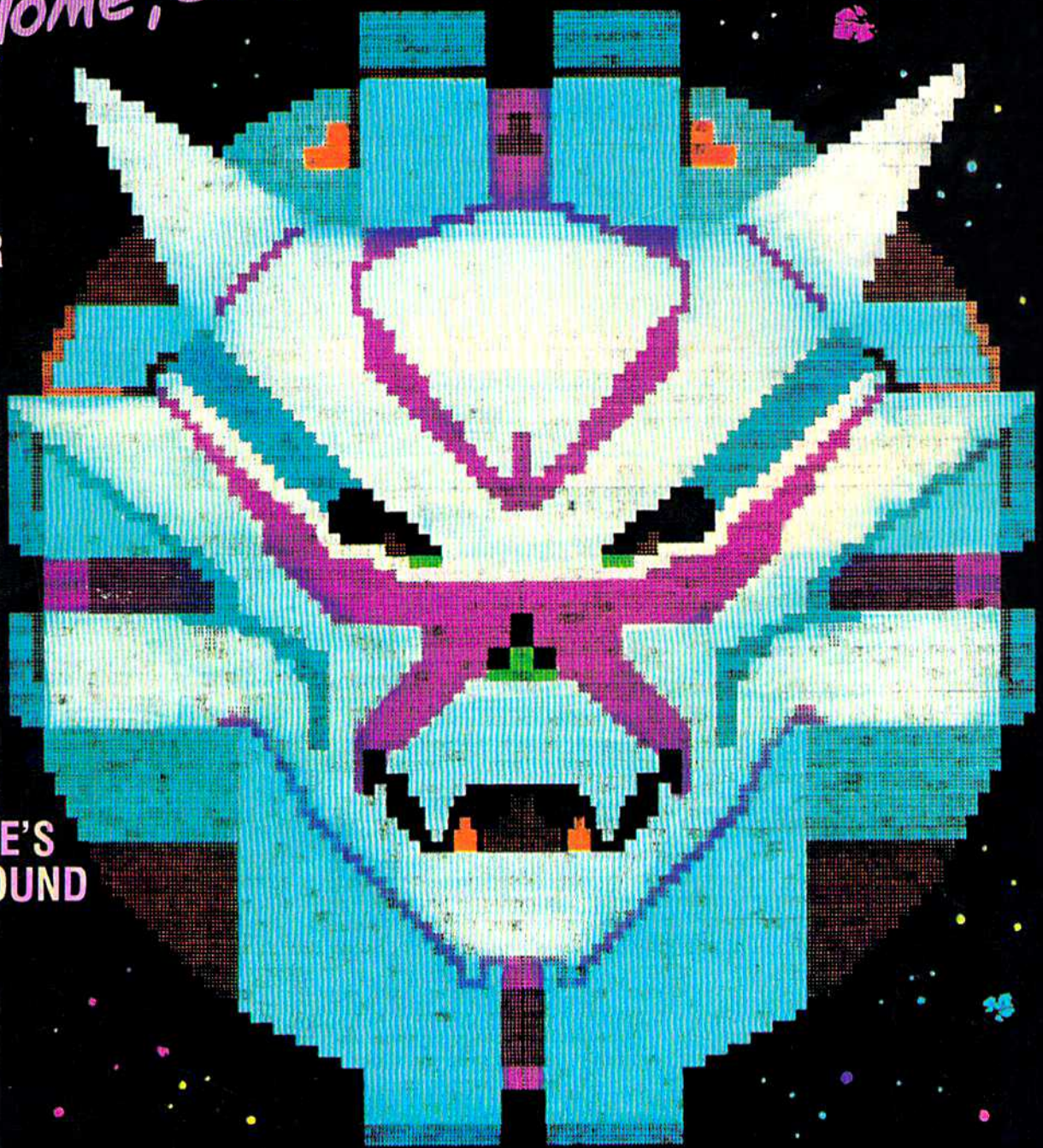
EASY DIG DUG PATTERNS

SURVIVING FOOD FIGHT

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HOW TO WIN AT HOME, COMPUTER & ARCADE GAMES



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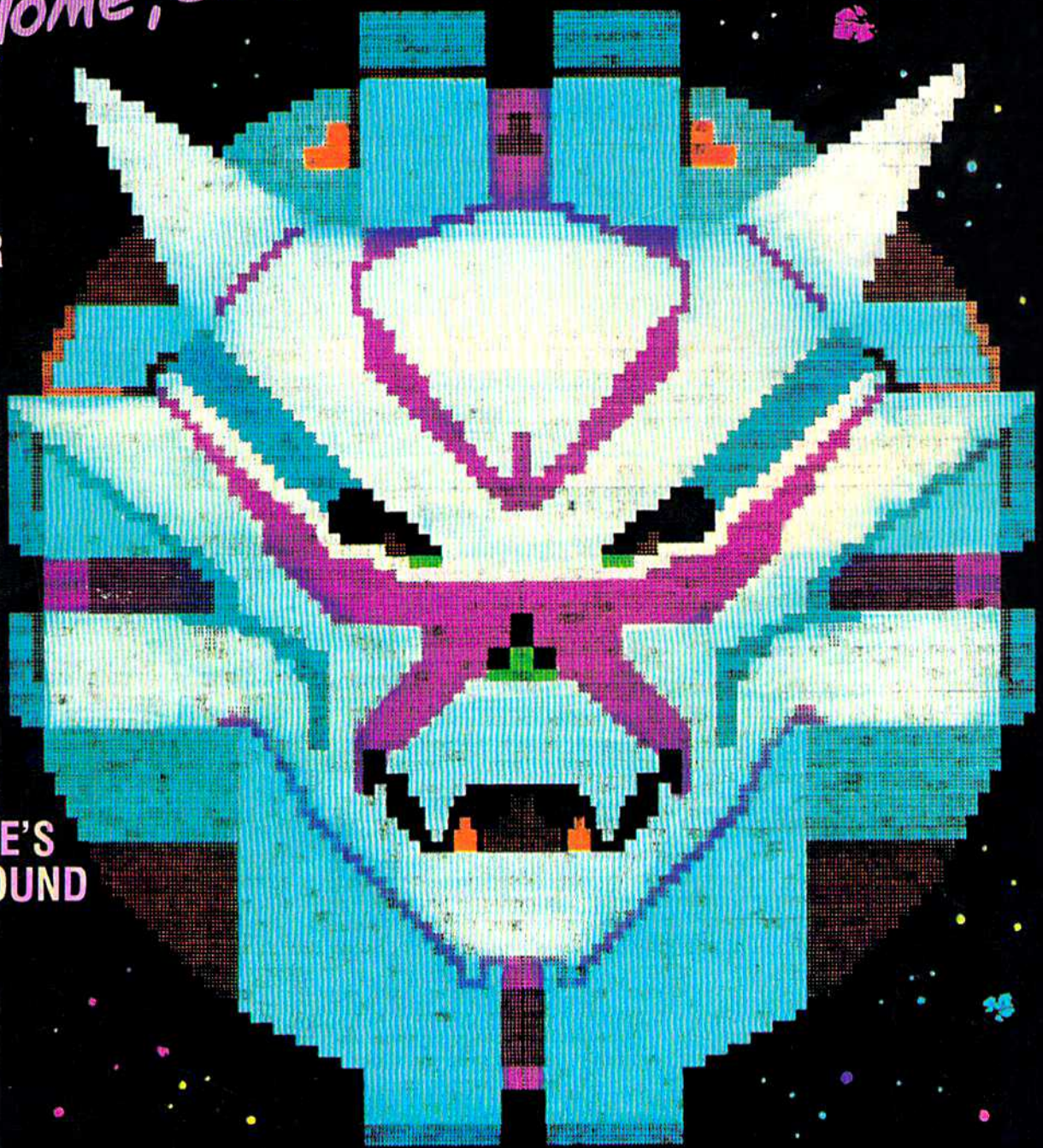
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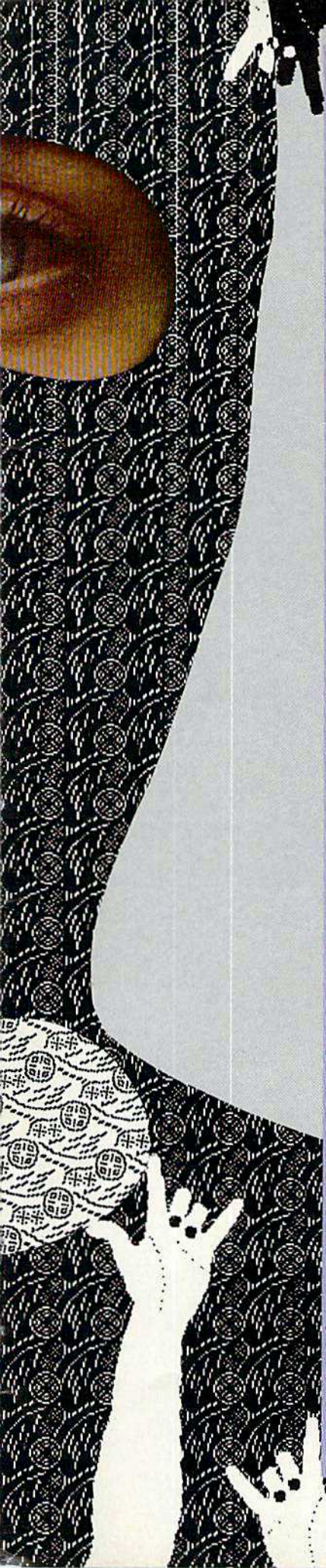
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Editor's Message

It's Saturday afternoon at the local arcade, and you've just dropped in for a quick game of Dig Dug. Both of the Dig Dug machines are taken, so you put up a token up on each one and walk over to an open Defender. Waiting for your turn to come up at Dig Dug, you drop a token into Defender and begin idly hammering the controls.

A dozen Defender games later, the same two players are on Dig Dug and you're getting impatient. You decide to go watch them, to see if you can pick up anything from their playing—after all, they've both been on the same game for almost five minutes.

The player on the left is playing with a set of quick and efficient patterns that keep the monsters at a safe distance. He has just cleared the 125th board, and has a long string of extra turns across the bottom of the screen. The player on the right, however, is still on the very first board. Through some obscure trick (which she refuses to reveal to you) she has managed to rid the screen of monsters without advancing to the next board, and is carefully carving her initials in the dirt.

Obviously, both of these players know the game of Dig Dug very well. They can both make a single game last almost indefinitely, so either one could claim to have "mastered" Dig Dug. But who is the better player? The answer, of course, depends on your definition of a good player. Rather than getting grounded in semantics and definitions, let's just assume that this is a matter of opinion and rephrase the question: Who do *you* think is the better player?

Most players would say that the pattern player, with his high score and many extra turns, is the better player. I disagree. The object of the game may be to clear screens, but the object of playing the game is to take a break from the pressures and problems of reality. And if we take the object of the game itself too seriously, we've just created yet another pressure to deal with—the pressure to perform. In the example above, the player on the right (the one with the trick) obviously isn't feeling that kind of pressure. She's just playing a game and having a good time doing it.

Achieving a high score is a satisfying accomplishment, and I don't mean to detract from that—I was once a very competitive player myself, and held the world record on Defender back when it was a mere 20,307,600 (24 hours of play). Achieving that record, however, was not the most satisfying experience I've had playing Defender. The first time I shot a baiter, the first time I froze the screen, the first time I made it through a wave of free space—those are the accomplishments that I'll always remember. I can honestly say that I often forget about the world record until someone mentions it. "Was that me?" I think. "Did I really care?"

So where does a player learn the tricks and techniques that can make playing video games more than a quest for the highest possible score? Well, the best place to learn is wherever you play. Watch other players, and pay close attention to anything that you don't understand. Ask questions, but don't be surprised if you get a slang version of "no comment" in reply. And read The Tricks of the Trade, on page 60 of this issue. It's a new column that will explain many of the tricks discovered by top players around the country. The first installment includes the Dig Dug trick mentioned above, along with others for Stargate, Tempest, Robotron, and Donkey Kong, Jr. They won't necessarily help you improve your score, but they will help you become a better player. By anyone's definition.

Doug Mahugh

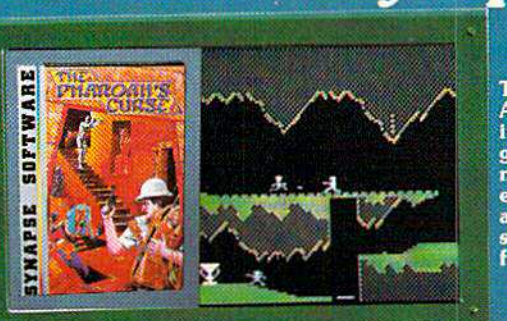
Doug Mahugh, Managing Editor

P.S. If you still want to play Dig Dug like the player on the left, turn to page 36—in this issue's Winning Edge, Eric Ginner explains a set of safe and effective patterns for Dig Dug that can get you through every possible screen.

Tired of chasing your tail?

If you're looking for Commodore 64® or VIC-20® software, look no further than Synapse!

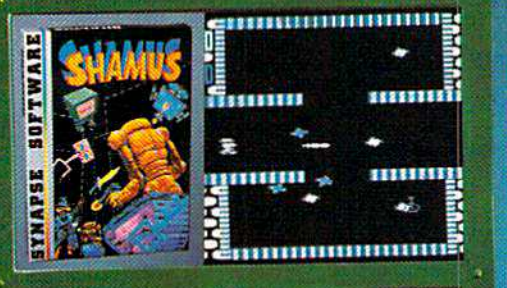




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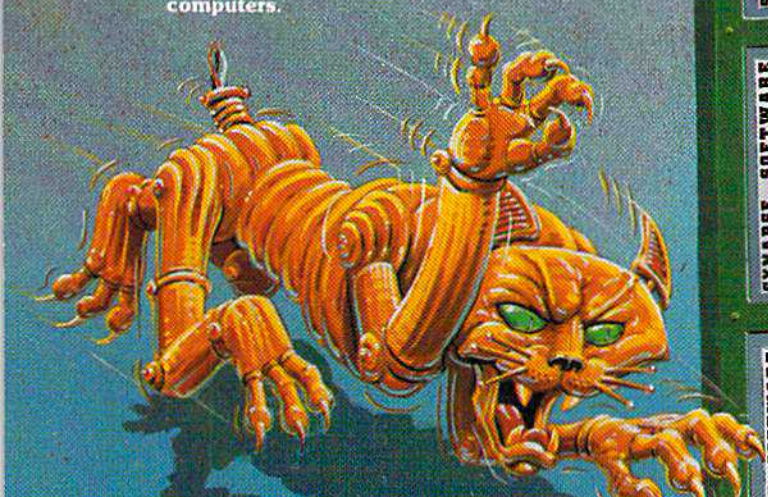
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Your mission—fly your helicopter to capture fuel and weapons from the Kraalthan lords of inner Earth, free the enslaved masses and destroy the fortress itself. Will you triumph or be crushed by its fiendish defenses? Encounter Fort Apocalypse!



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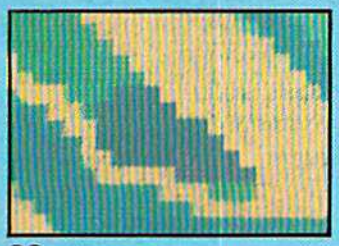
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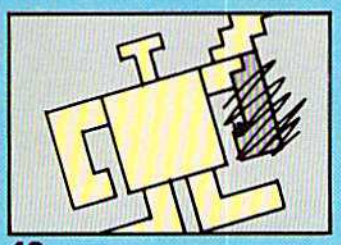
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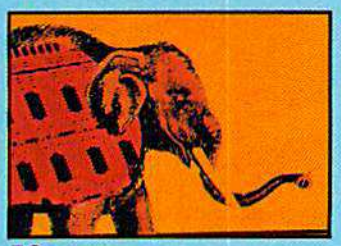
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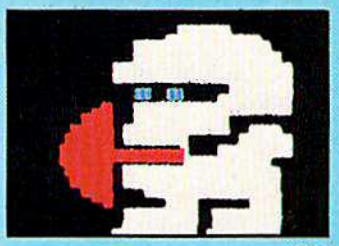
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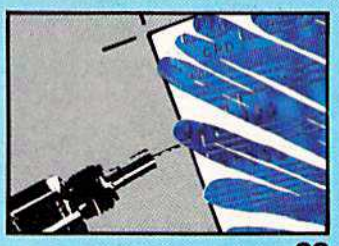
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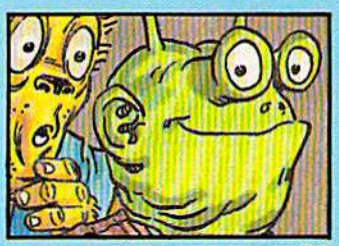

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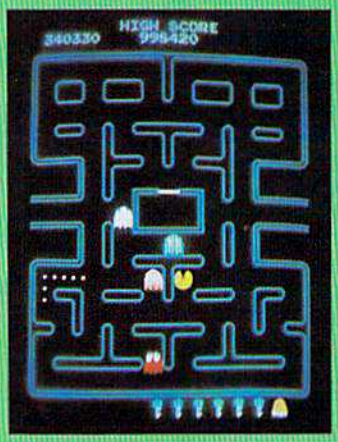
LETTERS

PAC-MATTERS

Recently, an arcader where I play pointed out a letter in the April 1983 JoyStik explaining how to avoid the split screen (244th key) in Pac-Man. According to Chris Crabtree's letter, all you need to do is have the number 256 in your score at the end of the 243rd key, and you'll never get the split screen. I was skeptical of this claim, so I tried it myself. I scored exactly enough points to have 3,256,000 at the end of the 243rd key, and I still got the split screen. Since then, I have also tried scores of 3,225,600 and 3,025,600 at the end of the 243rd key, and these didn't work either. I am now convinced that it is not possible to avoid the split screen.

Instead of trying for high scores, I think that Pac-Man players should strive for a perfect game, in which you eat all four ghosts after every energizer and never miss a prize. This will give you a score of 340,600 after the sixth key (the last time the monsters turn blue), and I have achieved it 17 times to date. Now, when I get to the ninth key I just quit the game, because it's all the same after that—if you can get through one board, you can get through them all. Also, I don't use patterns to achieve my perfect games. I use my own techniques for making all four monsters pile on top of each other before I hit the energizer. This works much better than a pattern, which can fail because of one little hesitation.

Randy Tufts
Hamilton, Ontario



Ed. note: *Randy enclosed photographs verifying many of his perfect games and split-screen games. We have always believed that a perfect game is possible (see page 70 of the January 1983 issue), but Randy is the first player to offer proof of this remarkable accomplishment. As for the split screen debate: we used the rack test to check this trick the first time, and that may be the only way it works. Randy has proved conclusively that it won't work if you actually play the game up to the 244th key.*

VIDEO JUNKIES

Once again I take pen in hand to write to you about the fantastically great job you're doing about keeping us video junkies well fixed. I would personally like to thank Eric Ginner for showing me the secret jump to green level on Tempest. For the longest time, I was trying to beat a score of 350,136 on Tempest, and with his strategy I did! Thank you!

Secondly, I have some Zaxxon strategy for you. I was watching some real scrubs playing it yesterday, and hardly anyone knows the safety strategy for the first wall screen. All you have to do is move to the first mark on your altimeter or just a little below it, and all you have to worry about are the upcoming rockets, because the lasers can't hit you if you're at this level. Well, time to conquer new fields in the video arcade. It's a tough job, but someone has to do it.

Bill Mosley
Toledo, Ohio

AUSTRALIAN READER

JoyStik is terrific! It's great to read a mag by people who take their entertainment as seriously as I do. Here in Australia, there aren't as many games as in the U.S.A. It's even hard to find a Pac-Man or a Defender here—even though they're established classics, they're not new, and there aren't many of them around.



What I like is serious, analytical writing on video games. For example, in the first issue I thought the best article was "The Evolution of Space Games." In the second issue, Isaac Asimov's article was best by far. Sure, video games are mostly about having fun, but to contrast the enjoyment I like to see something serious. I think JoyStik's role is not only as a stimulus to the imagination and a good games coach; it should give informed comments on a new social phenomenon.

A few more comments:
1) your video-style layout and color is great;
2) your comments on Donkey Kong, Jr. were very astute;
3) I notice that there are no advertisements in JoyStik. From this I deduce that you make all of your money from sales and have a very high circulation.

Finally, I'll give you a list of my favorite games and high scores:
Scramble (179,000), Donkey Kong (124,000), Galaga (157,000), Phoenix (53,000), and Pac-Man (60,000). I'm also just starting to play Donkey Kong, Jr., Robotron, and Tutankham. My paper's run out, as has my brain, so I'll sign off. Hope my comments are valuable. If any serious JoyStikkers want to write to me, my address is below. See ya!

Jon Flynn
Bathurst, Australia

DIFFERENCE OF OPINION

Recently, I read the April issue of JoyStik and noticed a couple of articles about Atari's new racing game Pole Position. If I had a sense of humor, I would laugh hysterically. Unfortunately, I do not, and am infuriated that you would say Pole Position is the best racing game around. I played it, and for 25 cents I got 50 seconds of play. I only passed stupid signs saying Dig Dug, Centipede,

and Atari, and once I passed a racing car. Despite my poor start, I can safely say that Sega's Turbo makes Atari's Pole Position look like Atari's Pong. The only thing that Pole Position had better than Turbo is the perspective on other cars when you pass them, the size and detail of the racers, and the explosion of your racer. That's it!! Turbo has a nicely detailed city, hills, a countryside, tunnels, icy roads, an oncoming ambulance, and day turning to night and then back to day scenes, as well as nifty turns as in Pole Position.

I find it hard to believe that you actually tested both Turbo and Pole Position and found Pole Position to be the superior game. Maybe you got the names mixed up? That would not be as big a mistake as actually believing Pole Position is better than Turbo.

James Mucerino
Richmond Hills, NY

No, we didn't get the names mixed up. The features that you point out in your comparison of Turbo and Pole Position are all part of the games' background graphics or effects, and we don't feel that those are the most important considerations in rating a game. Game play is a more important criteria —particularly in a driving game, where strategy is not a significant factor— and Pole Position offers the best game play of any driving game yet. Calling Turbo a better game simply because it has more color and variety in the background is a little like saying Beach Blanket Bingo *is a better movie than* Casablanca *because it is more colorful. We do agree, however, with your comparison between Pole Position and Pong —in its day, Pong was also the best game of its kind.*

DONKEY KONG

I have found a way to get lots of bonus points on Donkey Kong. Get past the barrels level, so you're on the rivets board. Then get to the right-hand side of Kong, on the highest level. Now be careful, this part's tricky—get as close as possible to Kong's right foot without dying. Jump as you get closer. If you get to the right place near his foot, you can keep jumping for 100 points a jump!

Mike Robinson
London, Ontario

This trick does indeed work, but it is more entertaining than practical. This is because the bonus timer (which determines how many bonus points you'll receive at the end of the level) is constantly decreasing while you jump on Kong's foot. The rate at which you lose points on the bonus timer is roughly the same as the rate at which you gain points by jumping, so there is no net effect on your score. It's a fun trick, however, and worth a try when you're "just showing off."

GALAGA MYTH

I have heard that in Galaga it is possible, while playing with two men, that a third man can be captured and then freed to have three ships joined together. Could you tell me if this is possible, and if so, how it is done?

Brian Sword
Mt. Sterling, KY

The Galaga "tripleship" is a common myth in the arcades. Many players claim to have seen it once or done it once, but they can never quite remember how it worked. This is simply because it isn't possible— once you have a doubleship, another fighter cannot be captured until you lose one of your ships. You'll be better off spending your time practicing with the doubleship than searching for the tripleship.

SUPER ZAXXON

In your April 1983 issue, the rating which you gave to Super Zaxxon was quite poor. In fact, you even said it was rather disappointing. Well, I totally agree with you! As a dedicated Zaxxon player (high score: 834,050), I was looking forward to playing Super Zaxxon. When I found out that it was at a gameroom nearby, I immediately went to play it. Here is my personal review:
1. It stinks.
2. The dragon is too cute. Is this supposed to be a frightening fire-breathing dragon? They've got to be kidding—you feel sad after killing it, it was so adorable. Good grief! Give me a break!
3. It is too fast. That's stupid! In the original game, it was possible to destroy every object within the castle. (I have done it.) But in Super Zaxxon, the radar discs and many other targets are just impossible to shoot. There is no way!
4. The "tunnel in" section is very dull and unoriginal. What was wrong with the original space section? Nothing—it was exciting and challenging.

Robert Le
Houston, TX

*Your opinions—particularly your last two observations —are shared by many Zaxxon players. We feel that the increased ship speed and the tunnel section are the main reasons that Super Zaxxon has not been a hit in the arcades. The dragon's cuteness, however, probably doesn't bother players already accustomed to attacking cute characters in games like Pengo, Dig-Dug, and Q*bert. And none of the Super Zaxxon machines we've tested have had any noticeable odor at all.*

REACT

Your reaction to JoyStik is vital—be it hate mail or strategy, comment or exposition. Let us know what you think. We can't guarantee that we'll answer every letter, but we'll answer the best of them right here in the Letters column. Send letters to:

JoyStik Editors
3841 W. Oakton St.
Skokie, IL 60076

NEW WAVES

THE EXPANDER

Milton Bradley is offering the Expander, an attachment necessary for voice synthesis with the Texas Instruments TI99/4A Home Computer and Milton Bradley's Voice Command Software. The kit includes an action input keypad, a pistol-style joystick and a headset microphone.



Electronic speech synthesis and voice recognition is possible with the 64-position membrane keypad. The unit has ports for two joysticks (although only one is included), a headset microphone outlet and a plug-in attachment to connect to the Texas Instruments joystick port. A quick-fire trigger and three auxiliary control buttons complete the joystick, which rotates 360 degrees with proportional control.

For the quiet types, all of Milton Bradley's Voice Command game cartridges, except Bug Hunt, Soundtrack Trolley and Championship Baseball, can be played on the Texas Instruments system without the Expander.

JOY-LESS STICKS?

It may be like taking the lemon out of lemonade, but Suncom Inc. is introducing a video game controller with no stick. Called the Joy-Sensor, the panel simulates the action of Atari-compatible joysticks through two touch-sensitive panels. Rapid fire is built into the center of the left or right-handed firing sensor panel.

Joy-Sensor can be used with the Atari game console, Sears Tele-Game, Atari 400/800/1200, Commodore and Texas Instruments TI99/4A. Suggested retail price is $34.95.

Also from Suncom is the Starfighter for Apple joystick with inboard trimming adjustments streamlining feel and tactile response.



The joystick's throw adjuster may be varied from 20 degrees to 40 degrees for full output working in conjunction with a hi/lo sensitivity throw switch to provide four different levels of joystick output. Fire buttons for both right and left-handed players, alternative function fire button and dual-axis centering trimmers round out the controls.

For adult players, Suncom introduces TAC-2, an Atari-compatible joystick designed to accommodate larger hand size and increased strength of older players. Features include a large, arcade-style, ball top handle, larger base, longer cord and cone-shaped joystick throw limiter. It can be used with the Atari 400/800/1200 computers, Commodore, Texas Instruments and Sears Tele-Game console.

Suggested list price for Starfighter for Apple is $49.95. TAC-2 will list for $19.95.

TABLE TOP NINTENDO

Donkey Kong's familiar Mario character opens his own cement factory in a new line of table top electronic games from Nintendo of America, Inc.

Nintendo's liquid crystal diode (LCD) screens promise vivid full-color graphics, detailed animation and bright visual imagery. Two "C" batteries are needed to run the unit for about three years.

Actual musical sounds, not just bleeps, highlight the games' actions. There is also a clock/alarm and a scorekeeper with digital readout.

Five table-top games, including "Popeye" and "Mario's Cement Factory," are expected by the fall.

RADIO SHACK'S LATEST

Five games for the TRS-80 Color Computer are the latest offerings from Radio Shack, a division of Tandy Corporation. Subjects range from adventure and arcade-style play to card games.

Available on cassette for $14.95, Klendathu is a space adventure based on the book *Starship Troopers* by Robert A. Heinlein of science-fiction fame. Designed for one or two players, the game requires a 16K system and offers optional keyboard or joystick control.

Canyon Climber challenges the player to maneuver through three levels of play to set dynamite charges while avoiding a number of hazards along the way. Predictably, the pace increases after three levels have been completed. The Canyon Climber ROM Pak requires 16K of RAM and is available for $34.95.

The joysticks in Doubleback, for one or two players, control a moving line to encircle objects appearing at random on the screen. At first the objects disappear but some remain later in the game to create unexpected obstacles. Needing a minimum of 16K, the game will sell for $24.95.

Beginning and average bridge players may show their hands at the Bridge Tutor, a series of hands presented graphically for bidding and playing sequences. The screen will even tell you when a wrong bid is made or an incorrect card played. For $34.95, the player takes either defensive or offensive positions or lets the computer play all four hands. Instructions, commentaries on each of 100 hands, a summary of bridge fundamentals and a key reference

guide is included. The game requires a minimum of 4K of RAM.

Six different card games—Solitaire, Solo Poker, Last Pirate, Go Fish, Blackjack and War—are included in (what else?) Card Games, a set of three casettes for $19.95. Using a 16K tape system, the screen displays all cards, including draw and discard piles, and play is controlled on the keyboard.

TELESYS COMPUTER GAMES

Moving into the computer game arena, Telesys has released three of its VCS games—Fast Food, Cosmic Creeps and Demolition Herby—for the Atari 400/800/12XL series. Ram It and Fast Food, both for the Commodore Vic 20, are expected later in the year. Plans for future releases include possible games for the Timex/Sinclair and Commodore 64 series.

JUST THE FACTS, MA'AM

Aspiring detectives will welcome Sir-Tech Software's entrance to the home and educational software market with Police Artist, a game which makes you eyewitness to a crime and challenges you to remember it. The object is to be able to pick the culprit's face from a police lineup or reconstruct it from a catalog of face parts. The program creates more than one million different faces, each with a unique name.

Sir-Tech's software contains three separate games, may be played at various difficulty settings and displays best scores. Police Artist is available for the Apple II, II+ and IIe with 48K and one disk drive.

QUESTAR BLASTER

Questar introduces the Blaster, a plug-in, adjustable-speed, automatic-firing module for Atari VCS, Atari 400/800, Colecovision, Sears Tele-Games and Commodore Vic-20 home game systems.



The Blaster attaches between the games console and the joystick, adding automatic firepower to Defender, Zaxxon, Astro Blitz and other shooting games. It converts single-shot firing into high-speed, machine gun action at rates up to 20 shots per second.

Adjustable speed control lets the player choose a firing rate to match the game software. Since it can be adjusted to a single shot mode, there is no need to remove and insert the module repeatedly. Passive circuitry protects the game console.

GAMESHOWGAMES

If the title of this article is confusing, it reflects the content. Manufacturers of games for the Atari 2600 have been dropping out of business at a rapid pace in the last few months. Data Age, U.S. Games and Games by Apollo are now only memories. With all the fallout, then, one would wonder why a new company is announcing a venture into the oversaturated VCS software market.

In the case of the Great Game Company of Hollywood, Florida, the reason is a belief in a great new idea. Simply, or even rather obviously, the GGC has licensed many of the most popular TV quiz shows for conversion to the video game format.

The first release scheduled is The Family Feud, which begins with the Richard Dawson character putting a kiss onto the opening screen. Subsequent screens list topics, and a choice of responses. You select answers with your joystick and earn the appropriate amount of points.

Other licensed titles are the Price is Right, Joker's Wild and Jeopardy. Industry sources are doubtful, however, about how well any game show can be translated to a cartridge with memory as limited as that for the VCS. The number of questions will have to be curtailed and once the correct responses are learned, the game should soon prove to be predictable and tiring.

WHAT IS COLECO UP TO NOW?

Step by step, Coleco is developing a reputation for shaking up the competition. First it was high-resolution, high-capability Colecovision game console, soon to be the heart of a computer system. Now the manufacturer is planning an improved keyboard for the Atari 2600, as well as a self-contained, free-standing Atari cartridge player, the Gemini.

Coleco combines voice with on-screen activity in an ingenious way in the Gemini. By precision timing or a switching device in the console, the voice-enhanced game cartridges will trigger a companion voice cassette on the associated unit. According to Coleco's Barbara Wruck, the combination of voice and game play is especially well suited to a line of Berenstain Bears and Dr. Seuss educational game programs to be released. The voice also will work with the Atari module for the Colecovision console.

