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SEPTEMBER/OCTOBER 1984
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K POWER™

FOR THE COMPUTER GENERATION

PUBLISHED BY SCHOLASTIC INC.

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Buyer's Guide to Joysticks & Trak Balls

Computers in Big-League Baseball

Reviews of *Seastalker, Questron, Agent U.S.A., Seven Cities of Gold, King's Quest*

New Lucasfilm Games: *Rescue on Fractalus!* and *ballblazer*

0 76956 14009 09

How to talk your parents

There's a new Apple® Personal Computer called the IIc that's so complete and so affordable that getting your parents to buy one should be easier than learning Logo.

If, that is, you know what to say.

For example, don't tell your parents that the IIc has the first true 128K VLSI motherboard, dual built-in RS-232 ports and a built-in half high disk drive. Or that it has a switchable 80/40 character display and built-in mousetronics so it can use an AppleMouse.

You know that's incredible in an 8 pound* computer, but all those specs may make your parents uncomfortable.

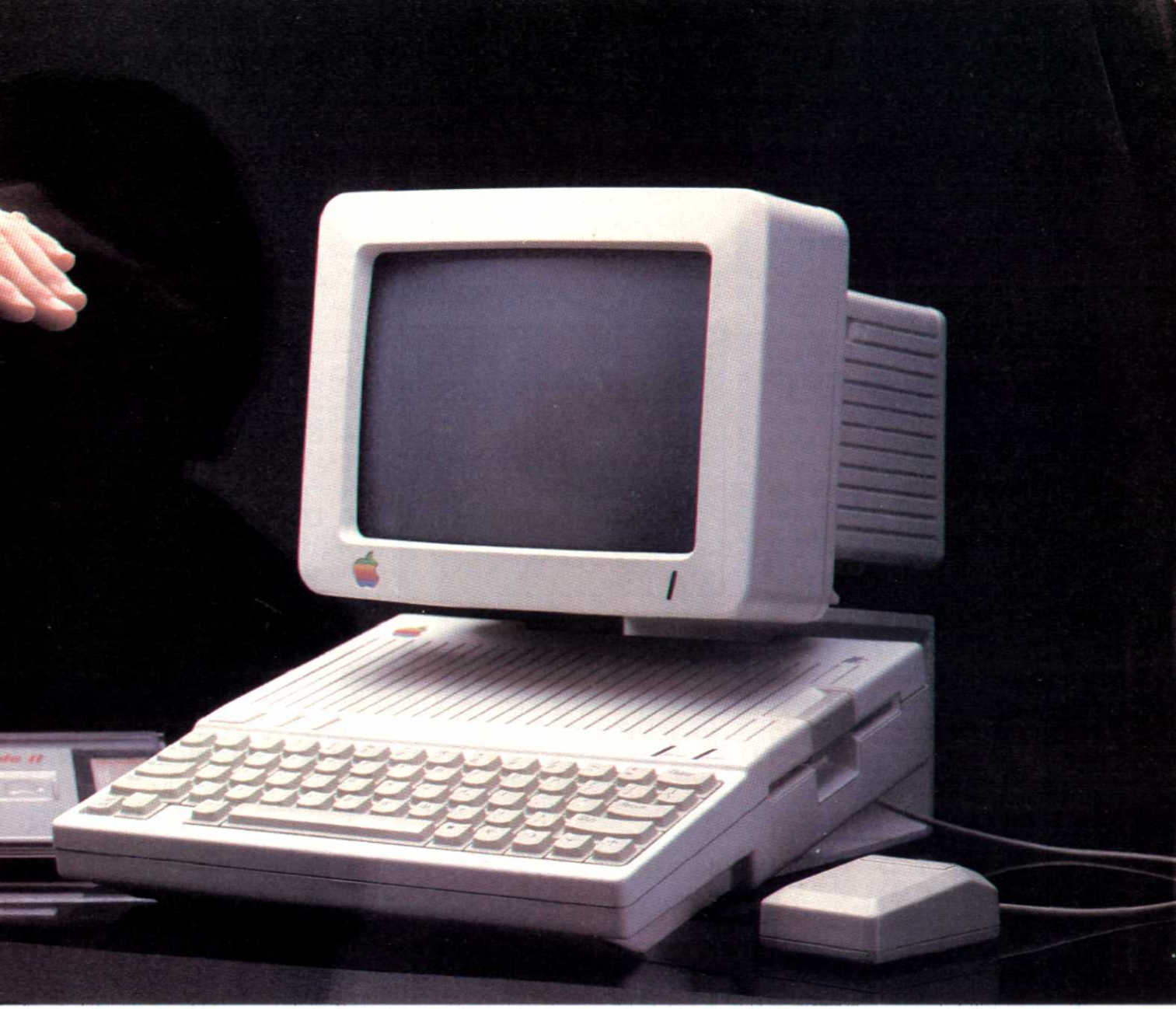
Just tell them that the Apple IIc can run more than 10,000 programs written for the Apple IIe, the most popular computer in education at all levels. And it works just the same as the Apple computers you learn on in school.

The IIc shows off its true colors with SubLogic's Flight Simulator II

AppleWorks—advanced business software even a parent could love.

With MousePaint, you could become the next Picasso. Or the next Charles Schulz.

You might also mention that it's a bargain. It comes with everything you need to start computing in one box—including an RF modulator that lets you hook it up to your TV the moment you get it home. There's even a free 4-diskette course on computer basics they



nto parting with $1300.

can use when you're too busy to show them how.

All for under $1,300.**

Of course, they probably won't want to hear that it runs more games than any other computer in the world except the Apple IIe.

But they might like to know that it also runs advanced business software. Including specialized programs for every profession from doctoring to farming to astronauting. Not to mention personal productivity software to manage their personal finances and taxes.

Speaking of which, they can deduct part of an Apple IIc's price from their taxes if they use it for business.

Even if they always keep it at home.

Don't confuse them right now with the wide array of Apple IIc accessories and peripherals. Like Apple's 1200/300 modems. Or the IIc's low cost full-color graphics/text printer, Scribe.

The IIc Bag has room for a power pack, software, even notebooks. So it's worth a few extra bucks.

But assure them that your IIc can grow just as fast as you do.

Now, if all of these carefully reasoned arguments fall on deaf parental ears, don't despair. There is still one thing more you can do.

Get a paper route.

The IIc alone weighs just 7.5 pounds. Power packs, monitors, printers, modems and mice can make it as heavy as you'd like. **Suggested retail price.* *© 1984 Apple Computer, Inc. Apple and the Apple logo are trademarks of Apple Computer, Inc.* *For an authorized Apple dealer nearest you, call* **(800) 538-9696. *In Canada, call* **(800) 268-7796** *or* **(800) 268-7637.**

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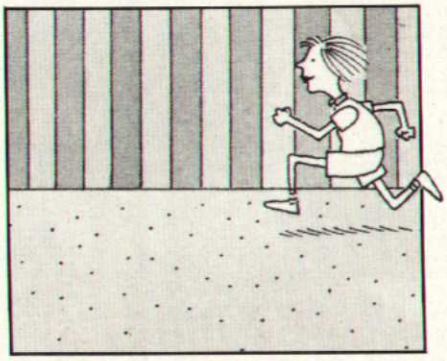

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Cover Photo:Janet Beller

ATARISOFT. All the hits your computer is missing.

It's showtime.

Time for ATARISOFT™ to show you six exciting, brand new games that are destined for stardom.

Games that can be played on your Commodore 64, IBM PC and Apple II. (Some titles available on IBM PC jr. and VIC 20:*)

First, there's *Gremlins*[1], based on the characters from the original film presented by Steven Spielberg.

Then there's *Crystal Castles*™ where Bentley Bear™ journeys through all sorts of tantalizingly difficult paths and ramps in his endless quest for gems.

In *Donkey Kong Jr.*[2] by Nintendo[2], Junior tries to rescue his father against immense odds. And speaking of Donkey Kong, there's also *Mario Brothers*[2] by Nintendo[2]. This time, Mario and his brother Luigi battle creatures on four levels of floors, encountering all sorts of treacherous enemies.

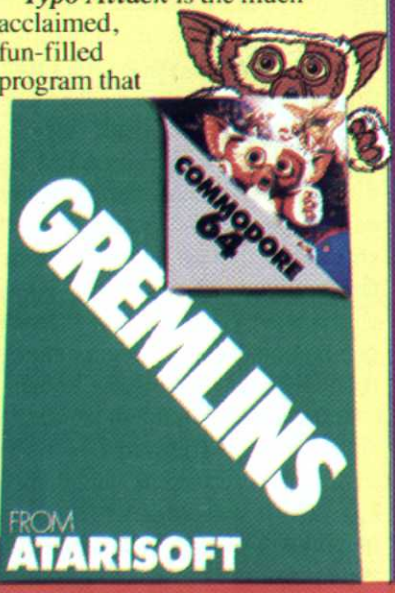
In *Track And Field*[3] you can compete by yourself or head-to-head with another player. But each player must beat qualifying times, heights and distances before they can compete in each of the gruelling six events.

Typo Attack is the much-acclaimed, fun-filled program that allows you to enjoy developing your typing skills at any level.

And still playing to the delight of audiences everywhere are *Pac-Man*[4]; *Ms. Pac-Man*[4]; *Jungle Hunt*[5]; *Battlezone*™; *Donkey Kong*[2] by Nintendo[2]; *Centipede*™ and *Pole Position*[6].

So, if you've been searching for ways to entertain your Commodore, Apple or IBM, treat it to one of the best shows in town, one of the hits from ATARISOFT.

And don't forget the popcorn.



MARIO BROS. — ATARISOFT APPLE II

DONKEY KONG JR. — ATARISOFT IBM PC

TRACK & FIELD — ATARISOFT COMMODORE 64

CRYSTAL CASTLES — ATARISOFT APPLE II

TYPO ATTACK — ATARISOFT IBM PCjr

ATARISOFT products are manufactured by Atari, Inc. for use with various computers and video game consoles. ATARISOFT products are not made, licensed or approved by the manufacturer(s) of those computers and video game consoles.

*Titles available on IBM PC jr. are Ms. Pac-Man, Centipede, Donkey Kong, Moon Patrol[7] and Typo Attack. Available on the VIC 20 is Typo Attack.

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ATARISOFT

SIX NEW HITS ARE COMING SOON TO A SCREEN NEAR YOU.

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EDITOR'S NOTE

Look out RAM, here comes RAP!

"I wouldn't have thought the, you know, *older* people who attend this show would go for *this*."

That was the comment of K-POWER writer Kim Guzeman as she watched some more-than-middle-aged men from Kansas tap their toes to the **da** dee-dee, **da** dee-dee, **da** da **da** rap dance beat blasting from a giant portable tape player. Thirteen-year-old Kim had to reserve further judgment as six break dancers in sun glasses lured her out onto a makeshift dance floor. You never would've guessed this was the 1984 International Summer Consumer Electronics Show!

The men with the beat were among the 98,000 people who checked out the twice-yearly show for the latest and greatest in new electronic products. Kim was there reporting on new computer developments for K-POWER. She was one of the few young people (besides the break dancers and K-NETTER David Lee) admitted to the show—it's reserved for retailers and manufacturers.

Her impression: "Walking around the show was like walking through the smallest airport with the most amount of people!"

Kim had never worked as a reporter at a show before. "You gather press kits and take a lot of notes from 9 a.m. to 6 p.m. By then, no doubt, your feet have taken the toll!"

Kim's big show find: "Break isn't just another dance fad these days, it's the focus for two new computer games! *Breakdance* is the name of the Epyx game at the show and Screenplay was there with *Breakdancer!*. Both companies had great dancers attracting people to their booths."

Kim did a great job at the show. She and David Lee will give a full report in the next issue. Their coverage of the show is all part of K-POWER's efforts to really make this *your* magazine. In fact, counting programs, articles, and software reviews, more than 30 percent of each K-POWER is written by kids. Care to join us and our contributors in making K-POWER even better? Write!

Anne Krueger

Anne Krueger, Editor

Screenplay's break dancers shake it up and teach K-POWER reviewer Kim Guzeman a few moves. Kim's impression of the show: "It's *crazy*!"

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FUN WITH SPEECH 64!

Speech Synthesiser for the C64 Computer

SPEECH 64 for the C64 computer is ready to talk immediately on power-up, has an infinite vocabulary and extra BASIC commands. Retailing at only **$49.95**, ***SPEECH 64***'s advanced features will give you, your family and friends lots more fun with your computer! Its sister unit μSPEECH — for the Sinclair Spectrum — is a smash hit in the UK and has been awarded the British CTA 'Product of the Year' accolade.

SPEECH 64 is easy to use! It needs no software to be loaded, it does not steal RAM from the BASIC operating system, or stop arcade style action.

With extended BASIC commands like SAY and its Text to Speech facility ***SPEECH 64*** can be programmed in plain English, just like this:

SAY "to say anything you want"

You can choose from two different voices, each with programmable intonation, and other commands control the voicing of keys as they are pressed — a useful educational aid for young children.

Watch out for ***SPEECH 64*** in your local computer store — or contact us directly for a list of retailers.

CURRAH

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LOGON

LETTERS

How to Submit Programs

You have put together a great magazine! After picking up my first K-POWER (the April issue), I subscribed. The articles were good, but the programming section was outstanding!

I do have one question however, or for that matter several. What's your procedure for reader submission of articles and/or programs? Do you require a computer listing? Most importantly, must I include a disk or cassette with the program submitted?

THURMAN GENTRY
Warren, Michigan

Dear Thurman,

To get your program in K-POWER, *you have to mail us a disk or cassette containing two copies of your program. For complete details, check out the Hacker Heaven section. It has a special box with the whole lowdown on how to submit programs. If you want to submit an article, write a letter proposing your story idea and mail it to* K-POWER. *Be sure to keep a copy of anything you send us, in case it gets lost or damaged on the way.*

THE EDITORS

K-Bloopers Are The Best!

Your May 1984 KP (page 40) has an article called "K-Bloopers." When I started to read it, I thought, "Oh wow, this is neat!" Then I stumbled across the letter sent by Joseph Hausenstaub and Bryn Thompson and totally freaked out! I called my friend Charlie Rohrbacher and he was so excited he asked me what he needed to do in changing TI Extended BASIC to BASIC, so I showed him the information in the letter.

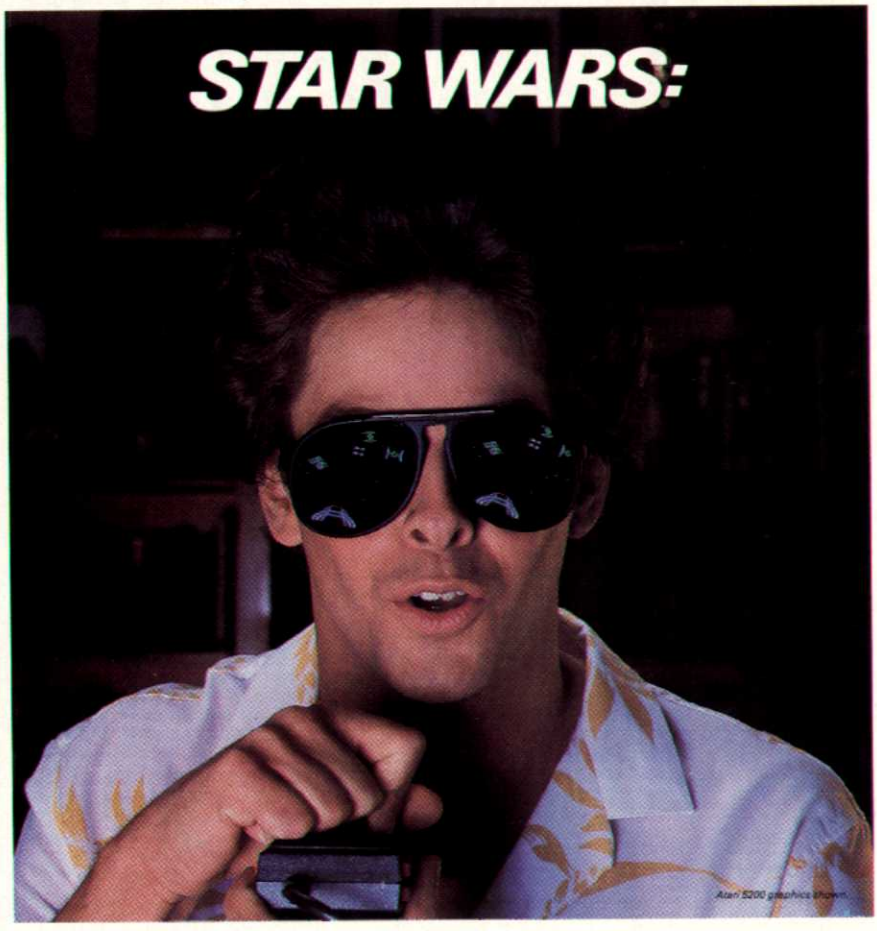
My friend Charlie and myself just want to say thanks!

ADAM McINTYRE
Wahiawa, Hawaii

Dear Adam,

We never realized that the K-Bloopers (now called Edit Mode) would be such a hit! Thanks for your letter! Anyone else who has programming hints, send 'em in!

THE EDITORS



How to Build a Robot

I am 10 years old. Would you write an article on how to build a robot? Because I want to have a real robot. I do not care how much it costs.

JODY MAGERS
Columbia, Missouri

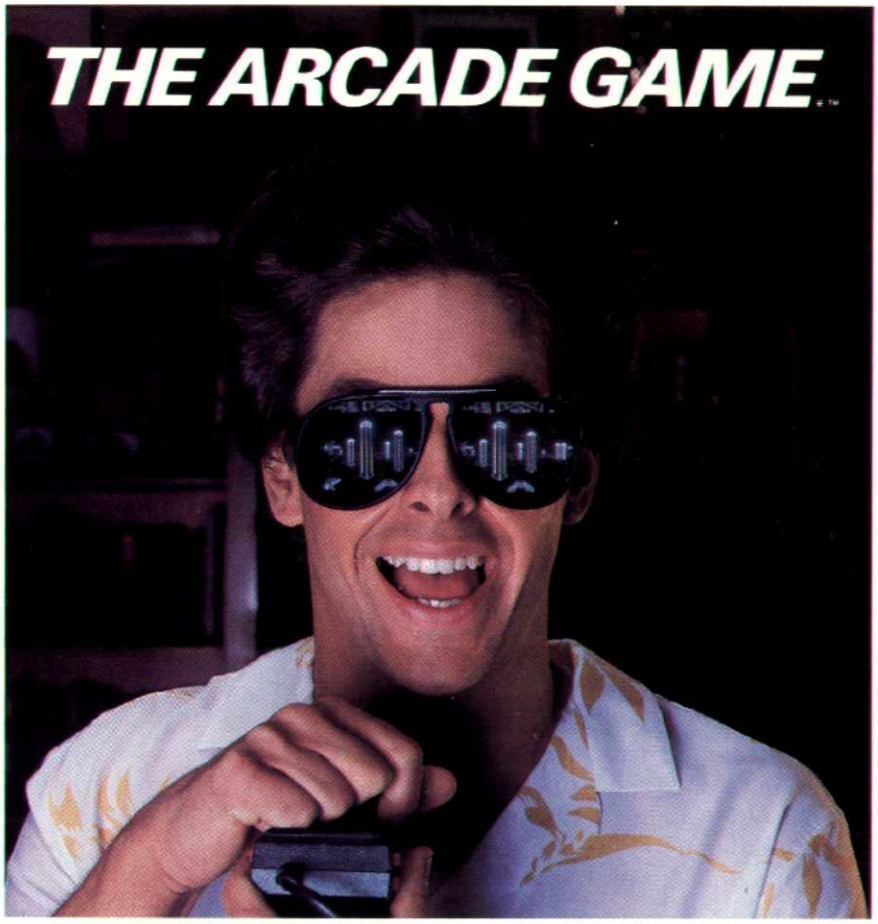
Dear Jody,

We'll see what we can do. In fact, we have a 14-year-old K-POWER *reporter building his own Heathkit HERO right now! Look for his step-by-step article in our November/December issue.*

THE EDITORS

Never Too Old

I am a 36-year-old mother who just loves your magazine. When we bought our ADAM, I subscribed to three different computer magazines, but the only subscription I will renew will be K-POWER. It's not only great for kids, but also for adults who have no knowledge of computers, like me. Your magazine is just



grams for my software library. Hopefully, in the future I will get to read more about the TI-99/4A in K-POWER.

LEONARD BROOKS
Seymour, Indiana

Dear Leonard,

K-POWER *is committed to supplying TI owners with plenty of programs. Check out our new pullout Hacker Heaven each month!*

THE EDITORS

WE WANT TO HEAR FROM YOU!

Send your letters to LOGON, c/o K-POWER, *730 Broadway, New York, NY 10003. Or, if you're a CompuServe member, you can leave messages for* K-POWER *in care of E-Mail. Our number is 76703,673. And if you're looking for a computer-using pen pal,* K-POWER *is looking for you! Write* K-POWER's K-BASE, *c/o* K-POWER.

what we "home computer kids" need. The other magazines are for "professionals." I just love your neat programs and humorous articles.

Keep up the good work!

LINDA BODINE
Deer Park, Texas

Computer Fever

I would like to congratulate you on your magazine. It is interesting and contains some great reviews of software. Your magazine has given me computer fever!!

JOSEPH BRUCATO
Irvington, New Jersey

Thanks from a TI-99/4A Owner

Just a few lines to say "Thanks!" Unfortunately, I own one of the "dying breed"—a TI-99/4A computer.

However, thanks to K-POWER, I can still obtain a few more pro-

STAR WARS,™ the arcade game that blew its way to the top of the charts, is coming home. TIE FIGHTERS*,™ fireballs, catwalks, they're all there in 3 of the hottest action screens in any galaxy. There is only one STAR WARS: THE ARCADE GAME*.™ For the Atari 2600, 5200, Atari Home Computers, ColecoVision and the Commodore 64.* PARKER BROTHERS

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COMPUZINE
VOL. 1 NO. 7 SEPTEMBER/OCTOBER

Edited by John Holmstrom

The Ultimate Game?

Photon! It's the world's first "living video game!" Wow! And "the ultimate game on Planet Earth!" Holy Cow!

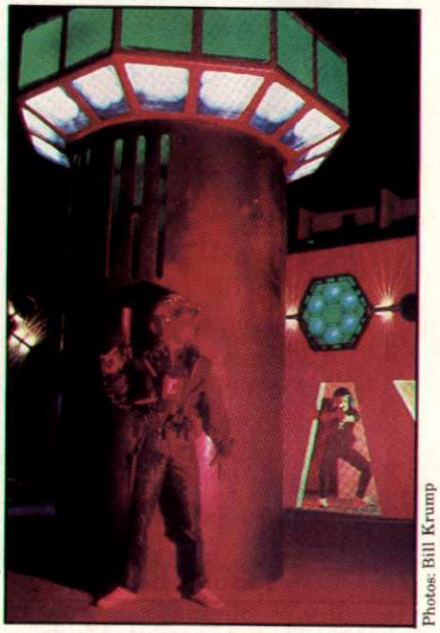
Actually, *Photon* is the world's first computerized sport. The arena is filled with mazes of tunnels and walkways. Two teams try to win by zapping opponents or their enemy's goal.

Will *Photon* come to your local arcade soon?

There's even special equipment. A helmet contains radio receivers and signal lights to let everyone know when you've been shot. Your weapon, the Photon Phaser, fires light beams. The Control Module contains microchips that tap into the central computers that control the game. A Power Pack provides the juice for all the Space Gear you lug around.

Unlike other sports, sometimes the best players are the little guys. And there's no age limit (but you've got to be big enough to wear all that stuff). The playing area is heavily padded so no one gets hurt, and two Game Commanders kick out any player who breaks the rules. Games last six to eight minutes, and high scores range from 500 to 900 points.

So far, there's only one *Photon* center (in Dallas, Texas). But there will probably be a *Photon* in every state by 1985. And, a national *Photon* tournament for 1985 is in the works. The best players will compete for a grand prize of $100,000.



Photos: Bill Krump

***Photon*'s playing area covers 10,000 square feet. It features a maze of tunnels, battlements, and walkways, as well as fog machines, sound effects, and elaborate lighting.**

Robot Patrol

Pretty soon, when convicts try to leave jail without permission, they'll get nailed by a 325-pound robot. "You," the robot will say, "have been detected. Will you please return to your cell?"

Thanks to infrared and ultrasonic detectors, these robots can identify shapes, motion, heat, and odors. They'll have internal bulletproof vests and move at approximately three miles per hour. About 1,000 guard robots are being made for the largest prison security systems company in the country, Southern Steel of San Antonio, Texas. Denning Mobile Robotics of Woburn, Massachusetts, manufactures them.

When a prison riot breaks out, the robots can go on suicide missions, according to Ben Wellington, vice president of Denning. The robots will be equipped with two-way radios to transmit the sound of the riot—for as long as they survive. (TV cameras to transmit pictures will be optional.)

Security is big business. It's expected to grow from $9 billion to $30 billion by 1990. In the very near future we may see robot patrols in warehouses, banks, and museums. They may also perform dangerous missions in nuclear plants. There's even talk that Uncle Sam will recruit them for high-security surveillance work. —PAM HOROWITZ

Who's Got K Power?

These readers sure do. . . . Randy Reames and Shaun Powers of Wamego, Kansas, used a VIC-20 in the 1984 Regional Science Fair. And they won first place in the Intermediate Behavioral Science Division.

The two 12-year-olds programmed their entry "Is Victor (VIC-20) an Educator?" and proved that computers teach students about thinking, patience, determination, teamwork, and programming. Congratulations Randy, Shaun, and, of course, Victor, for showing Kansas what K power is all about!!

If your parents complain that this is what all computer games are doing to you, they obviously don't know about Spinnaker.

With most computer games the biggest challenge isn't the game. It's keeping your parents from objecting to it.

Now, Spinnaker has the answer. It's called the Learning Adventure Series, and it's a whole bunch of great games that will challenge and inspire your imagination for hours. But won't inspire hours of complaining from your parents.

Of course, even if they didn't offer this nice little benefit, our games would still be fantastic. Because they've got the kind of built-in, long-lasting excitement and adventure that make great games great. You'll explore, figure, and investigate your way through all kinds of situations. You can bargain with aliens, search a haunted house, even build your own railroad empire. And that's a lot more fun than most games that are "bad" for you.

So the next time your parents complain that computer games are turning you into a vegetable, tell them about Spinnaker's Learning Adventure Series.

Then you can get down to the business of fun and games in peace and quiet.

Spinnaker Learning Adventure games are available for Apple,® Atari,® IBM® and Commodore 64™ home computers.

It's New! TRAINS.™
You're in charge of an old-time railroad – and whether it turns into a bonanza or a bust depends on how well you run it. But either way you'll find that working on this railroad is a challenge – and a lot of fun! **Ages 10-Adult.**

It's New! ADVENTURE CREATOR.™
Design a challenging adventure game that you or a friend can tackle – or let the computer design one for you. It's complex, exciting – utterly addictive! **Ages 12-Adult.**

IN SEARCH OF THE MOST AMAZING THING.™
It isn't easy to find – even in your B-liner. But you'll have help from your Uncle Smoke Bailey as you search the universe to find the Most Amazing Thing. **Ages 10-Adult.**

SPINNAKER™
We make learning fun.

Disks for: Apple, Atari, IBM, and Commodore 64.
Cartridges for: Atari and Commodore 64 – (ADVENTURE CREATOR only).

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WHAT WOULD YOU DO IF YOU

You leave the sun behind as you lower yourself down into the unexplored caverns beneath the Peruvian jungle. Deeper and deeper you go. Past Amazon frogs, condors, and attacking bats. Across eel-infested underground rivers. From cavern to cavern, through level after level. Swimming, running, dodging, stumbling, you search for the gold, the Raj diamond and the thing you really treasure... adventure. Head for it. Designed by David Crane.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600
- IBM PC jr

As you suit up you see the webbed forcefield surrounding your planet. Holding it. Trapped with no escape. No hope. Except you: The Beamrider. The freedom of millions depends on you. Alone you speed along the grid of beams that strangle your planet. Alone you must destroy it sector by sector. Your skill and your reflexes alone will determine the future of your people. Take their future in your hands. Designed by Dave Rolfe.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600

You made it. The Olympics. You hear languages you've never heard. And the universal roar of the crowd. You will run. Hurl. Vault. Jump. Ten grueling events. One chance. You will push yourself this time. Further than ever. Harder than ever. But then... so will everyone. The starting gun sounds. A blur of adrenaline. The competition increases, now two can compete on screen at the same time. Let the games begin. Designed by David Crane.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600 (1-4 players alternate)

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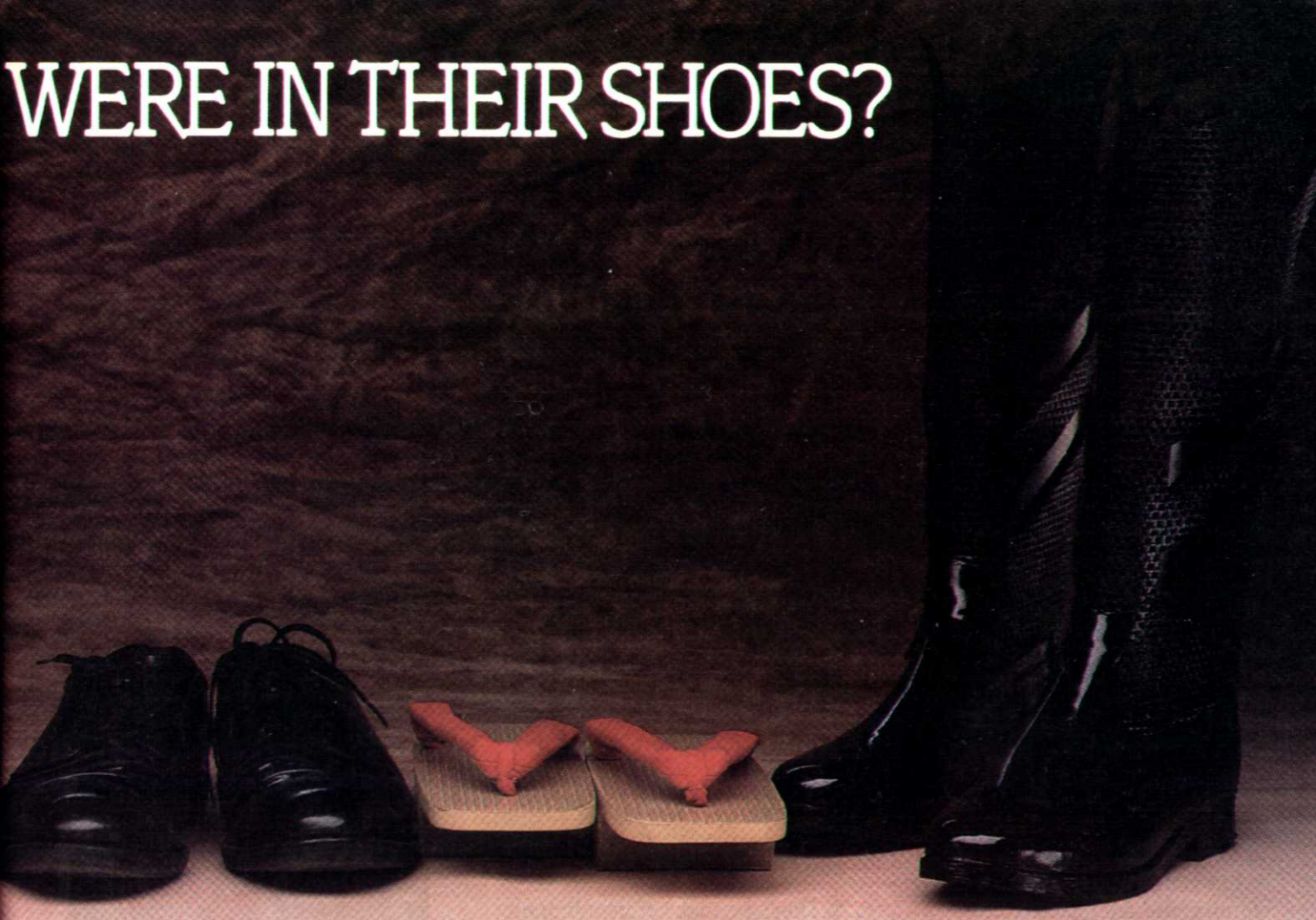
WERE IN THEIR SHOES?



