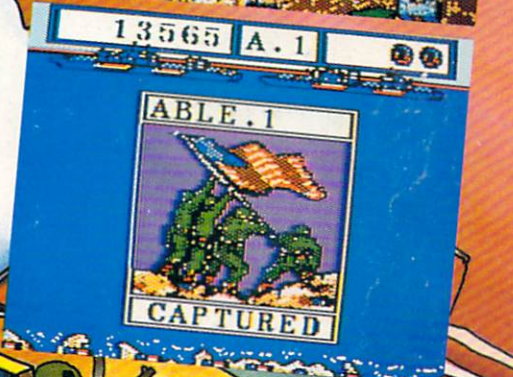
Telephone number _____

T-shirt size: S M L XL (circle one)

Illustration: J. D. King

BEACH LANDING!





Beach Landing, *the spine-tingling new strategy arcade game from* Weekly Reader Family Software, *offers the thrill of combat as landing ships hit the shell-wracked beach ...dodge withering enemy fire...and unload our fighting men so they can plant Old Glory on the embattled shore! But beware Yank! One error in strategy and the battle is lost!*

Look for great features that make the fierce invasion even more exciting! Like a magnified view of the battle zone that pinpoints detail... real strategy...arcade action...high-score saves ...fabulous sound...multiple levels...and more!

Developed by Optimum Resource, Inc. Designed by Richard Hefter and Susan Dubicki. For Apple® Computer and Atari® Computers with 48K and one disk drive.

Look for* Beach Landing *in finer computer stores everywhere. Or, order by calling toll-free 1-800-852-5000, Dept. AD62. Only $39.95 each.

BEACH LANDING

Weekly Reader Family Software

A division of Xerox Education Publications
Middletown, CT 06457

Commodore Software– The Best Game in Town.

...Take on the world, toughen up your trigger finger and fire away...

Commodore is the best computer value in town...at home, at school and at work... with our exciting, easy to use, inexpensive VIC 20 and C64 computers.

We're fast becoming the best game in town when it comes to entertainment for the whole family...and at affordable prices.

THE BEST ARCADE IN TOWN can be in your own home with our exciting, faithful reproductions of the best of Bally Midway arcade games. Our **Kickman,** (which just received a coveted "Electronic Games" award for an arcade translation) lets you steer the unicycle to catch the falling objects, as they fall quicker and quicker!!

Gorf, Lazarian, and Omega Race give you the best in classic space action against the one-eyed leviathon, the droids or the evil Empire.

In **The Wizard of Wor** you attempt to defeat the Wizard and the Warriors, fighting your way through to the end. With the new Commodore "MAGIC VOICE"... It talks back to you too!!

You commandeer the fleet at sea with our version of **Seawolf,** and become the master tactician as you battle "it out" with enemy fleet.

Clowns and **Blueprint** round out our arcade entertainment package to keep your fingers nimble and your mind in gear.

commodore COMPUTERS

First In Quality Software

See your local dealer now... He's got the best game in town... just for you.