Recently the company announced what potentially could be the biggest upset so far: a keyboard for the Colecovision, selling for less than $150. The complete system of modules will convert the Colecovision into a computer which will meet what Coleco feels are the users' "most important needs:" entertainment, information and education. Coleco declined description of the modules' capabilities, but it is conceivable they will have a printer, some form of modem for telecommunications and an optional cassette recorder. The supergame module, however, probably will use the preferred storage device.

Illustrations courtesy of Chinese Cut-Paper Designs, selected by Theodore Menten, Dover Publications, Inc.

OUTSIDE HELP FOR COLECOVISION AND ATARI 5200

Over the past two years, it seemed as if everybody and his brother was, at one time or another, selling an "exciting new breakthrough game cartridge for the Atari VCS." Few of these games were exciting. Those from such companies as Activision and Imagic were, perhaps, breakthroughs, and all were, indeed, for the Atari VCS. One out of three isn't often enough, however. Recently, the number of Atari VCS (2600) game makers has diminished, with some firms going bankrupt or abandoning video game operations. Others are now taking the time to develop one or two really good games, instead of a bunch of instant schlock.

Why were so many companies so deeply involved? Simply because, with 10 million or more of the game machines in the home, and an extremely hungry public, initial sales of virtually anything VCS-compatible were extremely profitable. In order for most clear-thinking companies to now venture into the software development field, they must expect a few things: that enough units are already in use to support one more company and sell enough of its product to make a profit; that the cost of developing a new game program and package are not higher than expected sales revenues and profits and that there truly is an adequate market out there.

In the case of Colecovision, the first and third criteria are probably immediately met. To date, about a million and a half Colecovision units have been sold, with all software coming from Coleco. Imagic is the only firm specifically licensed by Coleco to produce Colecovision compatible software. Nova Blast should be released by Imagic by the end of the summer followed by Moonsweeper in October.

In researching this piece, many potential developers of Colecovision software were contacted. There are two basic ways for potential developers to produce a Coleco-compatible game. They can acquire a license from Coleco to develop the game (Coleco then assists the licensee's designers in overcoming the system's unique codes, and the licensee pays Coleco a royalty for each cartridge sold), or they can reverse-engineer the system.

Reverse-engineering involves opening up the unit to see how it is made, then running different processes through it to see the response. Through trial and error the code can be broken and a game designed for the system. Many of the 2600-compatible manufacturers reverse-engineered that unit. Likewise, for primarily economic reasons (why pay a royalty or license fee if you don't have to?), many prospective third party developers are reverse-engineering the Colecovision.

Coleco is in licensing negotiations with a number of large software developers. In order to avoid premature announcement which might destroy months of careful negotiations, neither Coleco nor any of the potential licensees are talking, although Activision is rumored to be very close to signing a licensing agreement with Coleco.

What might make the Colecovision and Atari 5200 market different from that of the VCS compatibles is that many of the computer software (vs. game software) companies are either actively working on, or intend to develop, games for either or both systems. One of the first third-party Colecovision releases will be from Microfun, a division of Microlab.

Microfun has acquired the license to develop the Atari 400/800 game Miner 2049er for Colecovision. According to Microfun president Stan Goldberg, the game will have eleven game screens, with only three identical to the Atari version. This difference, he says, will give the owner of both a 400/800 and a Colecovision a reason to also buy the Coleco game.

The July release of Miner 2049er will be the first in a series of Microfun games for the Colecovision. Scheduled September releases are Scraper, Time Runner and Globe Grabber.

Spectrevideo and many other software designers are exploring the possibility of doing their own versions of Colecovision games. With the supergame module to be released by Coleco, games can be recorded onto the tape wafer and sold in that form. This saves a developer the cost of producing ROM cartridges, and also provides a competitive edge with more game screens available on the wafer than the cartridge format.

The Atari 5200 may not yet have the high numbers of units sold to guarantee a tremendous market, but the development costs are reportedly quite a bit less than they are to develop games for the Colecovision system. This is because many games already developed for the Atari 400/800 can, with relative ease, be converted for play on the 5200. Instead of having to develop a program entirely from scratch, most of the work has already been done. Because of this, a proven, successful 400/800 game can be easily adapted, marketed, and should be relatively successful on the 5200.

This is probably the reasoning behind Big Five Software's release of its first 5200 compatible cart, Miner 2049er. The sample we received was superb (and is reviewed elsewhere in this issue). In the first month of distribution, over 45,000 game cartridges had been purchased by distributors, confident of sales of this cartridge.

Big Five will also be releasing four new games over the next few months, and is in the process of developing new games in both the 400/800 format and for the Atari 5200. When asked which other companies are adapting games for the 5200, one spokesman answered "who isn't?"

The implication is obvious. For a successful 400/800 software house, developing a 5200 cart is feasible, and has a pretty fair probability of commercial success. We should probably be seeing a bit of a flood of 5200 software available if the Big Five experiment pans out, and there is every indication that it will.

LEADER OF THE PAC

Professor Pac-Man is certainly the strangest and possibly the most important Pac-Man spinoff to date.

Designed by Rick Frankel, Mark Pierce, Marc Canter, and Sue Forner for Dave Nutting Associates (a subsidiary of Bally Midway), it's part game show, part IQ test, part jigsaw puzzle, and all Pavlov's dog.

The object of the game is to answer questions properly and quickly. There are 500 animated questions built into the original machine (500 additional questions will be available for existing machines in early 1984). There are always three possible answers to every question, and these answers are keyed to three oversized response buttons on the control panel. When you see the same type of question again (the questions may repeat themselves after 20 questions are successfully answered—although the repeat spread is usually much greater than that) those answers may switch places—if indeed the question is asked in the same way. The questions are always accompanied by some surprisingly detailed animation, and they range from simple tests of observation (How many arms did you see waving?) to quite sophisticated problems of comparison (A is to B as C is to: 1, 2 or 3?).

This is without doubt the first educational game for the arcades. It promises to lure a type of player not often found pumping quarters into the machines, and it has already proven itself to be especially popular among young couples and women. For the dedicated gamester, it's a strange and jolting experience—there's something working here that's never been tried before: a real straightforward test of intelligence (all video games are subliminal tests of intelligence).

The game is at its best when two players go at it, giving Professor Pac-Man a real game-show atmosphere. A question flashes on the screen, the time starts ticking off, and your palm begins to itch. The first person to commit him or herself gets the first shot at the question. If the proper answer is given, you're on to a new question. If it's botched, your opponent gets a stab at it. This is real hot stuff.

Professor Pac-Man is a game to watch. Although the concepts are not new to gaming (basic quiz-show concepts go back to the Egyptians), they're certainly new to the arcades. Success for Professor Pac-Man could open a whole new chapter in the coin-op book.

THE NEXT VOICE YOU HEAR

The next voice your Atari 2600 hears will be...yours! Milton Bradley will produce for the popular video game system a plug-in peripheral featuring voice synthesis *and* voice recognition. Players will be able to command their on-screen counterparts through a headset microphone. Bye-bye, joysticks? The expansion module and the first few voice-recognition games should be in stores before Christmas.

THREE-WAY WINNER

Prince Kolwyn journeys forth to save his beloved Princess Lyssa and to recover the powerful, mystical, star-shaped "glaive" from the dreaded Beast. Is this: a) a great drive-in flick pick; b) a fast-paced arcade adventure; or c) an exciting home video game? Try d), all of the above. *Krull*, the movie, is from Columbia; the arcade game, from Gottlieb; and the home version, from Atari.

SUCH A DEAL

The personal computer industry is buzzing with rumors of impending price war. Industry heavyweight Atari is expected to trigger much of the action as it phases out—with dramatic price reductions—its current generation of machines (400, 800, 1200XL) to make way for powerful new lower-priced computers. One member of the new breed, the Atari 1251XL, will boast 64K memory, built in modem and voice synthesizer, *and* built in disk drive—all for under $800.

Also this summer, you will see the price of the Texas Instruments 99/4A drop to under $100. Watch for other computer manufacturers to slash prices too.

ONE MORE TIME

Did you think you had seen the last of Mario, star of Donkey Kong and Donkey Kong Junior? Wrong. Here he comes again—with his brother Luigi—in Mario Bros., Nintendo's latest arcade entry. The apes are gone, but now Mario and his sidekick must battle pesty reptiles and insects. Do you suppose the next spin-off will be Mario Goes to Monte Carlo? After all, nothing succeeds like excess.

WATCH THE SKIES

Movie audiences everywhere are cheering the summer's big action/adventure hit, *Blue Thunder*. Can video game spin-offs (both home and arcade) be far behind?

ON THE ROAD AGAIN

Journey Escape, the popular Data Age home video game, is now a Bally Midway arcade game. Your goal is to get the band members and their instruments all together so they can perform a concert. Journey Escape features music from the album of the same name.

HIGHER LEARNING

Harvard University's Graduate School of Education recently sponsored a symposium on "Video Games and Human Development." Social scientists, educational researchers, product developers, and industry representatives met to discuss such topics as "Video Games and Social Behavior" and "Video Games in Medical Rehabilitation and Learning." Watch for more detailed reports in a future issue of JoyStik.

HOT SPOTS

Win a free "survivor" T-shirt by scoring 5000 points in Solar Storm. The new Atari 2600-compatible game from Imagic features alien invaders, enemy spaceships, flaming meteors, sun spots, and—are you ready?—Sizzloids. Sizzloids? Don't laugh too soon. An Imagic press release warns that just a few Sizzloids can set your world on fire. Sounds like there'll be a hot time in the universe tonight.

SNEAK PEEK

Here's a sneak peek at games you'll be playing in your living room later this year:

- For Colecovision—Slither, Mr. Do, Buck Rogers, Time Pilot, Sub Roc, Wizard of Wor and Frenzy.
- For Atari 2600—Galaxian, Moon Patrol, Joust, Battlezone and Donkey Kong Junior.
- For Atari 5200—Ms. Pac-Man, Battlezone, Joust, Pengo, Tempest and Robotron.

Illustrations courtesy of Chinese Cut-Paper Designs, selected by Theodore Menten, Dover Publications, Inc.

SIMUTRON'S VISION:

ARCADE OF THE FUTURE

by Mark Brownstein



You drive your vehicle into the shopping area, docking it in front of the shop labeled *Simutron*. Leaving your vehicle, you walk into Simutron and go up to the pretty lady at the dispatch terminal. Pulling out your identification card, you hand it to her. She reads it, types into her terminal and responds, "We've been waiting for you. Number 13 is ready."

She returns your card, you walk up the ramp and the airlock door opens. You walk to 13, sit down and in a matter of moments you are in a galaxy far, far away, trying to save the universe from a Klingon invasion.

Science fiction? Science fact? What's going on here?

What's going on is Simutron, a San Diego, California, based firm, and its interesting new concept of the future of video arcades. Before we explain the company, let's describe the concept a bit further.

The Simutron Tournament Center (where you will be participating in these simulations) is an entirely new concept in video gaming. The centers are computer controlled and the game area is a semi-enclosed module. The walls of the module wrap around you. You sit in a cushioned space-type seat. Stereo sound surrounds you. Ahead of you is a series of controls, with up to 100 buttons. Each button directs a particular function.

Your module is a screen with two wings, right from the space age. In front of you, and on each wing, is a 13-inch color monitor. Above you is a 19-inch monitor. Combining the four screens you are involved in your simulation.

The 19-inch monitor displays laser disk generated, photographic quality images of what's happening, with the other screens reporting on game play conditions such as fuel or approaching enemies. You may, for example, direct a change to Warp drive, using the keys in front of you. The 13-inch screen in front of you acknowledges the message, the screen on your left updates your fuel levels, and above you, you can see the space you are traveling through.

As your abilities improve, more buttons and controls are available to you. You can, in effect, grow with the game. You start out as a lowly cadet, and may end up as a fleet commander. But this is only one application.

Photograph courtesy of Simutron, Inc. Star Trek is a trademark of Paramount Pictures Corporation.


DAMAGE CONTROL

The game we've been describing is Star Trek. It uses the graphics, under license, from the first Star Trek movie. In this simulation, the Klingons have just destroyed your fleet, and only you can save the galaxy. You learn to operate your starship with responsibilities, options, and controls increasing as you progress from level to level. At the top level, most of the 100 keys are used.

Aside from the laser disk, everything is controlled by the computer. The game program is fed into the main computer, which runs all the games at the Tournament Center, and the computer interacts with your input. The computer also controls the display of the laser disk by accessing specific frames on the disk.

The computer also remembers you. Instead of having to work through early levels of a simulation, you pick up at the level where you left off on your last visit. It is also able to set up tournaments, where you may compete with another player who is on a similar level, or where the best will compete with the best. The computer acts as referee while simultaneously controlling all aspects of game play, and all interactions between the players and each other, and the computer. It is conceivable that a game of baseball could be played, with each player at a different position, and in a different city.

There is also a closed circuit TV set-up, which allows you to communicate with another player, who is off in another galaxy. In the future, such interactive games may be played cross-country. A national tournament may only be as far away as your nearest Simutron Tournament Center.

The system lends itself to other remarkable simulations: flying a 747 (or even the Space Shuttle); speedboating down the Amazon river; driving the Indy 500 (with the actual track on the screen above you) and even some educational interactive activities. Simutron plans to be developing about three games a year, with other firms developing perhaps eight to ten a year.

Simutron intends to act as a publisher or film maker. The independent game developer will come to Simutron with a script or game concept. If it is approved, the game will be developed, tested in a Simutron center and, finally, distributed to Simutron centers across the country.

Who is Simutron? Simutron is a firm that was once involved in helping arcade operators eliminate some of their problems. Among the problems identified were the high costs of purchasing new games (currently $2,000 to $5,000), the expense of updating old games (about $500 to $1,000) and the risk involved in doing either. Another problem is the collection of quarters or tokens.

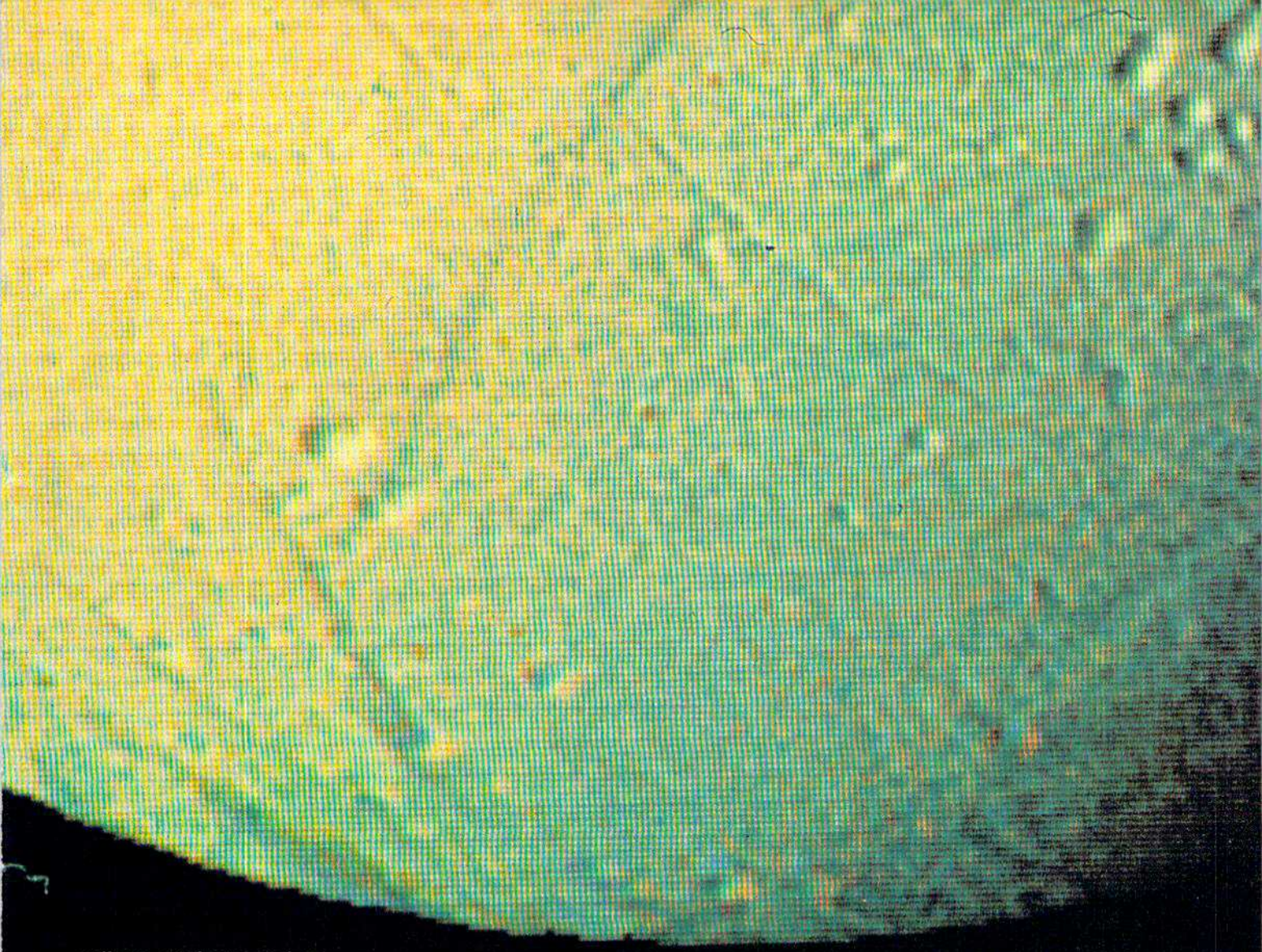
At Simutron Tournament Centers, you pay for the time used to play the games. According to Simutron spokesman Dave Jenkins, the cost of game play at a Simutron Tournament Center will be about as high as it is at arcades, unless you're a video game wizard who can tie up a machine for hours on the same quarter. The cost, initially, should be around $10 per hour. Prices probably will be set by individual Tournament Center operators.

Some of the options which will probably be available include advance payment, possible credit and certain bonuses or special promotions. It is expected that Tournament Centers will be open only from 2 p.m. until 10 p.m.

Obsolescence should be a minimal problem. Since the actual game program is stored on a large computer with reprogrammable memory (rather than the minimally-modifiable arcade units), a new game can be entered via telephone lines to Simutron. Also, because the computer can monitor response to a new test game, Simutron will be able to avoid most manufacturing costs by pulling a game which doesn't make it through testing.

Another problem faced by arcades is the difficulty of obtaining an operating license in many communities. As Jenkins explained it, La Mesa (the location of the pilot center) offered resistance. "We had to convince them that we aren't an arcade.... One councilman thought we would turn into a place for pornograhphic movies," he said.

At Simutron, most of the "undesirable" aspects of an arcade are avoided. The centers will be open only a limited number of hours (and won't encourage truancy), will probably attract mid-teens and



college students and environmental controls will be stronger. In order to play a game at the center, one must first register. If that person damages the equipment or vandalizes the center, he can be held responsible.

There will be no tokens to fight over or coin changers to kick. Food will be vended in areas away from the game stations and neither food nor smoking will be allowed inside the actual game play area. If this sounds a bit too controlled, consider this: each center represents an investment of at least $150,000. If you had this kind of money committed, wouldn't you want to make sure property isn't destroyed?

But, all is not rosy at Simutron. The Tournament Center in La Mesa has been ready for a year and a half, and has yet to have a single patron because the equipment isn't ready. Inside the plush pilot center and franchise sales office is an eight-station play area, a waiting room with a 25-inch TV set, vending machines, sign-in desk and computer area and, fortunately, bathrooms. Simutron has been paying rent on all this, but the hardware needed for the games didn't arrive from the manufacturer. A one-station demonstration unit was expected to be installed at the center by June, however.

Simutron appears to have had at least a year's jump on any possible competition. A trade story tells of Simutron approaching Paramount Pictures to license the graphics from *Star Wars: The Movie* on laser disk. Paramount turned to its subsidiary Sega (who develops arcade coin-ops) to see if they had any need for laser disk graphics. At that time, Sega management reportedly could not imagine a need for laser disks in arcade games. Today, they are developing exactly that, and have shown a laser disk game at amusement operator's shows.

At first, Simutron will be testing the concept of its pilot Tournament Center but plans include opening ten locations in southern California during the first half of 1984. Franchised centers will follow. The cost per station should be in the neighborhood of $12,000 to $15,000 per simulator, with many centers holding as many as 32 stations. Despite the large initial investment, Simutron reportedly has been approached by groups interested in territorial agreements for locating or franchising centers. Others, it appears, are anxious to hop on the wave-of-the-future bandwagon.

Photograph courtesy of NASA.

TOP STRATEGIES FOR CHOPLIFTER

by Dan Gorlin





Most of us have dreamt about being heroes; few have realized this dream. Now, thanks to Choplifter, a 48K diskette game program for the Apple II + personal computer and Atari 400/800 system, the dream becomes a video reality as you are given the chance to battle evil forces and win honor in the eyes of your countrymen.

In Choplifter, you are the pilot of a helicopter capable of performing an array of dazzling aerial stunts. You must take off from your home base (a post office, of all things) and fly across a horizontally-scrolling playfield of rugged terrain to reach the enemy Bungelings' barracks. There, you must land and rescue a group of helpless hostages and return them to your base. To hinder your mission, the enemy will attack with an array of armaments including tanks, jets, and dangerous air mines. To complete a perfect game, you must rescue all of the 64 hostages.

ELEMENTS

HELICOPTER: In Choplifter, you control a large, white helicopter equipped with an endless supply of fuel and ammunition. Your chopper responds to the slightest joystick movement and can fire off volleys of cannonfire as quickly as you can press the left action button. The object of your mission is to pick up the hostages who are being held captive in the enemy's barracks and bring them safely back to your home base/post office. While blowing away tanks, jets, and mines can gain you great personal satisfaction, it doesn't earn you any points. Thus, your emphasis in this game should be on *salvation*, rather than destruction.

You begin each game with one chopper in the air and two in reserve. You lose a helicopter life if you are destroyed by an enemy jet, tank, or mine. In addition, you will lose a life if you crash into the landscape; thus you should land your aircraft and fly over mountain ranges with extreme caution. The game ends when either all three of your choppers have been destroyed or when all of the hostages have been rescued or killed. You cannot earn bonus lives or extended play in Choplifter.

HOSTAGES: There are a total of 64 hostages to be rescued in each game. They are held captive in the four blue and white barracks located at the extreme left-hand side of the horizontally-scrolling playfield. Each barrack houses 16 hostages; your helicopter is able to transport a maximum of 16 hostages on each trip. At the beginning of each game, one of the barracks will be on fire and the hostages will be running about in panic. (The other barracks will remain intact until either you or the enemy blows them open with a direct hit.) As your helicopter nears, the freed hostages will scamper toward the chopper. When you go in for a landing, be careful not to crush the humans under your aircraft. Waste no time while rescuing the hostages—they can easily be picked off by the enemy's firepower.

HOME BASE/POST OFFICE: Located to the far right of the playfield is your main base, the post office. This is where you must deposit all rescued hostages for points (where they will probably be air-mailed home). To drop off a hostage, you must land on the green patio that surrounds the post office.

TANKS: The tanks you'll encounter in Choplifter are not the sophisticated new "supertanks" being produced for the U.S. Army. Rather, they are the old "stupidtanks" with limited firepower that must have been left over from an old World War II movie. The tanks can sense your location and will follow you to some extent, but cannot fire at you as long as you remain airborne. You are vulnerable to the tanks only when you land in the battlezone—the area between the barracks and the post office. You can, however, fire at the tanks when you are in the air by pointing your aircraft in the "tank attack" position by pressing action button "1." Tanks can blow open the hostages' barracks, and can even blast the escaping captives themselves if you're not there to defend them. Tanks cannot cross the dividing line near your base and follow you into the post office area.

JETS: The enemy's second line of defense. They will appear after you have returned at least one hostage back to the base. Each jet is armed with two missiles that it can fire either at your chopper or at the hostages on the ground. Early in the game, it is not likely that a jet will fire at you while you are on the ground. However, in later rounds of play, when the action gets heated, jet missiles will be out to get you no matter where you are. Like tanks, jets cannot cross the dividing line and follow you into your home territory.

AIR MINES: After you have made your second run back to the base, the dreaded drone air mines appear. Mines tend to hover at mid-screen waiting for you to crash into them. Once you are on the same screen area as an air mine, it will begin to chase after your helicopter. When the majority of the hostages have been rescued, these mines will become extremely aggressive. They may even drop bombs on the hostages remaining on the ground. Mines are the only enemy craft that can cross the dividing line at the right end of the playfield near your base and attack you on your home turf.

STRATEGIES

Lift off from the post office patio where you begin each Choplifter game, and proceed to the left. Attack the tanks only if they pose a threat to the hostages. Continue moving to the left until you reach the first of the four barracks. Many hostages should be running around outside.

TANK ATTACK: If the tanks are closing in on the hostages as you approach the barracks, assume the "tank attack" position and blast them. Don't worry about killing the hostages as you attack the enemy tanks—as long as you are facing a tank as illustrated in "A," your shots will be aimed forward, well away from the hostages. Saturate the area near the tank with your shots; keep firing until the dust clears and the tank is no more. Be merciless with the tanks—the longer they remain in the game, the greater the probability they will fire upon the escaped hostages.

HOSTAGE RESCUE: To rescue the hostages successfully, you must be able to land in the barracks area quickly and accurately. Once you are over a group of hostages, they will start to run toward your chopper, sometimes stopping directly underneath you. If you land on them, they will die. Desperate people sometimes do stupid things. Find a clear spot in which to land, and then descend rapidly without hesitation. Head for the ground in "tank attack" position (with your nose facing down). This is the position in which the smallest amount of helicopter will touch the ground, thus reducing your chances of crushing a hostage.

Try to avoid hovering over the hostages—you will attract tanks that will attack them while you are in the air. Land as close to the barracks as possible, preferably between two groups of hostages. The distance the hostages will have to run to the chopper will be short, thus decreasing the amount of time you

will have to wait on the ground, vulnerable to tank fire. Land between two hostages only if you can do so safely. A word of caution—do not land directly on one of the barracks. If you do, the hostages will run out of the building, find themselves under the helicopter, and be killed.

When all 16 hostages have been accounted for, head back for your base. On your first run, there is no excuse for returning with fewer than 16 captives, the maximum number your helicopter can hold in its bay. Before returning to the post office, some players like to blow open the three remaining barracks to save precious time in later rounds. Others, however, prefer not to let the hostages wander around in the battlefield. To blow open one of the barracks, face it with your helicopter and fire one shot. Don't fire more than one shot at a time, since you may accidentally kill one or more hostages as they emerge from the building.

When you have returned to the base and have landed, make sure you drop off all of the hostages in your helicopter before taking off again. As they exit, each hostage will wave and salute you. After you have completely disembarked, take off and return to the barracks area for the remaining hostages.

JET ATTACK: As a general rule, fly low in the direction you are moving and apply full throttle. When an enemy jet appears, it generally makes its approach for a missile launching by looping back behind you. Occasionally, however, a jet will make a daring head-on attack, as illustrated in "B." A jet will always attack at the altitude your chopper was at the time the jet entered the screen. This means that you can easily avoid the jet's missiles by dropping down quickly to a new altitude. The missiles will pass harmlessly overhead. When the jet passes over you, blow it out of the sky.

MINE ATTACKS: Air mines can be dangerous adversaries only if you are not paying full attention to the game. They move slowly and are easy to avoid and/or destroy. When you encounter an air mine, rise to its level and shoot it down, as illustrated in "C."

HOSTAGE RESCUE—SECOND ATTEMPT AND BEYOND: On your second hostage run, you may have to blow open one of the barracks to set the hostages free, as described earlier. You may also choose to hover over a building, attract a tank, wait for the tank to blow open the barrack, then quickly blast away at the tank before any hostages die. In this manner, you'll both set the hostages free and eliminate the nearest tank at the same time.

Each time you fill the chopper with hostages, return directly to your home base as quickly as possible. Continue with the above procedures until all 64 hostages have been accounted for and your heroism has been assured.

A



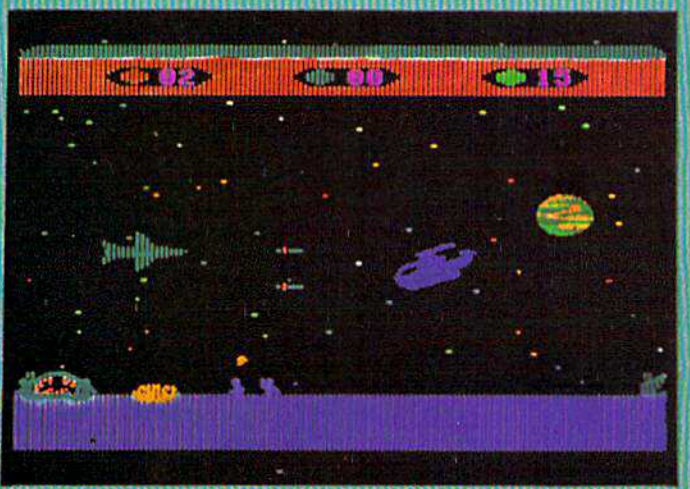
As long as you are facing a tank, your shots will be aimed forward, away from the hostages.

B



You can easily avoid a jet's missiles by dropping down quickly to a new altitude.

C



When you encounter an air mine, rise to its level and shoot it down.

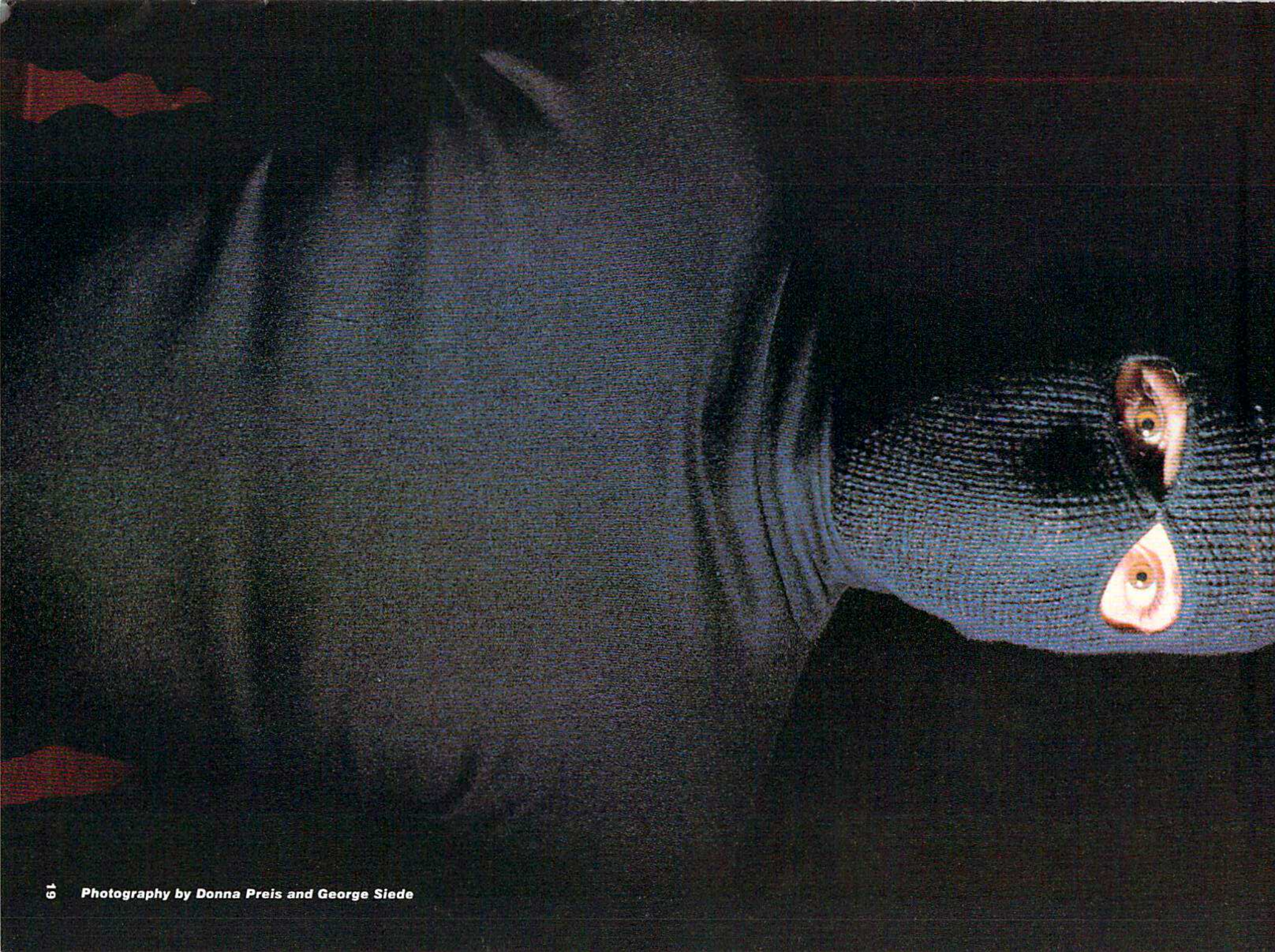


ASTROCADE'S UNDERGROUND

by Danny Goodman



You can't really call the group an "underground," because it operates openly, almost vocally. But few of the millions of Atari, Mattel, Odyssey and Coleco players are aware that an entire cottage industry has grown around the highly rated, but rarely seen, Astrocade Professional Arcade system. To gain appreciation for the third-party support out there, consider that almost 400 individual programs are currently available for the Astrocade—more than for the Atari 2600 and Mattel Intellivision combined.