You've put on your badge, grabbed your nightstick and headed out. But what's going on in that department store? A good old-fashioned chase that's what. You've got to catch the greedy little burglar who keeps throwing beachballs, toy airplanes and shopping carts in your path. Up the escalators. Down the elevators. From floor to floor. There's something funny going on here. Take charge of the investigation, lieutenant. Designed by Garry Kitchen.

Available for your:
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600

You have heard the elder speak of one central source and a maze of unconnected grey paths. As you connect each path to the central source, what was grey becomes the green of life. When all are connected, then you have achieved "Zenji." But beware the flames and sparks of distraction that move along the paths. You must go beyond strategy, speed, logic. Trust your intuition. The ancient puzzle awaits. Designed by Matthew Hubbard.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200

You prepare for what may be your last take-off. Negotiations have failed. The Dreadnaught moves in. You must attack. No single hit will stop it, you must destroy individual energy vents, individual engines. Approach. Attack. Swerve away. Again and again. An evil enemy inhabits the massive Dreadnaught. And you alone, a small speck in the vastness of space, fly out to meet it. Get on board, your ship is ready to leave, sir. Designed by Tom Loughry.

Available for your:
- Atari home computers
- Atari 5200

ACTIVISION®

We put you in the game.

Follow the Million Dollar Road

By Timothy Knight

I just graduated from high school last June, but I make as much money as a lawyer or doctor. I have my own corporation called Probotech Inc., a partnership in KLH Publishing, I publish a magazine called *Personal Robotics*, and I've written 20 computer books.

Almost no one at my old school, Miramonte High, in Orinda, California, knew about my business endeavors until last February. That's when I drove into the school parking lot with my new red Porsche.

How did I hit the jackpot? It's a long story. But I can tell you what really helped: support from family and friends, my determination, and some luck. (I accidentally received a how-to-booklet on writing computer books. I also got the chance to meet one of the largest literary agents in the world!) I suppose it also was my good fortune to become interested in computers in the first place!

Along the way, I learned some valuable lessons. I'll pass them on to you.

1. Start off small. I didn't just sit down one day and write a book. I wrote dozens of reviews, articles, and programs before I was experienced enough to complete my first book, *The World Connection*.

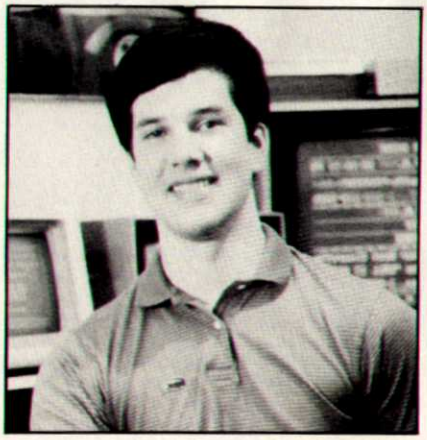
2. Don't be obsessed with the idea of making money. Concentrate on making work for yourself first, and count the money later.

3. Don't pay attention to people who advise you to get a "normal" job.

4. Don't be upset if people make fun of your endeavors. They'll end up admiring you in the long run.

I'll be starting college very soon. At the same time, I plan to start a robotics corporation, write novels, and work on my magazine. After all, I plan to be a millionaire by my 21st birthday!

TIMOTHY KNIGHT *has been plugging at computer keyboards since the eighth grade. One of his books,* Megabucks From Your Microcomputer, *gives lots of tips on making it big.*



There's no end to Timothy's computing adventures.

Lights! Computers! Action!

Photo: Courtesy Universal/Lorimar

***The Last Starfighter*—a supercomputer shoot-'em-up.**

Science fiction filmmakers are letting go of their cameras and getting supercomputers to do their super special effects. *The Last Starfighter*, for instance, has about 30 minutes of supercomputer graphics.

The Last Starfighter follows the adventures of Alex Rogan (played by Lance Guest). He's a small-town kid whose favorite game, *Starfighter*, is actually a training computer for an intergalactic war. He's so good at playing the game that he's recruited to fight in the real thing. Digital Productions in Los Angeles used computers (instead of blue-screen model photography, which was used in *Star Wars*) to create the film's space battles.

Just how did Digital use computers to create the intergalactic space wars? First, they constructed a 3-D "wire-frame" (or vector line) model of the spaceship for a data base. The database spaceship could be moved around until the director and producers gave the action a final OK. Then, the wire-frame model was colored, shaded, and detailed by technical directors using Digital's $12 million CRAY XMP computer.

Digital also uses the computational power of the CRAY XMP to create photo-realistic effects. For instance, you may have seen the scene where Centauri (the alien con artist played by Robert Preston) zooms off in his space car. Digital matched the picture and action of the space car so you can't tell when the filmed image of the car ends and the computer-graphic image begins.

—DAVID HUTCHISON

"Name That Hacker" Winners

"Computer users aren't nerds, they're _____." When we asked that question in K-POWER's first contest (February 1984), we had no idea the response would be so awesome! We got so many great new words for "hackers" that 10 lucky winners will each receive a K-POWER T-shirt!

Cindie Jackson, 10, from **Diamond Bar, California,** sent in a bunch of great words: BYTERS, BOOTERS, GIGA-BYTERS, and NIBBLERS. **Eric Newbauer, 12,** of **Fenton, Missouri,** thought hackers should be called KEYBOARD JOCKS or TUBE CRUISERS. **Todd Kennedy, 14,** who lives in **Avon, Connecticut,** also suggested Jocks—J.O.C.K.S (Just Ordinary Computer Kids). **Marc Jaeger, 14,** from **Las Vegas, Nevada,** said "computer users aren't nerds, they're BRACKS." **James Shamus, 8,** from **Bridgeport, Connecticut,** likes C-WEEDS and BUFFER PUFFERS, instead of computer nerds. The most unusual new hacker term was MARGORPS, sent in by **Aine Malone, 13,** of **Itasca, Texas**. And, as in every great contest, there was a tie! **John Battdorf, 14,** from **Big Rapids, Michigan,** and **Chris Anderson, 12,** from **Omaha, Nebraska,** both sent in BRAINIACS, so we're sending both of them a K-POWER T-shirt. **Kathrine D. Maxwell, 20,** from **Sandston, Virginia,** thought DATA BUFFS and BYTE BUDDIES sounded good. **Robert McCool, 19,** of **Richmond, Kentucky,** had the last word on new names for hackers—HACKERS OR ELSE!!! (He adds: "I'm still proud of the name!")

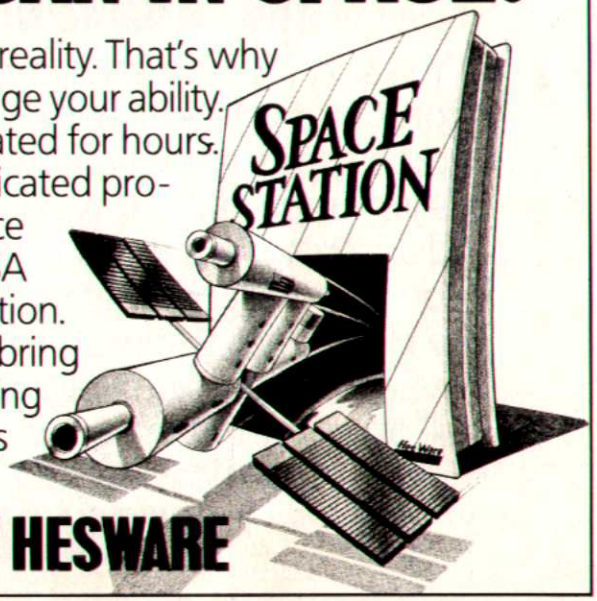
Illustration: Howard Lewis

Here are some of the other hacker terms that we liked:

TICKS, BLIPS, NEAKS, MITES, SPIKES, SPLURPS, GIDGETS, GACHIES, FLOPPERS, COOL-POPS, COMPUNAUTS, CRAY-FISH, K-PERTS, KEY-SMACK-ERS, BUG RUNNERS, FREAK-AZOIDS, ZEROIDS, SPONGES, and HANGDOGS.

PUSH ALL THE RIGHT BUTTONS AND YOU COULD BE THE NEXT AMERICAN IN SPACE.

The race for space is not a game. It's a reality. That's why we developed a program that will challenge your ability. Expand your mind. And keep you fascinated for hours. Project Space Station is the most sophisticated program for designing and operating a space station. You'll use the actual process NASA uses in designing an authentic space station. You can take on the mission yourself, or bring along your family and friends. Start working on Project Space Station today. America's astronauts are counting on you.



PROJECT SPACE STATION™ BY HESWARE

Commodore 64 and Apple

Computer Movie Stars!

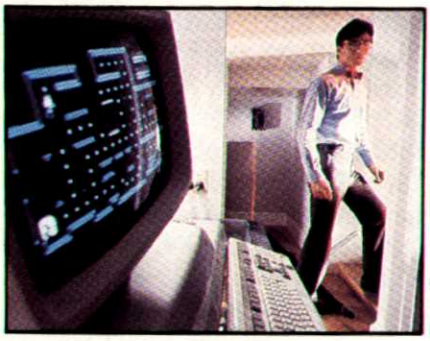


Photo:Courtesy MGM/UA

***Electric Dreams* asks, "Why do computers fall in love?"**

The hottest movie stars these days are computers! *Electric Dreams* stars a computer, and *Revenge of the Nerds* has a "computerized" robot.

Revenge of the Nerds is a slapstick comedy about a couple of *Animal House*-inspired hackers. They take over the college with the aid of their homemade robot. *Return of the Jedi*'s Jim Schoppe designed it and says it's patterned on the trash-can species.

The robot can open and close its hand (to pick up after its thirsty buddies), vacuum the rug, or water the lawn. It can't speak, but it responds to voice commands. The robot also spews rolls of paper containing computerized data from its mouth, so it looks like it's performing computer functions.

Electric Dreams features a love-triangle plot between a man, a woman, and a computer.

The story involves a computernik named Miles. He falls for Madeline, a musician who lives upstairs. Miles is too nervous to go after her himself, so he has his computer compose music to win her over. It works. Madeline hears it, and they begin to hit it off. But the computer, commanded to crank out more music, also falls in love with Madeline.

The graphics and the computer's voice make it believable as a character, according to writer/producer Rusty Lemorande. He's not too worried about people accepting the computer as a character. "People always personify objects," Rusty says. "My sister named her first car."

These days there are a lot of movies that focus on computers. "That's because computers are very much a part of life," says Rusty. His next film, *The Lastar*, is about a robot that exists 100 years from now and a boy's trip to the edge of the universe. "By the time I finish this one," he says, "robots will probably be as much a part of life as computers are today." —CHRISTINA KELLY

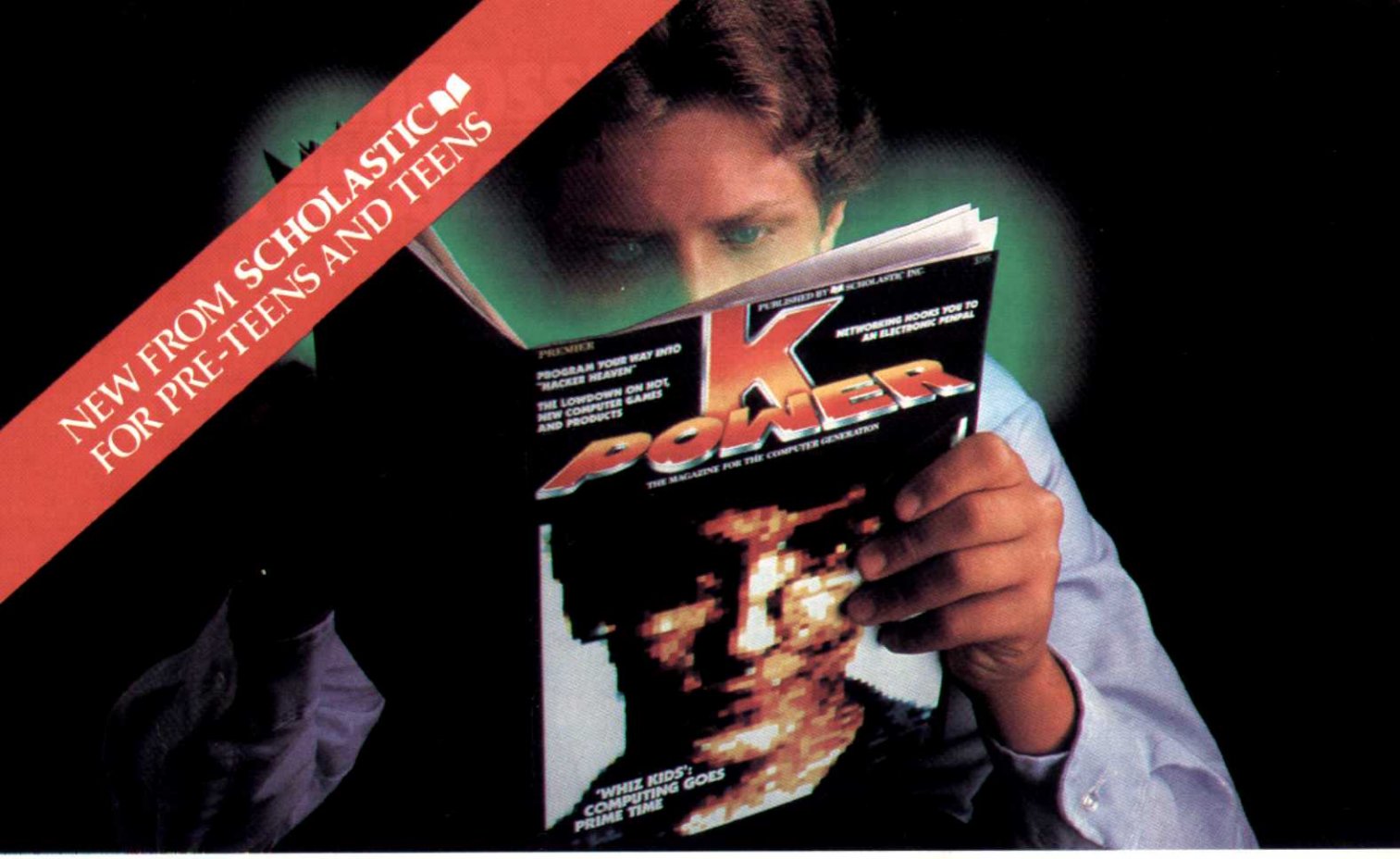
CHALLENGE THE SOVIET TRACK TEAM TO FIFTY LAPS IN YOUR BEDROOM.

You shouldn't have to jump hurdles to have fun with a computer. Unless it's HesGames. With all six action packed sports games on one disk, HesGames lets you jump, run, dive, lift weights, and shoot a bow and arrow against world class competition. And if you try our HesGames now, we'll give you a free HesGames t-shirt. So come and give HesGames a try. And really experience the thrill of victory or the agony of defeat.

Without ever leaving your own bedroom.

HESGAMES™ BY HESWARE

For the Commodore 64, and soon for the Apple II.



At last ... a computer magazine that talks to the kids who are talking the new language

Right now, your kids are talking a new language:

COMPUTER LANGUAGE.

They're trying out new programs. Crossing new boundaries of communication. And experimenting with their computers' memory–the power of *K*.

And they're having fun doing it!

That's why K-POWER™–the brand new computer magazine for kids from Scholastic–is so important to *your* kids.

Because it's packed with the same energy and excitement that makes pre-teens and teens want to learn all there is to know about computers. With articles that teach them by asking them to take part–and *be part* of the future.

Your kids will learn about exciting new programs–and ways to write their own. About the problems other members of the computer generation are finding–and solving. About the brightest new stars in the computer field–and about some very surprising new technology.

And K-POWER™ *is* kids. With input from its own K-NET–an electronic network of computing kids. Plus jokes, tips, book and software reviews, interviews, games and contests. K-POWER™ is where your computer-age kids will *turn to learn*.

Give your kids K-Power at a special Charter price and get a FREE gift.

And right now, 7 issues (1 year) of K-POWER–are yours at the special rate of only $8.97. That's 34% off the cover price! Plus, with your paid subscription, you'll receive the K-POWER Collection FREE! It's our exclusive programming book with 10 one-of-a-kind computer games and puzzles. Just mail in the coupon or attached post-paid card to subscribe today!

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Ready for the Hottest Scoops From the Valley?

K-NETTER David Lee with Sierra Inc.'s Ken and Roberta Williams at CES.

GAMES! Electronic Arts' long-awaited *Archon* sequel has arrived—*Archon II: ADEPT*. Also from EA is a new flight-simulation and strategy game called *Skyfox*....

MORE GAMES! Parker Brothers' *Frogger* sequel, *Frogger II: Threee Deep!*, will feature three play levels—underwater, surface, and air. Also new from Parker Brothers is *Montezuma's Revenge*, an adventure and action game....

TOYS! Epyx is bringing out games featuring the world's most popular toys—Mattel's Barbie doll and Hot Wheels cars, and Hasbro's G.I. Joe. Only Epyx isn't creating "games" with the characters. It's calling them "Computer Activity Toys," a "new kind of software." Look for 'em this fall....

MORE GAMES! New Activision games are *Zenji*, which takes its name from an Eastern form of meditation, and *Toy Bizarre*, which takes place in a toy factory gone berserk!...

STILL MORE GAMES! *SETI* (Search for ExtraTerrestrial Intelligence) is a new game from a company called Trapeze. Players have to decipher alien messages before government cutbacks create a power failure at the radio telescope. (Sounds very realistic!) Also from Trapeze, a text-adventure game parody called *Twisted*. Players examine the ruins of Realhigh Tech, a university where the only prerequisite was a sense of humor....

MORE FUN! Micro Fun bought the rights to *Boulder Dash*, First Star's smash hit, for a whopping $1.3 million! Micro Fun will produce it for four computer systems—including the ADAM, Apple, and Commodore 64. This game is so hot, First Star hopes to get Rockford, *Boulder Dash*'s insect star, its own Saturday morning cartoon show. And speaking of cartoons, First Star also licensed "Spy vs. Spy" from *MAD* magazine. It plans to release a computer game version of the comic strip in September....

ADVENTURE MASTER! That's the name of a new two-disk program from CBS Software. It's an adventure gamemaker. You can create up to 60 "rooms," and it comes with a built-in graphics system to illustrate them. You can save the game and pass it along to friends....

HELP AT LAST! Need software or hardware for your TI-99/4A? Call Triton Products at (800) 227-6900. Triton's already sent out catalogs to all TI owners it's been able to locate. It's taken over Texas Instruments' home-computer products line. Also, a new company called SunWare is converting TI-99 disk- and cassette-based software into cartridges. So don't worry, TI owners! Help is on the way!...

ADVENTURE NEWS! Ken Williams, president of Sierra Inc., says: "Most adventure games get played once and end up collecting dust on a shelf. We're doing research on games that you can return to over and over again. Every puzzle you solve will have lots of possible endings and solutions."...

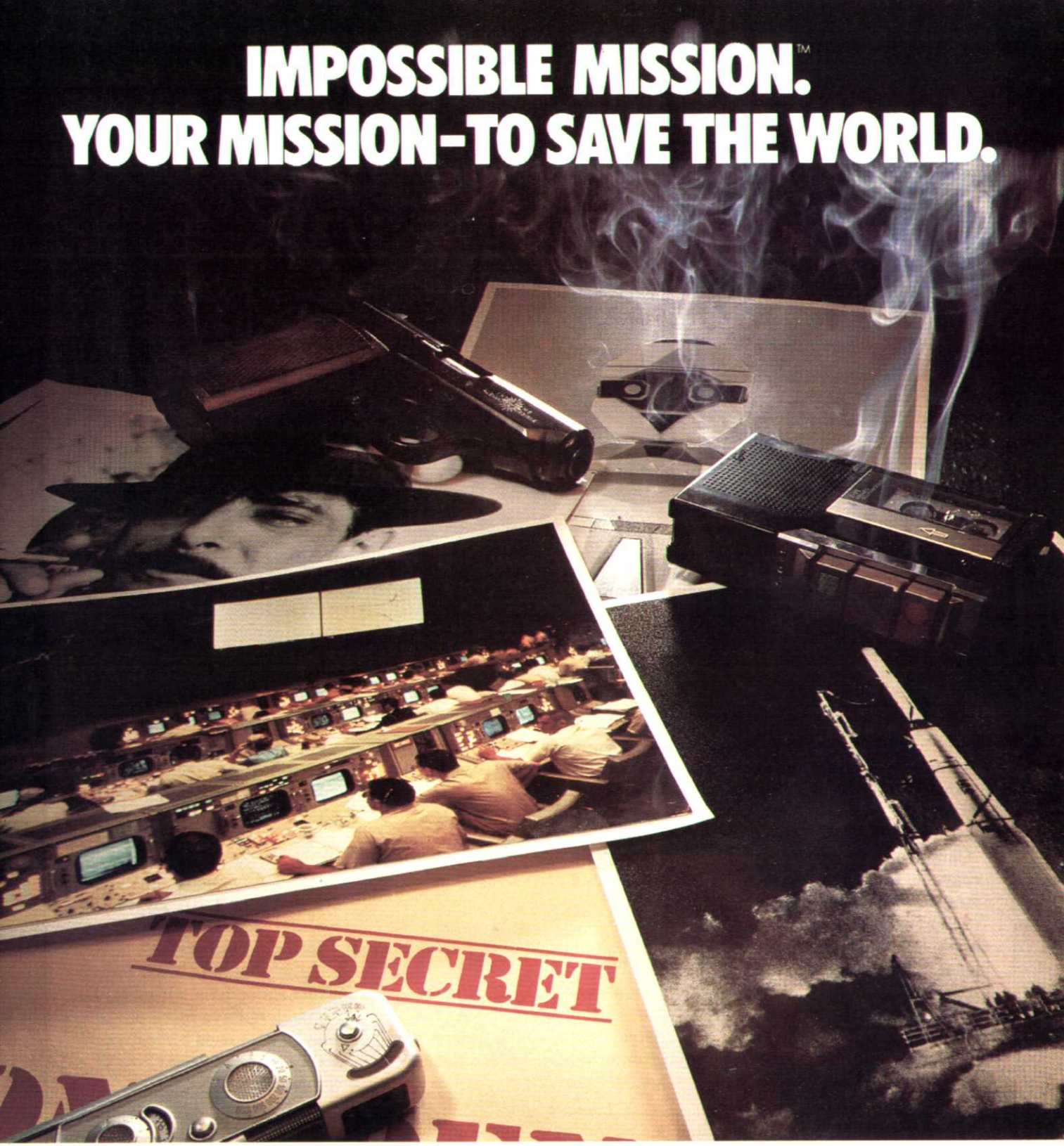
WHAT'S TRILLIUM? Spinnaker's new line of adventure games! The games are based on novels by best-selling science-fiction writers like Arthur C. Clarke, Michael Crichton, and Ray Bradbury. Some of the titles: *Fahrenheit 451* and *Rendevous with Rama*....

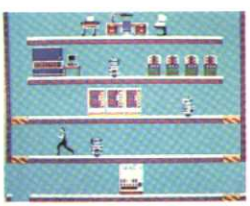
KID CRITICS! Six kids helped HesWare design and improve its new *Project Space Station*. HesWare put together the youth advisory group because kids are the toughest critics, Jeff Schwamberger, the game's codesigner, told K-POWER. The critics met once every two weeks for three hours at a time and were instrumental in making *Project Space Station* what it is! HesWare has introduced other science software including *Cell Defense, Life Force, Ocean Quest,* and *Reflections*. Watch for 'em!...

COMMODORE HAIG! That's Alexander Haig's new title. President Reagan's former U.S. Secretary of State joined the Board of Directors of Commodore International Ltd., makers of the 64 and VIC-20.

David Lee tested the new Atari Mind-Link at CES. The headband lets you play games with brain impulses instead of a joystick.

IMPOSSIBLE MISSION.™
YOUR MISSION–TO SAVE THE WORLD.





As a member of the exclusive Anti-Computer Terrorist Squad (ACT), your mission is to find and reach the infamous Elvin, who is holding the world's population hostage under threat of nuclear annihilation. You must negotiate a path through the rooms and tunnels of his headquarters trying to avoid Elvin's robot protectors.

Should you try to outrun or jump over the next robot or play it safe and take the time to assemble the codes needed to deactivate the robots and then to find and stop Elvin.

Use your camera to photograph as many clues as possible to find the password which will allow you to penetrate Elvin's control room.

Your Mission—To Save The World, But Hurry!

One player; joystick controlled.

EPYX™
COMPUTER SOFTWARE

Strategy Games for the Action-Game Player

DOCTOR KURSOR'S KLINIC™

Illustration:Sam Viviano

A radio station in England plays computer programs over the air. How do they do that?

DR. KURSOR: The BBC (British Broadcasting Corporation) has a late-night radio show called "The Chip Shop." When the diskette jockey (DJ?) "plays" the computer programs a computer buff wants, the buff records the high-pitched tones on cassette and then uses a translator to load the programs into his or her home computer. BBC TV has also transmitted programs on "The Computer Programme," a 10-part series that aired in the '83–'84 season.

Cassette tapes store computer programs the same way they store music. A computer "writes" an audio code to the cassette tape. Since all computer data can be represented in binary code (off or on, 0 or 1), a certain bleep can represent "one" and another bleep "zero."

Pull the "ear" plug on your tape machine while you're loading a program and you'll hear the audio version of a binary computer code. Those squawks can be broadcast in the same way that music or speech is broadcast by a radio station. It might not make for very good human listening, but it's music to your computer's ears.

Here in the U.S., Activision may go into a joint venture with Atari to distribute software electronically in the home. They're going to start testing a new system very soon.

What are DIN plugs and DB connectors?

DR. KURSOR: A DIN plug is a round connector (see diagram) with anywhere from one to eight pins, although DIN plugs commonly have five, six, or eight pins. You're likely to find a DIN plug at one end of your monitor cable, and some computers' serial ports accept DIN plugs.

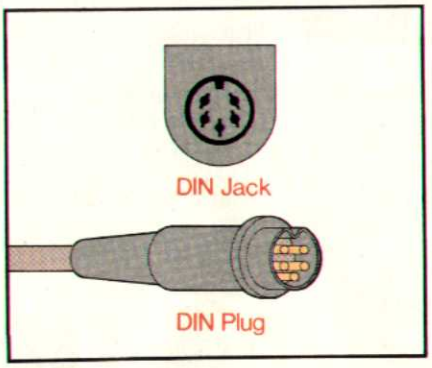
Now, you ask, what does DIN mean?

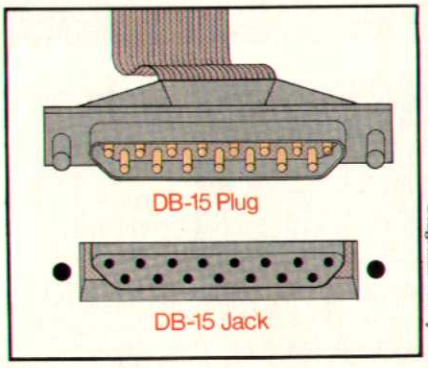
Some people say DIN is an abbreviation for Deutsche Industrie Norm, which means the German Industrial Standard. But DIN also stands for the West German institute that sets those standards. It's called the Deutches Institut für Normung.

A DB connector is a larger, D-shaped connector (see diagram) with an odd number of pins. In this case, DB is short for a real tongue twister: Durchführungsbestimmung. That translates, roughly, to "standardized connector."

The 25-pin connector that attaches to many serial ports and the 9-pin connector on the end of the Apple IIe/IIc joystick are both DB connectors.

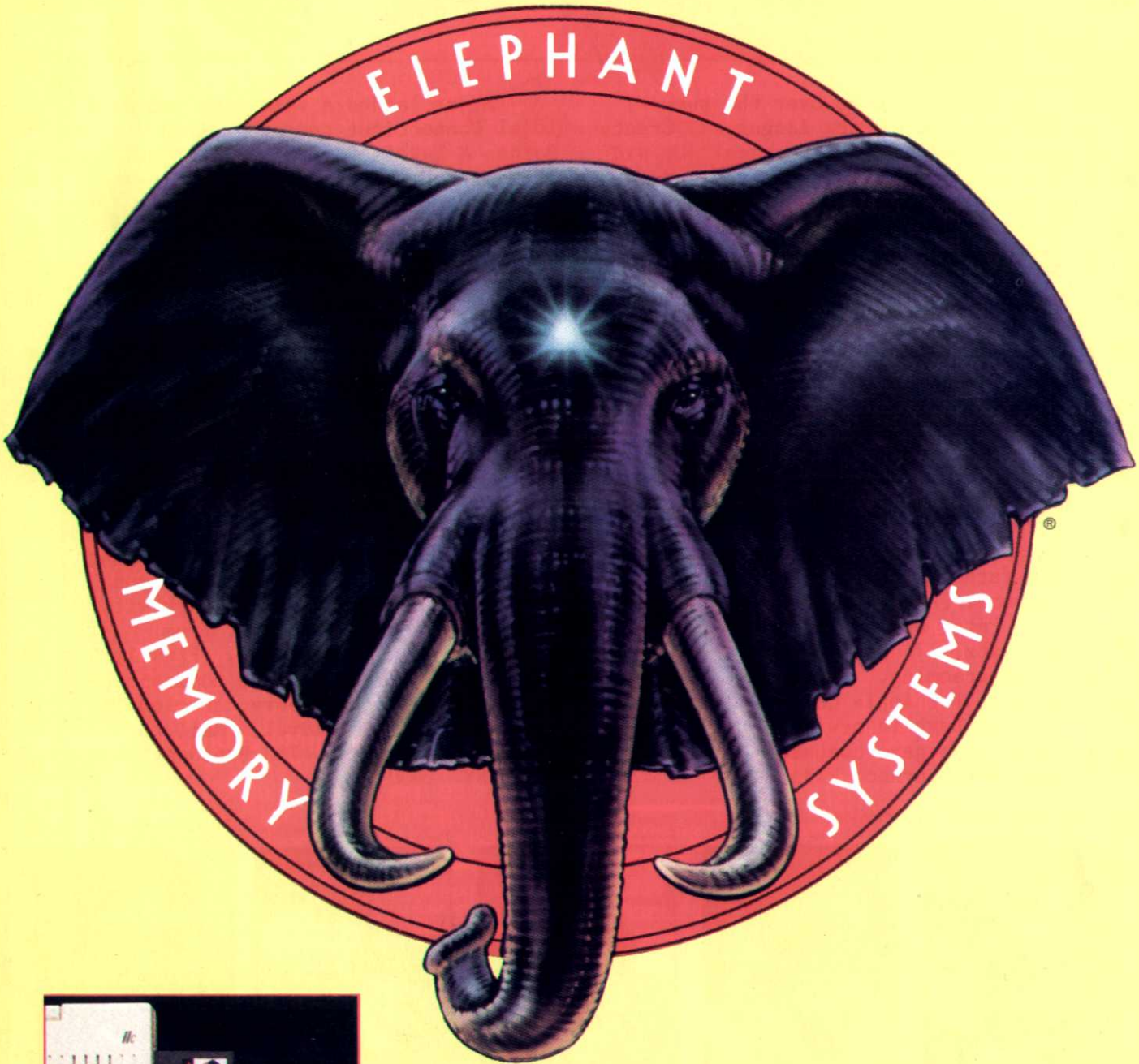
DIN connectors don't have enough pins to be used for parallel connections; although DB connectors have more pins, they're also used almost exclusively to make serial connections.





