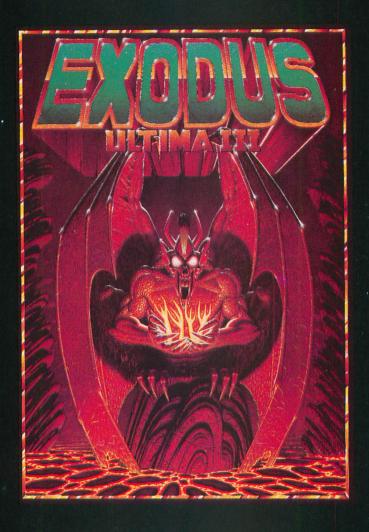


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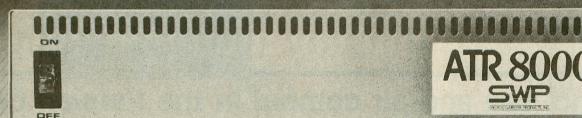
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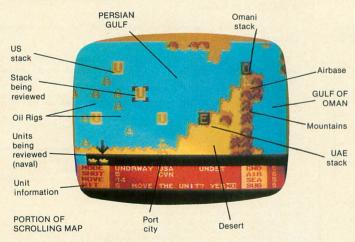
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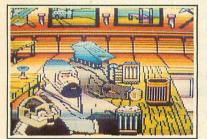
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F	E	A	T	U	R	E	S

ADVENTURE TRENDS by Michael Ciraolo New directions in fantasy	2
COMING ADVENTURES by Nat Friedland State-of-the-art interactive fiction	2
WE SOLVED 8 INFOCOMS! by Bett Long and Chuck Landgrave Four of them in a single week	er3
SIMULATION ADVENTURES by Charles Jackson Flying your Atari	4
CREATE YOUR OWN CURSOR by Jerry White A cursor construction set Type-IN SOFTWARE	9

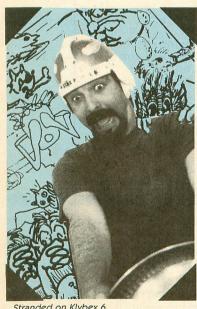


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NEW TYPE-IN LISTINGS SECTION

51



Stranded on Klybex 6 with J.D. Casten 44

-	-	 . A	0	-	A A	_	N 1	-	-
) -		N	800	$\Lambda\Lambda$	E			-
L		 /	1		IVI		IN		0

DEPARIMENTS		
STARTING OUT		
FIRST LESSON IN ASSEMBLY LANGUA	GE	
by Mark Andrews		19
COMMUNICATIONS		
ADVENTURES ON-LINE by Michael Ciraolo		19
BONUS GAME		
ADVENTURE ISLAND by Robert Lee	TYPE-IN SOFTWARE	49
GAME OF THE MONTH		
ADVENT X-5 by J.D. Casten	TYPE-IN SOFTWARE	4
BONUS GAME		,
OMNIVENTURE by Jerry A. Lemaitre	TYPE-IN SOFTWARE	40
TOOLBOX		
WINDOWS by Jerry White and Dave Culbertson	TYPE-IN SOFTWARE	7:

	The second second		
I/O BOARD	6	NEW PRODUCTS	85
HELP!	10	SHOPPER'S GUIDE	86
ANTIC'S SOFTWARE STORE	70	ADVERTISER'S LIST	88
PRODUCT REVIEWS	76		



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i/o board

THE ANTICS OF SLYVESTER BIFFDROP

This amounts to a fan letter for J. D. Casten. Escape from Epsilon and Risky Rescue are exceptionally challenging! One of the difficulties with Escape is the game only utilizes the right and left positions of the joystick. If a diagonal is accidentally selected, Slyvester Biffdrop stops running and usually dies. A little change will keep him running if the joystick is pushed into the diagonal positions. Look at line 120 in the program. Replace the first part of the line, which reads IF ST=247 with IF ST>244 AND ST<248. (The rest of the line continues unchanged.

Similary, change line 125 from IF ST= 251 to read IF ST>248 AND ST<252 (continue with the rest of line).

Frank Walters Panama City, FL

SHOPPER'S FRIEND

Just a word or two about your magazine. I've subscribed for over a year, ever since I purchased my Atari. Without your help I would not have been able to put together the economical system that I have in my home, including the Atari 800, Gemini 10X, Ape-face, and the Indus disk drive.

Your reviews have allowed me to obtain the best buys on the market in hardware and software. In my area of Middle Georgia, there are no computer dealers where a hands-on test of products is possible, so it's vital that there is a reliable magazine such as **Antic** to give the low down on the latest software and hardware. Keep up the good work, and thank you.

Pete Miller Warner Robins, GA

MAGNETIC ANTIC

Why don't you have your public domain software available on disk/cassette?

Tony Gray Toronto, Canada

We do! We have 14 disks and four cassette selections available, covering games, utilities, graphics and music. Also, each issue of Antic is now available prepackaged with a disk. For details, see the Antic Software Library page in this issue.

—ANTIC ED

DATA ABOUT DATA FILES

I've received a great deal of help from Antic with database programming. Now I'd like to use random-access data files with Microsoft BASIC, but I'm having trouble finding information.

Jerry Steinberg Brooklyn, NY

Atari Microsoft BASIC uses a NOTE command for random access, the function of which is identical to that of the Atari BASIC's NOTE. However, MSB uses PRINT AT instead of POINT. See the MSB manual's discussion of NOTE and AT, and Jerry White's article "Update Disks With NOTE and POINT," (Antic, April 1984). You'll have to revise Jerry's program somewhat to be compatible with MSB. —ANTIC ED

GRAPHICS 9 DEMO

Greetings from Berlin! This short program is a demonstration of the Atari Graphics 9 mode.

10 GRAPHICS 9:SETCOLOR 4,1,0:5=10
20 FOR AS=55 TO 0 STEP -5:
FOR B=0 TO 24:C=B
30 IF B>11 THEN C=24-B:C=C+3
40 Z=AS+B
50 D=INT(SQR(B*(24-B)))/2:COLOR 15-C
60 PLOT Z,AS+7-D
70 DRAWTO Z,AS+7+D:COLOR C
80 DRAWTO B,180-AS+3:NEXT B:NEXT AS

Oliver Baczkowski Fed. Rep. of Germany

PRINTER PERPLEXITIES

90 GOTO 90

I have an Okidata Microline 82-A printer with an Atari 800. I am unable to print inverse characters or dump graphics and charts to the printer. I was told by the former Okidata dealer that I had the wrong computer and "Welcome to the computer world." Is there any help for me, or do I need different equipment?

B.E. Kilgore Santa Cruz, CA

Most dot-matrix printers require special software, such as Lister-Plus, Megafont, or PrintWiz to print hard copy of the

i/o board

Atari inverse and special characters because Atari provides more characters than other computers, not because you have the wrong computer.

According to Okidata, their Microline 82-A, as sold, does not come with the necessary graphics equipment for a special character or screen dump. For \$49, however, you can purchase the Okigraph 1 from Okidata. This is a set of chips which, when plugged into your printer, will allow it to bandle dotaddressable graphics. We were warned, however, that in the 82-A, unlike the Gemini 10X or Epson FX-80, the Least Significant Bit fires the top pin on the Okidata, whereas the Most Significant Bit does the same on the Gemini and Epson. Also, the printer codes are different, so you might want to contact the makers of the software mentioned above and hear what they have to say. -ANTIC ED

CASSETTE AUTO BOOT

I have an answer to Eddie Leach's problem in the September 1984 issue of Antic, "Cassette Auto Boot?" He needed a fully automatic boot capability for his 48K Atari 400 for an alarm system he was building.

Add these two lines to your program, and use a GOTO 32750 to boot your cassette.

32750 RESTORE 32760:CLR
32755 DIM X\$(40):POKE 764,
32:FOR X=1 TO 19:READ Y:X\$
(X,X)=CHR\$(Y):NEXT X:X=USR
(ADR(X\$))

32760 DATA 162,253,154,169,183,72,169,84,72,169,4,32,182,187,169,255,76,4,187

Brian Kummer Cincinnati, OH

DOS AND ATARIWRITER

Here's a discovery for readers that have a disk drive with OSS DOS XL 2.2 or 2.3 and use Atariwriter. I've found that you cannot use this DOS with this word processor. To fix this incompability problem, delete the file called STARTUP.EXC.

Brant Sears Sapulpa, OK

A BASIC DIRECTORY

I have used my Atari for four years and I've devised a simple way to get the directory from the disk in BASIC. Go to DOS and type

C [RETURN] E:,D:DIR [RETURN]

DIM N\$(15):CLOSE #5:OPEN # 5,6,0,"D:*.*":FOR I=1 TO 6 4:INPUT #5,N\$:? N\$:NEXT I: CLOSE #5 [RETURN]

Then, in BASIĆ, type
ENTER "D:DIR"

This will also generate an Error 136, which can be ignored, and will give you the directory.

I'm sure a lot of your readers will like this very short but useful utility.

Kenny Ksajikian Van Nuys, CA

BLINKING CURSORS

In the August I/O Board we printed a request for a blinking cursor routine ("Grab Bag"). Our thanks to everyone who contributed to the subsequent torrent of letters and routines. All but one of these manipulated address 755 which caused the cursor and all inverse characters to blink. The remaining program blinked only the cursor, but required several keystrokes before the blinking began. Please see Jerry White's "Create your own cursor" in this issue for a useful blinking cursor.