Photography by Donna Preis and George Siede

In conversations, correspondence and meetings with several members of the group, I found a common thread of intense dedication to keeping the Professional Arcade alive. Despite the up-and-down activities of the system's producers over the years, the Arcade guerrillas are keeping the faith.

The Astrocade system started on the hilly home game road back in 1977 as the Bally Professional Arcade, a programmable home game from the people that brought us blockbuster arcade video games of the 1970's like Gunfight and Checkmate. After meeting with minimal success in the home market (many of the Arcade guerrillas maintain it was a half-hearted attempt anyway), Bally in 1980 sold off the Professional Arcade to a newly formed company called Astrovision. To confuse the matter even more, Astrovision later changed its name–and the name of the system–to Astrocade to prevent mix ups with the popular cartridge maker, Activision.

Since the early part of this year, however, Astrocade has been operating under Chapter 11 of the federal bankruptcy laws as they try to extricate themselves from financial difficulty. Product shipments and planned introduction of new cartridges has been irregular, and no one is quite sure what the fate of the Professional Arcade will be. But this turn of events has not deterred the Astrocade guerrillas in the slightest.

Three features about the Professional Arcade attracted early advocates. Foremost was the system's combined graphics and sound capability, which was very advanced for 1977 and has only recently been surpassed by the likes of the Atari 5200 and Colecovision. Second, a plug-in cartridge – at first an accessory, later included with the console at no extra charge–let the user create computer games and other applications using the console's calculator-like keyboard for program entry and a cassette recorder for program storage. That cartridge was the Bally BASIC programming cartridge (later upgraded under the Astrocade BASIC name). With the cartridge and the well-written Astro BASIC tutorial manual, anyone with the time and inclination could become a game designer within the confines of the system's 1.8K memory and the speed of the BASIC language.

Third, there was a promise from Bally, and carried over by Astrocade, that a keyboard add-under would turn the Professional Arcade into a powerful graphics-oriented computer. The most recent incarnation of the add-under, called the Z-Grass 100, has not yet made it to market, but rumors are circulating that another company will have the Z-Grass ready this year.

But, while users patiently awaited the Z-Grass, they were busy writing programs with the BASIC cartridge. Some designed programs just for fun, but others, like professional musician Mike Peace, eventually turned game design into a thriving business. Mike's company, Wavemakers (Box 94801, Schaumburg, IL 60193), now offers 18 different cassette tapes that load directly into the BASIC cartridge. In addition to featuring some very original games, his catalog also includes a unique guitar course that uses the Arcade's tone generator to tune a guitar. Combined with graphics, the musical program teaches you fingering of chords and chord progressions for folk, blues, etc.

Tom McConnell, who originally bought his Arcade because he liked the invaders-type cartridge, learned that programming in BASIC isn't all that difficult. He now runs Tiny Arcade (Box 1043, Cuyahoga Falls, OH 44223) which produces many titles. Omega Valley, although not as graphically appealing as you see on other home systems, is nonetheless a game with three simultaneous waves of space ships to fight off on three different screens.

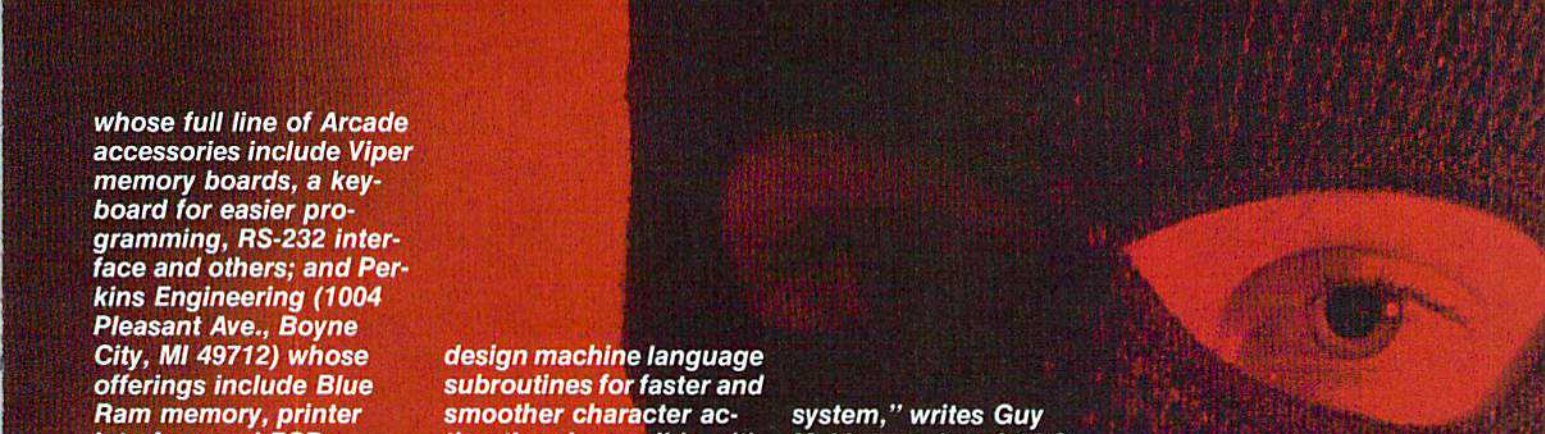
One of the most complex maze games on any home game system is L&M Software's (8599 Framewood Dr., Newburgh, IN 47630) Secret of Pellucitar. In this contest, you must guide a miniscule cursor through obscenely narrow channels without touching any of the walls. The steadier your hand and the faster you are, the better your score and rating at the end.

And, what is a first for the Arcade, Spectre Systems (Box 1741, Dearborn, MI 48121) is producing a third-party plug-in cartridge, called Treasure Cove. Aimed primarily at the younger set (although it is no piece of cake, by any means), the game features a diver which you must guide down to the bottom of the sea to recover treasures one-by-one and return them to the ship above. Hassling you every glub of the way are numerous sea creatures, any one of which will spell an end to your diver's life. And you can't dally, either, because you have limited oxygen with which to retrieve each treasure.

Treasure Cove departs from the Arcade tradition of presenting a menu screen at the beginning. Instead, a colorful title screen appears. There is also a singularly pleasant musical backdrop to the entire cartridge, with a series of three different nautical tunes playing at all times (disengageable, too). The score was produced by Arcade musical expert George Moses, who offers several tapes of his realizations of all types of music for the Arcade, plus a music development system (P.O. Box 686, Brighton, MI 48116).

Software isn't the only part of the Arcade receiving attention from the guerrilla forces. Memory expansions and more sophisticated development tools help bring homebrewed programs very close to the level of the plug-in cartridges available from Astrocade.

Memory suppliers include: R&L Enterprises (2901 Willens Dr., Suite 6, Northlake, IL 60164) with their 64K RAM board; Alternative Engineering Corporation (P.O. box 128, Gardiner, ME 04345)



whose full line of Arcade accessories include Viper memory boards, a keyboard for easier programming, RS-232 interface and others; and Perkins Engineering (1004 Pleasant Ave., Boyne City, MI 49712) whose offerings include Blue Ram memory, printer interface and BSR lighting/appliance controller interface.

Mike Peace at Wavemakers has also developed a number of his games in Blue Ram versions. Additional memory allows him to create the game screens in four colors, instead of the regular BASIC's two-color limits. Particularly impressive are his renderings of Dungeons of Dracula, Flying Ace, and his newest creation, The Gate Escape, which has rotating gates similar to the ones in the arcade game/Colecovision adaptation Lady Bug.

Mike demonstrated some of the graphics development tools he has designed for both Astro and Blue Ram BASIC. Inside of three minutes right before my eyes, he issued a few commands that generated girder-like constructions for a Donkey Kong type of screen background. It made some of the big computerized development systems I've seen at the giant cartridge makers look primitive.

For those with a little bit of Z-80 microprocessor programming experience, or at least the desire to learn, The Bit Fiddlers (P.O. Box 11023, San Diego, CA 92111) makes a Machine Language Manager (MLM) cartridge that helps you design machine language subroutines for faster and smoother character action than is possible with BASIC alone. Andy Guevara of The Bit Fiddlers developed the MLM because he found the standard BASIC language to be too slow for the games he has envisioned. Thus, you will see Andy's imprint on many of the better games developed by other Arcade game makers.

The extent to which the Arcade is supported by third-party suppliers is well-documented in Richard Houser's semi-annual Sourcebook, a listing of every program and related product available. Lest you think this is just a skimpy newsletter, the book is 114 pages, complete with many detailed advertisements for the products listed. If you have an Astrocade, you can't be without the latest edition (RMH Enterprises, 635 Los Alamos Ave., Livermore, CA 94550).

Of course, the followers of the Arcade didn't always have it so easy. In fact, much of the credit for keeping the Arcade alive over the years can be attributed to one gentleman. "Bob Fabris in particular is largely responsible for saving the Astrocade system. His monthly ARCADIAN newsletter kept users informed and interested during the 'long dry spell' between Bally's decision to give up and Astrocade's purchase of the system," writes Guy McLimore, Jr., of ABC Hobbycraft, a major Arcade hardware and software dealer (2155 E. Morgan Ave., Evansville, IN 47711).

Bob Fabris is still the editor of the ARCADIAN. Each issue of the ARCADIAN contains a wealth of information. In addition to the latest gossip about the future of Astrocade, there are loads of BASIC program listings, reviews, and frequent programming tutorials for BASIC and Assembly Language. Further information is available from Bob at 3626 Morrie Drive, San Jose, CA 95127-9990.

As you may have noticed from the addresses of most of the suppliers, there seems to be a pocket of intense interest in the midwest, particularly Michigan and Ohio. There is little wonder, then, that one of the strongest local user's groups is the Michigan Astrobugs User's Group (59400 Nine Mile, South Lyon, MI 48178). The group has been known to draw a hundred Arcade followers to its meetings.

As a group and as individuals, the Arcade guerrillas are a dedicated lot – more so than any player's group following the other home systems. Remember that these Arcade followers are doing more than simply massaging a joystick to the rhythm of a professional game designer's beat; they are taking an active role, doing the actual designing, production and marketing of the products themselves.

In all my years of writing about video games and computers, never have I run across a group so willing to help with information and examples of their work. It certainly can't be easy for them to sustain interest and enthusiasm for a system that never seems to catch on with the masses. Yet the frustration, if there is any, is not evident. On the contrary, the disappointment in Bally's and Astrocade's ability to get "The Word" across to the home game buying public almost seems to link these survivors more closely together. They continue to explore the capabilities of a wonderful system and stretch their knowledge about its inner workings to new limits. They are forever sharing tidbits they unearth about the system.

Brett Bilbrey, who started publishing his BASIC games in the ARCADIAN a few years ago and has graduated to the design of the Treasure Cove cartridge, speaks for every Astrocade guerrilla when he resolutely states, "We're not going to give up on the Astrocade system."

Photography by Donna Preis and George Siede

NEO SINISTAR

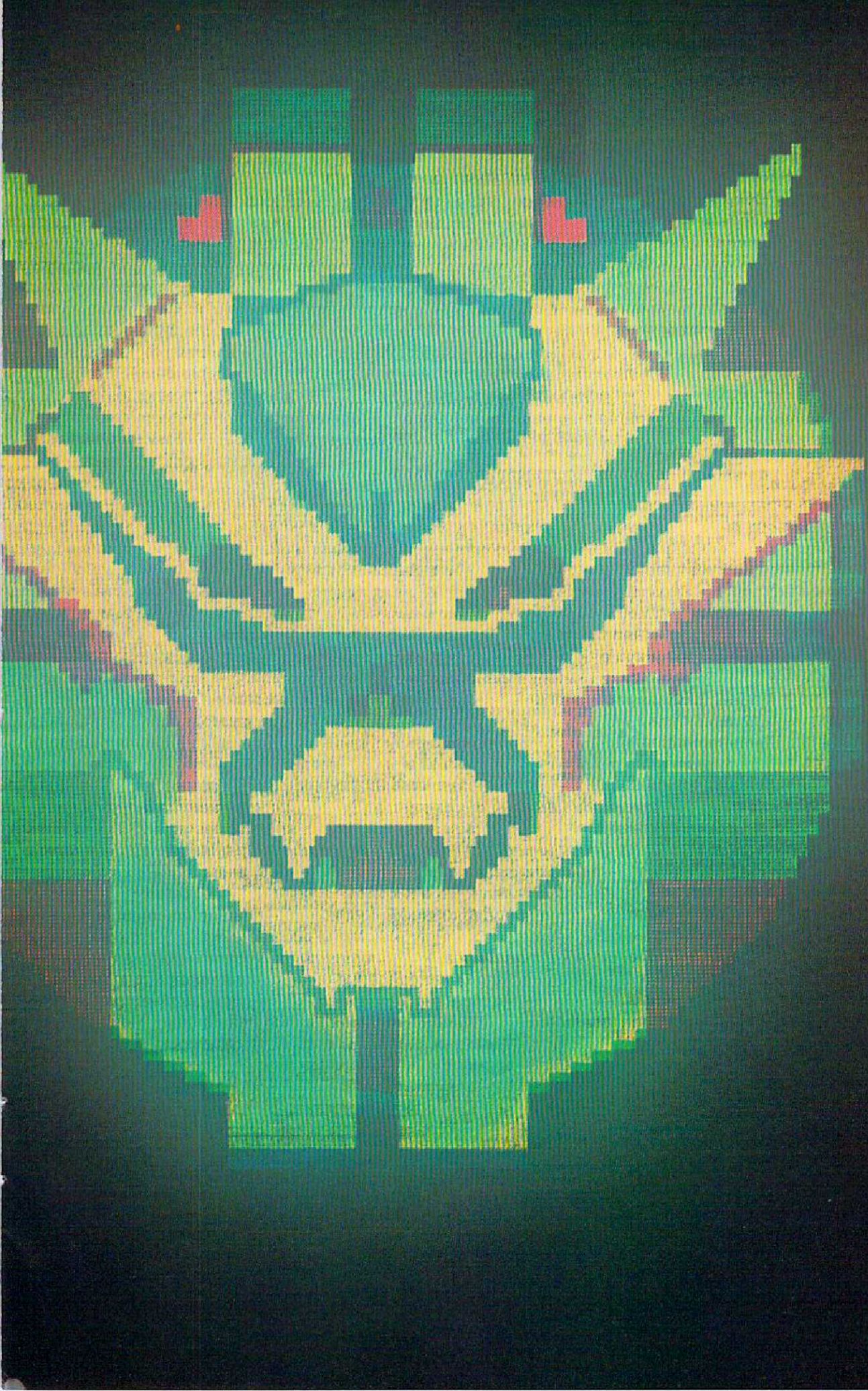
by Doug Mahugh

Last fall, Williams Electronics presented two games at the 1982 AMOA Expo in Chicago: Joust and Sinistar. Joust (covered in the January 1983 issue of JoyStik) was already in production and had proven itself one of the best games of 1982, with unprecedented graphics, game play, and animation. Sinistar, on the other hand, was a simple and lifeless space game that most AMOA attendees overlooked. In rating the games from that show (in the April 1983 JoyStik), Scott Phillips called Sinistar a "good idea that was poorly executed."

Fortunately, that version of Sinistar never made it into the arcades. Williams designers continued to modify the game until its release early this year (in fact, most of the design work on Sinistar occurred after the AMOA), and the final production version is a far better game than we saw at AMOA Expo '82.

The spectacular effects — flashy explosions and roaring speech sounds — are usually the first things to grab a player's attention. But Sinistar has more to it than impressive sights and sounds. As in previous Williams space games, the player has enough firepower to get out of almost any predicament, so that even the most overwhelming situation doesn't seem unfair. And the Sinistar opponents have been given a "collective logic" that makes them intelligently divide up their responsibilities.

In most video games, each type of opponent has a predictable characteristic behavior. In Defender, for example, Landers will always look for humanoids to pick up, and Mutants will always hunt your ship. But in Sinistar, the Workers and Warriors have many different tasks to perform: mining crystals, building the Sinistar, guarding the Sinistar, attacking your ship, etc. These tasks are divided up among the available Workers and Warriors according to a complex allocation scheme whereby some opponents are always working on each task, but certain tasks (like attacking your ship) have a higher priority. As a result of this, you can never predict the behavior of an individual Worker or Warrior, because he may be reassigned to a new "job" at any time. You can only be sure that, like neurons, ants, and (supposedly) humans, their collective behavior will be consistent with their collective goals.



Your goal in Sinistar is simple: destroy the Sinistar before it destroys you. The Sinistar is a large silver and red face with devil-like horns that will chase down your ship and—literally—eat it. It is constructed one piece at a time by small red bugs called Workers. Workers assemble the Sinistar one piece at a time from crystals that they find floating in space.

Crystals don't start out floating in space; originally, they are buried deep within the Planetoids drifting through space around you. They can be broken loose (or mined) by firing into the Planetoids. Workers can't mine crystals themselves, so they wait for you to do it and then try to steal the crystals before you can get to them. You'll want to prevent the Workers from stealing crystals for two reasons: 1) to prevent them from building the Sinistar; and (2) because the crystals you collect are converted to Sinibombs, which can be used to destroy the Sinistar later.

The only dangers to your ship in Sinistar are the Warriors (described below) and the Sinistar itself. The Warriors will try to shoot you while you're mining crystals, but they can be quickly destroyed with the fire button. The Sinistar, on the other hand, can only be destroyed by a direct hit from a Sinibomb on every piece of it. This is the main goal of the game, but before discussing it let's take a look at the controls and the screen.

Sinistar's controls are very simple and very sensitive. A 49-direction (7 x 7) joystick controls your velocity and acceleration, and two buttons are used to control firing and Sinibombs. (The buttons are provided on both sides of the joystick, for right- and left-handed players.) The fire button is used to destroy the Sinistar. Continuous firing is available if you hold the button down, but you can fire faster manually if you're willing to work at it. Because of its sensitivity, small movements of the joystick will give you the best control of your ship. If you move too quickly or abruptly, you'll just be fighting against your own momentum. This is particularly important when mining the Planetoids, because the Workers will steal your crystals if you can't pick them up right away.

Sinistar is a scrolling background game. This means that the background moves (scrolls) past your ship as you fly, and the ship itself stays in the center of the screen. The main screen shows what is happening nearby, and a radar scanner at the top of the screen shows what is happening in a much larger area of the universe.











Planetoids, Workers, Warriors, and the Sinistar all show up on the radar, but most players only use it for locating the Sinistar. Even the radar scanner doesn't show the entire universe — the entire universe is almost 10 minutes' flying time across, and it wraps around at the edges like Asteroids.

There are many things to keep track of in Sinistar. To help you with this, the message area (just below your score in the upper left corner) flashes warnings and news of important developments. A beeping sound will tell you when a new message appears. And just above your score, two rows of small circles keep track of how many Sinibombs (crystals) you have collected.



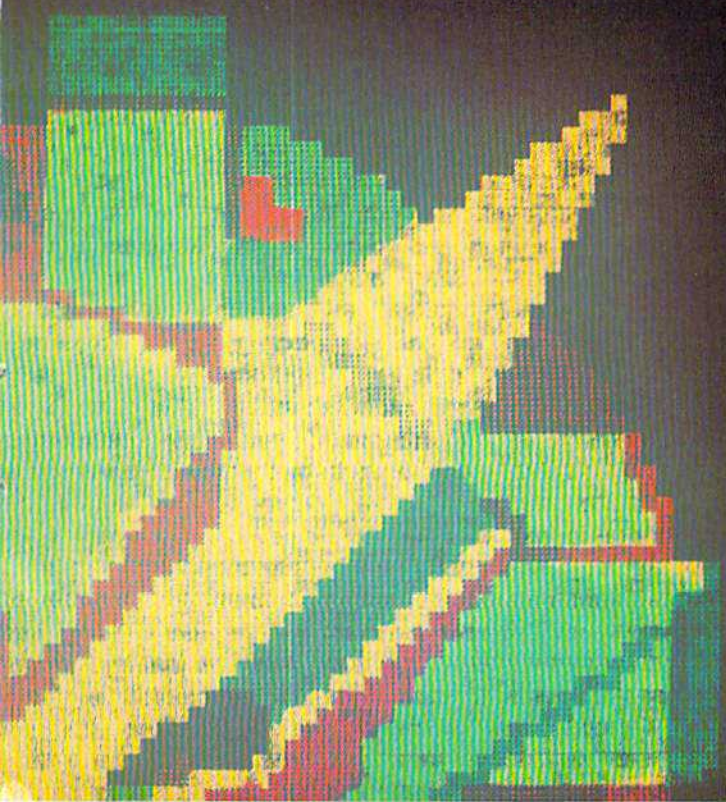
To mine crystals, you must shoot the Planetoids. Each shot imparts a certain amount of energy to the Planetoid, making it shake vigorously. Once a Planetoid has absorbed enough energy from your shots, it will begin emitting crystals and then continue emitting crystals as long as you keep the total energy of the Planetoid above a certain threshold. There is no limit to the number of crystals that can be mined from a single Planetoid, but the Planetoid can be accidentally destroyed if you fire into it too rapidly; it will simply absorb too much energy and shake itself apart. Five points are awarded for destroying a Planetoid, but it's usually better to save them and mine the crystals.

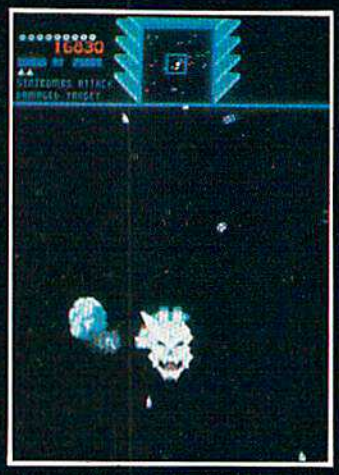


As mentioned above, the Workers will try to steal the crystals as you mine them. To prevent this, you can either shoot the Workers for 150 points apiece or simply push them out of the way (your ship is not affected by running into them). Even if a Worker manages to steal a crystal, you can still recover it; just shoot the Worker when he is flying away with the crystal, and the crystal will be left behind after he is destroyed. It will still be moving with the Worker's original velocity, however, so it may not be worth the trouble of chasing it down. If you do recover it, you'll receive 200 points, but following a single crystal all around the universe — when you could be mining many more — is definitely a rookie maneuver.

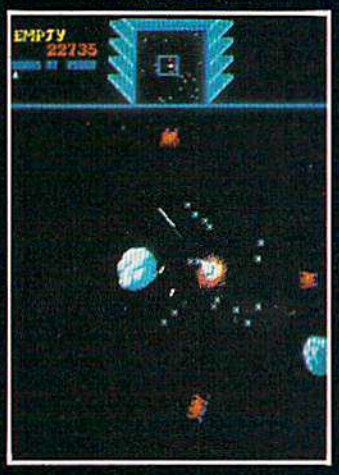
Warriors are blue and octagonal, with a white gun turret in the center. Although they harmlessly bounce off your ship in a collision (like Workers), they can shoot at you and have fairly good aim. They will fire more and more as the game progresses, so shoot them as soon as possible when they come on the screen — they don't start firing for up to one second, and you can often eliminate them













before they get a shot off. Warriors are worth 500 points.

The Workers' main objective is to build the Sinistar, and the Warriors' main objective is to destroy your ship. But, as explained on page 22, an individual Worker or Warrior can be assigned one of many tasks to help achieve these goals. Workers will either (1) hang around your ship and wait for you to mine crystals; (2) hang around Warriors that are mining crystals (yes, Warriors can shoot Planetoids and mine crystals); or (3) pursue free crystals. Once a Worker has gathered a crystal, his highest priority then becomes transporting the crystal back to the Sinistar. Warriors also have three main jobs to do: (1) mine crystals; (2) guard the Sinistar; and (3) attack the player (top priority).

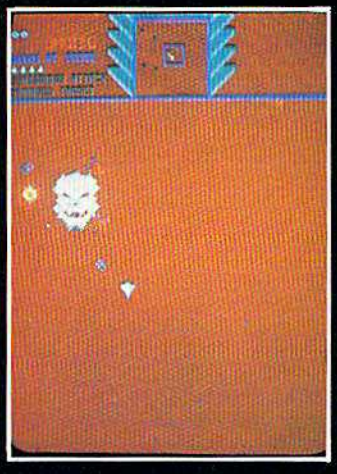
The Sinistar is built one piece at a time by the Workers. Each time a piece is added to it, you will hear a clanking sound. After 20 pieces have been assembled, the Sinistar is complete and roars "Beware — I live." That's your final warning to stock up on Sinibombs — the next time the Sinistar speaks, he will attack. He can fly much faster than your ship, so it won't do any good to turn and run.

Once you have collected enough crystals to destroy the Sinistar — i.e., you have more Sinibombs than the Sinistar has pieces — move towards it and get ready to release some of your bombs. When you hit the Sinibomb button, a bomb will drop from your ship and head straight for the Sinistar. (When you don't know where he is, following a bomb is a good way to find him.) If the Sinistar is off the scanner or the bomb hits a Planetoid, Worker, or Warrior, a "Sinibomb Intercepted" message will appear in the message area, letting you know that the Sinibomb never reached its destination. Workers and Warriors try to throw themselves into the path of a Sinibomb, and Warriors even shoot at the Sinibombs, so long shots are often intercepted.

A hit on the Sinistar destroys one section and is worth 500 points. There are 13 sections in a whole Sinistar (12 pieces and the face), so it takes at least 13 Sinibombs to destroy it. When the Sinistar is being built,







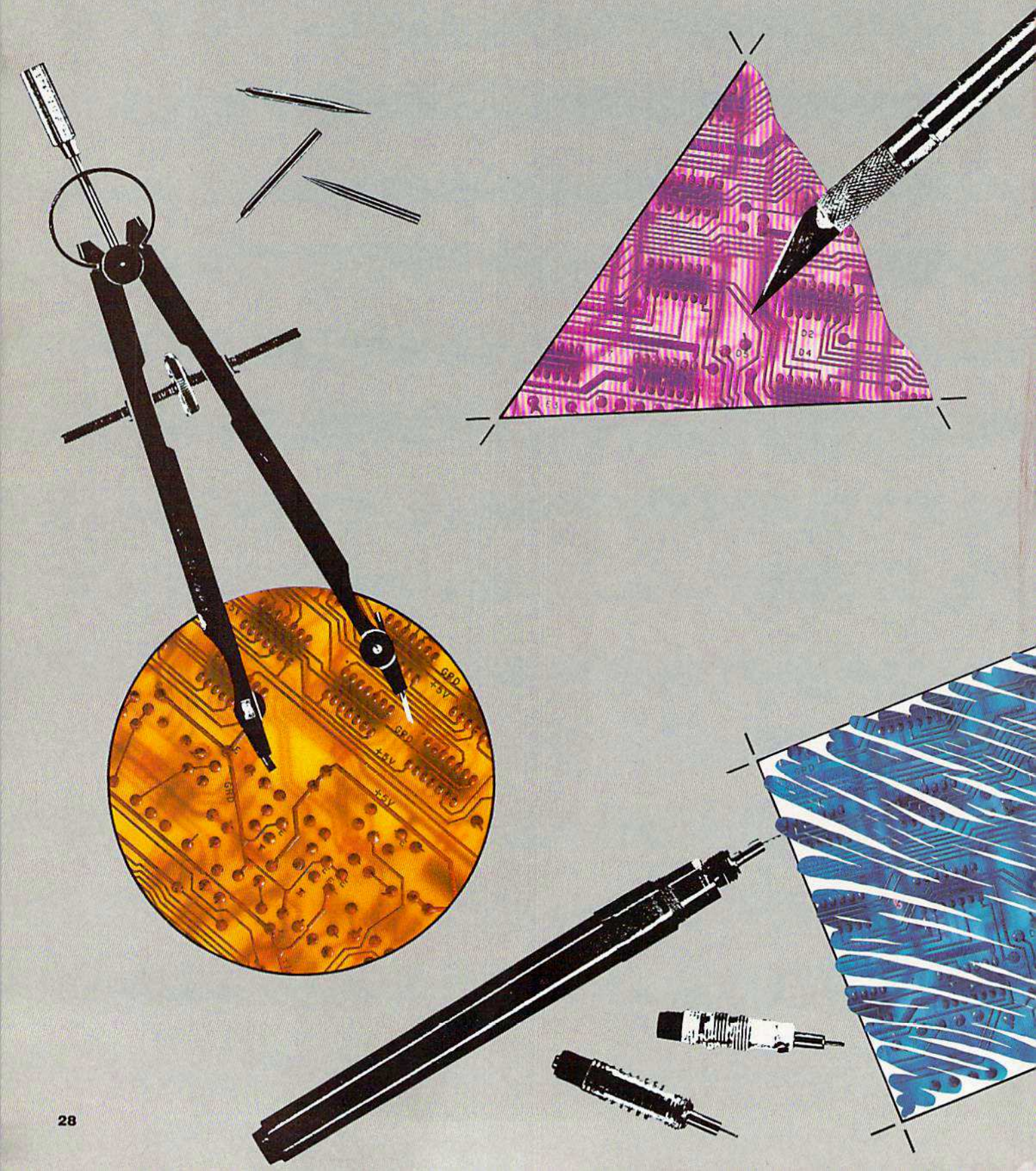


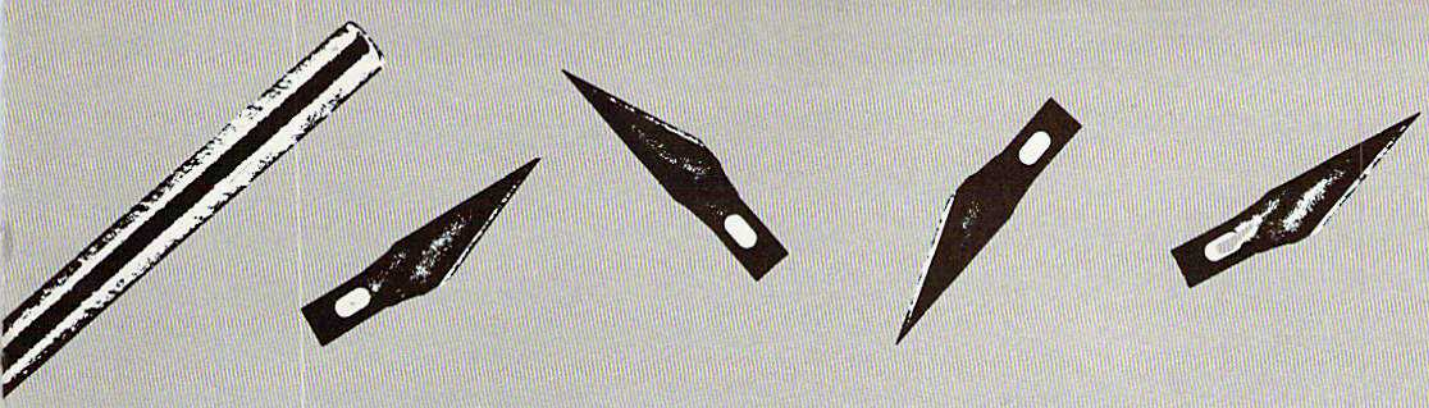
however, it is assembled from 20 pieces; after it is complete, the seven pieces that make up the face combine into one section. The face section will then be the last one to be destroyed, and is worth 15,000 points. If you run out of bombs before finishing off the Sinistar, the Workers will rebuild it while you're collecting crystals. (The one exception to this is the first wave, where the Sinistar is only built once.)