Diagrams:Pat Lyons

TEST DRIVE AN ELEPHANT.™



Elephant Floppy Disks are the perfect vehicle for storing and protecting data. Because Elephant never forgets. You'll get high performance that's 100% guaranteed for a lifetime of heavy use. So take them for a test drive. They're available now at your local computer showroom. And there's no waiting for delivery. For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect (617) 769-8150.

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ELEPHANT™ NEVER FORGETS.

Plug into K-NET each issue for what's new with K-POWER's national network.

Plus, find out what else is hot in the world of networking!

K-NET'S Hot Summer

What'd you do over the summer? Did you learn a new language? Create the ultimate adventure game? Or did you get lost in some exotic land for the month of July? K-POWER hopes you had a summer to remember. We know our K-NETTERs did!!

Between vacations, family outings, and riding waves, the K-NET programmed the hot weather away. And a few made money doing it!

For the third summer in a row, Jodi and Scott Moskowitz, 12 and 9, helped other kids at the CP & You Computer Learning Center day camp. Lucky for them, their parents own the Center! Stephen Sakach, 14, also helped out with the family business. He spent a couple of days a week at his father's computer consulting company, Pacific Systems.

Peter Green, 16, and Steve Horowitz, 17, really had a full summer of programming. Peter made $6 an hour working for Apple Computer, Inc. finding bugs in new software programs. Peter also gave computer lessons to some neighborhood kids.

Steve landed a full-time job at a local Connecticut company called Forhan & Wakefield. He made $7 an hour writing programs and graphics demonstrations on an IBM PC.

But computers, programming, and big bucks weren't the only things K-NETTERs had their minds on. Just ask Eric Fisch, 15, who left his computer and modem at home during an eight-week camp session in Wisconsin.

Let us know if you spent your summer with a computer. And don't forget about K-BASE, our data base of computing kids. We'll hook you up with another K-POWER reader so you can swap computer know-how.

Send us your name, age, sex, address, phone number, and programming level. Let us know what computer you use, and what languages you work with. Tell us if you want to hear from someone nearby or far away. Finally, let us know if you want to communicate with someone below, above, or close to your own computing level. Mail to K-BASE, c/o K-POWER, 730 Broadway, New York, NY 10003.

Photo: Robert Flishel Picture Group

Jodi Moskowitz
Scott Moskowitz
Toledo, Ohio

Photo:Rick Browne Picture Group

Stephen Sakach
Suzanne Sakach
Dana Point, California

Photo:Rick Browne Picture Group

Peter Green
Cupertino, California

Photo: Joel Bronz

Steve Horowitz
Dan Horowitz
Westport, Connecticut

Photo: Steve Wort Picture Group

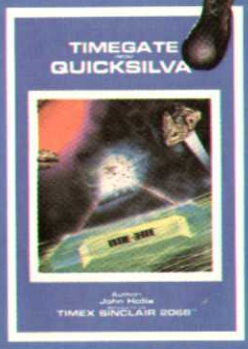
Eric Fisch
St. Paul, Minnesota

THE BEST COMES WEST

Quicksilva Computer Games are Here, America!

QUICKSILVA computer games — Britain's most popular — are now available in the United States. They feature high quality graphics with European flair and exciting, imaginative scenarios. Here are two examples out of 19 currently available for Commodore 64™ and/or Timex Sinclair 2068™ computers:

BUGABOO by Indescomp — An exciting adventure game where Bugaboo, a friendly flea, is trapped in a cave. You can help him escape by signaling him to jump from ledge to ledge. Making him hop just the right direction and just the right height is the challenge. If you don't, he'll fall back and you have to begin his escape again. And all the time you must help him hide from the fearsome Pterodactyl and hungry Venus Fly Traps. It's fun, colorful and exciting – you'll develop timing and strategy.



TIMEGATE by John Hollis — The best selling and longest running mega game in England! It's a four dimension, Space-Time Science Fiction arcade adventure. You are the hero. You must pilot the intergalactic battle cruiser, Void-Runner I, through space and time itself, fighting off the evil Squarm to save the Universe. Your ship is equipped with sophisticated systems, full control panel, radar and exotic weapons; but you must develop the skill and spacemanship to use them effectively. It's a challenge, but the safety of the Universe is at stake.

Ask for these and other Quicksilva games at finer stores.

COMING SOON:

Exciting Quicksilva programs for the Acorn BBC, Atari 400/800/1200, Apple II, Memotech MTX, Sinclair QL and IBM PCjr.

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Shoes.
If they don't fit, they're not worth wearing.
Software programs.
If they don't fit, they're not worth using.
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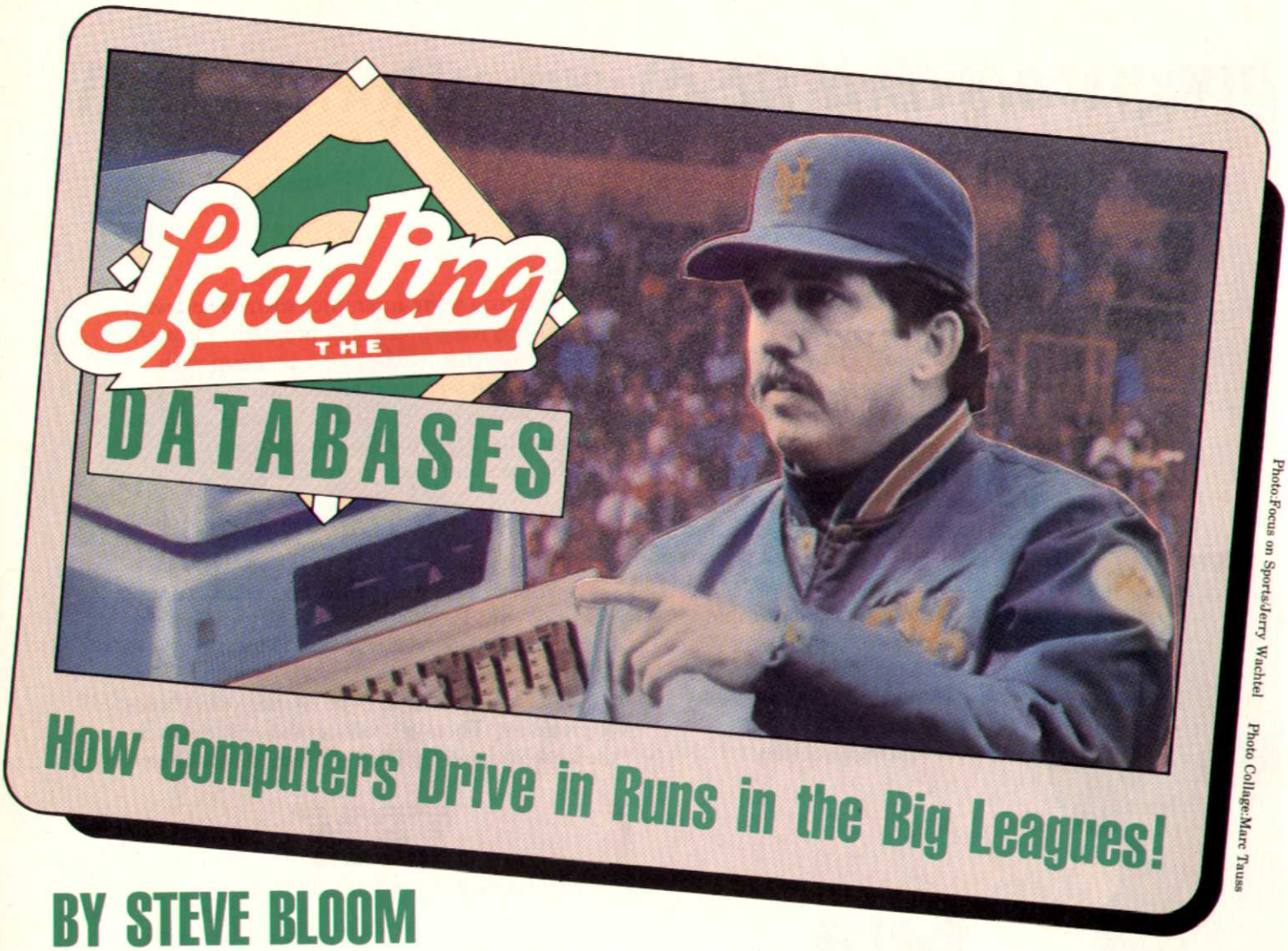


Photo:Focus on Sports/Jerry Wachtel Photo Collage:Marc Tauss

How Computers Drive in Runs in the Big Leagues!

BY STEVE BLOOM

Last year, the New York Mets were the pits. They finished dead last in the National League. To the surprise of absolutely no one, the Mets sacked the manager on the last day of the season. A few weeks later, Davey Johnson was hired to take his place. The Mets didn't just hire the guy who tied the record for Most Home Runs Hit by a Second Baseman in One Season, they hired a hacker!

Davey isn't the first baseball man to use computers. Most Major League teams use computers in one way or another. And plenty of managers use printouts to help them make on-field decisions. (See chart.) But Davey's the first to write a program (with the help of a few hacker friends) to help make on-field decisions.

While I spoke with Davey, his assistant, Russell Richardson, was busily punching data into the IBM PC that rests on a table across from the manager's desk. "We're trying to keep it as basic as possible," Russell explains. "We take the box score and analyze it, look for trends. How hitters do versus certain pitchers, for example.

"But, we don't break it down by the pitch," he adds. "That was the [Oakland] A's problem. They were spending a lot of money, and found that there was a lot of information they weren't using."

THROWING OUT THE *EDGE*

Russell is talking about the Oakland A's' decision to stop using the elaborate *Edge* system—after three years. "Now I'm back to pencil and paper," A's team statistician Jay Alves says glumly. "It will take me an hour and a half to do something that would have taken me three minutes [with *Edge*]."

For instance, if the manager wanted to know how well All-Star left-fielder Rickey Henderson played in the late innings of games, all Jay had to do was ask the Apple II plus, which was hooked into the Digital Equipment 1092 mainframe in Philadelphia. *Edge* would do the rest. The *Edge* system also could tell the manager how Rickey fared against right-handed pitchers, how he hit with men on base, or even how the team did when Rickey stole a base. The cost for this setup? Close to $100,000 a year.

After the A's dropped *Edge*, they said it wasn't worth the money. And, that its use was exaggerated.

If it was, the A's have only themselves to blame. When they traded outfielder Tony Armas to the Boston Red Sox after the 1982 season, they made a point to say the computer told them to do it. Computer-generated charts and graphs indicated that Tony, one of baseball's top sluggers, would flop in Boston's Fenway Park. Fenway is famous for the "Green Monster"—its short left-field wall. According to the computer, most of Tony's home runs were hit to center field. He hit 36 homers in 1983 for the Boston Red Sox. So much for the computer!

I asked Davey if the Mets would follow the A's lead and let computers decide what players should be traded. "If you need a computer to judge talent, you're in bad shape," he says. "You can use a computer to put that talent to better use, but to judge it? No way! Computers don't see too well."

Davey, now 41, was a sophomore at Texas A&M when the Baltimore Orioles offered him a contract. He left school, and by 1966 was the Orioles' second baseman. During his 13-year career, he played in three All-Star Games and four World Series.

Davey finished his college education while he was still playing ball. A math major, Davey wrote his first programs on a mainframe at Trinity University in San Antonio, Texas. "I was programming in FORTRAN and COBOL," he recalls. "I wrote a program to improve the Oriole lineup. By using certain hitters in different orders I was able to show that my lineups would produce more runs—and why. I played thousands of games on the computer. It was really fun."

And useful. He used to bring the printouts to contract negotiations with the general manager of the Orioles, Frank Cashen. When Frank moved to the Mets, he remembered Davey's printouts. He figured Davey's computer skills could help the Mets score more runs.

ON-LINE LINEUPS

Davey uses his PC to help decide who should play and in what batting order before each game. It seems to be working. As this article is being written, the Mets are battling it out for first place!

How long will it be before managers have computers on the field? "It's conceivable that in the near future, I'll have a terminal in the dugout," Davey says. "But most managers really don't know how to use computers yet."

Suddenly, Davey excuses himself. It's approaching game time, and he has a bunch of computer printouts to read. *(Turn the page for your own pitching-statistics programs.)* **k**

STEVE BLOOM *has written about sports for* New York Sports *and the* Bay Guardian.

Loading the DATABASES

CHARTING COMPUTERBALL

HERE'S A GLANCE AT THE MAJOR LEAGUE TEAMS THAT USE COMPUTERS

AMERICAN LEAGUE EAST	KEEPS ROSTERS FOR OFFICE USE	MATCHES HITTER/ PITCHER STATS	USED FOR LINEUP DECISIONS
BALTIMORE ORIOLES Digital	⚾	⚾	
BOSTON RED SOX Digital	⚾		
DETROIT TIGERS Xerox	⚾		
NEW YORK YANKEES Apple IIe	⚾	⚾	
TORONTO BLUE JAYS Quantel	⚾		
WEST			
CHICAGO WHITE SOX Apple II plus	⚾	⚾	⚾
KANSAS CITY ROYALS IBM	⚾	⚾	⚾
SEATTLE MARINERS IBM	⚾		

NATIONAL LEAGUE EAST	KEEPS ROSTERS FOR OFFICE USE	MATCHES HITTER/ PITCHER STATS	USED FOR LINEUP DECISIONS
CHICAGO CUBS Digital	⚾	⚾	⚾
MONTREAL EXPOS Compaq	⚾	⚾	
NEW YORK METS IBM PC	⚾	⚾	⚾
PHILADELPHIA PHILLIES Tele-Video	⚾	⚾	⚾
WEST			
ATLANTA BRAVES Tele-Video	⚾	⚾	⚾
LOS ANGELES DODGERS Compaq	⚾	⚾	⚾
SAN FRANCISCO GIANTS Macintosh	⚾	⚾	⚾

TEAMS THAT DON'T USE COMPUTERS: Cleveland Indians, Milwaukee Brewers, California Angels, Minnesota Twins, Oakland A's, Texas Rangers, Pittsburgh Pirates, St. Louis Cardinals, Cincinnati Reds, Houston Astros, San Diego Padres.

Loading THE DATABASES

MEASURING A PITCHER'S K POWER

When a power pitcher is at work, he doesn't throw baseballs. He fires aspirin tablets! (That's what his fastball looks like by the time it reaches the plate! It travels at 90 to 100 miles per hour.)

A power pitcher's calling card is the strikeout. When scoring a game, a "K" stands for a strikeout. A power pitcher piles up Ks.

These programs measure pitchers' performances. You can find their ERA (Earned Run Average—how many earned runs per nine innings they give up) and their K power (how many strikeouts per nine innings they throw).

RADIO SHACK/*BASEBALL STATISTICS*

TRS-80 Model III • 16K RAM

```
10 CLEAR 5000:A$="*****":B$="##.##"
20 DIM F$(1):F$(0)="####.#":F$(1)="####"
30 CLS:INPUT "HOW MANY PITCHERS ARE THERE ON THE
TEAM";PI
40 DIM P$(PI),PS(PI,4):P$(PI)="TEAM TOTALS"
50 FOR X=0 TO PI-1
60 PRINT "WHAT IS PITCHER NUMBER";STR$(X+1);"'S N
AME";:INPUT P$(X)
70 PRINT "HOW MANY INNINGS HAS ";P$(X);" PITCHED"
;:INPUT PS(X,0)
80 PRINT "HOW MANY RUNS HAS ";P$(X);" GIVEN UP";:
INPUT PS(X,1)
90 PRINT "HOW MANY BATTERS HAS ";P$(X);" STRUCK O
UT";:INPUT PS(X,2)
100 PRINT:FOR IX=0 TO 2:PS(PI,IX)=PS(PI,IX)+PS(X,
IX):NEXT IX
110 IF PS(X,0)=0 THEN NEXT X ELSE PS(X,3)=PS(X,1)
*9/PS(X,0):PS(X,4)=PS(X,2)*9/PS(X,0):NEXT X
120 CLS:PRINT "NAME";TAB(26);"ERA";TAB(37);"IP";T
AB(46);"ER";TAB(55);"K POWER":PRINT
130 IF PS(PI,0)<>0 THEN PS(PI,3)=PS(PI,1)*9/PS(PI
,0):PS(PI,4)=PS(PI,2)*9/PS(PI,0)
140 FOR X=0 TO PI
150 IF X=PI THEN PRINT
160 PRINT P$(X);TAB(25);
170 IF PS(X,3)=0 AND PS(X,1)>0 THEN PRINT A$; ELS
E PRINT USING B$;PS(X,3);
180 PRINT TAB(35);USING F$(-(PS(X,0)=INT(PS(X,0))
));PS(X,0);
190 PRINT TAB(45);USING F$(1);PS(X,1);
200 PRINT TAB(56);USING B$;PS(X,4):NEXT X
210 PRINT:INPUT "DO YOU WISH TO CONTINUE";R$
220 IF LEFT$(R$,1)="Y" THEN 10 ELSE END
```

Loading THE DATABASES

MEASURING A PITCHER'S K POWER

APPLE/*BASEBALL STATISTICS*

II plus, IIe, or IIc • 32K RAM

```
10 HOME:PRINT "HOW MANY PITCHERS ARE THERE":INPUT
 "ON THE TEAM?";PI
20 DIM P$(PI),PS(PI,4):P$(PI) = "TEAM TOTALS"
30 FOR X = 0 TO PI - 1:PRINT:PRINT "WHAT IS PITCH
ER":PRINT "NUMBER ";X + 1;"'S NAME";:INPUT P$(X)
40 PRINT "HOW MANY INNINGS HAS ";P$(X):INPUT "PIT
CHED?";PS(X,0)
50 PRINT "HOW MANY RUNS HAS ";P$(X):INPUT "GIVEN
UP?";PS(X,1)
60 PRINT "HOW MANY BATTERS HAS ";P$(X):INPUT "STR
UCK OUT?";PS(X,2)
70 PRINT:FOR IX = 0 TO 2:PS(PI,IX) = PS(PI,IX) +
PS(X,IX):NEXT IX:IF PS(X,0) = 0 THEN 90
80 PS(X,3) = PS(X,1) * 9 / PS(X,0):PS(X,4) = PS(X
,2) * 9 / PS(X,0)
90 NEXT X
100 IF PS(PI,0) <> 0 THEN PS(PI,3) = PS(PI,1) * 9
 / PS(PI,0):PS(PI,4) = PS(PI,2) * 9 / PS(PI,0)
110 HOME:PRINT "NAME";TAB(15);"ERA";TAB(22);"IP";
TAB(28);"ER";TAB(33);"K POWER":PRINT
120 FOR X = 0 TO PI:IF X = PI THEN PRINT
130 PRINT P$(X);
140 IF PS(X,3) = 0 AND PS(X,1) > 0 THEN PRINT TAB
(14);"*****";:GOTO 160
150 TB = 19:MUL = 100:IN = 3:GOSUB 1000
160 T = INT(PS(X,0)):IF PS(X,0) = T THEN PRINT TA
B(24 - LEN(STR$(T)));T;:GOTO 180
170 TB = 26:MUL = 10:IN = 0:GOSUB 1000
180 PRINT TAB(31 - LEN(STR$(PS(X,1))));PS(X,1);
190 TB = 39:MUL = 100:IN = 4:GOSUB 1000
200 PRINT:NEXT X:PRINT
210 PRINT "DO YOU WISH TO CONTINUE? (Y/N)";
220 GET A$:IF A$ = "Y" THEN RUN
230 END
1000 IF PS(X,IN) = 0 THEN OP$ = "0.00":GOTO 1040
1010 OP$ = STR$(INT(PS(X,IN) * MUL + .5) / MUL +
1 / (MUL * 10))
1020 IF LEFT$(OP$,1) = "." THEN OP$ = "0" + OP$
1030 OP$ = LEFT$(OP$,LEN(OP$) - 1)
1040 PRINT TAB(TB - LEN(OP$));OP$;:RETURN
```

—MARK S. HALEGUA

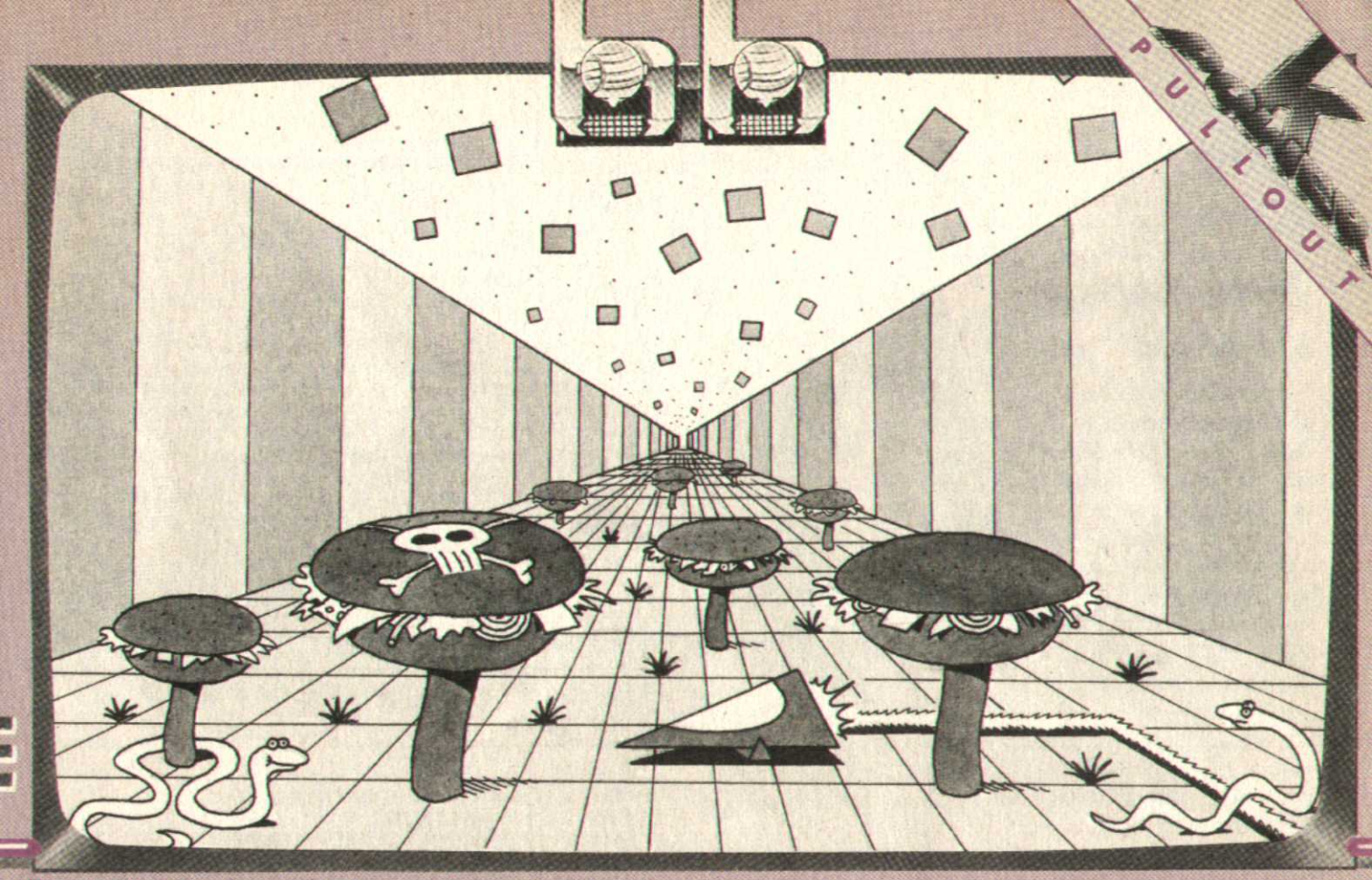


Illustration: Chris Reed

HACKER HEAVEN

SEPTEMBER/OCTOBER

PROGRAMS Page 26 See your bytes in lights! Play with snakes! Duel to the death!	**PIXEL THAT** Page 33 Take a trip into the third dimension with your Atari.
COMPUCOPIA Page 35 Quick! When does 9 equal 1001? For clues, flip to Compucopia.	**MICROTONES** Page 37 An earful of crazy noise.

Illustration: Jim Cherry III

Byte Movie

By Brian White

Ever wanted to see what your bytes look like? Type in *Byte Movie* for a private screening! SAVE the program before running it, though, because some bytes bite back! A PEEK to the wrong memory location might just cause your program to crash.

For a show with real character, Timex owners can set the program to start displaying bytes at the base of their character set. Just RUN the program, ask to start the show at address 7680, and prepare for a surprise!

BRIAN WHITE *lives in Carmel, California. As far as we know, Brian has no plans to make his byte-size program into a feature-length film.*

IBM/*BYTE MOVIE*

PC or PCjr • 64K RAM

```
10 DIM D$(1),BAR$(1):D$(0)=CHR$(219)+CHR$(254)+CHR$(21
9):D$(1)=CHR$(219)+" "+CHR$(219)
20 BAR$(0)=D$(0)+STRING$(8,219)+D$(0):BAR$(1)=D$(1)+ST
RING$(8,219)+D$(1)
30 KEY OFF:CLS:PRINT TAB(10);"*BYTE MOVIE*":PRINT
40 PRINT "AT WHAT MEMORY SEGMENT SHALL"
50 PRINT "I START THE SHOW?":PRINT
60 PRINT "(MUST BE BETWEEN 0 AND 65535.)"
70 INPUT "SEGMENT";SEG:SEG=INT(SEG)
80 IF SEG<0 OR SEG>65535! THEN 60 ELSE DEF SEG=SEG
90 PRINT "WHAT ADDRESS WITHIN SEGMENT";STR$(SEG);:INPU
T AD
100 AD=INT(AD):IF AD<0 OR AD>65535! THEN 90
110 NS=SEG+INT(AD/16):NO=AD-INT(AD/16)*16
120 INPUT "HOW MANY BYTES SHALL I DISPLAY";NB:IF NB<1
THEN 120
130 CLS:PRINT "TOUCH ANY KEY TO MAKE DISPLAY PAUSE."
140 PRINT "TOUCH AGAIN TO RESTART."
150 PRINT:PRINT TAB(3);"(PRESS <ENTER> TO BEGIN.)"
160 IF INKEY$<>CHR$(13) THEN 160
170 CLS:LOCATE 24,1:PRINT "ADDRESS  (ABSOLUTE ADDRESS)
";STRING$(5,32);"VALUE"
180 PRINT TAB(18);D$(1);SPC(8);D$(1)
190 IF INT(C/8)=C/8 THEN LOCATE 24,1:PRINT TAB(18);BAR
$(-F):F=NOT F:C=0
200 C=C+1:NB=NB-1:IF NB<0 THEN LOCATE 24,1:PRINT TAB(1
8);D$(-F);SPC(8);D$(-F):LOCATE 25,1:PRINT STRING$(40,3
2):LOCATE 24,1:PRINT:GOTO 40
210 B$="":D=PEEK(AD):V=D
220 FOR X=0 TO 7:KD=D/2:D=INT(KD):B$=CHR$(32-145*(D<>K
D))+B$:NEXT X
230 AA=SEG*16+AD:IF AA>2^20-1 THEN AA=AA-2^20
240 LOCATE 24,1:PRINT AD;"(";RIGHT$(STR$(AA),LEN(STR$(
AA))-1);")";TAB(18);D$(-F);B$;D$(-F);TAB(32);V:F=NOT F
250 LOCATE 25,1:PRINT "SEG.:";SEG;" EQUIV. ADDR.";STR$
(NS);":";RIGHT$(STR$(NO),LEN(STR$(NO))-1);" ";
260 AD=AD+1:IF AD>65535! THEN AD=0:SEG=SEG+4096:IF SEG
>65535! THEN SEG=SEG-65536!
270 DEF SEG=SEG:NO=NO+1:IF NO=16 THEN NO=0:NS=NS+1:IF
NS>65535! THEN NS=0:LOCATE 25,1:PRINT STRING$(39,32);
280 IF INKEY$="" THEN 190
290 IF INKEY$="" THEN 290 ELSE 190
```

RADIO SHACK/*BYTE MOVIE*

TRS-80 Color Computer • 16K RAM • color TV or monitor optional

```
10 DIM D$(1),BAR$(1):D$(0)=CHR$(133)+"0"+CHR$(138):D$(
1)=CHR$(133)+" "+CHR$(138)
20 BAR$(0)=D$(0)+STRING$(8,128)+D$(0):BAR$(1)=D$(1)+ST
RING$(8,128)+D$(1)
30 CLS:PRINT TAB(10);"*BYTE MOVIE*":PRINT
40 PRINT "AT WHAT MEMORY ADDRESS SHALL I"
50 PRINT "START THE SHOW?"
60 PRINT "(MUST BE BETWEEN 0 AND 65535.)"
70 INPUT "ADDRESS";SM:SM=INT(SM):C=SM-INT(SM/8)*8:F=0
80 IF SM<0 OR SM>65535 THEN 60
90 PRINT "HOW MANY BYTES SHALL"
100 INPUT "I DISPLAY";NB:IF NB<1 THEN 90
110 CLS:PRINT "TOUCH ANY KEY TO PAUSE DISPLAY."
120 PRINT "TOUCH AGAIN TO RESTART."
130 PRINT:PRINT TAB(3);"(PRESS <ENTER> TO BEGIN.)"
140 IF INKEY$<>CHR$(13) THEN 140
150 CLS:PRINT TAB(9);D$(1);TAB(20);D$(1)
160 IF INT(C/8)=C/8 THEN PRINT TAB(9);BAR$(-F):F=NOT F
:C=0
170 C=C+1:NB=NB-1:IF NB<0 THEN PRINT TAB(9);D$(-F);TAB
(20);D$(-F):PRINT:GOTO 40
180 B$="":D=PEEK(SM):V=D
190 FOR X=0 TO 7:KD=D/2:D=INT(KD):B$=CHR$(32-143*(D<>K
D))+B$:NEXT X
200 PRINT TAB(2);SM;TAB(9);D$(-F);B$;D$(-F);TAB(15);V:
F=NOT F
210 SM=SM+1:IF SM=65536 THEN SM=0
220 IF INKEY$="" THEN 160
230 IF INKEY$="" THEN 230 ELSE 160
```

