

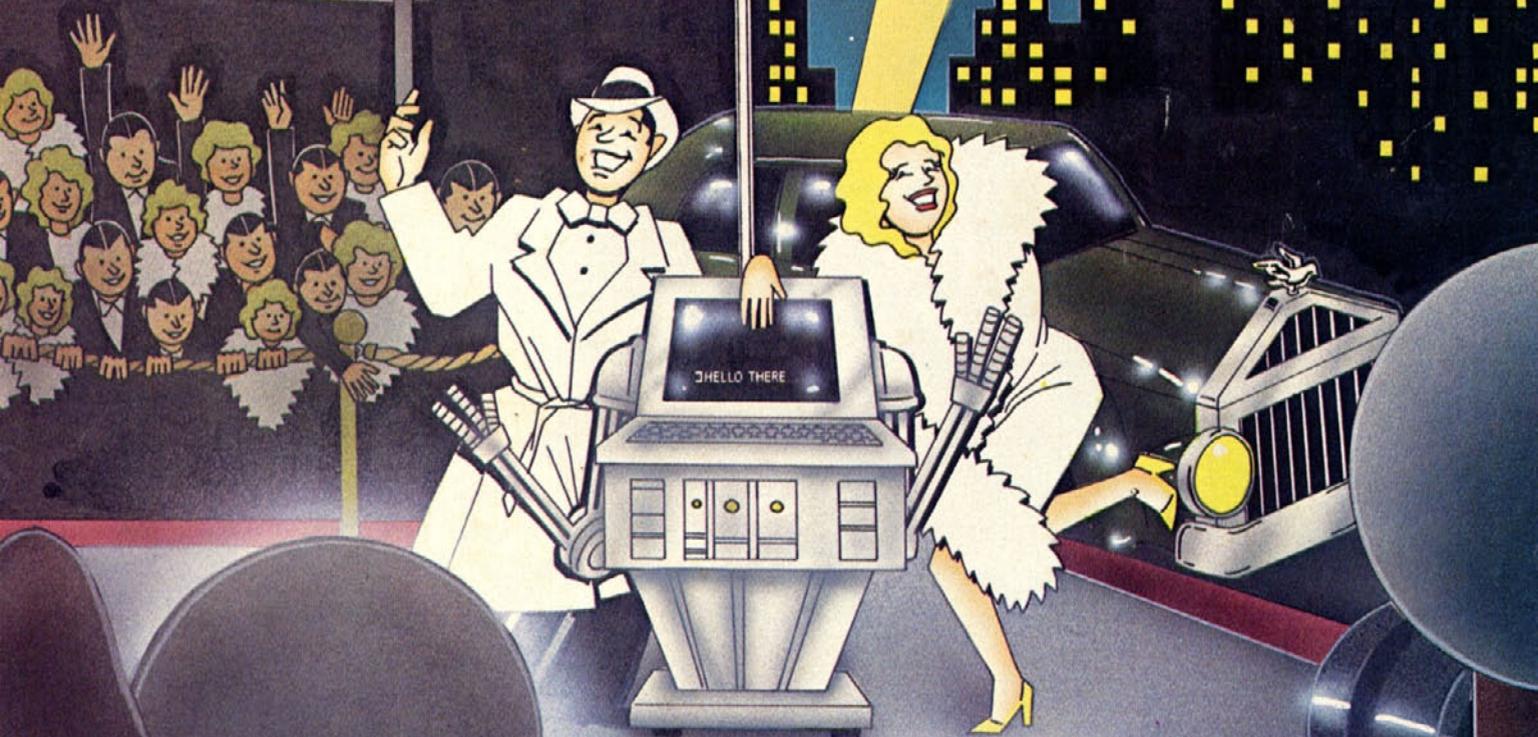
SOFTLINE

VOLUME 2

JULY-AUGUST 1983

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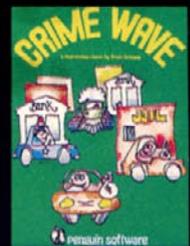
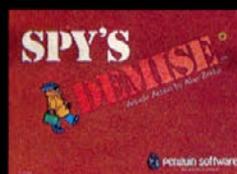
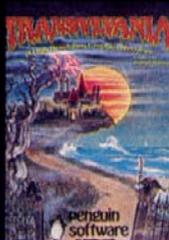
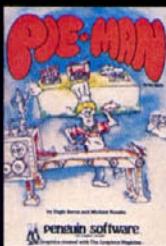
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Directline / 2

Actual letters by actual readers with actual literate abilities.

Adventures in Adventuring: Return of the Teddy / 8

Yeah, it gets tough this month. How to make your own "You can't do that . . . yet" puzzles.

by Ken Rose

Dungeon Fun / 14

Make fantasy games in the privacy of your own home. Add one drop of water and stir.

by Jock Root

Atari Sound / 19

Pokey takes you surfing again on those bitchen waveforms.

by Bill "Gumby" Williams

Software 101: Big Bux Beckon in Education Biz / 21

Sure beats reading the classifieds.

by Sherwin Steffin

Gameline / 22

Q: Are these real, or are they games?

A: What is the difference?

No Tipping / 27

Halllllp!



Your Computer: The Motion Picture / 30

Chris "Hi-Res" Reeve and war games a la modem. No transvestite actors, no aliens on the phone. Just good ol' wholesome computer fun.

by Andrew Christie and Les Paul Robley

No Contest / 34

All-new contests with brand-spanking-new prizes. Brent is finished (or is that just a rumor based on clues in his albums?).

The Guts; the Glory; the Game / 38

Sure, you can get a high score at home, but competing joystick to joystick against others takes nerve, skill, and . . . aw, heck, just read the story!

by William Meggs

Games on the March! / 42

Marvelous, grandiose things gamemakers say are coming your way. Or are they just trying to calm the restless gamers?

Infomania / 46

Is Bill Budge really Jackson Browne's half-brother? Does the Atari version of Porky's II really require 256K? Who knows? Who cares? Here is some stuff we do know.

New Players: Electronic Arts / 52

No kidding, software as an art form? C'mon, be real. Who are these guys?

Computer Stars Over Hollywood / 54

Ya got the makings of a star, kid. Trust us, trust us. Sign right here. The first adventure game contest on paper. Turn page. Enter contest. Win money. Let's have lunch.

High Scores / 57

Was it really worth the three quarts of coffee, the bloodshot eyes, the blistered joystick fingers just to see your name here? Better believe it.

Highlines/Hall of Fame / 57

Notes on those who had only two quarts of coffee, one nosebleed, and a few hangnails. But we print their names anyway. For different reasons.

Editorial: A Margot Comstock Tommervik production. Produced by Pat Ryall. Directed by Andrew Christie. Stunts: Tommy Gear. Story and screenplay by Matt Yuen, Jean Varven, David Durkee, David Hunter, and Catherine Petersen. Cutting room: Cord Cooper. Sound: Harry McNeil and Judith Pfeffer. Key grip: Betsy Barnes. Critic: Roe Adams.

Art: Production design: Kurt Wahlner. Special effects: Don Robertson. Costuming: Mike Pender. Makeup: Tim Durr, Lucas McClure.

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DIRECTLINE

Seeing Is Believing

I would like to talk about a subject that is dear to the hearts of all readers of *Softline*: Brent Shaw.

Of course, we all know about his feats of derring-do in *International Gran Prix*, and we have gone so far as to honor him by observing Brent Shaw Month and naming contests after him. But I would like to raise a question that will likely cause some controversy: Has anyone ever seen Brent Shaw?

Sure, we've read about him, and some may have claimed to have talked to him, but have we ever seen him? I am almost forced to stop believing in this "Brent Shaw" person. I demand some action! I want to see an actual photograph of the alleged Brent Shaw!

Personally, I think this whole thing was cooked up by the late shah of Iran as a plot to overthrow the very foundation of American computer game playing. If I do not see visual proof of the existence of Brent Shaw, I will be forced to alter my plans of naming my first-born after him.

Lord Kalagil, Albuquerque, NM

Now Hear This

Many software pirates have written to this and other magazines claiming that they pirate software because most programs are too expensive and/or are not worth purchasing. This immature excuse is easily discredited by pointing out that companies such as Black Sun Program Exchange will gladly rent you a program for three weeks at about one-quarter of the retail price. This is a legal, inexpensive, and moral alternative to pirating software.

I have held the high score on *International Gran Prix* (thirty-two seconds) for quite some time and would like to see some competition. To achieve a score that low, you must race on Karlskoga, level 0, for two laps. Use the first lap to ascertain a speed of two hundred miles per hour so that you can start the second lap at top speed, instead of the usual dead start. You should always race on the inside lane and keep a map of the track so you will not crash. A single lap record is thirty-two seconds.

Brent Shaw, Amwalk, NY

Scat Doggy

I really enjoyed seeing an article in a computer magazine that wasn't just another goody-goody review in favor of any crummy new program that happened to come along. The dog of the year, *Frogger*, certainly had the votes it needed to win, but this brings up some questions: If *Frogger* really barks that loud, then why is it a bestseller according to *Softtalk*? Why did it outsell *Castle Wolfenstein*, *WordStar*, *Screen Writer II*, and *DB Master* in April? Are people really masochists, or is Brent Shaw going on a shopping spree?

On another note, didn't *Alkemstone* receive any votes? This program has to be the worst I have ever purchased. Awesome sounds, simulating postnasal drip, in combination with the graphics quality of *Human Fly*, tend to make one reach for the power switch. At least *Human Fly* was compiled so we wouldn't have to wait as long for the game to be over. Anyone who has seen *Alkemstone* can tell that this dog hasn't been let out so nature can take its course. This pooch is so full of it, they should have included a pooper scooper with documentation. I can't wait to see *Dakin-5's* next attempt at programming.

Robert Zitko, Downers Grove, IL

Stuck in the Sticks

I enjoy reading *Softline* very much. I have only a few complaints. I receive my copy by mail, and when it arrives at my door it

looks as though it has been run through a paper shredder. Could you put it in a brown wrapper or something to protect it so it doesn't look like it's been handled by the U.S. Postal Service or Anne (EPA) Burford?

I also have a complaint about your game reviews. I live in the sticks and the nearest competent Apple dealer is forty miles away. There's nothing like the feeling of being screwed over by a review that highly praises a game which, after you receive it, you think could qualify for the *Softline* top ten dog list. So, consistent with the desires mentioned in George Fergus's and John Wira's letters about your reviews, could you mention the cons as well as the pros of the game, not just lauding or pouncing on it?

In conclusion, I would like to commend and recommend two excellent software packages, the first being *Ultima II*, from Sierra On-Line, for its stunning graphics and the vastness of its plot. The second, the *Bank Street Writer* from Broderbund Software, is the best small word processor for the money.

Kris Woods, Athens, OH

Wants More than a Handful

I'm fifteen years old, play advanced *Dungeons and Dragons* once a week, and have solved *Wizardry* and *Knight of Diamonds*, and also the *Apple Adventure*. My characters in *Wizardry* are of the fifteenth level to the nineteenth level, and I consider myself a seasoned adventurer.

Well, I'm writing about the game *Ultima II*. First I would like to congratulate Lord British on the graphics and sounds of the game. However, the sounds bother everyone in my home, including me. Also, after a few hours of playing it, my eyes become sore. Some mention of the irritating noises and the bright graphics should have been made in *Softline's* review.

Another disappointing thing is that, totally unlike *Wizardry*, *Knight of Diamonds* contains only a handful of monsters and a handful of spells. Even though I didn't like it, I know that some people do.

Steven J. Kirchhof, Granby, MA

Let's Hold Our Breath—Shall We?

Normally I would reserve comment on any reviews of our products, but I would like to make some comments pertaining to *Kayos*. *Kayos* is one of my favorite games. I am a hard-core arcade player and I personally have a high score of 413,000 points on *Kayos*. My living room is full of arcade games like *Space Wars*, *Asteroids*, *Sea Wolf*, and so forth. I like a hard game!

I also would like to point out that *Kayos* was released almost three years ago. It was released in 8K of memory because that was the amount of memory coming stock with the Atari 400 back in those days. *Kayos* was one of the first games released for the Atari totally in machine language by a third-party vendor.

The only thing I am left wondering is whether *Kayos* will still be competing against other games in 1999. If it is, it can't be that bad.

Jim Mahoney, vice president,
Computer Magic, Plainview, NY

I Left My Monster in San Francisco

I am writing about Lee Stafford's high score of 1,283,900 on *Crush*, *Crumble*, and *Chomp* from Epyx. Having owned and played this game for about two years, I am aware—as I'm sure others are—that it's possible to achieve any score you wish. In fact, five million or more would be duck soup.

I have a game saved that's in progress that I play periodically. I'm now up to 800,000 points. If I wanted to, I could walk away and leave

the computer on for a week, thereby easily topping Lee Stafford's score. Frankly, I couldn't afford the electricity bill. This loophole in the game will allow for virtually any score, provided you don't get a blackout in your area!

All you've got to do is "grow" a mechanical monster that can swim, choose "survival" as your objective, and dump him smack dab in the middle of San Francisco Bay. Since the mechanical monster doesn't eat, there is no need to move from that spot. After a hundred or so game minutes have elapsed, the only foes that show up are tanks—and their gunfire can't reach your monster! You can sit for an eternity in the bay, earning five points for every game minute that goes by.

I'm wondering if I should leave my computer on long enough to top the current high score and send it in, or will you drop this game from the list now that I've brought the loophole to light?

Lisa Oerman, Muscatine, IA

Save your computer—and save your scores for the "survival" scenario of Crush, Crumble, and Chomp. Softline will still be accepting scores for proficiency in those other, more important point-getting modes, such as "rampaging and destroying."

Wall Begone

I have a correction for "The Amazing Maze," part 5. To see the problem, turn west and teleport to 10,1. You will see a left front wall where there shouldn't be one. Fortunately the problem is easily fixed: Change line 1250 to `goto 1320` instead of `gosub 1320`.

Tim Benner, Milesburg, PA

Chain Chain Chain

To Ken Rose: Without getting technical, is there any way you can program modular sections of an adventure map, call individual modules to run, and still maintain the variables from a previous module?

Charles Mastrovich and Richard Turro, New York, NY

Ken Rose responds:

There is a command your Apple and Atari disk-operating systems know called *chain*. On the Apple, it is used from Integer Basic, but it can be used from Applesoft with some modification. Chain allows you to load and run a program without clearing the values of any of the variables of a previous program. You can then also use variables from a previous program. Another more obvious technique is to write out a file of variables from one program and read it in when you load another program.

Ken Rose, Palatine, IL

Enterprising Freely

It would be nice if you could describe the keys one might use during a game and indicate whether they're interchangeable. I would also like to see games like *Jellyfish* (in which a Joyport is almost mandatory) given a lower rating than usual. I have a TG Select-a-Port, so I cannot operate an Atari joystick without an adapter. Games like this are too hard for most people, but I guess this sells more Joyports. So much for free enterprise.

I have a question regarding the Hayes Smartmodem. If I bought a serial card, could I use it with the Apple II Plus? I like its features better than the Micromodem II's, but I don't have any idea if the software is compatible.

I would like to produce some games made with *The Graphics Magician* soon. Do I have to have the permission of Penguin Soft-

ware if I want to put them in the public domain?

Dennis Heaton, Seattle, WA

Permission may be obtained by contacting Dave Albert at Penguin Software, 830 Fourth Avenue, Geneva, IL 60134; (312) 232-1984.

Convertibles Reconsidered

In reply to David Bean's letter (January '83 Directline), I would ask you to reconsider the thought of converting Apple programs to IBM. The Apple and the IBM have a completely different microprocessor. That is, they do not speak the same Basic or the same assembly language. Both machines interpret Basic like Samoan and French. However, in buying the IBM, you really shouldn't try to convert Apple programs. The IBM already has a vast library of programs for the computer itself. I would suggest picking up a *Softalk for the IBM, or PC*, or any other magazine that shows the things that IBM already has. You shouldn't have to go to Apple when you have the programs available on the IBM already. If you are interested in Apple programs, I would suggest getting an Apple. If you like the things an IBM does, get and use the IBM and its software. The Commodore Pet, however, has the same microprocessor that the Apple does, so the conversion will be easier between those two machines.

Daniel North, Westminster, CA

Paleolithic Proficiency

I was startled to see "The Cassette Connection" letter from E. Macsinka in the March '83 issue. I loaded Applesoft from tape for two or three years, until I found an Applesoft ROM board for \$50. (That's all they're worth.) I still use tape exclusively for program storage. It is nearly 100 percent reliable and takes only two minutes to load 10K. Furthermore, since one can hardly find software on tape nowadays, one is forced to do one's own programming—a plus in my estimation. But I did think I was the last of the Neanderthals.

Ms. or Mr. Macsinka supplies some good information, but in five years of tape loading I have come up with a foolproof operation myself. The old red manual contained a recommendation for the Panasonic RQ-2309 cassette recorder. This is the only one I've found that is not in the least critical as to volume settings. With tone control at maximum high (10), the volume control can be set anywhere from 4 to 7 and forgotten, for both save and load.

The superior performance is probably because this machine has better fidelity in both record and playback. Many machines have the necessary response to 9 kHz on playback but not on record.

However, if the audio output from another make of recorder is set to five volts, peak to peak, they should also work. If the recording is started just prior to a selected number coming up on the digital counter, then set to that number on playback, one does not have to monitor for the start of the tone leader.

W. S. Skeen, Hornbrook, CA

All the Answers—Almost

I've gotten through *Mystery House*, *Wizard and the Princess*, *Wizardry*, and *Knight of Diamonds*, and could probably answer questions sent to No Tipping.

Does anyone know why On-Line had a change of name to Sierra On-Line? What magazine does Softalk Publishing publish besides *Softalk* and *Softline*?

Wade Hoelter, Piedmont, CA

Softalk also publishes Softalk for the IBM Personal Computer

and has a great interest in *Softdisk*, the magazine on disk.

As to your question about whether anyone knows why *On-Line* changed its name to *Sierra On-Line*: probably.

Stopped by the Store

I am working on a program using joystick and artifact colors in graphics mode eight to produce static displays in four colors. However, I'm having trouble saving my screens to disk. Does anyone have a program to store and retrieve Atari gr.8 screens?

Vernon Anderson, Santa Clara, CA

In Proportion

I would first like to say how astonished I was to find out that some of my friends who have Apples and Centronics 739s (at my urging) are not using the proportional spacing mode. When I showed them the P.P. mode compared to standard print they were amazed at the drastic difference. For those of you with Centronics 739s, here is the program:

```
10 PR#1
20 PRINT CHR$(27)+CHR$(17)
30 Control I 132N
40 PR#0 (substitute 20 for 17 for compressed print)
```

How do I get elongated print on the above? I have tried a lot of programs but none seemed to work. Also, I would like to point out that the articles on graphics by Ken Williams were excellent but were directed to the advanced programmer, while a beginner such as myself requires more explanations.

Jeff Feldman, Miami Beach, FL

Reader's Gripes

Okay, guys, I've had it! I like *Softline* and all, and I've been buying and reading it avidly since it came out. But now (you saw it coming) it's time to gripe!

My favorite section is High Scores. The editor who compiles it and the writer responsible for Highlines do a great job. I didn't mind when you guys started wanting verification for high scores. Nor did I mind when you pulled some games out of the list, even though they had high scores that are easily obtainable by the average schmoe. But no—you guys finally had to outdo yourselves!

What's all this noise about retiring game scores that have been

on the list for more than six months? Are you getting tired of typing the same names over and over again?

Think: When I want to see the high score for a game I just whipped the tar out of, can I pick up the most recent issue of *Softline* and find out what the current high score is? No! I have to refer to past issues to find the damn score. And how about all those poor, inane people who just started receiving this merry mag? They don't have all those fancy back issues like I do.

Sure, they can always send in their high scores; but wouldn't you be disappointed if you had gone to all the trouble of walking to the post office in the pouring rain to buy a stamp, only to discover that not only is there a higher score than yours, but that it's so high that if you had known, you wouldn't have spent all that time at the computer trying to achieve it?

Wasn't the proud display of all the great computer game players one of the central ideas of High Scores in the first place? Otherwise, why have the column in the magazine at all? You may not be dumb—just defeating your purpose.

Let the egos have their ride until their score is beaten. (I, for one, being a lousy game player, would like to have their throats!)

Don Howe, Scotia, NY

All right! Okay! Enough! The Hall of Fame, at great personal expense, direct from its performances before the crowned heads of Europe, is now with us. Everybody peek at the last page and come right back.

All Sorts

First, thanks to the people at Sir-tech for their prompt reply. When I lost my instruction booklet, they offered to send me one for only six dollars with proof of purchase.

Also, thank you, Ken Rose, for line 3090 in your adventure program "Hide, Hide, the Cow's Outside." It's nice to know that someone else is a Monty Python fan, too.

To John Woo, who complained about the hardware modification problems: You justly complain that it might cost you twenty-five dollars for a new chip. However, you ignore the fact that your piracy costs software companies hundreds of dollars. If programmers are anything like writers, they will go to any length to protect their precious programs from the evils of piracy—even if this means using hardware. I think Penguin has probably just given up on codes! You might like to know I'm thirteen. Did you know that if you were re-

I'd Love To Learn To Go Adventuring, But I Don't Want To Do a Lot of Typing

Okay, pilgrims, this is it: the *Softline* "Adventures in Adventuring," on disk, in Applesoft or Atari Basic. The programs are in chronological order, taking you through graduated levels of complexity. The disks are \$8 each, less in combination; the *Softline* back issues featuring the program listings and accompanying explanatory articles are available for \$2 each.

January 1982: *Attack of the Three-Toed Ogre*. Rolling dice, winning through attributes, and variables.

March 1982: *Please Parse the Zork*. Communication and interaction, string handling.

May 1982: *A Voyage to the Planet Pincus*. Sense of direction, dimension variables, and vectors.

July 1982: *The Werewolf Howls at Dawn*. Keeping track of time with a counter.

September 1982: *Case of the Pig-Headed Diamond*. Picking up, using, and dropping.

November 1982: *Labyrinth of the Minotaur*. An adventure maze, using the routines learned previously.

January 1983: *The Horrible Rotten Dancing Dragon . . . Strikes!* Pulling it all together for a full 18K adventure.

March 1983: *Challenge of the Adventure Writers Guild*.

A bit of whimsy; a complete adventure in forty-three lines.

May-June 1983: *Hide, Hide, the Cow's Outside*. Adventure in a western setting; hi-res cows not included. (18K)

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January, March, May, July, September '82

Apple Pak 2

November '82, January, March, May '83

Atari Pak 1

January, March, May '82

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ported, you could be subject to fines, imprisonment, and all sorts of nasty things?

Laurel Goulding, Grosse Ile, MI

What Fun, Indeed

I am a compulsive *Knight of Diamonds* player. If I do not make at least one level per day, I suffer from a form of withdrawal illness. I have reached some pretty amazing heights in my one year of playing. I have one level 54 evil lord, with 460 hit points, another level 50 evil lord, a level 49 evil elfin ninja (who can cast all priest spells), a level 56 priest, and two level 61 evil bishops, each having all spells with the maximum points in each (9).

Now comes my predicament: I have complete maps for two levels in the game; they are 1 and 6. In between, I only have coordinates and small sectional maps. I have all the armor and the staff from the statue. I cannot find the king in his tomb, but I have all three clues and most of all dark areas mapped. Where is that king? What is the answer to that blasted riddle? Not only the sphinx, but the fiery-faced demon on level 1 who steals all your armor if you answer incorrectly.

Finally, a word about those cheat programs: I think they stink. What fun is it to cheat? Why, if you have one of those robot characters from the warrior factory, it's just no fun. The best part of *Wizardry* and *Knight of Diamonds* is watching your characters grow. I would pit my current party against any challenger, whether or not he had a billion hit points. I doubt any player would have the sheer experience of play to win.

Also, I can answer just about any questions about *Knight of Diamonds* and *Wizardry*, except the ones pertaining to winning at the former.

Matt Lentz, Blue Earth, MN

Curious. In any Wizardry played au naturel, evil characters cannot become lords, and vice versa.

A Lone Star?

I enjoy *Softline* very much. We have two computers at home, an Apple II Plus (my dad's) and a Texas Instruments 99/4A (mine). I got the TI because of its capabilities and price. I'd like to suggest that there be more coverage of programming on the Texas Instruments computer and the new products that become available for it.

Jessica Menck, Barrington, IL

Pensate State of Mind

In the May-June issue you asked, "How Does a Chicken Cross the Board?" We found that an Apple II Plus, a copy of *Softline*, and an afternoon of programming works quite well. We read the article about *Pensate* and were intrigued, as well as being addicted. We would like to know more about the official rules of *Pensate*—specifically, whether they've been formulated yet. How does a normal game start, how are the number and type of pieces selected, and what distinguishes different levels of the game? We made the assumption that if the human piece is surrounded and cannot move, the game is lost. We are waiting with bated breath and poised fingers for the answers to these biting questions of the *Pensate* micro-universe.

Our congratulations and thanks to John Besnard for coming up with this masterpiece. Also, thanks to *Softline* for sharing it with us.

Rick Langer and Wynne Steere, Sierra Madre, CA

Pensate is now published by Penguin Software, 830 Fourth Avenue, Geneva, IL 60134; (312) 232-1984. The documentation contains all the answers you seek.

Thanks to John Besnard for producing a game never to be found in a video arcade, and sympathy to the family of Al Tommervik. In Texas we do many things to cows, but orking even a hi-res cow would bring out a lynch mob.

Don Wright, San Antonio, TX **SL**

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AWARD WINNING MOONBASE 10

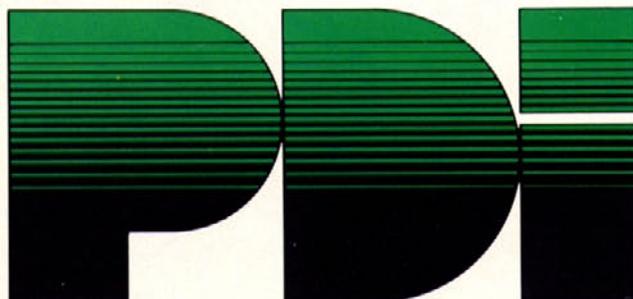
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**WE STICK OUR G
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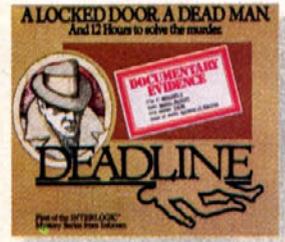
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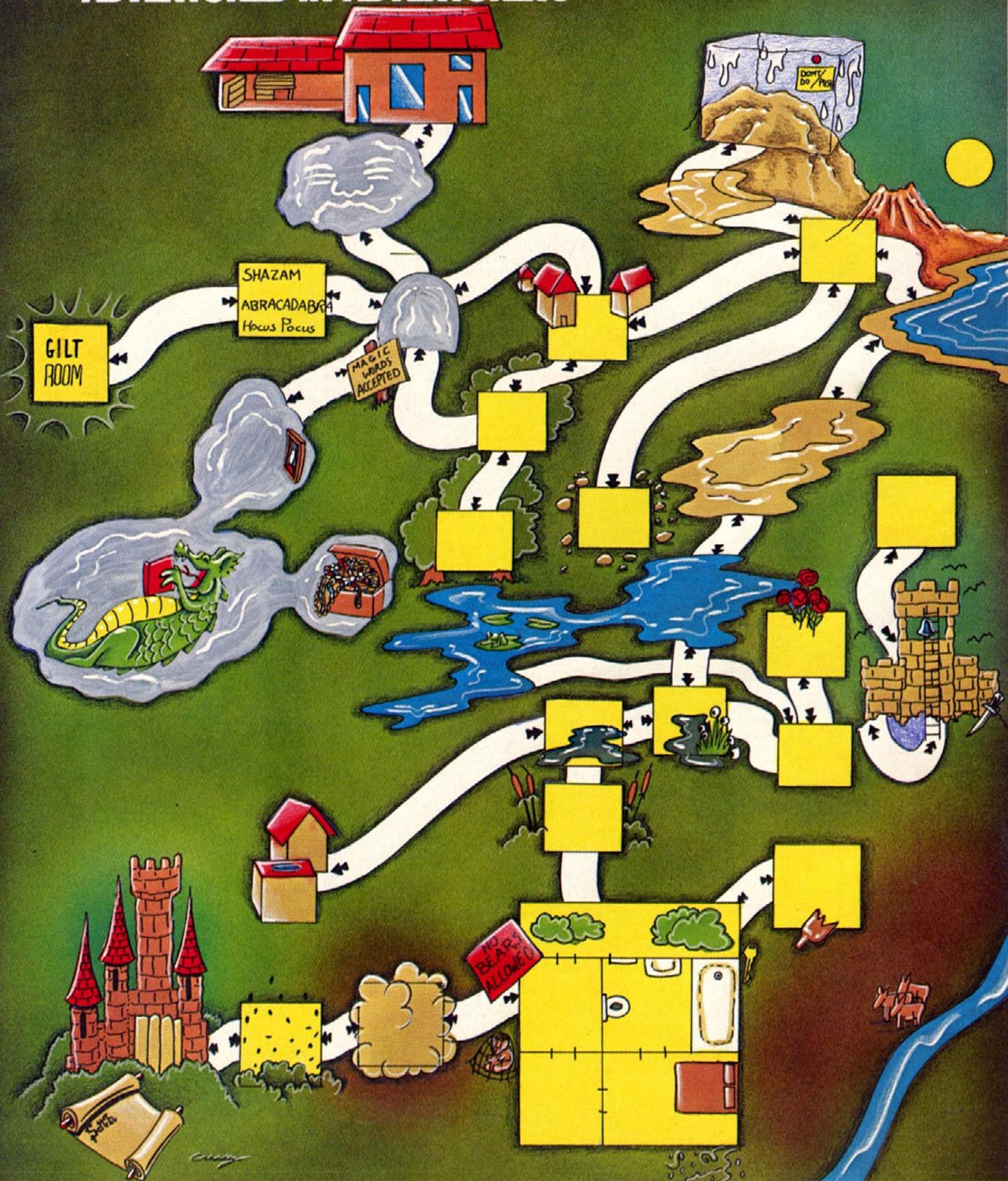
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KEN ROSE

RETURN OF THE TEDDY

ADVENTURES IN ADVENTURING



This is a tough one, folks.

No more Mr. Nice Guy.

Up until this point, these articles have illustrated the easy part of writing adventure games, namely the programming of this and that.

A Hint of Difficulty. This month, we'll begin to explore the real guts of the adventure world—in general, the story line, but specifically, the puzzles. The puzzles you'll find in the accompanying program are of two kinds. First, an interpretation of exactly what words mean. Words often have dual meanings. The descriptions and the contexts in which words have been placed are deliberately misleading in some cases. In other cases, the words are literally what they mean.

Second, what you do with objects that you find in the adventure and the order you do them in is critical! Some things can be done and seem to have the desired effect, only to bring you to disaster or prevent you from winning the game later on.

This adventure is fairly tough . . . about a five on a scale of one to ten. It is designed so that even though you key in the program, there's enough hidden that you won't be able to play through the adventure without thought.

There are hints scattered here and there . . . maybe not enough! While the game was being play-tested, the suggestion was made to include a few more hints. Maybe next time.

The Long and Short of It. If you've been following these articles, you should understand what each part of the program is doing. The addition this month elaborates on a describe or look routine. Also, the commands *wordy* and *terse* have been changed to *long* and *short* this time, just to keep you on your toes.

You'll also find in earlier issues the hints you need to modify this program for Atari and similar computers.

Good luck, adventurer.