After the Sinistar is destroyed your ship is warped to another Zone, where a new Sinistar will be built. (When you first appear in a new Zone, the Sinistar will be straight ahead, about two scanner widths away.) After the first Zone, the Zones repeat in a group of four: Worker Zone, Warrior Zone, Planetoid Zone, and Void Zone. The Worker, Warrior, and Planetoid Zones have extra Workers, Warriors, and Planetoids, respectively. The Void Zone has very few Planetoids, and is the hardest of the Zones. With each repeat of the group of four, the characteristic traits of each Zone are exaggerated. For example, the Warrior Zone has even more Warriors the second time around, and the Void Zone has even fewer Planetoids.

There are many different ways to play Sinistar, so we asked Noah Falstein, Sinistar design team leader, to explain his approach. According to Noah, "Mining crystals effectively is the key to good playing. Use subtle movement of the joystick; its 49-direction control is most effective that way. Also, you should be very careful of the Warriors' shots—that's what kills most players, and not the Sinistar itself. Here's how we (the Williams designers) play: Start out by mining crystals like mad. Then, use a bomb to find the Sinistar (drop a bomb and watch which direction it goes). Go to him and blast away a few pieces for extra points, and then go fill up on bombs before finishing off the Sinistar with a volley of bombs. That way, you can enter the next Zone with plenty of bombs. This is a good trick for getting through the first Worker and Warrior zones. Then, on the Planetoid Zone, you can take a breather because there are so many Planetoids. Bomb the Sinistar for extra points, and save bombs for the Void Zone, which is really tough."

CHOOSING A PERSONAL COMPUTER: A SPECIAL REPORT ON GRAPHICS





Planning to buy a computer? You aren't alone. This year, millions of home computers will be bought by American consumers. But which is best?

One of the primary considerations is this: what do you want in a home computer? If your purchase is primarily for game play, capabilities of each system to support game software is of major importance. If you're interest is in designing games, graphic capabilities are important (a good-looking game is usually better than an equally well-playing game with mediocre graphics). If you just want to program or word process, display characteristics may make the difference between a computer which works with you and one which works against you.

This article gives you the background necessary to evaluate the differences in graphic capabilities and a comparison of existing software and capabilities of the three major systems: Commodore Vic 20, Atari 400/800, and TI-99/4A.

What are graphics? Computer graphics are, basically, what you see on your TV screen or video monitor. The graphics are the artwork: scrolling backgrounds in Zaxxon, as well as the action on the screen; your jet fighter, the missiles which it fires, and are fired at it. They are the field of mushrooms in Centipede, as well as the moving beasties.

In order to understand the comparisons made by manufacturers, we have to define what it is they are saying, and which features are most important. The ads read "hi-res," or "medium-res," or even "arcade quality graphics," but what do they mean?

Screen resolution is a measure of how finely a picture can be drawn on the screen. If you think of the television screen as a piece of graph paper (which is a tool designers often use to develop the game graphics), it is easy to see that you can draw a much finer picture on a sheet 100 × 100 than you can on a sheet that is, say, 10 × 10. With more squares, referred to as Pixels (picture elements), on the same sized screen, much more detailed and life-like pictures can be drawn.

Still, we haven't answered what "hi-res" or "low-res" are, just defined resolution. We haven't defined the term because the industry hasn't agreed on a definition. As a rule, of course, the higher the numbers are, the higher the resolution the computer is capable of creating. The three computers described here all have acceptable resolution, with the Atari 400/800 at the top of the list.

High-res isn't everything, however. To get high resolution ties up a lot of memory, since the computer has to store information for each pixel (to fully use the Atari screen would take 61,440 bytes, which exceeds the capacity of the Atari 800). If the TV screen was looked at as a needlepoint canvas, and you only had, say, ten yards of yarn, you would be limited to doing your picture in only selected areas of the canvas. Therefore, on any home computer system, as on the canvas, only certain portions of the screen are in use at any time.

It is here that some of the major differences in graphics begin to be important. Whether you divide the

screen into 192 or 256 little boxes, it would probably be difficult to visually detect a very significant difference between the two. Each pixel would be slightly smaller with increasingly higher resolution, but by the same token, would use up more memory to draw the more detailed picture. So there must be a trade-off between the degree of resolution and the amount of the screen which is filled with the graphic.

Arcade quality graphics? With arcade units now using memory in the neighborhood of 256K, and talk of expanding to megabytes or laser disks, the gap between computer capabilities and arcade graphics should begin widening considerably. Although not arcade quality, home computer graphics are more than adequate for game playing.

The next important term is sprite. When we talk about sprites, we don't mean the soft drink made by the Coca Cola company. Sprite is a term reportedly developed by Atari in reference to their video and arcade games. A sprite is the object moved on the screen, over the high-, medium-, or low-res background. A sprite, then, is the missile moving on screen; it is the spaceship coming towards you, and it is the exchange of pyrotechnics between your missile and the spaceship. If something moves on the screen (and doesn't just scroll across like a background), it is probably a sprite.

The greater the sprite-handling capabilities of a system, the more intricate the game that can be developed. For example, the Atari VCS (not the computer) is capable of handling only three sprites. In the Pac-Man game (and even worse, the Wizard of Wor by CBS), the number of moving objects exceeded the system's limits and, as a programming necessity had to be turned on and off to fool the system into displaying them. This technique was responsible for the notorious blinking ghosts and Worriors. In the Atari 400/800 version, with greatly improved sprite-handling capacities, the ghosts, fruit and Pac-Man himself were rock-steady on screen. The Atari 5200 version of Centipede is probably one of the best examples of sprite-handling of any home video system or computer game so far.

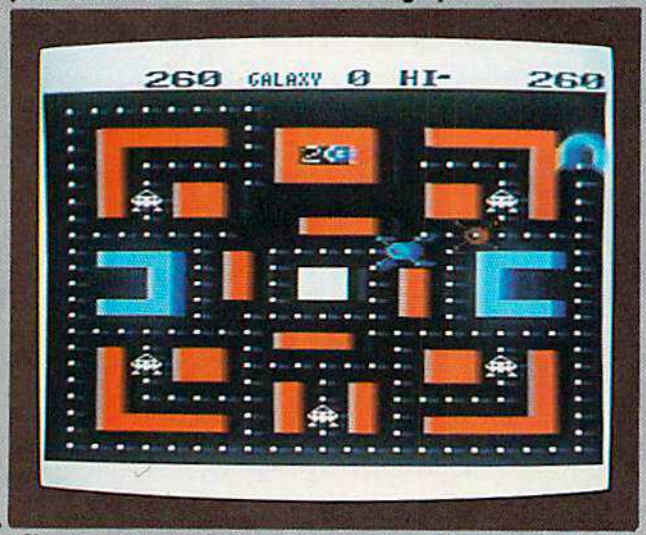
A related term is postage stamp. A postage stamp is the unit onto which the sprites are drawn. The stamp is moved around the screen during game play. Characteristics for defining the stamp make a difference in the appearance and game play of the games. An 8 × 8 stamp will have a more clearly defined sprite than a 4 × 4, and neither will be as good as a 16 × 16 stamp. A stamp with three colors will look better than one with two colors. The more pixels available to draw a sprite, the greater the detail of the sprite (it will appear sharper and less boxy).

An additional factor which affects the blinking on the screen is the ability of each computer's graphics processor, the integrated circuit which handles the video output, to handle the sprites or stamps on the same line. The Colecovision and TI-99/4A use practically identical display processor chips. This chip only allows a maximum of four sprites on a horizontal line, which explains the blinking barrels on Donkey Kong. With clever programming, this number

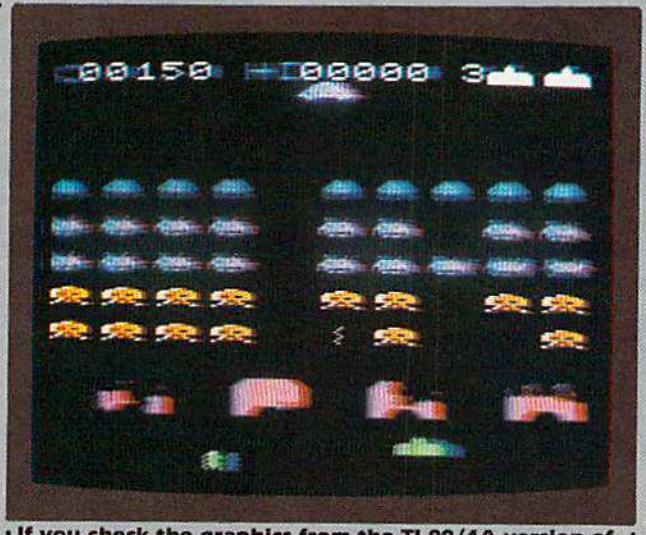
continued page 32



Imagic produces a Demon Attack cartridge for both the Vic-20 and the Atari 400/800 computer systems. Comparing this screen to the one on page 33 shows the difference in resolution between the graphics.



Characters on a Vic-20 game screen are designed in 8 x 8 blocks. Resolution is reduced, as in this screen from Cosmic Cruncher, because each pixel occupies a larger portion of the screen.



If you check the graphics from the TI-99/4A version of Space Invaders on page 34, you can see that each pixel in the Vic-20 occupies a larger portion of the screen.

COMMODORE VIC 20

The Vic-20 is the weakest of the three computers compared here from many standpoints. First, the resolution of 176 × 184 is the poorest of the three. In most games, the difference in resolution is obvious, even to the untrained eye.

Characters are designed in 8 × 8 blocks, with a limit of 23 × 22 blocks on the screen. Although rather high resolution graphics are possible, through the laborious process of pixel by pixel coloring, each pixel occupies a larger portion of the screen; resulting in reduced resolution.

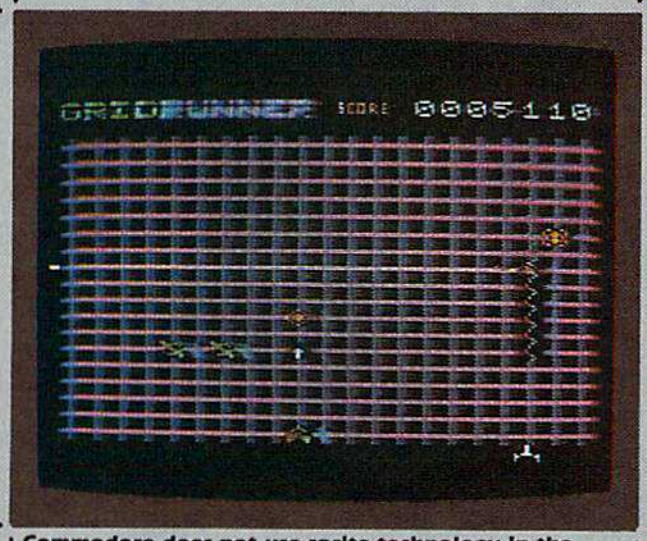
Commodore doesn't mention sprites in any of its literature. According to a Commodore spokesperson, the Vic-20 doesn't use sprite technology. Instead, the game designer must manipulate the generated box in a vertical or horizontal direction—coding diagonal movement is very difficult and often limiting to the game designer. As with the TI-99/4A, the Vic-20 is only capable of 16 colors—an obvious limitation.

As a typewriter, the Vic-20 is the least handy of all. It only displays 22 lines of 23 characters each, making many programming lines wrap around the screen, and making it virtually impossible to guess what a printed page will look like.

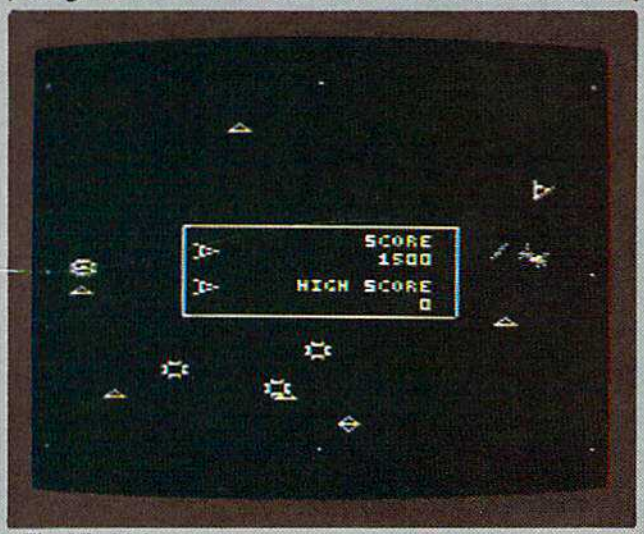
The Vic-20 does have a nice feature which assists in developing graphics, and which is missing from either the Atari or the Texas Instruments computer. At the bottom of each full-sized key are two graphics characters. If you want to draw a picture, for example, you merely have to assemble the picture from the characters on the keys. No pixel by pixel manipulations are necessary. Of course, the picture must be made from the available character set, and each character block can only be displayed in one color, but being able to do anything graphic with as much simplicity as the Vic offers is quite an accomplishment.

Since the unexpanded Vic has only 5K of memory, and only about 3.5K available for programming, it won't hold much graphic information. Game play on the Vic-20 seems to be significantly slower than that on the Atari or the TI-99/4A, which have faster processors and more memory. Of the three, the 99/4A is probably the fastest as a result of its 16 bit processor.

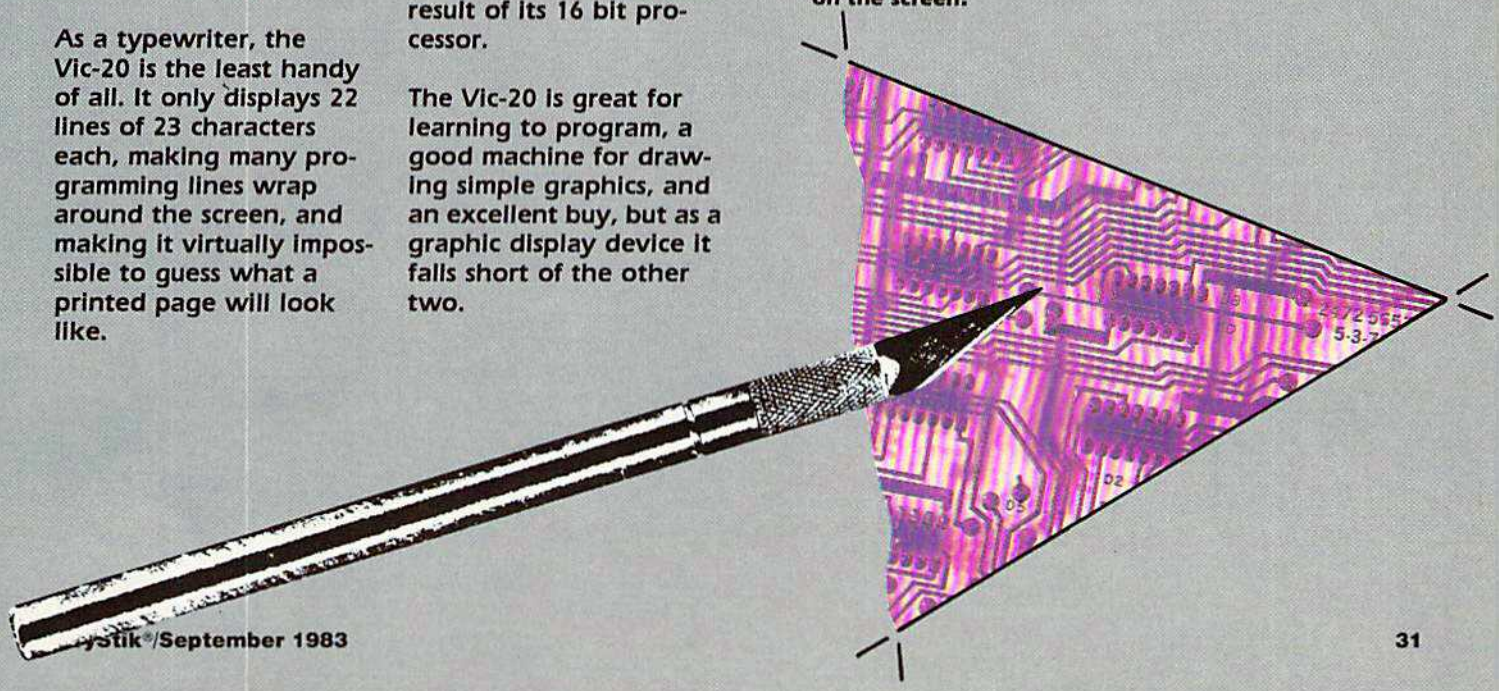
The Vic-20 is great for learning to program, a good machine for drawing simple graphics, and an excellent buy, but as a graphic display device it falls short of the other two.



Commodore does not use sprite technology in the Vic-20. For moving objects, such as the droids and combat ships in Gridrunner, the designer must manipulate the generated box in a vertical or horizontal direction.



The Vic-20 home computer is capable of only 16 colors, limiting the number of elements in a game. In Omega Race, each of the 16 colors is available for background on the screen.



can be doubled, but it does take some fancy programming skills.

Which brings us to a major, undefinable, difference between the systems: programming. Given the fact that all the systems have some inherent limitations, the goal of any game or graphic developer is to get the most possible out of each system. It is a major challenge (and an extremely rewarding one) to get the system to jump through hoops.

In its first years the Atari VCS was an example of adequate use of low-res graphics and game play. Limitations were quickly reached and seemed to be accepted as insurmountable. Then, along came companies like Activision and Imagic, and ways of overcoming some of the simple limitations were developed.

In the Astrocade, a much more powerful game system, but still not hi-res, some exceptional game software has been developed. Galactic Invasion is a better game than the Atari 5200 version of Galaxian. (It should be noted that the 5200 is much like an Atari 400 without the keyboard). The Incredible Wizard, still not hi-res, on the Astrocade is a better game than the arcade version, the same goes with Space Fortress and the monochrome arcade game, Space Zap.

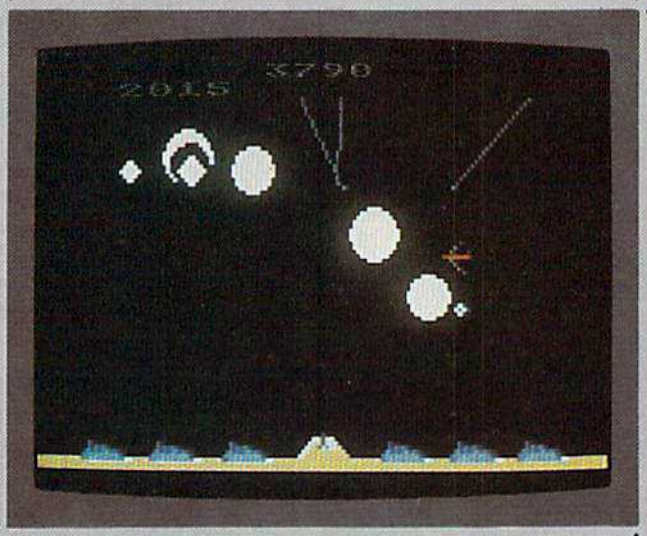
The reason for the superiority of these Astrocade games over either an arcade game or a newer generation, high resolution computer is simple: better programming. With good programming, each system reviewed here is capable of very appealing games. As programming skills increase, however, it is likely that a system with more capabilities can provide better game play.

A couple of other areas, color and sound, should be explored. The more colors which a computer is capable of generating, the more interesting the graphics may become. Atari's Centipede, which should be available for the 400/800 by the time you read this, involves numerous pastel shades from screen to screen, making a very interesting game. If this multi-hued game were suddenly to become either red or green, or worse, black and white, the game play would remain the same, but the game would be very dull. Although 16 colors may be adequate for a computer game, having more colors available make a more interesting challenge, and also assist in designing games where color is a cue to proper game play. (When a character changes from red to blue, it means something different from a character who is still red).

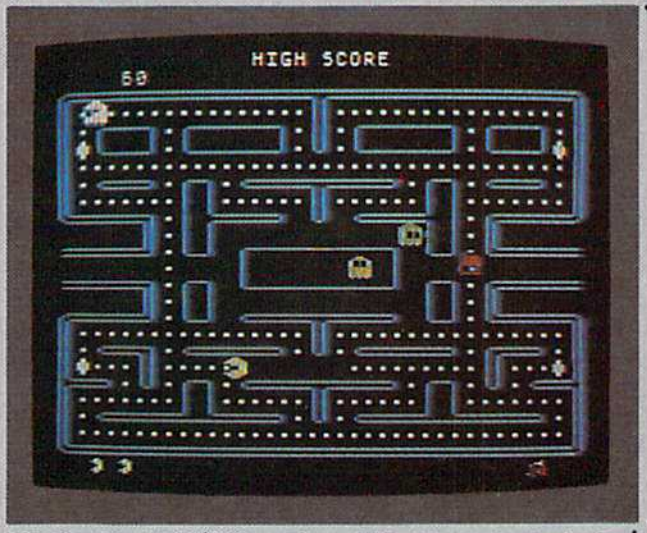
Sounds are also an integral part of most games. They let you know when your shot is fired, when it's a hit or a miss. If the computer had only a single voice, it would be capable of making only a single tone. You'd get one buzz to represent your shot, and another buzz for hit or miss, but never both at once. Add more voices, and you can have more tones which communicate clearly what happened on screen, and may even do both at once with more than one sound playing simultaneously. (If you still think sound is unimportant, try playing some of the newer games with the volume turned all the way down).

Now that you've got the basics on what goes into

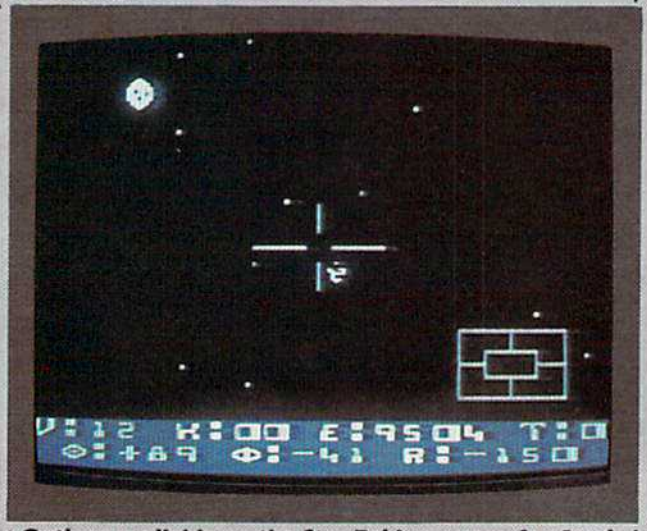
continued page 34



A screen from Missile Command for the Atari 400/800 is a good example of pixel technology. The "squared off" circles are the result of a designer's method of dividing the television screen much like a piece of graph paper.



In the Atari 400/800 version of Pac-Man, ghosts, fruits and Pac-Man himself are rock-steady on the screen. This is because of advanced sprite handling capabilities, an advantage over the VCS version of the game.



Options available on the Star Raiders screen for Atari demonstrate the "sandwich" process used by game designers.

ATARI 400/800

The Atari 400 and 800 are, under the skin, essentially the same computer. The Atari 800 has a full-stroke typewriter keyboard, expanded memory, and an extra cartridge port, but the same video and sound processing devices are provided in both machines. Other than disk-loading games, which require more memory, both to run the disk drive and to handle the game instructions, game play and appearance is identical in both systems. Cartridges designed for this system are completely interchangeable from the 400 to the 800 and are usually designated "compatible with Atari 400/800 computers."

What will it do? The Atari 400/800 wins the resolution battle hands down, with screen dimensions of 320 × 192. This is quite a bit greater than the Vic graphics, and only slightly better than the TI-99/4A in the vertical direction. What it means on your monitor or TV screen may not be very significant.

The 400/800 also wins the comparison in terms of colors available. With a palette of 128 colors, it is capable of providing much more interesting colors and game play. (Technically, there aren't really 128 different colors; rather, the intensity of each color is subject to a great deal of control, producing a markedly superior color image.)

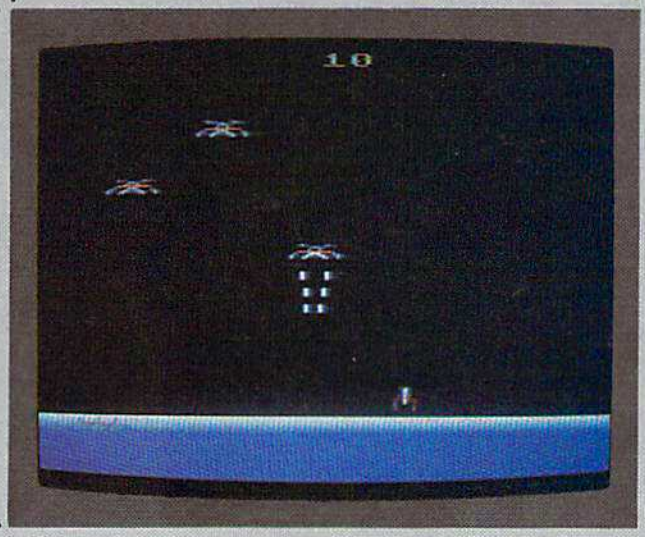
The sprite handling capabilities were more than appropriate when the 400/800 was introduced. With the ability to handle four sprites and four players, it was more than adequate for most games which were available, or even conceivable at the time of its introduction.

As a typewriter/text editor, the 400/800 has a display of 24 columns of 40 characters each. This is adequate for entry of programs, but, since it is half the normal typewriter keyboard, can pose problems for hard-core typing/word processing.

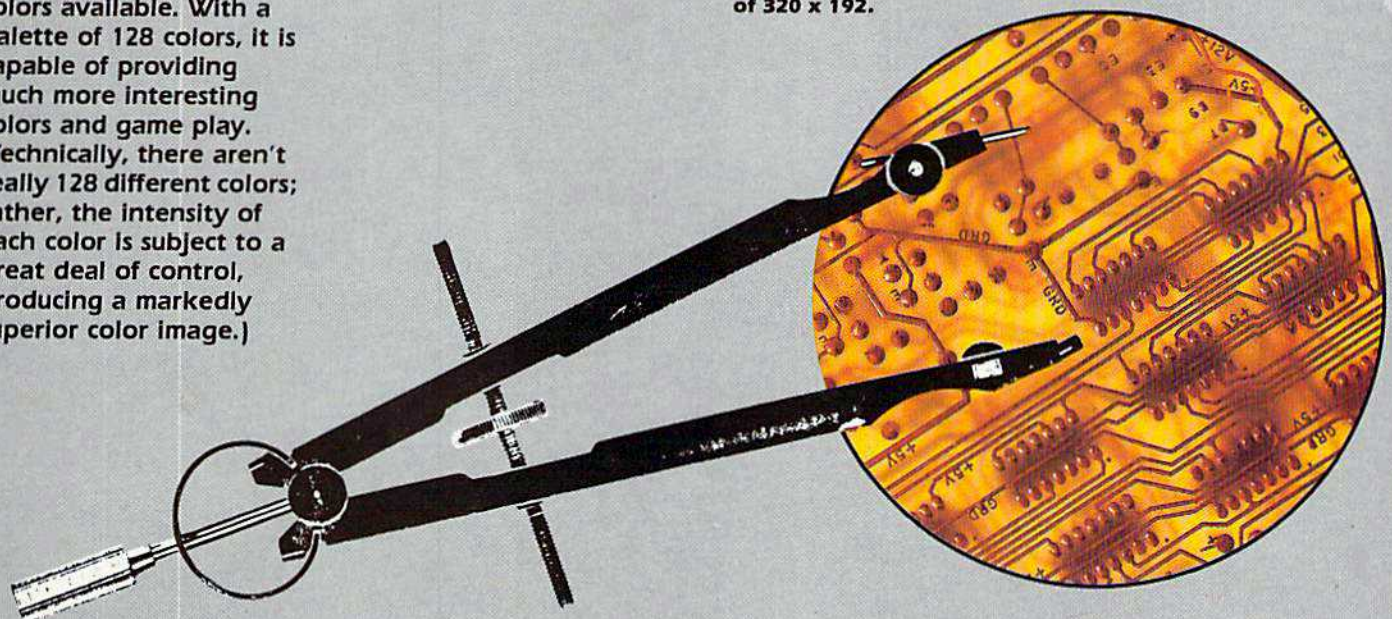
With good programming, and especially in light of the slightly higher resolution and improved range of colors, the Atari 400/800 is a definite continued competitor as the top graphic display system, particularly as it affects game play.



Color is an integral part of the game Centipede, which uses numerous pastel shades from screen to screen. Not only are the graphics more interesting because of the range, but the colors are important to play.



Although both are produced by Imagic, Demon Attack for Atari displays better resolution than the cart for Vic-20. This is due, in part, to greater screen dimensions of 320 x 192.



making a game, how are they put together? Designers put together something like a sandwich. First, the background is drawn. Although it probably scrolls during game play, it usually remains relatively unchanged. Next a layer of graphic characters is placed over the background. Still other layers are added, with multiple transparent areas through which the layer below is visible. Finally, after this sandwich (similar to the process used in animating cartoons) is made, the computer is told how each one behaves, and who will be controlling which layer of the sandwich, i.e. the player(s) or the computer. A sub-circuit can tell where intersections between layers occur (Pac-Man layer coincides with Ghost-Monster layer) and what should happen then (Pac-Man dissolves).

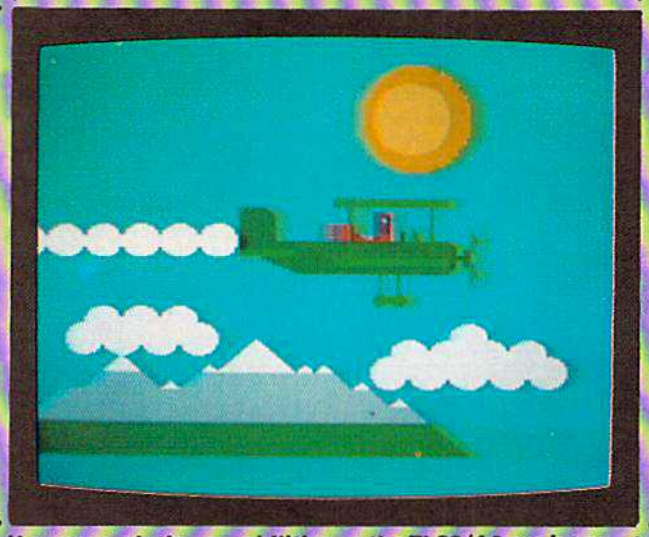
Finally, an important consideration is how the software is loaded into the machine. There are a few basic methods: disk, cassette tape, or ROM (Read Only Memory). The ROM cart plugs into a cartridge port in the computer. It has direct access and control over certain areas of the main and display processors. ROM cart games are in machine language, and are capable of running very high-speed programs, and providing excellent graphics, but are usually limited (due to cost of the internal circuitry of the cart) in memory available.

Disk-loading games are also developed in machine language. They are not as limited in terms of memory (with many games going to 64K), and allow interaction between the player and the program. With a disk-loaded program, you can take advantage of "high-score" memories, you have more options for game play, and in some strategy games, you can be continually modifying the program as you play. In an adventure game, for example, the game will be different each time you load it, because you've redefined the characters and situations during your last play session. A disk-loaded game could conceivably take months to master.

There is often a drop in quality from either the disk-load or ROM carts to the cassette. This is primarily due to a limitation in the cassette system. The cassette recorder is not capable of loading game instructions into the computer as efficiently as a disk or ROM cart. Cassette tape signals record and play more slowly than the other methods; there is more possibility of errors in recording or playing a program, and for these reasons programs on cassette usually require much less memory than the other systems.

A further limitation is that many cassette-loading games are programmed in the computer's version of Basic. Basic is a programming language which, in effect, converts Basic instructions back into machine code. Making this conversion during game play takes time, which slows down game play and response on screen.