TRS-80 Model III • 16K RAM

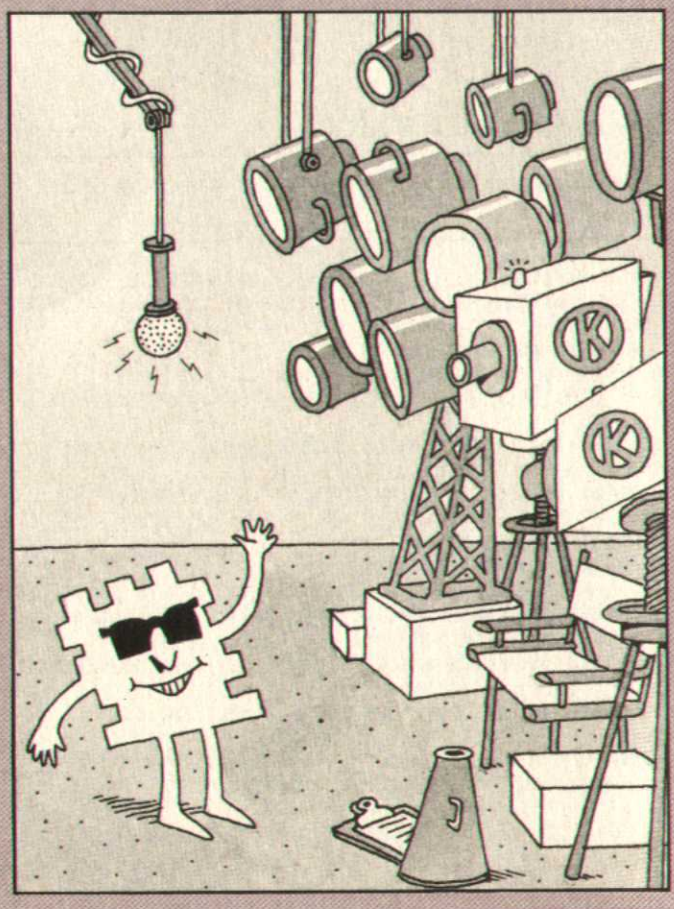
```
10 DIM D$(1),BAR$(1):D$(0)=CHR$(170)+CHR$(179)+CHR$(14
9):D$(1)=CHR$(170)+CHR$(191)+CHR$(149)
20 BAR$(0)=CHR$(170)+CHR$(179)+CHR$(157)+STRING$(8,140
)+CHR$(174)+CHR$(179)+CHR$(149):BAR$(1)=CHR$(170)+CHR$
(191)+CHR$(157)+STRING$(8,140)+CHR$(174)+CHR$(191)+CHR
$(149)
30 CLS:PRINT TAB(26);"*BYTE MOVIE*":PRINT
40 PRINT "AT WHAT MEMORY ADDRESS SHALL I START THE SHO
W?"
```

```
50 PRINT "(MUST BE BETWEEN -32767 AND 32766.)"
60 INPUT "ADDRESS";SM:SM=INT(SM):C=SM-INT(SM/8)*8:F=0
70 IF SM<-32767 OR SM>32766 THEN 50
80 INPUT "HOW MANY BYTES SHALL I DISPLAY";NB:IF NB<1 T
HEN 80
90 CLS:PRINT "TOUCH ANY KEY TO MAKE DISPLAY PAUSE."
100 PRINT "TOUCH AGAIN TO RESTART."
110 PRINT@272,"(PRESS <ENTER> TO BEGIN.)"
120 IF INKEY$<>CHR$(13) THEN 120
130 CLS:PRINT TAB(23);D$(1);TAB(34);D$(1)
140 IF INT(C/8)=C/8 THEN PRINT TAB(23);BAR$(-F):F=NOT
F:C=0
150 C=C+1:NB=NB-1:IF NB<0 THEN PRINT TAB(23);D$(-F);TA
B(34);D$(-F):PRINT:GOTO 40
160 B$="":D=PEEK(SM):V=D
170 FOR X=0 TO 7:KD=D/2:D=INT(KD):B$=CHR$(32-159*(D<>K
D))+B$:NEXT X
180 PRINT TAB(16);SM;TAB(23);D$(-F);B$;D$(-F);TAB(28);
V:F=NOT F
190 SM=SM+1:IF SM=32768 THEN SM=-32766
200 IF INKEY$="" THEN 140
210 IF INKEY$="" THEN 210 ELSE 140
```

TIMEX SINCLAIR/*BYTE MOVIE*

1000 or 1500 • 16K RAM

```
10 SLOW
20 DIM D$(2,3)
30 DIM L$(2,14)
40 DIM S$(8)
50 LET D$(1)=CHR$ 128+CHR$ 52+CHR$ 128
60 LET D$(2)=CHR$ 128+" "+CHR$ 128
70 FOR X=1 TO 8
80 LET S$(X)=CHR$ 128
90 NEXT X
100 LET L$(1)=D$(1)+S$+D$(1)
110 LET L$(2)=D$(2)+S$+D$(2)
120 PRINT TAB 9;"*BYTE MOVIE*"
130 PRINT
140 PRINT "AT WHAT MEMORY ADDRESS SHALL"
150 PRINT "I START THE SHOW?"
160 PRINT "(MUST BE BETWEEN 0 AND 65535.)","ADDRESS? "
;
170 INPUT SM
180 LET SM=INT SM
190 LET C=SM-INT (SM/8)*8
200 LET F=0
210 IF SM<0 OR SM>65535 THEN GOTO 160
220 PRINT SM
230 PRINT "HOW MANY BYTES SHALL I DISPLAY?"
240 INPUT NB
250 IF NB<1 THEN GOTO 240
260 PRINT NB
270 PRINT
280 PRINT "TOUCH ANY KEY TO MAKE DISPLAY","PAUSE. TOUC
H AGAIN TO RESTART."
290 PRINT
300 PRINT TAB 3;"(PRESS <ENTER> TO BEGIN.)"
310 IF INKEY$<>CHR$ 118 THEN GOTO 310
320 CLS
330 SCROLL
340 PRINT TAB 7;D$(2);TAB 18;D$(2)
350 IF INT (C/8)<>C/8 THEN GOTO 400
360 SCROLL
370 PRINT TAB 7;L$(F+1)
380 LET F=NOT F
390 LET C=0
400 LET C=C+1
410 LET NB=NB-1
420 IF NB>=0 THEN GOTO 510
430 SCROLL
440 PRINT TAB 7;D$(F+1);TAB 18;D$(F+1)
450 SCROLL
460 SCROLL
470 PRINT "PRESS ANY KEY TO RUN AGAIN."
480 PAUSE 4E4
490 CLS
500 GOTO 120
510 LET B$=""
520 LET D=PEEK SM
530 LET V=D
540 FOR X=0 TO 7
550 LET KD=D/2
560 LET D=INT KD
570 LET B$=CHR$ (136*(D<>KD))+B$
580 NEXT X
590 SCROLL
600 PRINT TAB 1;SM;TAB 7;D$(F+1);B$;D$(F+1);TAB 23;V
610 LET F=NOT F
620 LET SM=SM+1
630 IF SM>65535 THEN LET SM=0
640 IF INKEY$="" THEN GOTO 350
650 PAUSE 4E4
660 GOTO 350
```



Illustrations: Chris Reed

Glutton

By K-POWER's Resident Hacker

Your computer is an unbelievable slob! I mean it. It may look innocent and plain, but underneath all that metal and plastic is a ravenous beast!

If you don't believe me, try this program. Then you'll see how much of a hog your computer *really* is. After you type it in, a tubular thing remotely resembling a snake will appear. It'll immediately start squirming around the screen looking for food to gorge itself on. All this thing wants to do is eat, eat, eat. And it gets plenty of opportunities, too, because little junk-food plants pop up all over the place. Each time he snarfs one down, he grows bigger and bigger. So big that he soon gets in his own way!

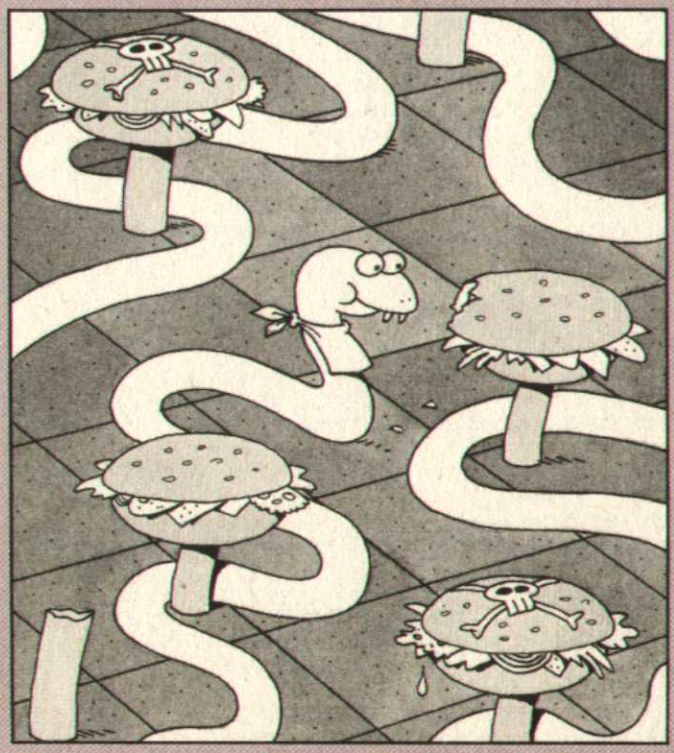
But there's one little problem in this world of culinary delights: Junk food soon turns into poison! If the Glutton eats a poisoned junk-food plant, he dies instantly. Gross!

So, type it in, eat all you want, and let the Glutton get fat.

COMMODORE/*GLUTTON*

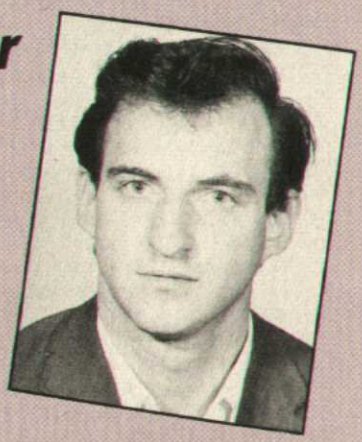
Commodore 64 • 64K RAM • color TV or monitor optional

```
10 DIM A(959),M(3,3):HS=0:SM=1024:SD=54272:CM=55296
20 C$=CHR$(19)+CHR$(5):BL$=" ":FOR X=1 TO 5:BL$=BL$+BL
$:NEXT X
30 POKE 53280,0:POKE 53281,0
40 FOR X=SD TO SD+24:POKE X,0:NEXT X
50 POKE SD+24,15:POKE SD+5,16:POKE SD+6,16:POKE SD+4,3
3
60 PRINT CHR$(147);TAB(10);CHR$(5);"*GLUTTON*":PRINT:P
RINT
70 PRINT "DIRECT YOUR SNAKE BY USING ...":PRINT
80 PRINT "<I> TO MOVE UP,"
90 PRINT "<M> TO MOVE DOWN,"
100 PRINT "<J> TO MOVE LEFT, OR"
110 PRINT "<K> TO MOVE RIGHT.":PRINT
120 PRINT "EAT MUSHROOMS (";CHR$(28);CHR$(119);CHR$(15
4);CHR$(119);CHR$(5);") ";
130 PRINT "OR BONUS BYTES (";CHR$(156);CHR$(115);CHR$(
5);")"
140 PRINT "TO IMPROVE YOUR SCORE, WHILE AVOIDING"
150 PRINT "THE WALLS, YOUR OWN TAIL, AND THE"
160 PRINT "DEADLY FUNGUS (";CHR$(120);")."
170 PRINT:PRINT "PRESS ANY KEY TO BEGIN."
180 WAIT 197,191
190 RW=20:CL=20:DX=1:DY=0:TP=1:HP=1:SC=1:SG=0:Z=2:TI$=
"000000"
200 FOR X=1 TO 3:M(X,1)=2:READ M(X,2):M(X,3)=0:NEXT X
210 PRINT CHR$(147):FOR X=0 TO 39:IF X<2 OR X>22 THEN
230
220 P=X*40:POKE 1064+P,224:POKE 2063-P,224:POKE 55336+
P,1:POKE 56335-P,1
230 POKE SM+X+80,224:POKE 2023-X,224:POKE CM+X+80,1:PO
KE 56295-X,1:NEXT X
240 IF TI<60 THEN 360
250 TI$="000000":FOR X=1 TO 3
260 M(X,3)=M(X,3)+1:IF M(X,3)<M(X,2) THEN 350
270 IF M(X,3)>M(X,2) THEN 300
280 IF PEEK(M(X,1))=87 THEN POKE M(X,1)+SD,1
290 GOTO 350
300 M(X,3)=0:IF PEEK(M(X,1))<>83 AND PEEK(M(X,1))<>87
THEN 330
310 IF X=3 THEN POKE M(X,1),32:POKE M(X,1)+SD,0:GOTO 3
30
320 POKE M(X,1),88
330 M(X,1)=INT(RND(0)*860)+1144:IF PEEK(M(X,1))<>32 TH
EN 330
340 POKE M(X,1),83-4*(X<3):POKE M(X,1)+SD,X+1
350 NEXT X
360 GET A$:IF A$<"I" OR A$="L" OR A$>"M" THEN 380
370 DX=(A$="J")-(A$="K"):DY=(A$="I")-(A$="M")
380 RW=RW+DX:CL=CL+DY:HP=HP+1:IF HP=960 THEN HP=0
390 A(HP)=SM+RW+CL*40:PT=PEEK(A(HP))
400 IF PT=88 OR PT=102 OR PT=224 THEN 550
410 IF PT=32 THEN 500
420 T$=TI$
430 IF PT=83 THEN 460
440 T=INT(RND(0)*9)+1:POKE A(HP),T+48:SC=SC+T:SG=SG+T:
Q=6:FOR X=1 TO 10
450 POKE SD+1,Q*T:Q=Q-2-(4*(X>3)):FOR D=1 TO 50:NEXT D
:NEXT X:GOTO 490
460 BS=INT(RND(0)*30)+1:SC=SC+BS:PRINT C$;"BONUS SCORE
```



```
: ";BS
470 FOR X=1 TO 5:POKE SD+1,54:FOR D=1 TO 25:NEXT D:POK
E SD+1,45:FOR D=1 TO 25
480 NEXT D:NEXT X:POKE SD+1,0:FOR D=1 TO 200:NEXT D:PR
INT C$;BL$
490 TI$=T$
500 IF SG<>0 THEN SG=SG-1:GOTO 520
510 POKE A(TP),32:POKE A(TP)+SD,0:TP=TP+1:IF TP=960 TH
EN TP=0
520 POKE A(HP),102:POKE SD+A(HP),5:POKE SD+1,Z:Z=Z+1:I
F Z=9 THEN Z=2
530 PRINT C$;"SCORE:";STR$(SC)
540 FOR D=1 TO 25:NEXT D:GOTO 240
550 FOR X=1 TO 100:POKE SD+1,75:POKE SD+1,45:NEXT X:PO
KE SD+1,0
560 PRINT C$;BL$;C$;"GAME OVER!":FOR D=1 TO 500:NEXT D
570 PRINT CHR$(147);"YOUR SCORE IS ";STR$(SC);"."
580 IF SC>HS THEN HS=SC
590 PRINT "HIGH SCORE IS ";STR$(HS);"."
600 PRINT "PRESS ANY KEY TO PLAY AGAIN.":RESTORE:GOTO
180
1000 DATA 6,11,18
```

Dead Ringer



By Mark Gilman

Mirroria is a *very* weird planet. Located in the constellation Gemini, it has long been famous as the home of the most peculiar creatures in the universe. Of all these beings, the snakelike "Dead Ringer" is perhaps the strangest.

For one thing, Ringers are always born in pairs. Being a twin may be OK if you're a human, but for a Ringer it can be downright fatal. You see, if one Ringer dies, its twin also dies. If one accidentally bumps into the other, both die instantly.

Avoiding your twin and leading a cautious life might sound easy to someone not from Mirroria. But it isn't. First of all, there's one big problem: Ringers inhabit small craters. Very small craters. Craters with deadly plants scattered all around.

On top of that, one Ringer in every pair goes through life mimicking the movements of the other, but in an opposite direction. Which means if one Ringer moves north, its twin moves south. If one turns west, the other turns east. All this while both Ringers are in constant motion. Needless to say, survival is rough.

Well, now that you know what you have to look forward to, how would you like to be a Ringer for a while? Aw, c'mon! It's not a happy life, but just think how much more you'll appreciate your own once you've seen the world through their eyes!

MARK GILMAN *has written TI programs ranging from weight lifting simulations to educational games. He lives in the Bronx, New York.*

APPLE/*DEAD RINGER*

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

```
10 HS = 0:FL = 0
20 TEXT:HOME:VTAB 2:HTAB 14:INVERSE:PRINT "DEAD RINGER
!":NORMAL
30 IF FL = 0 THEN FL = 1:GOTO 60
40 VTAB 4:PRINT "CURRENT HIGH SCORE: ";HS
50 VTAB 6:PRINT "YOUR LAST SCORE: ";S
60 VTAB 9:HTAB 14:INVERSE:PRINT "INSTRUCTIONS":NORMAL
70 VTAB 11:PRINT "YOU CONTROL THE RED RINGER (THE ONE
THAT";:PRINT "STARTS ON THE LEFT) BY USING ..."
80 VTAB 14:PRINT TAB(8);"THE <I> KEY TO GO UP,"
90 PRINT TAB(8);"THE <M> KEY TO GO DOWN,"
100 PRINT TAB(8);"THE <J> KEY TO GO LEFT, AND"
110 PRINT TAB(8);"THE <K> KEY TO GO RIGHT."
120 PRINT:PRINT "PRESSING THE <SPACE BAR> WILL MAKE TH
E":PRINT "GAME PAUSE AND LOWER YOUR SCORE."
130 VTAB 22:PRINT "PLEASE PRESS <RETURN> TO BEGIN.";
140 GET A$:IF A$ <> CHR$(13) THEN 140
150 GR:HOME:VTAB 21:HTAB 15:PRINT "SCORE: ":S = 0
160 COLOR= 15:HLIN 0,39 AT 0:HLIN 0,39 AT 39
170 VLIN 0,39 AT 0:VLIN 0,39 AT 39
180 FOR I = 1 TO 15:COLOR= INT(RND(1) * 12) + 2
190 CL = INT(RND(1) * 36) + 2:IF CL = 4 OR CL = 35 THE
N 190
200 PLOT CL,INT(RND(1) * 36) + 2:NEXT I
210 Q = INT(RND(1) * 20)
220 X1 = 4:X2 = 35:Y1 = 20 - Q:Y2 = 19 + Q:XC = 0:YC =
 1
230 K = PEEK(-16384) - 128
240 FOR D = 1 TO 20:S0 = PEEK(-16336):NEXT D
250 IF K = 32 THEN S = S - 1:GOTO 320
260 IF K < 73 OR K > 77 OR K = 76 THEN 280
270 XC = (K = 75) - (K = 74):YC = (K = 77) - (K = 73)
280 X1 = X1 + XC:X2 = X2 - XC:Y1 = Y1 + YC:Y2 = Y2 - Y
C
290 IF SCRN(X1,Y1) <> 0 OR SCRN(X2,Y2) <> 0 THEN 340
300 S = S + 10
310 COLOR= 1:PLOT X1,Y1:COLOR= 14:PLOT X2,Y2
320 VTAB 21:HTAB 22:PRINT S;" "
330 GOTO 230
340 FOR I = 1 TO 100:S0 = PEEK(-16336):FOR D = 1 TO 3:
NEXT D,I
350 IF S > HS THEN HS = S
360 PRINT:PRINT "PLEASE PRESS <RETURN> TO START OVER."
;
370 GET A$:IF A$ <> CHR$(13) THEN 370
380 GOTO 20
```

COLECO/*DEAD RINGER*

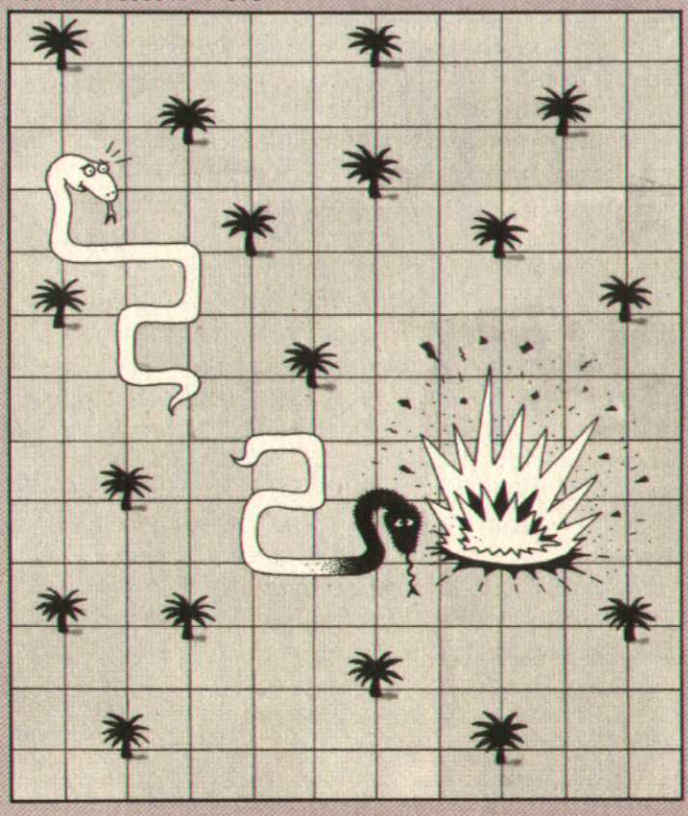
ADAM • 80K RAM • color TV or monitor optional

```
10 hs = 0:fl = 0
20 TEXT:VTAB 2:HTAB 9:INVERSE:PRINT "DEAD RINGER!":NOR
MAL
30 IF fl = 0 THEN fl = 1:GOTO 60
40 VTAB 4:PRINT "CURRENT HIGH SCORE: ";hs
50 VTAB 6:PRINT "YOUR LAST SCORE: ";s
60 VTAB 9:HTAB 9:INVERSE:PRINT "INSTRUCTIONS":NORMAL
70 VTAB 11:PRINT "CONTROLLER #1 CONTROLS THE RED"
80 PRINT "RINGER (THE ONE THAT STARTS ON THE LEFT)."
90 PRINT:PRINT "EITHER TRIGGER WILL MAKE THE":PRINT "G
AME PAUSE AND LOWER YOUR":PRINT "SCORE."
100 VTAB 22:PRINT "PLEASE PRESS ANY KEY ON THE"
110 PRINT "KEYPAD TO BEGIN.";
120 IF NOT PDL(11) THEN 120
130 GR:HOME:VTAB 21:HTAB 11:PRINT "SCORE:":s = 0
140 FOR i = 1 TO 15:COLOR= INT(RND(1) * 12) + 2
150 cl = INT(RND(1) * 37) + 2:IF cl = 4 OR cl = 35 THE
N 150
160 PLOT cl,INT(RND(1) * 37) + 2:NEXT i
170 COLOR= 15:HLIN 0,39 AT 0:HLIN 0,39 AT 39
180 VLIN 0,39 AT 0:VLIN 0,39 AT 39
190 q = INT(RND(1) * 15)
200 x1 = 4:x2 = 35:y1 = 20 - q:y2 = 19 + q:xc = 0:yc =
 1
210 k = PDL(5)
220 FOR d = 1 TO 150:NEXT d
230 IF PDL(7) OR PDL(9) THEN s = s - 1:GOTO 290
240 IF k <> 0 AND k/3 <> INT(k/3) THEN xc = (k = 2) -
(k = 8):yc = (k = 4) - (k = 1)
250 x1 = x1 + xc:x2 = x2 - xc:y1 = y1 + yc:y2 = y2 - yc
260 IF SCRN(x1,y1) <> 0 OR SCRN(x2,y2) <> 0 THEN 310
270 s = s + 10
280 COLOR= 1:PLOT x1,y1:COLOR= 14:PLOT x2,y2
290 VTAB 21:HTAB 18:PRINT s
300 GOTO 210
310 FOR i = 1 TO 100:NEXT i
320 IF s > hs THEN hs = s
330 PRINT:PRINT " PLEASE PRESS ANY KEY ON THE"
340 PRINT " KEYPAD TO START OVER.";
350 IF NOT PDL(11) THEN 350
360 GOTO 20
```

COMMODORE/*DEAD RINGER*

VIC-20 • 5K RAM • color TV or monitor

```
10 POKE 56,28:POKE 52,28:CLR:POKE 36879,24
20 D=-22:P=210:C=30720:SC=1:N=36876:POKE N+2,15
30 FOR T=1 TO 22:BL$=BL$+CHR$(160):NEXT T
40 PRINT CHR$(147);TAB(3);"*DEAD RINGER*"
50 PRINT CHR$(31);"YOU CONTROL THE":PRINT "RED RINGER
(THE ONE"
60 PRINT "THAT STARTS ON THE":PRINT "RIGHT) USING ..."
:PRINT
70 PRINT "<I> TO GO UP,":PRINT "<M> TO GO DOWN,"
80 PRINT "<J> TO GO LEFT, OR":PRINT "<K> TO GO RIGHT."
:PRINT
90 PRINT "PRESSING ANY OTHER":PRINT "KEY WILL FREEZE T
HE"
100 PRINT "ACTION BUT COST YOU":PRINT "POINTS.":PRINT
110 PRINT CHR$(28);"NEITHER RINGER MAY":PRINT "HIT A P
LANT, ITS"
120 PRINT "TWIN, OR ITS OWN":PRINT "TAIL.":PRINT:PRINT
 CHR$(144);"PLEASE PRESS ANY KEY."
130 GET K$:IF K$="" THEN 130
140 PRINT CHR$(147):PRINT "HOW MANY PLANTS":INPUT "(5-
25)";NP:IF NP<5 OR NP>25 THEN 140
150 PRINT CHR$(147):PRINT "DIFFICULTY LEVEL":INPUT "(1
=EASY; 9=HARD)";DL
160 IF DL<1 OR DL>9 THEN 150
170 DL=10-DL
180 PRINT CHR$(147);
190 FOR T=7168 TO 7191:READ A:POKE T,A:NEXT T:POKE 368
69,255
200 POKE 36879,8:FOR T=1 TO 22:PRINT BL$;:NEXT T:PRINT
 LEFT$(BL$,21);:POKE 8185,160
210 FOR T=7702 TO 7723:POKE T,0:POKE T+C,1:POKE T+440,
0:POKE T+C+440,1:NEXT T
220 FOR T=7724 TO 8142 STEP 22:POKE T,0:POKE T+C,1
230 POKE T+21,0:POKE T+C+21,1:NEXT T
240 FOR T=1 TO NP
250 X=INT(RND(0)*20)+1:IF X=2 OR X=19 THEN 250
260 A=7724+X+INT(RND(0)*16+1)*22:POKE A,0:POKE A+C,1
270 NEXT T:Q=INT(RND(0)*8)*22:S1=8117-Q:S2=7770+Q
280 POKE S1,1:POKE S1+C,2:POKE S2,1:POKE S2+C,7
290 GET K$:FOR T=1 TO DL*5:NEXT T
300 IF K$="" THEN 330
310 D=(K$="J")-(K$="K")+22*((K$="I")-(K$="M"))
320 IF D=0 THEN SC=SC-1:GOSUB 1000:GET K$:FOR D=1 TO P
S*5:NEXT D:GOTO 310
330 S1=S1+D:S2=S2-D
340 X1=PEEK(S1):X2=PEEK(S2)
350 IF X1<3 OR X2<3 THEN 390
360 POKE S1,1:POKE S1+C,2:POKE S1-D,2
370 POKE S2,1:POKE S2+C,7:POKE S2+D,2
380 POKE N,200:FOR T=1 TO 100:NEXT T:POKE N,0:SC=SC+10
:GOSUB 1000:GOTO 290
```



```
390 POKE N+1,130
400 FOR T=7184 TO 7191:POKE T,0:FOR R=P TO P-10 STEP -
1:POKE N,R:FOR E=1 TO 5:NEXT E,R
410 P=P-10:NEXT T:POKE N,0:POKE N+1,0:POKE 7180,195:PO
KE 7181,189
420 PRINT TAB(7);CHR$(18);"GAME OVER"
430 PRINT TAB(6);CHR$(18);"PLAY AGAIN?";
440 GET K$:IF K$<>"Y" AND K$<>"N" THEN 440
450 POKE 36869,240:IF K$="Y" THEN PRINT CHR$(147):RUN
460 PRINT CHR$(147):END
1000 PRINT CHR$(19);CHR$(18);CHR$(5);"SCORE:";STR$(SC)
;" ":RETURN
2000 DATA 8,13,42,88,14,9,8,28
2010 DATA 60,126,219,255,189,195,126,60
2020 DATA 60,102,203,149,169,211,102,60
```

TEXAS INSTRUMENTS/*DEAD RINGER*

TI-99/4A • 16K RAM • color TV or monitor optional

```
10 RANDOMIZE
20 CALL CLEAR
30 PRINT "YOU CONTROL THE RED RINGER"
40 PRINT "(THE ONE THAT STARTS ON":"THE RIGHT) BY USIN
G ..."
50 PRINT :"THE <E> KEY TO GO UP,"
60 PRINT "THE <X> KEY TO GO DOWN,"
70 PRINT "THE <S> KEY TO GO LEFT, OR"
80 PRINT "THE <D> KEY TO GO RIGHT."
90 PRINT :"OTHER KEYS FREEZE THE":"ACTION BUT COST YOU
 POINTS."
100 PRINT :"NEITHER SNAKE MAY HIT A":"MUSHROOM, ITS TW
IN, OR ITS":"OWN TAIL."
110 PRINT :"PRESS ANY KEY TO BEGIN.":"GOOD LUCK!"
120 CALL KEY(3,K,ST)
130 IF ST=0 THEN 120
140 A$="3C7EFFFFFFFF7E3C"
150 B$="422481E7993C4242"
160 CALL CHAR(96,A$)
170 CALL CHAR(97,B$)
180 CALL CHAR(104,"3C7EFFFFC3181818")
190 CALL CHAR(112,A$)
200 CALL CHAR(113,B$)
210 CALL SCREEN(12)
220 CALL COLOR(10,8,1)
230 CALL CLEAR
240 CALL COLOR(9,7,1)
250 CALL COLOR(11,2,1)
260 READ SCORE,ROW,COL,SN1C,SN2C,R,C
270 CALL HCHAR(3,3,86,29)
280 CALL HCHAR(23,3,86,29)
290 CALL HCHAR(5,4,86,27)
300 CALL VCHAR(4,3,86,19)
310 CALL VCHAR(4,31,86,19)
320 MSG$="DEAD RINGER**SCORE=0"
330 GOSUB 1000
340 SN1R=9+INT(11*RND)
350 SN2R=28-SN1R
360 FOR OBSTACLE=1 TO 15
370 RP=6+INT(17*RND)
380 IF (SN1R=RP)+(SN2R=RP) THEN 370
390 CALL HCHAR(RP,4+INT(27*RND),104)
400 NEXT OBSTACLE
410 COL=24
420 CALL KEY(3,K,ST)
430 IF ST=0 THEN 510
440 IF (K=68)+(K=69)+(K=83)+(K=88) THEN 490
450 SCORE=SCORE-1
460 MSG$=STR$(SCORE)
470 GOSUB 1000
480 GOTO 420
490 R=(K=69)-(K=88)
500 C=(K=83)-(K=68)
510 CALL GCHAR(SN1R+R,SN1C+C,CD1)
520 IF CD1=86 THEN 660
530 SN1R=SN1R+R
540 SN1C=SN1C+C
550 CALL HCHAR(SN1R,SN1C,97)
560 CALL HCHAR(SN1R-R,SN1C-C,96)
570 SN2R=SN2R-R
580 SN2C=SN2C-C
590 CALL GCHAR(SN2R,SN2C,CD2)
600 CALL HCHAR(SN2R,SN2C,113)
610 CALL HCHAR(SN2R+R,SN2C+C,112)
620 IF (CD1>95)+(CD2>95) THEN 680
630 SCORE=SCORE+10
640 MSG$=STR$(SCORE)
650 GOSUB 1000
660 CALL SOUND(1,1047,2)
670 GOTO 420
680 CALL SOUND(1000,-5,2)
690 CALL COLOR(9,15,1)
700 CALL COLOR(11,15,1)
710 ROW=24
720 COL=12
730 MSG$="PLAY AGAIN?"
740 GOSUB 1000
750 CALL KEY(3,K1,ST)
760 IF ST<>1 THEN 750
770 IF K1=ASC("Y") THEN 800
780 CALL CLEAR
790 END
800 RESTORE
810 GOTO 230
1000 FOR P=1 TO LEN(MSG$)
1010 CALL HCHAR(ROW,COL+P-1,ASC(SEG$(MSG$,P,1)))
1020 NEXT P
1030 CALL HCHAR(ROW,COL+LEN(MSG$),32)
1040 RETURN
2000 DATA 0,4,5,26,8,0,-1
```

ATTENTION, PROGRAMMERS!