Another request sought a cursor redefined as an ATASCII number. Below is Alan Budelier's solution. —ANTIC ED

0 ASCII=42:REM ASCII CHARA

10 DATA 165,107,240,3,76,9 8,228,165,84,201,24,208,3, 76,98,228,165,80,24,105,12 8,197,93,240,3,76,98,228

20 DATA 160,0,165,206,145, 94,76,98,228

30 FOR I=1536 TO 1572:READ A:POKE I,A:NEXT I:POKE 54 286,0:POKE 548,0:POKE 549, 6:POKE 54286,64

40 IF ASCII<32 THEN ASCII= ASCII+64:GOTO 60

50 IF ASCII<96 AND ASCII>= 32 THEN ASCII=ASCII-32

60 POKE 206, ASCII

ACTION!

I've been programming with Action! for a few months now and wrote the following demonstration program, which shows the speed of the Action! language. This routine puts three thick bars on the screen. They will rotate upward in 128 unbroken colors while the background colors move down.

Try running this in a dark room for best results. This might be just the thing to show the kid down the street with his brand new Apple IIc. But don't forget to remind him that his jaw is on the floor.

```
PROC pretty()
   DEFINE key="Peek (764) <255"
   CARD SC
   BYTE wsync=5D40A.
        vertcnt=5D40B,
        color@=$D01A,
        CO10F1=5D018,
        counter, chgcolor,
        upcolor, i, loop,
        downrolor
   Graphics (23)
   Poke (264, 255)
   SC=PeekC(88)
   SetBlock(5C+75*40,40*20,255)
   SetBlock(SC+37*40,40*20,255)
   SetBlock (SC, 40*20, 255)
   FOR counter=1 to 9
      upcolor=chgcolor
      downcolor=chgcolor
         DO
          wsync=0
          color@=downcolor
          color1=upcolor
          upcolor==+1
         downcolor==-1
          UNTIL vertent&580
          OD
      nn
   chgcolor==+1
   UNTIL key
   OD
RETURN
```

Brian Abbot Coos Bay, OR

HANDICAPPED PROGRAMMERS

I'd appreciate any keyboard reprogramming suggestions to make it easier for one-handed persons to use the Atari 800 and 800XL. Specifically we'd like to simplify commands where two keys must be depressed at the same time—such as CONTROL and cursor keys.

A.B. Fox, Jr., Principal Bad Kissingen D.O.D. School

continued on next page

i/o board

COMPUTER BRAINWASHING?

This short program, called "brainwash," contains eight FOR/NEXT loops.

5 D=500:Q=100:E=10:P=100:R =5

6 FOR 5=0 TO 15

10 GRAPHICS 18:POSITION 7, 3:? #6;"PROJECT":POSITION 6,6:? #6;"BRAINWASH"

11 D=D-1:Q=Q+180:D=D-Q:E=E

-1:P=P-15:R=R-1 20 FOR ZZZ=0 TO D:NEXT ZZZ

:FOR A=0 TO E:POKE 710,RND (0)*255:POKE 711,RND(0)*255:POKE 712,RND(0)*255

30 SOUND 0,10,10,8:FOR B=0 TO P+5:NEXT B:SOUND 0,55, 10,12:FOR B=0 TO P+5:NEXT B:NEXT A

33 FOR C=0 TO R

35 GRAPHICS 23:COLOR RND(0) *3:PLOT 0.0:DRAWTO 156.0:DRAWTO 156.94:DRAWTO 0.94:DRAWTO 0.0:DRAWTO 156.94
40 DRAWTO 156.0:DRAWTO 0.9

40 DRAWIU 156,0:DRAWIU 0,9
4
45 FOR 777-0 TO DINEUT 777

45 FOR ZZZ=0 TO D:NEXT ZZZ:NEXT C

50 NEXT S

100 SOUND 0,0,0,0:GRAPHICS -18:POSITION 7,5:? #6;"WHO A!!"

110 FOR G=0 TO 1000:NEXT G

Chris Bluethman Perry, OK

FOR SIMPLICITY'S SAKE

I enjoyed Mr. Wilcox's article on Boolean logic (August 1984). The article suggests a problem that has bothered me for some time.

I have programmed computers and taught computing for over 20 years. I've noticed that too many programmers use their programs to satisfy the needs of their own egos and not the needs of the people that are intended to use the programs. They use their programs as a means of showing their skills of inventiveness instead of thorough thoughtfulness. Generally, the job does not get done in the simplest method.

Referring to the example near the end of "Logic According to Boole," Mr. Wilcox indicated that "the resulting code is more difficult to debug." He did not mention, however, that the enhanced code took 33 more bytes than the "IF . . . THEN" ver-

sion nor that it took 16 jiffies (one jiffy is about one sixtieth of a second) to cycle through the six conditions as opposed to seven jiffies for the simpler, more understandable method.

As hobbyists or programmers, we must remember that in the long run the simplest programming methods will have the most staying power.

> Gene Barton Chatsworth, CA

BEST WISHES

How delighted we, of ROM Magazine, were to meet you and your staff. It was most kind of you to take the time from your obviously hectic C.E.S. schedule to stop at the ROM booth.

Bob and Peter hold the publication of **Antic** insuch high esteem and believe me, your visit to ROM's booth was the highlight of their C.E.S. trip.

Mrs. T.G. Cockroft General Manager, ROM Magazine Maple Ridge, Canada

Thanks for the visit and the kind words. Best wishes from the Antic Staff.

-ANTIC ED

COUNTING ON BANK STREET WRITER

I am a freelance writer using an Atari 800 and Bank Street Writer (Broderbund). How can I get a program to count words accurately? How much will it cost?

Cheryl Kennedy North Little Rock, AR

As far as we know, there is no commercial word-count program for Bank Street Writer. However, we wrote a short, fairly accurate BASIC program to do this, and it won't cost you a cent. Replace SAMPLE in line 10 with the name of your text file.

- 10 OPEN #1,4,0,"D:SAMPLE"
- 20 TRAP 100
- 30 GET #1,B
- 40 IF B<>32 and B<>142 THEN 30
- 50 GET #1,B:IF B=32 OR B=155 THEN 50
- 60 COUNT=COUNT + 1
- 70 GOTO 30
- 100 PRINT "Word Count = ";COUNT —ANTIC ED

WHAT PRINTER?

I am planning to buy a printer, but have not found one that is XL compatible and usable with Atariwriter. It has to be tractor feed, letter quality and relatively sturdy. Any ideas?

> M. Claudio Queens, NY

Watch for our upcoming printer issue. There will find all of your questions about printers, compatibility, buffers and screen dump programs answered.

-ANTIC ED

PEN PALS

I would like to thank you for the International Issue in March. After reading your magazine I wrote to Emanuel Sellner of Austria featured in that last issue. Now he and I are pen-pals. Now we've traded lots of games with each other. I hope all readers can get to know each other.

Hubert Hom San Francisco, CA

BLIND PROGRAMMER

After reading "Listening for Error Messages" in the I/O Board (Antic, August 1984), I decided to try to answer the request of a nameless programmer who is without sight. I admire the courage required to attempt using a computer without the aid of eyesight.

I've written a machine language routine that produces a steady beeping sound and monitors two key locations used by BASIC to handle errors—locations 166 and 185 (decimal). If an error occurs, the beeping lowers in tone. If the error takes place while a program is running, the tone is raised to its former pitch with one press of the combination of a shift key and the space bar, followed by [RETURN]. If the error occurs in the immediate mode, however, the previous combination must be entered twice to restore the pitch.

Fred Deutsch Simi, CA

Thank you, Fred. We've passed your solution on to the person who requested it.

—ANTIC ED

continued on page 10



Help Agent U.S.A. stop the fuzz plague. And you can win a trip to Washington, D.C.

The FuzzBomb is turning millions of men, women and children into mindless fuzzbodies. And Agent U.S.A. can't stop the devious plague spreader without your help.

But don't accept the assignment unless you're really prepared to stretch your mind. Because sharp eyes and quick reflexes aren't enough to stop the fuzz plague. You'll have to outthink and outplan the FuzzBomb as you pursue him around the country in super-fast rocket trains. And you'll have to remember state capitals, learn the time zones and figure out the quickest routes across the nation. If you don't, the fuzzbodies will turn you into one of them.

Become one of the few super-agents to defeat the FuzzBomb and you may win a trip to intelligence head-quarters in Washington, D.C. What's more, even if you

never catch the evil one, tell us what you like about the game and you can become an instant winner of an Agent U.S.A. knapsack (see package for contest details).

Agent U.S.A. needs you now. So sign up where you usually buy your software. Or write to Scholastic Inc., Dept. EW, 730 Broadway, New York,

Do it before the fuzz plague comes to your neighborhood!



help!

RECALL PROBLEMS

If you typed in "Recall" (Antic, August 1984, page 12), you're probably having trouble getting it to work. In order for the program to work correctly, the variable QQ\$ in line 10000 must be the first variable entered in the program. Here's how to get the working version:

- 1. ENTER or LOAD the version of RECALL that you've typed in.
- 2. LIST "D:RECALL.LST" (Cassette users LIST "C:" onto another cassette). If you already have a LISTed version, you may omit this step.
 - 3. Type NEW [RETURN].
 - 4. Type DIM QQ\$(1) [RETURN].
- 5. ENTER "D:RECALL.LST" (Cassette users rewind the cassette from step 2 and ENTER "C:").
- 6. The program now in your computer should work correctly. SAVE (don't LIST)

a version for permanent storage.

If you haven't already typed the program in, simply type DIM QQ\$(1) [RETURN] *first*, then enter the program.