You'll need it on this one.

```
10 HOME : VTAB 10: PRINT TAB( 10)"REVENGE OF THE TEDDY":
VTAB 12: PRINT TAB( 10)"A SOFTLINE ADVENTURE": VTAB 14:
PRINT TAB( 19)"BY": VTAB 16: PRINT TAB( 16)"KEN ROSE": FOR A
= 1 TO 5000: NEXT
20 HOME
30 DIM N(41),S(41),E(41),W(41),RD(41),OB(15): REM DIMENSIONS
VARIABLES
40 FOR A = 1 TO 41: REM LOADS ROOM VARIABLES
50 READ N(A),S(A),E(A),W(A)
60 NEXT
70 CH = 1:KD = 1:BE = 1:MG = 1
80 OB(1) = 2:OB(2) = 6:OB(7) = 40:OB(8) = 26:OB(9) = 19:OB(10) =
16:OB(11) = 34
90 PRINT : PRINT "DO YOU WANT TO LOAD PREVIOUSLY SAVED
GAME (TYPE YES OR NO)? ": INPUT "":AS: HOME : IF AS =
"YES" THEN GOTO 3220
100 R = 1: GOSUB 2000: GOSUB 690: REM SETS UP FIRST ROOM
110 IF CH = 1 THEN PRINT : PRINT "BUZZ BUZZ": REM PARSER
120 IF CH = 3 THEN PRINT : PRINT "SNUFFLE SNUFFLE"
130 IF FR = 1 THEN PRINT : PRINT "A FROG WITH A CROWN IS
FOLLOWING YOU."
140 PRINT :V1$ = "":N1$ = "": PRINT "WHAT NOW? ": INPUT
"":AS
150 FOR A = 1 TO LEN (AS): IF MID$( AS,A,1) = " " THEN X = A
-1:A = 0: GOTO 180
160 NEXT A
170 V1$ = AS: GOTO 210
180 V1$ = LEFT$( AS,X)
190 IF RIGHT$( AS, LEN (AS) - X) = " " THEN N1$ = "": GOTO 210
200 N1$ = RIGHT$( AS, LEN (AS) - (X + 1)):X = 0
210 REM VERB-HANDLING ROUTINE
220 IF V1$ = "SAVE" THEN GOTO 3120
230 IF V1$ = "QUIT" THEN GOTO 3070
240 IF V1$ = "READ" OR V1$ = "LOOK" OR V1$ = "DESCRIBE" THEN
GOSUB 3300: GOTO 110
250 IF V1$ = "NORTH" OR V1$ = "N" OR V1$ = "SOUTH" OR V1$ =
"S" OR V1$ = "EAST" OR V1$ = "E" OR V1$ = "WEST" OR V1$ =
"W" THEN GOTO 540
260 IF V1$ = "LONG" THEN WO = 1: PRINT : PRINT "OKAY, LONG
DESCRIPTIONS COMING UP.": GOTO 110
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270 IF V1$ = "SHORT" THEN WO = 0: PRINT : PRINT "OKAY, BACK
TO SHORT DESCRIPTIONS.": GOTO 110
280 IF V1$ = "I" OR V1$ = "INV" OR V1$ = "INVENTORY" THEN X =
42: PRINT : PRINT "YOU ARE CARRYING. ": PRINT : GOTO 710:
REM INVENTORY ROUTINE
290 IF V1$ = "GET" OR V1$ = "TAKE" THEN GOTO 950: REM GET
ROUTINE
300 IF V1$ = "DROP" THEN GOTO 1080: REM DROP ROUTINE
310 IF V1$ = "TURN" AND R = 2 THEN GOSUB 3550: GOTO 110
320 IF V1$ = "GO" AND N1$ = "DRAIN" AND R = 2 AND CH = 1
THEN GOSUB 3490: GOTO 110
330 IF DA = 1 AND N1$ = "DRAIN" THEN PRINT : PRINT "YOU'RE
OUT!":DA = 0: GOTO 110
340 IF V1$ = "GO" AND N1$ = "KEYHOLE" AND R = 1 AND CH = 1
THEN R = 3: PRINT : GOTO 610
350 IF V1$ = "GO" AND N1$ = "KEYHOLE" AND R = 3 AND CH = 1
THEN R = 1: PRINT : GOTO 610
360 IF V1$ = "WAIT" THEN PRINT : PRINT
'HMMMM...HMMMMM...HMMMMM...": GOTO 110: REM
GENERAL WAITING ROUTINE
370 IF V1$ = "DRINK" AND R = 11 THEN GOSUB 3750: GOTO 690
380 IF V1$ = "DRINK" AND OB(2) = 42 THEN GOTO 3590
390 IF V1$ = "DRINK" AND OB(2) = R THEN GOTO 3590
400 IF V1$ = "GIVE" THEN GOSUB 3670
410 IF R = 2 AND N1$ = "TAP" THEN GOSUB 3550: GOTO 110
420 IF V1$ = "BREAK" AND BE = 1 AND R = 4 THEN GOTO 3630
430 IF R = 2 AND KD = 1 AND OB(3) = 42 AND V1$ = "TIE" THEN
GOTO 3650
440 IF R = 3 AND OB(4) = 42 AND N1$ = "DOOR" THEN PRINT :
PRINT "THE EAST DOOR IS UNLOCKED.":E(3) = 1:W(1) = 3:
GOTO 110
450 IF V1$ = "WEAR" AND N1$ = "BEARSKIN" AND OB(5) = 42 THEN
OB(5) = 0:BE = 2:CH = 3: GOTO 110
460 IF BE = 2 AND V1$ = "REMOVE" AND N1$ = "BEARSKIN" THEN
OB(5) = 42:BE = 0:CH = 2: GOTO 110
470 IF R = 26 AND V1$ = "PRESS" THEN GOTO 3830
480 IF R = 26 AND V1$ = "PUSH" THEN GOTO 3830
490 IF R = 35 THEN GOTO 3870
500 IF R = 36 AND OB(1) = 42 AND N1$ = QY$ THEN GOTO 4650
510 IF R = 33 AND V1$ = "SCALE" THEN GOTO 4030
520 IF R = 33 AND N1$ = "SCALE" THEN GOTO 4030
530 PRINT : PRINT "I DON'T KNOW WHAT YOU MEAN!": GOTO 110
540 REM MOVING AROUND ROUTINE AND SPECIAL CONDITIONS
550 IF KD = 2 AND R > 2 THEN GOTO 3660
560 X = R
570 IF V1$ = "NORTH" OR V1$ = "N" THEN R = N(R)
580 IF V1$ = "SOUTH" OR V1$ = "S" THEN R = S(R)
590 IF V1$ = "EAST" OR V1$ = "E" THEN R = E(R)
600 IF V1$ = "WEST" OR V1$ = "W" THEN R = W(R)
610 IF R > 0 THEN X = R: HOME : GOTO 630
620 IF R = 0 THEN PRINT : PRINT "YOU CAN'T MOVE THAT WAY AT
THIS TIME.":R = X:X = 0: GOTO 110
630 IF WO = 1 THEN RD(R) = 0: REM RESET LONG DESCRIPTION
640 IF R > 25 THEN GOTO 670
650 ON R GOSUB 2010, 2050, 2080, 2100, 2130, 2150, 2170, 2190, 2210,
2230, 2250, 2270, 2290, 2310, 2330, 2350, 2370, 2390, 2410, 2440, 2460,
2480, 2500, 2520, 2540
660 GOTO 680
670 ON R = 25 GOSUB 2560, 2580, 2600, 2610, 2620, 2640, 2660, 2680,
2700, 2720, 2740, 2760, 2780, 2800, 2810, 2830
680 REM
690 PRINT : PRINT "OBJECTS HERE ARE.": PRINT
700 X = R
710 REM LISTING OF OBJECTS ROUTINE
720 IF X = OB(1) THEN PRINT "A MIRROR":Y = 1
730 IF X = OB(2) THEN PRINT "A BOTTLE":Y = 1
740 IF X = OB(3) THEN PRINT "A STRING":Y = 1
750 IF X = OB(4) THEN PRINT "A KEY":Y = 1
760 IF X = OB(5) THEN PRINT "A BEARSKIN":Y = 1
770 IF X = OB(6) THEN PRINT "A SCROLL":Y = 1
780 IF X = OB(7) THEN PRINT "A SILVER BELL":Y = 1
790 IF X = OB(8) THEN PRINT "A MAGIC RING":Y = 1
800 IF X = OB(9) THEN PRINT "A MALLET":Y = 1
810 IF X = OB(10) THEN PRINT "A SWORD":Y = 1
820 IF X = OB(11) THEN PRINT "A CRYSTAL LENS":Y = 1
830 IF X = OB(12) THEN PRINT "A PETRIFIED SNAKE":Y = 1
840 IF X = OB(13) THEN PRINT "TRINKETS":Y = 1
850 IF X = OB(14) THEN PRINT "A JOKEBOOK":Y = 1
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860 IF Y = 0 THEN PRINT "NOTHING"
870 IF R = 15 AND OB(12) = 0 THEN GOTO 3800
880 IF R = 33 THEN GOTO 3990
890 IF R = 38 THEN GOTO 3910
900 IF R = 41 THEN GOTO 3950
910 IF BE = 2 AND R = 4 THEN GOTO 3050
920 IF R = 9 AND MG = 1 AND CH < 3 THEN GOTO 3060
930 IF MG = 1 AND R = 9 AND CH = 3 THEN GOTO 3740
940 Y = 0: X = 0: GOTO 110
950 REM GET ROUTINE
960 IF CH = 1 AND KD = 1 AND N1$ = "STRING" THEN GOTO 1020
970 IF CH = 1 AND R = 1 AND N1$ = "STREAMERS" THEN GOTO
3520
980 IF CH = 1 THEN PRINT : PRINT "YOU'RE NOT STRONG ENOUGH
AT THE MOMENT.": GOTO 1070
990 IF N1$ = "STRING" AND KD = 3 THEN OB(3) = 0: OB(4) = 42:
PRINT : PRINT "YOU'VE GOT THE KEY ON A STRING.": KD = 0:
GOTO 110
1000 X = 0: IF N1$ = "" THEN PRINT : PRINT "HEY, I NEED A
NOUN!": GOTO 1070
1010 IF OB >= 3 THEN PRINT : PRINT "OOF...YOU'RE NOT STRONG
ENOUGH TO CARRY ANOTHER THING.": PRINT : PRINT
"YOU'LL HAVE TO DROP SOMETHING!": GOTO 1070
1020 GOSUB 1170: REM CHECKING NOUN VALIDITY
1030 IF OB(X) = R OR OB(X) = 42 THEN GOTO 1050
1040 PRINT : PRINT "YOU CAN'T, AT THE MOMENT.": GOTO 1070
1050 OB(X) = 42: REM YOU ARE ROOM 42; I.E., YOU'VE GOT OBJECT
1060 PRINT : PRINT "OKAY, YOU'VE GOT THE "; N1$; ".":
OB = OB + 1
1070 X = 0: GOTO 110
1080 REM DROP ROUTINE
1090 X = 0: IF N1$ = "" THEN PRINT : PRINT "HEY, I NEED A
NOUN!": GOTO 1160
1100 GOSUB 1170: REM CHECKING NOUN VALIDITY
1110 IF OB(X) = 42 THEN GOTO 1130
1120 PRINT : PRINT "YOU'RE NOT CARRYING THE "; N1$; ".": GOTO
1160
1130 OB(X) = R: PRINT : PRINT "OKAY, DROPPED THE "; N1$; ".":
1140 IF KD = 2 AND N1$ = "STRING" THEN KD = 3
1150 OB = OB - 1: IF OB < 0 THEN OB = 0
1160 X = 0: GOTO 690
1170 REM SUBROUTINE TO CHECK NOUNS
1180 IF N1$ = "MIRROR" THEN X = 1: QY$ = "MIRROR"
1190 IF N1$ = "BOTTLE" THEN X = 2
1200 IF N1$ = "STRING" THEN X = 3
1210 IF N1$ = "KEY" THEN X = 4
1220 IF N1$ = "BEARSKIN" THEN X = 5
1230 IF N1$ = "SCROLL" THEN X = 6
1240 IF N1$ = "BELL" OR N1$ = "SILVER" THEN X = 7
1250 IF N1$ = "RING" THEN X = 8
1260 IF N1$ = "MALLET" THEN X = 9
1270 IF N1$ = "SWORD" THEN X = 10
1280 IF N1$ = "LENS" OR N1$ = "CRYSTAL" THEN X = 11
1290 IF N1$ = "SNAKE" OR N1$ = "SERPENT" THEN X = 12
1300 IF N1$ = "TRINKETS" OR N1$ = "TRINKET" THEN X = 13
1310 IF N1$ = "JOKEBOOK" THEN X = 14
1320 RETURN
2000 REM ROOM DESCRIPTIONS START HERE
2010 PRINT "YOU'RE IN A BEDROOM.": IF RD(R) = 1 THEN RETURN
2020 PRINT : PRINT "IT MUST HAVE BEEN QUITE A PARTY LAST
NIGHT BECAUSE THE ROOM IS A MESS. THE CEILING IS
FESTOONED WITH GAILY COLORED STREAMERS.": RD(R) = 1:
IF CH = 1 THEN PRINT : PRINT "YOUR HEAD HURTS."
2030 IF W(1) = (0) THEN PRINT : PRINT "THE WEST DOOR IS
LOCKED."
2040 RETURN
2050 PRINT "YOU ARE IN A BATHROOM.": IF RD(R) = 1 THEN
RETURN
2060 IF OB(1) = 2 THEN PRINT : PRINT "IT'S A FUNNY BATHROOM.
THERE'S NOTHING BUT A MIRROR AND A BIG OLD-
FASHIONED BATHTUB HERE.": RD(R) = 1: RETURN
2070 PRINT : PRINT "IT'S A FUNNY BATHROOM. THERE'S NOTHING
BUT A BIG OLD-FASHIONED BATHTUB HERE.": RD(R) = 1:
RETURN
2080 PRINT "YOU'RE IN A DEN.": RD(R) = 1
2090 PRINT : PRINT "DEN WHAT DO WE DO?": RD(R) = 1: RETURN
2100 PRINT "YOU'RE IN THE FOYER.": IF RD(R) = 1 THEN RETURN
2110 PRINT : PRINT "THE WALL TO THE SOUTH BEARS THE SIGN.":
PRINT : PRINT " NO BEARS ALLOWED....": IF BE <> 1 THEN
RETURN
2120 PRINT : PRINT "THERE IS A LARGE BEAR HERE CAUGHT IN A

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NET. HE (OR SHE) IS FLOPPING AND THRASHING
AROUND....POOR BEAR!": RETURN
2130 PRINT "YOU'RE IN A BRUSHY COURTYARD.": IF RD(R) = 1
THEN RETURN
2140 PRINT : PRINT "THE COURTYARD THEEMS TO BE HEAVILY
OVERGROWN WITH THORNS AND THISTLES. FORTUNATELY
THERE ARE PATHS TO THE NORTH, SOUTH, EAST, AND WEST
THAT SOMEONE HAS KEPT CLEAR.": RD(R) = 1: RETURN
2150 PRINT "YOU'RE AT EAST POINT.": IF RD(R) = 1 THEN RETURN
2160 PRINT : PRINT "YOU'RE ON A HIGH BLUFF. BELOW AND TO
THE EAST IS THE RIO YUCKO RIVER. THERE ARE MANY HEAD
OF CATTLE MILLING AROUND DOWN BELOW, BUT THERE IS
NO WAY DOWN. BESIDES, THAT WAS LAST ISSUE'S
ADVENTURE.": RD(R) = 1: RETURN
2170 PRINT "YOU'RE ON A DUSTY TRAIL.": IF RD(R) = 1 THEN
RETURN
2180 PRINT : PRINT "THIS IS AN AREA DEVOID OF VEGETATION. IT
APPEARS AS IF SOMEONE (PERHAPS AN EVIL MAGICIAN) HAS
CAST A SPELL TO REMOVE ALL POSSIBLE HIDING
PLACES.": RD(R) = 1: RETURN
2190 PRINT "YOU ARE IN DANK UNDERGROWTH.": IF RD(R) = 1
THEN RETURN
2200 PRINT : PRINT "THERE IS A FEELING OF EVIL AND MYSTERY
HERE. THE AIR IS THICK AND HARD TO BREATHE. SWARMS OF
GNATS SURROUND YOU.": RD(R) = 1: RETURN
2210 PRINT "YOU HAVE ENTERED THE MAGICIAN'S CASTLE.": IF
RD(R) = 1 THEN RETURN
2220 PRINT : PRINT "THIS IS THE GREAT HALL OF THE CASTLE. THERE
APPEARS TO BE ONLY ONE EXIT...THE WAY YOU ENTERED.
THERE IS A SMELL OF EVIL HERE.": RD(R) = 1: RETURN
2230 PRINT "YOU'RE ENTERING A MARSHY AREA.": IF RD(R) = 1
THEN RETURN
2240 PRINT : PRINT "THE GROUND IS BECOMING SOFT AND
MUSHY. WATERY NOISES CAN BE HEARD FROM EITHER SIDE
OF THE PATH, BUT THE UNDERGROWTH IS TOO HEAVY TO
PASS THROUGH.": RD(R) = 1: RETURN
2250 PRINT "YOU ARE IN THE DANKSIDE SWAMP."
2260 PRINT : PRINT "THE HUMID ATMOSPHERE PASSES DOWN.
YOU FEEL DEPRESSED AND WEARY.": PRINT : PRINT "THERE IS
A POOL OF WATER HERE. NEXT TO THE POOL IS A SIGN.":
RETURN
2270 PRINT "YOU ARE DEEPER IN THE SWAMP.": IF RD(R) = 1 THEN
RETURN
2280 PRINT : PRINT "STRANGE MISSHAPEN CREATURES STARE AT
YOU FROM THE UNDERGROWTH. YOU HAVE A FEELING THAT
ONE MISSTEP COULD BE FATAL.": PRINT : PRINT "YOU'RE
RIGHT.": RD(R) = 1: RETURN
2290 PRINT "YOU ARE LEAVING THE DANKSIDE SWAMP.": IF RD(R)
= 1 THEN RETURN
2300 PRINT : PRINT "CONGRATULATIONS...YOU'RE THROUGH THE
SWAMP.": RD(R) = 1: RETURN
2310 PRINT "YOU ARE IN THE SWAMP CASTLE.": IF RD(R) = 1 THEN
RETURN
2320 PRINT : PRINT "SOMEONE OR SOMETHING BUILT THIS CASTLE
MANY YEARS AGO AS A HAVEN FOR WEARY ADVENTURERS.":
PRINT "PERHAPS YOU'D LIKE TO LIE DOWN AND REST
AWHILE....HMMMMM?": RD(R) = 1: RETURN
2330 PRINT "YOU ARE IN THE SERPENT'S LAIR."
2340 PRINT : PRINT "A SIGN ON THE WALL READS.": PRINT : PRINT
"BEWARE, BEWARE THE SERPENT'S STING": PRINT " IT CAN BE
CONQUERED BY THE ....": PRINT : PRINT "I CAN'T QUITE MAKE
OUT THE LAST WORD.": RETURN
2350 PRINT "YOU'RE IN THE ARMORY.": IF RD(R) = 1 THEN RETURN
2360 PRINT : PRINT "MOST OF THE WEAPONS HAVE LONG BEEN
REDUCED TO RUST.": RD(R) = 1: RETURN
2370 PRINT "YOU HAVE CLIMBED TO THE BELFRY.": IF RD(R) = 1
THEN RETURN
2380 PRINT : PRINT "A FEW BATS ARE FLYING IN AND OUT OF THE
OPEN ARCHES.": RD(R) = 1: RETURN
2390 PRINT "YOU'RE IN THE MAGICIAN'S LABORATORY.": IF RD(R)
= 1 THEN RETURN
2400 PRINT : PRINT "THE LABORATORY IS SET A WAYS FROM THE
CASTLE, AS THINGS HAVE BEEN KNOWN TO GO AWRY AND
THE MAGICIAN'S INSURANCE RATES ARE LOWER THIS
WAY.": RD(R) = 1: RETURN
2410 PRINT "THE MAGICIAN'S LABORATORY ANNEX.": IF RD(R) = 1
THEN RETURN
2420 PRINT : PRINT "THERE'S A TELESCOPE BOLTED TO THE FLOOR.
IT APPEARS TO BE POINTED AT THE SUN. THERE'S A SIGN ON IT
THAT SAYS: 'CAUTION. THE SURGEON GENERAL SAYS
LOOKING THROUGH THIS MAY BE DANGEROUS TO

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YOUR HEALTH'."

2430 RD(R) = 1: RETURN

2440 PRINT "YOU'RE IN THE ROSE GARDEN.": IF RD(R) = 1 THEN RETURN

2450 PRINT : PRINT "THERE ARE A FEW SHABBY, SCRAWNY BUSHES HERE THAT NEED PRUNING. ONE LONE BUSH LOOKS AS IF IT MIGHT BEAR FLOWERS.":RD(R) = 1: RETURN

2460 PRINT "YOU'RE IN BLEAK POND.": IF RD(R) = 1 THEN RETURN

2470 PRINT : PRINT "THE WATER IS WARM AND UNCOMFORTABLE. IT FEELS VERY UNCOMFORTABLE.":RD(R) = 1: RETURN

2480 PRINT "YOU SMELL QUICKSAND.": IF RD(R) = 1 THEN RETURN

2490 PRINT : PRINT "OH OH...BE VERY, VERY CAREFUL HERE.":RD(R) = 1: RETURN

2500 PRINT "YOU'RE ON A BEACH.": IF RD(R) = 1 THEN RETURN

2510 PRINT : PRINT "THE SUN BEATS DOWN ON THE BEACH. IT IS A SUN OF A BEACH.":RD(R) = 1: RETURN

2520 PRINT "YOU'RE IN VOLCANO VALLEY.": IF RD(R) = 1 THEN RETURN

2530 PRINT : PRINT "RUMBLE...RUMBLE...GRUMBLE...GRUMBLE. FORTUNATELY, ONLY THE GROUND SHOOK, BUT YOU NEVER CAN TELL.":RD(R) = 1: RETURN

2540 PRINT "YOU'RE IN SLOW SAND.": IF RD(R) = 1 THEN RETURN

2550 PRINT : PRINT "THERE IS A SAFE PATH THAT RUNS THROUGH THE MIDDLE OF THE SAND. IN SOME WAYS IT IS A SAND WHICH...":RD(R) = 1: RETURN

2560 PRINT "YOU'RE IN THE CORAL CANYON."

2570 PRINT : PRINT "THE WATER DRIPPING OFF THE HIGH CANYON WALLS COULD DRIVE YOU MAD IF YOU STAYED HERE FOR ANY LENGTH OF TIME.": PRINT : PRINT "THERE IS A BUTTON HIGH OUT OF YOUR REACH. THERE IS A SIGN UNDER IT.": RETURN

2580 PRINT "YOU ARE IN A SMALL OBSCURE VALLEY.": IF RD(R) = 1 THEN RETURN

2590 PRINT : PRINT "THIS VALLEY IS REALLY OUT OF THE WAY AND MOST PEOPLE NEVER VENTURE HERE. THERE ARE MANY STONES STREWN OVER THE VALLEY FLOOR. MIND YOUR FOOTING.":RD(R) = 1: RETURN

2600 PRINT "YOU ARE IN THE SETTLEMENT.": RETURN

2610 PRINT "YOU ARE IN THE DARK LANDS.": RETURN

2620 PRINT "YOU ARE IN THE DARKER LANDS.": IF RD(R) = 1 THEN RETURN

2630 PRINT : PRINT "TO THE SOUTH THE REAL FORCES OF DARKNESS ARE GATHERING...BUT ONCE AGAIN THIS ADVENTURE WILL NOT PERMIT YOU TO RESCUE MIDDLE EARTH. BESIDES, YOU'RE NOT A HOBBIT.":RD(R) = 1: RETURN

2640 PRINT "YOU'RE AT THE DOOR OF THE DEN OF THE DR ": IF RD(R) = 1 THEN RETURN

2650 PRINT : PRINT "WHOOPS, PARDON ME, BUT THERE JUST WASN'T ENOUGH ROOM ON THE LINE ABOVE TO GIVE YOU A COMPLETE DESCRIPTION.":RD(R) = 1: RETURN

2660 PRINT "THE ANTECHAMBER OF THE DEN OF THE DRAGON.": IF RD(R) = 1 THEN RETURN

2670 PRINT : PRINT "THIS IS A HUGE CAVERN WITH WALLS EXTENDING UP INTO DARKNESS. IF YOU LOOK CAREFULLY, YOU MIGHT BE ABLE TO MAKE OUT A PICTURE OR TWO. THERE IS A SMELL OF DRAGON IN THE AIR.":RD(R) = 1: RETURN

2680 PRINT "THE DRAGON'S DEN.": RETURN

2690 REM

2700 PRINT "THE EX-DRAGON'S TREASURE CHAMBER.": IF RD(R) = 1 THEN RETURN

2710 PRINT : PRINT "WOW!!! THE PLACE IS FULL OF TREASURE IN CHESTS STOLEN FROM THE COMMUNITY. THESE OF COURSE ARE COMMUNITY CHESTS.":RD(R) = 1: RETURN

2720 PRINT "YOU'RE IN THE CAVE WAITING ROOM.": IF RD(R) = 1 THEN RETURN

2730 PRINT : PRINT "ONE OF THOSE UBIQUITOUS SIGNS SAYS: 'MAGIC WORDS ACCEPTED. (ESPECIALLY HOT AND STEAMY ONES.)':RD(R) = 1: RETURN

2740 PRINT "YOU'RE IN THE MAGIC RUNE ROOM."

2750 PRINT : PRINT "ON THE WALL IT SAYS, 'THE MAGIC WORD IS NOT ONE OF THE FOLLOWING...ABRACADABRA, SHAZAM, HOCUS POCUS. PLEASE DON'T SMOKE....THANK YOU.' ": RETURN

2760 PRINT "YOU'RE IN THE GILT ROOM.": IF RD(R) = 1 THEN RETURN

2770 PRINT : PRINT "IF THIS WERE 'DEADLINE' AND YOU MADE IT THIS FAR, YOU MIGHT FEEL GILT-Y.":RD(R) = 1: RETURN

2780 PRINT "YOU'RE IN AN UGLY PASSAGE."

2790 PRINT : PRINT "SOME FREAK OF NATURE HAS CAUSED THE ROCKS IN THE WALL TO TAKE ON THE SHAPE OF A TERRIBLE

UGLY FACE...AND THE FACE SEEMS TO BE STARING AT YOU.": RETURN

2800 PRINT "YOU'RE IN THE OGRE'S CONDOMINIUM.": RETURN

2810 PRINT "YOU'RE IN THE SCROLL ROOM."

2820 PRINT : PRINT "RACKS AND RACKS OF SCROLLS ARE STORED BEHIND IMPREGNABLE WIRE-SCREENED CABINETS. THERE IS A READING DESK IN THE CENTER OF THE ROOM.": RETURN

2830 PRINT "YOU'RE IN THE FROG POND.": IF RD(R) = 1 THEN RETURN

2840 PRINT : PRINT "HUNDREDS...EVEN THOUSANDS OF FROGS ARE LEAPING AND HOPPING ABOUT. MOST OF THEM APPEAR HAPPY AND CONTENT.":RD(R) = 1: RETURN

3000 REM ROOM DATA STATEMENTS

3010 DATA 2, 0, 0, 0, 0, 1, 0, 0, 4, 0, 0, 5, 3, 0, 0, 10, 4, 6, 7, 0, 0, 5, 0, 0, 5, 8, 0, 0, 7, 9, 0, 0, 8, 0, 11, 5, 0, 0, 10, 12, 18, 21, 0, 13, 11, 20, 0, 14, 12, 15, 17, 16, 13, 0, 14, 0, 0, 0, 0, 14, 14, 0, 0, 0

3020 DATA 0, 19, 11, 0, 18, 0, 0, 0, 13, 0, 0, 22, 12, 0, 41, 23, 21, 0, 0, 0, 22, 0, 24, 25, 27, 23, 28, 26, 24, 0, 0, 25, 0, 0, 24, 0, 0, 35, 29, 24, 0, 28, 30, 0, 35, 29, 0, 0, 0, 35, 32, 29, 0, 31, 33, 0, 0, 32, 0, 0, 0

3030 DATA 0, 0, 0, 33, 38, 0, 28, 36, 0, 0, 35, 37, 0, 0, 36, 0, 0, 35, 0, 0, 0, 38, 0, 40, 0, 0, 39, 41, 0, 0, 21, 13

3040 REM END OF GAME ROUTINES

3050 IF BE = 2 THEN PRINT : PRINT "OH NO, YOU'VE BEEN NETTED AND SOLD TO A CIRCUS WHERE YOU MUST RIDE A UNICYCLE THREE SHOWS A DAY. WHAT LOUSY LUCK SINCE YOU CAN'T GET THE ZIPPER UNSTUCK.": GOTO 3070

3060 IF MG = 1 THEN PRINT : PRINT "WHAMMOKAZAM....THE MAGICIAN STEPS OUT FROM BEHIND A PILLAR AND ZAPS YOU RIGHT OUT OF THE GAME."

3070 REM ROUTINE TO QUIT

3080 PRINT : PRINT "DO YOU WANT TO SAVE THIS GAME?": INPUT "":AS: IF AS = "YES" THEN SG = 1: GOTO 3120

3090 PRINT : PRINT "POOF!!! THE GAME HAS ENDED."

3100 PRINT : PRINT "DO YOU WANT TO PLAY AGAIN? ": INPUT "":AS: IF AS = "YES" THEN CLEAR : GOTO 20

3110 END

3120 REM ROUTINE TO SAVE GAME. THE IMPORTANT THING IS FOR YOU TO LOAD THE VARIABLES SHOWN BELOW. THE TECHNIQUE IS FOR THE APPLE COMPUTER AND WILL BE DIFFERENT FOR EACH COMPUTER.

3130 D\$ = CHR\$(4): REM FOR APPLE USE

3140 PRINT D\$;"OPEN CREATUREFILE"

3150 PRINT D\$;"WRITE CREATUREFILE"

3160 PRINT BE: PRINT CH: PRINT DA: PRINT DR: PRINT E(3): PRINT E(33): PRINT FR: PRINT HW: PRINT KD: PRINT MI: PRINT N(38): PRINT OB: PRINT OB(1): PRINT OB(2): PRINT OB(3): PRINT OB(4): PRINT OB(5): PRINT OB(6): PRINT OB(7): PRINT OB(8): PRINT OB(9)

3170 PRINT OB(10): PRINT OB(11): PRINT OB(12): PRINT OB(13): PRINT OB(14): PRINT QX\$: PRINT QY\$: PRINT R: PRINT S(35): PRINT ST: PRINT TD: PRINT TF: PRINT W(1): PRINT WO

3180 PRINT D\$;"CLOSE"

3190 REM LINES 3160-3170 CONTAIN VARIABLES TO BE SAVED

3200 PRINT D\$: IF SG = 1 THEN GOTO 3090

3210 GOTO 110

3220 REM ROUTINE TO LOAD SAVED GAME. THE IMPORTANT THING IS FOR YOU TO LOAD THE VARIABLES SHOWN BELOW. THE TECHNIQUE IS FOR THE APPLE COMPUTER AND WILL BE DIFFERENT FOR EACH COMPUTER.

3230 D\$ = CHR\$(4): REM FOR APPLE USE

3240 PRINT D\$;"OPEN CREATUREFILE"

3250 PRINT D\$;"READ CREATUREFILE"

3260 INPUT BE: INPUT CH: INPUT DA: INPUT DR: INPUT E(3): INPUT E(33): INPUT FR: INPUT HW: INPUT KD: INPUT MI: INPUT N(38): INPUT OB: INPUT OB(1): INPUT OB(2): INPUT OB(3): INPUT OB(4): INPUT OB(5): INPUT OB(6): INPUT OB(7): INPUT OB(8): INPUT OB(9)

3270 INPUT OB(10): INPUT OB(11): INPUT OB(12): INPUT OB(13): INPUT OB(14): INPUT QX\$: INPUT QY\$: INPUT R: INPUT S(35): INPUT ST: INPUT TD: INPUT TF: INPUT W(1): INPUT WO

3280 PRINT D\$;"CLOSE"

3290 PRINT D\$: GOTO 540

3300 REM DESCRIPTIONS HERE

3310 IF R = 1 AND N1\$ = "DOOR" THEN PRINT : PRINT "THERE IS A KEYHOLE IN THE WEST DOOR.": RETURN

3320 IF MI = 1 AND N1\$ = "MIRROR" THEN PRINT : PRINT "THE STEAM FROM THE HOT WATER IN THE TUB BRINGS OUT THE WORD 'FRUMGIS' ON THE MIRROR.":MI = 0:QX\$ = "FRUMGIS": RETURN

3330 IF OB(1) = R AND N1\$ = "MIRROR" THEN PRINT : PRINT "THE MIRROR IS KIND OF GREASY. YOU ARE LOOKING BACK AT

YOURSELF.": RETURN
3340 IF OB(1) = 42 AND N1\$ = "MIRROR" THEN PRINT : PRINT "THE MIRROR IS KIND OF GREASY. YOU ARE LOOKING BACK AT YOURSELF.": RETURN
3350 IF R = 2 AND N1\$ = "TUB" THEN PRINT : PRINT "THERE IS A HOT WATER TAP AND A DRAIN.": RETURN
3360 IF R = 1 AND N1\$ = "STREAMERS" THEN PRINT : PRINT "THEY'RE COLORFUL BUT THEY LOOK FUNNY.": RETURN
3370 IF N1\$ = "BOTTLE" AND (OB(2) = 42 OR OB(2) = R) THEN PRINT : PRINT "IT CONTAINS SOME GREASY, NOXIOUS-LOOKING FLUID. THERE IS A SKULL AND CROSSBONES ON THE LABEL.": RETURN
3380 IF R = 11 AND N1\$ = "SIGN" THEN PRINT : PRINT "THE SIGN READS.": PRINT : PRINT "DRINK THIS WATER IF YOU CHOOSE.": PRINT "YOU MAY WIN OR YOU MAY LOSE.": PRINT "BUT IF YOU'RE LUCKY AND DON'T CRY.": GOTO 3410
3390 IF OB(5) = 42 AND N1\$ = "BEARSKIN" THEN PRINT : PRINT "THE LABEL SAYS: 'WORN BY BEARS WHO CARE. BRUIN BEARSKIN CO. DRY-CLEAN ONLY.'": RETURN
3400 GOTO 3420
3410 PRINT : PRINT "P.S. OR NOT, AS THE CASE MAY BE.": RETURN
3420 IF N1\$ = "SCROLL" AND (OB(6) = 42 OR OB(6) = R) THEN PRINT : PRINT "THE SCROLL, LOOSELY TRANSLATED, TALKS ABOUT PRINCESSES, CHICAGO, AND XYLOPHONE MUSIC.": RETURN
3430 IF N1\$ = "JOKEBOOK" AND (OB(14) = R OR OB(14) = 42) THEN PRINT : PRINT "YOU CAN'T READ IT, AS IT'S WRITTEN IN SOME OBSCURE REPTILIAN LANGUAGE.": RETURN
3440 IF R = 26 AND N1\$ = "SIGN" THEN PRINT : PRINT "I DON'T ADVISE PUSHING THIS BUTTON...THEN AGAIN, I DON'T ADVISE NOT PUSHING IT...THE MANAGEMENT.": RETURN
3450 IF R = 19 AND N1\$ = "TELESCOPE" AND FR = 0 THEN PRINT : PRINT "YOU JUST CAN'T BELIEVE THESE SIGNS. THROUGH THE TELESCOPE LENS YOU SEE A REALLY CUTE FROG WEARING A CROWN.": RETURN
3460 IF R = 32 THEN PRINT : PRINT "YOU CAN BARELY MAKE OUT A PICTURE OF SOMEONE DOING SOMETHING WITH A DRAGON. PERHAPS SCALING IT.": RETURN
3470 PRINT : PRINT "THERE IS REALLY NOTHING TO DESCRIBE.": RETURN
3480 REM SPECIAL CONDITIONS
3490 IF HW = 1 THEN PRINT : PRINT "OUCH, YOUCH. THE HOT WATER HAS SCALDED YOU TO DEATH!": POP : GOTO 3090
3500 IF KD = 1 THEN PRINT : PRINT "YOU ARE IN THE DRAIN, AND IT'S DARK, BUT YOU CAN SEE A KEY HERE.": DA = 1: RETURN
3510 PRINT : PRINT "YOU'RE IN A DARK, EMPTY DRAIN.": RETURN
3520 PRINT : PRINT "OH NO...YOU ARE STUCK...REALLY STUCK TO THE FLYPAPER.": PRINT : GOTO 3080
3530 REM
3540 PRINT : PRINT "NOTHING HAPPENED.": RETURN
3550 REM TAP ROUTINES
3560 IF CH = 1 THEN PRINT : PRINT "YOU'RE TOO WEAK TO DO THAT!": RETURN
3570 IF N1\$ = "TAP" THEN PRINT : PRINT "THE HOT WATER IS FLOWING AND THE BATHROOM IS STEAMING UP.": PRINT "AS YOU RELEASE THE TAP, IT SNAPS OFF, BUT THE ROOM IS STILL STEAMY.": MI = 1: RETURN
3580 PRINT : PRINT "NOTHING HAPPENS.": RETURN
3590 REM DRINKING FROM BOTTLE
3600 PRINT : PRINT "YOU TAKE A HEALTHY SWIG FROM THE BOTTLE, DISREGARDING THE WARNING, AND FEEL AS STRONG AS AN OX.": PRINT : PRINT "POOF! THE BOTTLE VANISHES.": IF OB(2) = 42 THEN OB = OB - 1.
3610 ST = 1:OB(2) = 0: GOTO 110
3620 REM BEAR ROUTINES
3630 IF ST = 0 THEN PRINT : PRINT "YOU'RE NOT STRONG ENOUGH!": GOTO 110
3640 IF ST = 1 THEN PRINT : PRINT "YOUR GREAT STRENGTH ALLOWS YOU TO BREAK THE NET, FREEING THE BEAR. THE BEAR LICKS YOUR EAR IN GRATITUDE AND SHUFFLES OFF.": BE = 0:OB(3) = 4: GOTO 690
3650 PRINT : PRINT "GOOD! YOU'VE TIED ONE END OF THE STRING TO THE KEY.": KD = 2: GOTO 110
3660 PRINT : PRINT "SOMETHING YOU'RE HOLDING IS HOLDING YOU BACK.": GOTO 110
3670 REM GIVING THINGS
3680 IF N1\$ = "BOTTLE" AND OB(2) = 42 AND BE = 1 THEN BE = 1: PRINT : PRINT "THE BEAR GULPS DOWN THE LIQUID, HICCUPS, AND DISAPPEARS IN A PUFF OF SMOKE ALONG WITH THE BOTTLE. THE STRING AND A LARGE BEARSKIN ARE LEFT BEHIND.": GOTO 3700
3690 GOTO 3720
3700 OB = OB - 1:BE = 0:OB(2) = 0:OB(3) = 4:OB(5) = 4: GOTO 690
3710 IF R = 33 AND OB(14) = 42 THEN PRINT : PRINT "THE DRAGON TAKES THE BOOK, GLANCES AT IT, SMILES, CHUCKLES, PATS YOU ON THE HEAD WITH HIS TAIL, AND SETTLES DOWN TO READ.":OB(14) = 43:OB = OB - 1:DR = 1: GOTO 4010
3720 IF R = 33 AND OB(14) = 42 THEN PRINT : PRINT "THE DRAGON TAKES THE BOOK, GLANCES AT IT, SMILES, CHUCKLES, PATS YOU ON THE HEAD WITH HIS TAIL, AND SETTLES DOWN TO READ.":OB(14) = 43:OB = OB - 1:DR = 1: GOTO 4010
3730 GOTO 110
3740 PRINT : PRINT "THE MAGICIAN SEES A LARGE BEIGE BEAR, DROPS THE SCROLL HE WAS READING, AND FLEES FOR HIS LIFE.":MG = 2:OB(6) = 9: GOTO 690
3750 IF CH = 1 THEN CH = 2: GOTO 3770
3760 IF CH = 2 THEN CH = 1
3770 FOR A = 1 TO 11
3780 IF OB(A) = 42 THEN OB(A) = 11
3790 NEXT A: GOTO 110
3800 REM SNAKE ROUTINES
3810 IF OB(7) = 42 THEN PRINT : PRINT "THE DINGING OF THE BELL PETRIFIES THE SNAKE. HE IS STIFF AS A BOARD.":OB(12) = 15: GOTO 690
3820 PRINT : PRINT "THE SERPENT SNEERS AT YOU AND, BEFORE YOU HAVE A CHANCE TO MAKE A MOVE, EMBRACES YOU FONDLY. SO FONDLY, IN FACT, IT SQUEEZES YOU RIGHT OUT OF THE GAME.": GOTO 3070
3830 REM BUTTON PUSHING
3840 IF TD = 1 THEN PRINT "ONLY ONE PUSH TO A CUSTOMER.": GOTO 110
3850 IF OB(12) = 42 THEN PRINT : PRINT "PUSHING THE BUTTON OPENS THE SECRET COMPARTMENT, CAUSING SOME GREAT ITEMS TO TUMBLE OUT.":TD = 1:OB(14) = 26:OB(13) = 26: GOTO 690
3860 PRINT : PRINT "YOU JUMP AND STRETCH AND REALLY TRY BUT YOU JUST CAN'T REACH THE BUTTON. YOU NEED SOMETHING WITH WHICH TO PUSH IT. (THIS HINT IS BROUGHT TO YOU AT NO ADDITIONAL COST).": GOTO 110
3870 REM WAITING ROOM
3880 IF V1\$ = QX\$ THEN S(35) = 31: PRINT : PRINT "RUMBLE...RUMBLE...THE SOUTH WALL SLIDES OPEN.": GOTO 110
3890 IF N1\$ = QX\$ THEN S(35) = 31: PRINT : PRINT "RUMBLE...RUMBLE...THE SOUTH WALL SLIDES OPEN.": GOTO 110
3900 PRINT : PRINT "NOPE...NICE TRY, BUT THAT'S NOT THE WAY TO THE WAY.": GOTO 110
3910 REM FACE ROOM
3920 IF TF = 1 THEN PRINT : PRINT "ROCK FACE LOOKS AT YOU, SHUDDERS, AND IGNORES YOU.": GOTO 110
3930 IF OB(1) = 42 THEN PRINT : PRINT "OLD ROCK FACE LOOKS AT THE HORRIBLE REFLECTION AND HURRIEDLY OPENS THE PORTAL.":N(38) = 39:TF = 1: GOTO 110
3940 IF TF = 0 THEN PRINT : PRINT "ROCK FACE WON'T LET YOU PASS.": GOTO 110
3950 REM FROG ROOM
3960 IF CH = 1 THEN PRINT : PRINT "CHOMP... SO MUCH FOR FLIES IN THE MIDST OF FROGS...": GOTO 3070
3970 IF FR = 0 AND OB(11) = 42 THEN PRINT : PRINT "ALL THE FROGS RUN AWAY SCREAMING AND CROAKING. THROUGH THE LENS, YOU SEE THE ONE REMAINING IS WEARING A TINY GOLD CROWN. SHE NUZZLES UP TO YOU.":FR = 1: GOTO 110
3980 GOTO 120
3990 REM DRAGON ROUTINES
4000 IF DR = 1 THEN PRINT : PRINT "THE DRAGON IS COMPLETELY ABSORBED IN HIS BOOK. HE LAUGHS AND CHORTLES.": GOTO 110
4010 IF OB(14) = 43 THEN PRINT : PRINT "THE DRAGON BEGINS TO READ HIS BOOK. HE COMPLETELY IGNORES YOU.":E(33) = 34: GOTO 110
4020 PRINT : PRINT "THE DRAGON IS VERY GRIM AND NASTY. HE ISN'T IN A FRAME OF MIND TO EAT YOU, BUT HE MIGHT BE PERSUADED TO CHANGE HIS MIND. OH, HE WON'T LET YOU PASS BY.": GOTO 110
4030 REM ENDING ROUTINES
4040 IF OB(9) = 42 AND DR = 1 AND FR = 1 AND N1\$ = "SCALE" THEN PRINT : PRINT "BANGING THE SCALES WITH THE Mallet FILLS THE CAVE WITH MAGICAL VIBRATIONS, CHANGING YOU INTO A FROG SO YOU AND THE FROG PRINCESS CAN LIVE HAPPILY EVER AFTER.": END
4050 PRINT : PRINT "THAT JUST WON'T WORK. CLOSE, BUT NO CIGAR.": GOTO 110

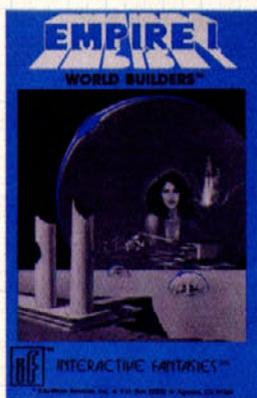
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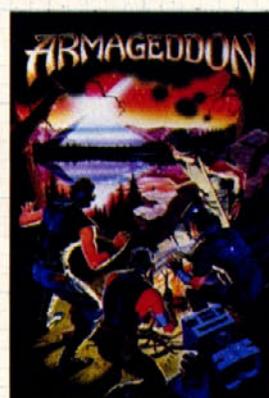
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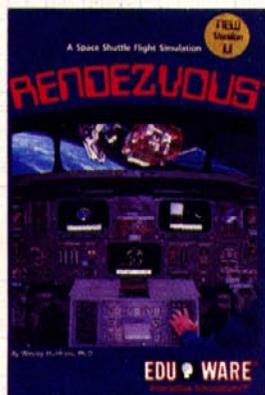
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Dungeon Fun Part 1:

He Was Going to Hit Me, So I Hit Him Back First

BY JOCK ROOT

O what a piece of work is your computer. How noble, how fine. In practice, how like a game machine, with much brightly colored zipping and zapping. But it can also be a dark and somber Dungeonmaster—and if that is what you truly desire, stick around. This series will give you the tools to build your own fantasy-game environment, with the Apple rolling the dice.

Specifically, the series will develop the mechanics of a computer-administered fantasy game: the controlling logic, the subroutines, and all that good stuff. The components will be supplied here; you can provide the story, the scenery, and the fine tuning—changing the timing, bending the odds a little.

The program is in Applesoft and uses several Apple-specific routines, but the logical structure would work in any Basic. Some formatting routines would need to be changed, but not much else. More on this in a future issue.

The Big Game Plan. The overall design of our game will be the classic fantasy-simulation game format: A group of adventurers with various skills will be brought together, equipped with weapons and magical instruments, and sent off into a strange place. There they will fight monsters, explore rooms and caverns, and seek treasures both enchanted and mundane. Afterward, if they don't get lost or killed, they will return home to be paid off, advanced in rank and power, and put to bed on disk.

That's a lot of different activities—it's going to take a great many lines of Basic to cover them all. We will eventually wind up with several different programs that call each other: a combat program, an exploring program, a create character program, and so on.

But that's for later. We want to start with something relatively simple to see how this kind of thing works. This installment, you will meet Joe, a typical fighter; he'll introduce you to the elements of movement and combat.

Why We Fight. The routine for duels between fighters is more complex than most: You have more choices. On each round, you have to choose how much effort you will put into attack and how much into defense. The more energy you spend on these, the more tired you get; and, as you get tired, your coordination suffers.

You can recover energy by fighting defensively for a round or two, but you still take the chance of getting hit—and wounds decrease your coordination, too. It gets pretty tricky sometimes.

Of course the bad guy has the same problems. And he does not have access to healing potions and energy pills, as you (sometimes) do.

In this version, the bad guy is a mirror image of Joe: same abilities, same equipment. A couple of future articles will dwell on how to create differences—bizarre monsters, special equipment (quarterstaff, Samurai swords)—but this first time out you will learn how to make two ordinary guys hammer away at each other with ordinary iron equipment. Read on. . . .

It's All in the Game. This is how it works: Joe is a typical fighter, average in every respect—call him Everyperson. He is wandering in an endless corridor, where he meets an occasional bad guy. Sometimes he can avoid the meeting by running away, but that will cost him half of his energy (and it's very bad form for a fighter).

To move forward, press the F key; to turn right, press R; to turn left, press L. And there's an alternate set of movement commands: The space bar moves Joe forward, and the arrow keys turn him to either side. These options will be listed on the bottom line of the screen.

When Joe sees someone down the hall, you can type either F for Fight or R for Run. These choices also appear on the bottom line.

In a fight, you enter a number from 1 to 9. The numbers 1, 2, and 3 are purely defensive—they help you recover energy; 4, 5, and 6 represent a moderate attack—not Joe's best effort, but not too tiring, either. The numbers 7, 8, and 9 represent an all-out slash—hard to defend against, but it uses a lot of energy.

Energy loss is proportional to the square of the input number; so a blow of 9 takes more than twice as much energy as a blow of 6.

Varying amounts of defense are represented by each of the three numbers in each of the previously mentioned groups: 1, 4, and 7 are minimum effort (risky); 2, 5, and 8 are moderate; and 3, 6, and 9 are maximum (safest, but tiring).

If you have any healing potions or energy pills left (see upper right corner of display), you can take one by typing H or E respectively. This will add between thirty and seventy points to your health or energy. On such a move, an input of 3 (maximum defense, no attack) will be assumed.

After you input your move, the screen will tell you whether you hit the bad guy and whether he hit you. It will also tell you how serious the wounds are: A scratch is one to ten points, moderate damage is twelve to thirty, and serious is thirty-four to seventy.

Then you will be asked for another input, and this pattern will continue until somebody gets killed. If the somebody is Joe, the game is over; but if it's the bad guy, then Joe can explore the corridor some more.

Some of the bad guys carry healing potions or energy pills, even though they don't use them themselves. Fortunately, Joe is smart enough to search the bodies after he kills them and to add any such loot to his own supplies.

And that's about it for this version. You don't have a complete game yet, but you do have a couple of useful components: a combat routine and an overall framework. For now, you can use these pieces in your own game—or just watch how they work and use the ideas.

Toward a More Logical Variable. Before we dig into the program itself, let's review a trick that's used in it: logical index control.

An *indexed variable*—sometimes called an array variable or a dimensioned variable—is actually several different variables. They all have the same name, but each of them has a different number. This is useful when you want to do something several times and keep track of the different results: For example, Test(1), Test(2), and Test(3) are an indexed variable.

In Applesoft, you can also have indexed string variables: For example, Day\$(1) = "Monday", Day\$(2) = "Tuesday", Day\$(3) = "Wednesday", and so on.

The number between the parentheses is the *index* of the variable. When you use an array variable, you usually replace the index

with another variable—for example, with the Day\$ array, you could enter:

```
FOR X=1 TO 7: PRINT DAY$(X): NEXT X
```

and the Apple would give you

```
MONDAY  
TUESDAY  
WEDNESDAY
```

and so on through Sunday.

You can use any arithmetic expression as an index, and AppleSoft will process it according to the rules of arithmetic. All of the following indexes are permissible: Day\$(X-1), Test(2*N+D), Name\$(Int(10*Rnd(5))).

In other words, the Apple usually treats indexes as numbers: They can be added to, subtracted from, multiplied by, and so on. Have you got that clear? Good—now store that idea somewhere; we'll need it later. But that's not how we're going to do things today. We are going to do our indexing logically, not numerically.

The difference is that the logical operations, And, Or, and Not, are two-valued, while numeric operations, of course, are many-valued. 1 + 1 is 2, but 1 And 1 is 1 (try it: Print 1 And 1 <Return>). Stranger still, 3 And 5 is 1, and 100 And 0 is 0!

The logical operators (And, Or, Not) recognize only two values, zero and nonzero. Any time they get a nonzero value, they treat it as 1; 0.005 and 1,000,002 and -33 all look like 1 to the logical operators.

To put that in technical terms, anything that is zero is zero; and anything that is not zero is one.

And why is that important to us? Because it gives us a way of talking to either the side at bat or the side in the field—without knowing, at a given moment, which side is up.

We are dealing with two people, Joe and the bad guy. If we number them 1 and 0—the two numbers recognized by the logical operators—then we can talk about whichever one we want to without knowing which is which. For example, if the fighter (X) is Joe, then the fighter (not X) has to be the bad guy. Or if the wounded one (P) is the bad guy, then the wounded one (not P) is Joe.

This will be very useful when we are trying to figure out who hit whom—as you will shortly see.

The Parts of the Program. The program has five parts: the *main loop* (it's called "Each Round" in the listing, because each round starts there, no matter what Joe is doing); the section on *exploring*; the section on *combat* (called "Fight!" in the listing); a group of *utilities* (such as the delay timer); and the *initialize* section.

Initialize Me. The initialize part is big and busy: Its purpose is to load all the strings and variables the program needs (there are lots of them!) and to present the prologue and introduction to the user. As it turns out, more than one-quarter of the program is concerned with initializing.

The logical place for this stuff is at the beginning of the program; but instead, we've put it out at the very end. Why? Because if we put it at the beginning, it would make the whole program run slower. Whenever Applesoft does a gosub or a goto, it has to count through all the line numbers (starting at 1) to find the one it wants, and that takes time. If the initialize section were in front, the program would have to count through all those line numbers on every jump.

Instead, with initialize out at the end, we have to count through those numbers only once. The jump at line 50 takes care of the whole thing at the beginning of the program, and we never have to count through those numbers again.

What does the initializing actually do? Many things. First it prints the beginning of the prologue (lines 5010 through 5090) for the user to read. Note that all the lines of the prologue are indented five spaces by printing I\$ in front of them (I\$ = 5 spaces—line 5020). This makes a neat column in the middle of the screen and separates these lines from other lines, which are full-length and which will be printed later. The same thing could have been done with htab 6, but I\$ is shorter.

While the user reads the first half of the prologue, the program starts loading variables.

Line 5110: "Doing" is very important. This number specifies what Joe is doing at any moment: 0 is for exploring, 2 is for fighting, and 1 is for deciding whether to run or fight. This number controls branching and various other things during the program. Watch for it.

Line 5130: "EP" is the number of energy pills Joe will start off with. Rnd(5) produces a random number between 0 and 0.999..., multiplying by 6 results in a number between 0 and 5.999..., and Int places the value between 0 and 5. Then add 2 to that, and Joe starts off with between two and seven energy pills.

Line 5140: "HP." Same deal. From one to four healing potions.

Line 5150: "EQ" and "HQ" are to remember what he started with, in case you want to print out a tally at the end of the game. We don't do that in this version, but we will someday; and if you want to write that part for yourself, there is the information.

"Safe" determines Joe's chances of running into a bad guy on any given move. Safe = 3 means the chance is one in three (see line 810).

"Time" is the value the delay timer counts up to—see line 1200 and beyond. Changing this value will change all the delays in the program, in proportion.

"Wall" determines whether Joe is facing a wall or not—see line 530 and elsewhere.

Then we load a bunch of strings. Z\$ in line 5230 is the bell; the others are self-explanatory. The string arrays at 5300 are for when we need several different versions of a particular string. The first group, C\$(), is three different ways of saying the same thing. It's a thing that has to be said often during the game, and this technique (see lines 720 and 730) adds a little variety.

The second group, O\$(), comprises the various options available during play. These will be printed on the bottom line of the screen. Line 350 selects the appropriate one, using the current value of Doing.

The lines after 5400 set up the array variables we will use with the logical indexing technique mentioned earlier. Vit() is short for vitality, the average of health and energy—this value is used in computing the effectiveness of attack and defense. In() is short for investment, that number from 1 to 9 that you enter on each combat round.

In line 5420, the abbreviations stand for attack capability, attack investment, defense capability, and defense investment.

Then we display some more prologue. This time, starting at line 5540, we use a more compressed technique—it takes less space than repeating "Print 'one line of message'" over and over. Instead, we store the strings we want to print as data statements and then print them with a Read:Print loop.

A word of caution: When using this trick, be particularly careful when entering the data statements. The program will read them in order, from beginning to end; and if there is anything wrong—a statement omitted from one group, or a typo in the wrong place—then all the following data statements may be out of sequence or garbled.

After the Introduction, we load a few more strings and then (line 5800) go to 100 to start the first round.

A Round and a Round. "Each Round" is the main loop of the program—the part that does most of the work. You can arrive here from many places in the program, but they all have this logic in common: Something has just happened—it might be a round of combat or a bit of exploring or Joe bumping into a wall—and all the necessary values have been updated to show the results.

The gosub 1240 is a delay. In this program, any gosub 12xx is a delay.

Call -912 scrolls the entire display up one line. It's the same effect you get when you print with the cursor on the bottom line; but call -912 works regardless of where the cursor is. The loop in lines 140 and 150 does this just enough to bring the cursor to screen line 19—again, regardless of where it started from.

The loop in lines 160 through 180 adds fifteen points to Joe's energy ($X=1$) and the bad guy's ($X=0$) on each round, up to a maximum of 100—the normal recuperative processes of a healthy body at work.

Following line 200, we print Joe's current condition—health, energy, and supplies—across the top of the screen. In a later version, everybody in the party will be up here.

Finally, after line 300, we go down to the bottom of the screen and print P\$, the prompt (which never changes); skip a line and print O\$(), the options (which vary with Doing); put the cursor back at the end of the prompt line; and wait for an input.

The 400 block is very important: It determines what will happen next. First, the user's input is translated into ASCII to make comparisons easier; then it is compared to 27—the escape key, used here as an instant exit. Then we clear the prompt area, and ... jump!

If Doing is 0, we fall through to line 500, Explore; if Doing is 1, we jump to 900, Run or Fight?; and if it's 2, we go to line 2000, Fight!

Feel My World. Now we come to "Explore." First we have to decode the input: What did the user ask for? ASCII 32 is the space bar and 70 is the letter F: The two commands for "move forward." If the input is not one of these, we'll deal with it elsewhere.

Right, then: Joe wants to move forward. Can he? He can if he's not facing a wall. If he is, we tell him so (lines 550 through 570) and then jump to 800 to see if he encounters anyone.

If he's clear to move forward, line 530 sends him to 720. This is a short-cut—a step has been omitted here. If we were in a "real" corridor, the program would include a set of variables that mark Joe's position on a map of the "game environment"; and these numbers would have to be adjusted to show that Joe had moved.

But the Upper Hall of the Caverns is not "real." We'll have to deal with mapping and position in another article—it's a big topic in itself. For now, Joe is just standing in the same place, over and over: His turns are "real," but his forward motion is not.

His turns are managed in the 600 block. D is a number from 0 to 3 that represents his direction; and DD (short for "Delta D," which means "the change in D") is the amount added to or subtracted from D as the result of a turn. Right turns (R is ASCII 82, the right arrow is 21) add to D, left turns (ASCII 76 or 8) subtract. If the input is none of those, it's an error—goto 1300.

After the turn is computed, line 670 determines whether Joe is facing a wall.

The 700 block tells Joe what he sees after his move. If he's turned sideways in the corridor, all he will see is a wall (line 710). If he's facing down the corridor, lines 720 and 730 tell him so, by using a random number to select one of the C\$() messages. Then he falls through into the 800 block, which rolls the dice for an Encounter.

If a random number, times safe (defined in line 5160), is greater than 1, then Joe is still alone. Go back to line 100 and start another round.

If not, then line 820 sets Doing to 1. This will change the options offered at 350, and the jump at 450. Line 830 tells the user what's happened, and 840 goes back to 100.

He Who Fights or Runs Away. If Doing is 1 when you go through line 350, you will be offered the choice of R for Run or F for Fight. Then, when you get to line 450, you will be sent to 900.

If you chose to fight (Asc("F") is 70), then line 904 jumps you to 960, where you meet your opponent.

If you didn't choose that and you didn't choose to run either, then line 906 sends you to 1300 to be nagged for a bad input.

Otherwise you chose to run: Line 910 gives you a 50 percent chance of making it. If you do, you get told about it (line 920), turned around a bit (930), and half-exhausted by the effort (935)—then sent back to line 670 to see where you are, with Doing set to indicate exploring again.

If you don't get away, line 950 tells you so, and the next few lines tell you what the strangers look like. Finally line 990 sets Doing to 2—combat—and sends you on to 1900. There, a new bad guy is taken out of the deep freeze and put down in front of Joe, and

another round begins.

Note the bad guy's numbers AC(0) and DC(0)—Joe has similar values with a 1 index (see lines 5450 and 5460). They represent attack capability and defense capability.

Fight! Now we come to the important part: the fight itself. This is the star of the show.

The logic of it is this: Each fighter chooses what he will invest in attack and defense, as described earlier (the bad guy's choice is made by a random number). These values are modified by his vitality (health plus energy, divided by two) and by his capability (attack or defense, as appropriate).

Next, a random offset is generated, which may be positive or negative (also random), and added to the attacker's value computed previously. The result is compared to the defender's value, computed similarly except for the random number; and if the attacker's is higher, he scores a hit.

If a hit is scored, the difference between the numbers determines the degree of damage: Up to fourteen points is a "scratch," fifteen to forty-nine points represents "moderate damage," with fifty or more points representing "serious damage." The actual amount of damage is determined by another random number, within a range specified by the seriousness of the hit: A scratch is one to ten points, moderate is twelve to thirty, and serious is thirty-four to seventy.

The damage figure is deducted from the defender's health; then the roles of attacker and defender are reversed, and the same calculations are repeated. Finally, the results are displayed, and—if nobody is dead yet—another round begins.

Secret Messages. In developing this program, we needed a way to see what was going on inside it: to make sure it was doing what we thought it was. Thus we included several lines to display the intermediate results of the calculations previously described.

This information would not be displayed during play in the finished game—much of it is unnecessary, and some of it should be concealed (the bad guy's energy, for example). However, this version is by no means finished—so we decided to leave it up to you. These "report lines" all have line numbers ending in 3, 5, or 7; and they are in the 2100 block and the 2600–2760 block. You can leave them in or take them out, as you wish.

Good Luck, Joe! There is much more that could be explained—such as the reason that the Random Mod routine has a squared term in it (because it makes a bell curve, which is prettier than a straight line), or how that Delay Timer works (in a spiral). But if you knew everything, it would take all the mystery out of life. Besides, there's that program, just lying there invitingly, daring you to probe its inner secrets for yourself. It's broken into logical sections, which should help you figure it out. If something puzzles you, play around with it: Change things and see what happens. Add a few extra report lines to tell you what's going on inside.

And just think: Next issue, we'll be back with an even more complicated version, with position control and mapping and doors and rooms and stuff like that—finally we'll get Joe out of that endless corridor.

```
3 REM
4 REM COMBAT: ENILT FOS
5 REM
6 REM V: 67
7 REM
8 REM
50 GOTO 5000: REM INITIALIZE
100 REM +++ EACH ROUND +++

110 REM ** NEW PAGE **

115 REM ENTER W/CUR JUST BELOW LAST LINE TO BE RETAINED
120 CV = PEEK (37)
130 CALL - 958: GOSUB 1240
140 FOR X = 1 TO CV - 19
150 CALL - 912: NEXT X
160 FOR X = 0 TO 1:ENERGY(X) = ENERGY(X) + 15
170 IF ENERGY(X) > 100 THEN ENERGY(X) = 100
```

```

180 NEXT X
200 REM ** PRINT STATUS **

210 HTAB 1: VTAB 1: PRINT ST$
220 CALL - 868: PRINT NAME$;
230 HTAB 8: PRINT PROF$;
240 HTAB 11: PRINT HEALTH(1);
250 HTAB 18: PRINT ENERGY(1);
260 HTAB 31: PRINT HP;
270 HTAB 36: PRINT EP
280 CALL - 868

300 REM ** PROMPT & INPUT **

310 GOSUB 1240: REM PAUSE
320 VTAB 22: PRINT P$;
330 CH = PEEK (36)
340 PRINT : PRINT : GOSUB 1240
350 PRINT O$(DOING);
360 GOSUB 1240
370 VTAB 22: POKE 36,CH + 2
380 GET Q$: REM

400 REM ** DECODE & BRANCH **

410 Q = ASC (Q$)
420 IF Q = 27 THEN END
430 HTAB 1: CALL - 958
450 ON DOING GOTO 900,2000: REM
500 REM +++ EXPLORE +++

510 REM ** STRAIGHT AHEAD **

520 IF Q <> 32 AND Q <> 70 THEN 600: REM TURNS OR ERROR
530 IF NOT WALL THEN 720
550 PRINT Z$$(THUMP) OUCH! THAT'S A"
560 PRINT I$" WALL, NOT A DOOR!"
570 GOTO 800: REM

600 REM ** RIGHT OR LEFT **

610 IF Q = 21 OR Q = 82 THEN DD = + 1: GOTO 640
620 IF Q = 8 OR Q = 76 THEN DD = - 1: GOTO 640
630 GOTO 1300: REM BAD INPUT
640 D = D + DD
650 IF D > 3 THEN D = 0
660 IF D < 0 THEN D = 3
670 WALL = (2 * INT (D / 2) < D)

700 REM ** WHAT YOU SEE **

710 IF WALL THEN PRINT I$W$: GOTO 800
720 R = INT (3 * RND (5))
730 PRINT I$C$(R): REM

800 REM ** AN ENCOUNTER? **

810 IF SAFE * RND (5) > 1 THEN 100: REM NO ENCOUNTER
820 DOING = 1
830 PRINT : PRINT I$E$
840 GOTO 100: REM

900 REM ** RUN OR FIGHT? **

904 IF Q = 70 THEN 960
906 IF Q <> 82 THEN 1300
910 IF RND (6) < .5 THEN 950
920 PRINT I$"YOU GOT AWAY, THIS TIME!": PRINT : GOSUB 1230
930 ENERGY(1) = INT (ENERGY(1) / 2):D = INT (3 * RND (7))
940 DOING = 0: GOTO 670
950 PRINT I$"NO GOOD -- HE'S TOO CLOSE!"
960 PRINT : PRINT I$"HE'S A FIGHTER, ABOUT YOUR"
970 PRINT I$" SIZE, AND WITH SIMILAR"
980 PRINT I$" EQUIPMENT. GOOD LUCK!"
990 PRINT :DOING = 2: GOTO 1900: REM
1000 REM +++ UTILITIES +++
1010 REM ** RANDOM MOD **
1015 REM ENTER WITH RIN PRESET
1020 SIGN = 1 - 2 * ( RND (7) < 0.5)

1030 RO = INT (RIN * RND (6) ^ 2) + 1
1040 RO = SIGN * RO / 2
1050 RETURN

1200 REM ** DELAY TIMER **

1210 GOSUB 1220: REM 16 CYCLES
1220 GOSUB 1230: REM 8 CYCLES
1230 GOSUB 1240: REM 4 CYCLES
1240 GOSUB 1250: REM 2 CYCLES
1250 FOR T = 1 TO TIME
1260 NEXT T: RETURN
1270 PRINT DAM$(HIT( NOT W))

1300 REM ** BAD INPUT **

1310 POKE 36,CH + 2: PRINT Q$
1320 GOSUB 1340: VTAB 20
1330 CALL - 958: GOTO 200
1340 GOSUB 1240: GOSUB 1350
1350 GOSUB 1240: VTAB 24
1360 PRINT Z$O$(DOING);: HTAB 1
1370 GOSUB 1230: CALL - 868
1380 RETURN

1900 REM ** NEW OPPONENT **

1910 HEALTH(0) = 100
1920 ENERGY(0) = 100
1930 AC(0) = 100
1940 DC(0) = 100
1950 DEAD = 0
1960 GOTO 100
1990 REM
2000 REM +++ FIGHT! +++

2010 REM ** INPUTS **

2020 IN(0) = INT (RND (5) * SQR (1.3 * EN(0))) + 1
2025 IF IN(0) > 9 THEN IN(0) = 9
2030 IN(1) = VAL (Q$)
2040 IF IN(1) = 0 THEN 3000
2050 IF IN(1) ^ 2 * 2 / 3 < ENERGY(1) THEN 2100
2060 PRINT I$Z$"YOU'RE TOO TIRED.";
2070 GOSUB 1220: HTAB 1
2080 CALL - 868: GOTO 200

2100 REM ** THE ATTACKS **

2103 PRINT I$"YOUR INPUT:";
2105 PRINT IN(1)" HIS:"IN(0);
2110 GOSUB 2500: REM SET UP
2113 PRINT " HIS EN:"EN(0)
2115 PRINT I$"YR AK:"AI(1)" DF:"DI(1);
2117 PRINT " HIS AK:"AI(0)" DF:"DI(0)
2130 GOSUB 2600: REM ATTACK & DEFENSE
2140 GOSUB 2800: REM DAMAGE
2150 GOSUB 2900:REM REPORT
2180 IF NOT DEAD THEN 100

2200 REM ** IN CASE OF DEATH **

2210 HOME : HTAB 8: VTAB 10
2220 IF HE(1) < THEN PRINT "OOPS! TOO BAD....": HTAB 20: END
2230 PRINT "CONGRATULATIONS!"
2240 HTAB 10: VTAB 14
2250 PRINT "YOU GOT HIM!"
2260 GOSUB 1220:DOING = 0
2270 PRINT : PRINT : PRINT
2280 IF 3 * RND (5) < 1 THEN 100: REM NO LOOT

2300 REM ** LOOT! **

2310 PRINT I$"AND HE WAS CARRYING"
2320 PRINT : GOSUB 1230
2330 LT = INT (1.7 * RND (5))
2340 LQ = INT (5 * RND (5)) + 2
2350 IF LT THEN HP = HP + LQ
2360 IF NOT LT THEN EP = EP + LQ
2370 PRINT I$!LQ" "LT$(LT)
2380 GOSUB 1220: GOTO 100

```

2500 REM ** SET UP ATTACKS **

2510 W = 0: GOSUB 2530
2520 W = NOT W
2530 VIT(W) = INT ((EN(W) + HE(W)) / 2)
2540 EN(W) = EN(W) - INT (IN(W) ^ 2 * 2 / 3)
2550 IN = IN(W) - 1
2560 AI(W) = INT (IN / 3)
2570 DI(W) = IN - 3 * AI(W)
2590 RETURN : REM

2600 REM ** COMPUTE ATTACKS **

2610 GOSUB 2630
2620 W = NOT W
2630 AI = (AI(W) + 3) / 4: IF AI < 1 THEN AI = 0: EN(W) = EN(W) + 7
2640 DI = (DI(NOT W) + 3) / 4
2643 WHO\$ = "HIS": IF W THEN WHO\$ = "YOUR"
2645 PRINT IS\$WHO\$ " ATK "AI;
2647 PRINT " AGAINST "DI
2650 RIN = AI * VIT(W) * AC(W) / 100
2655 PRINT IS\$ " RIN="RIN;
2660 GOSUB 1000: RO = RIN + RO
2665 PRINT " RO="RO;
2670 HIT = RO - DI * VIT(NOT W) * DC(NOT W) / 100
2680 PRINT ": HIT="HIT " ";
2710 IF HIT < 1 THEN HIT(W) = 0: GOTO 2750
2720 IF HIT < 15 THEN HIT(W) = 1: GOTO 2750
2730 IF HIT < 50 THEN HIT(W) = 2: GOTO 2750
2740 HIT(W) = 4
2750 REM
2755 INVERSE : PRINT HIT(W): NORMAL
2760 RETURN : REM

2800 REM ** DAMAGE **

2810 GOSUB 2830
2820 W = NOT W
2830 DAM = HIT(W) * INT (10 * RND (5) + 1) + 10 * (HIT(W) - 1)
2840 IF DAM < 0 THEN DAM = 0
2850 HE(NOT W) = HE(NOT W) - DAM
2860 IF HE(NOT W) < 1 THEN DEAD = 1
2870 RETURN : REM

2900 REM ** REPORT **

2910 W = 0
2920 GOSUB 2940
2930 W = NOT W
2940 PRINT : PRINT IS\$;
2950 IF NOT HIT(NOT W) THEN PRINT LEFT\$(HIT\$(W),4):: GOTO 2970
2960 PRINT HIT\$(W);
2970 PRINT DAM\$(HIT(NOT W))
2990 RETURN : REM

3000 REM ** HEAL & ENERGIZE **

3010 IF Q = 81 THEN DOING = 0: PRINT IS\$"COWARD!": GOTO 100
3020 IF Q < > 69 AND Q <> 72 THEN 1300
3030 FIX = HE(1): USE = HP
3040 IF Q = 69 THEN FIX = EN(1): USE = EP
3050 IF USE = 0 THEN 3130
3060 USE = USE - 1
3070 FIX = FIX + 30 + INT (40 * RND (5)): IF FIX > 100 THEN FIX = 100
3080 IF Q = 69 THEN EN(1) = FIX: EP = USE
3090 IF Q = 72 THEN HE(1) = FIX: HP = USE
3100 IN(1) = 3: GOTO 2100
3130 PRINT IS\$"SORRY -- NONE LEFT.": PRINT : GOTO 3100
5000 REM +++ INITIALIZE +++

5010 REM ** START PROLOGUE **

5020 HOME : VTAB 4: IS\$ = " " : REM 5 SPACES
5030 PRINT IS\$,: INVERSE
5040 PRINT " THE CAVERNS OF ENILT FOS "
5050 NORMAL : PRINT
5060 PRINT IS\$"YOUR FIGHTER, ON THIS TRIP, IS": PRINT
5070 PRINT IS\$"JOE, A MALE HUMAN OF AVERAGE": PRINT
5080 PRINT IS\$"SIZE AND CAPABILITIES.": PRINT : PRINT

5090 REM -- CONTINUED AT 5500

5100 REM ** VARIABLES **

5110 DOING = 0
5130 EP = INT (6 * RND (5)) + 2
5140 HP = INT (4 * RND (5)) + 1
5150 EQ = EP: HQ = HP
5160 SAFE = 3
5170 TIME = 60
5180 WALL = 0

5200 REM ** STRINGS **

5210 NAME\$ = "JOE": PROF\$ = "F"
5230 Z\$ = CHR\$(7)
5250 E\$ = "SOMEONE IS COMING!"
5260 P\$ = "WHAT WILL YOU DO NOW?"
5270 ST\$ = "NAME PR HEALTH ENERGY HEAL ENERGZ"
5280 W\$ = "YOU ARE FACING A WALL."

5300 REM ** STRING ARRAYS **

5310 DIM C\$(2)
5320 FOR X = 0 TO 2
5330 READ C\$(X): NEXT X
5340 DATA "YOU ARE LOOKING DOWN A CORRIDOR.": "A
CORRIDOR STRETCHES BEFORE YOU.": "YOU ARE FACING
INTO A CORRIDOR."
5350 DIM O\$(2)
5360 FOR X = 0 TO 2
5370 READ O\$(X): NEXT X
5380 DATA "F/SP:FORWARD R/->:RIGHT L/<- : LEFT": "F:FIGHT
R:RUN": "1-9:FIGHT H:HEAL E:ENERGIZE"

5400 REM ** COMBAT SPECS **

5410 DIM HEALTH(1): DIM ENERGY(1): DIM VIT(1): DIM IN(1)
5420 DIM AC(1): DIM AI(1): DIM DC(1): DIM DI(1)
5450 HEALTH(1) = 100: AC(1) = 100
5460 ENERGY(1) = 100: DC(1) = 100

5500 REM ** MORE PROLOGUE **

5510 GOSUB 1220: PRINT IS\$;
5520 PRINT " -- COMBAT CHART --"
5540 PRINT : FOR X = 1 TO 8
5550 READ Q\$: PRINT : PRINT Q\$
5560 GOSUB 1230: NEXT X: PRINT
5570 DATA " ATTACK: NONE MODERATE ALL-OUT": "D": "E
SLIGHT 1 2 3": "F"
5575 DATA "E MEDIUM 4 5 6": "N": "S STRONG 7 8
9": "E"
5580 PRINT IS\$ (ANY KEY TO CONTINUE): PRINT : PRINT
5590 HTAB 20: GET Q\$: PRINT : REM

5600 REM ** INTRODUCTION **

5610 PRINT
5620 FOR X = 1 TO 6
5630 READ Q\$: PRINT IS\$Q\$
5640 GOSUB 1220: PRINT : NEXT X
5660 DATA "JOE, YOU ARE IN A CORRIDOR.": "IT STRETCHES AS FAR
AS YOU CAN.": "SEE, IN BOTH DIRECTIONS --": "DIMLY LIT BY
AN OCCASIONAL TORCH": "IN A WALL HOLDER. THE
NEXT": "MOVE IS UP TO YOU."

5700 REM ** COMBAT STRINGS **

5710 DIM HIT\$(1): DIM DAM\$(4)
5720 HIT\$(0) = "YOU HIT HIM! "
5730 HIT\$(1) = " HE HIT YOU! "
5740 FOR X = 0 TO 4
5750 READ DAM\$(X): NEXT X
5760 DATA "MISSED.": "ONLY A SCRATCH.": "MODERATE
DAMAGE.": "SERIOUS DAMAGE!"
5770 DIM LT\$(1)
5780 LT\$(0) = "ENERGY PILLS!"
5790 LT\$(1) = "HEALING POTIONS!"
5800 GOTO 100



Part 7: Custom Waveforms Revisited

Last time out, some sweeping generalizations were made in this space in the interest of shortening the discussion on waveforms to a digestible length. Let's go back and qualify those remarks.

Here's the truth: Custom waveforms *can* be used simultaneously with other routines. What's more, they can even coexist with Basic routines. Surprised? Let's review the case against using simultaneous custom waveforms.

(1) "Basic is too slow to change the volume control bits at a usable frequency." Right. Very little can be done at the speed Basic runs at.

(2) "The only way Basic can run simultaneously with a machine language routine is through the use of interrupts." As far as we know, that's also correct.

(3) "Vertical blank interrupts operate at too low a frequency (at intervals of one-sixtieth of a second). The highest frequency obtainable through VBIs would be a 30 Hz square wave." Also true.

Given this, it would be easy to conclude that there was no way to produce a usable custom waveform that would continue to play during the execution of a Basic program. Where this line of thinking goes astray, though, is in the assumption that the only interrupt we have available to us is the vertical blank. It's an understandable mistake: VBI routines have become so popular that programmers now hang half their codes off of them, and once we discover a useful approach to a problem we tend to think of all similar problems in the same way. Nevertheless, there are lots of other interrupts available—and one type in particular that is tremendously more flexible than a VBI.

Pokey's Interrupt Timers. The very same hardware used to generate standard Atari sound effects has an interesting trick: When Pokey timers 1, 2, and 4 count down to zero, they generate an interrupt request, causing the 6502 to jump through global RAM vectors VTIMR1, VTIMR2, or VTIMR4. The addresses of these vectors are \$210, \$212, and \$214 respectively. Usually, these vectors just point to a PLA, RTI sequence, and so nothing happens as a result of the interrupt.

When one of these vectors is changed to point to an interrupt routine, though, it provides us with a nifty *frequency controllable* interrupt for time-critical routines. The old formulas for determining frequency still apply, so all we need to do is determine how often we want the routine to execute, calculate the corresponding AUDF value, and poke it into the frequency registers for that particular channel. We won't even have to worry about reloading the timer. Pokey automatically reloads it with the last value that was poked into AUDF.

Sometimes the capability that was built into this machine just leaves you breathless.

Generating simultaneous custom waveforms becomes terribly easy when viewed in this light. We need three routines: one to set up the interrupt (start the sound), one to clear the interrupt (make it shut up), and the interrupt itself, which will simply pick succeeding values out of a waveshape table and poke them into AUDC. Once the setup routine has been executed, the frequency of the note is selected by Basic and poked into AUDF in much the same way we've been selecting frequencies all along. Basic can pick a note, go away, and do something interesting (the demo draws some pretty

boxes), and the sound won't stop until we execute the shut-up routine.

The limitations? Well, there are three. The higher the frequency, the more noticeable the distortion caused by DMA, et cetera. Higher still, the interrupts occur so fast that the machine can't pay attention to anything else, and it locks the program up at AUDF value 2. (You can recover by hitting system reset, and your program will still be intact.)

The third limitation is that the higher your frequency the less machine time will be available to the rest of the program. For instance, using the screen editor while the interrupt is ripping along at AUDF value 3 is *weird*: The OS becomes so slow you can see each individual line scroll up the screen. Obviously, this effect would be quite unacceptable in a program.

The Demo. The Basic demo installs the three routines just described and then uses them to play a squashed motif from Beethoven's "Moonlight Sonata" while drawing boxes on the screen. The tempo variations are strictly a result of the varied lengths of time required to draw the different size boxes—it is certainly possible to achieve a steady tempo by altering the display routine to one of a more predictable length.

The waveform played is a ramp wave, which produces a nasal-like tone quite different from that of the standard square wave and yet pleasing enough to be used for musical effect. The frequencies used are quite low, to get away from the problems described earlier, but higher frequencies than these are usable.

Both of the listings should be self-explanatory, but two items deserve comment. Note that the Basic routine is careful to poke a frequency value into AUDF before calling the setup routine. This is to make sure AUDF contains a value low enough to prevent lockup of the program.

Also note that the waveform table (in the assembler listing) is eight steps long. Shortening or lengthening this table will raise or lower the frequencies obtained by AUDF. Shortening the table to four steps, for instance, would produce sounds an octave higher than those created by the current version. This is one way to get higher pitches without making the rest of the program sluggish—at the expense of waveform resolution. If you do change the length of the table, remember to change the portion of the code that does the wraparound of the waveform pointer WINDX.

Get into this program, use the routines in your own work, and here's hoping you get as big a kick out of using them as your correspondent did writing them. This technique, and the possibilities it opens up, is one of those serendipitous discoveries about the Atari that can leave you feeling excited for days.

Basic Interrupt Sound Demo