If you have an interesting program, send it to K-POWER*! If we enjoy it, we'll publish it in Hacker Heaven and send you $50. Try to keep it under 50 program lines if you can. We also pay $20 for extra-short programs of 10 lines or less. Send a disk or tape containing two copies of your program(s), plus a listing (preferably a printout) to: Michael Tuomey, Hacker Heaven editor, c/o* K-POWER*, 730 Broadway, New York, NY 10003. We need to know your name, address, age, phone number, computer model, program title with brief description, computer language, and the memory required. If you want your program returned, enclose a stamped, self-addressed mailer.* K-POWER *can't assume responsibility for the loss of, or damage to, any unsolicited materials.*

ZIP!

By Jerry Lemaitre

Sports in the 30th century won't be anything like they are now. Baseball will be played (and watched) by robots. Basketball courts will be swarming with 20-foot genetic misfits. And the biggest, most hotly contested event in the world will be called ZIP!

ZIP! will pit two multiwarp hovercraft against each other on an enormous playing field of polished black glass. Skimming across the glistening surface, the two pilots will engage in a duel to the death.

The object? Survival to play another day. The strategy? Kill or be killed.

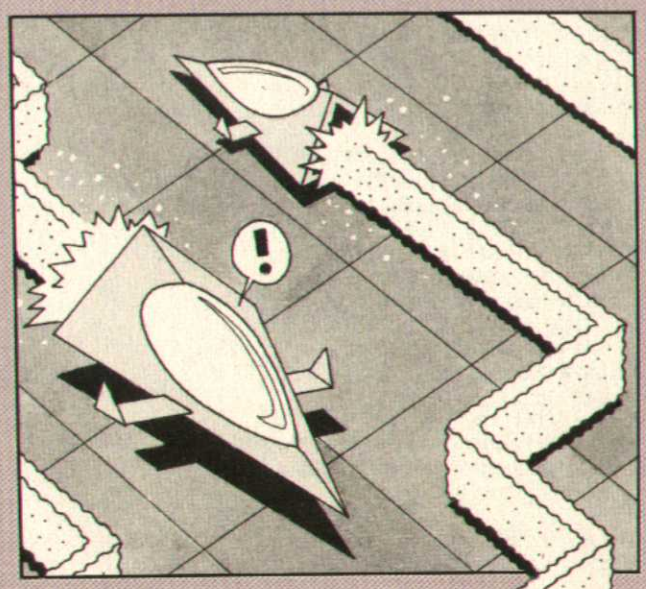
For a taste of the future: *ZIP!*

JERRY LEMAITRE, *17, from Collingwood, Canada, spent many a late hour honing and perfecting this masterpiece. He's a real hacker's hacker.*

ATARI/ZIP!

400, 600XL, 800, or 800XL • 16K RAM • two joysticks (ports 1 and 2) • color TV or monitor optional

```
10 DIM DIR(1),OLDIR(1),FL(1),SC(1),PL(1),FLG(1)
20 DIM MV(4),CL(4,4),CC(4),TOT(1),MOV$(39)
30 FOR I=1 TO 39:READ A:MOV$(I)=CHR$(A):NEXT I
40 FOR I=0 TO 4:READ A,B:MV(I)=A:CC(I)=B:NEXT I
50 FOR I=1 TO 4:FOR J=1 TO 4:READ A:CL(I,J)=A:NEXT J:N
EXT I
60 CH=PEEK(740)-8:SCR=PEEK(88)+256*PEEK(89)
70 I=USR(ADR(MOV$),57344,CH*256,1023)
80 FOR I=480+CH*256 TO 632+CH*256:READ A:POKE I,A:NEXT
 I
90 GRAPHICS 1+16:POSITION 5,5:PRINT #6;"GET READY!":FO
R D=1 TO 700:NEXT D
100 GRAPHICS 0:SETCOLOR 1,0,14:SETCOLOR 2,0,2:POKE 752
,1:POKE 756,CH
110 TOT(0)=0:TOT(1)=0:ROUND=1
120 DL=PEEK(560)+PEEK(561)*256:POKE DL+3,71:POKE DL+6,
11
130 PRINT CHR$(125):POSITION 8,0:PRINT "zip!"
140 COLOR 92:PLOT 1,2:DRAWTO 38,2:DRAWTO 38,22:DRAWTO
1,22:DRAWTO 1,3
150 COLOR 255:PLOT 21,0:DRAWTO 38,0:COLOR 0:PLOT 14,1:
PLOT 25,1
160 FOR I=1 TO 14:FOR J=1 TO 3:SOUND 0,I*J,10,8:NEXT J
:NEXT I
170 SOUND 0,17,4,2:SOUND 1,11,4,2:POSITION 16,1:PRINT
"ROUND: ";ROUND
180 C=0:SC(0)=0:SC(1)=0:FLG(0)=1:FLG(1)=1:DIR(0)=2:DIR
(1)=4:PL(0)=SCR+488:PL(1)=SCR+511
190 IF  NOT FLG(C) THEN C= NOT C
200 OLDIR(C)=DIR(C):S=STICK(C):T=(S=14)+((S=7)*2)+((S=
13)*3)+((S=11)*4):IF T THEN DIR(C)=T
210 SC(C)=SC(C)+1:TOT(C)=TOT(C)+1:POSITION 3+C*13,0:PR
INT SC(C)
220 POSITION 6+C*26,1:PRINT TOT(C):POKE PL(C),CL(OLDIR
(C),DIR(C))+6*C:PL(C)=PL(C)+MV(DIR(C))
230 IF PEEK(PL(C)) THEN 260
240 POKE PL(C),CC(DIR(C))
250 C= NOT C:GOTO 190
260 POKE PL(0)*(C=0)+PL(1)*(C=1),77+C:FOR I=1 TO 14:FO
R J=1 TO 3:SOUND C,I*J,12,8:NEXT J:NEXT I
270 IF C=0 AND FLG(1) THEN FLG(0)=0:SOUND 0,0,0,0:GOTO
 190
280 IF C=1 AND FLG(0) THEN FLG(1)=0:SOUND 1,0,0,0:GOTO
 190
290 SOUND 0,0,0,0:SOUND 1,0,0,0
300 ROUND=ROUND+1:POKE 77,0:IF ROUND<10 THEN 130
310 GRAPHICS 1+16:POSITION 8,1:PRINT #6;"ZIP!":PRINT #
6:PRINT #6;"   FINAL RESULTS:"
320 POSITION 3,7:PRINT #6;"PLAYER #1: ";TOT(0):POSITIO
N 3,9
330 PRINT #6;"PLAYER #2: ";TOT(1):POSITION 4,22:PRINT
#6;"PRESS <FIRE>"
340 POKE 708,PEEK(53770):SOUND 0,PEEK(53770),10,4:IF S
TRIG(0) AND STRIG(1) THEN 340
350 SOUND 0,0,0,0:SOUND 1,0,0,0:GOTO 90
1000 DATA 104,104,133,215,104,133,214,104,133,217,104
1010 DATA 133,216,104,133,218,104,170,160,0,177,214
1020 DATA 145,216,200,208,4,230,215,230,217,202,208
1030 DATA 242,198,218,16,238,96
2000 DATA 0,0,-40,64,1,63,40,62,-1,61
3000 DATA 70,69,70,68,67,66,68,66
3010 DATA 70,65,70,67,65,66,69,66
4000 DATA 51,204,51,204,51,204,51,204,0,96,252,223,223
4010 DATA 252,96,0,24,24,60,60,60,102,126,60,0,6,62
4020 DATA 251,251,62,6,0,60,26,102,60,60,60,24,24,8,8
4030 DATA 8,10,0,0,0,0,0,0,0,170,0,0,0,0,8,8,8,168,0
4040 DATA 0,0,0,0,0,0,168,8,8,8,8,0,0,0,10,8,8,8,8,8
4050 DATA 8,8,8,8,8,8,8,16,16,16,16,21,0,0,0,0,0,0,0
4060 DATA 85,0,0,0,16,16,16,16,80,0,0,0,0,0,0,0,80,16
4070 DATA 16,16,0,0,0,0,21,16,16,16,16,16,16,16,16,16
4080 DATA 16,16,40,40,170,170,170,170,40,40,20,20,85
4090 DATA 85,85,85,20,20,0
```



Endless Hallway

By Dan Persons

Hold on tight, 'cause this high-speed trip down a seemingly endless hallway is a real dazzler. Even more amazing than the hallway itself is the fact that this fast-paced graphics demo is done without a single shred of machine-language coding.

If you've been fooling around with Atari graphics, then you know about SETCOLOR, the command that's used to set each of the computer's color registers to a specific color and luminance value.

SETCOLOR's ability to change colors across the screen simultaneously can be put to good use. Say you've plotted a pixel using color register 0, and then next to it plotted two more pixels using color registers 1 and 2. You could then create the illusion of a single pixel moving across the screen by doing the following: First, use SETCOLOR to turn register 0 "on" to a certain luminance and color value. Follow that with another SETCOLOR to turn register 0 "off" to the background color (black, in most cases). Now turn register 1 on, and then turn it off again. Do the same thing with register 2. Repeat over and over and... Presto!, the pixel seems to move, without the need to erase and replot it constantly.

Through the use of a similar technique to rotate three luminance values from one register to another, *Endless Hallway* makes it appear as if panels of light are moving towards and away from you. The routine to draw the hallway starts at line 100. A FOR...NEXT loop determines the width of each wall, ceiling, and floor panel as the drawing progresses. At the center of the screen, the panels will be narrow. As the drawing continues out towards the edge of the screen, the panels will get wider and wider, creating an illusion of depth. Lines 150 and 160 determine which color registers will be used to draw the next set of floor and ceiling panels. The numbers of these registers are placed in variables REG1 and REG2, offset from each other by 1, so that the color of the wall panels contrasts with the floor and ceiling panels. After each set of panels is drawn, lines 150 and 160 increase the values of REG1 and REG2 by 1 (or bring one of them back to 1 if it's now equal to 4) so that the three color registers are, in effect, rotated as the segments of the hallway are drawn.

Once the hallway is drawn, the animation portion of the program starts. The loop from line 180 to 210 checks to see whether the joystick has been moved forward or backward, or if the trigger has been pressed. If these tests fail, the program will loop back up to check the joystick again. Otherwise, one of the routines in lines 180–200 is executed.

The routines in lines 180 and 190 are basically the same. Each rotates the values found in addresses 708, 709, and 710, which correspond to color registers 0, 1, and 2. Line 180 rotates them downward, creating the illusion of forward motion, while line 190 rotates them upward, making it look as if you're going backward.

The subroutine at 2000 is called from line 200 when you press the joystick button. It rotates the HUE of the colors displayed on the screen, from 0 (gray) to 15 (light orange) and back around again.

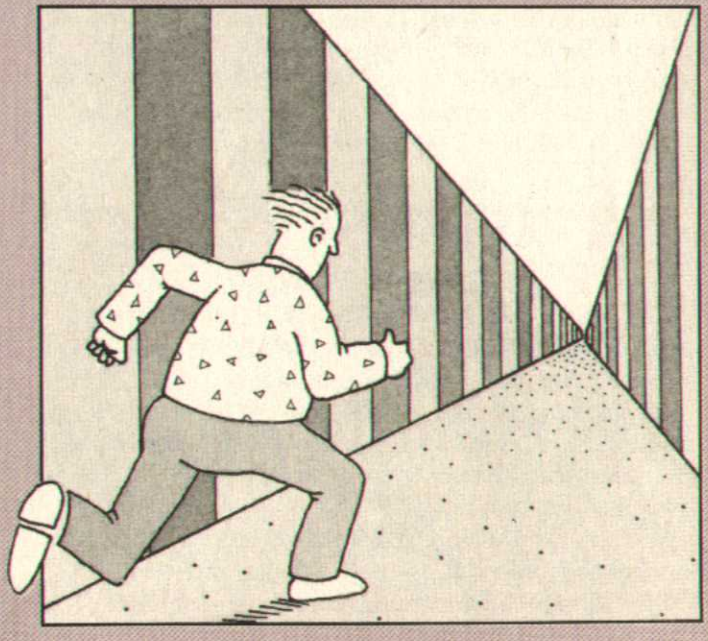
This simple routine would make a great background for a *Star Wars*-style trench battle. Even without the addition of spaceships and lasers, it's fascinating to look at. Just be sure to break every now and then for meals.

DAN PERSONS *is a games fanatic as well as a zealous programmer. His computer gaming articles have appeared in several national magazines.*

ATARI/*ENDLESS HALLWAY*

400, 600XL, 800, or 800XL • 16K RAM • color TV or monitor optional

```
10 X1=78:X2=81:Y1=47:Y2=49:REG1=1:REG2=2:HUE=0:FLAG=0
20 GRAPHICS 1+16:SETCOLOR 0,0,0:GOSUB 1000
30 POSITION 2,6:PRINT #6;"ENDLESS HALLWAY"
```



```
40 Q=0:FOR LUM=0 TO 28 STEP 2
50 SETCOLOR 0,0,Q:FOR DELAY=1 TO 25:NEXT DELAY
60 Q=Q+2-4*(LUM>12)
70 IF LUM=14 THEN GOSUB 1000
80 NEXT LUM
90 GRAPHICS 7+16:GOSUB 2000
100 FOR X=2 TO 9:FOR Y=0 TO X
110 COLOR REG1:PLOT X1,Y1:DRAWTO X2,Y1:PLOT X1,Y2:DRAW
TO X2,Y2
120 IF FLAG=0 THEN COLOR REG2:PLOT X1,Y1:DRAWTO X1,Y2:
PLOT X2,Y1:DRAWTO X2,Y2:IF X1=0 THEN FLAG=1
130 X1=X1-2*(X1>0):Y1=Y1-(Y1>0):X2=X2+2*(X2<159):Y2=Y2
+(Y2<95)
140 NEXT Y
150 REG1=REG1+1:IF REG1=4 THEN REG1=1
160 REG2=REG2+1:IF REG2=4 THEN REG2=1
170 NEXT X
180 IF STICK(0)=13 THEN A=PEEK(708):POKE 708,PEEK(709)
:POKE 709,PEEK(710):POKE 710,A:GOTO 200
190 IF STICK(0)=14 THEN A=PEEK(710):POKE 710,PEEK(709)
:POKE 709,PEEK(708):POKE 708,A
200 IF STRIG(0)=0 THEN GOSUB 2000
210 FOR DELAY=1 TO 25:NEXT DELAY:GOTO 180
1000 FOR DELAY=1 TO 1000:NEXT DELAY:RETURN
2000 SETCOLOR 0,HUE,14:SETCOLOR 1,HUE,6:SETCOLOR 2,HUE
,4
2010 HUE=HUE+1:IF HUE=16 THEN HUE=0
2020 RETURN
```


Programming tips and tricks, K blooper corrections, and reader advice

MYSTERIOUS DOTS AND DISAPPEARANCES

Our printer gobbled up one of the characters from the Commodore version of *Mysterious Message* (February, page 46), leaving a space where a 3 should have been. Here's how line 2000 is supposed to look:

```
2000 DATA 23,5,12,3,15,13,5,32,20,15,32,11,45,16,15,23
,5,18,33
```

Thanks to **Megan Jennifer** of **Bethlehem, PA**, and **Thomas Trocco** of the **Bronx, NY**, for finding this error.

Then **Marty Schamus** of **New York, NY**, found a strange speck on page 43 of his May copy in line 50 of the ADAM version of *Crystal Maker*. It doesn't appear in all copies of that issue, but in Marty's it looks just like a period. Here's the correct version of that line (without the phantom period):

```
50 FOR x=aa TO (254*(y>0))-5*y STEP y:aa=x:bb=bb+z:HPL
OT a,b TO aa,bb:m=PEEK(64885):IF k<>m THEN k=m:GOTO 20
```

WHERE'S THAT KEY??

Commodore 64 fan **Walter J. Wilkins** of **Taunton, MA**, spent his last $2 on the March issue of K-POWER...but then he had trouble typing in *C 64 Line Drawing* (pages 47–48) because he couldn't find the " ^ " symbol on his keyboard. "I have tried changing this symbol to every other symbol I could imagine, but to no avail."

Walter, Commodore has its own version of the symbol that appears on most other computers as " ^ ". (Most non-Commodore printers—including K-POWER's—print it that way, too.) Commodore's added a tail to make it into an upward-pointing arrow. You'll find it on the Commodore 64 and VIC-20 keyboards right next to the asterisk key (don't confuse it with the CURSOR UP/DOWN key). In *C 64 Line Drawing* it means "raise to a power" (mathematical exponentiation). For example:

$$2^3 = 2 \times 2 \times 2 = 8.$$

ILLOGICAL FRUIT

Somehow, when we renumbered *Logical Fruit* (May, pages 52–53), we duplicated a line. The program runs fine, but line 145 is just the same as line 120 and can be deleted.

DUELING ADAMS

Since we published the ADAM version of *Dueling Cannons* (April, page 53), we've discovered it doesn't work quite right under a later version of SmartBASIC. If the wind speed doesn't display at the bottom of your screen when you run the program, you should add 1 to the number following VTAB, wherever VTAB appears. For example, you should change line 80 from

```
80 VTAB 20:HTAB 13:PRINT "WIND: 0":VTAB 21:HTAB 0
```

to

```
80 VTAB 21:HTAB 13:PRINT "WIND: 0":VTAB 22:HTAB 0
```

Make sure to change lines 180, 190, 310, 340–370, 390–420, 670, and 1000 in the same way.

A galaxy of microprograms for your microcomputer

BASE VERSION (APPLE)/*DECIMAL-HEX-BINARY CONVERTER*

II plus, IIe, or IIc • 32K RAM

```
10 TRU = 1:Q$ = CHR$(34)
20 HOME:PRINT "INPUT A POSITIVE DECIMAL,"
30 PRINT "HEXADECIMAL, OR BINARY NUMBER"
40 PRINT "FOR CONVERSION.":PRINT
50 PRINT "PRECEDE HEX INPUT WITH A ";Q$;"$";Q$;","
60 PRINT "BINARY INPUT WITH A ";Q$;"%";Q$;".":PRINT
70 PRINT:PRINT "INPUT";:INPUT NUM$:NUM = VAL(NUM$):P
RINT
80 IF NUM <> 0 THEN PRINT "DECIMAL:       ";NUM:GOSUB
 1000:GOSUB 2000:GOTO 70
90 IF LEN(NUM$) < 2 THEN 20
100 A$ = LEFT$(NUM$,1):BA = 2 * TRU * ((A$ = "%") +
8 * (A$ = "$")):IF BA = 0 THEN 20
110 FL = 0:FOR X = 2 TO LEN(NUM$):B$ = MID$(NUM$,X,1
)
120 IF B$ = "0" OR B$ = "1" THEN 160
130 IF B$ >= "2" AND B$ <= "9" AND A$ = "$" THEN 160
140 IF B$ >= "A" AND B$ <= "F" AND A$ = "$" THEN NUM
 = BA * NUM + ASC(B$) - 55:GOTO 170
150 FL = TRU:GOTO 170
160 NUM = BA * NUM + VAL(B$)
170 NEXT X:IF FL THEN 20
180 PRINT "DECIMAL:       ";NUM:IF A$ = "%" THEN GOSU
B 1000:PRINT "BINARY:       ";NUM$:GOTO 70
190 PRINT "HEXADECIMAL: ";NUM$:GOSUB 2000:GOTO 70
999 REM --DECIMAL TO HEXADECIMAL--
1000 ANS$ = "":C=NUM
1010 IF C < 16 THEN PRINT "HEXADECIMAL: $";:IF C < 1
0 THEN PRINT RIGHT$(STR$(C),1);ANS$:RETURN
1020 IF C < 16 THEN PRINT CHR$(C + 55);ANS$:RETURN
1030 DV = INT(C / 16):R = C - 16 * DV:ANS$ = CHR$(R
+ 48 + 7 * (R > 9) * TRU) + ANS$:C = DV:GOTO 1010
1999 REM --DECIMAL TO BINARY--
2000 ANS$ = "":C = NUM
2010 IF C < 2 THEN PRINT "BINARY:       %";RIGHT$(STR
$(C),1);ANS$:RETURN
2020 DV = INT(C / 2):ANS$ = RIGHT$(STR$(C - 2 * DV),
1) + ANS$:C = DV:GOTO 2010
```

IBM/*DECIMAL-HEX-BINARY CONVERTER*

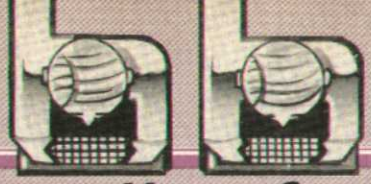
PC or PCjr • 64K RAM

```
10 Q$=CHR$(34)
20 CLS:PRINT "INPUT A POSITIVE DECIMAL,"
30 PRINT "HEXADECIMAL, OR BINARY NUMBER"
40 PRINT "FOR CONVERSION.":PRINT
50 PRINT "PRECEDE HEX INPUT WITH A ";Q$;"$";Q$;","
60 PRINT "BINARY INPUT WITH A ";Q$;"%";Q$;".":PRINT
70 PRINT:INPUT "INPUT";NUM$:NUM=VAL(NUM$):PRINT
80 IF NUM<>0 THEN PRINT "DECIMAL:";TAB(14);NUM:GOSUB 1
000:GOSUB 2000:GOTO 70
90 IF LEN(NUM$)<2 THEN 20
100 A$=LEFT$(NUM$,1):BA=-2*((A$="%")+8*(A$="$"))
110 IF BA=0 THEN 20
120 FL=0:FOR X=2 TO LEN(NUM$):B$=MID$(NUM$,X,1)
130 IF B$="0" OR B$="1" THEN 170
140 IF B$>="2" AND B$<="9" AND A$="$" THEN 170
150 IF B$>="A" AND B$<="F" AND A$="$" THEN NUM=BA*NUM+
ASC(B$)-55:GOTO 180
160 FL=-1:GOTO 180
170 NUM=BA*NUM+VAL(B$)
180 NEXT X:IF FL THEN 20
190 PRINT "DECIMAL:";TAB(14);NUM
200 IF A$="%" THEN GOSUB 1000:PRINT "BINARY:";TAB(14);
NUM$:GOTO 70
210 PRINT "HEXADECIMAL: ";NUM$:GOSUB 2000:GOTO 70
999 REM --DECIMAL TO HEXADECIMAL--
1000 PRINT "HEXADECIMAL: $";HEX$(NUM):RETURN
1999 REM --DECIMAL TO BINARY--
2000 ANS$="":C=NUM
2010 IF C<2 THEN PRINT "BINARY:";TAB(14);"%";RIGHT$(ST
R$(C),1);ANS$:RETURN
2020 DV=INT(C/2):ANS$=RIGHT$(STR$(C-2*DV),1)+ANS$
2030 C=DV:GOTO 2010
```

RADIO SHACK/*DECIMAL-HEX-BINARY CONVERTER*

TRS-80 Model III • 16K RAM

```
10 CLEAR 500:TRU=-1:Q$=CHR$(34)
20 CLS:PRINT "INPUT A POSITIVE DECIMAL,"
30 PRINT "HEXADECIMAL, OR BINARY NUMBER"
40 PRINT "FOR CONVERSION.":PRINT
50 PRINT "PRECEDE HEX INPUT WITH A ";Q$;"$";Q$;","
60 PRINT "BINARY INPUT WITH A ";Q$;"%";Q$;".":PRINT
70 NUM$="":PRINT:INPUT "INPUT";NUM$:IF NUM$="" THEN 20
 ELSE PRINT:A$=LEFT$(NUM$,1):IF A$="%" OR A$="$" THEN
NUM=0 ELSE NUM=VAL(NUM$)
80 IF NUM<>0 THEN PRINT "DECIMAL:";TAB(13);NUM:GOSUB 1
000:GOSUB 2000:GOTO 70
90 IF LEN(NUM$)<2 THEN 20
100 BA=2*TRU*((A$="%")+8*(A$="$")):IF BA=0 THEN 20
110 FL=0:FOR X=2 TO LEN(NUM$):B$=MID$(NUM$,X,1)
120 IF B$="0" OR B$="1" THEN 160
130 IF B$>="2" AND B$<="9" AND A$="$" THEN 160
140 IF B$>="A" AND B$<="F" AND A$="$" THEN NUM=BA*NUM+
ASC(B$)-55:GOTO 170
150 FL=TRU:GOTO 170
160 NUM=BA*NUM+VAL(B$)
170 NEXT X:IF FL THEN 20
180 PRINT "DECIMAL:";TAB(13);NUM:IF A$="%" THEN GOSUB
1000:PRINT "BINARY:";TAB(13);NUM$:GOTO 70
190 PRINT "HEXADECIMAL:";TAB(13);NUM$:GOSUB 2000:GOTO
70
999 REM --DECIMAL TO HEXADECIMAL--
1000 ANS$="":C=NUM
1010 IF C<16 THEN PRINT "HEXADECIMAL: $";:IF C<10 THEN
 PRINT RIGHT$(STR$(C),1);ANS$:RETURN
1020 IF C<16 THEN PRINT CHR$(C+55);ANS$:RETURN
1030 DV=INT(C/16):R=C-16*DV:ANS$=CHR$(R+48+7*(R>9)*TRU
)+ANS$:C=DV:GOTO 1010
1999 REM --DECIMAL TO BINARY--
2000 ANS$="":C=NUM
2010 IF C<2 THEN PRINT "BINARY:";TAB(13)"%";RIGHT$(STR
$(C),1)+ANS$:RETURN
2020 DV=INT(C/2):ANS$=RIGHT$(STR$(C-2*DV),1)+ANS$:C=DV
:GOTO 2010
```



COMPUCOPIA

TEXAS INSTRUMENTS/*DECIMAL-HEX-BINARY CONVERTER*

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

```
10 Q$=CHR$(34)
20 CALL CLEAR :: PRINT "INPUT A POSITIVE DECIMAL,"
30 PRINT "HEXADECIMAL, OR BINARY"
40 PRINT "NUMBER FOR CONVERSION.":::PRINT
50 PRINT "PRECEDE HEX INPUT WITH A"
60 PRINT Q$;"$";Q$;", BINARY INPUT WITH A " :: PRINT Q
$;"%";Q$;"." :: PRINT
70 PRINT :: INPUT "INPUT?":NUM$ :: IF NUM$="" THEN 20
ELSE A$=SEG$(NUM$,1,1)::PRINT
80 BA=10+8*(A$="%")-6*(A$="$")
90 IF BA<>10 AND LEN(NUM$)<2 THEN 20
110 FOR X=1-(BA<>10) TO LEN(NUM$):: B$=SEG$(NUM$,X,1)
SEG$(NUM$,X,1)
120 IF B$="0" OR B$="1" THEN 160
130 IF B$>="2" AND B$<="9" AND BA<>2 THEN 160
140 IF B$>="A" AND B$<="F" AND BA=16 THEN NM=BA*NM+ASC
(B$)-55 :: GOTO 170
150 FL=-1 :: GOTO 170
160 NM=BA*NM+VAL(B$)
170 NEXT X :: IF FL THEN 20
180 PRINT "DECIMAL:";TAB(13);NM :: IF BA=2 THEN GOSUB
1000 :: PRINT "BINARY:";TAB(14);NUM$ :: GOTO 70
190 IF BA=16 THEN PRINT "HEXADECIMAL:";TAB(14);NUM$ ::
 GOSUB 2000 :: GOTO 70
200 GOSUB 1000 :: GOSUB 2000 :: GOTO 70
999 REM --DECIMAL TO HEXADECIMAL--
1000 ANS$="" :: C=NM
1010 IF C<16 THEN PRINT "HEXADECIMAL: $";:: IF C<10 TH
EN PRINT SEG$(STR$(C),LEN(STR$(C)),1);ANS$ :: RETURN
1020 IF C<16 THEN PRINT CHR$(C+55);ANS$ :: RETURN
1030 DV=INT(C/16):: R=C-16*DV :: ANS$=CHR$(R+48-7*(R>9
))&ANS$ :: C=DV :: GOTO 1010
1999 REM --DECIMAL TO BINARY--
2000 ANS$="" :: C=NM
2010 IF C<2 THEN PRINT "BINARY:";TAB(14);"%";SEG$(STR$
(C),LEN(STR$(C)),1);ANS$ :: RETURN
2020 DV=INT(C/2):: ANS$=SEG$(STR$(C-2*DV),LEN(STR$(C-2
*DV)),1)&ANS$ :: C=DV :: GOTO 2010
```

TIMEX SINCLAIR/*DECIMAL-HEX-BINARY CONVERTER*

1000 or 1500 • 16K RAM

```
10 PRINT "INPUT A POSITIVE DECIMAL, HEXA-"
20 PRINT "DECIMAL, OR BINARY NUMBER FOR"
30 PRINT "CONVERSION. PRECEDE HEX"
40 PRINT "INPUT WITH A ""$"", BINARY"
50 PRINT "INPUT WITH A ""/""."
60 SLOW
70 PRINT
80 PRINT "(PRESS ANY KEY TO CONTINUE.)"
90 IF INKEY$="" THEN GOTO 90
100 CLS
110 PRINT "INPUT? ";
120 INPUT N$
130 IF N$="" THEN GOTO 120
140 PRINT N$
150 PAUSE 123
160 FAST
170 LET FLAG=0
180 LET A$=N$(1)
190 LET BASE=10-8*(A$="/")+6*(A$="$")
200 LET DEC=0
210 FOR X=1+(A$="$" OR A$="/") TO LEN N$
220 LET B$=N$(X)
230 IF B$<"0" OR B$>"9" OR (A$="/" AND B$<>"0" AND B$<
>"1") THEN GOTO 260
240 LET DEC=BASE*DEC+VAL B$
250 GOTO 300
260 IF B$<"A" OR B$>"F" OR A$<>"$" THEN GOTO 290
270 LET DEC=BASE*DEC+CODE B$-28
280 GOTO 300
290 LET FLAG=1
300 NEXT X
310 CLS
320 IF FLAG THEN GOTO 10
330 PRINT "DECIMAL:";TAB 14;DEC
340 IF BASE<>10 THEN GOTO 380
350 LET NEWBASE=16
360 GOSUB 1000
370 GOTO 400
380 IF BASE<>16 THEN GOTO 430
390 PRINT "HEXADECIMAL: ";N$
400 LET NEWBASE=2
410 GOSUB 1000
420 GOTO 60
430 LET NEWBASE=16
440 GOSUB 1000
450 PRINT "BINARY:";TAB 13;N$
460 GOTO 60
1000 LET A$=""
1010 LET C=DEC
1020 IF C>NEWBASE-1 THEN GOTO 1080
1030 IF NEWBASE=2 THEN GOTO 1060
1040 PRINT "HEXADECIMAL: $";CHR$ (C+28);A$
1050 RETURN
1060 PRINT "BINARY:";TAB 13;"/";CHR$ (C+28);A$
1070 RETURN
1080 LET DIV=INT (C/NEWBASE)
1090 LET REM=C-NEWBASE*DIV
1100 LET A$=CHR$ (REM+28)+A$
1110 LET C=DIV
1120 GOTO 1020
```

MODIFICATIONS FOR OTHER COMPUTERS

COLECO/*DECIMAL-HEX-BINARY CONVERTER*

ADAM • 80K RAM

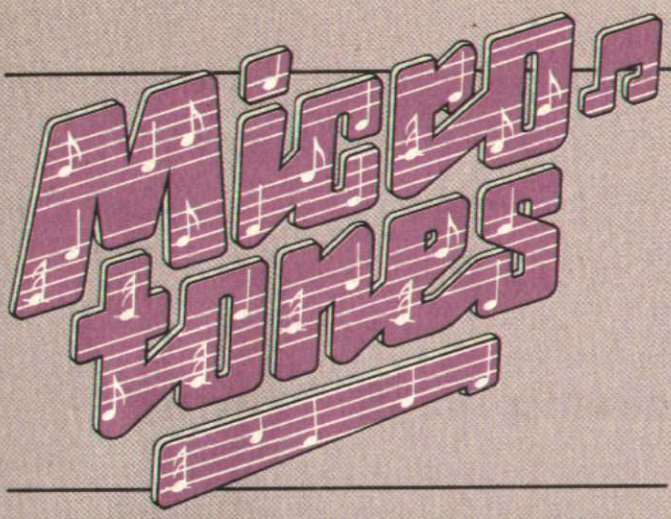
Use the base version. The ADAM will automatically convert all your variable names to lowercase.