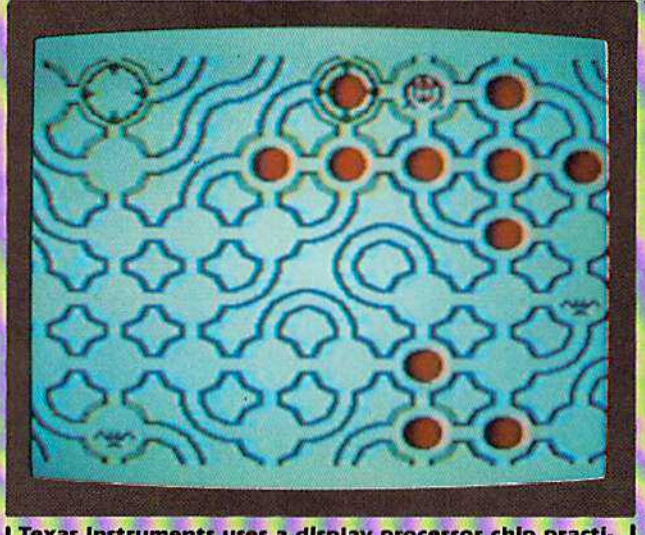
Some programs are designed to load into the computer bypassing the Basic feature and loading machine code directly into the computer. This allows you to play a better game, but probably still not as good a game as a ROM cart or disk-load system will provide.



Lower resolution capabilities on the TI-99/4A are inconsequential due to differences in programming. The opening screen from Reading Flight, an educational cart, is indicative of the systems' graphics range.



The TI-99/4A is capable of simultaneously manipulating 32 sprites. This adds more detail to Space Invaders graphics than the Vic-20 version can offer.



Texas Instruments uses a display processor chip practically identical to that of the Colecovision. This chip allows a maximum of four sprites on a horizontal line.

TEXAS INSTRUMENTS-99/4A

The TI-99/4A employs a high power graphic chip which provides virtually state-of-the-art graphics, with only a few limitations. This chip is practically identical to the one used in the Colecovision system. If you want to get an idea of what it is capable of generating, take a look at some of Coleco's games (which unfortunately are not compatible with the TI-99/4A).

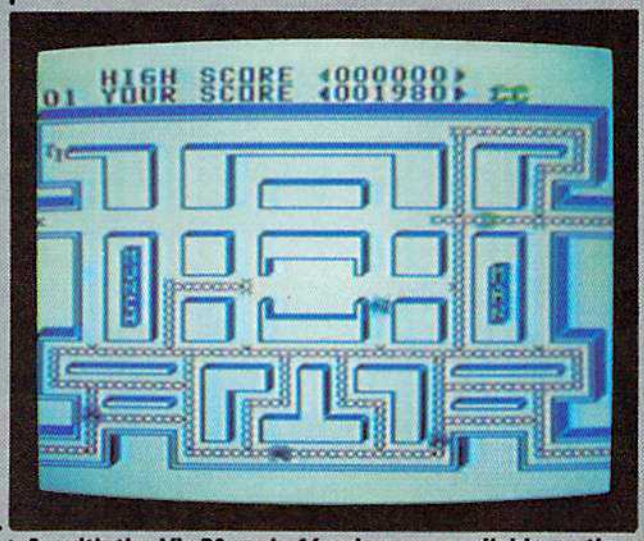
Technically, the resolution is slightly lower than on the Atari 400/800 computer (256 × 192 vs 320 × 192), but with differences in programming, and few programs to completely fill the screen, the difference becomes inconsequential. The computer is also capable of providing multiple display modes, with the resolution of the sprites selectable from very high (16 × 16) to low (4 × 4), with the normal sprite dimensions of 8 × 8.

The capabilities of the TI-99/4A excel in the area of sprite handling. The TI-99/4A is capable of simultaneously manipulating a monstrous 32 sprites. (Imagine being attacked by 32 independently moving ghost monsters.) The major limitation of this system is that it can handle only four sprites on the same line (a difficulty which can be avoided by programming). The sprite handling power allows development of awesome game programs.

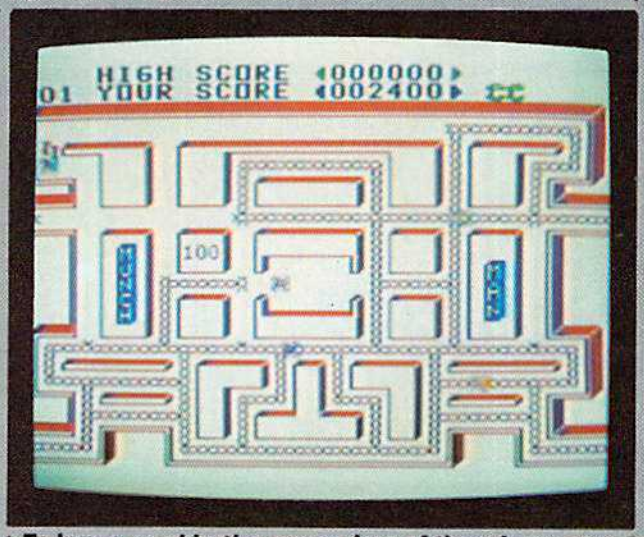
As a typewriter, the abilities are limited: 24 lines of 28 characters each. This is fine for programming, but hardly adequate for production typing or word processing. In all fairness, the TI-99/4A was probably not designed for either of these functions, since its 3/4 size keyboard is too small for most touch typists to comfortably use.

The system is limited by its ability to display only 16 colors (actually 15 plus transparent). This results in a less interesting game than is possible with the Atari 400/800.

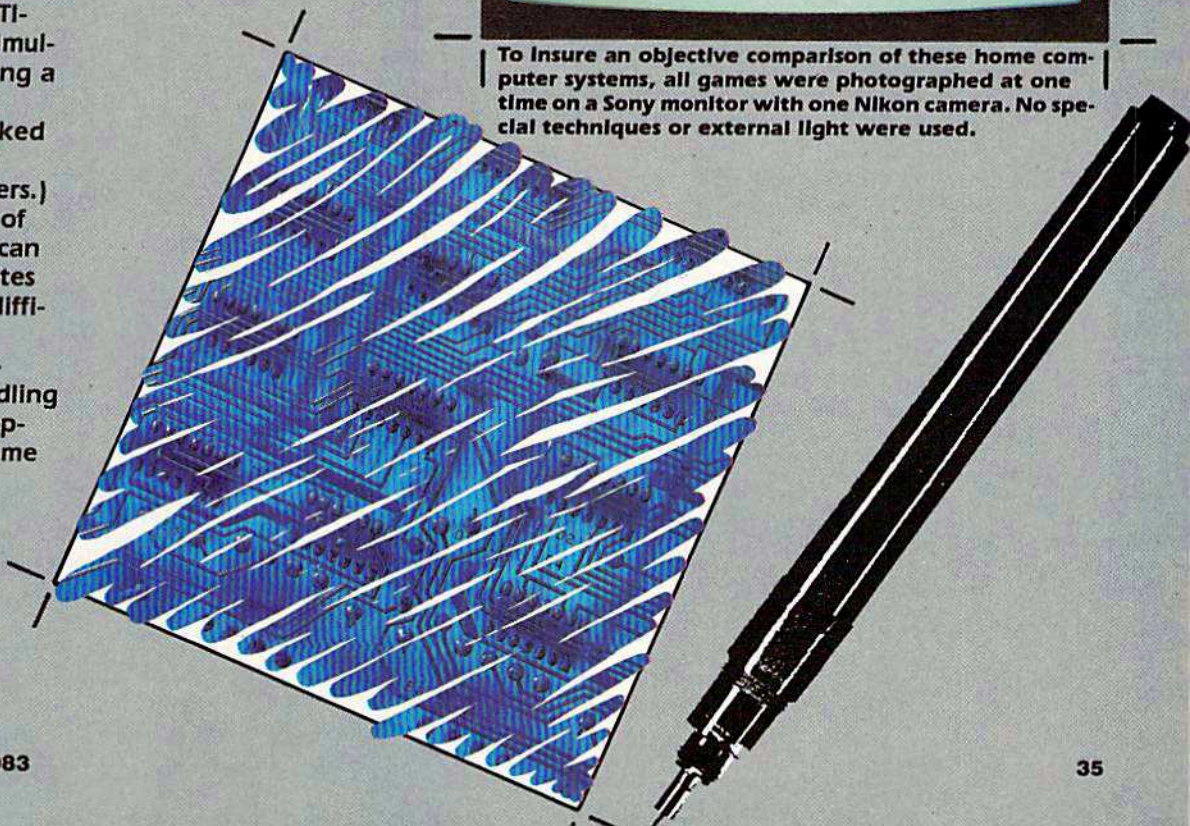
The TI-99/4A is the only 16 bit-based home computer on the market at this time. Potentially, it should be capable of game play and response faster than either the Atari or Commodore home computers (400/800 or Vic-20). Overall, the 99/4A is an extremely good graphic processing device.



As with the Vic-20, only 16 colors are available on the TI-99/4A, limiting games such as Munchman. But the system is the only 16-bit home computer on the market, giving it the potential of faster game play and response.

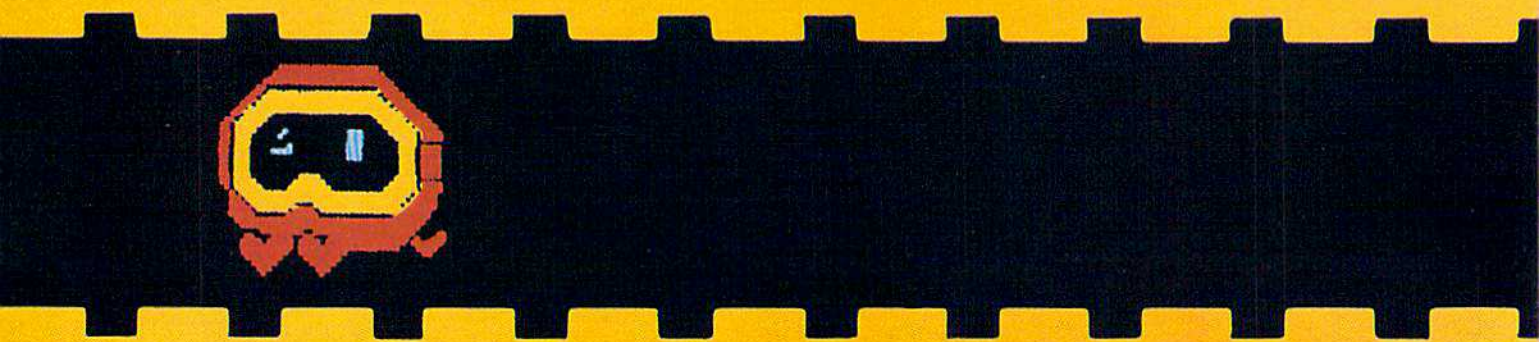


To insure an objective comparison of these home computer systems, all games were photographed at one time on a Sony monitor with one Nikon camera. No special techniques or external light were used.

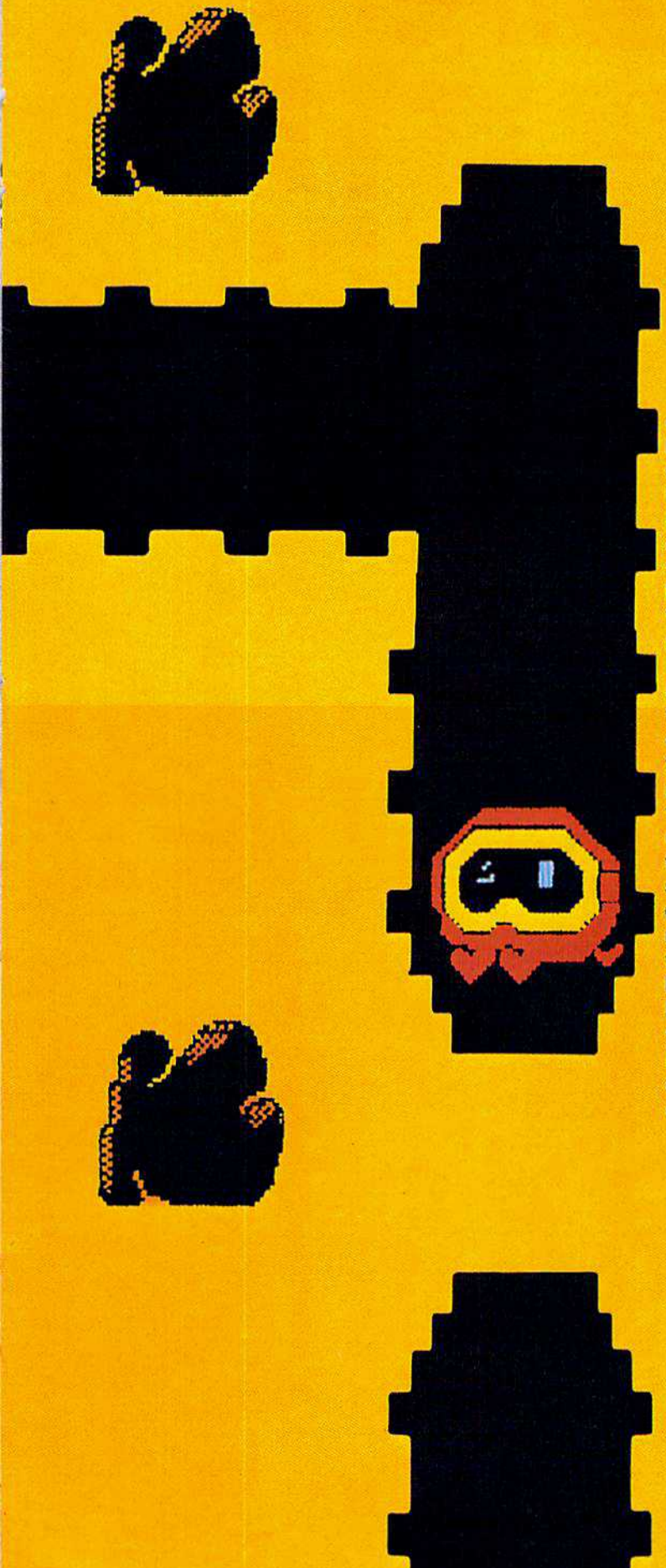


DIG DUG

by Eric Ginner







Here it is—everything you'll ever need to know about playing Dig Dug, including patterns for every board and tricks for escaping from almost any situation. If you're new to the game, read up on basic Dig Dug strategy in the November 1982 issue of JoyStik before tackling these advanced techniques. But if you're already familiar with Dig Dug, the strategies presented here will give you the winning edge over your competitors, be they Pookahs, Fygars, or other players. As in all Winning Edge articles, our goal is to turn your good game into a great one.

Dig Dug is a pattern game, but determining which pattern to use is not as simple as in other pattern games (like Pac-Man and Tron), for two reasons. First off, the order of the patterns is confusing—there are not just one or two patterns that will get you safely through all of the boards. Luckily, this is explained over the following pages. Second, there are many subtleties that must be considered in developing the patterns. For example, not only must you avoid the monsters and try to grab the two prizes (note the similarity to Pac-Man), but there are times when you should avoid killing all of the monsters because it will cost you a bigger bonus later (see the pattern for Round 13 on page 39). These fine points of play are the difference between knowing a pattern and knowing how to use a pattern.

Good scores on Dig Dug are achieved with the use of patterns and the knowledge of a few tricks for narrow escapes. The Dig Dug character is a tough little guy, but going against eight enemy Pookahs and Fygars can be rough. By using good patterns, you can crush several foes with one rock, giving you maximum points and a better chance to deal with surviving monsters. Round 1 pits Dig Dug against four monsters. On succeeding rounds, the number of monsters increases to a maximum of eight. Rounds 1 through 11 are all different and will only appear once. Beginning on round 12, a cycle of four patterns repeats indefinitely. Mastering these four patterns will enable you to score into the millions. The strategy for all four patterns is similar. Immediately head for a rock and drop it on a group of monsters, leaving a reasonable number of them to contend with. At that point, the following tricks will be helpful. These tricks will also help you develop patterns on the first 11 rounds.

SUPERPUMP

Dig Dug's air pump is not a very efficient weapon. Holding the pump button down explodes a monster very slowly. Since Dig Dug cannot move with the pump inside a monster, he is easy prey. To speed up the process, hit the button repeatedly instead of holding it down, while moving toward your target. With this speedy technique, you can fend off three or four monsters at a time.

PITS

A rock is only good for one drop, therefore it is important to use each rock successfully. The monsters will avoid the falling rock unless they are lured into a pit. Dig horizontally until you are under a rock, then dig a pit at least one space down. Turn around and dig straight up to the rock and wait for the monsters to enter the column under the rock. Release the rock by turning toward the side of the column with no escape for the monsters. They will all drop into the pit and be flattened by the rock.

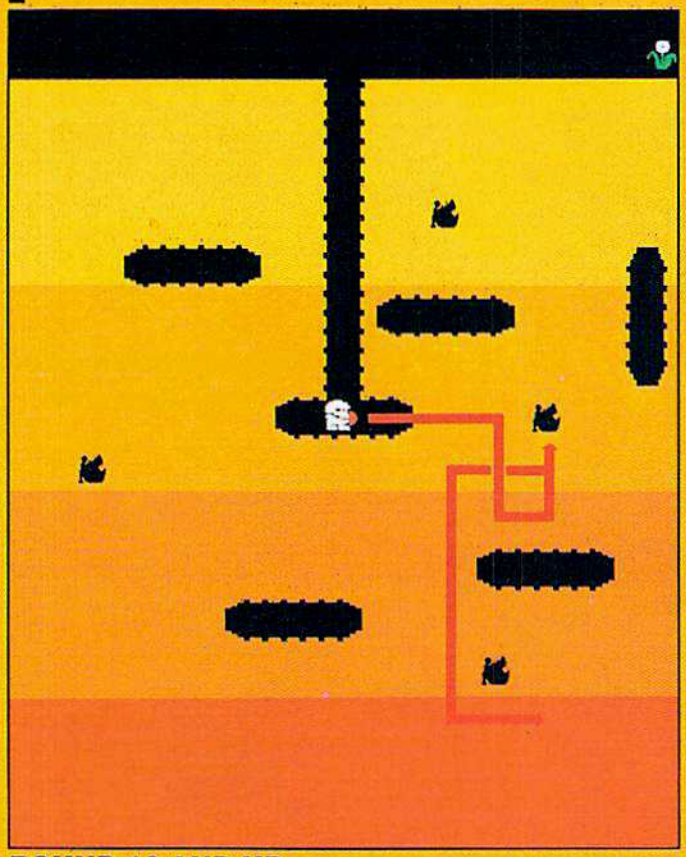
VEGETABLES

Dig Dug earns bonus points for picking up vegetables and fruits that appear in the center of the maze. The veggie appears after two rocks are dropped and remain on the screen for 10 seconds. The 8,000 point pineapple is the last fruit, appearing in round 18 and all following rounds. Always get the fruit, even if it means allowing the last monster to escape off the screen. One bug to watch out for: if a monster kills Dig Dug just before a rock drops, the rock will not count as one of the two rocks needed to make the vegetable appear. A total of three rocks must be dropped in that case.

SHOOT THROUGH DIRT

Dig Dug can surprise unsuspecting Pookahs and Fygars by shooting them through thin walls of dirt. The monsters can't move through the walls, so it is relatively safe. Relatively safe because a Fygar can still torch you through a thin wall. Shooting into the dirt can also surprise a ghost. Just before a ghost enters a tunnel, shoot the pump into him and explode him before he can even get into the tunnel. This trick is especially useful in later rounds, when the ghosts really jump out into the tunnels as they turn back to Pookahs and Fygars.

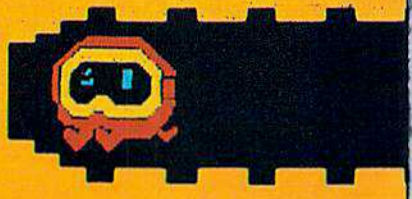
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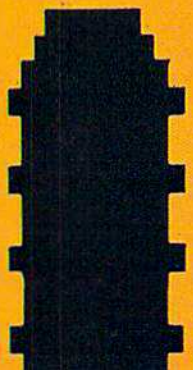


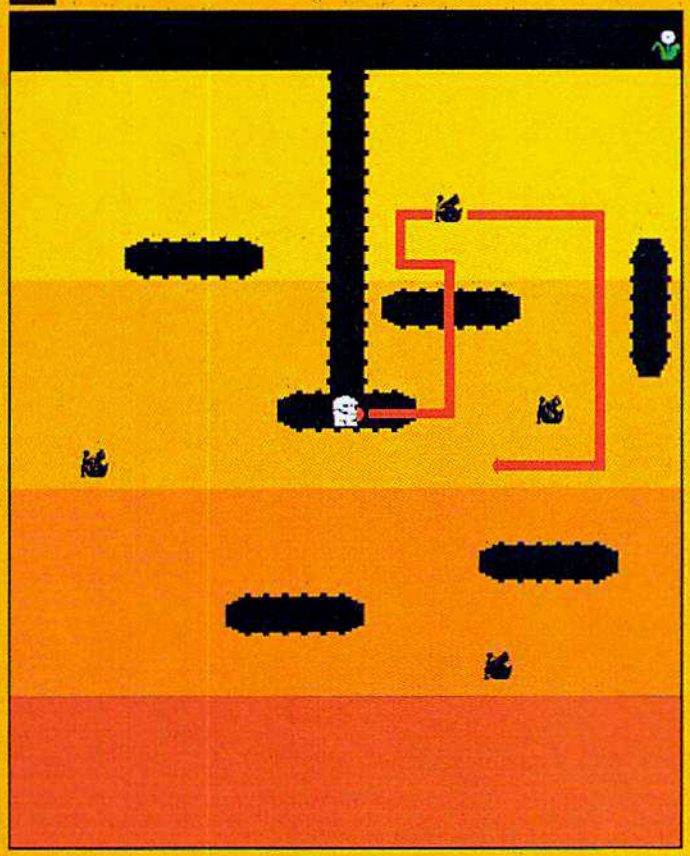
ROUND 12 AND UP

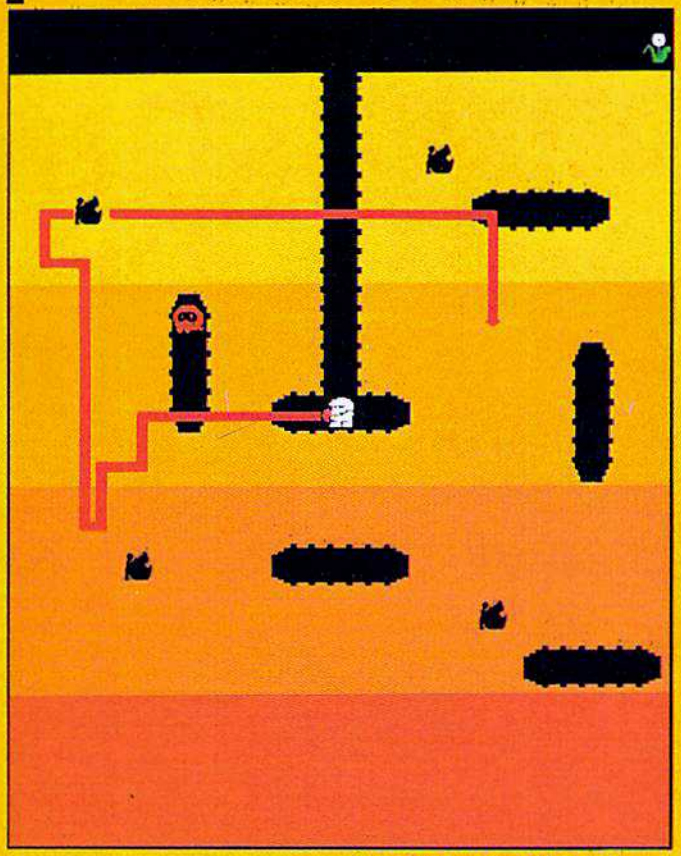
Round 12 is the beginning of the cycle of the four screens. Pattern 1 works on rounds 12-32, and also on 40 and 44. Begin by going straight over to the rock. Turn down two squares, then left up to the rock. Turn around and stun the Pookah under the rock to make sure the rock hits him. The rock will also flatten the two Fygars below. Go down to the lower rock, wait for a couple more monsters and drop the second rock on them to make the veggie appear. If the monsters are too close behind you after the first rock drops, go to the upper rock instead. On round 36, switch to pattern 2. Move under the two Pookahs, leaving a thin wall. Shoot them quickly and drop the rock on the monsters below. The three remaining ones pose no problem. Remember to use pattern 1 on rounds 40 and 44 and switch back to pattern 2 on rounds 48 and higher.

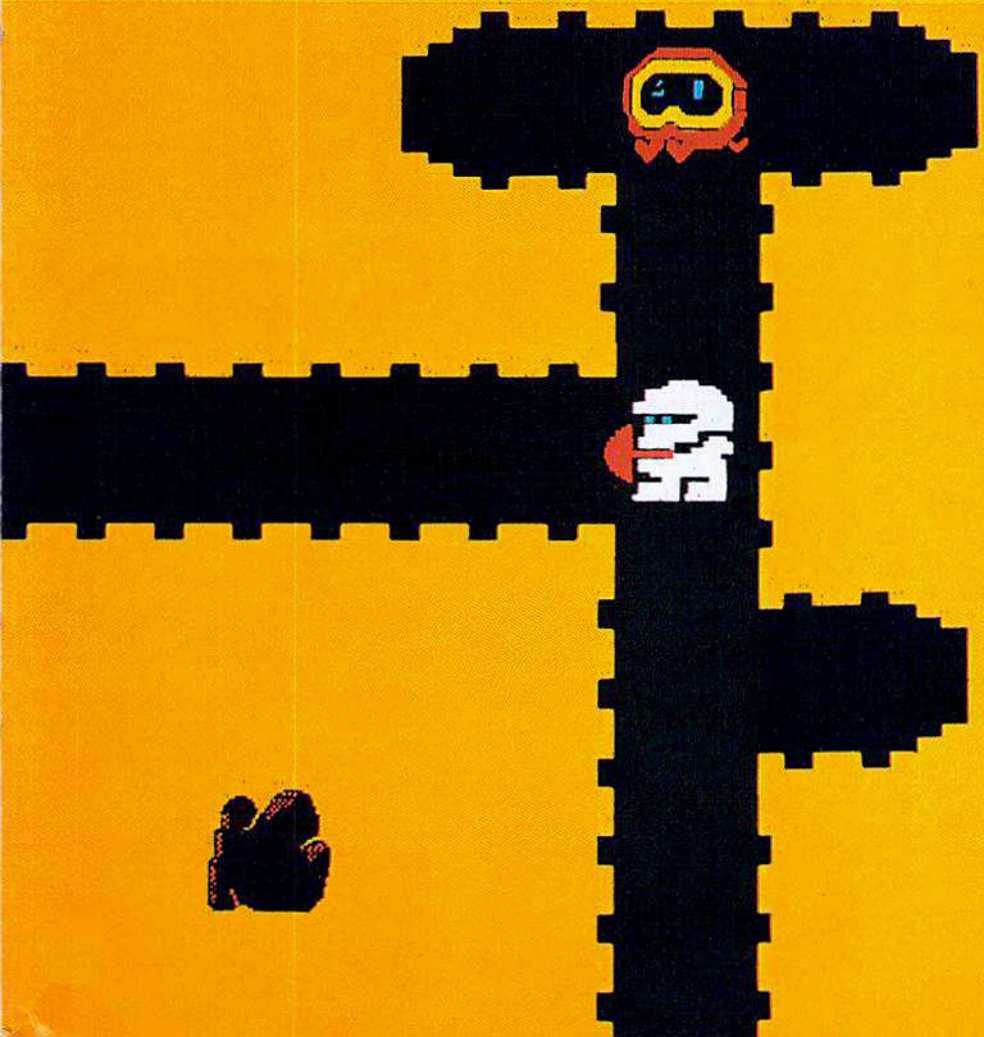






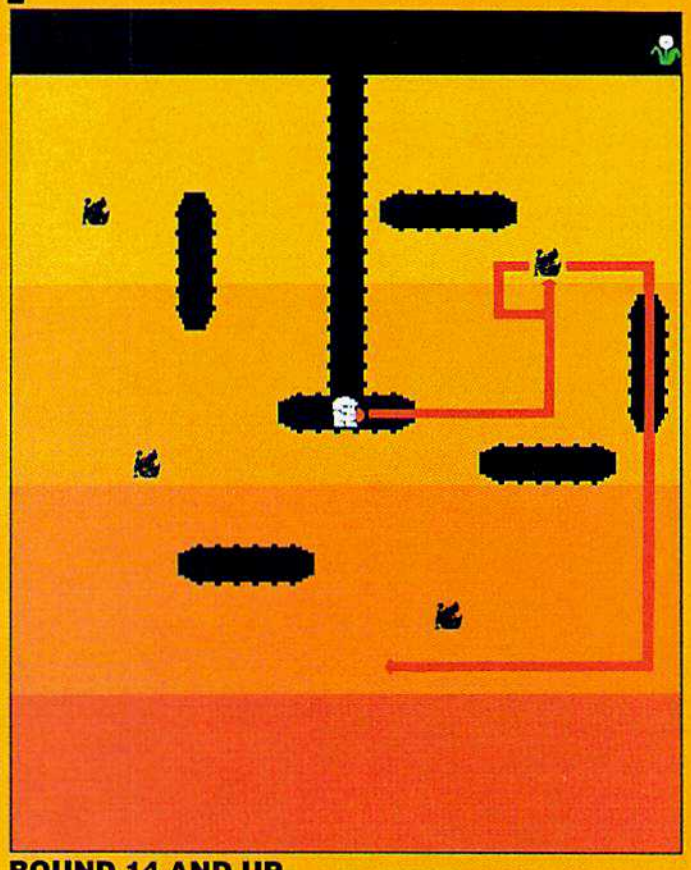


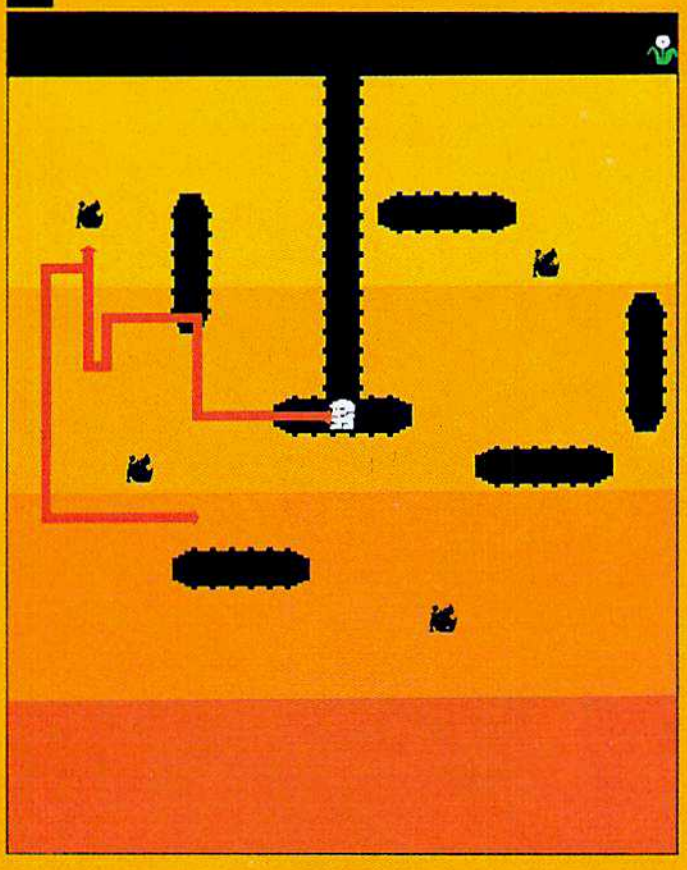




ROUND 13 AND UP

This is the easiest of the four screens to master. The same basic pattern works on round 13 and every fourth screen afterwards. Head straight to the left, entering the bottom of the Pookah's tunnel. Pump him up and go over below the high rock. Dig a small pit and go up to the rock. Wait for as many monsters as possible to move under the rock before dropping it. Always drop it by moving left to keep the monsters trapped in the pit. On higher rounds, the monsters will turn to ghosts at the bottom of the pit and try to follow you to the left. Just move back to the right and they will move back under the falling rock. The only problem with this pattern is that it works too well. You have to be careful not to kill all of the monsters with the rock so you can still get the pineapple. Sometimes you will have to allow a ghost to escape from the pit by staying to the left.