```
0001 REM Interrupt Sound Demo
0002 REM (with apologies to Ludwig)
0003 REM Routine addresses and freq register equate
0004 SET=1536: CLEAR=1558: AUDF=53760
0005 REM Poke in machine language
0006 FOR L=1536 TO 1600
0007     READ BYTE
0008     POKE L,BYTE
```


You Could Have a *Big Future* In Educational Software

by Sherwin Steffin

The long, lazy days of summer are a time when many educators are pondering a career change, and many recent college graduates are concerned with getting that first full-time job. Changing financial conditions at schools may be causing experienced educators to feel uncertain about job tenure, while newly certified teachers may be finding their prospects of getting good teaching jobs particularly grim (for although there are teacher shortages in the sciences and in mathematics, opportunities in other areas are still quite limited).

Perhaps this explains why both experienced educators and new teachers are beginning to explore the opportunities that may be available to them in the educational software industry.

Educational publishers usually focus on one of two sectors of the business—publishing/marketing or product development; very few firms demonstrate the ability to cover both of these areas well. Educational software development houses and independent authors supply the publishing companies with materials designed to satisfy buyers' constant thirst for new products. In addition, cross licensing and exclusive sublicensing arrangements are now becoming more common and are beginning to have an impact on the industry.

Developers or Publishers? Professional educators (or computer scientists) are likely to be most interested in looking to the development-oriented house for full-time employment, while software authors will probably wish to sell their programs to a publishing-oriented organization.

Software development houses bring together people with a variety of skills and talents to design, program, document, and test new educational software. Some development houses function solely as contract programming shops, taking original designs supplied by the software company and coding them or translating existing programs to run on other computers or media, while others handle all aspects of design and programming under one roof. Still others are staffed by developers who serve as general contractors and by project managers who subcontract each component of software development out to specialty houses.

In general, the jobs in educational-software publishing organizations involve sales, marketing, accounting, and management. If you don't have experience or training in one of these areas of the publishing business, you may have a hard time convincing these organizations to hire you.

Finally, a few full-service publishers develop programs in-house and then market their products themselves. Such organizations usually accept products from outside developers and then market them under their own names.

Sell Yourself. If you're looking for a career opportunity, or for a marketing source for your own materials, your first objective should be to discover which software houses may be interested in what you have to offer. To begin, spend a few days at your local computer store. Find a salesperson who is familiar with various companies who publish educational software and the products they sell. Ask questions and attempt to ascertain who is producing quality materials. Then, request demonstration disks from the companies about which you're interested in learning more. Ask yourself two questions: First, does the product represent an organization with which you'd like to be associated; and second, is there a consistency in display, operation, and documentation. If the answer to the second question is yes, it's likely that the publisher handles the development of its own

product or employs consistent editorial control over outside author submissions.

Once you have an idea which publisher you might wish to be associated with, and which, based on its product line, might be interested in using your skills, look at the quality of the advertising materials and packaging associated with the company. This will give you some idea of the size of the company. Consider also where the company is located; does this location suit you?

Now you're ready to do a personal-skills inventory. In the early days of this industry, generalists were the rule, but today, the specialist is king. Thus, getting the job you want in the educational software industry means carefully assessing your strengths and composing your resume to reflect them.

If you're interested in working as a program designer, you should possess at least a master's degree in instructional technology, early childhood education, educational psychology, or some other closely related discipline. For the classroom teacher without graduate credentials or university staff experience, the opportunity window is rapidly closing.

If you're seeking a software engineering position (programming, systems analysis, engineering management), you'd do well to discard the stereotype of the laid-back, hot-tubbing, dope-smoking, four-o'clock-in-the-morning California programmer. The contemporary programmer of educational software is a well-trained computer scientist, and extensive knowledge of microcomputers, a concern for careful documentation, and productivity in debugged lines of code per day are prerequisites for employment today.

Room for Writers. Does all this mean that the educational software industry has no positions available for the excellent classroom teacher who lacks advanced training? Not at all. One major area of software publishing that needs high-quality personnel is wide open to classroom teachers—writing documentation. Today, almost every educational program comes with an instruction manual, teacher's guide, or other explanatory written material. If you communicate well in writing to untrained readers, are a careful editor, and know something about printing and design, investigate positions that may be available in the documentation departments of educational software publishing houses.

Our discussion so far has been directed toward the person who's looking for a full-time position with a publisher. Yet many gifted software authors prefer for one reason or another to continue in their present positions. If you're in this category, you might still want to consider becoming an outside author for a publisher. Follow the suggestions given earlier for selecting publishers to whom you might wish to submit your programs.

In general, the closer your program is to completion, the greater the interest a publisher will have in reviewing it. Submit unlocked copies of your program (several people may need to review the system), along with written documentation. If the possibility of unauthorized distribution of your program disturbs you, submit a non-disclosure agreement and a program description before sending the actual program.

Well-trained, hardworking professionals will find a wealth of opportunity in the educational software field. If the prospect of getting involved in this burgeoning industry intrigues you, you owe it to yourself to try to break into the field. S

GAMELINE

Planetfall

By Steve Meretzky.

Apple, Atari, Commodore, DEC, IBM, NEC, Osborne, TI, TRS-80. *Planetfall* departs somewhat from Infocom's previous science-fiction fare. The heroes of *Starcross* and *Suspended* were an asteroid miner exploring the solar system in a one-man spacecraft and a man awakened from cryogenic suspension to save a planet from its own malfunctioning control systems. The character whose part you play in *Planetfall* is more of a comic antihero; the setting you find yourself in at the outset is reminiscent of Douglas Adams's *Hitchhiker's Guide to the Galaxy*. A life that otherwise might be viewed as glorious and exciting—that of an officer in the Stellar Patrol—is treated satirically, shown for what it really is (or could be): pure drudgery.

Aboard the *Feinstein*, you are an ensign of the lowest class, assigned deck-scrubbing duty by your malicious superior, Ensign Blather. This tour of duty is punctuated by the arrival of an alien ambassador, who, after giving you a tourist brochure about his planet, walks off leaving a trail of highly scrub-resistant slime. That's a high point of life on the *Feinstein*.

Fortunately—for us, the ensign, and the story line—there is hope for excitement in the Stellar Patrol. The ship blows up after not too much more deck scrubbing, and you find yourself in an automated escape pod—thrust upon your own devices, so to speak—plunging into the atmosphere of a nearby planet. After enduring the ordeal of a rocky landing followed by an unplanned splashdown, you fight your way to an alien shore. The planet was a human colony but seems to be uninhabited now. The first order of business is survival. Several abandoned dormitories give you a place to sleep and hang your spacesuit, but finding food becomes more difficult once you run out of the multicolored goo you found in your survival kit.

Planetfall is a game of discovery. If your first concern is survival, your second is probably getting back to civilization. A third goal is to discover what happened to the people on this planet. The more you discover—especially as you come across certain disturbing pieces of evidence—the more important this goal becomes.

Your first discovery is a little robot named Floyd. It is uncertain what Floyd was built for. His typical response to any request for help is "Enough talk. Let's play hide-and-seeker!" Floyd appears at first to be little more than an amusing diversion, a cybernetic puppy dog. Friendly and loyal, but not too bright. Still, among his playful ramblings there are bits of computerized wisdom, clues, and insights. (When you save the game, he says, "Oh, boy, are we gonna do something dangerous now?")

Like its predecessors, *Planetfall* is also a game of repairing machines and figuring out how to use them. Broken machines are common in the worlds of Infocom, and repairing them is necessary to set the world right. These puzzles are of planetary importance. Though they're often as simple as replacing burnt-out parts, there's usually a certain twist. The material or procedure necessary for the repair isn't always obvious. The final puzzles are more interesting and require intelligence and imagination to solve.

The situation you find yourself in, though it starts on the absurd side, becomes increasingly poignant. The puzzles are good; the character of Floyd is great. The climax is exciting, but you may find the denouement a letdown. Not that it isn't enough: It's too much. Instead of neatly tying things up, telling you the results of your actions, and logically concluding the unresolved plot elements, the ending goes a step too far, indulging in unabashed adolescent wish fulfillment. Although *Planetfall*, like the other Infocom games, raises the level of the adventure to something approaching interac-

tive literature, the ending of this game reads more like a fairy tale. The game is excellent. You can always rewrite the final paragraphs in your own mind to make it a satisfying piece of fiction. DD

Apple II, II Plus, IIe; 48K. Atari 400, 800, or 1200; 32K. Commodore. DEC. IBM pc. NEC. Osborne. TI Professional. TRS-80, Models I or III. \$49.95 from Infocom, 55 Wheeler Street, Cambridge, MA 02138; (617) 492-1031.

Zaxxon

Versions by John Garcia, Ron J. Fortier, Jim Ratcliff, and Steve Bjork.

Apple, Atari, Radio Shack. "Mission Command to attack leader. Zaxxon's fortress should be coming into your range now. Switching to manual control; begin your attack run. Good luck."

"Roger, Command. I'll continue to transmit as long as I can."

"The gun emplacements are low, arranged in a crossfire. They can be avoided by flying above them, but at this altitude I won't be able to do any damage or hit the fuel tanks I need to complete this mission."

"I'm beginning a strafing run now."

Against a blinding barrage of fire the lone ship dove lower, relying on its speed to avoid the heavy gunfire.

"I've knocked out one of their radars and several gun emplacements. . . . Oh no, they're launching rockets. One right under me. I don't think I can get out—"

A new movie from George Lucas? A laundry detergent? A killer play in Scrabble?

Arcade maniacs have known the answer for more than a year, and now computer crazies can share that information. *Zaxxon* is a superb three-dimensional computer game that impressively exploits the computer's multicolored high-resolution graphics and neatly gets around the scrolling limitations of Apple and Radio Shack.

Not since *Choplifter* has a game looked so impressive. *Zaxxon's* color display is awesome, and its finely detailed images make excellent use of perspective. The sound effects are authentic, rather than superfluous; the player genuinely feels like the occupant of a pressurized plane cockpit.

The fighter spacecraft pilot's mission is to destroy the deadly *Zaxxon* Robot. (Why the robot is considered "deadly" is never explained. It's been perfectly peaceful until now; it didn't sew razor blades into everybody's underwear; you just burst into this poor machine's territory and blast it to smithereens.)

The playing field is a bird's-eye view of a long, narrow course with a vanishing point beyond the screen's upper right corner (imagine a bowling alley viewed from the ceiling). Flying straight actually means moving at a forty-five-degree angle.

After making it through the first section—a space fortress filled with grounded enemy planes (which fire back in spite of their immobility), radar towers, gun emplacements (which fire horizontally at ground level), and base missiles (which fire vertically)—it's off to outer space, in which planes not destroyed in the fortress scramble for a dogfight. Because of the difficulty of judging three dimensions on a two-dimensional screen, the enemy planes are nearly impossible to defeat—there are no objects, therefore no reference points, in outer space. (At least not in Atari/Radio Shack outer space. In the Apple universe, there are lots of colorful planets and twinkly stars to help you out.) The conservative approach is perhaps best; flying in the bottom left-hand corner will get the player through this segment with a minimum of combat.

The second fortress is much like the first, except that walls are topped by force fields that leave only a narrow hole through which the player must fly. The altimeter (a green gauge on the left of the screen) is invaluable in this sequence. Once through the seven walls

guards will pursue, but not too swiftly. Also, they'll get tangled up amongst themselves and get into tight spots from which they cannot escape. In short, the guards are none too intelligent. They are, however, quite deadly. You have no weapons to use against them directly.

Instead, you are equipped with a laser drill pistol with which to dig through the myriad layers of bricks—one layer at a time. This means that you must drill ever-narrowing swaths in the bricks to get at some of the treasures. You can also dig pits into which the guards will tumble. The pits won't last long, due to self-renewing bricks (a technology that the stateside construction industry has managed to suppress in favor of the old-fashioned kind that wear away with time). The guards, nimble fellows in a pinch, will climb out of these pits in order to pursue you again. There are ways to trap guards in the regenerating bricks, which results in guard fatalities, which in turn bring other guards to life at the top of the screen. The player gets points for trapping the guards, as well as for causing their demise, but not nearly as many points as for getting the gold and completing a level.

The playability of *Lode Runner* is remarkable. In this game, when you lose, you lose with the certainty that your own wrong move caused your downfall. This means, of course, that you won't make that wrong move next game, and your score will improve. The proverbial carrot is always dangling, tantalizing and inviting.

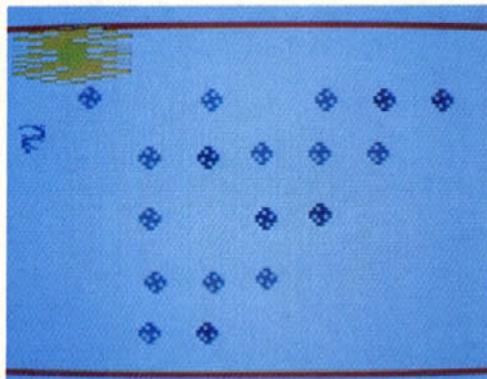
The carrot quality can be a game's undoing—players grow tired of going through the same progression of easy screens in order to get to the harder ones to push the score a bit higher. Not so in *Lode Runner*. Broderbund has thoughtfully provided—and documented—"cheat" keys. You can jump to any of the 150 levels at will.

Here's the rub—and it's a good one: The score won't register on the roster of ten high scores. You can also increase the number of commandos at your disposal, again at the price of losing an official high score.

In the program to edit and create your own levels, the possibilities are astounding. There are ten types of building blocks to use in creating the screens: among them, guards, treasure, escape ladders, diggable and undiggable floors, ladders, trap doors, and monkey bars. See if you can match the creative strategies and problems of the game's original levels.

Finally, the game deserves praise for not emphasizing violence. You must win by use of wits and strategy. While there are ways to kill guards, the enemy simply reappears. Winning comes with careful planning and problem solving—all designed to keep three steps ahead of the guards at all times. *Lode Runner* is not based on a futile-stand-against-ever-increasing-odds scenario. You must come up with a solution to each screen with patience, thought, and experimentation.

It's a ton of fun and horribly addicting. DA
Apple II, II Plus, IIe; 48K, disk. \$34.95 from Broderbund Software, 1938 Fourth Avenue, San Rafael, CA 94901; (415) 456-6424.



Archon

By Anne Westfall, Jon Freeman, and Paul Reiche III.

Atari. Paul Reiche feels the same way about chess that a lot of us do.

"I like chess, but I find it boring. When I play, I like to spend about thirty seconds

on one move, and then move, move, move, move, and be done. I may lose—in fact, I usually do."

Let's face it, sports fans, chess can be downright dull for those who don't have the time to expend the concentration it takes to master the game. A lot of movies about field battles don't last as long

as some chess matches.

Welcome to *Archon*.

If there is any computer game that even slightly resembles *Archon*, we haven't seen it.

Archon depicts a battle between the forces of light and darkness. It's more a challenge of restraint—restraint from physically strangling your opponent. Forget the computer game; this is life.

It begins as a standard board game (depicted on the screen, of course), and that's where likenesses end. You want to take an opponent's square? Fine. Just land on it and then fight for it. That's right. A knock-down, drag-out, no-holds-barred fight. When you land on an opponent's square, the square expands to fill the whole screen and serves as the battlefield. Then it's up to you, your joystick, and your wits. Only the ferocious survive.

Playing pieces (goblins, dragons, unicorns, basilisks, and spell-casting mages, to name a few) all have different attack forces, life spans, strengths, and weaknesses. Just because your foe is stronger doesn't automatically mean it'll win. You're still in control.

Adding to the scheme of things is the luminosity cycle. Some squares are always either white or black. Others gradually change color from light to dark and back again. The lighter the square, the more power the light pieces have in battle on that square, and vice versa for the dark. Only a fool (or the extremely brave) would dare challenge an opponent on his opponent's colored square.

Ideally, this is a two-player game. It also has an option for one person to play against the computer, but to do so is suicide. To say the computer is a formidable opponent is to say that Larry Holmes is a good sparring partner; you can defeat it, but you'll need help. A few well-concealed nuclear devices ought to do.

Archon represents a new trend in computer games, a trend that its publisher, Electronic Arts, is trying to set: interactive computer games that force you to act—and react. For the authors' game development firm, Free Fall Associates, it's an announcement that Free Fall does games. And it does them well.

MTY
Atari 400, 800, or 1200; 32K, disk; joystick required. \$40 from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171.



Pentapus

By Jeremy Sagan.

Apple. As one well-known astronomer might put it: "In this galaxy alone there are probably billions upon billions of games to play. Imagine a one with lots and lots of zeros after it; that's how

many games there are! Millions and millions of these games are written for computers of one kind or another. Thousands of them are written for the Apple.

"Yet, of these thousands, only a few hundred of them are written entirely in 6502 assembly language. Fewer still are ever published or released.

"Out of all those billions of games, only a handful show any sign of intelligent life."

Pentapus, the first arcade outing by Jeremy Sagan and his software company, Turning Point, shows quite a lot of intelligence in its design.

Against a vertically scrolling background of stars, the mutant minions of the dreaded Pentapus materialize into our dimension. Each wave of the animated army becomes progressively trickier and harder to hit.

With joystick, you control the "Stargate," a two-sized (large for greater fire power, or small for evasive action) cursorlike gunsight that must alternately evade enemy fire and roll right over the little devils to banish them from our universe.

Each of the five Stargates you are given can take four hits before being completely destroyed, but with the number of enemy shells dropping like eggs in the style of Piccadilly's famous *Falcons*, those hits can add up fast.

After clearing the Drangels, C-Aliens, Eagulls, and Nagas, you are left facing the dreaded Pentapus, sort of an intelligent, five-legged, spacegoing octopus, with his defending Whirrs, floating mines, and smart bombs. Only by banishing the Pentapus three times over can our universe finally become safe for humanity.

Although marred by image flicker, especially when two aliens pass over one another, *Pentapus* does offer some very nice animation and path routines, absolutely topnotch arcadelike sound effects, and a few thunderous surprises.

Additionally, *Pentapus* has all those convenience features that we've grown to know and love: pause, sound toggle, restart, and the ever-important skill levels. But watch out—Sagan's kindergarten level is tough enough for most postgraduate players. HAS Apple II, II Plus, IIe; 48K, disk. \$29.95 from Turning Point Software, 11A Main Street, Watertown, MA 02172; (617) 923-4441.

Scorpion

By Jimmy Huey.

VIC. *Scorpion* is a colorful, challenging, and just-plain-fun maze-type arcade game for the VIC-20. The premise is this: You control a scorpion that comes up from his home in the ground (a black square) into a maze to forage for food. His diet consists of frog eggs and frogs; these are large scorpions. You must guide him around the maze to locate the frogs and eggs, pick up the eggs, stun and then cart off the frogs, and race back to his home where he deposits the meal for his hungry family. Frogs like to eat scorpions just as much as scorpions like to eat frogs, so once they hatch, it's every arachnid and amphibian for itself.

Your scorpion also encounters dragons, worms, pod babies, pod mothers, and stalkers, all of which he must blast away. You need to keep your eye on the air indicator; traveling through the maze uses up oxygen, which you can replenish by shooting a few Venus-flytraps.

There are three difficulty settings—easy, normal, and hard—and thirty-two play levels to choose from. A demo mode gives a general idea of how the game should be played.

Scorpion is fantastically addicting. FP VIC-20; cartridge. \$34.95 from Tronix, 8295 South La Cienega Boulevard, Inglewood, CA 90301; (213) 215-0529.

Hard Hat Mack

By Michael Abbot and Matthew Alexander.

Apple. The blue-collar video game has become a genre unto itself. Following the carpenter in *Donkey Kong* and the miner in *Miner 2049er*, the working-class hero of *Hard Hat Mack* has more to do and more dangers to cope with in the course of an ordinary day's work than his progenitor did fighting gorillas!

Burning barrels and oversize simians aside, consider the hazards of everyday work on a construction site. Falling, for instance. Now, the average hard-hat worker probably has a better-than-average sense of balance, but that constitutes no immunity to the law of gravity. Just walking around on steel I-beams on the fifth floor is reasonably safe—if that's all you have to do.

Your immediate goal is to move girders into the holes in the uncompleted building, then rivet them into place. That would be easy were it not for the constant danger of being hit by falling rivets, molested by vandals and OSHA inspectors, falling off the edge, or running out of time. Surprisingly, the least dangerous item on the screen is the jackhammer, which runs around the building of its own volition when you're not using it. The idea of someone from OSHA, the Occupational Safety and Health Administration, running around killing construction workers is a little odd, but from the looks of the authors, as pictured on the package complete with hard hats, they've never been on a construction site in their lives. (Though Matt Alexander, in fact, has.)

Nevertheless, the game is fun and challenging, even if it does play on all your basic fears. The second level presents you with

inanimate dangers. Your goal is to collect lunchboxes; the hazards are the pieces of machinery that have been carelessly left running. One vandal remains, guarding one lunchbox. The machines are pretty machinelike, so once you get their rhythms down it's easy to get all the boxes—except for the guarded one.

The vandal presents a considerable problem, and Mack is likely to lose one of his three lives getting that box. Fortunately, when this game kills you it doesn't undo work you've already done, with the exception on level one of loosing girders that have been dropped into place but not yet riveted. So the vandal, while extremely difficult to get past alive, is not an insurmountable impediment to Mack's proceeding to level three.

Level three combines conscious enemies with hazardous machinery. The combination is deadly. Mack's job for the day is to collect scrap metal and drop it into the rivet machines to be melted down. Hazards include his old friends from level one, conveyor belts, exposed wiring, the rivet machines, and a Porta Potti you can fall into from above. Not a pretty sight.

The game bears a certain similarity to *Miner 2049er*, but it's a good game in its own right and the animation is a little better. What's more, there's no waiting for the excitement to begin. *Hard Hat Mack* encounters all the danger you could ever want from the moment you punch his time card.

DD Apple II, II Plus, IIe; 48K, disk. \$35 from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171.

Shamus: Case 2

By William Mataga.

Atari. William Mataga's recognition as a programming genius is long past due, and his *Shamus* series has yet to receive the attention it deserves.

Requiring only 16K, *Shamus* was an incredible achievement. Its fast action, twisting maze, and high-resolution creatures might easily have used twice as much memory. Mataga's 24K *Shamus: Case 2* is another masterpiece of compressed programming. Unlike lesser lights who follow a hit with thinly disguised variations on the original, Mataga created a completely different scenario with the same clever design and furious action.

Shamus is still around and quite recognizable in his sporty little hat. Also present is the enigmatic Shadow, who must have used a secret escape route to outfox our gumshoe last time. Apparently dissatisfied with his original maze hideaway, the Shadow now has holed up in a gigantic underwater fortress. Bond tried and failed. Solo and Kuryakin had to give up. Only Shamus, with his trusty plasmar detonators, can save us from the Shadow's mad plan of world domination . . . or something to that effect.

The game begins in the "pit room," so called because its narrow corridors are interlaced with spike-filled pits. Vertical ladders connect corridors to those above and below, and the passageways are patrolled by slaving snakes whose merest touch is, of course, fatal. Shamus moves up, down, left, and right in response to joystick commands, and the trigger helps him hop over those deadly serpents.

While many pit rooms contain four exits, not all are accessible to each other. The upper escape might connect only with that on the left, leaving the other two for a later portion of the complicated maze. Subsequent pit rooms contain ladders that unexpectedly lose their rungs, resulting in a quick drop on top of a passing snake.

One room is a yawning chasm occupied by the Shadow, who flits back and forth and drops his lethal bombs. Others are chamber rooms, filled with armies of crustacoid mutant waterlife: clams, mollusks, and fish. A chamber room is similar to a pinball machine. Shamus's plasmar detonators ricochet off walls and targets, and a single shot will often destroy more than one foe. A design restriction, which allows only two detonators on-screen at a time, rewards the player who carefully places his shots. Trigger hogs will not do very well.

The mutants descend from the top of the screen to the chamber floor, which disintegrates on contact. Should the entire floor disappear, Shamus will fall to the room below—which is not necessarily the last room he was in. Losing that floor toward the end can

be traumatic. Dropping from the twenty-sixth room is particularly bad news, because Shamus returns all the way to the first room.

The crustacoid mutants are joined by a seagull-like ally. This swooping invader drops missiles until Shamus hits it three times; then the bird transforms into a raging fireball that helps destroy the mutants.

Occasional treasure chests contain keys, extra lives, or public service messages (which are—touch of realism—of little use). Shamus begins with five lives and receives another by finding a key, unlocking a door, or scoring another ten thousand points. Be warned: Although keys and locks are not color-coded, as in the first game, they are not interchangeable. Each key fits only one lock.

Bowing to sanity, Mataga installed a pause control that halts the game when the space bar is tapped. During that rest, the game is replaced by a map showing how far Shamus has to go. Difficulty can be modified with the select key; most players will be satisfied with novice level, but there's always a masochist who will opt for expert.

So stop reading and run out and buy it so Mataga will be encouraged to create Case 3!

DB

Atari 400, 800, or 1200; 24K, cassette or disk. \$34.95 from Synapse Software, 5221 Central Avenue, Richmond, CA 94804; (415) 527-7751.

Astro Chase

By Fernando Herrera.

Atari. Not just another pretty space-shoot, *Astro Chase* is just about all you could ask for in an arcade game.

Tremendous graphics tops the list: A multicolored title page gives way to a scene on Earth against a night sky. From a building on the side, an astronaut walks toward a space pad, salutes, and is beamed up to a waiting flying saucer, which then blasts off. The scene shifts to outer space and a masterful asteroid's-eye view of the earth and various celestial bodies. The playing field scrolls smoothly in a geocentric microcosmos. The saucer hovers at the center of the screen.

The mission? Business as usual: Save the earth from the aliens. Fight with mines and ships. The mines advance toward the earth from all directions, and diligent patrol is required to bag them all. If even one mine gets through, the earth is destroyed, with appropriate and perversely appealing audio and visual effects.

Eight different types of alien ships make life more difficult for the would-be hero. Each ship has unique properties and all are bent on destruction. All aliens destroy by ramming. Some also shoot and some duck behind planets and ambush the saucer. Some do everything. There are double speed and high-level chases that are accessible only by successfully completing easier chases.

This game is an exercise in class and style, elements that always show up in the fine details. The background music (optional) is a theme from the *1812 Overture*. After every fourth chase, there's an entertaining intermission. After the fourth chase, the astronaut lands and looks around, scratching his head in an exaggerated "Where is everybody?" motion. After the eighth chase, crowds appear to cheer him. After the twelfth chase, the crowds appear, a limo pulls up, and the hero is whisked away; a relief astronaut takes his place.

The panache of the design and animation of *Astro Chase* is already attracting a lot of attention. One thing it's not likely to attract is dust.

DL

Atari 400, 800, or 1200; 16K, cartridge. \$36 from Parker Brothers, 50 Dunham Road, Beverly, MA 01915; (617) 927-7600.

Annihilator

By Mike Wacker.

Commodore 64. As everyone who ever spent time watching *Star Trek* knows, mankind is an aggressive, even nasty, species. We were told this by several advanced alien races, and who are we to argue with advanced aliens? This being the case, there must be a huge number of people in the world of video gaming who are sick of being put in the position of being the only defenders of an innocent planet against a horde of aliens. Let's get aggressive, already. This appears to be the marketing premise behind *Annihilator*.

The cover on the cassette box looks innocent enough. All it says is that you will be defending your planet against invading aliens.

Only after you have paid your money and actually started running the game is the true nature of your mission revealed. Your assignment is to totally clear a planet of its inhabitants so that it can be colonized by humans.

After you take a few minutes to swallow your scruples (they're dead, Jim), it's time to start annihilating. The game itself turns out to be very much like *Defender*, except that there are no civilians to save. You start out with your spaceship flying over the alien planet surrounded by alien ships. As in *Defender*, your ship can go left or right while rising or falling. The ship is always pointed either left or right, depending on its most recent direction of movement, and that is the direction you'll be firing in. The ship is also equipped with a smart bomb, which you can use only once per ship or sector.

But the run-of-the-mill alien spaceships are a front; fast, big, noisy meteors turn out to be your worst enemy. Reaching a new sector depends on achieving points; each advance puts you, naturally, in a more difficult situation. Eventually, of course, you're destroyed, but if that bothered you, you wouldn't be doing this sort of thing in the first place.

The use of noise has a lot to do with the pleasure of the game. Everything on-screen has a sound; those that go with the missiles and meteors are as good as any you'll find anywhere. The barrage of sound, along with the speed of the game, is totally involving and leaves you drained and exhausted when it's finally over.

The result of all these fairly standard elements is a game of the classic shoot-till-your-thumb-falls-off variety. It's fast, harrowing—and fun.

PD

Commodore 64; cassette. \$19.95 from Victory Software, 7 Valley Brook Road, Paoli, PA 19301; (215) 296-3787.

Jawbreaker

Versions by Chuck Bueche, Doug Whitaker, and Dan Drew.

Apple, Atari, Commodore 64, TI 99/4A, VIC-20. Once upon a time, about two years ago, the first version of *Jawbreaker* premiered on the Apple II. There ensued a series of legal battles over its resemblance to the world's most famous dot-muncher. Of all the maze-game manufacturers ordered to cease and desist in the making of maze eat-'em-up games, only Sierra On-Line fought it. After the court decided in favor of Sierra On-Line, the company decided it had made its point and retired *Jawbreaker*.