SORRY, WRONG NUMBER

There was a typographic error in the September 1984 Communications Department article. The phone number for Cassie Stahl's bulletin board should be (408) 289-9151.

BUGS IN THE CAVERNS

Mr. Ramos's "Creepy Caverns" (Antic, August 1984) is a very imaginative game and he should be congratulated. I did run into two errors in the listing which caused the program to stop:

1. I often got an Error 3 at LINE 4105 when shooting arrows. I checked the values and found that T had a value of 2.

Since LINE 10 set the maximum values of the two-dimensional array M0(1,5) and T is higher than 1, that caused the error. I changed the DIM value of M0 in LINE 10 to read M0(P,5).

2. Receiving an Error 9 at LINE 349 caused me to check LINE 349, where I found a zero instead of the letter O. The error no longer occurs when the line is changed from PEEK(1607+Y0) to PEEK 1607+YO).

Frank Walters Panama City, FL

SHORTCUTS

There's an error in one of the listings for "Shortcuts to Success" (Antic, June 1984). In Listing 2 on page 89, line 490 should read:

490 CHACT = \$02F3 ;CHAR. MODE REG

October Listing Errors

Missing division signs and lines

A number of division signs [/] were left out of listings in the October, 1984 Antic, due to typesetting telecommunications problems. (We again began setting the listings on an inhouse dot matrix printer, starting in the November issue.) On the October magazine pages, the lines show an empty space where the missing division sign should appear.

Following are the lines where division signs are missing. We reprint here only the portions of the lines that surround the missing [/] characters.

MOLE ATTACK

Page 53 — line 20: POKE 756,S/256 Page 54 — line 1060: T=18-L/2 Page 55 — lines 1090 & 1110: PEEK(20))/60) line 1140: 756,S/256 line 1160: IF AB/2<>INT(AB/2) line 1170: AC = 1 TO AB/2 line 1330: 756,S/256

PLUS MINUS

Page 56 — line 469: SOUND 0,40,10,N/4 line 9020: CHBASE/256

Page 57 — line 10014: ()*, ./:

BOUNCING BALL

Page 57 — line 110: INT(X/256)

ANTIC 4/5 ANIMATOR/EDITOR (5 listings)

Page 59 — line 84: A N T I C 4/5

Page 63 — In an unrelated error, the

following two lines were left out of listing 3:

2820 FOR J=1 TO 10: FOR I=0 TO 8 2822 K=USR(COPY,48,F(10+I),AW)

Page 66 — "HYPNO.BAS" line 210: ADDRESS/256)
"HYPNO.BAS" line 220: (BYTES/256)
"DEMO" line 10: ERASE/PRINT

DIVER

Page 69 — line 550: #6;"/"
line 630: 0)*20)/(SK+1
line 650: *200)/(SK+1))
line 670: *15)/(SK+1)



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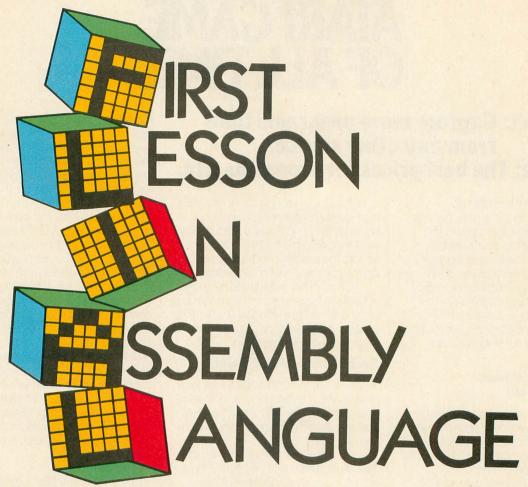
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Excerpt from Atari Roots — a terrific new book

by MARK ANDREWS

Start programming immediately in machine language! Turn on your Atari computer and type in this program. Then RUN it, type a few words, and you'll see something very interesting on your computer screen.

10 REM**"D:HEADSUP.BAS"**

20 REM**A MACHINE LANGUAGE PROGRAM**

30 REM**THAT YOU CAN RUN**

40 REM**STANDING ON YOUR HEAD**

50 REM

60 GRAPHICS O:PRINT

100 POKE 775,4

110 OPEN #1,4,0,"K:"

120 GET #1,K

130 PRINT CHR\$(K);

140 GOTO 120

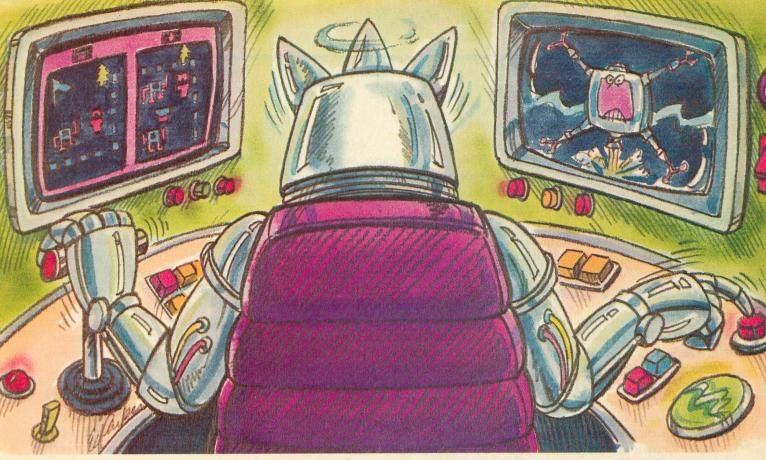
This article is an excerpt from Atari Roots — A Guide to Atari Assembly Language. Written by Mark Andrews and published by Datamost (\$14.95), this new paperback book is an excellent introduction to Assembly Language programming for Atari computerists.

This is, of course, a BASIC program. Line 60 clears your computer screen with a GRAPHICS 0 command. Line 110 opens the Atari keyboard as an input device. Then, in lines 120 through 140, there is a loop that prints typedin characters on your screen. But the most important line in this program, the line that makes it do what it's supposed to do, is line 100.

The active ingredient of line 100, the instruction POKE 755,4 is actually a machine language instruction. In fact, all POKE commands in BASIC are machine language instructions. When you use a POKE command in BASIC, what you're actually doing is storing a number in a specific memory location in your computer. And when you store a number in a specific memory location in your computer, what you're doing is using machine language.

UNDER THE HOOD OF YOUR ATARI

Every computer has three main parts: a Central Processing Unit (CPU), memory (usually divided into two blocks called Random Access continued on page 14



Show us the face of Max the Master Robot. And you may win your own talking robot.

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To make things even tougher, Max has taken a vow not to reveal his face until you conquer all his robots. Including Zweli the Invisible.

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But please remember, only a handful of people have gone face-to-face against Max and survived.

HUHANS:



FIRST LESSON IN ASSEMBLY LANGUAGE continued from page 12

Memory (RAM) and Read Only Memory (ROM), and Input/Output (I/O) devices.

Your Atari's main input device is its keyboard. Its main output device is its video monitor. Other I/O devices that an Atari computer can be connected to (or interfaced with) include telephone modems, graphics tablets, cassette data recorders, and disk drives. In a microcomputer, all of the functions of a central processing unit are contained in a MicroProcessor Unit (or MPU). Your Atari computer's MPU, as well as its CPU (Central Processing Unit), is a circuit using Large Scale Integration (LSI) called a 6502 microprocessor.

THE 6502 FAMILY

The 6502 microprocessor, your computer's command center, used not only in Atari computers, but also in personal computers manufactured by Apple, Commodore, and Ohio Scientific. That means, of course, that 6502 assembly language can also be used to program many different personal computers.

THE FOUNTAINS OF ROM

Your computer has two kinds of memory: Random Access Memory (RAM) and Read Only Memory (ROM). ROM is your Atari's long-term memory. It was installed in your computer at the factory, and it's as permanent as your keyboard. Your computer's ROM is permanently etched into a certain group of chips, so it never gets erased, even when the power is turned off. For most home computer owners, that's a good thing. Without its ROM, your Atari wouldn't be an Atari, In fact, it wouldn't be much more than an expensive, high tech doorstop.

The biggest block of memory in ROM is the block that holds your computer's *Operating System*, or *OS*.

Your Atari's Operating System is what enables it to do all of those wonderful things that Ataris are supposed to do, such as accepting inputs from the keyboard, displaying characters on the screen, and so on. ROM is also what enables your computer to communicate with peripherals such as disk drives, cassette recorders, and telephone modems. If you own one of Atari's XL series of computers, your unit's ROM package also contains a number of added features, such as a built-in self-diagnostic system, a builtin foreign language character set, and built-in BASIC.

RAM IS FLEETING

ROM, as you can imagine, was not built in a day. Your Atari's ROM package is the result of a lot of work by a lot of assembly language programmers. RAM, on the other hand, can be written by anybody — even you. RAM is your computer's main memory. It has a lot more memory cells than ROM does, but RAM, unlike ROM, is fleeting. The trouble with RAM is that it's erasable, or, as a computer engineer might put it, *volatile*.

When you turn your computer on, the block or memory inside it that's reserved for RAM is as empty as a blank sheet of paper. And when you turn your computer off, anything you may have in RAM disappears. That's why most computer programs have to be loaded into RAM from mass storage devices such as cassette data recorders and disk drives. After you've written a program, you have to store it somewhere so it won't be erased when the power goes off and erases your RAM.