RADIO SHACK/*DECIMAL-HEX-BINARY CONVERTER*

TRS-80 Color Computer • 16K RAM

Use the base version, except change HOME to CLS in line 20 and change line 10 to read as follows:

```
10 CLEAR 500:TRU=-1:Q$=CHR$(34)
```



SUPER SOUNDS!

BY JOEY LATIMER

The other day, as I was playing *Omega Race* on a VIC-20, I noticed something was wrong. The game seemed to be OK, but it was missing pizzazz. I was using a green monitor, but *Omega Race* is a two-color game, so that shouldn't have mattered. After a few minutes of watching unattended spaceships bite the dust, it hit me like a ton of bricks. "Why didn't I think of it before?" I scolded myself. "My green monitor doesn't have a speaker!"

It's easy to take sound for granted. After all, it doesn't require much effort for most people to hear. But when the sound is removed from our favorite computer games or TV shows, we're not happy. That's because sound effects and background noises are vital to the excitement of movies, TV shows, video games, and even hit songs.

Now, just for a minute, imagine you're watching an episode of the "A-Team" on TV. Several police cars with sirens blaring are chasing a van through a freight yard. The occupants of the van jump out just before the van careens off a trash gondola and into a giant cargo of explosive nitroglycerin. Kaboom! Now, put your mind into instant replay and run the scene again—this time without sound. That's right. No sirens, no explosions, no automobile noises, no music, no voices, no nothing. Pretty dull, isn't it?

To satisfy your hunger for sound effects, this issue of Microtones brings you a menu full of crazy, weird, funny, exciting, and downright outrageous noises for your computer. They were inspired by TV shows such as the "A-Team" and "Hill Street Blues," movies like *Godzilla* and *Sherlock Holmes,* recording stars such as Devo and Christopher Cross, along with places and situations like the Empire State Building elevator, a Coney Island shooting gallery, an astronaut lost in space, and more. These short programs can be used as subroutines in your own programming creations, or they can be typed in and played as is to friends and family. There's one thing to remember, though. Make sure your TV or monitor has a speaker!

JOEY LATIMER *is* K-POWER*'s programming associate. He's a musician and a programming pro.*

CHRISTOPHER CROSSWIND. This wind-tunnel effect was inspired by the popular Christopher Cross record, "Ride Like the Wind." It's created by slowly changing the pitch of a white - noise generator. For Atari.

CONEY ISLAND SHOOTING GALLERY. This sound effect typifies most people's luck at the shooting gallery. There is one rabbit left and nobody can hit it. For Commodore 64.

DEVO DRUM. This program came about one day as I was trying to sing a Michael Jackson tune to the beat of the clothes dryer. I called it *Devo Drum* because I found out I could sing any Devo song to its beat. For Atari.

EMPIRE STATE BUILDING ELEVATOR. They say it's one of the fastest elevators in the world. How would it feel to be stuck in it, out of control, during a blackout?? Run this program with the lights out for a taste of the real thing. For TI and TRS-80 CoCo.

GODZILLA'S HEARTBEAT. To create Godzilla's heartbeat, I imagined I was a Japanese doctor holding a five-foot-long stethoscope, standing on Mount Kilimanjaro with Raymond Burr. For the TI.

GREAT STOCK MARKET CRASH. We're always hearing about the Great Stock Market Crash. The way I have it figured, when it crashes again it will surely go with a bang! For Commodore 64 and VIC-20.

HILL STREET SIREN. Coming home from a Dodgers game on Hill Street in Los Angeles, the bus I was in was passed by a scurrying police car. My best rendition of the siren now finds its way to your computer! For TI, IBM, and TRS-80 CoCo.

KILLER MOSQUITO. It was easy to program this one after a sleepless night with a killer mosquito. I itched all the way to the computer. For IBM and VIC-20.

LOST IN SPACE. Picture yourself drifting away from your ship, 400,000 miles from the face of Jupiter. Your radio doesn't work, your mom is calling, and you're hungry! For IBM, TRS-80 CoCo, and VIC-20.

MR. T EXPLOSION. This is no ordinary explosion and Mr. T is no ordinary man. In order to make an explosion named after Mr. T, I had to make the biggest and best possible. Call your friends up and play it to them over the phone. They'll never forget it! For the Commodore 64.

SHERLOCK HOLMES' FOOTSTEPS. Holmes walks fearlessly along a gravel road searching for clues. If his deductions are correct, he'll soon prove why no one can hit the rabbit! For Atari.

ATARI/SUPER SOUNDS

400, 600XL, 800, or 800 XL • 16K RAM

CHRISTOPHER CROSSWIND

```
10 A=5
20 X=INT(RND(0)*40)-20:IF A+X>80 OR A+X<1 OR X=0 THEN
20
30 FOR D=A TO A+X STEP SGN(X)*0.5
40 SOUND 0,D,8,7:NEXT D:A=D:GOTO 20
```

DEVO DRUM

```
10 Q=0
20 FOR Y=11 TO 0 STEP -0.5
30 IF Q THEN SOUND 0,50,8,Y:GOTO 50
40 SOUND 0,2,8,Y
50 NEXT Y:FOR T=1 TO 75:NEXT T
60 Q= NOT Q:GOTO 20
```

SHERLOCK HOLMES' FOOTSTEPS

```
10 FOR X=0 TO 2
20 SOUND 0,INT(RND(0)*4)+20,8,X
30 NEXT X
40 FOR X=4 TO 0 STEP -2
50 SOUND 0,INT(RND(0)*4)+20,8,X
60 NEXT X
70 FOR T=1 TO INT(RND(0)*100)+300:NEXT T
80 GOTO 10
```

COMMODORE/SUPER SOUNDS!

Commodore 64 • 64K RAM

CONEY ISLAND SHOOTING GALLERY

```
10 S=54272:FOR X=S TO S+24:POKE X,0:NEXT X
20 POKE S+5,85:POKE S+6,87:POKE S+7,35:POKE S+8,135
30 POKE S+12,1:POKE S+13,16:POKE S+24,15
40 POKE S+4,17
50 POKE S,200:POKE S+1,INT(RND(1)*19)+50
60 FOR T=1 TO 75:NEXT T:POKE S+4,16
70 IF RND(1)>.30 THEN 40
80 POKE S+11,129:FOR T=1 TO 40:NEXT T:POKE S+11,0:GOTO
 40
```

GREAT STOCK MARKET CRASH

```
10 S=54272:FOR X=S TO S+24:POKE X,0:NEXT X
20 POKE S,135:POKE S+5,52:POKE S+6,138:POKE S+24,15:PO
KE S+4,33
30 FOR X=255 TO 30 STEP -1
40 POKE S+1,X
50 FOR T=1 TO 15:NEXT T
60 NEXT X:POKE S+4,0
70 POKE S,159:POKE S+1,9:POKE S+5,17:POKE S+6,204:POKE
 S+4,129
80 POKE S+4,128
```

MR. T EXPLOSION

```
10 S=54272:FOR X=S TO S+24:POKE X,0:NEXT X
20 POKE S+1,1:POKE S+5,17:POKE S+6,253
30 POKE S+24,15:POKE S+4,129
40 POKE S+4,128
```

VIC-20 • 5K RAM

GREAT STOCK MARKET CRASH

```
10 S=36876:POKE S+2,15
20 FOR X=254 TO 128 STEP -1:POKE S,X
30 FOR T=1 TO 15:NEXT T
40 NEXT X:POKE S,127:POKE S+1,234
50 FOR T=1 TO 500:NEXT T
60 FOR X=15 TO 0 STEP -.05
70 POKE S+2,X:NEXT X:POKE S+1,0:POKE S,0
```

KILLER MOSQUITO

```
10 V=10:S=36876:POKE S,220
20 Q=INT(RND(1)*24)-12
30 IF V+Q<1 OR V+Q>15 OR Q=0 THEN 20
40 FOR X=V TO V+Q STEP SGN(Q)*0.05
50 POKE S+2,X
60 IF RND(1)<0.9 OR X<8 THEN 90
70 POKE S,221
80 FOR T=1 TO 10:NEXT T
90 POKE S,220
100 NEXT X:V=X:GOTO 20
```

LOST IN SPACE

```
10 S=36876:POKE S+1,152:POKE S+2,8
20 P=INT(RND(1)*108)+128
30 FOR X=1 TO 5:FOR Y=P TO P+20
40 POKE S,Y
50 NEXT Y:NEXT X:GOTO 20
```

IBM/SUPER SOUNDS!

PC or PCjr • 64K RAM

HILL STREET SIREN

```
10 A=500
20 X=RND*400-200:IF A+X>800 OR A+X<440 OR X=0 THEN 20
30 FOR D=A TO A+X STEP SGN(X)*10
40 SOUND D,1
50 NEXT D:A=D:GOTO 20
```

KILLER MOSQUITO

```
10 A=975
20 X=INT(RND*100)-50:IF A+X>1000 OR A+X<900 OR X=0 THE
N 20
30 FOR D=A TO A+X STEP SGN(X):SOUND D,1:NEXT D
40 IF D<980 THEN 20
50 FOR X=1 TO INT(RND*5)+1:SOUND 980,1:SOUND 1020,1:NE
XT X:GOTO 20
```

LOST IN SPACE

```
10 P=RND*500+500
20 FOR X=1 TO 5:FOR Y=P TO P+500 STEP 50
30 SOUND Y,1
40 NEXT Y:NEXT X:GOTO 10
```

RADIO SHACK/SUPER SOUNDS!

TRS-80 Color Computer • 16K RAM

EMPIRE STATE BUILDING ELEVATOR

```
10 FOR X=1 TO 230 STEP 2
20 SOUND X,2
30 NEXT X
40 FOR X=225 TO RND(100) STEP -2
50 SOUND X,1
60 NEXT X
70 GOTO 10
```

HILL STREET SIREN

```
10 A=200
20 X=RND(60)-30:IF A+X>230 OR A+X<180 OR X=0 THEN 20
30 FOR D=A TO A+X STEP SGN(X)
40 SOUND D,1:NEXT D:A=D:GOTO 20
```

LOST IN SPACE

```
10 SOUND RND(125),1:SOUND RND(125),1
20 SOUND RND(125)+125,2:GOTO 10
```

TEXAS INSTRUMENTS/ SUPER SOUNDS!

TI-99/4A • 16K RAM

EMPIRE STATE BUILDING ELEVATOR

```
10 FOR X=110 TO 500+INT(RND*100) STEP 10
20 CALL SOUND(100,X,0)
30 NEXT X
40 FOR X=950 TO 600+INT(RND*100) STEP -10
50 CALL SOUND(75,X,0)
60 NEXT X
70 GOTO 10
```

GODZILLA'S HEARTBEAT

```
10 CALL SOUND(100,-7,0)
20 CALL SOUND(25,-6,0)
30 CALL SOUND(250,-5,20)
40 FOR T=1 TO 400
50 NEXT T
60 GOTO 10
```

HILL STREET SIREN

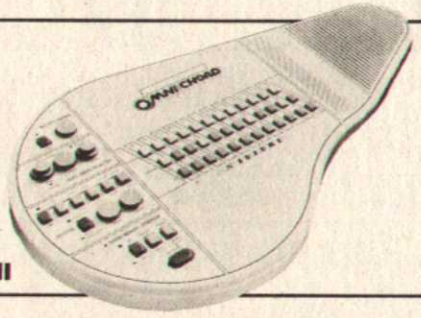
```
10 A=700
20 X=INT(RND*300)-150
30 IF (A+X>1000)+(A+X<500)+(X=0)THEN 20
40 FOR D=A TO A+X STEP SGN(X)*10
50 CALL SOUND(-200,D,0)
60 NEXT D
70 A=D
80 GOTO 20
```

MICRONOTES

The next BIG thing for computers will be music keyboards (instead of QWERTY computer keyboards). K-POWER got an exclusive look at **Music Port**, a music keyboard for the VIC-20, which is also compatible with the Commodore 64. It features a 38-key music keyboard and music software (on cartridge) boasting three octaves and a metronome. As you play, you can save the music on disk or cassette, and later play it back. It lists for $189 and is available from Tracksmith, P.O. Box 738, New York, NY 10276.

Then there's the ***Kawasaki Synthesizer***, coming soon from Sight and Sound Music Software for the Commodore 64. It's a two-disk program that's comparable to a professional synthesizer. It provides 99 preset musical tones and advanced color graphics, and will cost $49.95. Sight and Sound also sells the ***Kawasaki Rhythm Rocker***, which is a one-disk program, for $39.95. These can be used along with the company's **Incredible Musical Keyboard** ($39.95), which features an eight-octave range and includes a songbook.

The Suzuki Corporation recently announced two new computer-based musical instruments—**OMNICHORD SYSTEM II** and **TRONICHORD**.



The Omnichord II

The OMNICHORD SYSTEM II is a truly revolutionary design in portable music-computers. It looks like a space-age Autoharp! Its features include programmable memory, chromatic melody keyboard, 10 drum rhythms, selectable walking bass line, and the amazing SONICSTRINGS touch plate, which can be strummed like a guitar. It sells for $229.

The TRONICHORD is the little brother of the OMNICHORD. You can play your choice of 27 major, minor, and 7th chords by pressing a sensitive faceplate while you strum it like a guitar with your other hand. It sells for only $89 and comes with a one-year factory warranty.

A **Computer Song Contest**! With a grand prize of $1,000! And recording time at a Hollywood recording studio! Wanna win? Just send a disk of your original computer song (one song per disk, but enter as many times as you want) to: Computer Song Writing Contest, P.O. Box 881, Sun Valley, CA 91353.

"A digital hillbilly"—that's what **Joe Ely** called himself in an interview with the *Village Voice*. He wrote his new album, *Hi-Res*, on an Apple II computer with a synthesizer keyboard and

Joe Ely

Syntauri's *Meta Trak* and *Composer's Assistant* software. He says the computer saved him about $40,000 in studio time by letting him work out different arrangements at home.

That's not all. *Hi-Res* is also the first album with its own computer bulletin board. Joe listed the number ([512] 472-6028, I.D. Ely, if you don't believe us) on the record sleeve.

Live computer concerts? Believe it! **Stephen Beck**'s **Electron Visual Orchestra** has played live in San Francisco, Los Angeles, and Washington, D.C. Members of the group play music on the keyboards of modified Apple computers.

Steve's going to release a video album of his own work. It's called *Illuminated Music* and will be on his Electron Video Creations label. The album will feature his special technique of using microprocessor chips to produce pixels directly on the screen without typing in numbers.

Stephen Beck

THE LUCASFILM FORCE

THE LUCASFILM GAMES GROUP ENTERS THE SOFTWARE FRAY WITH *RESCUE ON FRACTALUS!* AND *BALLBLAZER*

BY ROBIN RASKIN

Far, far away in the distant galaxy of Lucasfilm, something special's been brewing. George Lucas and his band of high-tech games people have just finished the first phase of a two-year quest. Their mission? To make computer games that stand up to the Lucasfilm tradition of high standards, high technology, quality craftsmanship, and lots of fun.

Of course, George Lucas' great claim to fame is as the force behind such hits as *Star Wars* and *Raiders of the Lost Ark*. But, he's actually interested in all forms of ground-breaking entertainment. So much so that he and Director of Lucasfilm's computer division, Ed Catmull, took time off from moviemaking to look into computer-game developments.

And after two years of computer-game research, dedication, energy, and the kind of secrecy you'll find surrounding all George Lucas projects, they're breaking some game ground. With the release of *ballblazer*, a futuristic ball game, and *Rescue on Fractalus!*, a captivating space rescue, Lucasfilm has created games almost as riveting as the *Star Wars* saga itself!

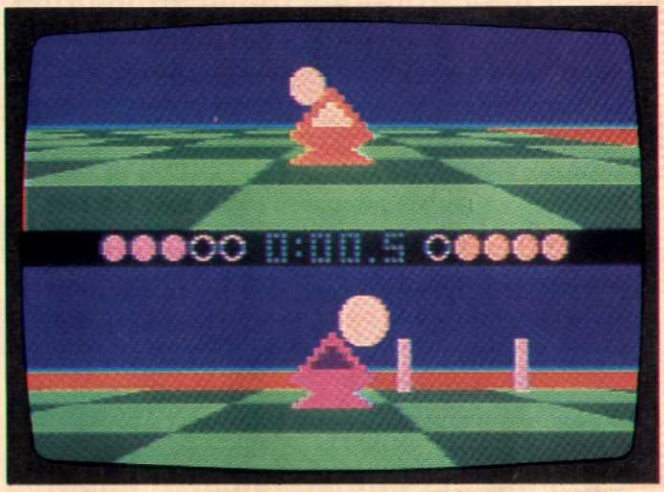
Their goal: "We wanted to create fantastic but believable new worlds for the player and set new standards for the industry," says Games Group Creative Director Peter Langston.

BALLBLAZER: IN A WORLD OF ITS OWN

No one would have believed it, but *ballblazer* really began with programmer David Levine's fascination with the Atari's unique horizontal and vertical scroll registers (that's one of the features that make Atari's game graphics so superb).

The game is a hypnotizing, futuristic soccer game. You and your opponent (human or computer) attempt to shoot a magnetized ball through one of two goals using your roto-foil's forcefield.

You view the action on a split screen. The top half shows the view out of one player's craft, the bottom shows the view out of the other player's. It can be confusing at first, but you'll quickly get used to using both views to your best advantage. The ball zips by at lightning-quick speed. You have to "catch" it within your magnetic force and take it downfield to your goal—blasting it through the posts while outmaneuvering your opponent's roto-foil.



Split screens and smooth-scrolling graphics are key in the futuristic sport, *ballblazer*.

According to the game's designers, *ballblazer* is meant to have the feel of a full-fledged "sport." The only difference, of course, is that it takes place inside the computer, instead of a playing field. "*Ballblazer,*" they say, "tries to simulate a real world, where the actual laws of physics are in operation."

RESCUE ON FRACTALUS!: DEATH TO THE "JAGGIES"

It isn't as unique as *ballblazer,* but *Rescue on Fractalus!* displays the same attention to detail and sports some nifty new tricks of its own. It takes the best parts of such hits as *Choplifter* and *Dimension X* and spices them up with impressive special effects.

Having been launched from the mothership, you start the adventure as you fly toward your destination: the hostile ranges of Fractalus. The enemy,

Tear through ravines and around a mountain in *Rescue on Fractalus!*, an arcade adventure with a truly 3-D feel.

evil Jaggies, have occupied the territory. Dodging laser guns and flying saucers, you try to rescue your space pilot buddies and bring them back safely to the Mom ship.

The hottest feature of *Fractalus* is its graphics. Thanks to a special technique known as fractal geometry (*see accompanying box*), the designers depict landscapes that have a truly three-dimensional feel. You actually maneuver around a mountain, for instance.

Another plus of the game's graphics is that you don't get as many "jaggies," those nasty jagged lines that happen when you try to draw a diagonal on a screen. The designers hate jaggies so much, that that's what they named the enemy on Fractalus. (By the way, you can usually find one or more Lucasfilm Games Groupsmen sporting a T-shirt with the international symbol for "no jaggies.")

Sound effects are also superb. It really adds to your enjoyment of the game—hearing the saucers zoom past your craft, the knock on the shuttle craft's door, the whoosh of an opening airlock.

In putting the Games Group together, Langston says he "tried to avoid people who were sold on the 'old' way of doing things." He was looking for talent that could work together—unusual for an industry "that's used to the lone-wolf approach," where games designers work by themselves or with only one other individual. "We could improve on the way things were done by taking a group approach. A wonderful storyteller may not be able to program the computer. A great programmer may have no visual sense. We tried to plan for these things."

This tactic put the group in an awkward position at first. "No one had ever produced a complete video game," Langston reported. So they set to work getting to know the Atari inside and out. They took a superlong (six months, in fact) look at the game industry and the state of the art, and even started writing a bunch of "throwaway games," meant, at first, to be a learning experience. The games turned out so well that the group decided not to throw them away after all—the beginnings of *Rescue* and *ballblazer*! Like other top game designers, they were dedicated to "squeezing things down and speeding things up," until every bit of the computer's memory was used as efficiently as possible.

Right from the start, Lucas gave his newly formed Games Group complete artistic freedom. From time to time he'd come into the lab (a closely guarded secret facility in San Rafael, north of San Francisco) to press a fire button for a few rounds, or comment on the "dramatic action," or lack of it, that he saw in the games in progress.

Langston tells one story about the earliest stages of *Rescue on Fractalus!* At first, the game didn't have any shooting in it. When Lucas took a look,

THE FRACTALS ON FRACTALUS

Rescue on Fractalus! takes place in a mountain range in enemy territory. You can thank a complicated technique called fractal geometry for the exciting realism of the terrain. It's a mathematical process for simulating variations of shapes in the universe.

With fractal geometry, the programmer instructs the computer to remember certain data. You program a peak 550 feet high, a valley 100 feet low, a ridge 300 feet high, and so on. The entire world of Fractalus was created this way. With 256 separate defined points, the program uses special equations to fill in the space between all the set measurements.

This program within the program is what makes the landscape look so natural, even though it's math, not artists, that fills in the scenery. Each time you move around Fractalus, the fractal geometry program recalculates (six to 10 times every second) what you see as you see it. It's an incredibly complicated routine, but powerful, as you'll see when you boot up *Rescue*.

his initial comment was "Where's the fire button? People want to shoot." Now the *Rescue* shuttle is equipped with lasers that blast away alien fortresses and flying saucers. In spite of these tips, he really left the creating up to the group.

The group strategy explains a lot of the games' success. But the high quality also comes from the fact that the group refused to cut corners. The details and special effects—*ballblazer*'s jazzy music, *Rescue*'s dramatic 3-D terrain—these are all extra touches that many people told them to cut out for the sake of keeping costs down. Langston says, "They'd ask us 'Why bother? Why be such perfectionists? No one will notice if those details aren't there.' "

The Games Group bothered. And what came from all that bother is a solid pair of games that bring movies and computer games a lot closer. But they're not willing to sit back on their disks and clip the rave reviews. Though they're good at keeping secrets, we do know they're already well underway on new projects—more computer games, some games especially for the arcade, and even an educational program with "just the right kind of educational content."

The force is with them. **k**

ROBIN RASKIN *writes frequently for* K-POWER *and* FAMILY COMPUTING. *Her review of the PC*jr *appeared in the July/August issue of* K-POWER.

THE PLAYERS

Here's a lineup of the forces in the Lucasfilm Games Group. The guys have a combined computer experience of more than 100 years.

Peter Langston, 38—The leader of the pack. Peter was an on-line midnight hacker discovered by Ed Catmull over the UNIX operating system. He was tempted away from his job as an office automation specialist on New York's Wall Street.

David Fox, 33—Cofounder of the Marin Computer Center, the first community center in the country. He coauthored *Armchair BASIC*. David's a "what if" man—his constant search for a better way kept the group on its toes.

David Levine, 25—A true hardware and software maven and a great musician, David wrote most of the code for *ballblazer*. He's the kind of guy who's always searching for "the other way you might look at things."

Charlie "Dragon" Kellner, 34—One of the original Apple team, Charlie created the famous alpha Syntauri, a keyboard synthesizer that interfaces with the Apple.

Garry Winnick, 29—The animator/illustrator behind the games' visuals. He's the man with the "art sense," already busy "storyboarding" the group's next projects.

Loren Carpenter, 37—Though not an official member of the group, Loren was sharing an office with David Fox while he struggled to figure out the games' graphics. Loren donated his fractal know-how.

Photo:Rick Browne/Picture Group

Lucasfilm's Games Group members (from left to right): David Levine, Peter Langston, and David Fox.

Noah Falstein, 26—Recruited from Milton Bradley, Noah is a programmer/designer who brought a ton of hands-on experience, as well as a keen sense of where the industry's been and where it's off to. He started with the group at the tail end of *ballblazer*'s and *Rescue*'s development.

Steve Arnold, 33—Famous for rolling out "49 conversions in five months" when he worked at Atarisoft, Steve is the marketing director of the Games Group. He's a psychologist. That helps him deal with the other members of the group, as well as figure out what their audience wants.

Chip Morningstar, 25—A newcomer to the group, Chip comes from the Xanadu project (the house of the future which is located in Florida). As a programmer there, he tackled the habitat's sophisticated computer-communications network.

AND THE WINNER IS . . .

YOU!

You can be a contest winner when you put your computing skills to competitive use. Find out how to win prizes and prestige with your programming power!

BY KAREL HOLLOWAY

You've never won anything, right? Well, it's about time you changed that.

You and your computer are an awesome team and there are loads of pats on the back, trophies, and prizes out there just waiting for you! Better yet, become a computer contest winner and your family and friends will stop wondering what you're doing hunched over your computer all the time! You may even surprise yourself with your computing talents!

Many schools, computer clubs, manufacturers, and other organizations are setting up computing contests so you can show off your K power. We asked some kids who'd placed in recent contests, for some hints on how they did it, what they won, and how they feel about it all. Their answer: They feel like winners! You can, too.

Illustration:Frank Riley

CONTEST HINT: Be Prepared

Wally Brown has team spirit!

There's a great feeling of accomplishment that comes from winning a contest, according to 12-year-old Wally Brown. Wally used to just fool around with the TI-99/4A at his school in Beaver Dam, Kentucky—until he got a chance to enter a statewide computer competition. Then Wally stopped fooling around and became a winner!

"The math group I was in was real big, so some of us started playing with the computer," Wally told K-POWER. The games led to programming and then Wally's math teacher decided to enter some students in a day-long contest sponsored by the

Kentucky Department of Education.

"I thought we'd just go up there and get around 20 [points] or something," Wally said. Instead, the team placed third in the elementary school division and won a team trophy.

Be prepared to spend a lot of time getting ready for a contest, Wally advises. His team worked on programming during class and after school. "We'd work three afternoons a week," Wally said. "I'd rather play outside, but most of the afternoons we worked, it was raining anyway!"

CONTEST HINT: Start Simple

Marney Kliever loves to win!

Thirteen-year-old Marney Kliever designed a program to satisfy her math teacher two years ago. She'd never done anything very complicated before.

"I was just going to do some simple game, a very simple game," Marney explained. "Then I just had this urge to keep going, to keep learning more!" For Marney, entering a contest really showed her how far her programming talents could take her!

Her game, *Ebony Castle,* nabbed first place in the elementary division and the overall grand prize in a competition sponsored by the Richardson, Texas, school district.

Marney also won a plaque. And fame! She's been a guest speaker at computer camps and her program is being sold through a computer-education service and a local users' group.

Marney explained her prize-winning game: "In *Ebony Castle*, the explorer is trying to turn off a magic lantern that has put a curse on this medieval village. The game has low-resolution graphics.

"After it was done, I just felt such satisfaction. Before I was a winner I felt good about myself, but this was a boost."

CONTEST HINT: Work Together

Berkely High's Eric Hoffman.

Many contests let hackers work together to win fame and fortune. For example, one group of high school students worked together to win a tournament at an exhibition called Softfaire. Seven schools in Oakland County, Michigan, battled against each other in the two-and-a-half-hour programming competition.

The winning team was a group of kids from Berkely High School. It consisted of Eric Hoffman, 17; Ed Sendler, 18; Chris Lindensmith, 17; and Eric Fauman, 18. They won $500 for their school.

"The contest was a great idea," Eric Hoffman said. "It gave me a chance to use my computer skills in real challenging situations. When you do group hacking, you learn new programming techniques from the other kids on the team."

Each member in Eric's team was given a program to write. Teams could earn up to 100 points per program, and the programs had to be finished within a time limit.

CONTEST HINT: Winning Isn't Everything

Harbor Spring's happy team.

Photos:Courtesy Apple Computer, Inc.

Writing a program isn't the only way to win a contest. One computer-science class in Harbor Spring, Michigan, was a finalist in an Apple Computer Club contest, and the students didn't even have to write a PRINT statement!

Trevor Zylstra, 17, and Anne Cox, 17, were

among the 12 members of the Harbor Springs High School Apple Corps Computer Club who won the contest. They won a five-day, all-expenses-paid trip to Washington, D.C., five Apple IIes, and $500 in cash. And what was their contest entry? They gave 16 neighborhood senior citizens computer lessons!

Winning was important, but helping the senior citizens was just as important to Trevor and Anne. "I like this better than writing a program," said Anne. "I really like helping people."

Anne's role was to introduce Apple IIe computers to students who were all 60 years old or older. "That was the stuff I knew best," she said. "It was how to turn the computer on, put in a disk, and stuff like that."

You don't have to be a computing pro to win a contest. Anne had only been using a computer for about six months.

Trevor already knew a lot about computers when the club decided to do the project. He likes programming, but said he thought teaching the classes was better than writing a program as a contest entry. "Anybody can write a program," he said. "This community service we did was a lot more unique. Programs are fairly easy. This was hard!"

CONTEST HINT: Apply What You Know

Photo:Courtesy Apple Computer, Inc.

Tuan Le in Washington, D.C.

Tuan Le's real interest wasn't the Apple Computer Club contest. It wasn't even computers! His real interest was, and is, math. That love for math led Tuan to programming and to a big computer prize! Just goes to show how you can combine computing and the other skills you have to win.

Tuan's father bought a Radio Shack Color Computer in 1982. Tuan read through the manuals and played with it a bit. But it wasn't until he started taking computer math classes at his high school in St. Paul, Minnesota, that he really got interested.

Tuan started competing in programming contests and found it takes time and patience. He entered a statewide competition in 1983, "but I didn't win anything," he said. Then in geometry class he learned the benefits of a compass, a straight edge, and euclidean geometry.