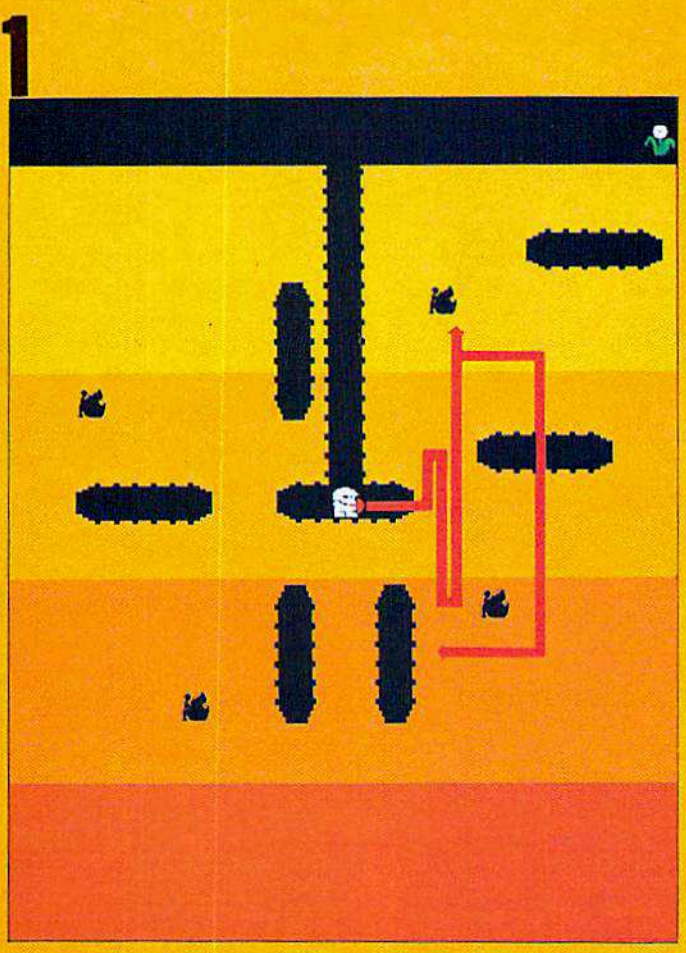


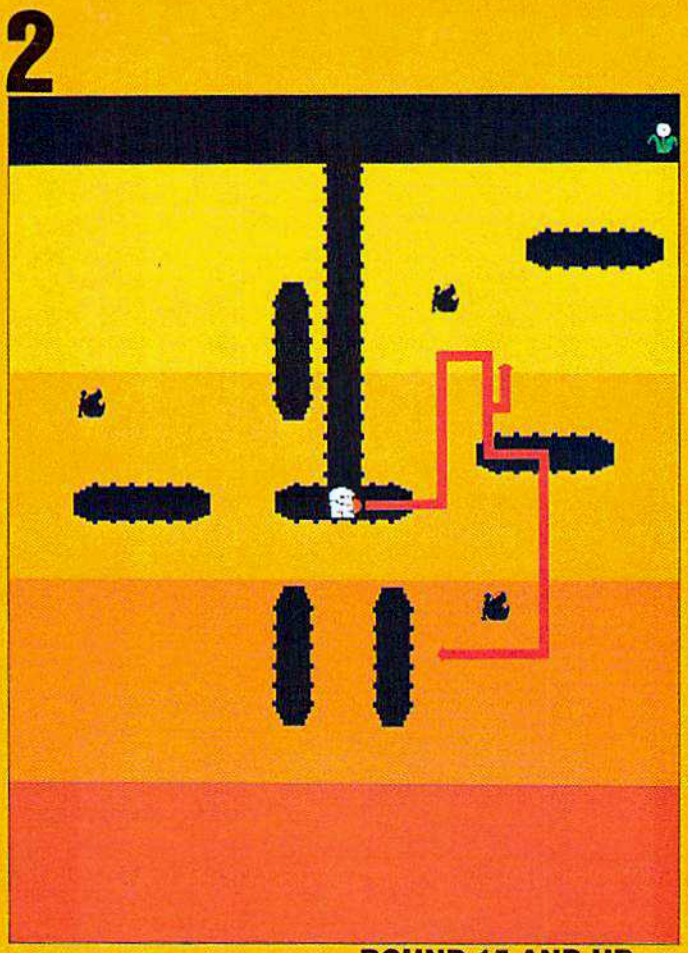


ROUND 14 AND UP

The monsters form a circle around you in this pattern making it difficult to get to the rocks in later rounds. For this screen in rounds 14-30, use pattern 1. Go straight across and then up to the rock and wait. Drop the rock so it will get the Pookah ghost coming from the right tunnel and also get the Fygar in the tunnel below. The remaining monsters will all be spread out so they can't gang up on you. Beginning at round 34, switch to pattern 2. This time go to the left and up to the two monsters in their tunnel. Don't go in, just leave a thin wall to shoot through. Shoot them both and go over under the rock. Make a small pit to get the two Fygar ghosts coming from below. Shoot the remaining monsters along the left column until you can go get the fruit.

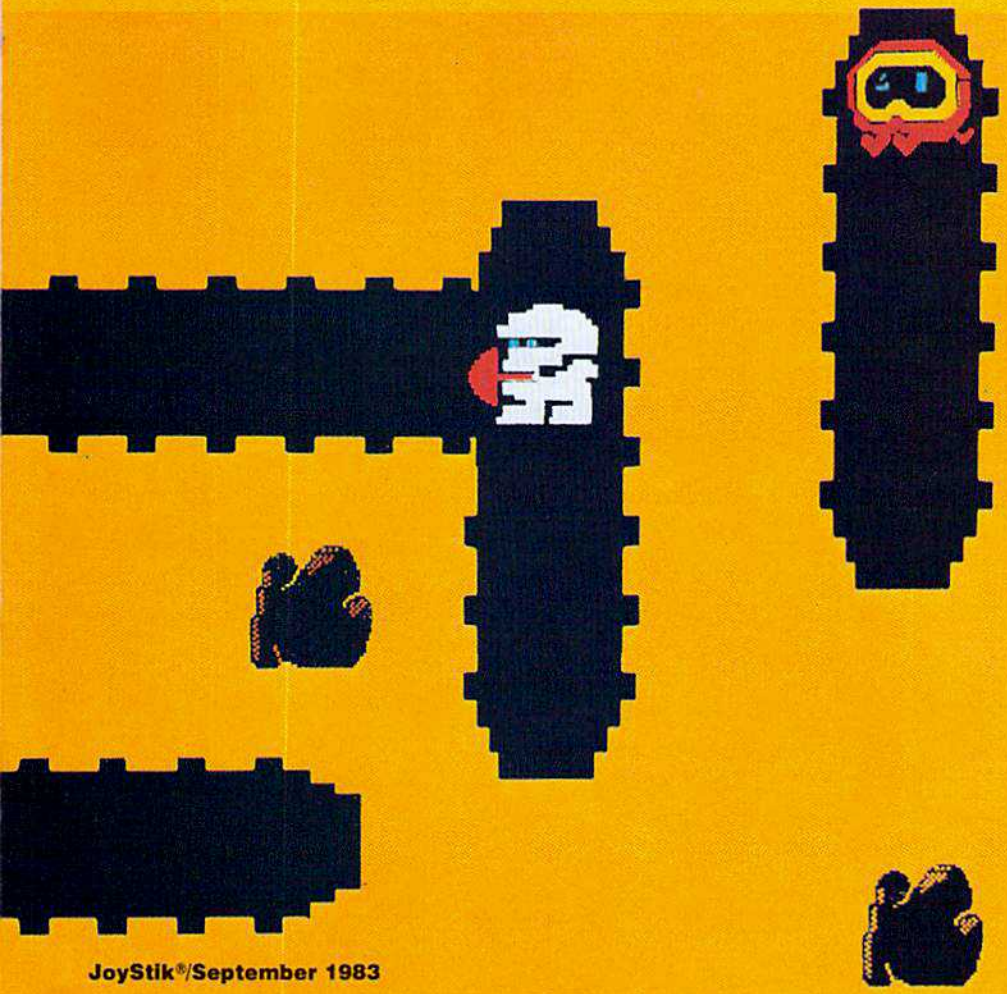






ROUND 15 AND UP

This pattern requires some quick shooting, but not much moving around. At the start, wait for the Pookah ghost to come at you from the right and quickly shoot him. Move straight over under the rock. Until round 35, you have time to dig a pit down to the lower rock. Shoot the two Pookahs that follow then go up and drop the rock. Beginning at round 35, forget about digging the pit and immediately go up the rock. Drop it without hesitation by going to the right, then turn down right away. A Pookah will be right behind you, so quickly turn around and kill him. Three Fygars should be left. Try to get two of them with another rock and get the pineapple while the last one tries to escape.



GAME DESIGN GAMBLE PART III:

Defender, the video classic, almost didn't make it to blast-off. The prototype featured ground based lasers and a barrage of hostile alien spaceships. It was, says designer Eugene Jarvis, "like Space Invaders except with three cannons."

It wasn't exciting and it wasn't innovative. The design wizard had labored seven months on the game that was to be Williams Electronics' debut in the shoot-em-up coin operated game market and he was under pressure to produce a winner and do it fast.

"Everything I tried just wasn't working. Finally, in a brainstorming session with some friends, the idea came up to put the player in control of a spaceship, to give him the power to fly. Then, to give the player a reason to be there, I made him defender of a planet under alien attack. From there, the game just caught fire."

And so Defender was launched. It was the first scrolling landscape game, one that combined the genuine thrill of flight with the threat of extermination. Now more than three years old, Defender remains an arcade draw and ranks among the top five money-making video games of all time.

The birthing of a video game is a process of evolution and mutation, touched off by an uninhibited imagination. Changes and refinements are made along the way in animation and format following testing or on the whim of the designer. ("If you don't do well at your own game, you can just change the rules and you play better," one top artist confessed.)

The acid test is arcade play, six to 18 months after conception. The game is placed in a real arcade—its location a jealously guarded secret—and the likes and dislikes of players are carefully recorded. They are the ultimate judges.

To become a winner, each game must be straightforward and exciting but tough enough to frustrate players into dropping another quarter "just to teach the machine a lesson." If it is too easy, players will get bored or blast away forever on a single coin; too hard and they will stomp off feeling cheated and they won't be back. When a game fails in any of these categories, its rules and graphics are clarified and action is revved up or slowed down.

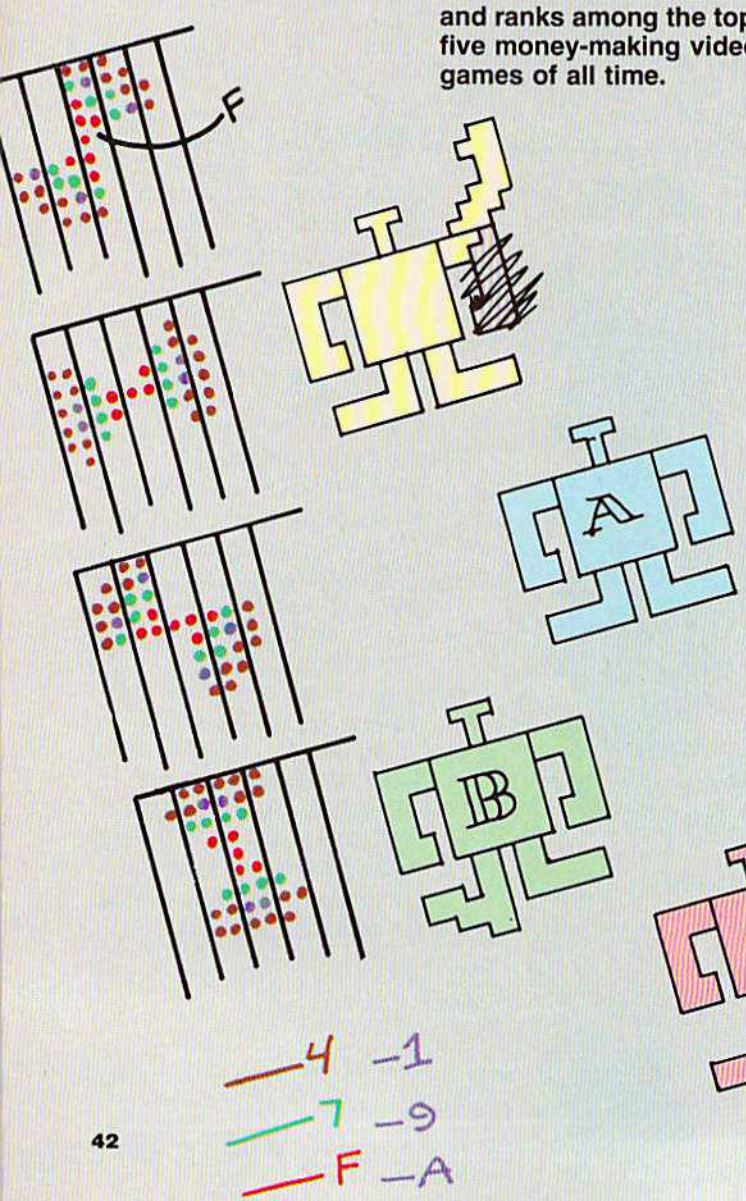
The process is a gobbler of ideas.

"There are maybe 10 critical elements in a game, and if you don't have 1,000 ideas, forget it," says Jarvis, who left Williams two years ago to form Vid Kidz with Larry DeMar, another Williams alum. The pair have since produced Robotron and Stargate. "You work a week or a month and you throw it all out if it doesn't work."

The ability to recognize a loser early is important, but imagination is what really makes a game and a designer. The idea for Insector, a man against bug game set for release in November by Gottlieb, came to designer Tim Skelly with a blitzkrieg of ants. Skelly also created Gottlieb's Reactor.

"They were crawling in and out of my disc drive as I was working, the place was just infested. And I thought it would be fun to do an icky game; I used to love to flip over bricks and kill all the bugs underneath when I was a kid. Besides, I didn't think the ultimate bug game had been done yet."

Skelly's realistic ants, spiders, scorpions and worms started as rough drawings, then came to life on the video art screen.



SOFTWARE

by Jean Davidson

There, in a room darkened but for the glow of the screen, small blocks of color are arranged and rearranged until the animated characters are just right visually. At the same time, the personalities of the characters are molded and controls and sounds are synchronized.

Joust, a dogfight-with-birds game featuring the slickest animation yet, matured on the art screen, says designer John Newcomer, of Williams.

Newcomer already had cast a flying ostrich as the hero of the game and a buzzard as the villain, but decided it needed more evil creatures for risk and challenge. Enter marauding prehistoric birds and the lava troll, who reaches up from the molten lava pit to snatch our hero.

Working with programmers, Newcomer also added a control button that allows players to flap the ostrich's wings with each push. "If the game is going to play like a bird, it should feel like a bird. Everybody dreams of flying."

Like many games, Joust was simplified after arcade testing. Since the game moved too fast for new players to learn flight manuevers and figure out what it was about, Newcomer made the first two waves of assault slower and reduced the number of enemy attackers.

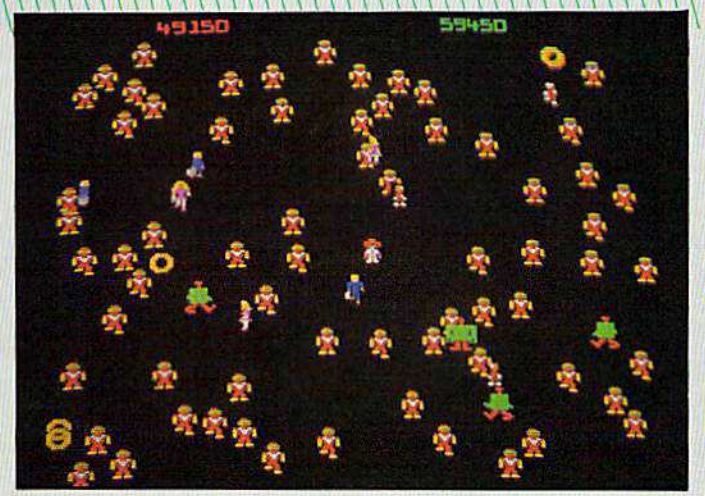
Insector's first arcade foray brought only a lukewarm reaction from players. Despite speeding up the action and altering graphics to help focus player attention, Skelly panicked as final testing approached.

"I was so nervous, I prepared an alternate set of graphics that would have been almost cartoonlike. But it tested phenomenally better, so the cartoons were scrapped. We tested it in an arcade for two months and it stayed in the top five games there."

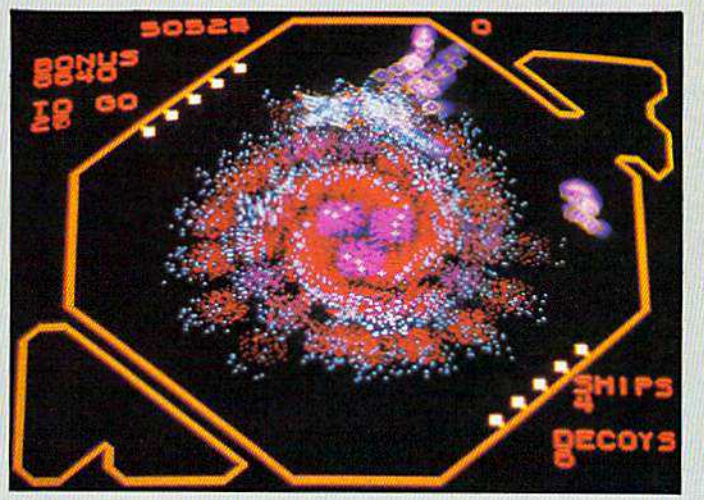
The measure of a game's success at the end of the evolution is simple: the number of quarters parted from their owners. In 1982, those coins totalled $8 billion, according to the Amusement Game Manufacturers Association. There is no formula that guarantees success, but originality, action, slick graphics and an element of risk are good insurance. Failure is virtually assured by copying, designers say.

"You've got to design for players, not computer experts, and you've got to be a player yourself," Jarvis adds. "That game has to mean more to you than anything, even sex.

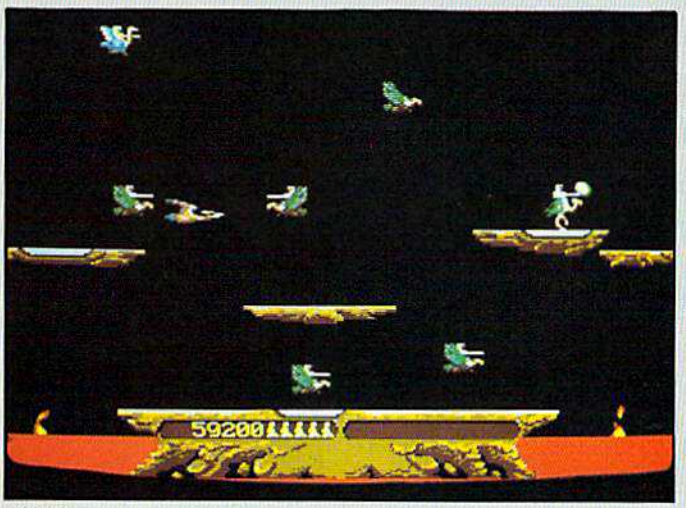
"I haven't had a public flop, but I've had lots of private flops. It's all a gamble; you can come out looking like an idiot or an Einstein."



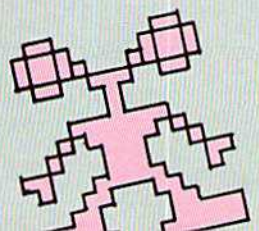
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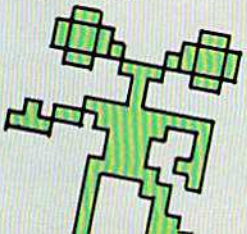


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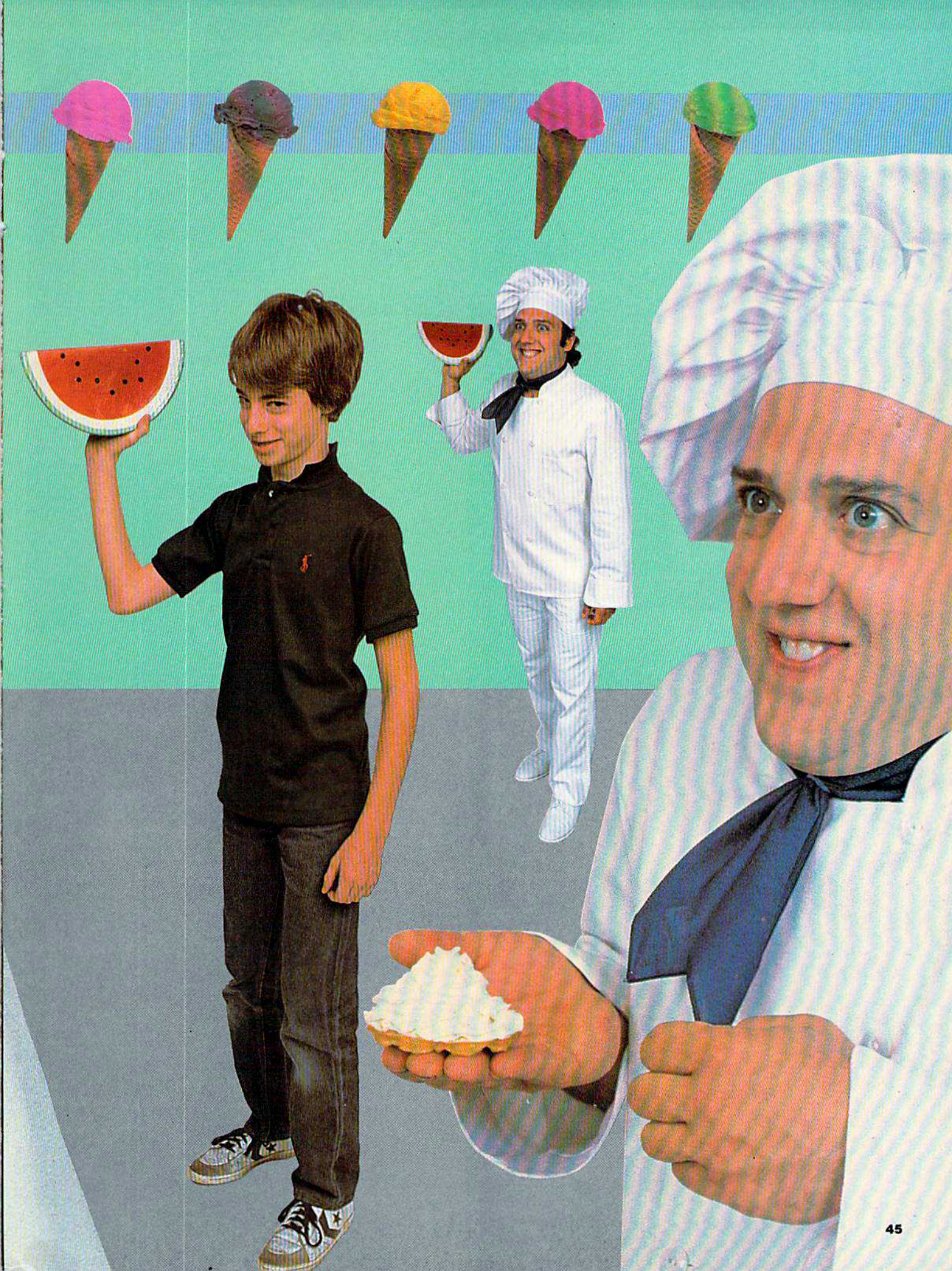


FOOD FIGHT

By Tad Perry



If you laughed hysterically—and maybe even a little enviously—at the cafeteria food fight scene in Animal House, Atari has finally come out with the game for you. Food Fight is a down-to-earth fantasy game that lets you take the part of John Belushi in that well-known scene, pelting your opponents (chefs in this case) with a variety of fast-moving foods. Turn the page, and learn how to use your food effectively and save leftovers—which are worth bonus points—while avoiding the chefs' barrage of flying food. Play each screen correctly, and you can gulp down up to 25,000 points in the form of a delicious ice cream cone.





In Food Fight, the player must maneuver Chuck, controlled by a joystick, from the right of the screen through piles of food, to the left side where he must eat an ice cream cone. Crossing a pile arms you with one piece of food to be thrown at one of four chefs. The chefs also try to hit Chuck with food, so you must watch them to see if they are picking up anything to throw.

Fortunately you are given a huge advantage in that Chuck can just stand on a pile of food and throw in any direction at machine gun speed. You can actually knock out chefs faster than they can come back on the screen to fight again, although you can only throw until all of the food in a pile is gone.

The chefs—Oscar, Angelo, Jacques, and Zorba—appear from holes in the floor. These holes are actually slits, and some are filled in with a light grey color. These are safe to move across. The others—those that aren't filled in—are dangerous, and you will lose a turn if you let Chuck fall in one.

The first extra Chuck is usually awarded at 25,000 or 30,000 points. (This can vary depending on how the machine is set.) But, of course, Atari has limited the number of extras that you can save up.

Point scoring can be high in Food Fight. The first chef hit is worth 100 points, and this increases by 100 points with each chef hit until the maximum value of 1000 points for each chef hit is reached. This makes it well worth knocking off as many chefs as possible before eating the ice cream cone and going to the next level. Also, each piece of leftover food at the end of a level is worth 100 points, so missed throws cost you 100 potential points.

The ice cream cone is worth 500 points times the level number; on the first level it is worth 500 points, on the tenth level it is worth 5000 points, and on the 50th level it is worth 25,000 points. The value of an ice cream cone stops increasing at Level 50, so every ice cream cone thereafter is worth 25,000 points.

The ice cream cone begins melting as soon as the level begins. If all of the ice cream melts, you will lose a turn, so the best thing to do is to get over to the piles of food that are nearest to the cone and begin hitting chefs. Before the ice cream melts, a warning signal will let you know to eat the cone. Keep a piece of food in your hand when you eat the cone—it will carry over to the next level.

This becomes very important on higher levels where things begin to move really







fast, and the chefs can get over to piles of food and become armed before you can. If there is a chef between Chuck and the nearest pile, you can wipe him out with the food you carried in from the last level. Once on this nearest pile, you should knock out the rest of the chefs and use the short time that it takes for them to pop back up through the holes to advance toward the cone.

One thing you should watch closely for is Oscar, the chef with the large rounded hat. He tries to get between Chuck and the cone, and if he manages this there is no way around him—other than to plaster his face with a cream pie or some hamburger. The other chefs, however, aren't as clever as Oscar and tend to get in behind you or trap you against a wall or in the corner.

As with many Atari games, you can choose which level you wish to start on. I suggest starting on the first level so you can play a little longer and get used to the games. On Level 1 there are only two chefs and they won't pick up any food, so you can run around a bit and pick off these two at will. Things move slowly on Level 1, so you probably won't accumulate much of a score there.

The second level has three chefs, and they can carry food and throw it. Starting with Level 3, all four chefs are present, and they can all carry and throw food.

Level 5 is a watermelon board. Watermelons have an interesting property; Chuck can stand on one and throw watermelon pieces all day—the supply never runs out. This is an excellent board to knock off as many chefs as possible. There's almost enough time to get an extra Chuck on a watermelon level, but it's not possible, so it's not a good idea to stay on a watermelon board hunting 1000 point chefs. However, if you have the maximum number of Chucks in storage and can win one more by playing the watermelon level one more time, it's worth killing off a Chuck to gain the points. But with extra Chucks awarded every 100,000 points or more, this can't be done indefinitely.

The only other food to look for is green piles of peas. Try not to use the peas if it's possible to use something else, because peas spread out when thrown and won't go as far as the other foods. Watermelons also begin to show up on boards with other food (not just on watermelon boards), so always look for watermelons to stand on. Beware of Oscar and always eat your ice cream, and you'll soon be a top-flight food fighter.






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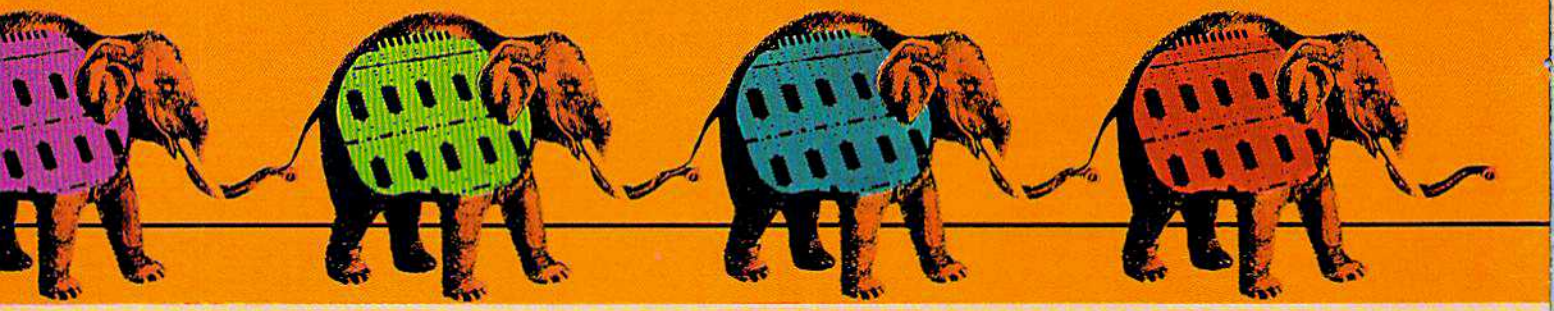
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THE ELECTRONIC CIRCUS



Weekends take on a new meaning for video freaks of all ages this year as The Electronic Circus hits the road, criss-crossing the country with three-day stops filled with entertainment, game challenges and a dose of good old-fashioned fun.

Organized by Meeting Planners of Boston, the show really is a three-ring circus. Since its opening in Boston in May, the extravaganza has been travelling non-stop ever since. Features include an Electronic Midway, a Superstar Stage and Kidd's Korner. All three events comprise one unit and, along with three other units, are touring regionally. In major markets, the four units are combined into a large show covering 200,000 square feet.

The Electronic Midway holds 500 video games set on free play. (There is an admission charge to enter the circus.) The midway also holds the Twin Galaxies Arcade International Scoreboard, designed by Walter Day of Twin Galaxies Arcade in Iowa. Day, whose scoreboard certifies and ranks scores internationally, is grandmaster and consultant for the circus.

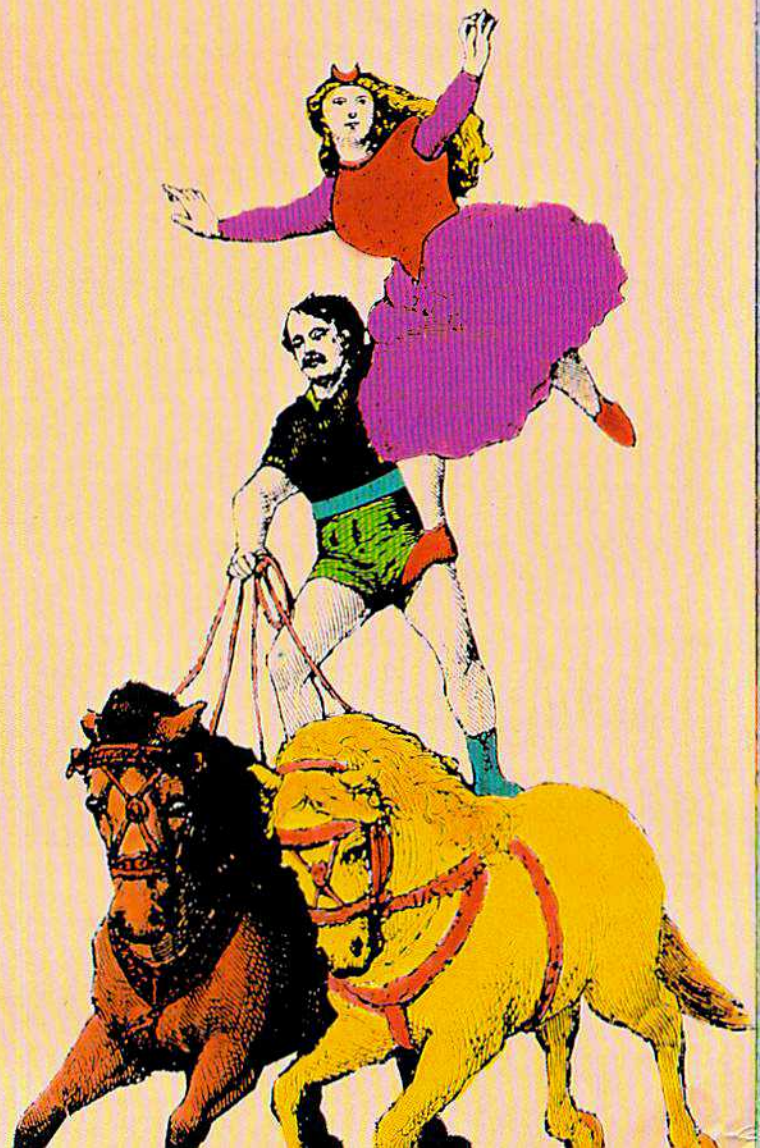
On the Superstar Stage, the world's highest scorers of the ten most popular arcade games are competing for cash. The players are travelling with the show and local champions are challenging their titles. Adding to the glamour, winners and high scores from the Battle of the Video Game Superstars in May will be listed in the next *Guiness Book of World Records*. Also on stage are video game characters as well as the musical group "Video Experience."