Your computer's RAM, or main memory, can be visualized as a huge grid made up of thousands of compartments, or cells, something like tiers upon tiers of post office boxes along a wall. Each cell in this vast memory matrix is called a memory location, and each *memory location*, like each box in a post office, has an individual and unique *memory address*. The analogy between computers and post office boxes doesn't end there. A computer program, like an expert postal worker putting mail in post offices boxes, can get to any location in its memory about as quickly as it can get to any other. In other words, it can access any location in its memory at random. And that's why user-addressable memory in a computer is known as *random access memory*.

ITS "LETTERS" ARE NUMBERS

Our post office analogy isn't absolutely perfect, however. A post office box can be stuffed full of letters, but each memory location in a computer's memory can hold only *one number*. And that number can represent only *one of three things*:

- 1. The stored number itself.
- 2. A code representing a typed character.
- 3. A machine language instruction.

WHAT NEXT?

When a computer goes to a memory location and finds a number, it must be told what to do with the number it finds. If the number equates to just a number, then the computer must be told why the number is there. If the number is a code representing a typed character, then the computer must be told how the character is to be used. And if the number is to be interpreted as a machine language instruction, the computer must be told that, too.

ITS INSTRUCTIONS ARE PROGRAMS

The instructions that computers are given so that they can find and interpret the numbers stored in their memories are called *computer programs*. People who write programs are, of course, called *programmers*. The languages that programs are writ-

starting out

ten in are called *programming* languages. Of all the programming languages assembly language is the most comprehensive.

RUNNING A MACHINE LANGUAGE PROGRAM

When your computer runs a program, the first thing it has to be told is where the program has been stored in its memory. Once it has that information, it can go to the memory address where the program begins and take a look at what's there. If the computer finds an instruction that it's programmed to understand, then it will carry out that instruction. The computer will then move on to the next address in its memory. After it follows the instruction it finds there, it will move on to the next address, and so on.

The computer will repeat this process of carrying out an instruction and moving on to the next one until it reaches the end of whatever program has been stored in its memory. Then, unless it encounters an instruction to return to an address within the program or to jump to a new address, it will simply sit there, patiently waiting to receive another instruction.

COMPUTER LANGUAGES

As you know, programs can be written in dozens of computer languages such as BASIC, COBOL, Pascal, Logo, and so on. Languages like these are called high level languages, not because they're particularly esoteric or profound, but because they're written at too high a level for a computer to understand. A computer can actually understand only one language, machine language, which is written entirely in numbers. So before a computer can run a program written in a high level language, the program must somehow be translated into machine language.

Programs written in high level continued on next page

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languages are usually translated into machine language using software packages called *interpreters* or *compilers*. An interpreter is a piece of software that can convert a program into machine language *as* it is being written.

A compiler converts high level languages into machine language *after* they are written. COBOL, Pascal and other high level languages are usually translated into machine language with compilers.

MACHINE LANGUAGE ASSEMBLERS

Interpreters and compilers are not used in writing assembly language programs. Assembly language programs are almost always written with the aid of software packages called assemblers. A number of assemblers for Atari computers are available, including OSS's very advanced MAC/65. An assembler doesn't work like an interpreter, or like a compiler. That's because assembly language is not a high level language.

One could say, in fact, that assembly language is not really a programming language at all. Actually, assembly language is nothing more than a *notation system* used for writing machine language programs using alphabetical symbols that human programmers can understand.

What we're trying to get across here is the fact that assembly language is totally different from every other programming language. When a high level language is translated into machine language by an interpreter or a compiler, one instruction in the original programming language can easily equate to dozens — sometimes even hundreds - of machine language instructions. When you write a program in assembly language, however, every assembly language instruction that you use equates to just one machine language instruction with exactly the same meaning. In other words, there is an exact oneto-one relationship between assembly language instructions and machine language instructions.

THE PROGRAMMER'S PLIGHT

Ironically, even though assembly language programs run much faster than programs written in high level languages, they require many more instructions and take much longer to write. One widely quoted estimate is that it takes an expert programmer about ten times as long to write an assembly language program than it would take him (or her) to write the same program in a high level language such as BASIC, COBOL, or Pascal.

On the other hand, assembly language programs run 10 to 1000 faster than BASIC programs, and can do things that BASIC programs can't do at any speed. So if you want to become an expert programmer, you really have no choice but to learn assembly language.

HOW MACHINE LANGUAGE WORKS

Machine language, like every other computer language, is made up of *instructions*. As we have pointed out, however, every instruction used in machine language is a number. The numbers that computers understand are not the kind that we're accustomed to using. Computers think in *binary numbers* — numbers that are nothing but strings of ones and zeros. Here, for example, is part of an actual computer program written in binary numbers (the kind of numbers that a computer understands):

It doesn't take much imagination to see that you'd be in for quite a struggle if you had to write long programs, which typically contain thousands of instructions, in binary style machine language. With an assembler, however, the job of writing a machine language program is considerably easier. Here, for example, is the above program as it would appear if you wrote it in assembly language:

CLC CLD LDA #02 ADC #02 STA \$CB RTS

You may not understand all of that, but you'll have to admit that it at least *looks* more comprehensible. What this program does, by the way, is add 2 and 2. Then it stores the result of its calculation in a certain memory location in your computer — specifically, memory address 203.

ASSEMBLY LANGUAGE AND BASIC COMPARED

Assembly language is written using three-letter instructions called mnemonics. Some mnemonics are quite similar to BASIC instructions. One assembly language instruction that's much like a BASIC instruction is RTS, the last instruction in the sample routine we just looked at. RTS (written 0110 0000 in machine language) means "RéTurn from Subroutine." It's used much like the RETURN instructions in BASIC. There's also an assembly language mnemonic that's similar to BASIC's GOSUB instruction. It's written JSR, and means to "Jump to SuBroutine." Its equivalent in binary coded machine language is 0010 0000.

continued on page 18



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FIRST LESSON IN ASSEMBLY LANGUAGE continued from page 16

Not all assembly language instructions bear such a close resemblance to BASIC instructions, however, An assembly language instruction never tells a computer to do something as complex as draw a line or print a letter on a screen, for example. Instead, most assembly language mnemonics instruct computers to carry out very elementary tasks such as adding two numbers, comparing two pieces of data, or (as we have seen) jumping to a subroutine. That's why it often takes vast numbers of assembly language instructions to equal just one or two words in a high level language.

SOURCE CODE AND OBJECT CODE

When you write an assembly lan-

guage program, the listing that you produce is called *source code*, since it's the source from which a machine language program will be produced. Once you've written an assembly language program in source code, you can run it through an assembler. The assembler will then convert it into *object code*, which is just another name for a machine language program produced by an assembler.

THE SPEED AND EFFICIENCY OF MACHINE LANGUAGE

Since assembly language instructions are so specific (you might even say primitive) it obviously takes lots of them to make up a complete program; many, many more instructions than it would take to write the same program in a high level language. Ironically, machine language programs still

take up less memory space than programs written in high level languages do.

That's because when a program written in a high level language is interpreted or compiled into machine language, big blocks of machine code must be repeated every time they are used. But in a well-written assembly language program, a routine that's used over and over can be written just once, and then addressed as many times as needed with JSR, RTS, and similar commands. Many other kinds of techniques can also be used to conserve memory in assembly language programs.

Mark Andrews writes a syndicated column about computers. Atari Roots is his 11th computer book. He owns five home computer systems and the Atari is his favorite.

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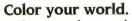
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> > living room!

Q: Is the OKIMATE 10 easy to use?

As easy as "PLUG 'N PRINT!" A. No other printer is easier to use than the OKIMATE 10. Connecting the printer to your Commodore or Atari computer is, literally, a snap. The exclusive PLUG 'N PRINT package snaps into the

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"Learn-to-Print" software program (included) teaches you printer basics—the "Color Screen Print" disk (also included) automatically prints everything on the screen in a single stroke. As a matter of fact, most of your printing can be done with just one command.

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ADVENTURES ON-LINE

Meet friends in a dungeon!

by MICHAEL CIRAOLO
Antic Staff Writer

Playing mainframe computer games is one of the most popular pastimes on the major on-line computer information services. It's surprisingly popular, when you consider how much cheaper it would be to buy one of the many similar adventures available on disk.

"It can be extraordinarily expensive to play adventures by the minute," freely admits The Source's public relations manager, Nancy Beckman. "It's not just students on their dad's accounts who are playing. There's a cross section of all types of business people sneaking off during the day to play on-line adventure games."

The lure of on-line gaming is easier to understand when you look at its two unique features—multiplayer capability and instant feedback.

MULTIPLAYER FEEDBACK

Multiplayer adventures like Compu-Serve's MegaWars (space battle a la Star Trek) and Plato's Moria (Dungeons & Dragons fantasy role-playing) can be used by up to 100 players at the same time. You find yourself adventuring along with students, lawyers or corporate vice presidents from places as far apart as Anchorage, Silicon Valley, Boston and New Orleans.

The other unique feature of on-line gaming is its capability for immediate communication with other players around the country, says Pat Phelps, manager of CompuServe's CB network. While playing, without interrupting a game, any player can switch into conversation with teammate or opponent. Terminal talking ranges from cursing the enemy to pleas for help from allies.

This interaction continues outside game time on the CompuServe Multiplayer SIG (Special Interest Group), Plato's notesfiles, or The Source's bulletin boards. These electronic forums are always available to provide opportunities for gamesters to compare notes, exchange tips, or just chat.

CompuServe's main multiplayer games are MegaWars II and MegaWars III. Using color graphics and sound on compatible terminals, MegaWars II is designed for two teams of up to four players each. The object of the game is to destroy all four enemy ships while capturing as many enemy and neutral planets as possible. You enter the game as a cadet, and attempt to work your way up through the ranks to admiral. MegaWars III is similar, except that up to 100 players can participate in one game simultaneously.