"I started working and working, and thought it was real, real neat. I thought, 'Wow, if I could just program this,'" Tuan remembers.

He began working on a program that would use computer-generated construction tools to draw geometric shapes. "I worked on it for five months. I didn't get tired of it. There are little programs, subroutines in there, and when you finish one, you feel really good and really enthused to go on," Tuan said.

The thought of entering the Apple Computer Club contest helped keep him fired up. "If I didn't compete, I wouldn't have the enthusiasm to do this program," he said. The thrill of competing and doing your best can be as rewarding as finally winning the contest!

Tuan won a five-day, expenses-paid trip to Washington, D.C., and $500! Then, in Washington last May, he won another $1,000 in cash when the judges awarded his program first place.

CONTEST HINT: Be Creative

Photo:Kelly Schiers

Paula Boge has winning ideas.

Even if you aren't a programming whiz, you can get into the computer contest scene. Take 16-year-old Paula Boge, for instance. This Dubuque, Iowa, teenager thought up a computer game that teaches children the value of a balanced diet. Her idea was worth $4,000 to Kraft, Inc.! They plan to market her idea.

When she won the Kraft Kideo Game Contest, Paula could have accepted the grand prize, a family trip to Florida's Disney World, but she took cash instead. "For two years, I wanted a computer," Paula explained. "I knew taking the money was my chance to finally get it!" Paula didn't have to program her nutrition game to win the Kraft contest (although she's been programming in BASIC for two years). She won first prize just for her idea.

Paula's game teaches 3- to 8-year-olds about nutrition, teeth, and exercise. "The player controls a little guy who hops from food to food," Paula said. "The player must decide if he wants to eat the food. If he does eat it, he has to decide which of the four food groups it belongs to. There's a set of teeth in the middle of the screen. The more food he eats, the dirtier his teeth get."

Paula's program branches off to screens that teach the fundamentals of good brushing and different ways to exercise. The game's over when the player has filled all four food groups correctly and when his teeth are all clean. The player automatically loses if his five teeth fall out!

After Paula found out about the contest at school, it took her three to four days to plan her game idea.

It may take you four days or four months to prepare for or enter a contest. What counts isn't how long it takes you, or even what you win. The biggest reward is the joy of competition and the thrill of doing your best. **k**

KAREL HOLLOWAY *writes for the* Dallas Morning News.

HOW TO GET INTO THE RAM RACE

With a competitive spirit and some work, you can turn your hacking into prizes and recognition. There are plenty of contests out there. Here are a few places to look.

1. COMPUTER CLUBS AND USERS' GROUPS

Many cities or regions have clubs designed to help users of specific computer brands. Look in your newspaper for notices of group meetings, or talk to computer dealers that sell your brand.

If you're an Apple user, try Apple Computer Clubs, P.O. Box 948, Lowell, MA 01853. As an Apple Club member you can enter all sorts of contests ranging from community service projects to programming events. This year's finalists won Apple computers, cash, and five-day trips to Washington, D.C.

2. SCHOOLS

Since more computers are being used in classrooms, more schools are offering contests to get students interested. Ask a math or computer-science teacher about contests in your area. Or use your computer for a science fair project.

Prizes offered in school contests may not be huge, but winning can be satisfying anyway, according to 14-year-old Robert Salley of Anaheim, California. Robert won his junior high school's programming contest and a $10 prize.

3. MANUFACTURERS

All sorts of manufacturers are sponsoring computing or computer-related contests. Some examples:

Gusdorf Corp. wants you to nominate yourself or a friend for its Computer Hero Award. The contest honors outstanding computer achievements and applications. The last winner won $2,000. For more info, contact Gusdorf, 11440 Lackland Road, St. Louis, MO 63141, or call (800) 325-3622.

Create a winning program for a Commodore computer and collect $1,000 in software and hardware or cash from **Independent Software Evaluation Systems (ISES).** ISES is located at P.O. Box 27463, Minneapolis, MN 55427.

Use **EnTech Software**'s music package, *Studio 64,* and a Commodore 64 to write original songs, and EnTech may award you $1,000 plus studio time. For more details write: Computer Songwriting Contest, P.O. Box 185, Sun Valley, CA 91353, or call (818) 768-6646.

The Great American SAT Contest from **Krell Software** awards prizes to the teen with the highest SAT scores and to the teen whose scores improved the most.

These two winners receive $1,500 of computer hardware, and $1,000 of software goes to their schools. For more details, write SAT Contest, Krell Software, 1320 Stony Brook Road, Stony Brook, NY 11790, or call (516) 751-5139.

4. COMPUTER MAGAZINES

Organizations often advertise contests in computer magazines. Lots of magazines run their own contests, too.

K-POWER, for instance, sponsors an annual game-design contest. This year's deadline is Oct. 15, and the first prize is an Apple IIe with a monitor, disk drive, and game controllers. Contestants are asked to send K-POWER a 100-line program (or less) on disk or cassette, plus a printout.

5. ASSOCIATIONS

Computing organizations often run a variety of contests for aspiring computer users.

One of the most active associations is the Young Peoples' Logo Association, P.O. Box 855067, Richardson, TX 75085. Eight-year-old Benjamin Squire of San Mateo, California, is a two-time YPLA contest winner. He won second prize, a YPLA T-shirt, for a program he wrote called *Rocky III*. Benjamin designed a smiling balloon program for another YPLA contest and won first place—an Atari 800 and an Epson MX-100 printer.

Karen Sullivan, 11, also is a YPLA winner. She named the association's mascot and won a T-shirt and a YPLA jacket. Her winning name? Logomorf!

6. RETAILERS

Every now and then, a software or hardware retailer will sponsor a big contest. This year, Software City, 1415 Queen Anne Road, Teaneck, NJ 07666, is giving out a $10,000 scholarship for the "most marketable" computer program. $1,000 awards will be given to four runners-up. Applicants must have graduated from high school after Jan. 1, 1984. Address inquiries to Scholarship Director.

—BERNADETTE GREY

BUYER'S GUIDE TO JOYSTICKS

Everything you always wanted to know about joysticks and trak balls...but were afraid to ask!

BY KEN COACH

You've just reached the Asteroid City and the mighty *Zaxxon* robot is in your sights when an enemy missile is launched. You see it, and take evasive action. The wrong action. As your friends laugh, you let out a familiar moan, "It's this joystick, man. It just doesn't respond!"

A joystick is like a permanent fall guy. When you win, it's skill. But when you lose, it's the joystick's fault!

There's no doubt that a good joystick or trak ball can improve your game, but what is "good"? Opinions vary from person to person and from game to game. Plus, for such a simple device, the joystick is available in an amazing number of variations!

To help you decide which model or models are best for you, we've put together a two-part guide. K-POWER's Guide to Joysticks and Trak Balls (*see chart, page 51*) lets you see at a glance what controllers are available, what they cost, and which computers they're compatible with.

The article that follows highlights what's new from a few of the major manufacturers. Plus, K-POWER's playtesters, David Langendoen (16), Damon Osgood (16), and Alex Shakar (16), comment on a variety of new controllers!

WICO

Wico joysticks are well known, and have a reputation for durability. **The Boss** costs about twice as much as other sticks. It features rugged construction and an arcade-size pistol grip. The **Command Control** model is available with a bat handle, ball top, pistol grip, or a combination of all three.

All three playtesters liked both of these popular Wico sticks, and found them solid and easy to control. Dave's favorite was The Boss. "But I like the Command Control's option of using either fire button—on the base or the handle," he said.

According to Damon, both sticks were a little heavy, especially if you play for a long time. Alex's remark: "It's sometimes tough to move diagonally."

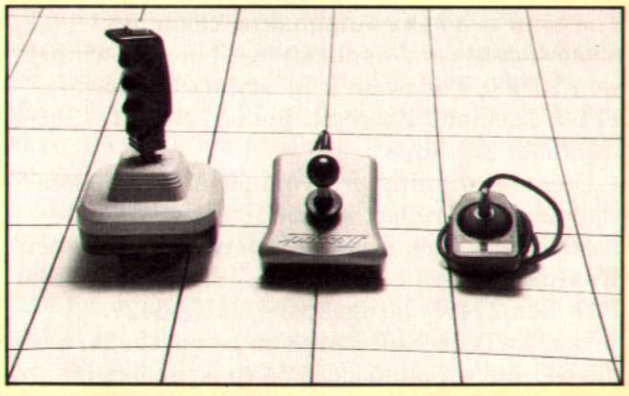
NEWPORT CONTROLS

Newport Controls is the maker of the **Prostick II** which has left or right fire buttons and a choice between a four-way and eight-way switchable gateplate. Restricting your play to only four directions is helpful in maze games.

This stick got high marks for being well-built, sturdy, and able to stand up to heavy-duty action. Alex summed up everyone's thoughts: "It's responsive and it fires well. The feel of the stick isn't too loose, or too stiff."

AMIGA

Amiga makes the smallest joystick we've seen on the market. The **Power-Stick** is so tiny it can



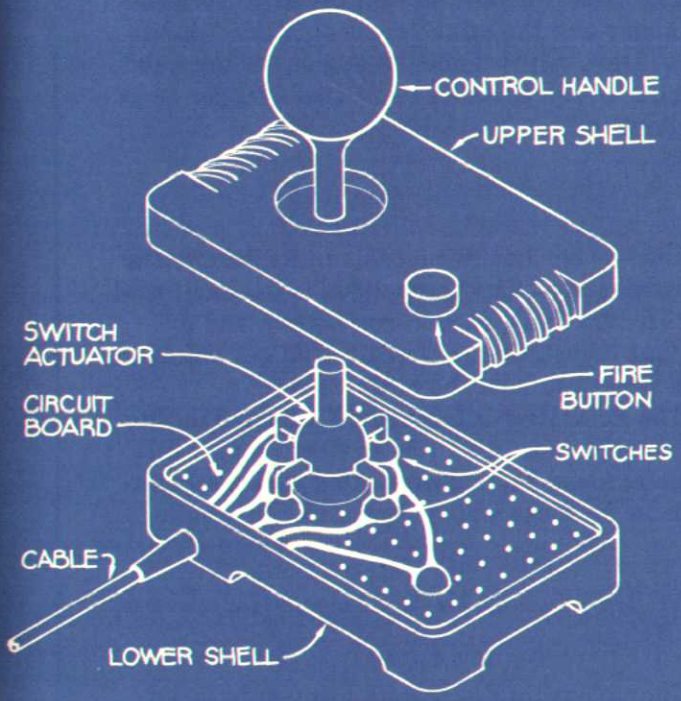
Left to right: The Boss (Wico), Prostick II (Newport Controls), and Power-Stick (Amiga).

Photos:Gary Kane

HOW JOYSTICKS AND TRAK BALLS WORK

Using a joystick is just like using a light switch, or a series of switches. When you move the joystick **control handle** in a certain direction, you flip the **switch** and whatever you're controlling on the screen moves in that direction.

The simplest joysticks use four switches (*see diagram*) and are known as "digital joysticks." With four switches, you can move in eight directions: north, east, south, or west by flipping the appropriate switch, and northeast, northwest,



southeast, and southwest by flipping two switches at once.

Each joystick needs an eight-bit (one byte) location in the computer's memory to interpret the commands coming from the stick. Moving the stick to flip a switch sends a message to the right bit.

Each direction you move in has a different value in the memory byte depending on the machine's logic. In some cases, north is one, south is two, west is four, and east is eight. In the center position, each of those bits are "on" and the joystick byte reads a value of 15. When you push the stick north, a bit is turned off and the value is then 14. Move it northwest and the value of the north bit (one) and the value of the west bit (four) are turned off so the value is 10.

The computer reads the joystick values and then directs action on the screen. The computer uses a single bit to sense whether or not the **fire button** has been pressed.

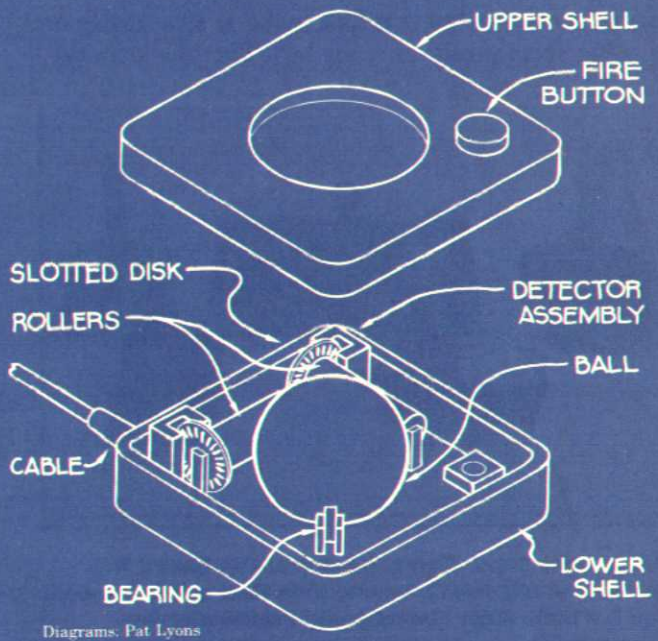
Trak balls, or rollerballs, operate slightly differently than joysticks—but the idea is the same. Trak balls can be analog or digital devices, putting out a series of pulses that the computer understands as or translates into analog or digital information. Instead of making contact with a switch, a trak ball spins one of two **rollers.**

The rollers are attached to gears that move a potentiometer (otherwise known as a variable resistor). The changes in resistance of the potentiometer tell the computer where to move whatever is on the screen.

On some trak balls (*see diagram*) the gears are replaced by a **slotted disk** which breaks a light beam in a **detector assembly** to change the resistance in the potentiometer.

On a true trak ball system (like the ones in the arcades) the faster you spin the **ball**, the faster you can move things on the screen.

Most microcomputers, unfortunately, can't handle that technology—they have limited speed control. In those cases, using a trak ball is just like using a joystick, except it may be a bit quicker.



Diagrams: Pat Lyons

be used with one hand. (You move the stick with your thumb!) Two-handed use is possible and it has two buttons for right- or left-handed play.

Our playtesters thought the Power-Stick's size was somewhat awkward, and they found the stick a little bit too responsive for many games. They did find one game it was right for—*Zaxxon*.

The Coleco version of the Power-Stick got higher marks because the stick's built-in keyboard gave the testers more to hang on to. "We're just used to a bigger joystick," Alex admitted.

COIN CONTROLS

Coin Controls makes four **Competition Pro** sticks ranging from a very cheap replacement stick to a dual fire button, quality stick. The two mid-range models are a straight stick and a pistol grip. All of the joysticks are medium size. We tested the **3000** and the **5000** models.

The 3000 features a fire bar instead of a button at the front of the stick. There's also a trigger, and a fire button on top of the stick. Dave liked the option, but Alex wanted a switch so he could deactivate the two buttons.

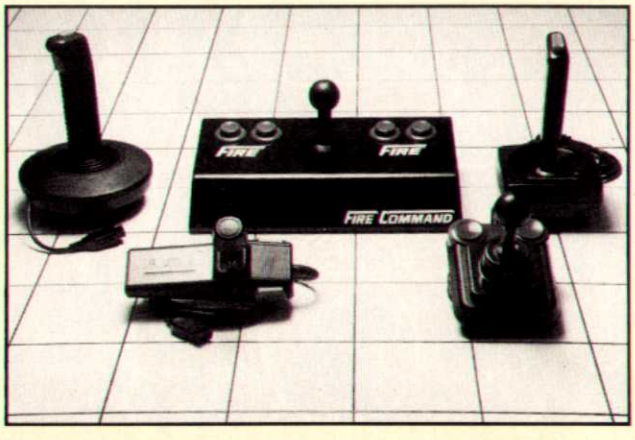
The model 5000 got raves. Everyone found it was sturdy, responsive, and had a good feel. Damon liked it best, saying it was smooth and comfortable. Alex and Dave remarked it tended to slip out of their hands.

GIM ELECTRONICS

GIM Electronics makes the joystick that comes closest to capturing the feel of an arcade stick. The **Fire Command** weighs a whopping five pounds and is almost a foot wide. It sits firmly on a table or squarely on your lap. The black metal base leaves no question about durability. And the stick itself is rugged.

Damon liked the sturdy tabletop base and said it was easy to use. But according to Dave, "It was slow and a bit sticky at times."

"It's a good idea," Alex summed up, "but maybe it needs work. The fire button seems slow."



Left to right: Super Champ (Championship Electronics), Pro- Line (Atari), Fire Command (GIM Electronics), Competition Pro 5000 (Coin Controls), and PointMaster Pro (Discwasher).

ATARI

Atari recently introduced a new video game machine, the 7800 ProSystem, with a new controller called **ProLine**. The new sticks are smaller and more streamlined than standard Atari joysticks and have right and left fire buttons on either side of the new streamlined base. (They work with all Atari computers.)

The testers found the ProLine to be very responsive and they liked the feel of the fire buttons. Dave felt it tended to slip out of the hand during a really sweaty game like *Boulder Dash* or *Archon*.

DISCWASHER

Discwasher has two models in its **PointMaster** joystick series. The **Competition** is the basic model. The **Pro** has a suction-cup bottom and a unique "constant fire" circuit. You get automatic fire when you hold the button down.

The PointMaster touched off a heated debate on suction cups. Alex was against them, while Damon found them useful. Alex said the PointMaster joysticks were responsive, but fragile.

CHAMPIONSHIP ELECTRONICS

Championship Electronics has two basic joystick models. Both have suction-cup bottoms and retractable cables. The **Super Champ** has a 10-foot cable that disappears into the base, while the **Mini Champ** has a four-and-a-half foot cable. Both sticks have a fire button on the top of the stick. The Super Champ has a second one in the trigger position. The Mini Champ has two on either side of the base.

Dave said it was nice that the cord rolls back into the base, and he felt the suction cups held nicely. But Damon felt the Mini Champ wasn't sturdy enough. "It seems like it would break easily," he said. **k**

KEN COACH *is a charter member of* K-POWER's *famous lab crew.*

GUIDE TO JOYSTICKS AND TRAK BALLS

COMPANY	MODEL	PRICE	HANDLE SIZE	FIRE BUTTONS	COMPATIBILITY
AMIGA COMPUTER (408) 748-0222	Power-Stick	$9.95	Tiny	Two, one on each side of base	AT/COM
	Power-Stick	$19.95	Tiny	As above	COL
ATARI, INC. (408) 745-2000	ProLine	$19.95	Medium	Two, one on each side of base	AT/COM
	Space Age	$14.95	Large	Trigger-type, with stick on top	AT/COM
	2600 Trak-Ball	$49.95	N/A	Two, one on each side of base	AT/COM
CHAMPIONSHIP ELECTRONICS (415) 588-3015	JC-351 Mini Champ	$7.95	Small pistol grip	Three, each side of base and on stick	AT/COM
	JC-250 Super Champ	$12.95	Medium pistol grip	Two, top of stick and trigger	AT/COM
COIN CONTROLS (800) 323-8174 or (312) 228-1810	Competition Pro Model 1000	$12.95	Short	Bar on front of base	AT/COM
	Competition Pro Model 200X	$8.95	Short	As above	AT/COM
	Competition Pro Model 3000	$15.95-$17.95	Medium pistol grip	Three, bar, top, and trigger	AT/COM, TI, COL
	Competition Pro Model 5000	$17.95	Medium ball top	Two, either side of base	AT/COM
DISCWASHER (314) 449-0941	PointMaster	$16.95	Large pistol	One, mounted on shaft	AT/COM
	PointMaster Pro	$27.95	As above	As above	AT/COM
ELECTRA CONCEPTS INTERNATIONAL (516) 567-4783	Triga Command II	$10.95	Medium pistol grip	Trigger	AT/COM
	Triga Elite	$23.95	Medium pistol grip	Two, trigger, one on top of handle	AT/COM
	Masterplay Track ball	$26.95	N/A	One, on top of base	AT/COM, COL
GIM ELECTRONICS (516) 741-3133	Fire Command	$39.95	Medium, large base	Two, one on each side of stick	COL, AT/COM
	Fire Command	$44.95	As above	Four, two on each side of stick	COM
	S-3000	$49.95	Small	Two on base	AP, IBM
KRAFT (800) 854-1923	Joystick	$12.95	Small	One, left side	AT/COM
	Switch Hitter	$14.95	Small	Two, one on each side of base top	AT/COM
	Premium	$49.95	Small	One, on left side	AP, IBM, TRS
NEWPORT CONTROLS (408) 358-3439	Prostick II	$24.95	Medium	Two, one on each side of base front	AT/COM
	Prostick III	$29.95	Medium	Two, one on each side of base front, front one lets both fire simultaneously	COL
	Prostick 2002	$29.95	Medium	As above	TI
SUNCOM (312) 459-8000	Slik Stik	$7.99	Short	One, on left side of base top	AT/COM
	Starfighter	$10.95	Medium	As above	AT/COM
	Tac-2	$12.95	Medium, ball tip	Two, one on each side of base top	AT/COM
	Tac-3	$14.95	As above	Three, two in front, one on top of handle	AT/COM
	Starfighter for Apple	$49.95	Medium	Three, one each side of top, and one in front of base	AP
TG PRODUCTS (214) 424-8568	Enjoystick	$19.95	Small	One, on side of base	AT/COM
	Joystick	$44.95	Medium	Two, both on base top	AP, IBM
WICO (800) 323-4041 or (312) 647-7500	Command Control Bat Handle	$26.95	Large	Two, on base and on stick	AT/COM
	Command Control Super Three-Way	$32.95	Medium (choice of 3 handles)	Two, on stick and on base	AT/COM
	Command Control Joystick	$31.95	Medium	Two, on either side of keypad	COL
	Keypad Computer Command (grip)	$31.95	Large pistol	Two, on base and grip	AT/COM
	Computer Command (analog)	$49.95	Medium	Two, on base	AP, IBM
	The Boss	$17.95	Large pistol	One, on top of stick	AT
	Command Control Trackball	$49.95	N/A	One, on top of base	AT/COM

Joysticks and trak balls marked AT/COM are compatible with Commodore and Atari computers and in most cases can be used with an adapter on the TI-99/4A, but you should check with your dealer or the manufacturer before making a purchase. Joysticks and trak balls for other computers are marked as follows: AP for Apple, COL for Coleco's ADAM, IBM for the PC and PC*jr*, TRS for TRS-80 CoCo, and TI for the TI-99/4A if an adapter is not required. N/A means not applicable.

SCREENING ROOM

THE RATING GAME

THE SEVEN CITIES OF GOLD

For Atari, 48K (disk). Soon available for Commodore 64. Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171. $40

GRAPHICS:
EXCITEMENT:
ORIGINALITY:
EASE OF USE:
CHALLENGE:
SHELF LIFE:

Screen Shot: William Gallagher

My career as an explorer began when the King of Spain consented to finance my expedition to discover a shorter route to the Orient. But exploring for the sake of exploring wasn't my only motive. I had heard tales of a land between Europe and the Orient where seven bishops founded seven cities of splendor never seen before.

I set sail in 1492. The journey was long but we had packed more than enough goods and food. After sighting land and spending months mapping new territory, I led an expedition in search of one of the seven cities, the "Aztec" capital.

But we ran out of food and had to stop at a nearby village. Unfortunately, our reputation as bloodthirsty conquistadors had spread and our welcome was less than friendly. We were quickly surrounded on all sides. We tried offering gifts and trading, but nothing worked. We had no choice but to fight.

Thanks to our superior weapons, we quickly overpowered the natives. But I had to stop the exploration for a while because so many of my men were killed in the fighting. We soon sailed home to Spain.

These are the kinds of adventures you'll encounter as you set off on *The Seven Cities of Gold*. You use a joystick and a series of menus—picking, for instance, how many men you'll take aboard ship, or whether you'll trade or fight with the natives.

No other games compare with this one. Though it contains scrolling maps similar to those used in *Eastern Front* and the *Ultima* series, the map used here is much more realistic and complex. The game's more than just a trek around a continent, too. When you enter a village, city, etc. the screen switches to a

THE RATINGS

Software is rated on a scale of one to five in each of six categories.

POOR
FAIR
GOOD
VERY GOOD
EXCELLENT

NOT APPLICABLE = N/A

GRAPHICS: The quality and sophistication of the graphics given the computer's capabilities.

EXCITEMENT: The pace, pulse, and action of the game.

ORIGINALITY: The degree to which it's a trailblazer.

EASE OF USE: Its boot-up playability and simplicity. A low rating doesn't mean it's a poor game.

CHALLENGE: This speaks for itself.

SHELF LIFE: Its ability to maintain interest over time and not grow stale.

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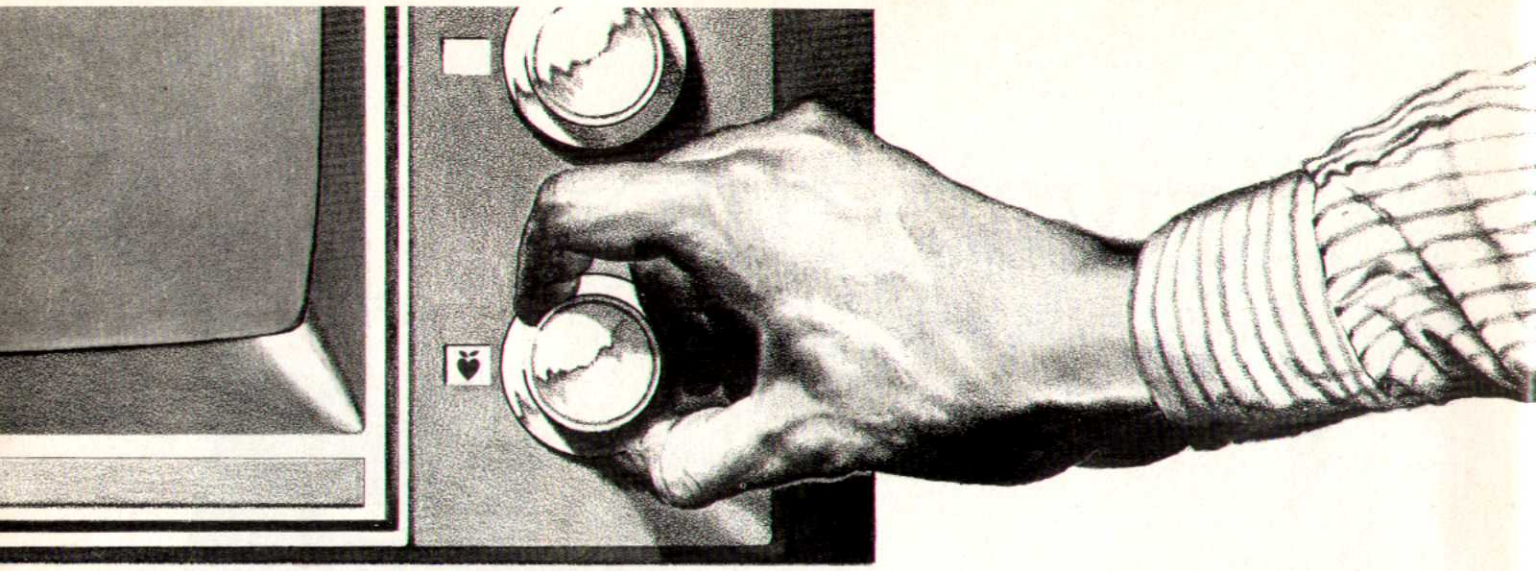

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close-up view where you get to control a single figure who has the option to trade or fight.

What *really* distinguishes this game from others on the market is the "World Making" option. To make it less predictable and more challenging, the designers (Ozark Softscape, the folks who gave us *M.U.L.E.*) made a program within a program that actually creates continents. So, when you're exploring one of these randomly generated "worlds," you know as much about it as Columbus knew about the West Indies when he found them.

This game is a ground-breaker and worth your time. It's not an action-packed shoot-'em-up, but I guarantee that if you sit down with it for 20 minutes and let yourself get into the world of exploring, you'll be hooked for a long, long time.

KEVIN LAWS, *15*
Carlisle, Pennsylvania

KING'S QUEST

For IBM PC, 128K (disk). Joystick optional. Soon available for Apple II series. Sierra Inc., P.O. Box 485, Coarsegold, CA 93614; (209) 683-6858. $49.95

GRAPHICS:
EXCITEMENT:
ORIGINALITY:
EASE OF USE:
CHALLENGE:
SHELF LIFE:

You're Sir Graham, the luckiest person in the kingdom, and you've just been chosen to be the next king. But there's a catch. You must find a magic mirror, which reveals the future; a magic chest, which is forever filled with gold; and a magic shield, which protects its bearer from harm.

In searching for these items, you encounter all sorts of good and evil people, creatures, and objects. You cross carrot patches, rivers, lakes, and mountains. You also encounter many dangers and traps.

One of these dangers is a wicked witch who offers you a wild ride on her broomstick. You also meet an ugly troll who won't let you cross his bridge unless you give him one of the objects you so painstakingly searched for.

What's special about this game is that it's more than the graphic adventure that it first appears to be. The pictures aren't just motionless drawings that accompany words. You can *control* your character, Sir Graham, with a joystick or by using the keyboard! You can move sideways, up, and down. You can jump, duck, and swim. In short, there's more movement here than I've ever seen in a graphic adventure.

As each picture appears, your character can be seen somewhere within it. You then have the option to type in commands such as TALK TO KING or CLIMB TREE, or you may move him around within the picture or onto the next.

I found this game very challenging and interesting, but I had a lot of trouble trying to find the magic mirror, chest, and shield. Because it's so tough, it's definitely a game for anyone who has a lot of time on his or her hands. But it's also a game for anyone willing to try something new. I've never seen any other game that has combined elements of graphic adventures and action games so well.

JULIANA BROWN, *13*
Livermore, California

QUESTRON

Reviewed on Apple, 48K (disk). Also available for Atari, 48K (disk), BASIC cartridge required. Soon available for Commodore 64. Strategic Simulations, Inc., 883 Stierlin Road, Bldg. A-200, Mountain View, CA 94043; (415) 964-1353. $49.95

GRAPHICS:
EXCITEMENT:
ORIGINALITY:
EASE OF USE:
CHALLENGE:
SHELF LIFE:

Questron is the most complex fantasy/role-playing game around. It's got the greatest variety of monsters, characters, situations, and locations of any I've played.

As in other fantasy/role-playing games, you control a character who has various amounts of strength, stamina, dexterity, charisma, and intelligence.

Boot up a brainstorm.

You're going to need all your cunning and intelligence to stop the FuzzBomb from turning the U.S.A. into a nation of fuzzbodies.

You're Agent U.S.A.,™ top investigator for the country's most elite intelligence organization. And now you've been assigned your toughest and most dangerous mission ever: stopping the evil FuzzBomb from turning every man, woman and child into helpless fuzzbodies.

Quick reflexes and sharp eyes are not nearly enough here. As you race around the country on super-fast rocket trains, you'll need all your smarts to outwit the devious plague spreader. But watch out! One wrong move and you're just another fuzzbody.

And once you've tested your mettle against the FuzzBomb, you'll be ready for more mind-stretching Wizware.™

Bannercatch.™
In a remote field bigger than any field you can imagine, you and a friend team up to take on chief robot Max and his crack robot raiders. Infiltrate their territory and grab their flag before they grab yours. It may sound simple, but your strategy better be good. Max has lots of surprises in store for you.

Spelldiver.™
You're a scuba diver on a secret assignment. You must find and decipher giant words hidden deep beneath the sea. But to succeed you have to outmaneuver ferocious sharks and pesky flipper-nippers that are out to stop you.