If challenging the champs is too ambitious for you, consider battling the chimps. In the Orangutan/Pac-Man Challenge, primates trained on the popular video game are competing with people from the audience.

The third event, Kidd's Korner, features Captain Kidd the Pirate and holds a carousel and other amusement rides for children. Food operations and a cafeteria are open and video-related merchandise is for sale. At each site, major door prizes include arcade games, home games and home game cartridges.

The circus hits each town in a flurry of parades and appearances by the travelling celebrities. Opening day includes special promotions for students. On Sunday, half-price tickets are available for church groups of youngsters.

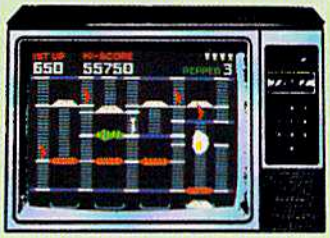
The tour will include 180 cities through the early part of 1984. Details on individual stops are being announced in local newspapers.



THE HOME FRONT

Choosing cartridges for home video systems has become a detailed process as more and more manufacturers put their offerings on the market. To help you sort out the possibilities, JoyStik has expanded its Homefront review section and added an extra feature. Beginning with this issue, you can count on eight pages of longer, more in-depth commentary on the latest cartridges available. And, if you're interested in rounding out your library with some golden oldies, check out the Classic Cartridges listing starting on page 57. Games that JoyStik reviewers rated ★★★★★ (terrific) or ★★★★ (great) have been catalogued for easy reference. This month's reviews were provided by Mark Brownstein, Danny Goodman and Todd Rogers.





BURGERTIME
Mattel Inc. for Intellivision

★★★★

This adaption for Intellivision, one of Mattel's first licensed arcade titles, is extremely good. In it, you have to maneuver your chef, Peter Pepper, across the gridwork. As he passes the various ingredients of the burgers (lettuce, bun and a particularly unappetizing brown-green burger) they drop to the level below. If an ingredient is beneath it, that one drops also. At the bottom of the screen, a burger is formed.

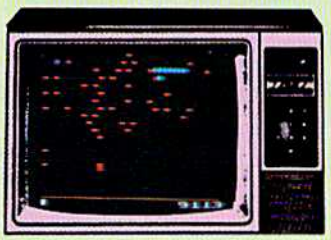
While you are doing this, you are pursued by walking hot dogs, fried eggs and, in later rounds, pickle chips. If they touch you, you lose a chef. You can temporarily stun your pursuers by throwing pepper in their faces, but with only four throws available, you must do this with care.

If you are skillful enough to drop a burger onto a pursuer, you get 100 points for each attacker smashed. Drop an ingredient while an attacker is on it and the ingredient falls more than one level and gives you 500 points. Occasionally, you can get a bag of fries, worth a bonus pepper.

There are numerous game screens, each one more complex than the one before it. In all, the sound is better on this version than it was at the arcade, and the same background music remains. Graphics are stable, non-blinking and very clear, although game play is rather slow.

If you are tired of shoot-em-ups, and are ready for a bit of whimsical scurrying about, or if you already like the coin-op version, Mattel's BurgerTime should be a welcome addition to your game library.

—MB



CENTIPEDE
Atari, Inc. for Atari 2600

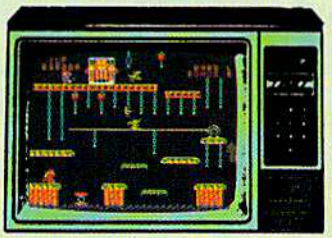
★★★★

Atari brings the arcade's favorite insects to home video in a sparkling Centipede cartridge. Centipede diehards will welcome the chance to brandish their magic wands and destroy spiders, fleas, scorpions and other low-lifes found on the floor of the enchanted forest.

The game takes you through eight waves of increasing difficulty, on the tail of the elusive centipede. Running through a maze of mushrooms, the centipede is wont to twist and turn at will, challenging you to follow. But if you don't find the action fast enough, the colors alone will rivet you to the screen.

To fully appreciate the quick action of this game, you probably will want to add a trackball to your console, instead of the traditional joystick. A joystick does not allow enough freedom of movement in stalking the wormy centipede.

—TR



DONKEY KONG, JUNIOR
Coleco, Inc. for Colecovision

★★★★

If Donkey Kong helped sell you on the graphics and sound capabilities of the Colecovision, then Donkey Kong Junior will remind you why you bought the system in the first place.

Junior features three different screens from the arcade original. Each is colorful and well detailed for a home game. Your goal in this turn-of-the-tables on the original Donkey Kong, is to guide Kong Junior—diaper and all—across vines or up chains to grab the key that frees Papa, who has been caged recently by Mario. Perilous creatures called Snapjaws share the climb on the first two screens, while equally dangerous birds fly patterns around screens two and three. As in Donkey Kong, a bonus timer counts down to make you wonder whether you should go straight for the key, or wait

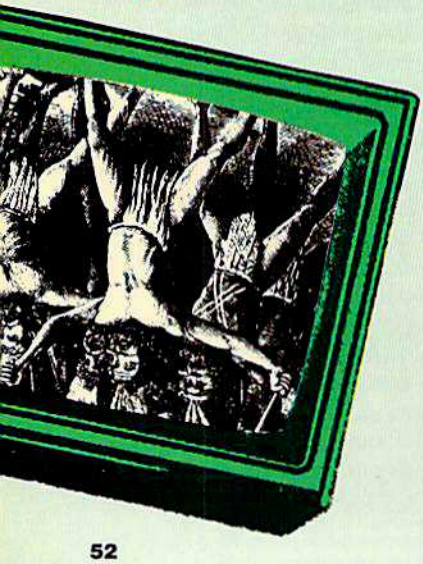
to drop a piece of fruit atop a Snapjaw or bird for special bonus points.

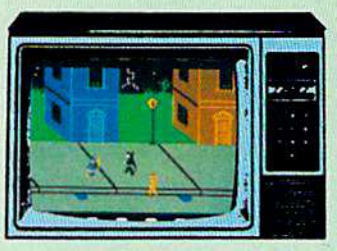
The third screen, as you remember from the first Donkey Kong, is a stickler in Junior, as well. You have several moving platforms and chains to jump to, plus some very close calls in tight quarters with the Stookybirds. It may be reassuring to know that extended experience from Donkey Kong will be a big help in getting your timing down just right. Therein lies a problem, however: either Junior is easier than Donkey Kong or after playing the original for hours and hours, Junior just seems too easy. The challenge isn't quite as intense as Donkey Kong. That may be great news for the occasional player, but a disappointment for the experienced player.

Nevertheless, it's nice to see that a sequel to a game can be something entirely different in game play, unlike the Ms. Pac-Man's of the gaming world.

—DG







DRACULA
Imagic, Inc. for Intellivision
★★★

Ain't public domain neat? You can take a character out of public domain and make a game from it and don't have to pay any licensing fees. Data Age was the first to realize this when they brought out Frankenstein's Monster, based ever so loosely on Mary Shelley's novel.

Imagic now does the same thing with a game called Dracula. Faithful to the original concept, Dracula puts you in control of this hungry nocturnal batperson as he leaves the graveyard and ventures into city streets. In order to maintain his health, he must nab joggers on the streets and bite them on the neck. This is accomplished by a combination of good timing and the lower left controller. Dracula must get enough blood each night to sustain him until the next day. If he fails to return to the graveyard by 6 a.m., the game is over.

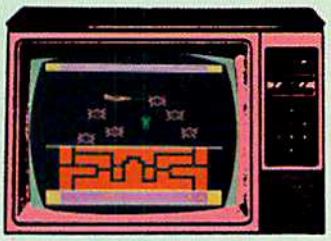
If you survive two days, your journey is complicated by patrolling cops. If you should get stopped by one of their stakes, you are temporarily paralyzed and lose precious time.

Although you can't bite a cop (I wouldn't anyways) you can create a zombie, who is capable of eliminating one, by biting a victim. When the victim turns into a zombie, you control his movement with the second controller. In order to get the cop, you must simultaneously manipulate both controllers, one to move Dracula (since you can't see the zombie if he's off the screen), and the other to move the zombie into the policeman. You only have ten seconds to do this, so you can't waste any time.

When you have eaten enough, a white wolf comes after you as a signal. The quicker you finish your nightly rounds and return to the graveyard, the more points you earn. In a pinch (and to avoid a cop) you can change Dracula into a bat by pressing the top fire button. Dracula can't bite anyone while he's a bat and he can be carried off by a vulture if he's flying too long.

Dracula involves limited strategy, sometimes rapid reflexes and is, overall, a so-so game. Imagic has succeeded in bringing a unique game play concept to the Intellivision, however, unless you relish games where you score points for killing people and not just alien spaceships, you may think twice before you buy it.

—MB



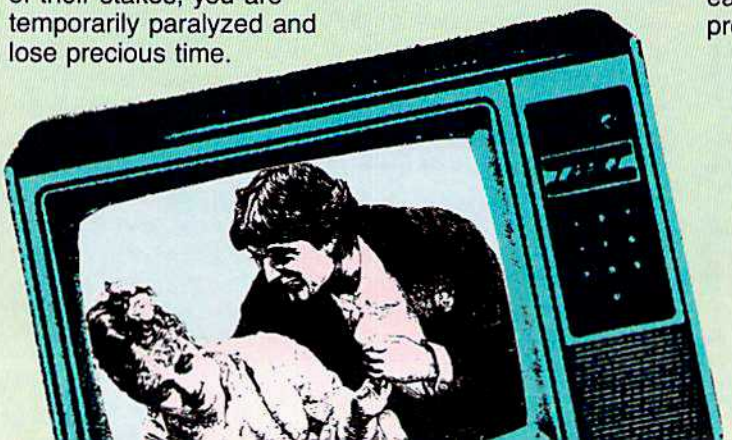
FLASH GORDON
20th Century Fox for Atari 2600
★★

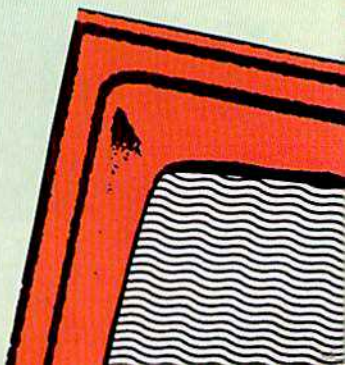
Flash is a good word for this cartridge. From the cinema-like artwork on the package to the colorful split-screen image, Flash Gordon is a graphically attractive piece of merchandise.

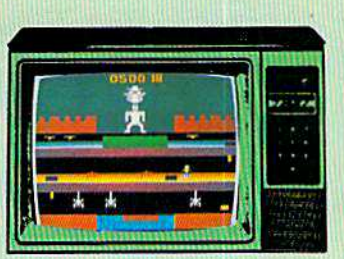
But the dazzle wears thin as the action unfolds. You, the player, as science fiction's Flash Gordon, are on a rescue mission in Spider City. Your quest challenges you to conquer a tunnel maze, and destroy hatching pods, enemy warriors and their patrol ships. You keep track of all this activity on a horizontally-divided screen which displays a map of the city's tunnels on the bottom and a close-up view of the space battle across the top. As you overcome the perils in one maze, a new, harder city emerges with faster and, presumably, smarter aliens.

With all due respect to David Lubar, who designed the cart, the game play hardly does justice to the attractive, stimulating battleground. This one could easily become the proverbial flash in the pan.

—TR







FRANKENSTEIN'S MONSTER
Data Age for Atari 2600

★★

In this game you have the opportunity to save a small town in Transylvania from the dread creature from Dr. Frankenstein's laboratory. To do so, you must build a barricade around the monster before he is completed and has absorbed enough energy to walk. At the same time, you must avoid spiders, bats and other creepy crawlers.

The monster is assembled on the top floor of the doctor's castle, and is energized by passing lightning bolts. The bricks you need to build the wall are, of course, in the dungeon. Once you pick up a brick from the basement, you must travel four levels of the screen to put it in place.

While the special effects are great in this game (the charging monster is superb), it will take more than color to keep your attention on the predictable action. The cause is noble, but after falling into the dungeon's moat three or four times as you try to skip over it, you may lose interest. Local citizens will have to get used to the footsteps of a stampeding monster.

—TR



HAPPY TRAILS
Activision for Intellivision

★★★★★

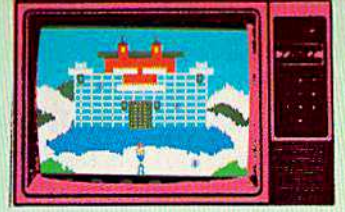
In a world of space and maze challenges, Happy Trails offers an innovative addition to the home video market. Developed by Carol Shaw, who gave the world River Raid, this unique and colorful game pits good and evil in an Old West setting.

In this game for one or two players, the bounty hunter, a white ten-gallon hat with feet, collects bags of loot and nabs the bandit (black-hatted, of course) in a race against time. His trail is directed by the player, who moves a series of rectangles from right to left and up and down to show him the way.

The action begins on a set of boxes 2 × 2. As play continues, the maze grows to an area of 5 × 8. And, to double the fun, Black Bart clones himself in a later screen. The bounty hunter even gets a chance to earn a deputy's star, making him momentarily invincible.

This is a great game. The strategic possibilities are seemingly endless as random chance and the player's skill increase. Even if you are not up to the challenge of playing, just watching the bad guy and the good guy battling it out is worth the effort.

—TR



ICE TREK
Imagic for Intellivision

★★★

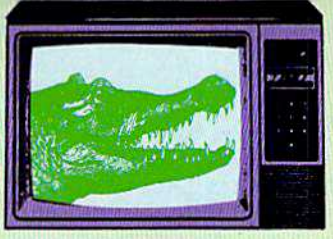
If immigrating to the arctic is not in your plans, this game will tell you why. In this barren ice-covered wilderness, there are few challenges worth leaving home for, save roving herds of caribou, chilly rivers to cross and a frigid Ice Palace to penetrate.

True, there are many perils on this adventure. Killing a caribou goes against the philosophy of conservationists and if you do the Wildlife Goddess will appear to pelt you with arrows. If you make it through the stampeding herd, the horizontally-scrolling screen then takes you to the brink of a chilly river. From your perch you must construct a bridge across the water. If an iceberg strikes your partially completed structure, you have to begin again. And, if you have the misfortune of falling into the water, you will turn blue.

When you succeed in spanning the river and reaching the Ice Palace, you are then met by a series of 16 more challenges to remove before the elusive Aurora Borealis is rescued. This may seem like sufficient reward, except that you get to repeat the action through six levels of the complicated screen—each with increasing difficulty, of course.

Appropriately, the graphics on this adventure are still and complacent. You may get a thrill out of building an ice bridge but, in short, Ice Trek left us cold.

—TR



JUNGLE HUNT
By Atari for Atari 2600

★★★★

Following the critical failure of Pac-Man, Atari apparently stepped back and took a good look at upgrading its cartridge business. Ms. Pac-Man and Centipede were both steps in the right direction. The solution continues with Jungle Hunt.

Licensed from Taito America, Jungle Hunt is faithful to the arcade game, given the 2600's limited memory and graphics capabilities. Your hero, Sir Dudley Dashly, receives an invitation to dinner—with his wife, Lady Penelope Dashly, the scheduled main course.

To save Penny, Dudley will have to swing across vines, negotiate his way past crocodiles, avoid boulders and get past two spear carrying guards. Each situation involves a new game screen.

The vines are simple but the crocodile screen is no picnic. Each crocodile is worth from 100 to 300 points, depending on how you kill it. As you dive, you must keep an eye on the oxygen gauge and return to the surface before Dud drowns.

Survive this screen and advance to Boulder Field, a path strewn with bouncing boulders. Timing is essential here. The final screen is Cannibal Camp. The camp is guarded by two savages, Dudley must jump over them and rescue Penelope.

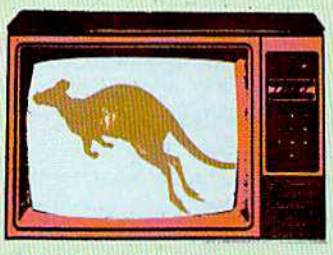
If you succeed in saving Penny, you return to the

beginning to face an even more difficult set of challenges. You start the game with five lives and 500 units of time. The game is over when you run out of either.

Atari makes the best use of memory by limiting the game to one player. Between games the cartridge goes into an attract mode, with Dudley going through each of the four situations.

Jungle Hunt is a fun, challenging game, which shouldn't disappoint many purchasers. If you like the arcade game (either Jungle Hunt or the original Jungle King), you will like this version.

—MB



KANGAROO
Atari, Inc. for Atari 5200
★★★

Kangaroo is a light game involving a mother kangaroo's attempts to save her baby from his captors. (Sound familiar?) Mommy has to make her way through four screens in this humorous game, the first being four floors with a ladder at alternating ends.

Mommy Kangaroo can either jump left or right, walk, or duck. These skills are important, because she is being pursued by monkeys, which will drop, throw or roll apples at her. Consequently, you have to move Ms. Roo with an eye out for monkeys and falling apples. Hit the fire button and she'll strike out at the monkeys. Punch them for extra points.

Points can be gathered by picking up the fruits scattered along the way. The supply can be replenished by ringing a bell somewhere near the top of the screen. Each round of fruits carries a higher point value. When you get to baby, the points remaining on a bonus timer are added to your score, a chorus of *Oh, Susanna* plays in three part harmony, and baby kangaroo says "MOM."

The second screen is more difficult than the first, requiring perfectly timed jumps to get across steps to baby. The third screen is slightly less difficult, with fewer jumps required. The fourth, and final screen involves those darned monkeys dropping apples at you, and is probably the most difficult of the four, as a final screen should be.

Although the graphics in the 5200 version are not as detailed and complex as the arcade original, they are more than adequate, providing high-resolution images. The only dubious depiction is that of the monkeys along the side of the screen. Only when they stop moving is it clear that they are, indeed, monkeys.

Atari has done a good job of bringing this Donkey Kong-ish variant to the home screen. With two levels of difficulty (novice and advanced), it can be played by one or two players. The novice level is challenging, but not too frustrating for new or youthful players, while the advanced level is supposed to approximate the difficulty of the arcade game. If you like helping Mommy Kangaroos save their babies, this game is for you.

—MB



LOOPING
Coleco, Inc. for Colecovision
★★★★★

Occasionally a game requires you to master a new touch on the controller, like learning how to time your jumps in Donkey Kong. In Looping, you have a new joystick sensation to adapt to as you steer a sensitive plane through a right-to-left scrolling, episodic game. The trick is getting used to the correct joystick motion when the plane is flying upside down and vertically.

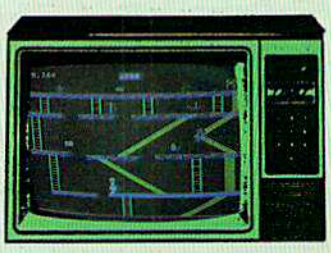
Each flight consists of six different "rooms." In the first you take off from a runway and position yourself to shoot a ground-mounted rocket. Hot-air balloons, however, are always getting in your way, unless you knock them out of the sky. If you hit the rocket, a gate opens to the remaining rooms. In later levels, you have to shoot more than one rocket to open the gate, and one or more of these will be well protected by a building which you must gradually shoot away.

The next room is full of pipes, and you simply have to maneuver your way through them. After that is another kind of pipe room with giant green drops falling from a spigot. Next is a small passageway full of high point value twinkle monsters. And finally, you come to a two-stage inner/outer room guarded by randomly bouncing giant balls. You must get past them to the "END" marker to complete the flight successfully.

Music accompaniment is courtesy of J.S. Bach in the pipe room and at the end of each successful flight. Other than that, there is little new in the sound department. Graphics, while very crisp against the black background, suffer a bit from the jerky scrolling, as in Zaxxon.

Looping is not a game you will conquer right away. Progression through even the first skill level is difficult on the third time around. And on higher skill levels, especially three and four, the response of the joystick is extremely sensitive, requiring a fine touch. All in all, it's a good addition to the Colecovision library.

—DG



MINER 2049er
Big Five Software for Atari 5200
★★★★★

Miner 2049er by Big Five Software truly is a knockout. Although you may not get all the pretty pictures that some of the Atari-developed games provide, what you do get is very high resolution and excellent game play.

This first third-party 5200 game cart is probably the best for the system so far. The game has ten entirely different, increasingly difficult and graphically loaded game screens. It also has a reported 99 levels of difficulty.

The goal is to move Bounty Bob across the floors of a cavern. Along the way, he has to either avoid or eliminate the ugly, skull-like mutants patrolling the area.

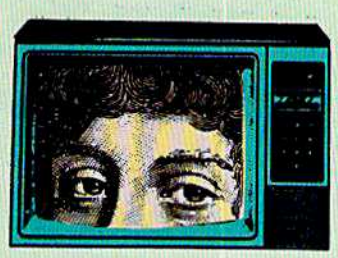
To do so, he must pick up artifacts (hamburgers, picks, martinis and other surprises) left by previous miners. When he does, the mutants are vulnerable to Bob's magical touch.

Some of the challenges include slides, an almost impossible series of jumps through the maze, moving platforms and even a cannon to fire Bob to another level. Each of Bob's attempts is set against a different colored background which keeps the game from even approaching boredom.

There are a few minor weaknesses. Only the left controller is activated. This is awkward in a two-player game. The 5200 controller is not properly responsive, either. Bob could fall off a structure if you are not careful.

But at a time when video games are spoken of in terms of hours, Miner 2049er is a potential six-monther. It is a fun, non-violent game for the entire family to enjoy, and enjoy again.

—MB



PEPPER II
Coleco, Inc. for Colecovision
★★★★★

Pattern players, is this a game for you! Pepper II is a maze game *par excellence* in the best traditions of Amidar and Pac-Man.

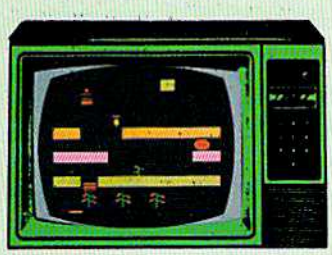
Although the characters in Pepper II seem to be a nonsensical gathering of nightmarish creatures, the game action is very intriguing and very well executed graphically on the Colecovision. Your joystick controls Pepper, the angel, as he zips up the track in a layout of four different connected mazes per level. Every time he zips all sides of a box, the core of the box fills with color. The goal is to fill all the boxes on all mazes.

Sets of roaming eyes chase Pepper, but if he encloses a box with a pitchfork in it, the tables turn for a few moments and Pepper gets increasing bonus points for capturing each set of eyes. There is also a Zipper Ripper going around at a fast clip to undo any dangling ends.

This is an easy game to learn, even if you don't understand the significance of all the objects and bonus points from the outset. Skill level one offers good practice to get the hang of the game, but the Zipper Ripper does not appear, even after filling all four mazes a couple of times. Since there is no warning when Pepper loses his power to capture Roaming Eyes, it will take a while to get your timing right. For the true action of the game, however, you need to go at least to level two.

You should also see noticeable improvement in your scores with just about every game. Yet with each level requiring no small amount of work, the game progresses more gradually than some of the other Coleco maze games, like Lady Bug. You can expect to continue to get better as your endurance improves. And the easy controller action (joystick only) will allow more than just the hard-core player to perform well.

—DG



REVENGE OF THE BEEFSTEAK TOMATOES
20th Century Fox for Atari 2600
★★★★

When a new game is released for press review, it usually arrives unannounced in a large envelope, with a brief blurb about how great the play is and maybe some black-and-white photographs. In this instance, however, 20th Century Fox wasn't willing to stand on convention.

In a predistribution promotion effort, Fox shipped out a different teaser every two days to herald the new game's arrival. The first was a bottle of ketchup labeled "Once the tomatoes take over, will we ever Ketchup?" Similar, pun-filled press releases and tomato products were sent for weeks. Finally, the game was delivered.

With all the hype, it would have been convenient to assume that we were being softened up to give a good review to a bad game. Unfortunately, we can't do that. Revenge of the Beefsteak Tomatoes is a good game. The graphics are clean, game concept is simple, sound effects are adequate and mastery is difficult.

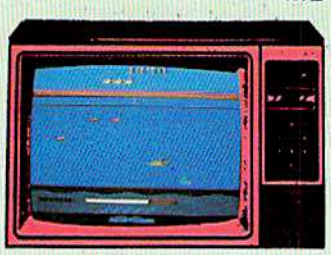
On the screen are three tomato plants, which scroll from side to side. The only way to defeat them is to build three brick walls above them, no simple task. The bricks you need are scrolling above your tomato sprayer. You must shoot the wall, then aim your brick to fill a gap below you and shoot the brick to the opening directed. Shoot the brick twice and end up losing it even before you get it.

Once the top is full, it is more difficult to plant bricks in the bottom rows. To add to the difficulty, the tomatoes at the bottom are shooting bombs, cherry tomatoes are dropping from the sky and a mean old beefsteak tomato is patrolling the playfield. Contact one of them and you lose a sprayer.

The game is enough to make you allergic to tomatoes for a long time. In the easier versions the game is playable. At higher levels, it becomes increasingly frantic, although quite habit forming.

Revenge of the Beefsteak Tomatoes is a worthy addition to a cartridge collection. Game play is unique, easy to learn, hard to master and most of all, fun.

—MB



SEAQUEST
Activision for Atari 2600
★★★★★

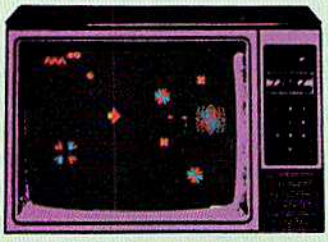
In Seaquest, you are the captain of a naval submarine on a treasure hunt. Your bounty-laden divers are stranded in the briny depths filled with schools of sharks and nasty pirates. Armed only with rapid-fire torpedoes, you submerge,

carefully gauging your oxygen supply, nab your men and return them to the surface. You're still not safe, however; an enemy trawler is patrolling the area.

But this game is not all that grim. Steve Cartwright has left his personal brand of whimsy on the design. While the graphics are not extraordinary, they are amusing (pink sharks with gaping jaws) and accompanied by understated torpedo retorts and explosions. Air bubbles even escape from the tanks of the stranded divers.

Although a challenging and unique concept, the game is not difficult to learn. Joystick-controlled, it is for one or two players. And the novelty doesn't wear off; soggy surprises are everywhere.

—TR



SPACE FURY
Coleco, Inc. for Colecovision
★★
There is little question that the graphics theme of Fury was derived from Asteroids. The basic scenario is the same: you control a central, rotating space fighter, shooting approaching alien ships before they touch your ship. You also have the ability to rocket out of the aliens' line of fire and motion.

Space Fury adds a little more excitement by having individual alien scouts group together to form larger, more menacing ships that not only hone in on you, but fire at you as well. Each wave features a bonus points timer, so the faster you can eliminate the wave, the greater your bonus.

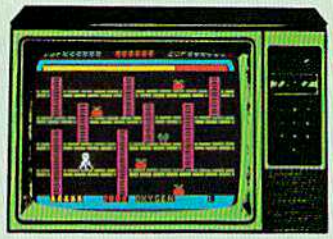
Your fire power starts small, but grows to impressive proportions if you successfully dock with mother ships between the first few waves. At the end of the game, the Alien Commander appears on screen and "speaks" a rating of how good an opponent you were (easy, adequate, stimulating, outstanding, etc.).

A good player will soon master the first skill level, but will find suitable challenges at skill levels three and four, in which the speed of alien scouts is appreciably faster.

Graphics displays of the playfield are not particularly interesting, but the opening and closing portraits of the Alien Commander is a work of video art. The big problem with Space Fury, however, is the Colecovision controller. You need to press both side buttons—the left for acceleration, the right for shooting. The shooting button is not auto-repeat, so you have to keep triggering it. If you hold the controller with your left hand, your firing index finger cramps up very quickly. It won't be long before you devise another method of holding the controller (like between your legs) to get the desired firing response time without needing Ben-Gay after a spirited game.

Space Fury is not a "must see" game, unless you are a dyed-in-the-wool Asteroids lover and have been going through withdrawal ever since you bought your Colecovision.

—DG



SPACE PANIC
Coleco, Inc. for Colecovision
★★★★★
Versions of Space Panic have long been available in computer translations under several titles all ending in "Panic." The game is difficult, but a whole lot of fun.

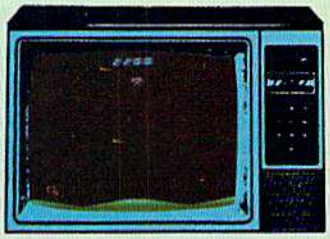
The screen scene consists of four levels of horizontal girders connected by randomly placed ladders. You control a spaceman (complete with globular-glass space helmet) who, racing against an ever declining oxygen supply, uses his shovel to dig holes at spots along the girders to trap every space monster crawling around. When a monster falls into a hole, your spaceman must cover up the monster with the shovel. One controller side button digs, the other fills. The challenging part comes in advanced waves in which certain monsters are eliminated only if they fall through two or three girder levels at once. In other words, you must plan ahead, carefully digging holes on multiple levels directly over one another. If you're lucky, a monster falling atop another unsuspecting one below scores even more bonus points.

Even though the basic scene remains the same during every wave—only the location of ladders changes—there is little chance you'll get bored with this game. Each wave has either more of the same kinds of monsters, or fewer monsters who are more difficult to destroy.

The typically sketchy Colecovision manual was apparently a bit too sketchy this time, because an additional sheet is included giving five tips on more productive digging.

Sound, or rather music, on this cartridge is superb, with the tinkling *diminuendo* of the tune between waves especially appealing. You'll like this one.

—DG

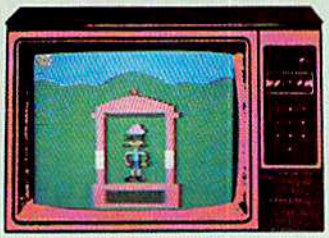


STARGUNNER
Telesys for Atari 2600
★★★
The invasion is upon us, we are told in the legend of this game. Your mission is to stop the advancement of the Sphyzygi while avoiding bombs, alien saucers and creatures called "buzzies" and "squeezers." During all this, the droid Bobo is pelting you with a fusillade of bombs.

If this sounds familiar, it is. But Telesys has repackaged the space-battle concept with bright graphics and eight game variations. You travel through three waves in each level of the game, meeting more and more aliens as the battle progresses.

Unfortunately, there is no rapid-fire capability in this joystick-controlled game. As it is, Stargunner is an average game posing an average challenge.

—TR

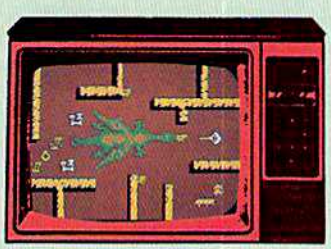


STRAWBERRY SHORTCAKE
Parker Bros. for Atari 2600
★★★★
This game for young children challenges the memory in the pastel world of Strawberry Shortcake and her friends. It appears the dastardly Purple Pieman has rearranged the body parts of several of Shortcake's friends and it is up to the player to reassemble them.

Youngsters are expected to learn new skills at the game, as each of the "berry" levels gets increasingly tougher. Number six is a timed game.

The music and graphics on the screen are captivating. This is a good exercise for one player.

—TR



SWORDS AND SERPENTS
Imagic for Intellivision
★★★★★
Enter the realm of medieval magic in this video adventure filled with knights, sorcerers, princes and wizards. As the White Knight with an enchanted sword, you must fend off evil doers, uncover treasures and locate the lair of the Sinister Serpent.