Plato's multiplayer games include Empire, their team-oriented space combat in the MegaWars mode, Sea-War, a grid boardgame simulation, and two fantasy role-playing adventures, Moria and Drygulch. All major Plato multiplayer games are supported by notesfiles (bulletin boards).

MORIA AND DRYGULCH

In Moria, as you explore the dungeon you can join with teams of players—frequently more experienced—or continue to risk wandering on your own. The screen shows you a detailed line drawing view of the scene ahead of you, including monsters, doors and corridor walls, along with status charts for your character's current strength and powers.

Plato's Drygulch is set in an Old West town. You are a miner trying to live long and prosper, which is not easy when hazards abound in the mines and in the wastelands surrounding the town. You must eat and drink enough to keep healthy, make sure you have enough prospecting equipment, etc. There are elections for sheriff, mayor and mine inspector. Each position offers potential for added fun and profit, election usually requires 10 to 12 votes.

In addition to multiplayer games, all three services offer a selection of the classic computer adventure games. These include versions of Hammurabi, a game that lets you govern ancient Sumeria. Avoid famine by paying attention to grain planting and harvests, taxes, birthrate, and so on. You can also expect to find Lunar Lander simulations, the original Trek space war and the original Colossal Cave text adventure.

continued on next page

MORE DUNGEONS

Also available on each service are single-player dungeon games like CompuServe's Castle Telengard and the Dungeons of Kesmai, The Source's Blackdragon, and Plato's Labyrinth. All allow you the usual role-playing choices in establishing your character's attributes, such as race, intelligence, dexterity and charisma. Typically, you equip your character with spells and weapons, and then venture down into the dungeons in search of monsters and treasure. Games on CompuServe and The Source provide rudimentary graphics (keyboard symbols like +, *, /, and —) in a top-down map overview. Plato offers more sophisticated graphics for an eyewitness viewpoint. On The Source, you'll find Castlequest and Explore. Both are well-written text adventures for players with prior experience in this genre. Because they are not renditions of previous works, they are sources of new challenge. They are also easier to read than the text on CompuServe, which uses a very slow mainframe computer that pauses several times on each screen of text during peak usage times (late afternoon to late evening).

SHORTCUT COMMANDS

Getting to adventure games in the three major on-line systems is not hard.

CompuServe has direct access page addresses for games including: GO GAM-200 for the original adventure, GO GAM-201 for the new adventure, GO GAM-219 for The House of Banshi, GO GAM-217 for the Scott

Adams games, GO GAM-260 for the Dungeons of Kesmai, GO GAM-320 for Castle Telengard, GO GAM-305 for MegaWars II, GO GAM-105 for MegaWars III, and GO GAM-300 for the multiplayer game SIG.

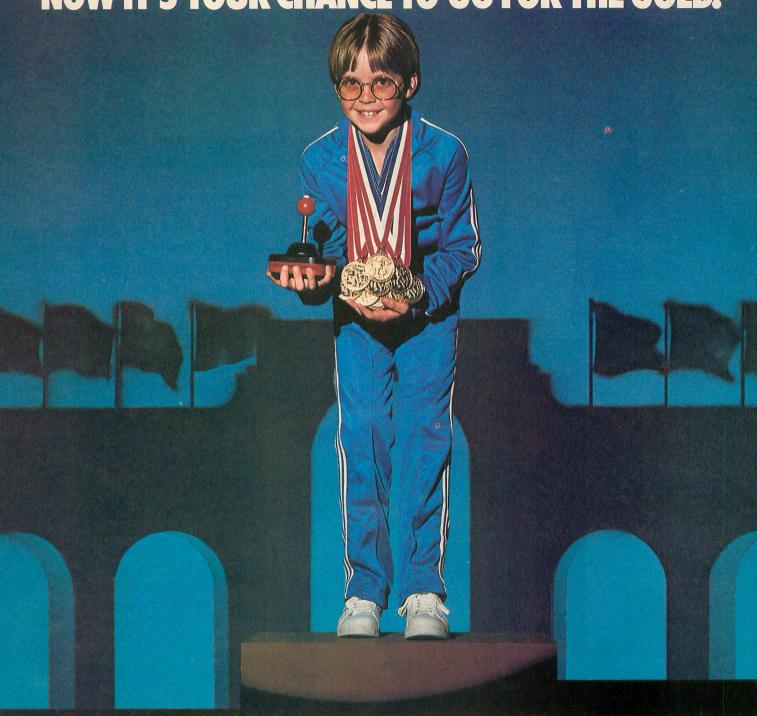
To access games in The Source, type HELP GAMES at the command level to get an on-line listing.

In Plato, select the main menu option to run Plato programs. Then type in the game's name (drygulch, labyrinth). Some game files require a zero in front of the name (0empire, 0moria). Notesfiles include morian (for Moria), gulchnts (for Drygulch), and empnotes (for Empire). The original adventure game can be accessed by typing rezadv1. Using the Plato index, you can get a list of all games.

A

Bulletin Board Update (408) 249-6946 Rat's Nest Michigan (408) 248-5135 Dark Tower MACE Main (313) 978-1685 (All times are local standard (408) 773-9326 MACE West Moonbeam (313) 582-0657 times for the particular board) (415) 282-6138 **GGBBS** MACE Trading Post (313) 882-5909 Arizona MACE Ethernet (313) 531-1701 Canada Amis Outpost (602) 578-0784 (all four are 24 hours) Castle Greyhawk (514) 325-4310 24 hours Evenings **New Jersey** Twilight Zone (602) 790-8805 **Enterprise BBS** (201) 689-0492 24 hours Florida Gemini After Dark (201) 267-0988 Star Raiders (305) 226-1452 California 6 p.m. to 9 a.m., all day Sunday Swap Shop (305) 878-1422 Compucat (408) 353-1836 JACG BBS (201) 549-7591 24 hours 6 p.m.-9 a.m., M-F 24 hours Software Library (305) 845-6466 Hermit (707) 428-3077 (904) 733-4515 Jax Forem New York 24 hours Beach Forem (904) 246-8133 Colossal Caves (516) 673-3141 Wizardry (818) 346-4343 24 hours 24 hours Indiana Metal Board I (516) 742-5949 Interact-Sylmar (818) 367-0324 AMIS Bulletin (516) 944-3116 Metal Board II Interact-Van Nuys (818) 902-1477 Board (219) 824-5198 (516) 626-6990 Starship Atari S.F. Valley Green Illinois Machine (818) 368-1661 Rhode Island Electric Co. (312) 221-0171 (818) 368-5801 S.F. Valley RBBS AARI BBS (401) 521-4234 Ray's Outer Limits (312) 933-1071 Granada Hills Energy Texas (818) 360-5053 Maryland Group The Midnight Forem Hotline (703) 683-3944 Starship Atari (415) 387-2190 Turtle (214) 783-7548 Rickey Moose (301) 474-7591 24 hours

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must plan and execute your game strategy in order to maximize your score. It is not just a matter of how fast you can move the joystick.

So change into your running shoes, grab your joystick and GO FOR THE GOLD!

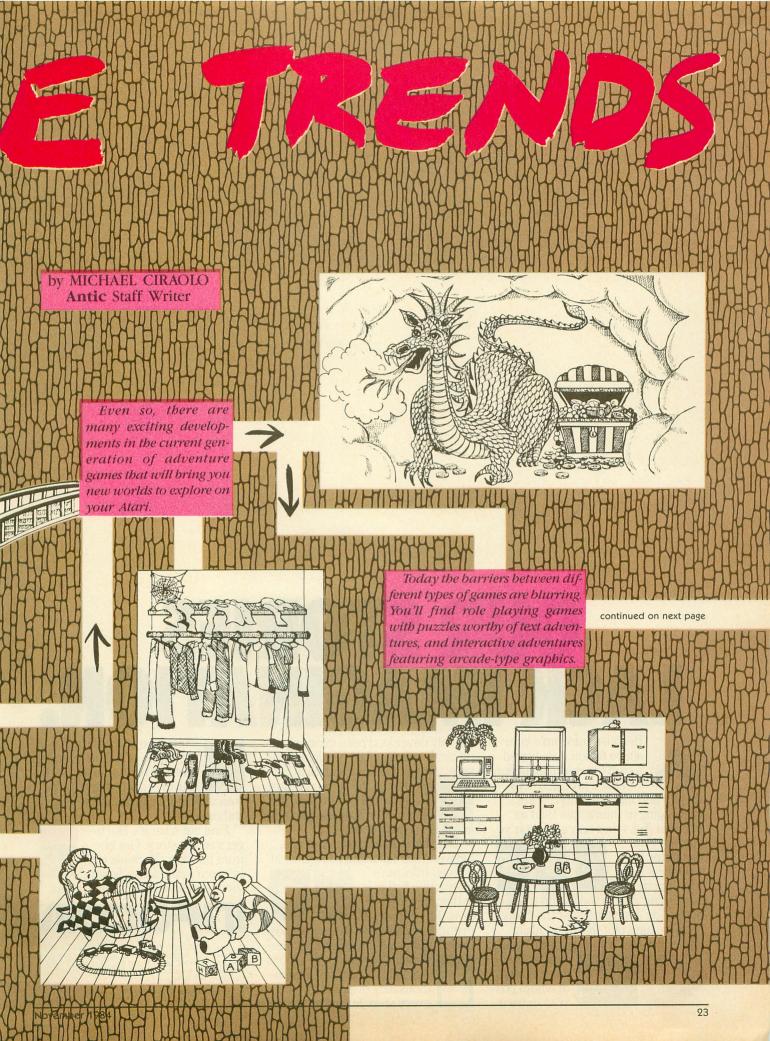
One or more players; joystick controlled.