Enter the all-new version of *Jawbreaker*. The new game has consistent play on just about any machine, right down to the Atari 2600 VCS (as released by Tiger Vision). This *Jawbreaker* appears to have been programmed with the VCS in mind. Atari had trouble making its VCS version of *Pac-Man* look good due to problems with putting more than two shapes on the same horizontal line. *Jawbreaker* sidestepped this by replacing the maze with a series of five horizontal rows. Each row contains a line of candy dots, possibly one evil/happy face, and the jaws, moved to that row. This makes for good-looking VCS graphics; however, there are no major improvements on the version for the computer, which can handle much more powerful graphics.

What *Jawbreaker* is, then, is a very clean, fast-action game with little sophistication. The top and bottom rows each have two energizer dots to keep you going as you hop through moving apertures, dodging faces and munching candy. After you eat all the dots on a level, a noisy toothbrush comes out and cleans your teeth. The game ends when you run out of teeth.

The graphics are clean, fast, and cheerful; the action is good on keyboard or joystick, and the music is cute—and optional. All the various machine translations are accurate, smooth renditions, and Sierra On-Line has certainly kept the game consistent. GWA Apple II, II Plus, IIe; disk. Atari 400, 800, or 1200; disk, tape, cartridge. Commodore 64; disk. TI 99/4A; cartridge. VIC-20; cartridge. Disk, tape, \$29.95. Cartridge, \$34.95. From Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614; (209) 683-6858.

Guest reviewers this issue are Dave Albert, Greg W. Autry, Derrick Bang, Peter Durkee, Don Lynch, Fay Popejoy, and Howard A. Shore.

SL

NO TIPPING

Adventurers are invited to respond to the pleas of the baffled listed herein and to solicit aid in turn. Fifty-dollar rewards are given for a selection of those tips that the editors judge to be extraordinarily clever, cute, concise, and correct. You would be wise to include a straightforward solution along with each masterpiece of literary or cryptographic subtlety.

Try to limit your responses to no more than three Typifieds. Address your entries to Softline Tip, Box 60, North Hollywood, CA 91603. Typifieds are fair game until a winning response is printed.

New Rules.

1. No more dead giveaways, please—do this, this, and that, and you get this. Just no fun, y'know?
2. If you really want to stand out, put it in some form other than a poem.

Ulysses—How do I get past the hurricane? (Special \$100 question.)
And the winner is:

Never into a hurricane sail,
None will be left to tell the tale.
Everything you have will be lost,
Surely it's not worth the cost.
Winds will whip you to and fro,
Ship's in trouble—down you go.

Without a map, it's safe to bet
Some won't know directions yet.
Ethics are not a part of the game,
Nasty bribes won't cost you fame.
Engage a guard and offer to pay,
Name the price and soon he'll play.

Everyone wants, of course, to win,
Each may find the clues within.
—Kris Swope, Davenport, IA

Honorable mention to Sheryl Atkinson of Colorado Springs, Colorado, who demonstrated a firm grasp of the value of brevity:

Ignore the title of this column.

Adventure—How do you get the clam open?
And the winner is:

Try denting it.
—Marc Wontorek, Northford, CT

Starcross—How do I: get the blue rod from the sphere and have enough gun blasts to reach the forward bubble . . . get the red rod from the rat-ant's nest . . . open the fused door in the guard room . . . find the appropriate slots for the rods?
And the winner is:

To fire a shot is really not wise,
It will surely lead to your ultimate demise.
If you play with your disk, now don't be dumb.
But with your "zoot" it can actually be done.

The rat-ant's nest puts your wits to a test,
To show you are good, be on your best.
If you think of your rods and places to stick 'em,
You'll find a new way to block and take 'em.

Trying to open the guard-room door—
Do you really think you are a human bore?
You could try but I think you'll fail.
If you succeed, where do you want the body mailed?

Some slots are visible, others are not,
Use the rods right and find a few spots.
Three options with one and it's not easy,
Two are smells and one is just noisy.
—Brian E. Whitworth, Meriden, CT

Brian went somewhat beyond the call of duty there, as only a single full question need be answered. Conceptually impressive, though it won't win no poetry awards and is necessarily vague in spots (the fourth stanza addresses the red rod slot only).

A tip of the font to John C. and Anita Woelk-Webb from up Toronto way, who sent in their tip typeset and camera-ready but had it in the wrong measure. (That's Optima, 9 on 10½.) Sorry, guys.

Knight of Diamonds—Which of the three doors (on level 2) do I go through?
And the winner is:

Roaming through the dark is too slow,
Introducing many a new foe.
Go ye first to the door
Holding not monsters galore;
The route to Gnilda you will know.

Rather than pass advice very sage,
In the dark is value on a page.
Get the experience valuable,
Helping with spells malleable,
Thereby strengthening priest and mage.
—R. Whitten, Burlingame, CA

Typifieds

Adventure

Can I cross the bridge without giving the troll a treasure? Been playing since I was seven; Dad won't talk to me anymore.—Mike Tulloch, Marietta, GA

What are the magazines for?—David Dunn, Nashville, TN

The Count

I have the stake, mallet, garlic, and torch, am standing in front of the coffin, but can't kill Dracula.—Doug Zavodny, Bloomingdale, IL

Creature Venture

How do you get to the devil? What is the old tree stump for? How do you change the batteries in the flashlight?—Bobby Agee, Saratoga, CA

Crystal Caverns

How do I get past the iron panel on the northwest wall of the domed room beyond the music studio?—Craig Sorensen, Denver, CO

Dark Crystal

What is the answer to Ursu's riddle?—Clayton Jacobs, Fountain Valley, CA

How do I get through the bars on the mouth of the ravine?—Frank Gilson, Downers Grove, IL

Deadline

How is the ladder connected to the murder?—Keith Comfort, Houston, TX

Does anybody know whether Steven will ever show up, and, if so, when and where?—Lisa Oerman, Muscatine, IA

How do you find the new will and safe?—Jonathan Gottfried, Ventura, CA

Deathmaze 5000

How do you get past the fourth level?—Doug Zavodny, Bloomington, IL

Demon's Forge

How do I get past the statue?—Riva Bickel, Lake Worth, FL

Eamon

How do you get out of the minotaur's lair and open the Acme bag?—Mike Sabo, Endicott, NY

Escape from Rungistan

Where can I get ski poles?—Byron So, Rowland Heights, CA

Journey to the Planets

How do you finish? I can't get home! Help!—David Schlater, Metairie, LA

Kabul Spy

I can't lower or cross the bridge near the tank, and I can't get through the bars.—Mike Lund, Belvidere, IL

How do you open the gate to the airfield?—Bob Rock, Milbrae, CA

How do I get the lighted match across the river to light the lamp? Am desperate—Darren J. Pierson, Cypress, TX

Knight of Diamonds

Does anyone understand Sir-tech's logic on the answers to the last two Staff of Gnilda riddles?—R. Whitten, Burlingame, CA

On the third level, where do you find the riddle and treasure?—B. Sebastian, Oxford, OH

Mad Venture

How do I handle the Mad Adder and get out of that room? What are the strange effects of the ruby?—Riva Bickel, Lake Worth, FL

Mask of the Sun

How do you escape from the mazes beneath Tikal and the Temple of the Sun? How do you kill (or even escape from) Francisco Roboff?—Michael Hsu, Potomac, MD

What do you do after crossing the molten lava (the talking statue scene)?—Michael M. Zilles, Emerson, NJ

How do you get past the skeletons to take the silver bowl?—Keith Comfort, Houston, TX

What's the big thing about the boulders? How will I get out of

the first pyramid?—Robert Monterola, Bronx, NY

Mystery House

How do I find the gun? Seems like I've been trying for decades!—Donna Alderson, Carmel, NY

Ditto!—Ronald Barnech, Chicago, IL

SAGA #1: Adventureland

I've found five treasures, and that's all I can do. Help!—Adam Ratner, Palisades, NY

SAGA #3: Mission Impossible

How do you get through all the large metal doors?—Greg McKnight, Bloomington, IL

How do I get the yellow key without blowing the place up?—Laurel Goulding, Grosse Ile, MI

SAGA #4: Voodoo Castle

What is meant by a "moving bag"?—Chris Nemcek, Coral Springs, FL

SAGA #6: Strange Odyssey

What do you need to do in the hexagonal room?—Chris Nemcek, Coral Springs, FL

SAGA #7: Mystery Fun House

What does the merry-go-round do? I have climbed it and can't figure it out.—Cameron Jones, Richmond, CA

SAGA #8: Pyramid of Doom

How do you get rid of that man-eating purple worm? I have all the treasures except one.—Jeff Frank, Albion, MI

Where can I find the gold tooth?—Scott Yang, Brooklyn Center, NY

Got gold teeth and treasure from table; can't get past worm.—Robert Pelak, Monroe, NY

SAGA #10: Savage Island I

How can I open the coconuts or get the bear to drink the salt-water?—Tom Kraines, Durham, NC

SAGA #11: Savage Island II

I've pulled the lever, using the treadmill. Now what? I keep getting sucked into space by a gust of wind when I leave the forcefield.—Ronald Barnech, Chicago, IL

What do you do to achieve psychotransfiguration? How do you prepare the ray shield? How do you keep the Neanderthal from killing you?—Michael Hsu, Potomac, MD

SAGA #12: Golden Voyage

I have the mask and am atop the mountain. Threw tablet in the fountain and filled chalice. What do I do now?—Riva Bickel, Lake Worth, FL

Serpent's Star

What is the city of the nine gates?—Bob Rock, Millbrae, CA

Sherwood Forest

How does one entertain one's troops on the stage and how does one move the boulder with the rhyme?—Greg McKnight, Bloomington, IL

Starcross

Where is the clear rod?—David Dunn, Nashville, TN

Where is the silver rod? What are the red and blue disks for and where do you use them? How do you get to the green bay without giving your suit to the alien chief?—Joseph Kraska, Vista, CA

How do you get into the spaceship?—Byron Sebastian, Oxford, OH

Hey, Mike Kline: Where is the guard room, dude? I'm up to 225 points and could use a little help in the rod department myself. What do the repair room symbols mean?—Adam Huff, Odessa, TX

Suspended

Whoever has repaired Iris, please tell me how it's done. Waldo has the microextension and Rx chips.—David Hussong, Palmdale, CA
Who gets the cutting tool and how?—Allen Holland, Downey, CA

Time Zone

How do you use the silk?
How do you cross the Amazon?
How do you cross the chasm in the mountains of South America?—David Sterling and Wes Wasson, Kingman, AZ
How can I relight my torch if I used the sticks to get the hammer?—Jeremy Selwyn, Chestnut Hill, MA

Transylvania

What is the ring for? How do you open the door in the cave? Who is Antonio Antiochia? Where did he learn to draw? (Intended as a compliment.)—Michael Hsu, Potomac, MD



At last! In a column all their own, the most-played text-adventure games in town. With the volume of questions and answers being what it is, we can only give away primo bux for one truly exceptional work of tip art per issue. This, therefore, will always be a \$100 award, and given only for outstanding achievement—which means sometimes not at all.

But this time, we've got a two-part achievement that's pretty outstanding. To wit:

Zork I—How do I open the grate under the leaves and get past the spirits to enter Hades?

And the winner is (open the grate):

A Mutt and Jeff cartoon from the 1920s.

Jeff: Here's the bet. We each ask a question that the other has to answer. But if you can't answer your own question you lose.

Mutt: Okay, go ahead.

Jeff: Why isn't there any dirt around the holes that ground squirrels dig?

Mutt (thinks and thinks): I don't know. Tell me the answer.

Jeff: They start at the bottom and dig up.

Mutt: How do they get to the bottom, you simpleton?

Jeff: I don't know. That's your question. You answer it.

and (enter Hades):

RememBer how witches
cast spElls.
That wiLl ring
a beLl.

I'll make Book
On it.

But get thOse candles lit.
Shades of Kim Novak!

The blaCk book has a hint.
You will hAve to
turn over a New leaf, though.
Stop by the Dam.

Lobby for matches.

O, how to kill that %#\$%&! werewolf?—Keith Comfort, Houston, TX

Ultima II

How does one get a rocket?—R. G. Radys, Santa Monica, CA

Ulysses and the Golden Fleece

How do you get across the fjord in the underground tunnel or out the hole in the roof after getting by Pluto?—David Addison, Portland, OR

How do I get by Pluto?—Ken Mizoi, Orangeburg, NY

How do I get by King Neptune?—Mike Schaffer, New City, NY

How do I get the harpies to let me free the man in the cage?—Eric S. Itakura, Cypress, CA

Wizard and the Princess

I have the treasure chest; I am on the island. Now what?—Jeff Rottingham, Stow, OH

Wizardry

What do I use the keys and the frog statue for?—Laurel Goulding, Grosse Ile, MI

Good-byE,

Sailor. Good luck.

—David A. Dunmire, Linwood, NJ

Now let's proceed to general pleas and assistance.

I

Help granted. "This month's misinformed adventurer award goes to clueless Jeff Connor for *Zork III!*" crows Matt Skinner (Foster City, CA). "So here is the truth, the whole truth, and nothing but the truth (I think). Try taking the rainbow-colored scepter to the waterfall where the rainbow is over the falls and see what you can do. By the way, did you know that the cyclops will flee in terror if you type 'Ulysses' or 'Odysseus' in the cyclops room?"

"Where is the boat?" asked Ted Phelps. According to Joel Moore (Pinole, CA), "The boat is in plain sight but not as a boat. You must find the way to make it float."

Deborah Bickford will have to be more specific as to the three nonobvious treasures she's missing, but they are "probably the brass bauble, the open egg, and the canary," guesses Peter T. Clark (Sacramento, CA).

Help wanted. How do you get the egg open?—Lee Hownshell, (Wheatland, CA) wants to know.

II

Help wanted. How to get the wand is the question on the mind of N.J. Sommer (Dayton, OH). Ann and Joel Moore (Pinole, CA) are stuck in front of the Menhir and haven't gotten to first base in the oddly angled rooms. And by the way, where is the sailor? Arthur D. Cashin III (Jersey City, NJ) ponders, "How do I get past the curtain of light? Why does the balloon give the sword a red glow?" How do you get through the door with the lizard head?—Lee Hownshell (Wheatland, CA).

III

Help granted. In the matter of getting a light source to the western shore, as far as Betsy Couch (Rochester, NY) is concerned, "The light can rest in Davy Jones's chest!" "Wait!" says Adam Huff (Odessa, TX). "Have you taken a light source to the southern shore? If not, try to find something to put your light in to keep it from going out."

Help wanted. "What can be done to the cage and jewels?" wonders Adam Huff (Odessa, TX). "I've traveled in time, fought Mr. Hood and Cloak, got the staff, been to the dungeon entrance, learned Frotty Ozmo, solved the puzzle, as well as all that lake stuff. Jeff Connor, Marc Blank, Brent Shaw, anyone, help!" Also, David Motzkus (Los Gatos, CA) needs to know how to get past the guardians of Zork.

NOW PLAYING

Why Tinseltown Went Game Ga-Ga

CORE 3800

by ANDREW CHRISTIE and LES PAUL ROBLEY

Are movies about to merge with games? Probably not, but according to International Resource Development, a management consulting and market-research firm that has just completed its 185-page report on "Videogames and Electronic Toys," the two will probably be in competition someday.

"There will tend to be space-adventure games wherein players will experience the feeling of being in actual spaceship cockpits," says IRD. "The consoles will be complete with high-fidelity floor-based controllers, dashboards with flashing lights, and bucket seats with optional seatbelts. In some cases, seats will vibrate to emulate the feel of space travel. Players will sit before large curved screens that might display graphics generated through a mix of TV-quality video technology and realistic computer animation. In short, players will be given a 'movie' experience in which they will have a chance to be a Luke Skywalker or a Buck Rogers."

Movies are already aiding in the production of future game technology, and thereby, perhaps, conspiring in their own demise. Take the big climax of *Superman III*: The Man of Steel does battle with the Ultimate Computer—described by computer whiz Gus Gorman (Richard Pryor) as "the world's first stone killer-diller get-down, get-it-on, and twice-on-Sunday super computer." Your popcorn is halfway to your mouth, and the next thing you know, the big guy from Krypton is whizzing through a canyon as rockets explode all around him. And everything on the screen, including the caped wonder himself, is generated on a computer by Atari.

Superman II½-D. The Special Programs Division, piloted by Steve Wright, worked fourteen weeks creating the sequence for this summer's special-effects blockbuster. Wright calls what they did "computer visualizations" (a fancy name for stop-frame computer animation).

"Warner Bros. (a sister company of Atari) wanted the sequence to convey the spirit of a super mega-video game of the future," ex-

plains Wright. "They asked us to provide graphics that would resemble closely how a coin-op arcade game might look several years from now."

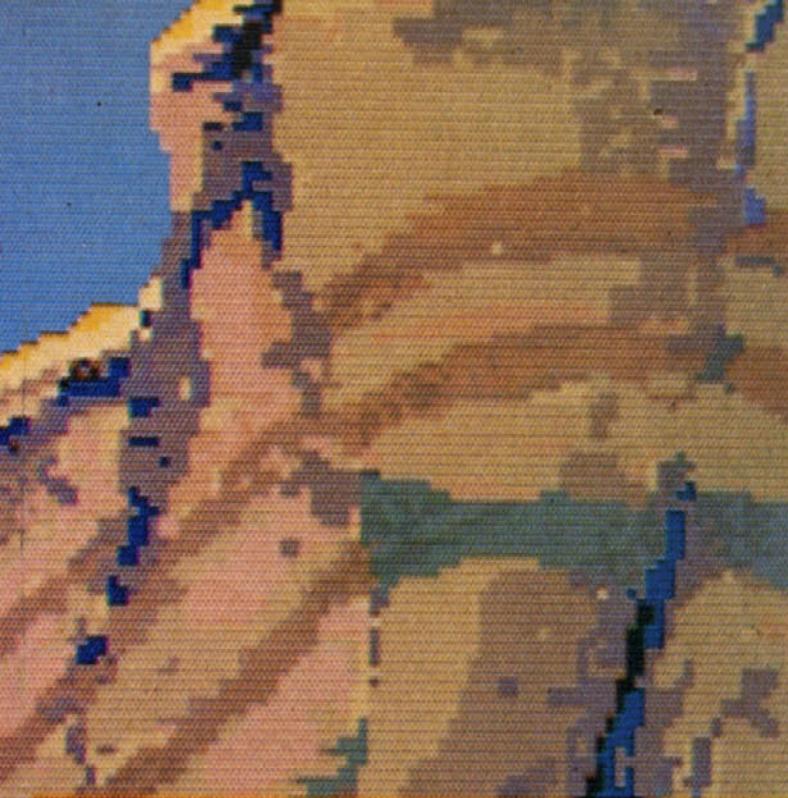
Software manager of Special Programs Pat Cole (one of several who designed the spectacular computerized Genesis sequence in *Star Trek II: The Wrath of Kahn* for Lucasfilm) says, "I suspect they [Warners] thought we'd be able to produce it on the same kind of machines we use for games. They really lucked out, because our Special Programs Division has been developing a number of tools using more sophisticated computers. We were able to use those tools with some additional software to produce the sequence."

Compared with the ultrareal Mathematics Applications Group footage for *Something Wicked This Way Comes* and *Tron*, Atari's computer footage is a whole new ballgame. The Disney films used three-dimensional computer animation—images that had volume and shadow characteristics—in an attempt to simulate real life. *Superman III* intentionally carried the look of low-resolution graphics, called 2½-D in the computer-animation vernacular. Flat images were preferred, combined with a few visual tricks to hint at a sense of depth.

"The extra depth is where the '½' comes in," says Cole. "We had a different set of challenges than the work on *Star Trek II* gave us. If it looked too real we'd have failed. Our effort was to establish firmly a look of video games, but not any game you'd see on Earth today."

The concept of 2½-D is similar to the multiplane animation pioneered by Disney's work in the late thirties. An artist would paint a scene on several sheets of glass. On the rearmost sheet would be mountains; on the second, trees; on the third, a car; and on the glass closest to the observer, there might be a human or animal character. The effect desired is a feeling of depth whereby the car can pass behind the person, with objects further away slightly hazed by atmosphere.

The added computer visualizations in *Superman III* cost Warner Bros. roughly ninety-five thousand dollars in equipment and nearly four months of production time. It took ten weeks to prepare the

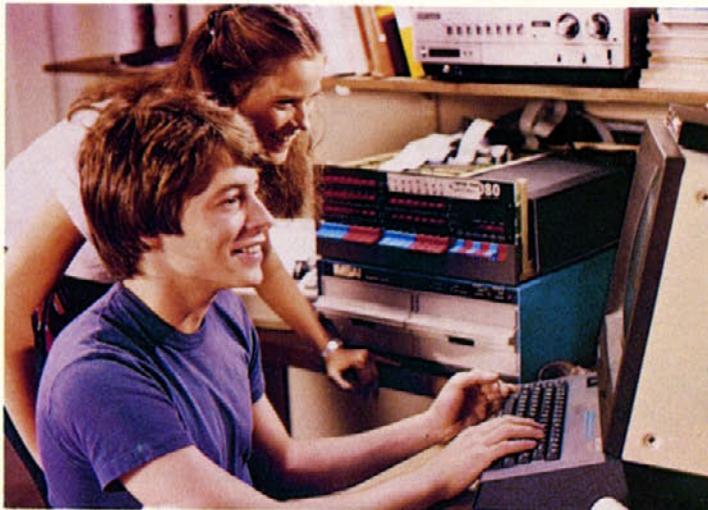


ROCKETS 18

program and four weeks to shoot the mere twenty-six seconds that ended up on film. But wow, what a sequence! (Atari actually provided Warner Bros. with sixty seconds of final footage. But true to big-budgeted picture form, more than half of it was left out.)

"It was really a full team effort of six talented individuals to create the effect," acknowledges Cole. "Programmers Vicki Parish and Mike Marshall developed the paint program. Art director Larry Wright and Richard Sachs helped conceptualize the whole scene. And Paul Hughett, a pilot by profession, used his aesthetic judgment for Superman's flying motions."

GAMES AT WAR



A few interesting side effects came out of the rigorous filming process. Since the film was shot in Panavision format, the proper 2.35-to-1 aspect ratio was achieved via software programming rather than through anamorphic lenses on the camera. In other words, they "squeezed" the image to Panavision without worrying about any of the distortion characteristic of filming through an extra piece of glass. This, as the IRD report predicts, could lead to game manufacturers actually marketing games in Cinemascope for future projection television sets modified for anamorphic wide-screen images.

Help Me Again, Obi-Wan! The movie games in your future will also make a nod to *Star Wars*. In the game booth/console of the future, IRD foresees "eye tracking," which is accomplished by projecting infrared light against the cornea and then determining the line of sight by the angle at which the infrared light is reflected. "At that point we will have entered the realm of 'The Force' . . . where the game flow can actually be controlled by focusing the eyeball," comments IRD researcher Joan de Regt. The essence of "burning tires, popcorn, or freshly cooked pizzas" will be emitted from the consoles at appropriate moments. (Hands up, out there, everyone who remembers William Castle's "Smell-a-rama.")

For Atari's Wright, the future will be a welcome arrival. "We didn't know how state of the art we were going to be when we began this project. We assumed the videotape world had quality single-frame, and that video recordings would be down pat out of the frame buffer. They weren't. People also really didn't know how to make 35mm film off of frame buffers, so we had to solve myriad technical problems.

"It wasn't ideal working with a production crew based all the way off in Pinewood Studios, England, either. There was a two-day wait getting feedback on our footage sent. The computer link-up accomplished with *Tron* wasn't possible because of incompatibilities with the PAL European system, among other reasons."

A megabuck movie portraying the ultimate video game, created by the Ultimate Computer and developed by the pioneer video-game company, might lead one to think "Aha! A tie-in video game cartridge is soon to follow!" Wrong. As an indication of the tenor of the times (they are a-changing), Atari's plans for the home-game version of *Superman III* are centered solely on their home computers. That's right: the 400/800/1200XL/600XL/800XL/1450XLD version will be with us shortly—you won't have to wait for the conversion of some 16K video cart that turns out not to be worth waiting for.

Now there's an amazing technological advancement.

"Do you have any idea at all why this bright kid would jeopardize the lives of millions?"

"No, sir. He says he does it for fun."

And now, a whole new meaning to the term "real time." David Lightman, a seventeen-year-old gamer, finds that the fate of the world is in his hands; he has twenty-seven hours and fifty-nine minutes to head off Armageddon, and there's no save-game feature.

Unlike *Tron*, *Evilspeak*, or *Joysticks*—presently the whole foundation of the computer game movie genre—*WarGames* is completely original. The others could (and do) exist in substantially the same form with some other plot, a slightly different setting, an easy substitution for the computer ingredient. Where the others trade on an established formula or exploit a genre, *WarGames* is something new, by virtue of the personal computer being something new.

The film could not exist if the microcomputer did not exist as a widespread phenomenon. It takes the micro and telecommunications as a given—part of the middle-class American landscape. David's girl friend is a little bewildered by the hardware and David's ability to access things like the school's computer, but she gets used to it fast. His offer to raise her failing grade in biology to a pass by the simple expedient of moving a cursor over it and hitting the appropriate key causes her to react with something like superstitious fear and anger, but she changes her mind the next day and admits that

it's a neat idea. The computer can get her out of having to go to summer school—handy.

WarGames could be called the first version of the boy-meets-computer story. David Lightman is an inveterate, hard-core strategy and adventure player. Looking for a free preview of a new game bulletin board by ringing every phone number in Sunnyvale, California, he logs on to WOPR, the new tactical war-games computer that just got put in charge of operations at North American Air Defense Command headquarters. After divining the programmer's private access code, David finds himself confronted with WOPR's strategy-game menu and decides to play one of the games: *Global Thermonuclear War*. He leaves the game unfinished.

The next evening, upon hearing about a mysterious nuclear alert on the news, David realizes just what he's been playing and promises himself he'll never, never do it again . . . but the WOPR has other ideas. It was not programmed to distinguish between a simulation and the real thing. And it knows his phone number. And it didn't finish the game.

"He gets in way, way over his head, into things he never anticipated, and has to use his wits and intelligence to get through this adventure," says director John Badham. "It's much bigger than any kind of game that David could imagine—it becomes a real-life game."

(Best line: As realization starts to dawn, David types:

> Is this a game or is this real?

The computer replies with sincere curiosity:

> What is the difference?)

Things as They Are. "There is a new reality called the information network—that thing with all those computers and telephones connected," says screenwriter Walter Parkes. "And it isn't just the kind of communication where people talk about what's in the real world—that is the real world! And David understands this.

"In a way, David's computer is his own fantasy world, but his fan-

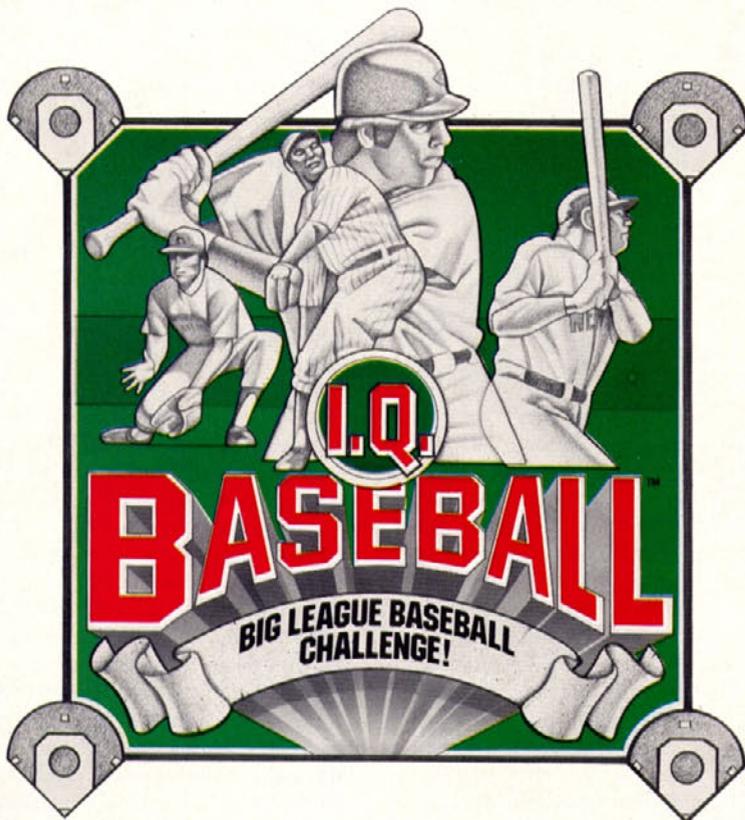
tasy world turns out in the end to be more real than 'the real world' because it's his understanding of the way machines work that allows him to stop—or at least forestall—World War III."

If any film can be the breakthrough work in convincing the populace at large of the common necessity, the inevitability, the joy of micros, this one deserves to be it. When David is picked up and grilled by the authorities at NORAD, the one thing they will not and cannot believe is that he's a reasonably bright kid who broke into their massively complex system on his own, alone, with no sinister plan, with nothing but his home computer and a telephone. It's certainly not what anyone had in mind when speaking of the true social equality that the home computer brings with it—equality of knowledge and access to information—but the point is driven home in that one scene.

Very funny, excruciatingly suspenseful, and endlessly inventive, this movie is right on the mark; authentic even when highly improbable. The scenes of the NORAD top-secret underground nerve center were simulated courtesy of hardware donations from Memorex, Diablo, Video Ventures, Data Products, and Electrohome—according to one military official at a preview screening, a little too well simulated.

(Another highly placed government official—the highest, in fact—in the midst of briefing a group of congressmen on his nuclear arms treaty proposal, appeared to be quite taken with the whole idea. "I don't understand these computers very well," commented the chief exec, "but this young man obviously did. He had tied into NORAD!" According to the *Washington Post*, Reagan also commiserated with General John Vessey, Jr., chairman of the Joint Chiefs of Staff, on the film's portrayal of a general as "this slovenly, mean, unthinking guy.")

Along with everything else it is, *WarGames* will probably be a shot in the arm for the sale of home computers, telecommunications hardware, and—natch—war games. **SI**



BASEBALL BUFFS— PLAY BALL!

The flag waves in the breeze—your computer plays "Take Me Out To The Ball Game"—you hear the last bars of the National Anthem and then—Play Ball!

You're at bat. The pitcher hurls the "question ball" at you. Some are easy—right over the plate. Some are tricky curves. If you answer correctly, the ball zooms out of the infield and you race toward first. Depending on the difficulty of the question, you'll hit doubles, triples, even homers . . . but only if you really know your baseball. There are two levels of difficulty; so you can start in the minors and work your way up to the major leagues.

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If your computer has 48K and a disk drive, you can play I.Q. BASEBALL on Apple II+/Ile

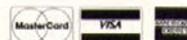
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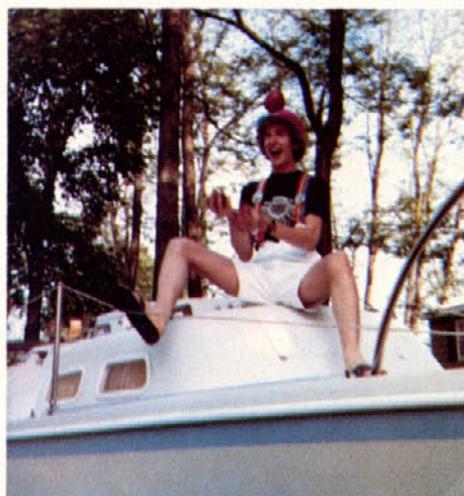
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NO CONTEST



They came in all shapes, colors, and sizes. Fat people, skinny people, tan people, pale people. All sorts. But when the dust cleared, Steven Savage (Perrysburg, OH) emerged as the winner of the Short Films contest, thus putting an end to all this B.S. B.S. Whatever the theme of his picture was went right over the heads of the judges, but it was silly, stupid, crazy, and inane enough to convince them to point their fingers in his direction (we decided to use our judges instead of having the readers vote, because we know how you all like to stuff ballot boxes). Savage is the one with the flag and the army boots. Shown here with Savage are runners-up Don "Juggler" Howe (Scotia, New York) and the ever-present Carl "Bezare" Webb (Vista, CA). Howe and Webb will each receive a check for \$4.36. Savage wins his choice of a year's supply of Bermuda shorts or the cash value (\$106.52) worth of games for his favorite computer.

Whooo. Summertime. Time for No Contest to take a breather. Put its feet up. Especially after last issue. Maybe we should have a contest this issue to see if anyone can count all the contests we ran last issue. We asked for it; we got it. The sound of a random-number generator screaming in agony is something you have to carry with you for the rest of your life.

So okay. No Contest is taking a well-deserved vacation, and now it's your turn. It's time for reader contests! Let No Contest show you how to be a contestmeister in your own home.

Be the Life of the Party. What we want to see here is computer-game word games. Crossword puzzles, word searches, anacrostics—any member of that genre, any way you can tie it in to Our Favorite Pastime; you name it, we'll judge it. The best one wins \$100 worth of *Softline* advertisers' products and will be published as its own sure-'nuff contest. (But let's not see the winning contest author trying to enter it, hmm?) Judging will be based on deviousness, cleverness, and originality. Hint: It's all in your clues. Use anagrams, puns, pictures, whatever. Another hint: Limit yourself to two pages and include the solution. You may create your puzzle on paper or on disk. Take your time to get it right; this is a two-month contest.

Send to:
Softline Playtime
Box 60

North Hollywood, CA 91603

Postmark deadline: 5 p.m., September 12, 1983.

Real Gamers Don't Hit Pause. What makes you a Computer Game Player Supreme? See if you can complete the following sentence:

"I'm a Gamer Supreme because . . ." (" . . . I can control my joystick with one hand" ". . . I don't save adventure games in progress" ". . . I play *Pollywog* on a black-and-white monitor . . ."—whatever.)

It doesn't have to be true, you'll note. This is your chance to indulge your gaming fantasies and to imagine yourself better than you are—all in the service of yet another *Softline* research project. Along the lines of further inducement, our research grant enables us to send the three most deserving respondents a check for \$29.95,

two arcade games of their choice, and a *Softline* "Infomaniac" button. Deservability will be calculated according to how loud you make us laugh. You may enter more than once.

Send to:

Softline Ego

Box 60

North Hollywood, CA 91603

Postmark deadline: midnight, August 12, 1983.

Challenge of the Computer EdGamers. The preliminary judging of Verbatim's Computer EdGame Challenge has been completed. Dozens of San Francisco Bay Area schoolkids were trucked into Verbatim's Sunnyvale headquarters to beta test the 220 contest entries and help out judges in selecting the finalists. "It seemed a good idea for students to screen software entries in our contest as a way of truly evaluating their educational merit and entertainment value," mused Linda Mancini, manager of Verbatim's school education program. Winners will receive gift certificates and royalties on future sales of their games.



Pensive Thinking. Entries poured in from everywhere. Some included the shortest, most efficient route to cross the *Pensate* board, while others included printouts of thousands of computer-generated answers. What to do, what to do?

Picture this: If you were asked to cross a field full of roving exploding robots, the most intelligent thing to do would be to enter the field and make tracks for the other side as quickly as possible—before you got your derriere blown clear to next Tuesday, right? Only a truly sick person would hang out among exploding robots, wandering around, trying to strike up a conversation, waiting to get blown up—and that isn't the kind of person who reads *Softline*. So it is with *Pensate*. The highest and noblest object of the game is to get to the other side of the board in as short a route as possible without having another piece land on you. It is the truest test of skill.

That's how we separated the winners from the nonwinners, the thinkers from the nonthinkers, the gutsy from the wimpy. Almost everyone who entered had a successful route or two, and from them we filtered out those who had the shortest possible route—nine moves.

After throwing the nine-move entries into the oft-feared, awesome *Softline* random-number generator, we came up with Tim Huang (Palos Heights, IL) as the winner. Mr. Huang even included a chicken as his playing piece trying to cross the board. For getting his chicken safely to the other side, Huang wins the \$200 worth of *Softline* advertisers' products and \$100 cold cash (Burger King, here he comes!), as is customary in *Pensate* contests all over the world.

Pensative Messing Up. As we said, most contestants sent correct answers. Then there were some who did not succeed. It was a hard contest, so there's nothing wrong with that, unless you happen to be Daryl Adamson (Tualatin, OR), who wrote, "This seems grossly easy, but I'll submit my answer anyway." Maybe next time Adamson will submit a correct answer.

There was also the Cramer clan of Scott, Daryl, Karen, David, and Diane (Duncansville, PA), each of whom wrote, "I would like to state that this contest was not very difficult to solve, and I was able to find more than fifty solutions starting at location number one. Where is the challenge?!" The challenge, dear friends, is finding correct solutions. Yours weren't.

The art of positive thinking can sometimes help you solve puzzles like the *Pensate* contest. But it can sometimes backfire, too. "This is to inform you that John Yuchimiuk of Philadelphia, Pennsylvania, has done the impossible," wrote an overconfident John Yuchimiuk. "He has completed the very difficult level 9 of *Pensate*. If by some unfortunate move on the part of the dreaded *Softline* RNG some other mortal should win, I would very much appreciate having my name mentioned someplace inside *Softline* besides the mailing label. Sincerely, John Yuchimiuk, Super Genius." His geniusness's wish is our command, but his chicken got flattened after his second move.

The best way to fight a computer program is with another program, and that's what some contestants did. Great admiration goes to those who wrote programs to beat *Pensate*. Chuck Shotton and Louis Slothouber (Williamsburg, VA) sent in a disk containing their program, *The Recursive, Backtracking, Pensate-Playing, Problem-Solving Program*, written in Pascal 1.1. Hans Hazelton (Juneau, AK) also programmed a Pascal version. "Would (*Softline*) be interested in it as a contributed program? I have no reservations at all about giving the original author full game-design credit." Gosh, how generous of him. Hazelton would probably also have no reservations about giving full credit to the original author of Hazelton's next book, *Return of the Jedi, Version 2*.