So get ready for challenge and excitement. Boot up Wizware and let the brainstorm begin.

Look for Scholastic Wizware at your local computer store. Or contact Scholastic Inc., 730 Broadway, New York, NY 10003, 212-505-3000.

For a free red-and-white "Boot Up a Brainstorm" T-shirt, send your name, address, shirt size and computer brand to "Boot Up" c/o Scholastic at the above address. Enclose $2.00 for shipping and handling.

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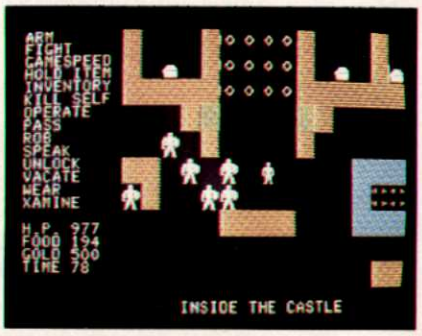
Agent U.S.A., Bannercatch, Spelldiver designed and developed by Tom Snyder Productions, Inc. Agent U.S.A. and Bannercatch available in Atari, Commodore, Apple and IBM versions. • Spelldiver available in Atari, Commodore and Apple versions.

RATING GAME

Though you begin the game as a pathetic little wimp, you can boost your character by playing different "games" and accomplishing various tasks. To increase your intelligence points, for example, you can play a mind-teasing puzzle. To increase your dexterity, there's a target-shooting game. These are a first in role-playing games because they allow your actual physical and mental capabilities to be added to your character.

All of your actions are controlled through the keyboard or with a joystick (for movement and menu selections). As you scroll through the land of Questron, you'll encounter a tremendous variety of creatures. Some of them are friendly and will offer to trade with you. Others are deadly, so armor and weapons are necessary. To obtain these, you have to enter towns, cathedrals, and castles. Upon entering, the screen switches to a close-up of a floor plan in which you can move to specific shops or areas to get necessary items.

Though similar to the *Ultima* series, there are many important differences. *Questron* has a greater number and variety of monsters, and some are vulnerable to certain weapons. Also, in *Questron* you have to complete two quests instead of just one. Your first is to achieve knighthood by accomplishing various tasks (such as killing monsters). On your second quest you travel to the Land of Evil and defeat

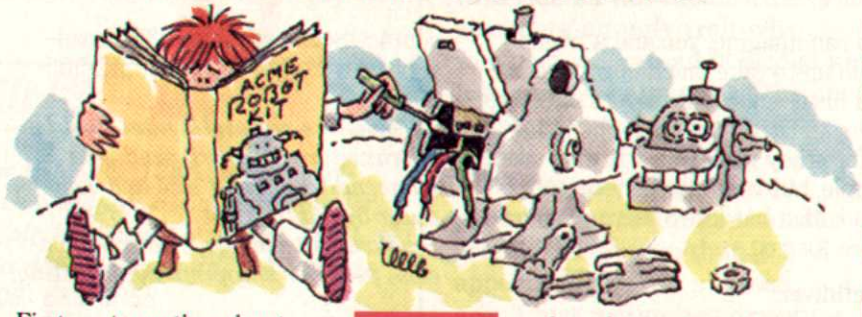


the terrible wizard Mantor.

One special point in the game worth emphasizing is the grand finale. I won't give it away, but it really puts other games to shame. It's something to look forward to. It's about time someone thought of giving the player a nice reward after spending so much time and effort on a game.

PETER COCKCROFT, *15*
New York, New York

HOW TO MAKE FRIENDS ON OTHER PLANETS



First, go to another planet. (That's easy if you're traveling through space in PLANETFALL™, the great science fiction comedy from Infocom's interactive fiction line.)

Next, find a robot nobody's using. Then, to make him start up, type in your command: TURN ON THE MULTIPLE PURPOSE ROBOT... You've just made a robot friend who'll follow you anywhere.

And you'll be glad you have a faithful follower—there's no telling what will happen next in PLANETFALL. Because, like all of Infocom's interactive fiction, PLANETFALL's designed so that whatever *you* choose to do affects what will happen next. And there'll be plenty happening—it's an adventure filled with everything from dread diseases to mutant monsters, and it can last for weeks or even months.

Get the closest thing on a disk to really going into outer space. Get PLANETFALL*. It's not just a great adventure—it's a great way to make friends!

INFOCOM™

*It's compatible with almost every popular home computer. PLANETFALL is a trademark of Infocom, Inc.

SEASTALKER

Reviewed on Apple, 48K (disk). Also available for Atari, 48K (disk); Commodore 64 (disk); IBM PC/PCjr, 64K (disk); TRS-80 Models III/4, 48K (disk). Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138; (617) 492-1031. $39.95

GRAPHICS:	N/A
EXCITEMENT:	
ORIGINALITY:	
EASE OF USE:	
CHALLENGE:	
SHELF LIFE:	

Ever since the world was first thrilled by the exploits of Captain Nemo in Jules Verne's *20,000 Leagues Under the Sea*, the ocean depths have been the

setting for many adventure novels. It's only fitting then that the sea is the scene for Infocom's latest text adventure.

Like all of Infocom's games, *Seastalker* has no graphics. The computer describes all events and the results of your actions in words. You type in commands in full sentences (as opposed to the awkward two-word directions used in most adventures). You can even carry out intelligent conversations with any of the game's nine supporting characters.

Seastalker's plot centers on a secret, underwater research station called the Aquadome, and on the *Scimitar*, a powerful miniature submarine packed to the gills with an assortment of gadgets that would put James Bond to shame. The cast of characters reads like an MIT honor roll. There's Sharon, a recent college graduate; Marv, the sonar expert; Dr. Thorpe, a dedicated and brilliant scientist; and six other unique, realistic characters.

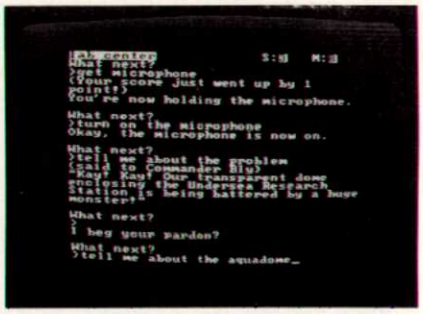
As a member of the "Discovery Squad," you're in charge of making sure everything runs smoothly for the project's christening the following week. Of course, if things *really* were running smoothly, *Seastalker* wouldn't be much of a game.

The trouble starts when you get a call from the Aquadome over the videophone. There's trouble on the ocean floor and only *you* can help. You must take the *Scimitar* to the Aquadome right away.

Once you reach the Aquadome, your troubles really begin. First, there's the matter of sabotage, a dastardly deed suggesting treachery in the ranks. Then there's the mysterious sea creature that shadows you throughout the game.

You have to answer many questions and solve plenty of puzzles before the end of your quest. Some puzzles are very easy while others are stumpers. If you *do* get stumped, you can look up one of the secret hints that come with the game.

Seastalker is billed as a "children's adventure." I think it should be billed as a "beginner's adventure." Unlike Infocom's other games, maps are given to you in the package, all of your equipment is explained to you beforehand, and hints are included with the game. These are a big help because making maps is one of the novice adventurer's greatest difficulties. So is trying to figure out the function of certain obscure appliances.



As for the hints, they only appear when you're completely in the dark.

Seastalker is imaginative, original, and challenging. It may not be as difficult as the rest of the Infocom line, but that's what makes it ideal for the novice adventurer.

CHARLES ARDAI, *14*
New York, New York

HOW TO BLOW UP A RUBBER RAFT

First, you need a reason to use a rubber raft. (That's a snap if you've got ZORK® I, the classic fantasy story from Infocom's interactive fiction line. Because you'll be hunting twenty fabulous treasures while dodging every kind of evil under the earth.)

Next, type in your command: BLOW UP THE RUBBER RAFT WITH THE AIR PUMP... But watch it, or you might just blow up the raft until you blow yourself to smithereens!

There's no telling what will happen next in ZORK I—because, like all of Infocom's interactive fiction, ZORK's designed so that whatever *you* choose to do makes the next thing happen. And you won't run out of things to do, either. The underground empire of ZORK is so huge, your adventure can last for weeks or even months.

So if you want the closest thing on a disk to really exploring an underground world, get ZORK I*. But brace yourself for the action—it'll blow you away!

INFOCOM™

*It's compatible with almost every popular home computer. ZORK is a registered trademark of Infocom, Inc.

RATING GAME

AGENT USA

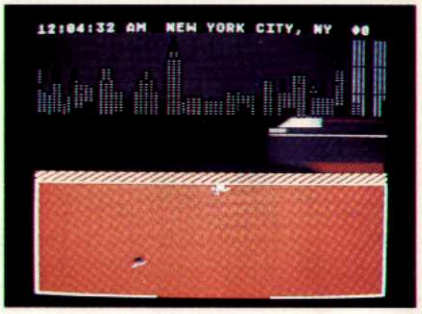
Reviewed on Atari, 48K (disk). Also for Commodore 64 (disk). Joystick required. Scholastic Software, 730 Broadway, New York, NY 10003; (212) 505-3000. $29.95.

GRAPHICS:
EXCITEMENT:
ORIGINALITY:
EASE OF USE:
CHALLENGE:
SHELF LIFE:

As Agent USA, your mission is to stop the evil "FuzzBomb" (a device capable of changing people into nasty "FuzzBodies").

The whole game takes place in railroad stations in major cities across the United States. At the outset, both you and the FuzzBomb are randomly placed in different stations, usually far across the country from each other. Your task is to travel to the FuzzBomb and disarm it before the nation's entire population is "fuzzed." To make your way across the country, you have to buy tickets and take trains to different cities where the FuzzBomb is doing its dirty work.

At first, your only defense against the FuzzBomb is a set of 10 magic crystals. But you must gather a total of 100 in order to overcome it. The strange rocks



multiply if you drop them on the ground. When they start reproducing you can scoop them up. Greedy local citizens can be a nuisance, though. They also want crystals (to help them fortify their city against the FuzzBody menace). Great skill is needed to touch the FuzzBomb while you still have 100 crystals. Even if you get this far, there's an advanced level to tackle.

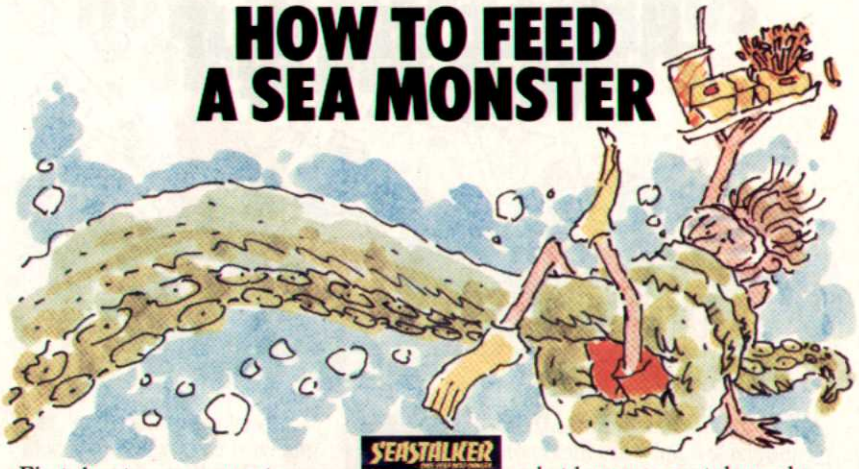
Once the FuzzBomb starts to turn people into FuzzBodies, the danger spreads quickly. If you get into a station with FuzzBodies, watch out! If one touches you, you'll lose half of your crystals. And when you run out of crystals, you turn into a FuzzBody yourself! The only way to be turned back into a person is by bumping into a crystal.

Tracking down your enemy isn't just guesswork. Helpful "InfoBooths" are located in every state's capital as well as in Washington, D.C. There you'll find useful information, such as the FuzzBomb's exact location, the amount of crystals fortifying each city, and lots more.

What surprised and impressed me most about this game is that it really *is* educational! I was so caught up in having fun that I wasn't even thinking about the fact that map reading, U.S. geography, math, and other kinds of skills were being "exercised."

JILL BASSETT, *13*
Miami, Florida

HOW TO FEED A SEA MONSTER



First, locate a sea monster. (The best place to find one is in SEASTALKER,™ the brand-new undersea story from Infocom's interactive fiction line.)

Next, type in your command: GET OUT OF THE SUBMARINE AND FEED THE CATALYST CAPSULE TO THE MONSTER. Then, swim for your life! Because the trouble with feeding sea monsters is, the monster might decide to feed on you!

There's no telling what will happen next in SEASTALKER. Because, like all of Infocom's interactive fiction, SEASTALKER's designed so that what happens next depends on what *you* decide to do. And you'll be doing plenty, too—your voyage can last for weeks or even months.

So get the closest thing on a disk to going on a real-life sea adventure. Sink your teeth into SEASTALKER*. But when you do—watch out!—or you might just find out somebody has a sweet tooth for you!

INFOCOM™

*It's compatible with almost every popular home computer. SEASTALKER is a trademark of Infocom, Inc.

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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. and Bannercatch available in Atari, Commodore, Apple and IBM versions. • Spelldiver available in Atari, Commodore and Apple versions. • Story Tree available for Apple.

SCREENING ROOM

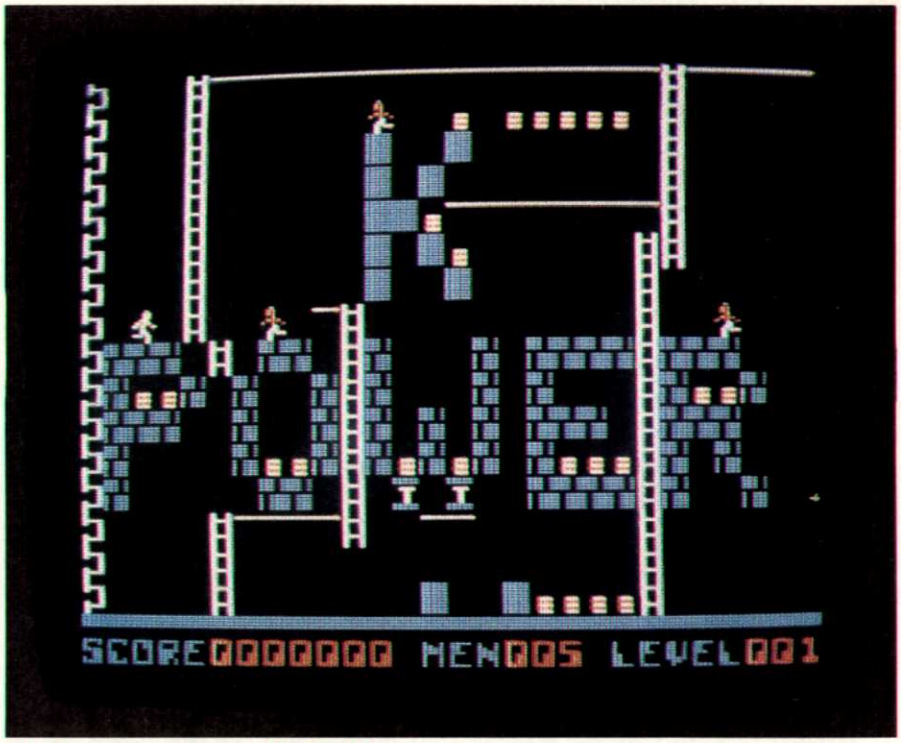
STRATEGY

LODE RUNNER

Broderbund Software
AP (disk), AT (disk), C 64 (disk & cart.), IBM PC (disk), VIC (cart.).
Product Info: (415) 479-1170
TYPE: *Climbing arcade with build-it-yourself options*
IN BRIEF: *Venture into enemy territory and retrieve gold chests scattered in mazes of bricks, ladders, pipes, and trapdoors as guards doggedly pursue you.*

Though crammed with 150 levels, the game also offers the option to make your own. I designed the homemade level shown here to put lode runners of any skill level to the test. Just duplicate the symbols using the Game Generator (EDIT mode).

—DAVID LANGENDOEN

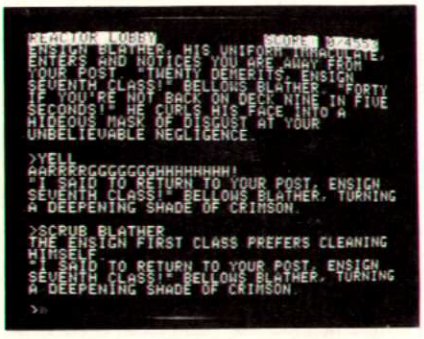


Screen Shot: William Gallagher

Climb your way through K-POWER.

PLANETFALL

Infocom, Inc.
AP, AT, C 64, IBM PC/PCjr, TI, TRS-80 I/III (all disk).
Product Info: (617) 492-1031
TYPE: *Text adventure*
IN BRIEF: *You're a lowly member of the prestigious Stellar Patrol, but life isn't as glamorous as you'd expected. As the game begins, you find yourself scrubbing floors under the scrutiny of a sadistic ensign. After an odd series of events, you wind up on a deserted planet. But why is the planet deserted? And what do you do while you're there? For clues, read on....*



The brig isn't the best place to be during an explosion, but the escape pod is.

The WAIT (or "Z") command is very helpful. Don't neglect it.

Once you get to the ruins, one of your first priorities will be to find the Kitchen Access card. Without it, you'll die when the food from your survival kit runs out.

You can't get to the game's "best" ending unless you fix the Communications Systems. Make this one of the first stops on your list.

Don't try to carry everything you find; many items are designed to distract you. There's a limit to how much you can carry, so take only what seems important. You can always go back for anything you missed.

In the ruins, you'll encounter the "Dial Room." You'll see a lock there. Don't waste time trying to guess the combination. It will be revealed in due time.

Spend some time in the library. You can find out a lot about your mission simply by studying the reference material.

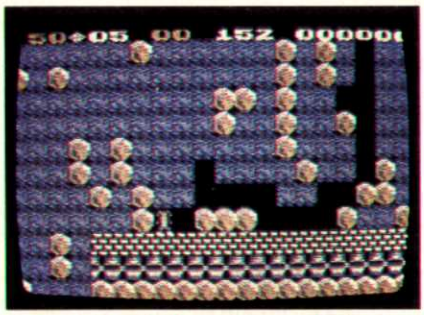
Keep Floyd, the robot, with you. He can bring you something that no one else can. Two somethings, in fact.

How do you get the card from the bio lab? Maybe someone can bring it to you.

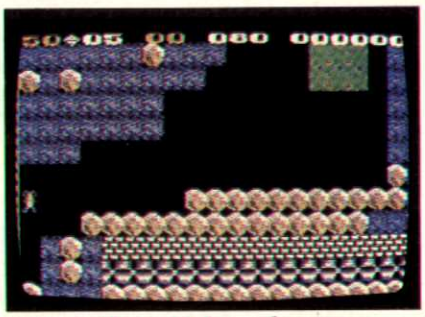
—CHARLES ARDAI

BOULDER DASH

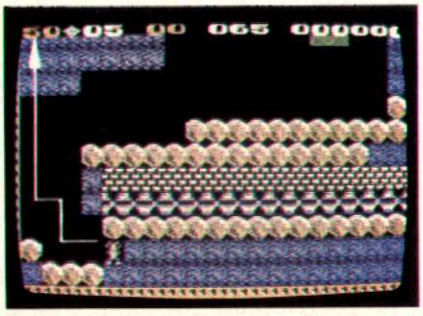
First Star Software
AT (cart. & disk), IBM PC/PCjr (disk).
Product Info: (800) 223-1545
Micro Lab
AP (disk), ADAM (cart.), C 64 (disk & tape)
Product Info: (312) 433-7550
TYPE: *Dig-'em-up arcade*
IN BRIEF: *As a tiny bug named Rockford, collect jewels (and points) on your way through a wide variety of dangerous caves. Falling boulders are a constant threat, and deadly fireflies and butterflies chase you to every corner of the screen. Each cave offers a different challenge and, in most cases, a distinct method for jewel gathering.*



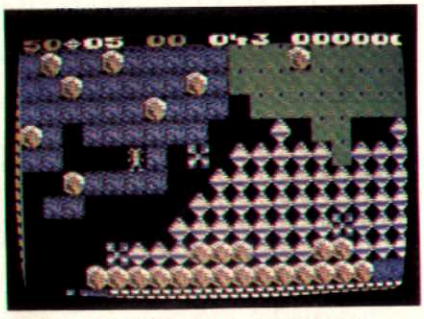
STEP 1: Start digging from the bottom up.



STEP 2: Clear out lots of space.



STEP 3: Release the butterflies by following the arrows.



STEP 4: Wait in safety, then start collecting.

The "M" cave, in particular, can be tough, especially if you don't know what you're doing. On your way, you have to dig through a ton of dirt and boulders to release a swarm of deadly butterflies. Meanwhile, you're trying to leave a path that'll lead the butterflies to a gurgling green amoeba, which waits to turn them into a pile of jewels on contact. Sound complicated? Well, it is... at first. But these pictures should make the situation a little clearer.

—MICHAEL TUOMEY

BEACH-HEAD

Access Software
C 64 (disk & tape). Planned for AT.
Product Info: (801) 532-1134
TYPE: *Multiscenario shoot-'em-up*
IN BRIEF: *The well-defended fortress of Kuhn-Lin awaits you on an enemy-held island. To destroy it, you'll need good aim and timing, fast reflexes, and practice, practice, practice. A few hints like these might help a little, too.*

Blast a swarm of fighter planes.

Always go through the secret passage. It may seem more difficult, but it'll save you some ships in the long run.

In the antiaircraft sequence, try to get the planes just after they leave the carrier. Keep your guns at one level, raising or dipping them only for irregular planes.

In the ship-to-ship sequence, fire first at the ship that is firing at you. Memorize how far off the ships are; the distances never change.

When on the beach maneuvering through obstacles, concentrate on steering, not on shooting enemy installations.

When you reach Kuhn-Lin, keep firing at the targets on the fortress, even when you're about to be shot. And don't try to run away—the Kuhn-Lin gun never misses.

—CHARLES ARDAI

Maneuver a tank through obstacles.

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COUPON

1. Who chose the last computer product you or your family purchased?
a.) ☐ I did b.) ☐ Parents
c.) ☐ Both

2. I own:
a. ☐ ADAM
b. ☐ Apple
c. ☐ Atari
d. ☐ Commodore
e. ☐ IBM
f. ☐ Radio Shack
g. ☐ Timex
h. ☐ Texas Instruments
i. ☐ Do not own

3. Do you use a computer in school?
a.) yes b.) no

4. Do you intend to purchase any of the following in the next six months.
a ☐ modem
b ☐ printer
c ☐ disk drive
d ☐ monitor
e ☐ joysticks
f ☐ games
g ☐ educational
h ☐ word processing

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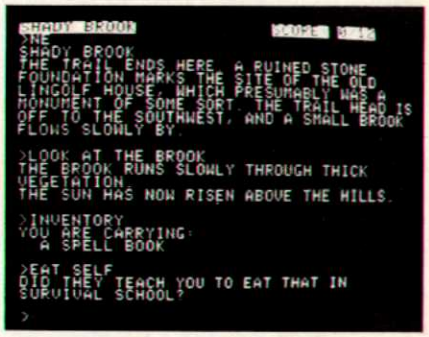
JULY/AUGUST

SCREENING ROOM STRATEGY

ENCHANTER



Infocom, Inc.
AP, AT, C 64, IBM, PC/PCjr, TI, TRS-80 I/III (all disk).
Product Info: (617) 492-1031
TYPE: *Text adventure*
IN BRIEF: *You're a novice spellcaster on a mission to destroy the evil Krill, a mysterious and powerful warlock. Why did your leaders, the great "Circle of Enchanters," pick* you *for the job? Well, because Krill would have detected and destroyed* any *great Enchanter who attempted to get too close. So, it's you, your wits, and a couple of spells against the most ruthless evil the world has ever known. Doesn't quite sound like a piece of cake, does it? If things get a little too rough, take a look at a few of the following hints:*

Be careful when you sleep outside the castle; your possessions may well be gone when you wake up.

Keep track of everything you dream (and examine your bed very closely). Compare the dreams to situations you encounter while you are awake.

There is a way to get the scroll in the "Machinery Room," but not for you. Perhaps an animal that could protect itself from

spears and the like might be able to get it for you.

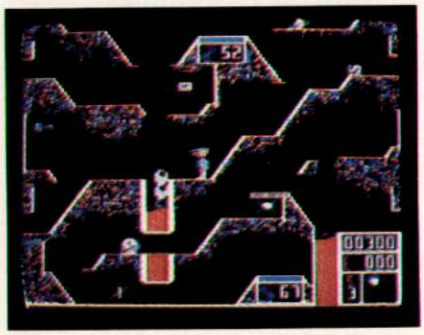
Be sure not to cast the FROTZ (light) spell on yourself! It won't hurt, but there's a point where darkness is crucial.

Try talking to any animals you meet; you'll be surprised by what they have to say.

There is more to the library than meets the eye. Try searching for some rat tracks, and see where they lead.

—CHARLES ARDAI

CRISIS MOUNTAIN



Creative Software
C 64 (cart.).
Product Info: (408) 745-1655
Micro Lab
AP (disk), ADAM (cart.), IBM PC/PCjr (disk).
Product Info: (312) 433-7550
TYPE: *Climbing arcade*
IN BRIEF: *The entire West Coast will be blown to bits unless you find and defuse bombs buried deep within the caverns of an active volcano. All sorts of dangers await you, including rocks, lava, and a crazed, radioactive bat named Bertrum. To survive, you'll need some help. Here goes....*

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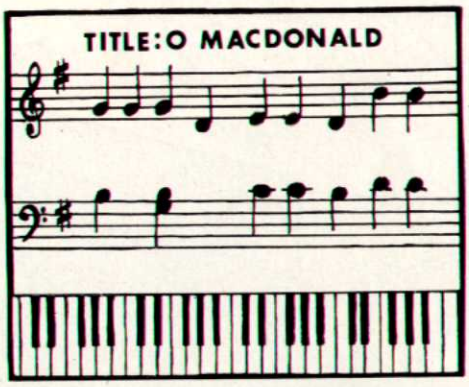

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Always get the shovel first, unless it's nearly inaccessible. You'll save a lot of time in the digging process.

Don't waste time picking up stray supplies; that's what the bonus round is for.

On the higher levels, be especially wary of Bertrum. He may be only a batty bat, but he has the uncanny accuracy of a homing pigeon.

Play it safe during the bonus rounds. Here, time isn't too important, but caution is. One collision ends the round.

—CHARLES ARDAI

HINT HOTLINE

Have you mapped every level in the *Wizardry* series? Figured out a few perfect patterns for *Pac-Man*? Finished *Zork* in one sitting?

If you have tips or tricks you'd like to share with struggling fellow gamers, send them our way! We'll publish the best and most helpful hints along with your name, and mail you $20.

Just think of all the frustrated game fanatics you'll be helping! Here's your chance to be a real pal. Just jot down your hints (with maps or diagrams, if necessary) and mail them to: HINT HOTLINE, c/o K-POWER, 730 Broadway, New York, NY 10003.

Please include the title of the game, its manufacturer, and the computer you played it on; and your name, age, address, and phone number.

CONTEST

NAME YOUR COMPUTER

Illustration: J.D. King

Davey Johnson, the manager of the Mets, reportedly nicknamed his computer Casey Doe. One guy, here at the K-POWER office, calls his computer Barney. (He's kind of strange, though—he also nicknames his disks, and calls his joystick Fred!)

Lots of people like to give their favorite things special "pet names"! Do you have a nickname for your computer? Let us know! K-POWER judges will pick 10 favorites and publish them in the January/February issue of K-POWER. If we choose your computer nickname, you'll win a K-POWER T-shirt!

Just fill out this questionnaire and send it to:

NAME YOUR COMPUTER
c/o K-POWER, 730 Broadway
New York, NY 10003

All entries must be received by Oct. 31, 1984. Void where prohibited.

NAME YOUR COMPUTER

My computer's nickname is _____
because _____
_____.

1. I am male ____ female ____. Age ____.
2. I got this copy of K-POWER from: book club ____ subscription ____ newsstand ____ other ____.
3. What kind of computer do you have?
_____.
4. Please rate all the features in this issue of K-POWER. Use this rating system:

4 = Excellent
3 = Good
2 = Not bad
1 = Pretty bad
0 = Didn't read it

a) ____ Editor's Note
b) ____ Logon
c) ____ Compuzine
d) ____ Silicon Alley
e) ____ Scrolling in Dough
f) ____ Dr. Kursor
g) ____ K-NET's Hot Summer!
h) ____ Loading the Databases
i) ____ The Lucasfilm Force
j) ____ And the Winner is... You!
k) ____ Getting Into the RAM Race
l) ____ Buyer's Guide to Joysticks
m) ____ Hacker Heaven
n) ____ Compucopia
o) ____ Pixel That!
p) ____ Microtones
q) ____ Micronotes
r) ____ Rating Game
s) ____ Strategy
t) ____ Name Your Computer Contest

Name _____
Address _____
City _____
State _____ Zip _____
Telephone Number (____) _____
T-shirt size: S M L XL (circle one)

You're traveling through 140° terrain at 300 rpm.

While some disks lose their way in the torrid zone of drive heat, Maxell guarantees safe passage.

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Consider this: Every time you take your disk for a little spin, you expose it to drive heat that can sidetrack data. Worse, take it to the point of no return. Maxell's Gold Standard jacket construction defies heat of 140°F. And keeps your information on track.

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HOW TO BECOME COMPUTER LITERATE.

FEATURES	COMMODORE 64™	APPLE IIe™	IBM PC jr™	ATARI 800XL™
Price*	$219	$699	$669	$299
Built-in Memory	64K	64K	64K	64K
Typewriter Keyboard	YES (66 Keys)	YES (62 Keys)	"CHICKLET" (62 Keys)	YES (61 Keys)
Upper/Lower Case	YES	YES	YES	YES
Programmable Function Keys	YES	NO	YES	NO
AUDIO				
Polyphonic Tones	YES	NO	YES	YES
Music Synthesizer	YES	NO	NO	NO
Hi-Fi Output	YES	NO	YES	YES
VIDEO				
TV Output	YES	EXTRA COST	EXTRA COST	YES
Video Monitor Output	YES	YES	EXTRA COST	YES
INPUT/OUTPUT				
Intelligent I/O Bus	YES	NO	NO	YES
RS-232 Communications	YES**	EXTRA COST	YES**	EXTRA COST
"Smart" Peripherals	YES	NO	NO	YES

*Prices shown are common retail and may vary slightly in different markets.
**Requires an adapter to operate.

First you need the right input.

Like $219. That's what the Commodore 64™ costs. It's about one third the price of the Apple IIe™ or the IBM® PCjr.™

And 64K. That's how much memory the Commodore 64 has. It's also how much memory Apple IIe and the IBM PCjr have.

This computer lesson is brought to you as a public service by Commodore (certainly not by Apple or IBM), the only computer company that can afford to show you a chart like the one above.

But what you can't see above are the thousands of software programs that make the Commodore 64 fully capable of doing anything any "triple the price" computer can do; for fun or profit, for every member of the family; anything from soccer to spread sheets to space exploration.

Because the Commodore is so affordable, you can load up on Commodore peripherals. Like a disk drive, a printer or a telephone modem. All together they cost just a tad more than an IBM PCjr by itself. With no peripherals.

No wonder Commodore sells more computers than Apple and IBM combined.

commodore COMPUTERS

IT'S NOT HOW LITTLE IT COSTS, IT'S HOW MUCH YOU GET.