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ou started out by blasting endless attack waves of zombie-like space attackers. Then you mapped your way through a colossal cave and fought trolls in the great underground empire of Zork. You carefully adjusted fuel rates to land yourself on the moon. Your taste in mind-challenging computer recreation is a lot more sophisticated now. You demand innovation from the marketplace. It's true that software designers still haven't come up with a totally new kind of adventure game to stand alongside the established standard formats such as-alltext puzzle explorations, visuals plus text, graphic scrolling displays, fantasy role-playing (computerized dungeons & dragons), space wars . . . even simulations and computerized strategy board





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**Use the IBM PC version for your Compaq and the MS-DOS 2.0 version for your Wang, Mindset, Data General System 10, GRiD and many others.

ADVENTURE TRENDS continued from page 23

JUPITER MISSION 1999

This blurring of genres is evident in Avalon Hill's Jupiter Mission 1999. Contained within the game's four disks are elements of graphics/text adventure, space war role-playing and arcade joystick games.

The varied elements in Jupiter Mission are tied together by a story line. Government agents drag you from your home early on a cold January morning and put you in charge of a solo mission to Jupiter.

This concept of a large-scale multiple element adventure package holds a lot of potential, even if some sections of Jupiter Mission 1999 are perhaps overly reminiscent of familiar classics such as Lunar Landing and Missile Command.

Another interesting new development is the arrival of easier adventure games for young people or younger beginners.

DRAGONS & TROLLS

There are even adventure games for children who have just learned to read. Sierra On-Line's Dragon's Keep and Troll's Tale are graphics/text adventures intended for kids as young as seven.

Young players locate a series of objects hidden by the troll or dragon—with help from warm graphics, suggestions by the computer, and a map that comes with the package.

On a typical Troll's Tale screen, you'll find the top 80 percent of the display filled with a picture of a room or a field. Below will be lines of text:

"You are facing the cave." A menu of options follows. "Go into cave," or "Turn on flashlight," or "Turn around and go into the field."

If you were to select, say, "Go into cave," without turning on the light, the next screen would show the colorful, impressive troll and warn you. "You are in the dark. Turn on light or leave the cave."

By the time you read this, possibly the Windham Classics line of interactive fiction for children will be available from Spinnaker Software. This series of graphics/text adventures is to be based on classic literature. The first Atari release will be Swiss Family Robinson.

By the way, you may have heard about Spinnaker's other new line, Trillium, which will feature adaptations of novels by big-name science fiction writers. Unfortunately, at this writing Spinnaker has no plans to produce these games for the Atari—a mistake that will hopefully be corrected by the time this is in print.

SEASTALKER

A game like Infocom's Seastalker can be enjoyed by both adult and older children who are beginning adventurers. This text adventure was scripted by Jim Lawrence, an experienced writer of books in the Tom Swift, Nancy Drew, Hardy Boys vein.

Seastalker enlists you in the Aquatic Discovery Squad. You must save the undersea Aquadome from a sea monster and saboteurs.

Seastalker is very forgiving on the beginning adventurer, offering several types of clues and extensive background information. It is a good introduction to the all-text world of Infocom for players who would be quite lost if dropped into a game like Suspended with absolutely no adventure experience.

But don't get the idea you can simply walk through this game. Seastalker is tough enough to keep a relatively experienced adventurer occupied for six to eight hours before the Aquadome is rescued.

In some more last-minute news, Infocom just announced Cutthroats, the latest game in the Tales of Adventure series. Cutthroat puts you on Hardscrabble Island, where you're a deep-sea diver on a treasure hunt with an untrustworthy crew. The game is written by Michael Berlyn, author of Infidel and Suspended.

Just as some companies have turned to noted books and authors for adaptations to interactive fiction, so has Datasoft turned to television. In The Dallas Quest, a not too inspiring graphics/text adventure, you become a detective trying to uncover a missing oil field map. The game contains several puzzles based on peculiar logic or inconsistent with the mood of the TV show

The Ultima series, created by Lord British, combined the puzzling text adventures with scrolling map graphics and fantasy role-playing elements.

QUESTRON

Strategic Simulation's Questron is a perfect warm-up for the Ultima games. Even though Questron's scrolling map contains 57,000 squares, it's a simpler game than the classic Ultimas. Still, you'll find plenty of challenge as you move about in a strange land, encountering powerful beings who may be either good or evil. You must survive and also complete specific quests.

When you feel confident in the world of fantasy quests, step up to Ultima III, Lord British's latest adventure. In Ultima III you can go questing with a team of four characters simultaneously. Create your fantasy A-Team from five races and 11 professions, equip them from a menu of 16 weapons and 32 magic spells.

Ultima III, published by Lord British's own company, Origin Systems, upgrades the graphics, combat options, navigational strategies, and dungeon scenes from the game's two predecessors. Your adventure in this fantasy world is more realistic because of the increased detail and interaction possibilitites.

ULTIMA IV

Antic received a special Lord British communiqué for this issue. (His Lordship is actually Richard Garriott, who's in his early 20s and the son of a space shuttle astronaut.)

"As Lord British thought of the future again and touched the silver snake around his neck, he saw Ultima IV laid out beautifully before him. A new age had come upon the land of Sosaria. Evil still existed, but many had discovered the virtues of friendship and trust. All of Lord British's subjects would need the power of good in order to complete eight quests and become an Avatar. Life would be lived in a world 16 times larger than its predecessor.

continued on next page

"Lord British wondered how much longer the quests would continue. He looked out at the hardware surrounding himself and realized that he had just begun to explore the capabilities of the computer. He knew that his journeys were far from over . . ."

And Infocom also predicts major advances for its all-text adventure games. Product manager Michael Dornbrook says, "There will be effectively no limit on the number of people or rooms in a game. Think of all the limitations in current games and knock them down. Imagine many current restraints on game play eliminated."

Thus ... adventure games have emerged from the caves as the quest for more reality continues ...

OUTSTANDING ADVENTURES

MANUFACTURER INFORMATION

The Dallas Quest

Datasoft 19808 Nordhoff Place Chatsworth, CA 91311 (818) 701-5161 48K disk, \$34.95

Dragon's Keep Troll's Tale

Sierra On-Line Sierra On-Line Bldg. Coarsegold, CA 93614

(209) 683-6858

48K disk with BASIC, \$29.95 each.

Jupiter Mission 1999

Avalon Hill Games 4517 Harford Rd. Baltimore, MD 21214 (301) 254-5300 48K disk, \$50.00

Questron

Strategic Simulations, Inc. 883 Stierlin Rd., Bldg. A-200 Mountain View, CA 94043 (415) 964-1200 40K disk with BASIC, \$39.95

Seastalker

Infocom, Inc. 55 Wheeler St. Cambridge, MA 02138 (617) 492-1031 48K disk, \$49.95

Ultima III

Origin Systems, Inc. P.O. Box 99 1545 Isgood St. #7 North Andover, MA 08125 (617) 681-0609 48K disk, \$59.95

Windham Classics

Spinnaker Software One Kendall Sq. Cambridge, MA 02139 (617) 494-1200 48K disk, \$26.95

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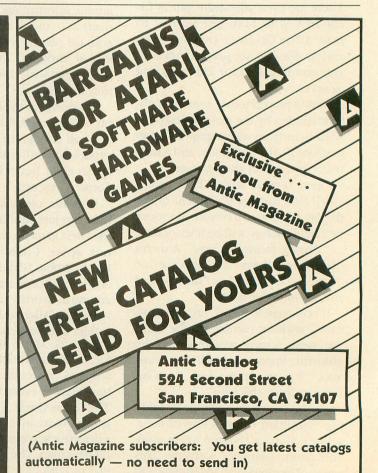
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JUPITER MISSION \$39.95	BLADE OF BLACKPOOLE \$29.95			
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TO THE GALAXY \$24.95				
10 THE GALAXY \$24.95	MISSION ASTEROID \$27.95			
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PLANETFALL \$24.95	SANDS OF EGYPT\$27.95			
WITNESS \$24.95	TRANSYLVANIA \$24.95			
ZORK 1\$24.95	ULTIMA 1\$23.95			
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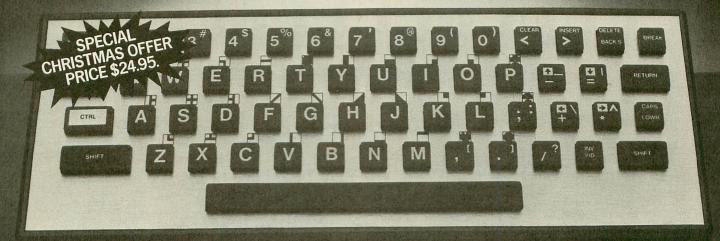
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mind wheel

State-of-the-aut interactive fiction by NAT FRIEDLAND

ust as this Antic 1984 Adventure Issue was going to press, we got an advance look at two games that dramatically advance the state of the art in interactive fiction.

These groundbreaking adventures are **Alternate Reality**, a graphic scrolling role-playing fantasy from Marsten Systems, and Synapse Software's **Electronic Novels** text adventure series. These games should be out by the time you read this . . . or soon after.



The City from Alternate Reality

The authors of Alternate Reality are Phil Price and Gary Gilbertson of Hawaii's Paradise Programming. Antic readers saw Phil's innovative color manipulation program "Price's Picture Painter" in our August 1984 graphics issue, illustrated with an elaborate scene from the game.