Perhaps the hardest worker of all was Alan Dail (Newport News, VA), who wrote a program in Applesoft Basic that displayed each move on-screen. Realizing that he didn't have a printer to print the listing, he rewrote it on a VAX11-750. Other hard workers were Rick Langer and Wynne Steere (Sierra Madre, CA), who wrote a program to solve the game and used Penguin's *Complete Graphics System* to create playing pieces.

That Trick Never Works. Richard Toren (Columbia, MD) tried the old buckshot method: Send in zillions of entries and hope one of them gets picked. Specifically, he sent 3,130 solutions.

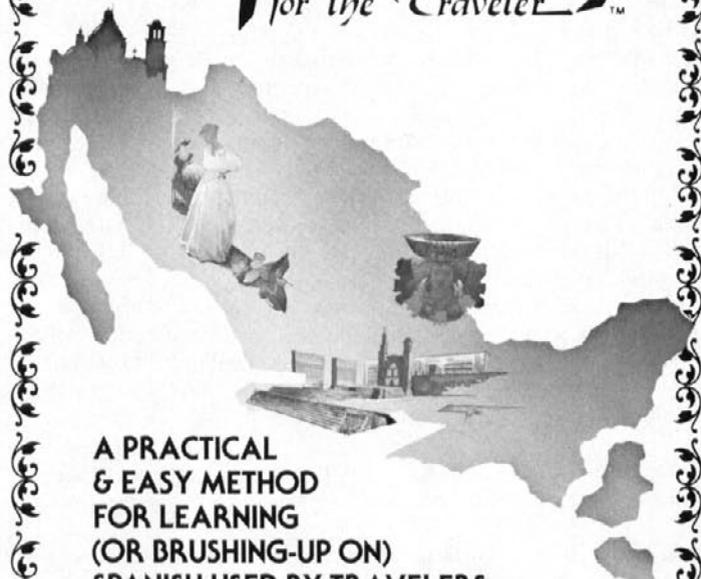
But compared to Toren, an entry that arrived the next week made his look minuscule. We found, inside a plainly wrapped box, an

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eighty-foot roll of thermal printer paper, filled from beginning to end with more than fifty-seven hundred solutions. How many of them were valid is anybody's guess. Only one problem. No name.

Answer Department. Question: When will *Pensate* be published? Answer: Soon.

Question: What is the name of the company in the Antarctic that will publish *Pensate*? Answer: Don't be silly, only penguins live in the Antarctic.

Question: Didn't you spell *think* wrong? What does *think* mean?

Answer: No. Ask your parents.

It May Not Make Billboard's Top 100, but . . . We have a winner in the Songfest competition. If this contest proved anything, it proved that we're all not as artistic and poetically licensed as we believe. Some songs didn't rhyme, some didn't fit rhythmically, and some just didn't do anything but take up space on paper.

On the other hand, there were lots of songs that hit the pause button in our hearts and made us read them over and over again, until we decided on which song was the best.

Some congratulations, fifty bucks, and two computer games are in order for Jerry Elvey (Grand Rapids, MI), whose winning entry, *The Prisoner*, shined brighter than the rest. The theme, Muse's *Castle Wolfenstein*, centers on a young man's quest to find some missing plans and escape from a castle, sung to the tune of Kenny Rogers's *The Gambler*. And a-one and a-two. . .

On a World War II evening, in a dungeon out in nowhere
I was talkin' with my cellmate; we were both too tired to
sleep.

So we took turns a-starin' at the cell door and the darkness.
As the Nazi guard approached us, he began to speak.

He said, "Son, I've made a lifetime outta breakin' out of places
Knowin' who the spies were by the way they held their eyes.
And if you don't mind my sayin', I can sense your desperation.
So if you'll just take this gun from me, I'll give you some
advice."

So I took his smuggled weapon and brandished it with honor.
Then he pulled out ten bullets and said that they were mine.
Then the night got deathly quiet, and a far-off door creaked
open.

He said, "If you're gonna escape from *Wolfenstein*, boy, ya
gotta learn to do it right."

Chorus:

Ya gotta know when to face 'em, know when to chase 'em,
Know when to walk away, and know when to run.
You never count your bullets when you're followed by the SS,
There'll be time enough for countin' when your escape is
done.

Every prisoner knows that the secret to survival
Is knowin' who to blow away and when to hide your gun.
And when you charge an SS without a bulletproof vest,
The best that you can hope for is to die on the run.

And then I stole away and turned around a corner,
Stumbled on a vest and keys; they'll help me in my flight.
Then somewhere in the darkness, a muffled scream grew
louder,
And in my head his words ran 'round while I kept outta sight.

Chorus

Strangely enough, none of the contest judges are fans of either *Castle Wolfenstein* or Kenny Rogers, but they liked the song.

First runner-up wins no prizes, but he or she gets his or her name in the magazine. E. Macsinka (Oakland, NJ) provided a little

comic relief with *Centipede*, sung to the tune of the Beatles' *Yesterday*.

Centipede

It's a game at which I can succeed.
I could play until my fingers bleed.
You know I'm good at *Centipede*.
Suddenly,
There's a spider right in front of me.
Can't stop now to have a cup of tea
The centipede came rapidly.

Where'd my quarters go?
Guess you know
I played all day.
I did something wrong
Now I long for a replay-ay-ay-ay.
Saturday
Only got my paycheck yesterday.
What's my starving family gonna say?
They've packed their things and moved away.

Other finalists included David Jarzembki (Chicago, IL), David "No Address" Small, George Bass (Williamsburg, VA), and Ivan Drucker (Los Angeles, CA).

But Is It Art? Computer games, art? Maybe not, but the Artsy contest was fun while it lasted. Titles for excavated twentieth-century computer games based on their on-screen appearance ranged from the bizarre to the absurd to the avant-garde. While the oeuvre of the computer game, as treated in the treatise, necessarily adhered to a modernistic, plastic aesthetic, it also exhibited hints of the neo-bit-map theory, which takes into consideration such programming efforts as broad strokes in fill routines (now seen as totally useless, though artists in the twentieth century didn't know that). But that's neither here nor there.

Existentially, it can be agreed that while the works themselves lean toward a dubious subliminal neologistic pantheism, their semiological signification lends them a cultural validity which, while it may not be inherent in the medium itself, does serve to deny the artists any undue monetary profits. In this we must cite the pioneering work of Aron Danburg (Houston, TX), who came up with artistically alternative titles for the following computer games:

Brick Out: Quadrangular Renditions of Two-Dimensionality
Hadron: Geometrals from the Void

Pac-Man, Snoggle, and other variations on the theme: *The Appearitions of the Labyrinth*

Human Fly: Crushed Emissary from the Cosmos

Pollywog: Depiction of Subnuclear Behavior

Dilettante Danburg will receive BudgeCo's *Pinball Construction Set*, Data Trek's *Maze Craze Construction Set*, and Broderbund's *Arcade Machine* to create his own works of art.

Name That Game. Name all fifteen of them and win yourself all sorts of swell stuff. That's just what Thomas Whiting (Brooklyn, NY) did in the Strategy contest, and he'll receive *Computer Bismarck*, *Tigers in the Snow*, *Road to Gettysburg*, *Torpedo Fire*, and *Old Ironsides* for his efforts.

A lot of readers reveled in and a lot of *Softline* staffers fell asleep to the war-game story in the last ish, but Whiting was the reader who paid the closest attention to detail. He was the only contestant to name correctly all fifteen of the strategy games referred to in the story.

For those who might have gotten lost along the many travels of Barrington, the games were, in order, *Legionnaire* (Avalon Hill), *Computer Bismarck* (Strategic Simulations), *Dawn Patrol* (TSR), *Eastern Front* (APX), *Galactic Adventures* (SSI), *Old Ironsides* (Xerox), *Tigers in the Snow* (SSI), *Road to Gettysburg* (SSI), *Max Command* (Rockroy), *Torpedo Fire* (SSI), *Warp Factor* (SSI), *RDF 1985* (SSI), *Shattered Alliance* (SSI), *Tawala's Last Redoubt* (Broderbund), and *Space Vikings* (SubLogic).

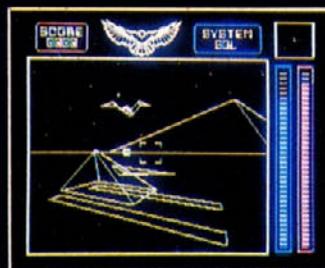
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KAMIKAZE KONTEST KIDS

By WILLIAM MEGGS

Sure you can rack up high scores all alone on your home turf, in the time and manner of your own choosing. But do you have what it takes to compete in the big leagues, the computer-game contests springing up across the country specifically designed to be the ultimate test of skill and endurance? One boy's father rips the lid off the computer-contest industry and tells the story of his courageous son.

"A forty-dollar check for what?"

"For *Kamikaze*."

"What's *Kamikaze*?"

"A computer game."

"Don't we have enough computer games?" he replied, eyeing the cardboard boxes of disks sitting on, and around, the Apple.

"It's his money," replied Susan Meggs. "We owe him more than that for baby-sitting with his little brother. He wants to enter the *Kamikaze* contest."

Thus did William Meggs hear about the *Kamikaze* contest his son intended to win. To promote its computer game, Hayden Software was sponsoring a contest in which owners of *Kamikaze* would play to get a high score, photograph the television screen, and send the photograph, along with a proof-of-purchase card, to Hayden. The five entries with the highest scores would be flown, all expenses paid, to San Francisco to participate in the contest. A first prize of \$5,000 awaited the winner, with second and third place winners getting \$1,000 and \$500 respectively. The worst a finalist could do was to win \$250 worth of Hayden's software, which included a fancy Applesoft compiler and a nifty 6502 assembler, in addition to the trip to San Francisco.

Born To Compete. Jason Meggs of Bethesda, Maryland, thirteen going on twenty-two, had been an avid video-game buff since the emergence of the first pong game. It was apparent to his father from the first days of *Space Invaders* that Jason was exceptionally talented at video play. William Meggs had cunningly used this as a means to cajole his wife into purchasing an Apple II. With the computer in the house, Jason played each game that came out intensely until he could "smash it"—playing the game for hours and racking up staggering scores. A quarter could go a long way for him at the local arcades.

When he saw the ads for the *Kamikaze* contest, Jason decided to sink forty dollars of his hard-earned money into the game as a business investment. Soon he was in the groove, rolling up scores in six digits. One night he started a game that continued for almost three hours; the final score was 270,125. The score seemed adequate, and the Meggses dusted off their trusty old Pentax Spotmatic and shot six pictures of the television screen in varying shades, colors, and exposures. After spending an hour at the photo de-

What is a champion? Christine Drda's winning style, intense concentration, and precise reflexes decimated the competition in Hayden's San Francisco meet and make her a heavy contender for any upcoming video olympics. (Attention, scouts.)

veloper's in the local shopping mall, Jason sent one picture off to Hayden.

As the time for announcing the finalists approached, Jason called Hayden's toll-free number daily, from home and school, only to be told that the winners had not yet been determined. Finally, a telegram arrived announcing that he was a finalist.

February 20, 1983, found Jason Meggs in San Francisco, accompanied by his father.

The big day dawned, and the Meggses gathered with the other contestants and their parents at a breakfast buffet provided by Hayden. Jason sized up the competition. There was nineteen-year-old Robert Stach of Wappingers Falls, in upstate New York, who looked fairly formidable. Fourteen-year-old Allan Thompson of South Bend, Indiana, looked tough. Matt Hill of Milwaukee, Wisconsin, and the only girl and youngest contestant, twelve-year-old Christine Drda of Costa Mesa, California, rounded out the players.

Marketing consultant Gabe Delrossi and Hayden administrative assistant Stephanie Clark introduced themselves and explained the contest. The morning would be devoted to practice, and participants could use their own game controllers. After a luncheon, the contest would begin in earnest in the afternoon, and participants would play for the best score in a single game. Only three games could be started, and there would be a time limit of six hours.

Kamikaze is a game in which the player controls a ship on the ocean. The ship can move from left to right on the screen and fire a cannon upward. Airplanes enter the screen from the left and right, dropping bombs that have to be dodged. *Kamikaze* planes appear and dive for the ship, and mines drift about in the water, blowing up the player's ship if contact is made.

Points are scored for each plane shot down. A player starts with a ship on the water and five replacement ships. Every time a thousand points are scored, the player gets an extra replacement ship up to a limit of five. If a contestant uses up all of the ships, the game is over.

A skilled player can play the game for hours, as long as he loses no more than one ship every thousand points. There are, however, certain hazards of play. After a ship is lost, a new ship can appear under a bomb and be quickly lost, only to have the next new ship also appear under a bomb. It's also possible to get trapped between a mine and a bomb in the corner of the screen, a virtually hopeless situation because the replacement ships appear in the same difficult configuration.

Robert and Allan, the nineteen- and fourteen-year-old contestants, were no match for the younger players. Perhaps they were too old for this type of contest, washed out before leaving their teens. Robert quickly played his three games with noncompetitive scores and went on to other activities. Allan had a strong start but quickly faded to land in fourth place. The contest shaped up as a three-way race between Jason, Matt, and Christine. They were running neck and neck.

The styles of play were very different. Matt was the most careful of the three players. He often put his game on pause by pressing the escape key and double-clicked the escape key to slow down the action. Christine sat motionless except for her hands, which almost imperceptibly moved the joystick and game buttons. Jason was the most animated of the three, totally absorbed in his game. He had slipped into a video trance—the alpha state of gamers in which consciousness slips away and the subconscious takes over, putting the brain on auto pilot.

Jason's father sat in the back of the room, calculating the rates of point accumulation. Jason and Christine were neck and neck, with Matt, who was continually slowing his game down with his double-click-the-pause-key technique, running a little behind. Still, the afternoon was young, and anything could happen.

What Makes a Horse Race. Suddenly disaster struck. Bang! Bang! Bang! Jason wiped out at 92,550 points. He had gotten trapped in the corner of the screen between a mine and a bomb. Each new ship that appeared got caught in the same trap,

and the ominous "Game Over" appeared on the screen.

A true competitor, he lost not a second beginning his second game, for he had almost a hundred thousand points to make up on Matt and Christine, the leaders.

Over the next hour the lineup became clear. Christine, who continued to rack up points at a consistent rate, pulled away from Matt and appeared well on the way to the \$5,000 first prize. Jason was slowly gaining on Matt, but it would take hours for him to make up the deficit. His only hope lay in a wipeout by the two leaders.

At times it looked as if Matt would bomb out. He would be down to one ship and would have to get a thousand points to gain a second ship. At these times, he would go into his supercautious play, pausing his game, double-clicking the pause button—which had the effect of advancing the ship, planes, bombs, and mines a small amount—then stopping the action and studying the screen to plan further strategy.

Christine continued her steady play, sitting motionless before the screen, racking up point after point in a steady, consistent manner. The three had been playing for around three hours, and fatigue was beginning to show. Jason put his machine on pause and got a cup of coffee—not, his father noted, the standard beverage for thirteen-year-olds at the Meggs house.

Then, Jason's hopes took a nose-dive as he wiped out at around 250,000. Christine was way out front, approaching 400,000. Matt was trailing Christine by about 50,000 points, and the halfway mark was approaching. Jason could quit and claim his \$500 third place prize; his hopes for doing better were slim. He was tired, and Matt and Christine would have to wipe out immediately for him to catch them in the remaining time. "Damn the odds and go for it" had always been his unspoken motto, and he wasted no time getting his third game under way.

Some time later, his chance to beat Matt out of third place im-

proved considerably, and became a mathematical possibility, when Matt wiped out at 360,000 points into the second half of the six-hour time limit. Matt had reached for the escape key to put his machine on pause for the umpteenth time and had hit the space bar, which, in *Kamikaze*, ends the game. Perhaps the fatigue of more than three hours of continuous play had caught up with him.

There was rejoicing in the Meggs camp, for if Jason could just click along at his steady pace, amassing point after point, he would pass Matt's score with time to spare.

With Matt's untimely demise, Christine became the winner, for there was not enough time remaining for Jason or Matt to catch her score, which was now greater than 500,000 points. And she was still playing.

Matt retired from play, for there was not enough time remaining to better his score. His hopes for second place lay in Jason's not beating his effort.

The stress was getting heavy. Jason's and Allan's dads stepped out to the bar for a drink. "You know, I used to get after that kid," Allan's father said. "Every time he got his allowance, it was off to the arcade. And now, he wins us a trip to San Francisco, all expenses paid. I'll never say a word about his going to the arcade again."

When they returned to the contest room, Christine had put her game on pause with more than 600,000 points, well out of reach of Jason. Still, the computer stayed on, and she could return to her game at any time.

Four of the five Apples were unused now, and only Jason remained in play, steadily accumulating points. Matt and his parents sat in a row a few feet behind Jason, discussing his performance in detail. The gap between Matt's final score and Jason's score kept shrinking, and though Jason had been playing continuously for more than five hours, he was strong and steady. He had five ships in reserve, and his fleet seldom shrank below the maximum. In fact, if there had not been a five-ship maximum, he would have accumulated tens of extra ships.

As the gap closed to 10,000 points, Matt was visibly and outspokenly nervous, which was somewhat distracting to Jason, who was under tremendous pressure.

Help Me, Obi-Wan! Suddenly it was over. Jason gave a loud shout. William Meggs stared in disbelief at his son's screen and the words "Game Over." Jason had gone down, less than 10,000 points—ten minutes of play—away from Matt's score and the \$1,000 second prize.

He swung wildly at the wall, landing a grazing right hook just as he was body-tackled by his father, who had seen more than his share of boxer's fractures as an emergency-room physician. The wall was spared, as were Jason's metacarpals. Wanting to be alone, Jason went to the hotel room and locked the door. *Star Wars* was on the hotel's cable television, and the tranquilizing effects of watching it for the thirty-fourth time brought him down to earth.

Matt's father told William Meggs how bad he felt for Jason, who had struggled so hard and come so close to second place. But Matt had put in a long, grueling performance himself, and had won on a point count tallied by a reliable Apple II Plus.

First place was undisputed. Christine's performance was impeccable, and her final point total was almost double Matt's or Jason's. And she never had wiped out.

That evening the contestants and their families dined on prime rib, compliments of Hayden. Gabe Delrossi awarded the prizes. Back in control after his frustration, Jason threw himself into the pleasures of the evening.

It is said that a measure of success is the number of imitators one has. That Hayden's contest was successful is apparent from the fact that mighty Atari has launched a similar contest with its video game *Centipede*. That Jason Meggs considered the contest a success is evident from his use of part of his \$500 prize money to purchase an Atari 5200 and a *Centipede* game—another business investment. These days, you can usually find Jason Meggs shooting bugs and dodging spiders. ■

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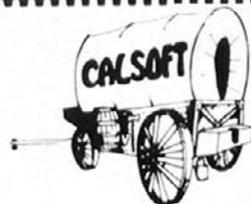


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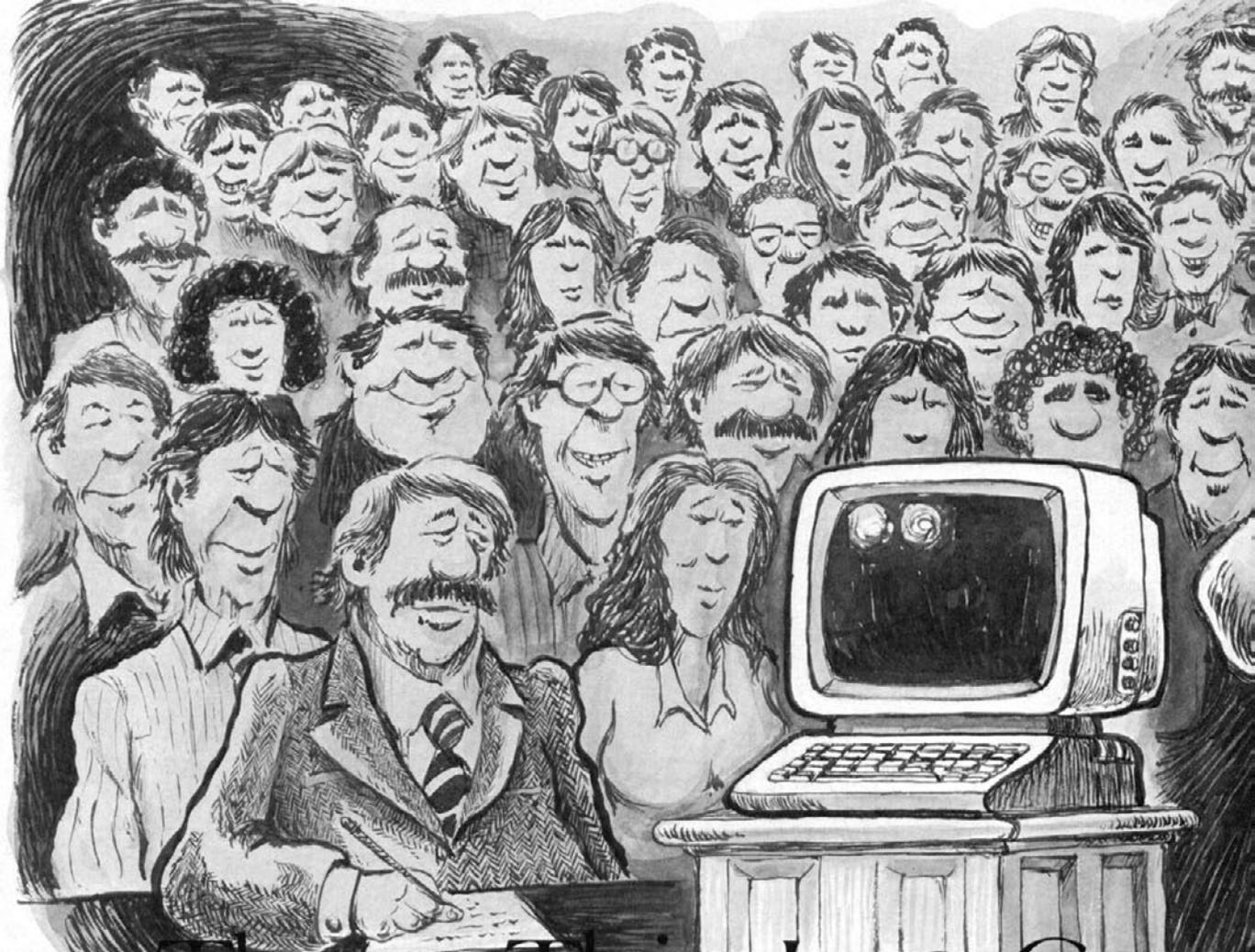
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Now Then: This Is a Com

The future of games. Everybody talks about it, but who's doing anything about it? Gamemakers, of course. But since tomorrow never comes, we might as well hear what they have to say about it while we're waiting.

The whole subject of computer-generated entertainment continues to be faintly disreputable.

To the embarrassment of those in the computer biz who long for a semblance of distinguished respectability, games still account for two-thirds or so of the home-computer software market. "Grow up!" cry business and educational software houses, trumpeting climbing sales curves. "Aren't you ashamed to be using such wonderfully expensive and terrifyingly complex equipment for . . . for that?" Market analysts routinely predict business/educational/home-management program dominance of the market in the next eighteen months or so, as they have been predicting for the last three years. The market they're talking about dominating belongs to games, Charlie.

So how is this shady pastime going to continue to compete? How is such frivolity to survive when faced with all the high-powered, exceptionally smooth and cool databases of the future? We asked several of our correspondents to check out the situation and report right back.

Harvard Conference

CAMBRIDGE—From May 22 to May 25, Harvard University hosted a unique conference called Video Games and Human Development. Educators and designers from across the country participated in this elite game chat, designed to show the educators

what the designers could come up with and to let the designers know what the educators wanted to see.

Financed by a generous donation from Atari and organized by the Gutman Library at Harvard, the conference featured talks ranging from "Donkey Kong, Pac-Man, and the Meaning of Life," presented by Robert Kegan of Harvard, to a report on a cognitive-psychology study of computer game-playing skills, given by UCLA's Patricia Greenfield. The panels discussed video games and social behavior, video games and formal education, even video games in medical rehabilitation and learning.

Kicking things off, though definitely not setting the tone, was genuine Valley Girl Hilleri Grossman, age fifteen, with her address "Video Games: Are They Hip or Hype?" written in ten minutes on the back of her algebra homework. Grossman predicted the discovery in the near future of new illnesses, such as *Space Invaders* Stress, *Pac-Man* Paranoia, and *Tempest* Tantrums, and warned against other ill effects, though her emphasis was mostly on the fiscal debilitations caused by the coin-operated manifestations of gaming. (Her dad had mailed a copy of her essay to the Gutman Library after hearing of the upcoming conference, and Harvard had called to say that they felt it might be, ahem, appropriate to have an adolescent lead off the program.)

But Educationally, Folks. Game designers Ann Pistrup of the Learning Company, Tom Snyder of Tom Snyder Associates, and Joyce Hakansson of Milton Bradley created a stir with their demonstrations of state-of-the-art educational software. (In a roomful of people accustomed to thinking of educational software as equations flickering on a screen—accompanied, perhaps, by a smily/frowny face—a demonstration of the Learning Company's *Rocky's Boots* produced a near-audible dropping of jaws.) David Perkins of



puter Game...

Harvard challenged educators to develop his version of "educational heaven," where the use of video games would almost replace the formal school structure.

Final speaker Alan Kay, chief scientist at Atari, blew away the assemblage with a multimedia presentation showcasing human learning and trends for the future. Kay had once seen a news clip about a tennis instructor in the Midwest who had boasted that he could teach anyone—anyone—how to play tennis in twenty minutes. A local television station called his bluff and showed up with a film crew and a fiftyish woman in a muumuu who had never picked up a racket. The instructor proceeded to instruct her in a technique to narrow her focus down to what she was doing, eliminate everything else from her mind, and just let her body follow. In twenty minutes she was serving and returning, and shortly worked up to a ten-minute rally. Kay tracked down the instructor and retained his services as a consultant for Atari. The videotape of the tennis lesson received a sustained ovation from the Harvard attendees.

In the midst of the glowing rapport between educators and gamers, a few voices of caution were heard. Judah Schwartz of MIT and Harvard and Herbert Kohl, educator and author, gazed into their crystal balls and saw some pitfalls. David Perkins warned that his "educational heaven" might be sidetracked by large obstacles such as "contextual welding" and the problem of game overhead versus educational content. For those of you who have never worried about that, pay attention: The contextual welding occurs when an educational game is so much fun that the learning process is applicable only to the play of the game and cannot be transferred to real life. Overhead is the amount of pure gaming thrills required to make an educational game a good game and capture the little tykes' attention. Continuing the economics metaphor, educational con-

tent is the profit. Too much fun (overhead) decreases educational content (profit), and then the contextual welders punch in at the construction site of your educational edifice and start demanding overtime.

The meeting also pointed up the need to clarify terminology. The terms *arcade games*, *video games*, and *computer games* blurred into sameness for many conferencegoers. While the group included some of the most knowledgeable educators today, their grasp of the significance of computer-enhanced education was still rudimentary. It was evident that there is a need for much more in-depth research into the field.

The conference was orchestrated by Inabeth Miller, librarian to the school of education. It was the fourth annual Video Games conference Miller had organized for Harvard. If there was a message to be had from this year's installment, it was in Alan Kay's implication that advancement in computer games can only come from unique approaches developed by human beings; the computer can only implement the ideas.

—Roe R. Adams III

CES

CHICAGO—This is the annual watershed of free-world electronic gadgetry and more and more the party-time celebration of what seems to be the only growth industry left in the world: This is the Summer Consumer Electronics Show, Chicago, 1983. High-tech corporate America held its breath; Wall Street leaned close to hear. Was there a theme to be found in all the printed circuitry and big box on view this year? Does it get foggy on Lake Michigan in the afternoon?

Very plain was the writing on the wall concerning the tattered status of our raffish little cousin, the home video game. Atari, while maintaining token representation, is attempting to extricate itself delicately from the VCS market. ("Hey, Joe, you got computer? Doesn't matter what computer—any computer; we got software, all kinds. Telecommunications, too!") All video-game magazines blazoned their "extended computer-game coverage" across their covers; the editors were wandering the grounds, hustling the top programmers for hot copy and quotes. Data Age Video Games filed for chapter 11 bankruptcy, following Apollo and U.S. Games, after shipping four hundred thousand copies of its *Journey/Escape* cartridge. ("Help the rock group Journey escape from the hordes of screaming groupies," remember?) Twenty-five thousand copies were sold in stores, and the other three hundred seventy-five thousand were returned—an idea whose time hadn't come.

While our video pals are obviously dying on the vine, two recent developments may actually convince you, dear reader, to go out and buy one of those quaint little video-game machines and set it right next to your number-cruncher. To wit: Columbia Video Game Club of Terre Haute, Indiana, the same folks who bring you Columbia Record Club (Buy Ninety-seven Records for Ninety-seven cents!) are offering the video game of your choice for \$4.95, pending your agreement to buy four more at regular club prices over the next year.

Development two: Will telecommunications save video games? Though beaten to the punch by Mattel (see Billboard Conference story), Control Video Corporation is introducing an "interactive telecommunications service," this one linking the Atari VCS and VCS-compatible machines to a central computer. Call the computer, pick a game, and it's loaded into RAM in sixty seconds. The general cost of each playing session is \$1. William F. von Meister, developer of the Source, is setting up the pay-per-play deal as the first of a number of services, to include electronic mail, news, home banking, and financial management . . . all through a little wonder called the Master Module, which plugs into a VCS/Sears/Coleco-Vision-expander cartridge slot and connects to your telephone, turning your game machine into a smart terminal. Game previews and "live" and "off-line" regional and national competitions with

prizes like college scholarships and sports cars are additional lures. The service is currently in search of a suitable original name.

Temptation. The big CES computer news was Adam, the long-rumored home-computer system from Coleco. Stats are thus: Dual Z-80/6502 processor; 80K RAM (expandable to 144K); full-stroke seventy-five-key keyboard; a magnetic tape memory storage unit using "digital data packs" (or stringy minifloppies), which have a transfer rate comparable to a floppy disk but don't crash and can store up to 250 pages' worth of info; numeric keypad; joystick cursor control; definable function keys; a daisy-wheel printer (getting dizzy?); and an Apple source code-compatible Basic cartridge. Adam will play all ColecoVision game carts and comes with a little number called *Buck Rogers: Planet of Zoom* that would drive Zaxxon to tears. What will it cost you? The whole shot? Are you ready? Six hundred bucks. Also available as a \$400 add-on module to the ColecoVision system. It doesn't even ship until August, so do not—repeat, do not—get hasty and confuse this with the Adam III, a dual-processor job from Cotaco (no joke), the latest Apple-compatible from the shores of Taiwan. And don't confuse it with another new Coleco product, not announced at CES but now available, namely the Summer Saver Pool Package, consisting of a large-size backyard wading pool, complete with ladder and free chlorinator tablets, for under \$200. ("How about another swim, honey? At these prices, why not?")

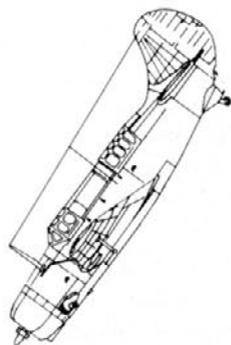
That's it from Chicago.

—Andrew Christie

Billboard Conference

SAN FRANCISCO—The future of games was the hot topic at "The First Video Games Conference," held here in April by *Bill-*

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board magazine and *Video Marketing Game Letter*.

Music will play an increasingly large role, according to Thomas Bonetti, president of Silco Videogame Licensing. Bonetti, who is in the celebrity, character licensing, and music licensing business, is currently negotiating what he says will "possibly be the world's first record release of a theme from a video game" (not counting *Pac-Man Fever* and such like).

"In the very near future . . . programmers are going to program for the ear as well as the eye," said Bonetti. "You will very likely hear the theme from *Zaxxon III* or whatever on radio stations across the country. This is very definitely a wave of the future."

Gene Fairly of Videodisc Publishing and Marty Perlmutter of Ghost Dance Productions are also doing interesting things with music, but on videodisc. *Murder, Anyone?* is the title of their first videodisc game. The mystery is conveyed by superimposed imagery of settings and suspects, and the videodisc and double audio-track capability is used to good effect. The creators said that they think there will be more elaborate games for the videodisc in the future, with programming on the disc as well as in the computer, and the two will interact with one another.

Videodisc Publishing and Ghost Dance Productions have another game in the works that has literally hundreds of clues buried in the pictures. It's a giant puzzle that you do in multiple viewings. Clues are in the soundtrack as well as visual. If you play soundtrack A, you get one set of clues, soundtrack B gives you another set of clues, and if you put them together you get a third set of clues.

So after lasers, what's the next revolution in gaming? Your telephone. Playcable, developed by Mattel, currently offers a video-game service for the Intellivision. Currently, there are seven hundred fifty thousand subscribers in thirteen cable systems, more than half of which are in and around New York City. The others are in Connecticut, South Carolina, and Florida. There's been a pilot system test in Santa Clara, but the commercial rollout has not yet hit the West Coast.

A standard Intellivision system and a special Playcable adapter attach to the television. You turn on your teevee and the Intellivision master component, choose a game number from the menu, enter that on the keypad, and within ten seconds the game is downloaded into the Playcable adapter, ready for play.

In the future, according to Gary Moscovitz, marketing director at Mattel, Playcable intends to broaden its line of offerings. "Whether it's different Intellivision-compatible games for Intellivision, VCS-compatible games for Atari, Coleco-compatible games for Coleco, or software for IBM and Apple computers, it's all on the horizon," said Moscovitz. He also mentioned the Aquarius home computer currently shipping on a limited basis, saying that this fits into Mattel's teledelivery plans for later in 1983.

Division of Play. Doug Carlston, president of Broderbund, believes there is going to be more specialization in games, games that are targeted for particular audiences. Currently, a company has incentive to do a high-speed fast-action game, because that type of game has at least ten times the market that a strategic game does, regardless of the merits of the program, said Carlston. However, as the market grows and gets more crowded, we're going to see segmentation of application and more diversity in programming. The Apple pc and Atari VCS markets are in this category now. In more and more computer and video-game markets, programs will be designed to appeal to particular groups, just as Cadillacs and Mustangs are both targeted to particular groups of people, said Carlston.

Talking about types of games, Carlston commented that in the long run games are going to have increased variety and depth. As a specific example, he mentioned *Pitfall*, by Activision. Saying that the depth of games will create more emotional involvement on the part of the player, he compared games of the future to soap operas, where a world is created that interests people enough that they get pulled into it. The games will more accurately reflect the complex-

ity and depth of the actual human experience. He speculated that continuing sagas may start being released every six months.

Carlston's company was the big winner in *Billboard's* selection of the Computer Game of the Year. The award-selection committee consisted of Tim Baskerville, publisher, *Video Marketing Game Letter*; Brian Chin, associate editor; Celeste Dolan, editor, *Video Game Update*; Martin Feely, director of research for database publishing at *Billboard*; Mike Harrison, president, Goodphone Communications; Russell Sipe, editor, *Computer Gaming World*; and Margot Comstock Tommervik, editor, *Softalk*. After an initial polling of deserving games released between March 1982 and April 1983, a final ballot of the most oft-mentioned titles was sent around, and the winner was (drum roll) Dan Gorlin's *Choplifter*.

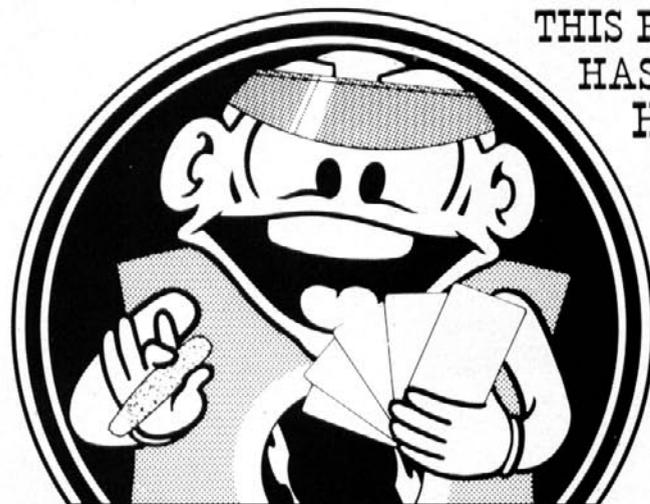