You can approach this battle alone or with the Wizard Nilrem. For the truly adventurous, Nilrem can conjure up a series of magic spells to liven the action.

Your adversaries consist of Phantom Knights and Red Sorcerers flinging fire-bursts. If you are injured, however, the Lantern of Life restores vitality.

Complicated and difficult, this game is fascinating nonetheless. The sound of footsteps follow the prince and his companion around the castle's four levels and the graphics are colorful. You may even glimpse a magical moment when a sliding door nearly does away with the hero. Flashes of bright color indicate his armour has saved the warrior from harm.

—TR



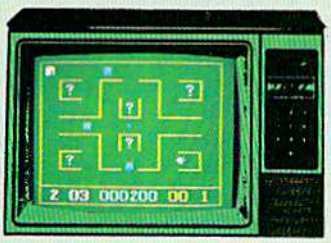
TROPICAL TROUBLE
Imagic for Intellivision
★★★★★
Chivalry is not dead; it has been reincarnated on the home video screen. In the amusing plot of Tropical Trouble, Clarence and Doris are marooned on an unidentified south seas island. Doris has attracted the attention of Beach Bruiser, an ape who seems to underestimate Clarence's powers. Doris has her reservations at times as well.

But our heartsick hero is not discouraged. At the first cries of "Help" from the lady in distress, he dodges boulders, avoids falling lava, jumps over clams and crosses islands to throw Bruiser off a bridge. He is not alone in his quest, either. Helpful Doris flings him her hanky and, although Clarence may blush a bright red when he retrieves it, he is invigorated and momentarily invincible when he picks it up.

This animated game may be whimsical, but it has its share of challenge. Progressing through three levels, the number of obstacles increase and the hanky becomes more elusive.

Detailed graphics add to the fascination. The coconuts even sport their own shadows, helping the player forecast their impending fall.

—TR

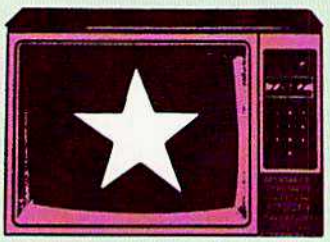


TURTLES!
N.A.P. Co. for Odyssey2
★★
In this arcade descendant, you are a benevolent turtle, undauntedly recovering your offspring who have wandered from the shelter of home. You must seek out the question marks displayed in each room of the Turtle Tower Hotel as you begin the search. If the mark represents a baby turtlet, return it to its home on the edge of the screen.

If the mark changes to a beetle, however, beware. Beetles, of course, are dangerous and must be destroyed with your Bug Bomb. They can be wily as well. The range of their vision determines their powers.

Once you have saved all the little ones, move to the next floor of the hotel, where the exercise begins anew. There is not much more to this slow-moving game. Even the background music is disappointing and joystick control is awkward. Its title is an apt one.

—TR



CLASSIC CARTRIDGES
From past reviews of home video game cartridges, JoyStik offers a summary of the best of what's available. The directory will become a regular feature in each issue. All software listed earned a ★★★★★ (terrific) or ★★★★ (great) evaluation.



CENTIPEDE
Atari, Inc.
for Atari 5200
The arcade's crawly characters encore in this demanding version.

CONQUEST OF THE WORLD
N.A.P. Co.
for Odyssey2
Fascinating war game combines board and video action.

DONKEY KONG
Coleco, Inc.
for Colecovision
Stunning version of the arcade classic.

FROGGER
Parker Bros. Inc.
for Atari VCS
Excellent music and graphics in this arcade counterpart.

GREAT WALL ST. FORTUNE HUNT
N.A.P. Co.
for Odyssey2
Computerized investment transactions for amateur financiers.

MS. PAC-MAN
Atari, Inc.
for Atari 2600
Mazes, traps and tunnels challenge home video's "Woman of the Year."

PHASER PATROL
Arcadia, Inc.
for Atari VCS
Detailed onscreen instrument panel monitors a battle against aliens.

QUEST FOR THE RINGS
N.A.P. Co.
for Odyssey2
Players work to recover ten rings of power. Good graphics.

RIDDLE OF THE SPHINX
Imagic, Inc.
for Atari VCS
Elaborate quest/adventure for ancient Egyptian treasures.

RIVER RAID
Activision, Inc.
for Atari 2600
Convincing graphics and audio backdrop a jet fighter on mission.

STAR RAIDERS
Atari, Inc.
for Atari VCS
Hyperwarp between sectors in classic space/combat challenge.



ATLANTIS
Imagic, Inc.
for Atari VCS
Defend the lost city of Atlantis in a fast-paced, colorful contest.

ATTACK OF THE TIMELORD
N.A.P. Co.
for Odyssey2
Blistering game play in a bottom-screen "time machine" setting.

B-17 BOMBER
Mattel, Inc.
for Intellivision
Fast-moving game with effective voice synthesis.

BERZERK
Atari, Inc.
for Atari VCS
Defend yourself against armies of alien robots.

CHOPPER COMMAND
Activision, Inc.
for Atari VCS
Superb graphics highlight a helicopter's challenging missions.

COSMIC ARK
Imagic, Inc.
for Atari VCS
Exciting, entertaining game with a non-violent space theme.

DEFENDER
Atari, Inc.
for Atari VCS
Better than average alien shoot-out. True to arcade original.

FIREBALL
Arcadia, Inc.
for Atari VCS
Supercharged version of *Breakout*'s juggling game.

FREEDOM FIGHTERS
N.A.P. Co.
for Odyssey2
Destroy enemy Warships and Drone Mines in blistering action.

K.C.'S KRAZY CHASE
N.A.P. Co.
for Odyssey2
Fun sequel to K.C. Munchkin's maze chase.

LADY-BUG
Coleco, Inc.
for Colecovision
Excellent game play, graphics and musical effects in Pac-Man variant.

MAJOR LEAGUE BASEBALL
Mattel, Inc.
for Intellivision
Plays, looks and even sounds like real baseball.

MEGAMANIA
Activision, Inc.
for Atari VCS
Battle killer Radial Tires, Bow Ties, etc., in intense game play.

NIMBLE NUMBERS NED
N.A.P. Co.
for Odyssey2
Voice-enhanced educational game for youngsters six to ten.

PITFALL
Activision
for Intellivision
Guide "Pitfall Harry" through 255 screens of jungle obstacles.

REACTOR
Parker Bros.
for Atari 2600
Careful strategy prevents a nuclear catastrophy.

SOCCER
Atari, Inc.
for Atari 5200
A 3-D playfield for the world's most popular sport.

SPACE SPARTANS
Mattel, Inc.
for Intellivision
Male, female and robot voices report on your ship's status.

STARMASTER
Activision, Inc.
for Atari VCS
Defend starbases and battle enemy Starfighters from a realistic point of view.

SUPER CHALLENGE BASEBALL
Mattel M-Network
for Atari VCS
Real baseball rules, clean and detailed graphics.

SUPER CHALLENGE FOOTBALL
Mattel M-Network
for Atari VCS
Gridiron action for home video.

THRESHOLD
Tigervision, Inc.
for Atari VCS
Move horizontally and vertically to attack from bottom-screen.

UTOPIA
Mattel, Inc.
for Intellivision
Good strategy game for aspiring world leaders.

VANGUARD
Atari, Inc.
for Atari 2600
Exciting encounter between spaceship and alien obstacles.

VENTURE
Coleco, Inc.
for Colecovision
Entertaining graphics lead to the treasure.

VOLLEYBALL
Atari, Inc.
for Atari VCS
Beat an opponent or the computer in regulation play.

HOOKING UP: BRINGING STEREO TO THE VIDEO GAME

Are you tired of playing pong on your grandmother's 19-inch DuMont? Does the blip in her 3-inch speaker drive you crazy? Wouldn't it be more fun watching your clothes spin at the laundromat?

If your answer to any of the above is yes, have we got news for you. Even if it wasn't yes, you might be getting bored with those low-res graphics and (still) 3-inch sound.

This is the first in a series of articles on improving the feel of your home video games. Although the ultimate game system will probably be a 3-D laser disk, on a ten-foot screen, with four channel sound; this is beyond existing technology, and will cost an arm and a leg.

One thing you can do now, however, is to beef up the sounds of your video games. The best way to do this is to take the sounds away from your television set's weak little speaker, and put them through your stereo receiver onto your 12-inch three-ways (or into your headphones).

The jump from mono to stereo isn't as difficult as it may initially seem. There are a number of devices on the market, originally designed to make stereo sound out of a monaural videotape, but which work equally well with home video games.

One representative example is the Rhoades Teledapter, which sells for anywhere from $20 to around $40, depending on how good a shopper you are. The Teledapter has passive circuitry (that is, you don't have to plug it in), which somehow separates the one-channel input into a stereo signal. It takes the weak signal from your TV speaker or VCR and allows you to adapt it to work in your stereo.

Hookup is very simple, as long as your TV set has a headphone jack. If it does, you just plug one end of a cable into the jack, the other end into the Teledapter and the stereo cables into your amplifier.

If your TV doesn't have a headphone jack, you can do three things: buy one that does; have a TV repairman put one in (you can do it yourself, but watch out for those extremely high voltages which could kill you) or run your game signal through your VCR, if you are lucky enough to have one. Run the cable to the Teledapter and you're in business. (If you have a VCR, it may take some experimentation to get it to allow you to "monitor" your game).

If you don't have a stereo, Rhoades also sells a Teledapter with a built-in amplifier, and even sells speakers. Again, there are other manufacturers of stereo synthesizers. They are all probably pretty good. None of the systems will give *true* stereo. None will sound as good as a game designed for stereo (so far, none have been). But all will enhance the experience of playing your games; and that's what it's all about anyway, isn't it?

TRICKS OF THE TRADE





TEMPEST

The secret techniques that can be used to achieve high scores in Tempest are among the most powerful we've found. Not only will these techniques improve your score, but they can be used to earn free games, which can be used to practice these techniques, which can be used to earn free games, which...

Here's how it works: First, you must complete Level 8 (the red level) and earn the 188,000 point bonus. Then carefully shoot spikes (worth one point apiece) until your score ends in one of the two-digit combinations listed below. After reaching the combination you want, use up all of your remaining turns by running into enemies. Then wait for the effect listed below to take place.

00 - freezes screen
01 - access to bookkeeping totals
05 - allows playing during attract mode
06 - 40 free credits
11 - 40 free credits
12 - 40 free credits
14 - credit sound without actual credits
15 - credit sound without actual credits
16 - 40 free credits
17 - 40 free credits
18 - 40 free credits
41 - last two digits of score switch
42 - score increases quickly
46 - allows following game to start at green level
50 - player moves by itself
51 - player moves by itself
60 - objects drift down
66 - objects drift right
67 - objects jump
68 - objects drift up
70 - objects drift up

The most useful combinations are those that earn you 40 free credits (06, 11, 12, 16, 17, 18) and the combination (46) for the "secret jump to green" (described in the April 1983 JoyStik Winning Edge). Another good trick is to stop at 05, which allows you to play the attract mode, and then pause at one of the other combinations while you're playing—its effect will take place instantly, as if you had ended a game with that score. Two additional combinations work only in the attract mode: 46 will generate a random-colored level with the wrong enemies for that level (e.g., a dark blue level with fuseball tankers), and 48 will award you 255 extra turns.

Atari has provided a modification that will prevent these tricks from working, but most of the Tempest machines we've tried do not have the modification.

ROBOTRON

The Robotron tank wave is one of the most difficult tests of skill yet in an arcade game. Intense and complicated, it can drain the stamina of even the best players. The trick explained here won't help you get through a tank wave, but it will give you a chance to relax for a while at the end of the wave.

A tank's most powerful weapon is its ricocheting shots, which bounce off two walls before disappearing. If the tanks stop firing, the tank wave suddenly becomes very relaxed; the tanks themselves are not aggressive, and you can survive for a long time by moving around just enough to avoid them.

To prevent the tanks from firing, you must make them "use up" all of their shots. If you can dodge 20 tank shots (without shooting them), the tanks will stop firing. Needless to say, this is easiest to do when there is only one tank left.

The reason this trick works is very simple. To prevent the tank wave from getting too crowded, Robotron's designers set a limit of 20 tank-bullets on the screen at one time. Each time a tank shoots, that bullet is added to the total, and each time you shoot one of the tanks' bullets, that bullet is subtracted from the running total. But the bullets that disappear after two bounces are not subtracted from the total, so the game program always thinks that those bullets are still active. After 20 bullets have disappeared, the program will think that all 20 of those bullets are still on the screen, and will stop the tanks from firing until you eliminate some of the bullets. But you can't eliminate the bullets—because they're already gone—so the tanks will never start firing again. (Unless you lose a turn, which causes all of the counters to start over.)

DONKEY KONG, JR.

This trick will not help your score, but it has a comical effect. On the first board of Donkey Kong, Jr., climb to



the top of the two vines at the far right edge of the screen. Then, with one hand on each vine, push up against the top of the screen and hold the joystick forward. All of the action on the screen will slow to a snail's pace until you release the joystick.

DIG DUG

Here's the trick mentioned in the Editor's Message of this issue as an alternative to "playing" Dig Dug. Kill all the monsters except one. Stop the last monster two spaces under a rock and hold him there by pumping him just enough to freeze him. Then dig up under the rock, pumping the monster as you pass through him. When you hit the rock, reverse back down inside the monster and turn away. Quickly turn around and explode the monster just before the rock hits him. In effect, the monster is killed twice. The game will not advance to the next round, leaving Dig Dug all alone on the screen and free to dig patterns or just sit still and take a break. When you want to advance to the next round, either get the fruit or drop a rock on lonely old Dig Dug.

STARGATE "PRO CATCH"

Many of the tricks covered in this column (e.g., the Tempest trick on p. 60) are the result of programming errors or oversights. But occasionally a designer will intentionally hide a "bug" in the game program in such a way that only the best players will uncover it. The Stargate pro catch—a difficult maneuver worth 2000 points—is an excellent example of this.

To execute a pro catch, shoot all of the opponents in a Stargate attack wave except one lander. Then wait for that lander to pick up a humanoid. Shoot the lander while she is rising upward (with the humanoid in tow), and then move to a position just above the planet's surface and directly below the falling humanoid. If you are close enough to the planet below, the humanoid will be deposited safely on the surface at the instant you catch it, and you'll be rewarded with a colorful flashing screen, some special sound effects, and a 2000 point bonus.

Unlike most of the other hidden tricks in video games, the pro catch "makes sense" from the player's point of view. In other words, if you think about how to get the most points out of a Stargate attack wave you'll probably come up with the move described above. Think of it this way: The wave is not over until the falling humanoid hits the ground. If you catch the humanoid, you'll get 500 points (and the wave will be finished). But if you could both catch the humanoid and set it down before the wave is over, you would receive 500 for the catch and an additional 500 for landing the humanoid. So, you try to catch the humanoid as close to the ground as possible, in the hope that you can set it down before the program realizes that the wave is finished.

A slightly different version of the pro catch can be used to squeeze 500 points out of the end of a Defender attack wave. Save a lander for the last opponent in the attack wave, and then let it pick up a humanoid. Fly directly at the lander at top speed, and—just before colliding with it—shoot it and pull down on the altitude lever. If everything is timed just right (including a couple of things beyond your control), you'll catch the humanoid before the wave finishes and earn an extra 500 points.

HELP!

If you have discovered a trick that you think might be of interest to other JoyStik readers, send it in. We can't guarantee that we'll use it, but if we do we'll give name credit to the first contributor of each trick. Contributors for this issue were Eric Ginner, Ben Gold, Tad Perry, and Larry Demar. We appreciate their help.

TECHNOCRACY

THE MICROWAFER: LOW COST STORAGE

It looks like a small disk drive. It stores and plays back up to 128K of data at the same rate as a disk drive. The storage media typically cost about $2 or $3. But it is less than half the size of a disk drive, and costs between one-third and one-half as much as a disk drive. What is it?

It's the MicroWafer system, and it's an excellent alternative to the high cost disk drive and the low cost (but inefficient) cassette medium. The system was developed by a firm called Exatron as a data handling device for the Radio Shack TRS-80 and some Olivetti electric typewriters. Recently, the firm was taken over by Entrepo, which has aggressively pursued marketing it as an OEM (original equipment manufacturer) product.

The system consists of the small tape drive device which records and plays back onto the wafer; a business-card sized continuous-loop tape cartridge. This is something like a microminiaturized 8-track tape cartridge, except that only one tape track is used, and the tape is high quality to support data recording needs.

Hands-on testing of Exatron's Vic-20 (or Commodore 64) model showed the device to be a smooth running, rapid (compared to cassette), powerful device. It worked flawlessly. Depending on the length of tape inside the wafer, up to 128K bytes of data can be recorded on each cartridge. Since the tape travels in only one direction, access time is slower than a disk (with random access capabilities), and can take up to a minute to locate and load a particular program. Anyone laboring with a cassette tape player would welcome the advantage in speed which the Exatron device provides.

Currently, Texas Instruments offers this system in its WaferTape drive, which retails for around $139. Colecovision utilizes the same technology in its SuperGame module, which costs around $129. Entrepo is currently developing a prototype system which it plans to sell to Commodore. (Even though Exatron has been selling a Vic-20/Commodore 64 unit for a while, it has only been available on a mail order basis for around $200, and will apparently continue to be offered as a mail-order device. For a mass market, a redesigned unit should be made available to and from Commodore).

With a larger market and higher production figures, the costs of the basic components should drop considerably. This price drop may ultimately see the replacement of cassette media systems with the more efficient MicroWafer system within the next few years.

ARCADE CONVERSIONS

He arrives in the dead of night, bringing with him a small microcassette tape, a key and a couple of sheets of printed plastic. Ten minutes later, he sneaks out, as quietly as he entered, his job complete.

Is this man a crook? No, he is the owner of the arcade, and he just changed an outdated BurgerTime machine into another, potentially successful video game. Can it happen at any local arcade? It probably has already.

What we've just described is the increasingly popular method of converting tired, old arcade games into new, exciting ones. Since the arcade market pretty much bottomed out in the last year or so, many operators are stuck with a lot of "used up" games. If Space Invaders, which just a few years ago was the hottest thing on the screen, is now bringing in $10 a week, and a new machine costs between $2000 and $4000 with no guaranteed results, what can an operator do?



Data East's multi-conversion kit.

One solution offered by Data East, Universal, Bally/Midway and a number of other manufacturers is the conversion. A conversion reuses many of the internal components of an older video game. That old Space Invaders game already has a high-quality video monitor, a power supply, a cabinet, coin box, controllers and miscellaneous internal hardware. If you can recycle these components, you save a lot of money.

It's something like putting a new engine into your Packard, and getting another 100,000 miles of driving. In the case of the arcade game, the new game bears no resemblance to the older model, because the exterior of the cabinet has new decal artwork and controllers may have been changed. The only way to tell if the game is original is, possibly, to look at the back of the cabinet.

There are currently two systems in use for converting an old game. The first method involves major surgery: the arcade console is either sent back to a factory for modification or the work can be done on

site by an operator. In this process, the internal circuit boards (which carried the original hard-wired game data) are removed and replaced with new ones.

The Data East approach is easier still. A one-time conversion removes much of the internal circuitry and replaces it with a standard set of internal circuits. This module accepts all the data needed to run the game on a microcassette tape cartridge. In order to change from BurgerTime, for example, to a newer game, the operator simply opens the coin box, pulls out the old tape cartridge, inserts a new one and slaps on some new decals. The entire conversion can be made in less than ten minutes and should cost between $350 and $450, quite a bargain compared to the cost of replacing an entire machine.

Sources at Data East report that designers in Japan are busy developing many new games for this system and that there should be a regular supply of new ones. This technology also allows a game to be field tested at minimum cost and inconvenience.

With many arcades already filled with machines, and few ready markets to dump them onto, we will probably be seeing many converted games in the future. The economics of video arcades virtually guarantee it.

DESIGNING YOUR OWN VIDEO GAMES

Boredom has always been a factor in most video games. You buy one, take it home, play it and it's the greatest thing since John Travolta. And you keep playing it. After a while, the novelty wears off, and it's just like that faded Travolta poster hung on the inside of your closet. You pull down the poster, stick the cartridge back in its box, and go out to get something else new and exciting.

One of the reasons for the eventual boredom, sooner in some games than in others, is that everything is fixed. Game play is always the same, the characters on the screen don't change and once you've seen it all ...you've seen it all. That's the way it's always been.

Mattel has come up with an answer to these problems. If you purchase their Entertainment Computer System, an add-on computer module with keyboard and what they now call the Game Maker, you can develop your own games.

Although the exact configuration hasn't been locked in silicon, the module reportedly comes with a selection of preprogrammed characters you can select to be included in your game, selectable action, and the ability to take characters off of your other Intellivision game carts, which Mattel tentatively calls their "suck out" feature. Imagine BurgerTime's Peter Pepper trying to shoot down the space invaders from Space Armada. Although Mattel hasn't announced many details of the actual functioning of this cartridge, it may also be possible to take game play, in addition to the characters, off of other cartridges.

The ability to take preprogrammed characters and situations and redefine them into a new game not only saves a great deal of bit crunching, but also opens up hundreds of possible new games, all for the price of the Game Maker cartridge. Even if you can't pull game play off of other carts, with the ability to make changes in some aspects of a repetitive game, the boredom level may take much longer to reach.

Mattel isn't the first with such an ability, although it is the first significant manufacturer to introduce such a product. Perkins Engineering has had a device called the Blue Ram for the Astrocade. This device increased the available memory for game programming, allowed a user to rewrite and enhance existing cartridge and tape-recorded programs and, in effect, to make new games from features in a variety of games. These new games could also be recorded onto tape, and played back through anyone's Blue Ram.

Although this feature of the Blue Ram's operations offered a great deal of variety, it wasn't aggressively marketed, it cost more than many wanted to pay and was designed for a similarly underrated, undermarketed game system. It is virtually certain that Mattel will fare much better with their Game Maker cartridge, which should be out before Christmas.

DIFFICULTY SETTINGS

Here are some operator accessible settings for more of your arcade favorites.

Bubbles, from Williams, can be set at nine possible levels of difficulty. The game comes from the factory set at the fifth one. Bubbles has a possible 99 men per play and you can earn an extra man every 1,000 to 99,000 points. The factory, however, sets men per play at three and lets you earn an extra man every 20,000 points.

Taito's Zookeeper is set at the factory for three zookeepers per play, although 99 are possible. Speed levels for novice and expert animals can range from one to 99.

Difficulty levels for Atari's Food Fight are set at the factory on two, but can vary from one to five. You have two to five lives per play (factory setting at three). Bonuses (two levels) are available at 5,000 to 1,000,000 points; the factory sets bonuses at 25,000 and 100,000.

Williams' Sinistar comes from the factory set at a difficulty level of five; nine are available. There are a possible 99 ships per play (factory setting at three). The first extra ship is possible at 1,000 to 99,000 points with additional ships set at zero to 99,000. The factory sets the first extra and additional ships at 30,000.

JOYSTIK CHARTS

The list grows longer and the scores grow higher! Send your high scores to the Twin Galaxies International Scoreboard: 226 E. Main Street, Ottumwa, Iowa 52501. Please include a signed verification of your score(s) from the owner or manager of the arcade in which the score was achieved. Also, be sure to include the bonus and difficulty settings from the machine you played, and any comments you wish to make about the game.

Game	Player	High Score	Date	Arcade Location
Amidar	Joe Barrett	18,201,100	8/13/82	Pot of Gold: Kenosha, WI
Asteroids	Leo Daniels	40,101,910	2/6/82	Ocean View Corp.: Carolina Beach, NC
Asteroids Deluxe	Leo Daniels	2,269,230	5/3/82	Light Years Amusement: Wrightsville Beach, NC
Battlezone	Steve Ritger	9,855,000	3/12/83	Time Out Arcade: Springfield, VA
Berzerk	Ron Bailey	77,490	3/22/83	Time Out Arcade: Gastonia, NC
Buck Rogers	Bruce Borsato	313,330	3/8/83	Electric Pizazz: Trail, British Columbia
BurgerTime	Chuck Coss	4,163,250	1/27/83	Aladdin's Castle: Steubenville, OH
Centipede	Darren Olson	15,207,353	10/7/82	Reflections: Calgary, Alberta
Defender	Burt Jennings	76,377,300	4/8/83	Outer Limits: Durham, NC
Dig Dug	Ken Arthur	4,129,600	1/20/83	Video Games, Inc.: Blacksburg, VA
Donkey Kong	Bill Mitchell	874,300	11/82	Twin Galaxies: Ottumwa, IA
Donkey Kong, Jr.	Bill Mitchell	957,300	11/82	Twin Galaxies: Ottumwa, IA
Food Fight	Steve Harris	895,140	3/22/83	Bob's IGA: Kansas City, MO
Frenzy	Mike Mann	4,789,909	3/4/83	The Arcade: Oak Park Heights, MN
Frogger	Mark Robichek	442,330	8/30/82	Phil's: Lakewood, CA
Front Line	Bob Tomasevich	278,500	4/5/83	Haunted Trails: Burbank, IL
Galaga	Mike Lynn	12,753,570	12/29/82	Outer Limits: Durham, NC
Galaxian	Chip Davis	367,720	1/17/83	John Brown University: Fayetteville, AR
Gorf	Jason Smith	2,220,000	2/13/83	Goldmine: Midland, TX
Joust	Robbie Saunders	35,057,100	4/7/83	Outer Limits: Durham, NC
Jungle King	Chris Knight	1,045,700	4/6/83	Putt Putt of Conyers: Conyers, GA
Make Trax	Randy Bortot	1,834,660	9/1/82	The Arcade: Cambridge, MN
Millipede	Eric Ginner	1,720,392	3/5/83	Golfland USA: Sunnyvale, CA
Missile Command	Victor Ali	69,739,020	1/21/83	Cinedome 7: San Francisco, CA
Moon Patrol	Mark Robichek	1,214,600	3/11/83	Golfland USA: Mountain View, CA
Ms. Pac-Man	Chris O'Brien	347,400	12/27/82	Fun Time Game Center: San Diego, CA
Omega Race	Craig Nichols	2,638,800	6/6/82	Arcade Alley: Glendora, CA
Pac-Man	Mike Lepkosky	8,161,270	11/5/82	Fantasy Freeway: Houston, TX
Pengo	Kevin Leisner	809,990	2/25/83	Mission Control: Racine, WI
Phoenix	Mark Gotfraind	987,620	3/17/83	Cloverleaf Miniature Golf: N. Miami Beach, FL
Pole Position	Mike Klug	65,460	2/28/83	Video Paradise: San Jose, CA
Popeye	Steve Harris	317,850	3/31/83	KC Pro Bowl: Kansas City, MO
Q*Bert	Ben Gold	17,899,325	3/27/83	Pro Video Game Center: Dallas, TX
Qix	Bill Camden	1,666,604	1/15/83	Galaxy 1: Lynchberg, VA
Reactor	Todd Mayberry	396,731	2/11/83	Mack's Gold Mine: Kennett, MO
Rescue	Roddy Rodolfo	419,555	1/2/83	Putt Putt Golf & Games: Ft. Worth, TX
Robotron	Eddie O'Neil	252,114,350	1/23/83	Outer Limits: Durham, NC
Satan's Hollow	Michael Ward	8,692,035	2/11/83	Odyssey: Madison, WI
Scramble	John Norman	999,250	12/6/82	Light Years Amusement: Wrightsville Beach, NC
Space Duel	David Covell	577,710	12/4//82	Bun 'n Games: Kenosha, WI
Space Invaders	Ned Troide	210,000	8/1/82	Barrel of Fun: Clearwater, FL
Space Invaders Deluxe	Matt Brass	425,230	9/16/82	Modern West: Helena, MT
Star Trek	Richard Borcher	20,916,075	4/1/83	Fun 'n Games: Santa Maria, CA
Stargate	Roger Mangum	71,473,400	4/8/83	Outer Limits: Durham, NC
Tempest	Lee Hedrich	5,829,783	3/9/83	Arcade City of Florida: Naples, FL
Time Pilot	John Roberts	1,892,000	2/27/83	Great Escape: Plattsburg, NY
Tron	Allen Rager	8,203,510	4/10/83	Video Land: Millington, TN
Turbo	Tom Brandney	127,631	1/20/83	Aladdin's Castle: Cranberry City, PA
Tutankham	Mark Robichek	1,004,980	4/3/83	Golfland: Milpitas, CA
Xevious	Tim Williams	2,737,420	10/83	Mr. Bill's: Moscow, ID
Zaxxon	Roger Mangum	2,326,350	12/28/82	Outer Limits: Durham, NC

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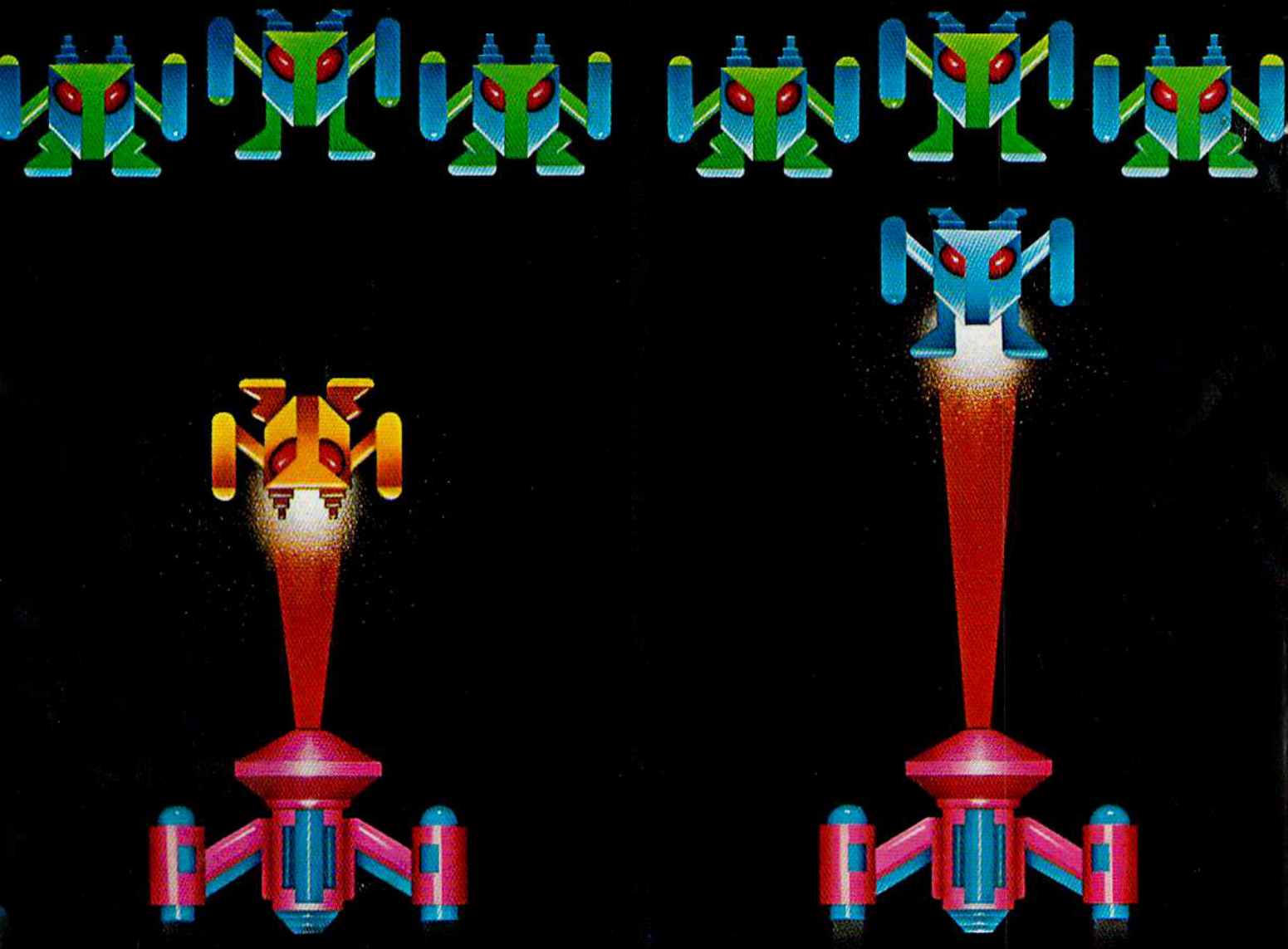
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