Alternate Reality is to ultimately become a seven-disk series. However, if the game proves popular they can insert additional disk adventures into the middle of the series before reaching the final chapters, "Revelation" and "Destiny."

What's new about Alternate Reality is the way it combines super-detailed graphics with a very wide-scope game map plus music, scrolling text and

occasional animation sequences.

Antic Editor

As for Synapse's Electronic Novels, they are all-text adventures that boast a parser (dialog interpretation program) that seems to be as advanced as Infocom's. Five of these games are under development and their major new advance is that they offer the highest-ever degree of interaction with the story's characters.

DEMO AT ANTIC

Gary Gilbertson came into Antic's office with a nearly complete version of the first Alternate Reality disk. The only missing elements were comparatively minor details such as the sun rising and setting in condensed real-time. Day and night are important in this game because a lot of monsters come out only in darkness and one of your first tasks will be to accumulate enough money to pay for indoor sleeping quarters.

The opening disk of Alternate Reality is called "The City" and you'll have to own it in order to play any of the later disks. In terms of mapping, all the other disks in the series will display territories that are adjacent to the city in some way—"The Dungeon," "The Arena," "The Palace," "The Wilderness." However, all these upcoming disks are to be independent of each other so you won't need to buy them in any particular order.

"The Dungeon" is also promised for release by the time you read this. It's to be a 12-level maze featuring more than 250 monsters. Located beneath the streets of the city, there will be a couple of ways you can teleport back above-ground to store your treasures safely.

Essentially, what you do in "The City" is wander through the streets and buildings, and build up your power points for the future disks. You'll have confrontations with the 47 types of life forms that live there—including goblins, zombies, muggers, etc. You see eye-level front views wherever you go. And you won't be quickly bored—during the demonstration an unmarked map of the 4,000-location city matrix was brought in and it looked as convoluted as a Mayan tomb decoration.



The Bar from Alternate Reality

The authors warn that you're building up karma during this phase. If you act too ruthlessly as you advance your status in the local society, you can expect to be struck down by an avenging destiny.

UFO KIDNAP

The game starts with an outstanding animation sequence. You see a detailed cityscape as a UFO flies in to grab prisoners (including you, of course). Next you're looking through the UFO's front porthole as a long series of star-strewn galaxies flashes by. Genuine computer generated music, not merely sound effects, is heard throughout all this.

continued on next page

You awaken at the portal leading to Alternate Reality. It's an open archway with sets of numbers swiftly revolving at the top. When you hit the joystick button you pass through and your starting attributes are set at the point values which were showing at that instant. You emerge into the city's main plaza.

In theory, you could "win" the game by discovering how to be transported home, even if you never get any of the other disks in the series. But the clues hinted at by Gilbertson seem pretty well buried. For example, part of the solution may be gained by charting the patterns of the UFO's route through the galactic clusters.

Marsten plans to price "The City" at \$49.95 and the follow-up disks at \$34.95. You'll also be able to get a \$14.95 utility disk for saving six characters.

SAMPLING FIVE NOVELS

To sample the five Electronic Novels, I drove over to Synapse Software's

quarters in an office park just north of Berkeley. The novels resided on a Corvus 10-megabyte hard disk accessed from an IBM PC. Richard Sanford, the project manager, explained that IBM and Apple will get the releases first. And then the programs will be adapted for the Atari and Commodore. Shipment is promised for before the end of the year, at a price of \$39.95.

The two opening games in the series, "Mindwheel" and "Essex" were complete enough to be playable . . . although it wasn't difficult to run into the boundaries of the unfinished programming as you got past the opening situations.

In the other three games, about all you could do at that point was explore the introductory scenes and pick up the overall flavor of the themes. However, even these glimpses were enough to provide a tantalizing overview of the scope of the series.

"Breakers" is set on an Outlandstype mining planet which you enter by way of a sleazy interplanetary barroom reminiscent of the Star Wars cantina. "Brimstone" will have Sir Gawain descending to hell on a knightly quest, but the exits from Camelot castle weren't in place yet. "Ronin" has a great atmospheric samurai setting, and it was very frustrating that the program wasn't yet developed enough for me to save the geisha by taking on the ninja with my sword.

WHEEL OF WISDOM

Mindwheel was farthest along at the time of my preview. This adventure's dense, symbol-packed prose is far different from the kind of tongue-incheek stage directions we all got used to in the earlier generations of text adventures. The plot is a lot more abstract too . . .

You become the first person to survive Dr. Virgil's mind transference experiment. It's up to you to save the planet by travelling through the minds continued on page 33

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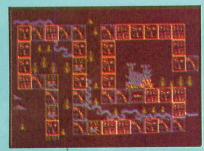


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OF ABADON







COMPOSER





continued from page 30

of a Dictator, a Rock Star, a Scientist and a Poet. When you get back to the primal level of history, find the mystical wheel of wisdom and bring it back with you. The journey starts with you as the Rock Star, performing at a huge, unruly concert and threatened by violent thugs.

I was able to move a little way into a couple of other minds from this rock concert setting, and the imagery is definitely something out of Dante's Inferno.

GIANT ROCKETSHIP

Essex is a somewhat unevocative title for the final adventure in this first batch of Electronic Novels. Actually, the Essex is a giant rocketship that's under attack from mysterious interplanetary saboteurs. As the game starts, you stumble across a murder and get a cryptic message to pass on to the captain.

I managed to get aboard the Essex just as it was blasting off. But before long I was bogged down trying to figure out how to use the computerized transporter systems and make my way to the bridge via the rocket's vast multiple levels of corridors.

This game provided an excellent example of what Synapse calls the "asynchronous universe" feature—which translates to random events. As you try to find your way around the rocket, you regularly ran into a mixed group of humans and non-humans who say different things at different meetings. Sometimes you could obtain valuable clues by speaking to these beings, at other times you just got a joke punchline.

Similar randomizing showed up in Mindwheel several ways. The rock concert crowd would start yelling song requests or throwing souvenirs every once in a while. If you got into a duel with the thug, you'd choose your weapon from one of three sealed boxes. But at various times the same box might contain either a magic talisman or a pizza.

TALK TO CHARACTERS

A lot of the data you need for advanc-

ing in these games is obtained by talking to characters. The effect can be eerily like a real dialog at times, though in other sequences it becomes obvious that this technique is still in its infancy.

It's going to be a real challenge for authors to suggest to game users when to start a dialog with the other characters, without being overly obvious about it. The situations here are somewhat more subtle than the earlier generation of text adventures where you'd be going down a murky tunnel and see a giant spider ahead.

In Mindwheel, for example, a bodyguard approaches you and says something like, "If you'd care to come with me to the green door, I might have something interesting to tell you."

Naturally, the longer inputs mean you must do more typing than if you were simply entering N, or GET LAMP. Synapse is still trying to simplify the response format before release. At the moment, you could get an answer by typing in as little as:

doc "who am i

In response, you'd see:

Doctor Virgil looks at you and says, "You're the first person whose brain wasn't fried by the machine."

MANUFACTURERS OF THE GAMES DESCRIBED IN THIS ARTICLE

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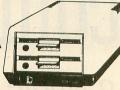
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We Solved 8 Infocoms

(... 4 of them in a single week)

by BETT LONG and CHUCK LANDGRAVER

Bett Long wrote Antic a letter after reading the adventure game article in our August issue (p. 44) and mentioned that she and her son had solved eight Infocom all-text adventures. We were fascinated, never having heard of anybody who had actually completed that many adventures. So we promptly wrote back to Bett and asked her to send us an article about her experiences in time for the deadline of our annual adventure issue . . .

This story arrived in three weeks under a double byline. Here's what Bett Long wrote us about herself. "I was hooked on Infocom by Chuck Landgraver, my bachelor son who does something in experimental nuclear power in the Idaho desert. I am a retired Ohio widow who does grandmotherly things when I must. Last month Chuck and I spent six days in Infocom and five days gambling in Reno. We can't decide which part of the visit was better."

-ANTIC ED

uring a six day visit we finished Deadline, Infidel, Planetfall and The Witness. We had previously done Zork I and Zork II, Starcross and Enchanter by mail and phone.

We spent eight to 50 hours on each program, including studying the

print-outs and talking or thinking about a problem.