Dr. Bruce Maier, president of Discwasher, a joystick manufacturer, says that electronic games are starting to evoke the emotional involvement that accompanied the hi-fi industry. He predicts that the number of fans will grow. "We will get to the point where certain authors and titles, whose names are known, will make games sell." (The future is now, doctor.)

Games will become a social activity, say a few industry sources. Alyson Frankley, vice president of sales at Wizard Video Games, commented, "I believe the computer game formatted for more than one player is going to be an extremely popular format, especially in the educational marketplace. This is because it's going to create interaction between human beings and it's going to make learning fun." (Once upon a time, Wizard was going to release *Halloween* and *Texas Chainsaw Massacre* for the Atari. Alas, it looks like the deal's off.) Ted Chislett, vice president of research and development, said, "As far as the future is concerned, looking way out there, we see two-way interactive games coming. I think more in the near term you'll see a new game social interaction where you play a game versus other subscribers. You'll see ongoing tournaments."



Choplifter fails to lose another award, this time from Billboard, once again as Computer Game of the Year. Dan Gorlin and Doug Carlston get the goods from Ron Willman.

The Sensuous Gamer. Fred Cutler, vice president of home computer systems at Mattel, made comments on both video-game and computer-game software. "Video-game software is driven by sensual stimulation," he said. He defined this as sights, colors, motions, and graphics, and said that this is one of the things that motivate people to play video games outside the competitive environment. The reason people play computer games has more to do with intellectual stimulation, he added. As far as the future, Cutler said, "We feel that successful software will marry the sensual values of video games with the intellectual stimulation of home computer software."
—Karen Kleiner



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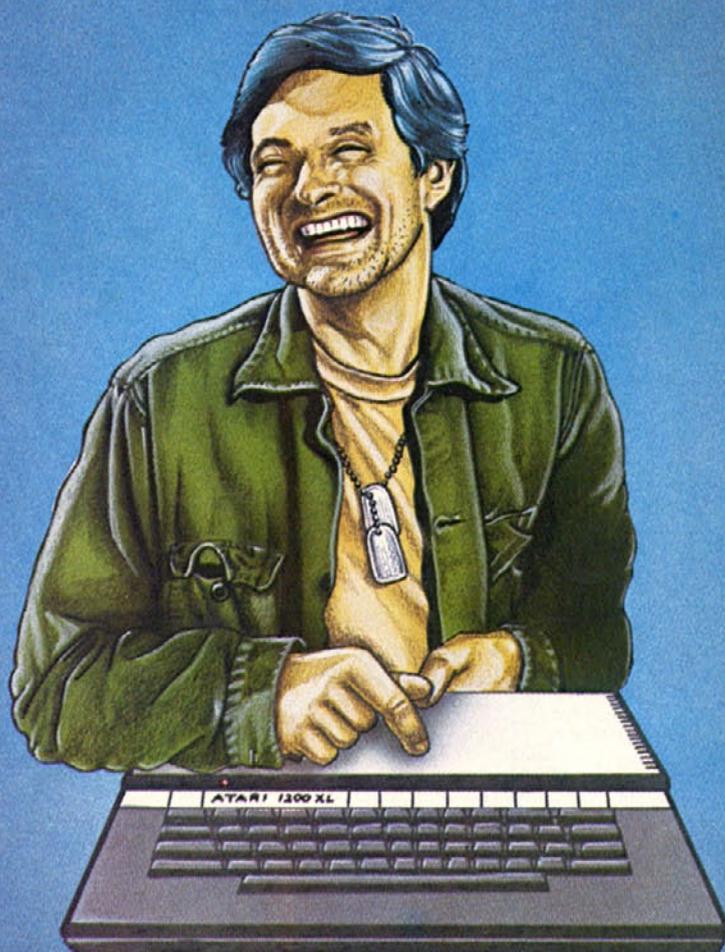
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In the wake of 1983 second-quarter losses even bigger than its 1983 first-quarter losses—which were no better than its 1982 fourth-quarter losses—Atari is going through considerable trials and transfigurations.

Papa company Warner Communications has ordered the merger of Atari's video-game division with the computer division (like ordering the merger of the survivors with the lifeboat) and is bringing in new management people. Some of Atari's top-level executives, who in happier days

enjoyed perks that included \$15 million in annual interest-free loans, are under investigation by the Securities and Exchange Commission for some fast stock sales that went down just before the company began its long nose-dive. The services of many of these gentlemen, coincidentally, will no longer be required after the video-computer consolidation.

The current line of Atari home computers will be discontinued. Taking its place are the 600XL, 800XL, 1400XL, and 1450XLD. Prices will range from \$150 for the

600XL to about \$800 for the 1450XLD.

The overall computer beef-up includes a memory expansion kit for the 400, designed to upgrade 8K or 16K models to a full 48K. Authorized regional repair and service centers will install the board at a cost of \$130. For the technically oriented, the upgrade is available as a kit for \$110 through the Atari Program Exchange.

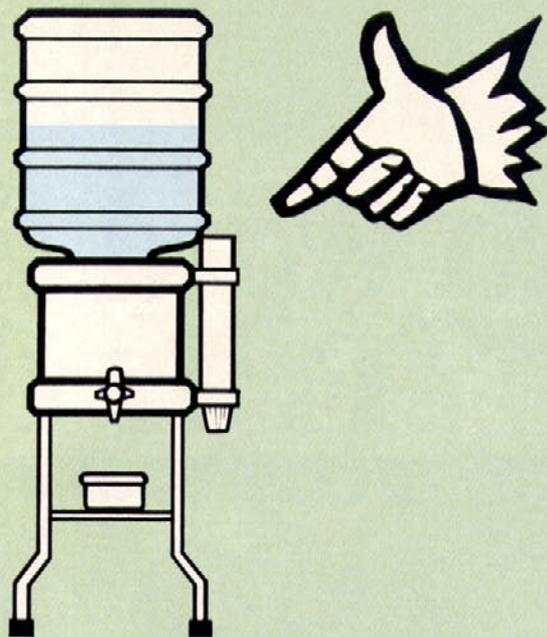
Meanwhile, in the big picture, Nolan Bushnell, who had to swallow a long non-competition clause in his contract when he sold Atari to Warner and was making loud competitive noises as its expiration date drew near, has quieted down considerably upon signing an agreement in which Atari gets consumer rights to any coin-op games developed by Bushnell's several companies. Atari had no kind words for Bushnell's "'hey-man' style of management" when he stormed out the door all those years ago, and the two have communicated with each other, until now, via lawsuits. (Said Atari CEO Ray Kassar: "We are pleased to have Nolan Bushnell back with us." Said Bushnell: "I'm looking forward to working again with Atari.") Another agreement, this one with MCA Video Games, sister company to Universal Pictures, has created the joint-venture Studio Games, which will develop coin-op, home video, and computer games from MCA's movie, television, and entertainment properties.

And, finally, a new division—Atari Software—is now marketing programs for the Apple II, Commodore 64, VIC-20, IBM pc, Radio Shack Color, and TI 99/4A. "We plan to make the best popular game titles such as *Pac-Man* and *Donkey Kong* available to consumers, regardless of which home computer they've purchased," said new vice president Fred Simon (even though several other companies have already had pretty much the same generous idea and have long since acted on it).

In a masterful marketing move to counter the Cavett Apple, the Cosby TI 99, the Shatner VIC, and Mattel's That Guy from *Lou Grant*, the new, first, official tee-vee spokesperson for Atari computers is . . . Alan Alda.

An astute analysis of all this might lead one to conclude that Atari is fleeing video-game land as fast as its corporate legs can carry it and has decided that its little computer sideline is an even better idea than it thought it was in the first place. Could be.

I'M NOT LISA



And Xerox said, "Let there be a high-tech business computer with a user interface like unto happy little cartoons," and there was Star. And Apple beheld Star, and they pronounced it Good, and thus was begat Lisa, out of Jobs. And Commodore beheld Lisa, and she was Expensive. Wherefore, lo: They did it in software. And in Color.

That's right, business fun fans: Forget *Miner 2049er* and *Zork*; we're gonna play *Magic Desk* on our Commodore 64!

On screen: a graphic rendition of a typical business office. ("You are in your office. You can see a lot of work here.") A P.T. Barnum-style pointing hand indicates

the object you select on the screen—a typewriter, a calculator, a telephone, an artist's easel, a filing cabinet, the digital clock on the filing cabinet. . . . You select the typewriter. You push your joystick button and get a close-up of the page in the carriage return. You switch to your keyboard and type. Document written, you move the paper up and down and back and forth with your joystick (or trackball or mouse) and correct mistakes. Document complete, you point to a picture of a printer and print it out. Or you point to a picture of a file drawer and file it (three-drawer file; ten files per drawer; ten pages per file). Or you get bored with it and point to

a picture of a garbage can and throw it out.

Future installments in the adventures of the *Magic Desk* can feature different objects on the desk—alphabet blocks for an educational program; a guitar for a music program. . . .

No, it ain't Lisa, but it looks like her. Coming this fall, in a 32K ROM cartridge, for under \$100. Be there.

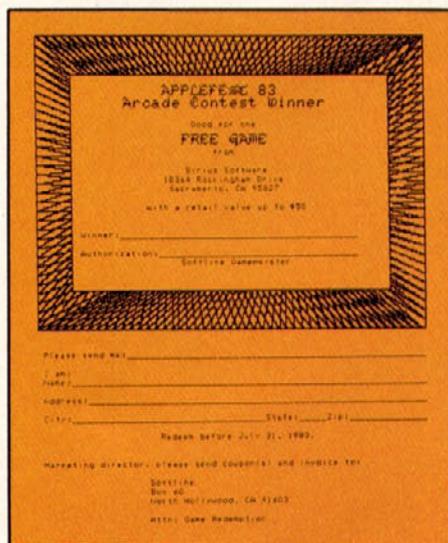
This is the opening salvo of Commodore Business Machines's new marketing strategy: (1) Go heavy into software and (2) cut every price in sight. The \$100 rebate program is going like gangbusters, thanks. (Send in any vaguely computeresque device, in any condition, when you buy a Commodore 64, and Commodore will send you a hundred bucks.) Says president Robert Lane, "I have pictures of thousands and thousands of machines, may they rest in peace, that have been sent in during the rebate program. Some people actually bought some of our competitors' machines, and they're not even out of the cellophane wrapping. We have lots of Timexes available."

Average game prices are expected to hit \$9.95; business packages will be cut 50 percent (*Multiplan* for less than \$100). Talking *Zork* and *Wizard of Wor* cartridges are planned for use with the speech module. All in all, more than seventy new VIC-20 and Commodore 64 titles are about to hit the scene. A partial listing of the new entertainment carts for the 64 might run as follows: *Avenger*, *Blueprint*, *Clowns*, *Jupiter Lander*, *Kickman*, *Lazarian*, *LeMans*, *Number Nabber*, *Omega Race*, *Pinball Spectacular*, *Radar Rattrace*. . . . You get the idea.

Rockin' the Applefest

Softline blew into Boston for that city's annual Apple bash last May, and several individuals are richer for it—in two ways.

Culturally, attendees passing by the booth were enriched by the opportunity to test their skills at and/or see demonstrated a clutch of hot new games prior to release: specifically, H.A.L. Labs's *Vindicator*, Data-most's *Mating Zone*, Sir-tech's *Legacy of Llylgamyn*, Synergistic's *Dino Eggs* (via Micro Fun), Origin Systems's *Caves of Calisto* and *Exodus: Ultima III*, Electronic Arts's *Hard Hat Mack*, Turning Point's *Pentapus*, Penguin's *Quest and Minit Man*, and Data Trek's *Maze Craze Construction Set*. A splendid time was had by all and a tradition was born.



Second, in strictly material terms, many competitive souls found themselves enriched after signing up for formal competition in the *Softline* Applefest Arcade Room, where one could either leisurely in-

dulge oneself at a smorgasbord of games on a dozen Apples (outfitted with Kraft and TG joysticks and paddles) or go head to head on selected games in timed five-minute competition for a high score, every hour on the hour, over the three days of the Applefest. The pros quickly established themselves, and each winner received a lovely official certificate good for a free game from the generous folks at Data-soft, Datamost, Sierra On-Line, Sirius, Broderbund, or Electronic Arts. "Infomaniac" T-shirts were another highly coveted premium prize, and overall highest tournament scorers of the weekend also got their names printed in the magazine, to wit:

Super Taxman II: Ben Schwartz 19,290
Repton: Mike Larson 13,200
Bandits: Ben Schwartz 20,325
Threshold: Alan Symond 53,900
Teleport: Mike Larson 3,550
Pentapus: Blake Ramsden 17,850

"Hey, I can beat that!" you say. Ah, but these are five-minute times, remember? Okay. Ready . . . set . . . go!

Do old cartoon characters have great agents or what? The big cartoon computer crossover news, of course, is the entry of Mickey Mouse and Co. into the educational-software field. The Mouse has made his debut on the Atari with *Mickey and the Great Outdoors*, fifty-six years after *Steamboat Willie*. Software moguls are already talking sequel, with deals in the works for NEC, Panasonic, Radio Shack, and Texas Instruments and options on Donald, Pluto, Happy, Sleepy, Grumpy, et al. The Pink Panther has signed on the dotted line with Odyssey in a strictly entertainment capacity. Datasoft has gone on a major animated talent expedition and come back with Heckle and Jeckle, Heathcliff (Garfield had other commitments), and Banjo the Woodpile Cat, not to mention Bruce Lee and *Dallas* (projected as an adventure game). Roklan has the rights to produced an entire series from Ripley's *Believe It or Not*. First Star Software has clinched a deal with Marvel and Harvey Comics; Casper the Friendly Ghost will head its educational game line, and the Marvel projects will be overseen by Fernando Herrera, *Astro Chase* wunderkind. Speaking of *Astro Chase*, the company now marketing that game, Parker Brothers, has locked up all the Jedis in sight, plus Popeye and the Atari *Frogger* cartridge.

Rocky and Bullwinkle are reportedly still holding out for a percentage of the gross and an offer that would reflect their more intellectual images; and Betty Boop and Koko are waiting for the phone to ring.

No Word from Fritz the Cat



Disk file by Craig Calsbeek



WE COPY, RED LEADER!

Okay, you saw *WarGames* and immediately ran out and bought a modem and started looking for classified phone numbers. Right, that's understandable, but hear this: Bill Hogue, he of *Miner 2049er* fame, saw *Blue Thunder* five times. Then he signed up for helicopter lessons. Next, he's going to buy a helicopter kit and build a helicopter.

"I was wavering between fixed-wing or helicopter, and the movie pushed me over the edge," he confesses.

Look to the skies. . . .

SPORTS ROUNDUP

The big story in the sports world—bowling! Here's how it went:

It all started at the Anaheim Applefest. While David Szetela and Peter Hansen were competing in the First Annual Softalk Summer Celebrity Invitational Miniature Golf Classic, they decided that they would jump the bandwagon and host the First Annual Nibble Magazine Invitational Miniature Golf Classic. After all, anything these California sun bums could do, *Nibble* felt it could do just as well. Besides, they could use the publicity.

It couldn't be called a "celebrity invitational" because they didn't know any celebrities, or, for that matter, anyone who knew any celebrities either. Celebrities or not, the time was set for Saturday, May 14, at 7:00 p.m., since almost everyone who was anyone would be in town for the Boston Applefest.

As it turned out, neither of *Nibble's* golfmeisters knew of any miniature golf courses that measured up to their strict standards (none of them served drinks). This created a problem. The *Nibbleites* felt that if they were going to have any chance of winning the tournament, they would have to invite people who were most likely to handicap themselves, since neither Szetela nor Hansen was any good at golf.

Szetela concluded that maybe miniature golf wasn't a very good idea. In his words, "Maybe miniature golf isn't a very good idea."

In a flash of brilliance, a better idea

came to them: candlepin bowling. Almost no one outside of Massachusetts has ever heard of candlepin bowling, let alone ever played the game. It's just like regular bowling, except that the pins are smaller and shaped differently from regular pins and the ball is also much smaller.

Team Nibble felt that these differences would be enough to give them a psychological advantage. The only flaw was that neither of them are native to Massachusetts, and neither had ever bowled candlepins either.

By May 14, the engraved invitations still hadn't come back from the printer, so the *Nibblers* were forced to invite everyone personally. That turned out to be a real problem because people seemed to be avoiding them. They did manage to kidnap enough people to make a go of it.

The turnout for the Invitational was disappointing. You would have found more Beach Boys fans at a James Watt testimonial dinner. We are not talking about a lot of people. Nonetheless, competitors were as fierce as they were scarce.

They were: Marsha and Steve Meuse (CPU Computer), Mark Pelczarski (Penguin Software), Mary Beth Pelczarski (Penguin again, younger sister, and "good sport"), Mark Glenn (Penguin ringer), Ken Hayden (novice Penguin, but he did have the Penguin shirt), Trish Glenn (another damn Penguin, but unable to compete due to a dancing accident), and Peter Hansen (bowling promoter unextraordinaire).

Szetela had hit the showers before the thing even began.

After the first frame, it became obvious that the psychological advantage was worthless, since Mark Pelczarski had lived in New Hampshire for a number of years and was no stranger to candlepin bowling. To make matters worse, Mark Glenn was a league bowler back in Indiana and took to candlepins like a penguin to a shape table. The Meuses were quite experienced at candlepins and held their own despite being out of practice. Mary Beth Pelczarski and Hansen spent the better part of the evening locked in a raging battle for last place. Perhaps the highlight of the tournament was younger sister Pelczarski jumping into the adjacent lane and knocking over someone else's pins.

At tournament's end, Mark Glenn emerged at the top of the heap, with a whopping score of 102. Host Hansen let up, and Mary Beth P. had won the title of Worst Candlepin Bowler in Microcomputer Circles 1983 (to save her the embarrassment, we won't release her final score. Let's just say we've seen more scoring at a senior citizens' home soccer match).

So, there you have it. *Nibble* fell flat on its derriere when it tried to imitate and emulate the benevolent doings of another publication. But they vow to be back stronger than ever next year.

Word has it that next year's *Nibble* sportsfest will be inspired by the film *Blue Thunder*. They're planning a real-life *Choplipter* simulation with hostages, tanks, and all. (Look for Bill Hogue to sign on as Spiritual Advisor.)

Stay tuned; we'll keep you posted.
(Thanks to Peter Hansen)

Power Up The People

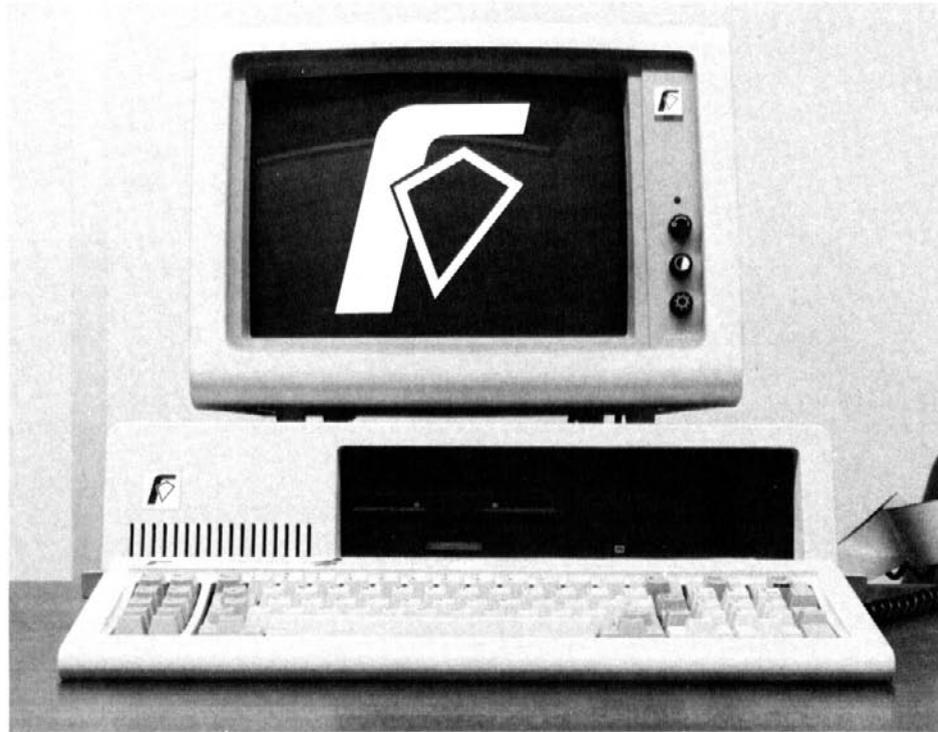
It's a popular observation that all the radicals from the sixties are now clean-cut types working at office jobs for the corporations they once fancied overthrowing. This may be an accurate description of the outward appearance and current occupations of the social firebrands of yore, but one never forgets one's past, and in some cases one's past makes for really interesting reading. It turns out that underground computer radicalism for the information age is alive and well in a feisty little periodical originating in a basement in the Haight-Ashbury district of San Francisco and calling itself *Processed World*. It favors references to Incredibly Boring Machines, and is pitched to VDT operators, word processors, and general terminal types, with articles ("Through the Tinted Glass," "Ten Ways To Wreck a Digital Video Ter-



terminal," "Processing Our Children"), columns, and poetry intended to provoke the reader to a more critical observation of the modern workplace. Literate, provocative, and impolite, a four-issue subscription costs as follows: \$10, "steady income"; \$5, "low income"; \$25, "libraries/institutions and overseas residents"; \$25 to \$500, "really into it (and somewhat rich)." Write to Processed World, 55 Sutter Street, Suite 829, San Francisco, CA 94104.

LITTLE CART; BIG LINGO

Action! is a programming language just out from Optimized System Software in Cupertino. Here's all we know: It's a 16K Atari cart with DOS, a two-window screen editor, and a compiler (extendable) that only occupies 8K of RAM. It's two to three times faster than Applesoft, ten to twenty times faster than VIC Forth, and runs a standard Byte magazine Benchmark in 19.6 seconds. Written by Clinton Parker, it most resembles C, and is, according to OSS's Bill Wilkinson, who also brought you Apple DOS and Atari Basic, "the only language I've ever seen capable of writing a real arcade game."



CORPORATE COMPATIBLE

William L. Sydnes has resigned his post at IBM as program manager for entry-level personal systems to join Franklin Computer—makers of the “Apple-compatible” Ace—as vice president of engineering. He will report to Avram Miller, who left Digital Equipment Corporation in March to become Franklin’s executive vice president.

Vahram Erdekian, who was responsible for the strategy and implementation of DEC’s personal-computer manufacturing program, has joined Franklin as vice president of manufacturing.

Neither IBM nor DEC is considering bringing suit against Franklin for executive infringement at this time.

New Stuff

Atari: Big Brother is watching you! With 1984 just months away, the future-thinking folks at Roklan have come up with a game for the Orwellian set. Run around town zapping unfriendly Eyes. For one player, this game ranks a 10 on the Winston Smith scale of paranoia. Get sucked into a black hole and then get shot at in *Rockball*. Next, try to elude the cops in a cross-town car chase in *'Da Fuzz*. But enough of that; let's get cosmic. In *Lifespan*, you are born, then traverse the galaxy looking for opportunities. Experience is desirable, but try to keep your character from becoming jaded so you can commune with the Beings of Light. All the above are cartridges and cost \$44.95 each. From **Roklan**, 3335 North Arlington Heights Road, Arlington Heights, IL 60004.

Board game bored? Don't fret: Parker Brothers unveiled its first microcomputer games this June at the Chicago Consumer Electronics Show. One new release is *Frogger* (the cartridge). A somewhat newer new release is *Astrochase*, a game where it takes the “right stuff” to save Earth. If you defuse the megamines, you get a hero's or heroine's welcome. No tenderfoots need apply. Then it's strategy to the max in *Risk*, the computer version. If you use skillful battle strategy you can conquer the world; otherwise everyone will forget you. He's hopelessly romantic, he's strong, and he eats his spinach. Yes, *Popeye* is back, battling Brutus for the love of Olive. For one or two lonely hearts, this one also runs on the IBM pc. All *Q*bert* wants out of life is to hop up and down the cubes on pyramids, changing their colors as he lands. But nasty creatures try to divert him on his mission, so *Q*bert* and you will have to do some fast hopping. Designed for one or two players, this also runs on the VIC-20 and the Commodore 64. In *Chess*, a player can try out various

strategies before making a move, playing either side in a single game. One player, eight skill levels. Also for the IBM pc. Precise moves, quick reflexes, and stamina are required in *Super Cobra*. The player has to navigate a helicopter gunship through mazes, caves, and city skylines in order to find the enemy and blow him up. All six of these babies are priced, shall we say, between \$37 and \$40, from **Parker Brothers**, 50 Dunham Road, Beverly, MA 01915.

In the *Wylde*, your boss is a lazy but powerful wizard. He goofs off with spells and other nonsense while you do the work, battling thieves and recovering stolen magical objects. 48K, \$29.95. *Ziggurat* is part four of the *Warrior of RAS* series. Monsters chase you through mazes as you try to get into a room with no doors or windows. Also for the TRS-80 and Apple. 48K, disk, \$29.95. From **Screen-Play**, 500 Eastowne Office Park, #212, Chapel Hill, NC 27514.

In *Triad*, you battle nine foes, with victories tallied in ticktack-toe fashion. Running high score and keyboard or joystick option. Also for the Apple and Commodore 64. \$34.95, disk. **Adventure International**, Box 3435, Longwood, FL 32750.

Nerves of steel are required in *Cargo Bay* as you are a dockworker responsible for the smooth flow of incoming disaster relief supplies. \$39.95. **Broderbund Software**, 1938 Fourth Street, San Rafael, CA 94901.

Not enough joy in joysticks? TG Software has announced the formation of a new software division to complement its present line of joysticks, trackballs, and game paddles. Its first four games include *Droid*, a fantasy space adventure, *Nightstrike*, a defensive combat game, *Abracadabra*, a two-player maze game, and *Ozzy's Orchard*, a defend-your-fruit-orchard-with-insecticide game. All games are \$44.95, cartridge. **TG Software**, 1104 Summit Avenue, #110, Plano, TX 75074.

Crank Calls

All right, knock it off! GameMaster is still giving away certificates worth three hours of time on the GameMaster system.

The modem number you're supposed to call to leave your name and address for the weekly drawings is (312) 475-4884. Apparently, in some copies of the May-June *Softline*, where this was announced, the ink got rearranged on the page where the announcement was made, and it made the phone number look different.

Everyone whose May-June issue of *Softline* doesn't have the above number in it, please go to your store, buy a copy of this issue with the legible phone number, cut the number out, and paste it into your May issue.

Thank you.

Roklan Requests

Vis-a-vis the “Most Popular Atari Programs” listed in these pages last March: According to Roklan Corporation, Alex Leavens did *not* program *Pac-Man* for the Atari home computer. According to Alex Leavens, he did. Nevertheless, according to Roklan Corporation, Roklan Corporation programmed *Pac-Man* for the Atari home computer. Got it? Good.

If Alex Leavens would like to contest this personally, Roklan reports that they miss him terribly and would love to hear from him.

The folks at Datasoft say that programs from their new Gentry Software division include competitive intangibles of the most successful arcade games in the industry. They weren't kidding around. One recent release is *Maniac Miner*, a game that sounds vaguely familiar. 48K, \$19.95. Next comes *Magneto Bugs*, a.k.a. *Tumblebugs*, nee *Dungbeetles*. 24K, disk. Also available on the Apple. \$14.95. Then there's *Target Practice*, which used to be *Shooting Arcade*. 16K, disk and cassette, \$16.95. Finally, *Spider Quake* is enough to send you to your doctor complaining of double vision. Eddie Eight Legs has to cross a highway where frogs have gone before him. 16K, \$16.95. The next Datasoft quartet seems absent of "intangibles." In *Sea Bandits*, you seek jewels lost in the briny deep. 16K, disk and cassette, \$16.95. *Starbase Fighter* places you on a desperate mission to destroy the Alien Brain. 32K, disk, \$14.95. *Rosen's Brigade* finds you on a mission to rescue trapped airmen. 16K, \$16.95. And *Memory Mania and Maxwell's Demon* is two puzzles on one disk. 48K, \$14.95. The entire bundle is brought to you by **Gentry Software**, 9411 Winnetka Avenue, Chatsworth, CA 91311.

Apple: Another quartet from Datasoft's Gentry Software Division. *Handy Dandy* features you as a plumber besieged by a mouse attack. 48K, disk, \$19.95. In *Break the Bank Blackjack*, the computer can be either your tutor or a formidable opponent. 48K, disk, \$14.95. It's a space-age cookout in *Alien Munchies*, as you try to fry aliens before they land. 48K, disk, \$19.95. Then race against the clock and your competitors in *Formula 1 Racer*. 48K, disk, \$19.95. **Gentry Software**, 9411 Winnetka Avenue, Chatsworth, CA 91311.

The Zerks are jerks in *Spare Change*, a game in which inhabitants of a hit arcade machine rebel. You are the arcade owner and try everything to keep them and the spare change around. 48K, disk, \$34.95. In *DROL*, you encounter airborne space turkeys and other oddball aliens while on a rescue mission. 48K, disk, \$34.95. Both are from **Broderbund Software**, 1938 Fourth Street, San Rafael, CA 94901.

Buzzard Bait is what you'll be if you don't get them before they get you. \$34.95. Little nuisances like business hours, plane schedules, and international time zones threaten to stop you from saving the world from a crazy scientist in *Critical Mass*. \$39.95. They're lost in space and it's you to the rescue in *Gruds in Space*. One hundred ten different locations, 160 different screens. Two-sided disk, \$39.95. In *Plasmania*, you go on a *Fantastic Voyage* inside the veins of a critically ill patient. \$34.95. All are 48K. **Sirius Software**, 10364 Rockingham Drive, Sacramento, CA 95827.

Texas Instruments: Emerald Valley Publishing has introduced 99'er-WARE, a line of software cassettes that retail for under \$10. The reason behind the marketing move is the price reduction in the TI 99/4A home computer, now available for under \$100, said company president Gary M. Kaplan. Cassettes will include entertainment, education, and business topics and will come in ringbinder collectors' cases.

VIC-20: Only Plaque-man can save the video teeth in the *Tooth Invaders*. Armed with dental floss, toothpaste, and toothbrush, he battles with the evil D.K. \$29.95. In *Gortek and the Microchips*, only a programmer who attends to his lessons can repel the fiendish Zitrons who invade the planet Syntax. Also available for the Commodore 64. \$24.95. Both are from **Commodore Computer Systems Division**, 1200 Wilson Drive, West Chester, PA 19380.

Spend your ancient evenings along the Nile in *Tutankham*. Lured on by priceless treasure, you brave treacherous mazes and horrid ghouls to plunder the boy king's treasure. Play by yourself or take a grave-robbing accomplice. Priced between \$37 and \$40. **Parker Brothers**, 50 Dunham Road, Beverly, MA 01915.

Commodore 64: You'll need more than an ark to stop the flooding caused by alien heat missiles in *Space Sentinels*. Joystick, disk drive required. \$29.95. **T & F Software**, 10902 Riverside Drive, North Hollywood, CA 91602.

Infocom's *Zork* trilogy, *Deadline*, *Starcross*, and *Suspended* are now available for the Commodore 64. All are priced at \$29.95. **Commodore Computer Systems Division**, 1200 Wilson Drive, West Chester, PA 19380.

Broderbund is also converting everything in sight. *Choplifter*, the most famous helicopter hostage rescue game ever made, is \$44.95. *Serpentine* pits you, an average snake, against the giant serpents. \$39.95. *Seafox* finds you in a submarine battling for your life against a pack of enemies. Also for \$39.95. You can even tilt in *David's Midnight Magic*, one of the classic computer pinball games. \$34.95. **Broderbund Software**, 1938 Fourth Street, San Rafael, CA 94901.

Not Newton. In *Juice*, the central character is Edison, a guy who just wants to build his circuit board, but Killerwatt keeps getting in the way. Edison is smarter than his foes, but if he's struck, a meltdown is imminent. Also for the Atari. \$34.95, disk. **Tronix Publishing**, 8295 South La Cienega Boulevard, Inglewood, CA 90301.

Hardware: "My Sticks Won't Go Wacko Because It's a Wico" is the theme of a campaign to promote the company's three product lines—the Command Control line of arcade-quality joystick and trackball game controllers; the Computer Command line of hardware accessories for personal computers; and the BOSS line of game controllers. Remember you heard it here first. **Wico Corporation**, 6400 West Gross Point Road, Niles, IL 60648.

But will your Wico drive you wacko? Thumb sore from video overlay? Do you have joystick fatigue? Video Masters says that it has the answer. Handsaver eliminates gaming malaise. It is a Wico joystick cushion grip that can be purchased with Octoputs, suction disks that won't let your Wico go anywhere you don't want it to. The combo costs \$4.95 from **Video Masters**, 69 Smith Street, Mount Clemens, MI 48043.

Texas Instruments has apparently decided that \$100 million is enough money to lose in one year, so it's decided to lure buyers to its computer by offering fewer programs to run on it. It is modifying its 99/4A operating system to accept only TI-patented GROM cartridges. The modification would, in effect, force publishers to license their software to Texas Instruments or get out of the 99/4A business. At least that's what TI thought. You know the guy who always has to walk on the grass where the sign says "Don't"? Well, Romox knows him very well. The quick-on-the-draw company is offering their game port expansion module, which accepts both GROM and the forbidden ROM cartridges. Will TI lose even more money by initiating a lawsuit? Or will it can the GROM-exclusive idea altogether? And what will Romox do next? Stay tuned for the next installment of *As the EPROM Burns*. \$39.95 from **Romox**, 501 Vandell Way, Campbell, CA 95008.

Ferraris, Christian Dior originals, and summers on the Riviera—only those who appreciate the finer things will enjoy the Big Stick, a new Apple joystick from C.P.M. Computer Products. During field testing of the product, users made such comments as, "It makes me feel as though I am part of the computer," "It's like flying a real airplane," and, "It reminds me of the movie *Firefox*, where Clint Eastwood piloted his aircraft by thought waves. . . . I was unaware of the existence of the joystick." This Jordache of joysticks isn't recommended for common ham-handed stick-slammers, as you can tell by its \$79.95 price tag. **C.P.M. Computer Products**, 3500 Bullock Lane, #60, San Luis Obispo, CA 93401.

TG Products has unveiled three new ones. The Enjoystick, model TJS-400, features an ambidextrous fire button that can be flipped for lefties, and a lightweight design contoured to the player's palm. For Atari, \$34.95. The TTB-800 trackball is compatible with the Atari and costs \$69.95; and the updated TG-600 for the Apple and IBM now includes three firing buttons instead of two. \$64.95. **TG Products**, 1104 Summit Avenue, #110, Plano, TX 75074.

At last! A real keyboard for the Timex/Sinclair, with keys and everything, that's only twice the price of the computer and is "humanly designed." (Do they mean "humanely" or are they saying it was not designed by aliens?) \$99.95. **Kopak Creations**, 448 Fifty-fifth Street, New York, NY 10019. SL

NEW PLAYERS:

Electronic Arts

Who are these guys?

In June, they began advertising—not products, but an image. They spirited away a photographer from the Los Angeles rock-music scene, flew him up to northern California, and took over a studio for the day to shoot about four hours' worth of pictures for the ad. No fancy artist's conceptions of games to come; just portrait shots of eight game authors. Who are these guys, anyway?

In June, their first games hit the market, and the response was overwhelming. Those stores that had early supplies couldn't keep *Archon* in stock. *Hard Hat Mack* was already presenting a challenge to the market's currently popular arcade-style games. The packaging of the products was as attractive as it was innovative—album format: color photographs, liner notes, author bios and pictures—class all the way.

Just who are these guys?

They're called Electronic Arts. And if things go as they plan, the computer-games industry may shortly be taking a sharp turn for the . . . different.

Virtually unheard of just a few months ago, Electronic Arts seems to have appeared out of nowhere—just a bunch of people with nothing better to do than start a software company, right? Not exactly.

The company's president is one William "Trip" Hawkins. He's a guy a lot of computer people know and a lot more people have never heard of.

The whole thing really started back in the early seventies. Hawkins first saw a computer eleven years ago. "My first feeling was that I wanted to play games on it," says the company's president. "Not necessarily video games but games that are interactive—games that use the computer as a communications medium."

As computer technology developed in the seventies, Hawkins was thinking ahead to the point when it would be feasible to start a business in the personal computer industry. In 1975, he saw 1982 as the time.

Waiting for 1982. In 1978, Hawkins took a position at Apple Computer, where he was in charge of getting the Apple II into the business market. That involved contracting programmers to develop such software products as *The Controller*, *The Cashier*, *Apple Writer*, and *Desktop Plan*. Though the II was just beginning to bud as a business machine, Steve Jobs and Hawkins were already working on the first proposal for the computer that is known today as the Lisa.

When 1982 finally rolled around, Hawkins felt the time was right to get moving. "I'm basically an entrepreneur, and with four thousand employees at Apple things weren't as fun as they used to be when there were just fifty of us. And, if I'd waited any longer, I wouldn't have been able to do Electronic Arts, and that's why I got into computers in the first place."

Word travels quickly in microcomputer circles, and when Richard Melmon, then director of marketing for VisiCorp, heard that Hawkins was leaving Apple, the two got together. For what Electronic Arts would be doing, it needed someone with real expertise in consumer marketing. Melmon was perfect, having previously held senior positions in public relations and advertising.

Melmon came aboard as executive vice president, marketing. The founding unit was complete, and, with sufficient venture capi-

tal procured, Don Valentine and Apple cofounder Steve Wozniak joined the Electronic Arts board of directors.

You Can Call Me Artist, or You Can Call Me. . . You won't hear staffers at Electronic Arts ever refer to its programmers as programmers. They prefer the term software artists. Electronic Arts thinks of the computer not only as a technological advancement but as a new medium of communication. Software, then, becomes an art form that's presented through that medium. According to Hawkins, the best software is being produced by people who act and think much the same way artists act and think; their first concern is for the opportunity to express themselves.

One of these software artists is Bill Budge, creator of *Raster Blaster* and the *Pinball Construction Set*. In the computer-games industry, news that Budge had given up working solo and gone to write software for someone else was just short of shocking. Actually, he was quite happy to let Electronic Arts take over the marketing of his works. Of Hawkins and his cohorts, Budge says, "They tried to convince me to join them, and I turned them down. But eventually I gave in, and right when I signed with them I realized that I felt really relieved.

"I usually take a year to complete a game," says the programmer supreme, "and I was happy to get back to that instead of taking a lot of time to market the game, design the packaging, and write the documentation."

Budge would rather spend his time developing software and let someone else handle the business end of things.

That's one person's approach, but it seems to work well for others. Jon Freeman is the "Free" half of Free Fall Associates; the "Fall" half is Anne Westfall, and a third half (what?) is Paul Reiche, who had a part in the creation of *Archon*. They enjoy doing only what they do best—designing games.

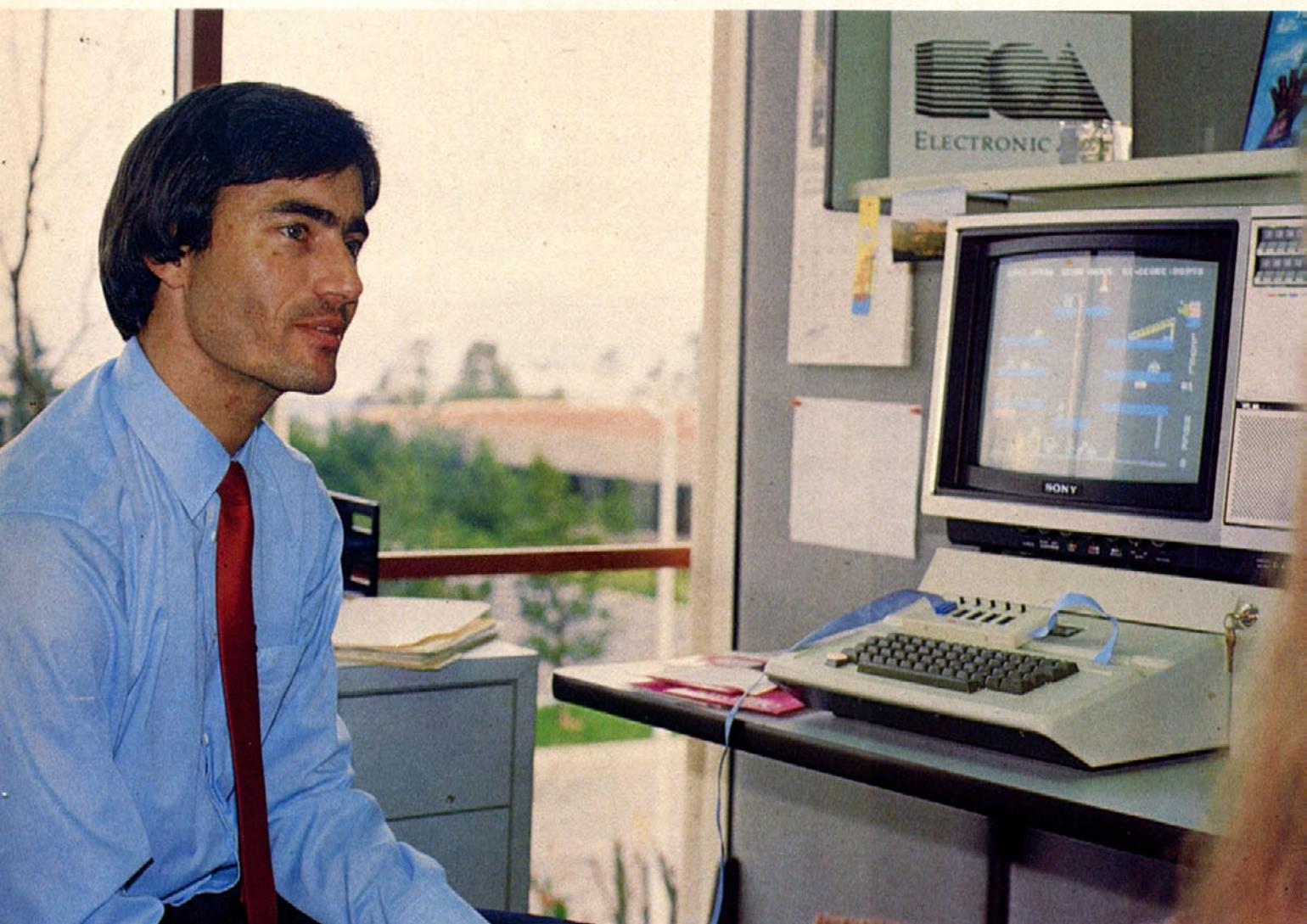
The Roundup. With the artist image in mind, Electronic Arts's talent-development department seeks out top software designers. Initially, the new company tried to contact most programmers who either weren't currently affiliated with companies or didn't have strong ties.

"Sometimes," says Hawkins, "a programmer approaches us with a really good idea. Then there are people we know of like Budge; we approach them to let them know we'd like to work for them and help sell their products."

One example of the Budge-type strategy involves a mirthful master of the macabre, cartoonist Gahan Wilson, whose works have appeared in *Playboy*, the *New Yorker*, and the *National Lampoon*. Hawkins and company heard that Wilson was interested in designing a computer game. Starting with the knowledge that Wilson lived in New York City, they tracked him down, got him together with some programming talent, and designed a product that's being developed now.

Electronic Arts has also signed basketball stars Julius Erving and Larry Bird to help develop a computer game. The big men won't be doing any programming, but the game will feature them in basketball action, with on-screen players programmed to match their playing styles.

This presages the way Electronic Arts plans to combine the computer with the talents of individuals in noncomputer fields. One of the company's most commendable goals is to expand people's ex-



If I were Trip: Let's see now . . . a game software company. Well, first I'd better have some money. Or know some people who have money who would like to give me some. . . . And programmers. Lots of programmers. And I should let them do whatever they want and let them remain independent and give them big royalties on the games they write because they're Art. Or they should be Art. They will be. We'll make games that are Art.

periences with computers into "noncomputer" areas.

Not Fade Away. One thing Electronic Arts's products will be is recognizable. No more senseless shooting in space; no more standard maze chases, they say. "The video games that are popular now are just a fad," says Hawkins. He's convinced that games involving only a player's reaction, and not interaction, will fade away.

Electronic Arts wants its works to endure. By creating games from which, in the course of playing, the player may learn something, they believe they can touch the lasting values at the creative heart of play. That doesn't mean they'll be giving up on fun for fun's sake, but Electronic Arts's main interest is in products with some learning content.

M.U.L.E., from Dan Bunten and friends at Ozark Softscape, is as complex as any Economics 101 class, but you'll never fall asleep in the middle of it. Another prime example of combining fun with learning is *Worms*? You've probably never seen a game like it. The inspiration for *Worms*? came to author David Maynard from a *Scientific American* column on mathematical games—not from the local arcade.

Free Fall's *Archon* is a strategy board game played on a standard chesslike grid. The twist is that strategy alone won't win the game. When a player wants to take a square from an opponent, the two game pieces disputing the square engage in battle that usually ends up just short of the human players falling out of their chairs.

All three of these games are for the Atari. It's ironic, considering Hawkins's background in the Apple community, that Electronic Arts's Apple line of games isn't yet as strong as its Atari line. The company plans to reduce the gap by year's end and eventually expand to the Commodore 64 and the IBM Personal Computer.

What Can It Do besides Play Games? Gaming isn't the only area Electronic Arts has its eye on. Hawkins et al. see the home computer as an appliance; it should eventually become something you use without having to read lots of instructions. When you wash clothes, you just put in the clothes and the detergent and start the washing machine. If you're hungry, you pop bread in the toaster and it comes out toasted. That's home management. Looking at the computer the same way, Electronic Arts believes that when you think, "I want my bills paid," or, "I want this paper typed," you should be able to get it done almost as easily as you would the laundry.

Whether the day when that's possible is coming soon is a moot point. But the vision is a good indicator of where Electronic Arts is heading. For now, the company's products are fun and compelling—games in which you learn actively.

Electronic Arts feels that if what you're doing isn't in some way worthwhile for people, you shouldn't be doing it, and you will quickly fail. If that's the case, then Electronic Arts will be doing what it's doing for a long, long time. SL

Who Is Rosebud?

MAKING HAY ON THE HOLLYWOOD SCENE

One question frequently asked about Tinseltown is, "Just how much like a dragon-ridden dungeon is Hollywood, anyhow?" Leave it to *Softline* to provide the answer and lay all the confusion to rest. Here it is: Hollywood is not at all like a dungeon, so long as you're on top; and there are absolutely no dragons there, or anywhere in southern California, except maybe once in a while in Santee.

Nevertheless, *Softline's* Last Annual Film-dom Adventure is a lot like a dungeon if you strip away the tinsel. You can't get killed playing it, but you can end up eternally pumping gas in Rockport, Illinois; clearing tables in Millburn, New Jersey; joining the Junior League in Port Arthur, Texas; or retiring peacefully to Pasadena, California.

It's better to end up a millionaire movie mogul or a world-famous superstar. Since we're on the subject (we always are), the movies you mogul at or star in all concern computers. That means your character's apt to do better if it knows something about computers as well as everything about film.

You might muse that money comes first with moguls and movie stars, but think again. At the very top of the heap, at the absolute peak (and of course that's where you're aiming), quality comes first. Along with courage and good sense.

Money, however, will be your reward (and celebrity, it goes without saying), should you be one of the two incredible human beings to choose what we believe is the most logical, well-rounded route to the top and make it there, one winner as a mogul and one as a superstar. (In case of ties, the incredible inhuman RNG will weed out the chaff.) For the peace of mind of doubters who might question the judges' decision (which is final) as to the right routes, the two predetermined correct routes have been traced and sealed in envelopes and sent to Zorkmeister Marc Blank, because he has such a nice face, and to Wayne Green (if we can find his address), for different reasons.

Now let's get serious about this darn contest. Here's how it works.

1. The Object is to reach either the computer-movie-mogul square or the computer-movie-superstar square. Choose one of the two, begin at high school, and select a route.

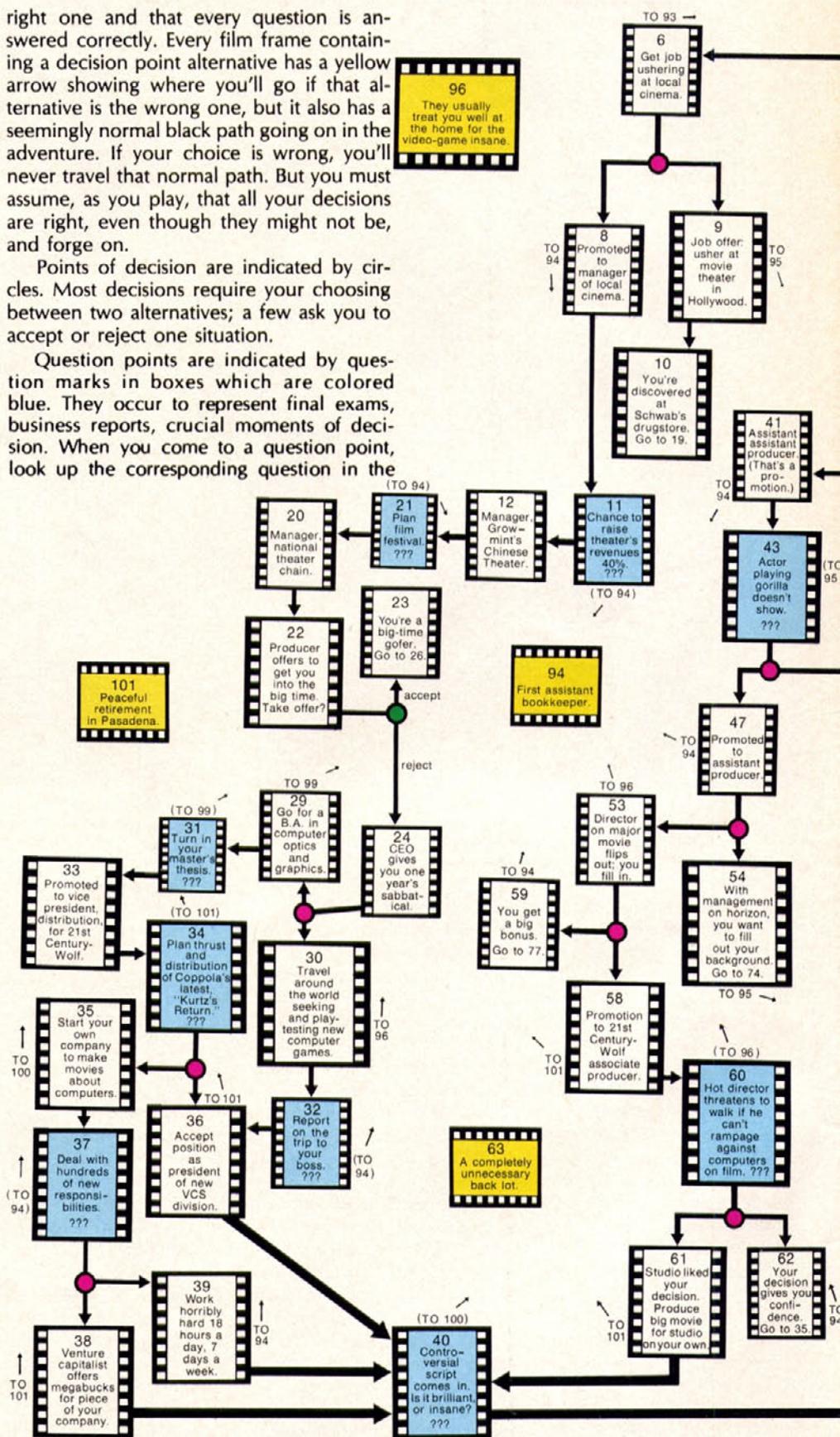
2. The Criteria we used in determining the best routes are that they give you the best background for the object you choose, they don't waste time, and they don't get you in trouble; they make sense. Again, the best routes have been preset; you are to use logic and clues to determine what they are.

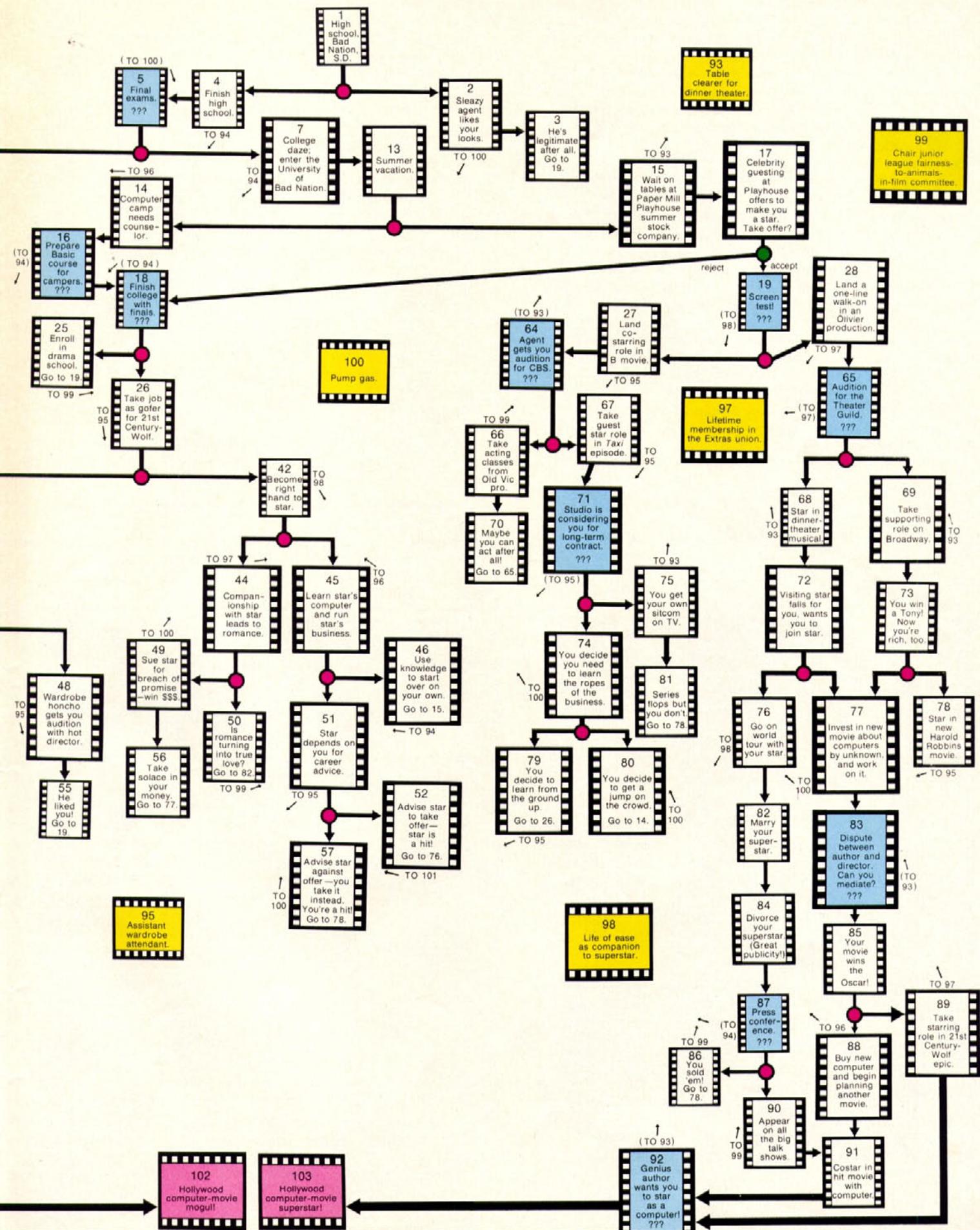
3. The Map is stupid. Unlike the judges, it assumes that every possible alternative is the

right one and that every question is answered correctly. Every film frame containing a decision point alternative has a yellow arrow showing where you'll go if that alternative is the wrong one, but it also has a seemingly normal black path going on in the adventure. If your choice is wrong, you'll never travel that normal path. But you must assume, as you play, that all your decisions are right, even though they might not be, and forge on.

Points of decision are indicated by circles. Most decisions require your choosing between two alternatives; a few ask you to accept or reject one situation.

Question points are indicated by question marks in boxes which are colored blue. They occur to represent final exams, business reports, crucial moments of decision. When you come to a question point, look up the corresponding question in the





list that follows these instructions and write its number and your answer on your entry. What will happen if your answer is wrong is indicated in parentheses next to the square on the map, but you're to assume, naturally, that you're right and carry on.

4. Rules. You may only move forward except when the game sends you to an earlier location. You may not jump around randomly; each location indicates where you can go from there.

5. Entries and Deadline. Your entry must consist of a photocopy or exact tracing of the game map (same size) with your route shown clearly, a list numbering the questions you encountered on your route and your answers to them, and your entry form or a facsimile of it. Comments are welcome, too. Compliments will be read by the entire staff; complaints will be shredded and fed to the contest-meister's dog Spot for breakfast. Entries must be postmarked by August 12, 1983.

6. Prizes. If you're one of the two people who best simulate the winning paths and answer all encountered questions correctly, you'll win the videocassettes (specify Beta or VHS) of *Citizen Kane*, *Star Wars*, and *What's Up, Tiger Lilly?* and \$100 worth of your choice of products from *Softline's* advertisers. If you don't have a video tape recorder and have no intention of getting one, you can take the equivalent cash instead.

7. What are you waiting for? This is a very experimental puzzle, so we're all trying together. Very trying.

Here are the questions. Numbers refer to the film frame they appear in on the map.

5. True or false: In *Casablanca*, Humphrey Bogart said, "Play it again, Sam."

11. This character was stolen from him, so Walt had to come up with a mouse.

16. What was the game designed by Flynn the computer whiz in *Tron*?

18. National origin of "America's Sweetheart."

19. Of whom is this official studio description, based on his screen test: "Can't sing. Can dance a little."

21. It was pulled from theaters virtually before it opened; the costliest flop in Hollywood history.

31. England's foremost Shavian filmic interpreter and a high-level programming language.

32. The computer in this one gave Julie Christie a very difficult time.

34. The critics called it "one from the lab."

37. Thirty years ago, it was the first feature film to be made using a gimmick that died fast but is now enjoying something of a comeback.

40. Raymond Chandler's detective spent the whole movie behind the camera and was never seen except in mirrors.

43. The plot revolved around Katharine Hepburn's escaped pet leopard.

60. She was the original choice to play Dorothy in *The Wizard of Oz*. Let's hope you make a better decision.

64. First a teen heartthrob, his film career was thought to be all washed up ten years later until he got a supporting role in a war movie.

65. Walter Pidgeon fought monsters from the id in this space-y version of *The Tempest*.

71. Whose famous last words, in what film? "Made it, Ma! Top of the world!"

83. Bela Lugosi's last film, acclaimed as one of the worst ever made.

87. Who said, "Klaatu, Gort! Klaatu barada nekto!"

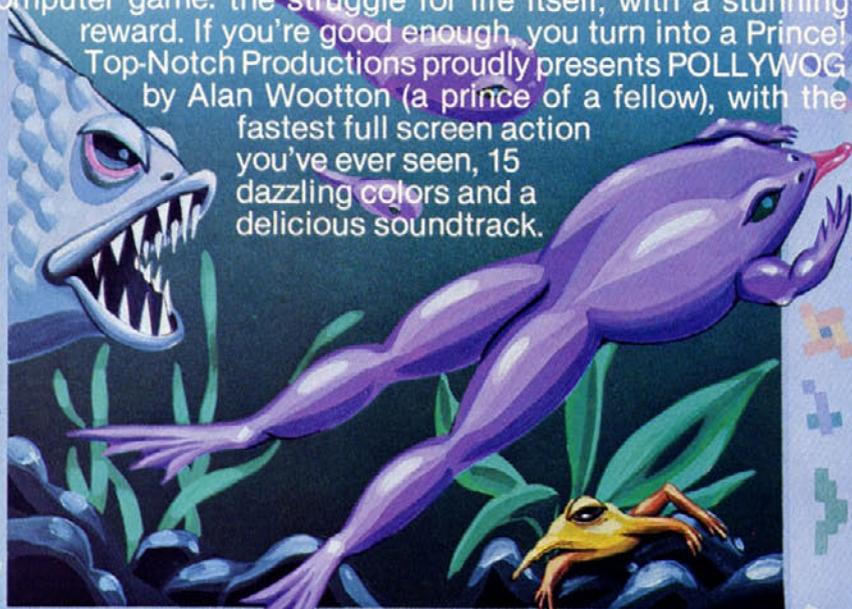
92. He was the model for the Gerber baby food label. His face became somewhat better known later on.

SL

Name: _____
Stage name: _____
Estate address (when not in Beverly Hills): _____
City, State, Zip: _____
Ring me, dahling (my agent's unlisted): _____

You Can Be A Prince!

POLLYWOG. It's not a shoot-'em-up game, it's not a maze game, it's not an adventure game, it's POLLYWOG -- a brand new kind of computer game: the struggle for life itself, with a stunning reward. If you're good enough, you turn into a Prince! Top-Notch Productions proudly presents POLLYWOG by Alan Wootton (a prince of a fellow), with the fastest full screen action you've ever seen, 15 dazzling colors and a delicious soundtrack.



POLLYWOG is a true test for champions, offering up to 64 possible levels of play. Eat the algae (but beware the creepies) and watch yourself metamorphosize into a frog. Lay your own eggs and bring more pollywogs into the world. Avoid the killer fish and reach the highest stage of the pollywog life cycle: you're a Prince!

POLLYWOG is sophisticated, challenging, fun. There's never been a computer-game experience like POLLYWOG!

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1201 Montana Ave., Suite 5
Santa Monica, CA 90403
(213) 395-9591

Visa, Mastercharge, checks, and money orders welcome. Add \$1.00 for shipping. California residents add 6½ percent sales tax. POLLYWOG requires a 48K Apple III/II+, DOS 3.2/3.3, a color display and a joystick.
Apple II is a registered trademark of Apple Computer, Inc.

Game/Publisher Score Player

Action Quest, JV Software	*20/95
A.E. (Apple), Broderbund	*126,200
A.E. (Atari), Broderbund	*77,700
Airstrike, English	*23,730
Alien Defense, Soft Sector Marketing	*185,750
Apventure to Atlantis, Synergistic	*2,225
Arena 3000, Med Systems	*97,700
Artesians, Rena-Soft	*6,490
Asteroids, Atari	3,594,920
Astro Chase, First Star Software	*448,947
Attack Force, Big Five	*996,560
Axis Assassin, Electronic Arts	*393,100
Aztec, Datamost	*Level 8/1,037,539
Baja Buggies, Gamestar	*167.40 M.P.H.
Bandits (Apple), Sirius	*889,855
Bandits (Atari), Sirius	*184,320
Battlesight, Versa	*176,500
Bell Hop, Hayden	*56.31
Bezare, Southwestern Data	*93,477
Bez Off, Bez	*160,844
Boa, Micro Magic	*Level 9/43,830
Bolo, Synergistic	*Level 9/6,942
Breakout, Atari	Double/2,656
Breakout, Atari	Progressive/4,580
Bug Attack (Apple), Cavalier	*587,303
Bug Attack (Atari), Cavalier	*54,385
Candy Factory, Gebelli	*1,198,900
Canyon Climber (Apple), Datasoft	*393,800
Caverns of Freitag, Muse	*Level 9/19,823
Centipede, Atari	*2,779,759
Chicken (Atari), Synapse	*111,190
Congo, Sentient	*31,362
Cosmic Fighter, Big Five	276,560
Cosmo Mission, Astar Int'l	*8,540
County Fair, Datamost	*4,205
Crazy Maze, Datamost	*105,600
Cricketeer, Software Farm	55,360
Crime Wave, Penguin	10,600
Crisis Mountain (Apple), Synergistic	*175,097
Crisis Mountain (Atari), Synergistic	*22,376
Crolon Diversion, Cload	*7,300
Crossfire (IBM), Sierra On-Line	*143,320
Cyclod (Apple), Sirius	966,518
Cytron Masters (Apple), Strategic Simulations	*Level 3/26,150
Cytron Masters (Atari), Strategic Simulations	*21,290
Dawn Patrol, TSR Hobbies	*18,207
Defender, Atari	*10,412,825
Defense Command, Big Five	120,380
Deluxe Invaders, Roklan	*26,850
Demon Seed, Trend	*28,330
Dig Dug, Atari	*73,180
Double Trouble, Bez	*22,174
Dragon's Eye, Epyx	*4,723
Eliminator, Adventure Int'l	*478,900
Epidemic, Strategic	*765
Escape from Arcturus, Synergistic	6,660
Escape from Vulcan's Isle, Epyx	13,580
Evolution, Sydney	*Expert/10,361
Falcons, Piccadilly	*301,750
Firebug, Muse	*9,850
Flying Saucers, Radio Shack	*1,013
Fly Wars, Sirius	22,780
Fort Apocalypse, Synapse	190,809
Frazzle, Muse	*56,850
Free Fall, Sirius	*7,962
Frenzy, Softape	*14,519
Frogger (Apple), Sierra On-Line	*53,220
Frogger (Atari), Sierra On-Line	*271,655
Galactic Attack, Sir-tech	*6,320
Galaxian, Atari	40,500
Galaxy Gates, Magnasoft	*60,300
Galaxy Invasion, Big Five	*2,612,000
Galaxy Travel, Tokumo	*69,350
Ghost Encounter, JV Software	20/92
Ghost Hunter, Arcades Plus	*119,210
Gorf, Roklan	59,460
Gorgon, Sirius	*85,220
Grapple, Insoft	*215,500
Guadalcanal Campaign, Strategic Simulations	*2,655
Guardian, Continental	*128,180

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Michael Lurie, Lincolnshire, IL
Dean Rekich, Prospect, PA
Doug Azzarito, Gainesville, FL
Steven Schwartz, Pittsburgh, PA
Bobby Moy, New York, NY
Hymie Shellfrine, Westminster, CA
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HIGH SCORES Highlines

Scores can be accepted only when accompanied by the following: Your name and full address, the name of the company that manufactures the game, your make of computer, and the level of difficulty on which the score was achieved, where applicable.

An asterisk indicates a verified high score and is bestowed only when said score is accompanied by the legal signature of a witness.

Send your high scores to High Scores, Softline, Box 60, North Hollywood, CA 91603. It would be appreciated if you could jot down the game name(s) and scores in a corner of the envelope.

Next High Scores deadline: 8:30 p.m. EST, August 7.

Oboyoboyoboy!!! News! Stop the press-es! Now hear this! Pay attention!!

This is your chance to be even more famous than you already are for getting your high score in *Softline*. Now is the time to send in the high-scoring strategy or winning pattern on your best game (sorry, Apple gamers only) to be considered for publication in an upcoming tome from Datamost on Apple-game high-score strategies. If your strategy is published (credited to you, natch), you will be compensated with \$100 worth of the Datamost software of your choice. High-score cheaters never prosper—like we've always said—and need not apply ("Well, ya hit escape-control-X and ya get 200 extra men and the aliens can't shoot back..."). Sound good? It should. Here's how it's done.

1. Do not send entries to this magazine.
2. Do send entries to:

Rod Nelsen
9711 Josephine Street
Thornton, CO 80229

New policy on low scores: We tend not to print them. This is sometimes due to a hopeless plethora of game choices (*Way-out*) or player options too numerous to mention (*Hi-Res Computer Golf*).

"Bobby Moy has fourteen high scores!" cries Tom Doolittle. "Only in your dreams, Bobby! I don't care who you are or how many hours you spend on a computer; it's impossible."

Such general caveats are rather common around here. Tom will have to be more specific if he wants to make a formal challenge. More like the exhaustive analysis turned in by Jon L. Berry on the matter of the score of Hymie Shellfrine in *Bolo*: "If his score really was attained on level 9, then his score would have to be divisible by 9; 6,942 divided by 9 equals 771.3333333... How did Hymie manage to destroy 0.3333333... of a tank? (And verified, too. *Dumb* cheaters bother me most of all.) How about it, Hymie?"

The Solution to Applesoft . . .

THE ROUTINE MACHINE

Now, from the programming experts of Southwestern Data Systems, an easy-to-use way of putting the POWER and SPEED of Machine Language routines in YOUR OWN Applesoft programs!

ROUTINE MACHINE does all the work for you! No knowledge of machine language programming, whatsoever, is needed. Simply choose the function you want from an ever-growing library and Routine Machine puts just that routine in your program. Over two years in development, we've made it all completely transparent — no need to bother with BLOAD'S, HIMEM:, etc. — and it's COMPATIBLE WITH APPLE II AND APPLE IIe!

Each Library Package is so packed with useful routines that it's impossible to do more here than just list the names! So get out your magnifying glass! Call or write for more information. Better yet, order now from your local dealer. All of our software is unconditionally guaranteed!

THE ROUTINE MACHINE

The main "librarian" of the series, this package includes not only the Routine Machine itself, but all of these commonly needed routines:

Variable Swap	Error Messages	Hires Characters	Print Using (\$.00)	Calculated Goto	Turtle Graphics
Text Output	Calculated Gosub	Fast Blood	String Input	Line # Data Restore	Binary Address Read
String Search	Data Element Select	Reset Run	Array Search (1D)	Hex/Dec Convert	Reset Boot
Bubble Sort (1D)	Memory Move	Reset Onerr	Tones	Pointer Read	
Sound Effects	Pointer Write	Shape Table Converter	Error Handling Routine		

\$64.95*

& CHART

\$49.95*

Library Disk

This package contains a Hi-Res chart graphics (plotting) library of routines that really helps with those custom graphics programs. Doing stock analysis, sales forecasts, scientific applications or even just plotting the monthly budget, & CHART makes the job much easier! Routines and functions include:

Page/Mode Display	Vertical Labels	Zoom/Unzoom
"Work" Page Select	Horizontal Labels	FP Program Splitter
Clipping Windows	Grid Pattern	3D to 2D Transform
Full User Scrolling	Log Scaling	Epson Screen Dump
Window Reverse	Arc Generation	Median Filter
Window Clear	Polar Charts	Window Frame
Axes Generation	Pie Charts	Area Fill
Fast Hires Load	Tic Mark Control	Fast Hires Save

& ARRAY

\$49.95*

Library Disk

This Library Package is dedicated to doing just about everything you ever thought possible (and some impossible) to an Applesoft array. With the tremendous number of routines in this package, you'll agree it's a bargain at twice the price. All routines work with two-dimensional arrays, many times with both string AND numeric data! In addition, routines are provided to perform virtually any usual mathematical operation on an entire array in ONE statement! For example, you could multiply every element in an entire array by a factor in one statement. You could also define a given array as the product of two other arrays. Over a year in development, this is a real bargain! Just some of the many routines are:

Fast Disk Read	Array Rounding	USR Function Library
Fast Disk Write	Matrix Identity	Fast FP Run
Search	Matrix Transpose	Fast Brun
Sort	Matrix Multiply	Hex Poker
Delimited Strings (1D)	Matrix Inverse	Keyboard Scan
Rename	Array Randomize	FP Onerr Fix
Clear	Array VAL	RP Rnd Fix
Redim (no data loss)	Array STRS	FP Return Fix
Row/Column Add	Row/Column Delete	Fast Garbage Routine

& SCREEN

\$49.95*

Library Disk

An extraordinary collection of screen related routines, this disk is dedicated to text display and input for the Apple II/IIe. For starters, the Screen Generator/Screen Processor allows you to design an entire input or output screen format, and then have the entire screen executed as one or two statements. This is useful for reports, menus, data entry and more. In addition to the Screen Processor, the following routines are also included:

Input Using	Speed Control	Control Char Display
Input With Editing	Print Pause	Lower Case Input
4 Way Scrolling	Keyboard Click	Special Line Scroller
Musical Keyboard	Printer Control	Center/Justify Strings
Screen Dump	Print Repeat	Clear Screen
Memory Dump	Memory Disassemble	Cursor Mouse Routine

& SAMPLER LIB II

\$49.95*

Library Disk

This disk is a collection of a wide variety of useful routines written by Peter Meyer, author of the Routine Machine, and other professional programmers.

Number Input	Catalog Modifications	String Execute
If-Then-Else	Disk File Data	Write Protect Sense
Controlled Get	Catalog to Array	FP Program Erase
Print Hex	File Selector	Speed Up Applesoft
Print Binary	FP Disk RWTS	Modified Chain
String Character Strip	Disk Sector Map	Slot Drv Vol Select
String Left/Right Fill	Find Free Sector	Disk Catalog Sort
String Overlay	Mark Sector	Push Button Read
Shellsort (1D)	Disk R/W String	

*Plus \$3.00 Shipping. (California Residents Add 6% Sales Tax.)

More to Come!

In addition to all these Library Packages, even more are in development!

The ROUTINE MACHINE and its Library Packages really WILL make the difference in your programming! Try out these programs and if you aren't convinced that the ROUTINE MACHINE is one of the best programming innovations to come along in years, we'll gladly refund your purchase price within 30 days of purchase, with return of product.

Ask your Local Apple Dealer or Ask Him to Contact:

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Game/Publisher Score Player

Hard Hat Mack, Electronic Arts	*20,305
Hazard Run, Artworx	*131,210
Heli-Lifter, Cload	*31,895
High Orbit, Gebelli	*28,860
Horizon V, Gebelli	*100,005
Human Fly, CPU	184
Ice Demons, Morningstar	*(1 Player) 46,200
Ice Demons, Morningstar	*(2 Player) 298,570
Intruder Alert, Dynacomp	*Level 4/4,584
Invasion Force, Computings	*79,760
It's the Pits, Sage Brush Software	*40,430
Jawbreaker II (Apple), Sierra On-Line	*536,790
Jellyfish, Sirius	*361,050
Journey to the Planets, JV Software	4,205
Jovian, Computer Shack	*28,650
Juggler, IDSI	*961,460
Jump Jet, Avant-Garde	*1,980
Jumpman, Epyx	*Loop/Level 25/51,900
Kamikaze, Hayden	600,075
Kid Grid, Tronix	*33,860
K-Razy Antics, CBS	246,000
K-Razy Kritters, CBS	*246,000
K-Star Patrol, CBS	*31,570
Labyrinth, Broderbund	*210,490
Laf Pak: Creepy Corridors, Sierra On-Line	*9,740
Laf Pak: Mine Sweep, Sierra On-Line	*8,354
Laf Pak: Space Race, Sierra On-Line	*14,500
Laser Defense, Med Systems	*44,960
Laser Maze, Avant-Garde	*87,083
Lazer Silk, Gebelli	*896,550
Leaper, Cedar Software	*12,400
Lemmings, Sirius	*449,604
Lunar Leeper, Sierra On-Line	*106,000
Mad Netter, Computer Magic	*57,823
Marauder, Sierra On-Line	*Level 2/290,700
Mars Cars, Datamost	*Level 28/59,080
Megalegs, Megasoft	*16,192
Meteor Mission Two, Big Five	*100,780
Microbe, Synergistic	13,716
Microwave, Cavalier	53,499
Miner 2049er (Apple), Micro Fun	*615,310
Miner 2049er (Atari), Big Five	*Zone 8, Station 10/582,205
Money Muncher, Datamost	705
Monster Mash, Software Farm	*207,768
Moon Landing, Herb Sandy	*1,017
Mutant, Great Lakes	*2,500,266
Nautilus, Synapse	*(1 Player) 127,500
Nautilus, Synapse	(2 Player) 321,000
Necromancer, Synapse	144,257
Neptune, Gebelli	31,820
Night Crawler, Softape	289,407
Night Falls, Omega Microwave	*Level 1/36
Nightmare Gallery, Synergistic	*225,575
Night Mission Pinball, SubLogic	*749,653,240
Outpost, Sirius	*31,267
Pacific Coast Highway (Atari), Datasoft	*146,940
Paddle Pinball, Radio Shack	*215,010
Pandora's Box, Datamost	*11,080
Peeping Tom, Micro Lab	17,900
Pegasus II, Sierra On-Line	*295,840
Penetrator, Melbourne House	*15,810
People Pong, Unique Software	*18,925
Pest Patrol, Sierra On-Line	*Level 29/10,336
Phaser Fire, Datamost	*7,045
Phobos, APX	*172,200
Photar, Softape	*108,236
Picnic Paranoia, Synapse	*144,360
Pie Man, Penguin	*425
Pillbox, Lord of the Games	*16,100
Plattermania, Epyx	*241,022
Pogoman, Computer Magic	673,430
Pollywog, Top Notch	*294,765
Preppie, Adventure Int'l	*37,810
Preppie II, Adventure Int'l	*Level 5/27,410
Protector, Synapse	63,000
Protector II, Synapse	*25,750
Qix, Atari	*134,543
Quadrant 6112, Sensible	*210,100
Raiders of the Lost Ring, Cavalier	*191,210

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In an attempt to head off such complaints, **Rich Dellinger** sent in his 966,518 in *Cyclod* with the request to "please, please believe this score is real. I am never going to play this game again, anyway. I will not go through that torture again. I did it fairly and didn't cheat at all. I started at 7:00 p.m. and I finished off my last man at 1:40 a.m. I was too tired to keep going so I killed off my last two men."

But genuine or fake, honest or devious, this is novice stuff. Those of you who've been with us for a while have probably already noticed the return of a familiar name. Yes, it's for real: He strikes back from the grave. **Norman Fong** doth protest his innocence, maintaining that it took him "about five to six hours" to get his ten mil-plus, verified, in *Defender*, and promising to do unprintable things to anyone who says he cheated. "I assure you I didn't cheat. I wish I knew how!" Frankly, Norman, we're glad to have you back. Maybe we're just sentimental old fools, but it always seemed to us like you'd been convicted on circumstantial evidence, and... well, it's just nice to know we'll have the future opportunity to publicly rake you over the coals all over again. Welcome back, fella.

Len Marinaccio has answered **Chris Athanas's** challenge over *Attack Force* with a closely reasoned two-page letter (single-spaced) ending with, "Do me a favor. Since I do not play this game anymore, it is up to you to beat Kevin. I don't have access to a TRS-80 anymore. I'm using an Apple now." The torch is passed.

Now it's time to go into the random-number generator and reward three worthy individuals from last issue's high scores. In honor of the software price wars and all the low-priced games now available, we'll make it \$19.95. And the winners are:

Apple: Mike Mariant, *Neptune*
 Atari: Rod Bonios, *Centipede*
 Overall: Buell Hollister III, *Epidemic*

Send us your addresses and we'll send you your money. Apologies to **Mike Wilkins**, a winner last issue for *Hungry Boy*, for our spelling of his name, and to his mom for the state of our masthead. (Honest, Mrs. W., they make us say those things!)

We have to cut Highlines short this time—and all foreseeable times—to make room for the Hall of Fame. You begged for it; you pleaded; you roared; you held your breath until you turned blue: These are the all-time, unbeaten, maybe unbeatable scores that ran so long in the mag that we had to retire them undefeated. But now it's here and it's hot. Even as we went to press, "southern rebel computer freak" **Andrew Mariner** displaced **Matt Sesow** in *Borg* by a thousand points. We have created a monster.

Hall of Fame

The mightiest of the mighty. Any scores submitted in contest to any of the below must be verified.

They must be accompanied by a complete address and phone number.

They must be accompanied by a detailed description of the progress of play of the winning game.

All verifications are subject to check.

ABM. Peter Sivo, 92,500
Alien Ambush, Derin Basden, 84,600
Alien Descent, Chris Athanas, 164,350
Alien Rain, Ron Bunch, 1,103,000
Alien Typhoon, Clark Alyea, 886,480

Andromeda, Joey Grisaffi, 118,000
Autobahn, Patrick Moran, 2,183
Avalanche (Atari), Brian Hall, 1,812
Beer Run, Robert Skell, 12,152
Bezman, Harry Ilg, 227,873
Blister Ball (2 Player), Neil Radick and Kerry Shetline, 7,164
Borg, Andrew Marriner, 19,160
Cannonball Blitz, Bill Shean, 1,390,120
Canyon Climber (Atari), Terry Rora, 92,800
Caverns of Mars, Tak Szeto, 796,900
Ceiling Zero, Denise Achram, 71,490
Chipout, Jason Meggs, 21,630
Chomper, Ed Mixon, 29,100
Clowns and Balloons, Dave Albert, 281,820
Crossfire (Apple), Brian Condon, 1,120,310
Crossfire (Atari), John Shaw, 2,000,770
Dark Forest, Allen Holland, 16,364
Datestones of Ryn, Eric Vesper, 5,530
David's Midnight Magic, Brian Whitworth, 2,803,110
Dodge Racer, Ed Mixon, 5,350
Escape, Dan Steele, 245,400
Galactic Chase, King Mon Yee, 40,000
Galactic Empire, Jeff Parrish, 3,217
Galaxy Wars, Brian Donnelly, 53,700
Gamma Goblins, Bob Farr, 18,160
Genetic Drift, Tom Bredehoft, 1,020,000
Gold Rush, Lee Stafford, 2,136,000
Golden Mountain, Scott Sanchez, 2,202,400
Hadron, Greg Bartlett, 604,765
Head-On, Steve Cloutier, 234,580
Hungry Boy, Mike Williams, 43,770
Hyper Head-On, Bob Elvey, 85,890
Intruder Alert, Dan Perrigan, 4,584
Jawbreaker I (Apple), Horace Gower, 280,615
Kayos, Randy Feldman, 51,460
K-Razy Shoot-out, Daniel Rosman, 35,270
Laf Pak: Apple Zap, David Duplantis, 44,025
Mar Tesoro, Michael Prater, 149,561,409
Meteoroids in Space, Robert Pettit, 555,335
Missile Attack, Chris Athanas, 32,580
Missile Defense, Bruce Schlickbernd, 429,000
Mission Escape, Steve Allen, 3,161
Morloc's Tower, John Coffee, 29,253
Mouskattack (Apple), Mark Zeitler, 89,100
Mouskattack (Atari), Jeff Connor, 240,100
Outpost, Charles Destrempe, 31,267
Pac-Man, King Mon Yee, 422,860
Pathfinder, Brian Hall, 25,254,326
Phantoms Five, Steve Rothenberg, 42,670
Pig Pen, Buell Hollister IV, 344,640
Planetoids, Jason Meggs, 584,160
Pulsar II, Eric Vesper, 61,968
Raster Blaster (Atari), David Taylor, 1,285,900
Rear Guard (Atari), Joey Grisaffi, 77,530
Red Alert, Michael Yang, 82,800
Roach Hotel, Mike Post, 12,350
Sabotage, Steve Cloutier, 86,431
Shamus, Jonathan Hopwood, 223,080
Shooting Gallery (Apple), Steve Rothenberg, 3,495
Slime, Terry Rora, Storm 34/227,730
Snack Attack (Apple), Chris Wysocki, 22,984
Snake Byte (Apple), Lisa Kislan, 2,698,800
Sneakers (Apple), Marc Brodsky, 1,035,982
Space Album: Death Star, Dave Ness, 1,391
Space Album: Tail Gunner, Charles Destrempe, 53,010
Space Quarks, Clark Aleya, 31,870
Space Warrior, William Tung, 44,441
Speedway Blast, Tommy Yang, 6,342,146
Star Dance, Michael Steiner, 3,605
Star Raiders, John Broas, 6,342,146
Star Thief (1 Player), Clark Aleya, 30,110
Star Thief (2 Player), Craig Wilson, 48,280
Star Warrior, Ron Felder, 1,872
Suicide, Joey Grisaffi, 97,030
Super Invader, Chris Wysocki, 99,840
Super Taxman II, Scott Brown, 225,490
Taipan, Dave Butler, \$12.9 trillion
Tanktics, Jeff Zeissner, 606
Taxman, Eggy Paul, 999,980
Threshold (Atari), Ron Felder, 309,500
Torax, Dale Archibald, 34,780
Track Attack (Apple), Brian Donnelly, 53,341
Track Attack (Atari), Chris Conway, 40,497
Tranquility Base, Brian Donnelly, 1,800
Tsunami, Kerry Shetline, 12,336
Twerps, Dick Nitto, 6,250
Wormwall, Eric Vesper, 120,380

Game/Publisher Score Player

Rear Guard (Apple), Adventure Int'l *600,423
Repton, Sirius *6,900,420
Rescue at Rigel (Apple), Epyx 1,557
Roach Hotel, Micro Lab *13,510
Robot Attack, Big Five 19,210
Robot Battle, Universal *4,515,800
Rocket Command, Norell *1,028,385
Ruski Duck, Gebelli *375,000
Sabotage, Sierra On-Line 99,893
Scarfan, Cornsoft 300,740
Sea Dragon, Adventure Int'l *263,525
Seafox, Broderbund *1,940,050
Sentinel I, In Home *5,513
Serpentine, Broderbund *Level 68/7,100,950
Shark Trap, Broderbund *10,705
Sheila, H.A.L. Labs *464,900
Shooting Arcade, Datasoft *94,740
Shooting Gallery (Atari), Analog *12,830
Shuttle Intercept, Hayden *13,500
Sigma 7, Bandinelli *1,800
Snake, Heath *Progressive/282,550
Snake (IBM), PDQ Software *468
Snake Byte (Atari), Sirius *25,590
Snapper, Silicon Valley 144,759
Sneakers (Atari), Sirius *Level 4/39,174
Space Ace, London Software *21,510
Space Adventure, Sierra *1,000
Space Album: Tail Gunner, California Pacific *53,010
Space Avenger, Cload *10,350
Space Eggs (Apple), Sirius *75,115
Space Eggs (Atari), Sirius *2,530
Space Invasion, SSM *6 Racks/74
Space Kadette, Funtastic 143
Space Raiders, USA *Galaxy Commander: 296
Space Warp, Radio Shack *Level 8/255
Spectre, Datamost *18,400
Spider Raid, Insoft *5,540
Spy's Demise, Penguin *63,968
Star Blaster, Piccadilly *416,000
Starbowl Football, Gamestar *College Level/28
Star Island, Binary Software *56,720
Star Maze, Sir-tech Level 16/172,925
Star Warrior, Epyx 3,731
Stellar Escort, Big Five *19,300
Stellar Invaders, Apple *208,330
Stellar Shuttle, Broderbund *17,200
Stickybear Bop, Xerox Educational *Level 4/225,040
Stratos, Adventure Int'l *Expert/82,100
Strike Force, Melbourne House *433,900
Succession, Piccadilly 10,300
Super Breakout, Atari *Progressive/3,337
Super Nova, Big Five *222,310
Super Puckman, ADO Software *64,140
Survivor, Synapse *311,920
Swashbuckler, Datamost 4,50
Tanktics, Avalon Hill *854
Teleport, Cavalier *Level 12/13,150
Tharolian Tunnels, Datamost *134,607
Thief, Datamost 303,600
Threshold (Apple), Sierra On-Line *751,000
Thunderbird, Urban Software *31,450
Thunder Bombs, Penguin *20,360
Track Attack (Apple), Broderbund 53,341
Tubeway, Datamost *90,801
Tumblebugs (Apple), Datasoft 15,130
Tumblebugs (Atari), Datasoft *38,785
Tunnel Terror, Adventure Int'l *252,780
Turmoil, Sirius *83,540
Type Attack, Sirius 179,975
U-Boat Command, Synergistic *2,189
Viper, RDA Systems *5,995
Vortex, Datamost *16,250
Wall War, Sierra On-Line *61,470
Warp Destroyer, Piccadilly *89,950
Way Navy, Sirius *88,780
Wizard of Wor, Roklan *454,200
Zargs, Insoft *3,715
Zaxxon, Datasoft 77,800
Zenith, Gebelli *900,450
Zero Gravity Pinball, Avant-Garde *19,100

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