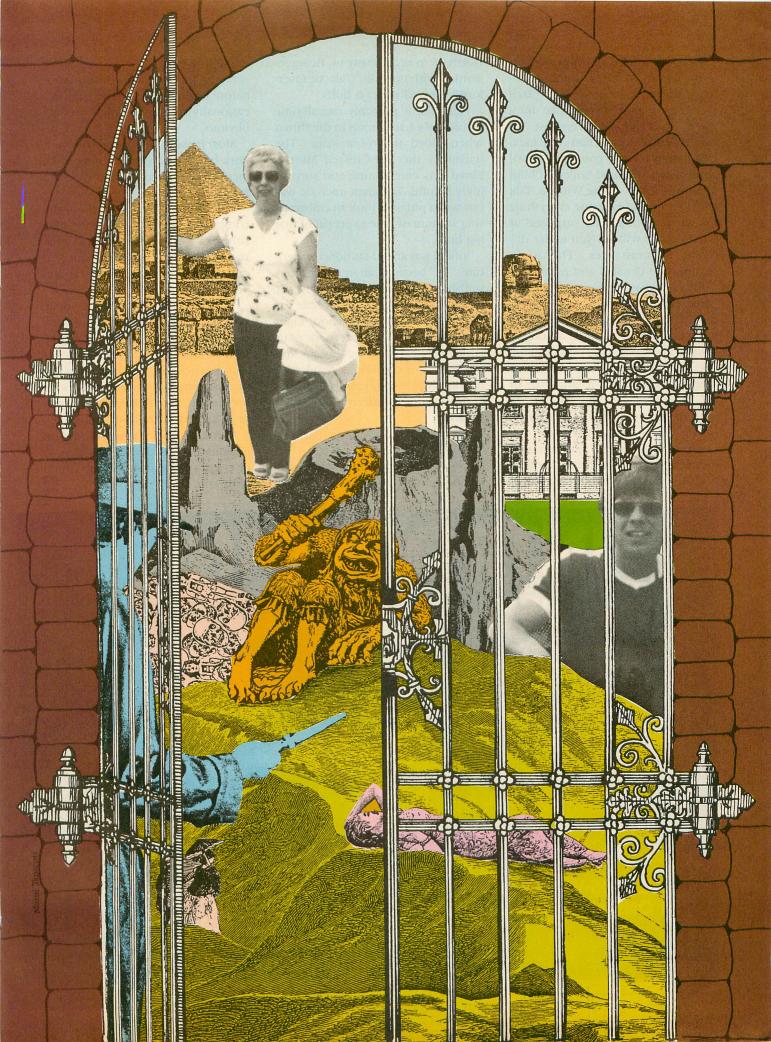
Zork I was our introduction to Infocom. Despite previous text adventure experience, this took about 50 hours. Mapping the maze was almost impossible because the thief stole articles we dropped as markers. Draining and filling the reservoir was satisfying while we were stuck badly and needed something to do. We knew were were making progress when we got in and out of the Machine Room. Zork II was more of the same, but it was easier and not quite as much fun. Going up the volcano was worth the trip. Getting in and out of the Bank Vault and into the workshop were the biggest headaches. Zork III awaits on the shelf.

ZIFMIA GOD

Enchanter was like reading a fascinating book and having the power to make it end well. Some enchantments were easy to control, some took much time and thought. The "kulcad" scroll was the most difficult and satisfying to get. We passed the "Guarded Door" repeatedly for comic relief. Be sure to "zifmia" God. Remember your dreams and speak to everyone, including the animals. There are 17 ways to die and at least one is vital to the solution. This is one of our two favorites. Our peek into the sequel, Sorcerer, shows promise it'll be equally good.

The authors (in sunglasses) amid some of the friendly folks they met while solving eight Infocom adventure games.

continued on page 38



Deadline and The Witness are mysteries where we became the detectives. We had to be in the right place at the right time. Events that took place out of our sight were lost. We "saved" endlessly and had good luck. Deadline was more complex but we appreciated the hard-boiled "Philip Marlowe" flavor of The Witness. Talk to everyone and examine everything for clues. You will be surprised at what people will tell you under different circumstances. The backgrounds are detailed and realistic.

Flying across the center of the "Artifact" in Starcross is a real adventure. We had some serious holdups in this game so it took nearly as long as Zork I. The hardest part was making the round trip to and from the weasels' vessel alive. A large part of the game was deciding what to do with all the rods. The most satisfying puzzle was learning to follow the compulsively neat maintenance mouse into the mouse holes. Another problem was persuading the bored

Gurthark to accompany us. Being rewarded with the title "Galactic Overlord" pleased us sci-fi buffs.

Planetfall is probably our all-time favorite. We had a lump in the throat when Floyd the robot sang "The Ballad of the Star-Crossed Miner". Floyd was entertaining and surprisingly helpful. The giant microbe was our worst pitfall. It took an embarrassing amount of time to get rid of that

Infidel was an old-fashioned adventure. We became an unscrupulous selfish second-rate archaeologist. (It might be slightly uncomfortable for nice people.) We spent about eight fast-paced hours on Infidel. One of us anticipated Egyptian technology and the other is a cryptology fiend who decoded the hieroglyphics. The program was very orderly and ended suitably.

OUR ADVICE

Our best advice is to map and document carefully. A printer makes solving a little easier.

Study the packaging thoroughly before beginning and refer back occasionally for hints which become obvious.

Most items you take have one purpose but in one game we needed a piece of equipment in three different locations.

Try anything. Read everything the computer tells you. An answer may amuse or insult you, or be just what you hoped for. A slight variation in computer response is usually an important clue.

When you begin, explore only. When you can gather what you think you will need and are ready to be serious, make a "good save" in as few moves as possible. Don't save over this because some of your later choices are irrevocable. After that, save frequently as suggested in the instructions.

If you are lucky you will find an imaginative friend who is willing to give up a normal life to adventure with you.

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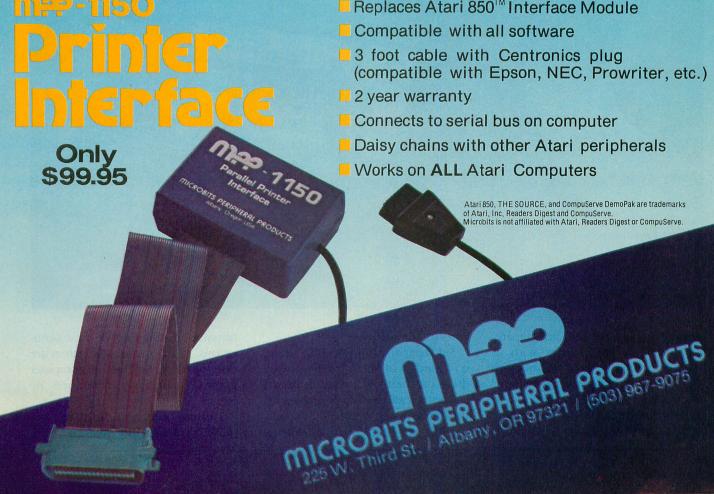
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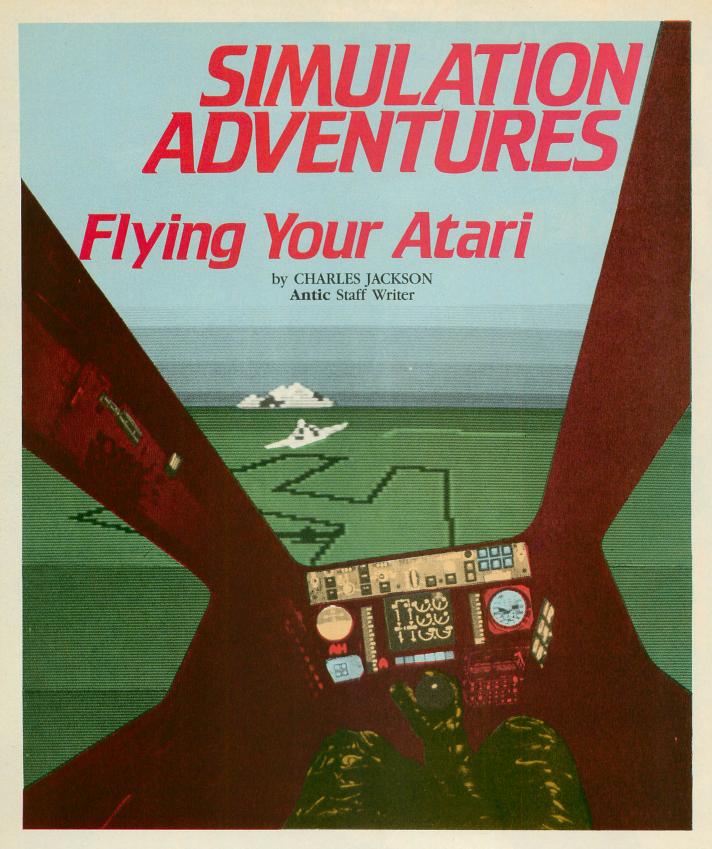
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Sid Meier and John W. (Bill) Stealey, co-founders of MicroProse Software, drew on their own aviation experiences to create nearly a dozen successful simulation games.

"We spend better than a man-year

of work creating each of these simulations," Stealey said. The games are developed in SidTran, a computer graphics language developed by Meier.

Hellcat Ace and Spitfire Ace (\$29.95), Mig Alley Ace and F-15

Strike Eagle (\$34.95) are joystickcontrolled flight simulations that each realistically duplicate an actual aircraft's speed, and maneuverability. The simulated planes climb, dive, roll and loop just as quickly as the aircraft they're modeled after. Even the instrument panels are similar. For example, many of the F-15's new computerized displays and avionics are included in MicroProse's F-15 Strike Eagle game.

Spitfire Ace puts you in the cockpit of a British fighter during World War Two. Mig Alley Ace takes place during the Korean War, and gives you a choice of battlefields and aircraft. These aircraft include: an F-80 Shooting Star, an armed C-119 cargo transport, an F9F Panther, an F-84 Thunderjet and an F-86 Sabrejet.

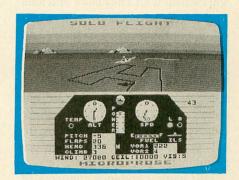
developed Solo Flight (\$34.95). This real-time flight simulator puts you behind the joystick of a small, singleengine private plane. And it's realistic enough to be used for practice by student pilots.

Levels of difficulty in Solo Flight range from flying over flat terrain in clear, calm weather to navigating through dense clouds over windswept mountains. You can practice taking off or landing in your choice of conditions too.

Once you're comfortable flying in all types of weather, you can advance to the mail delivery option.

The Solo Flight airplane features retractable landing gear, brakes, threeposition flaps, an Instrument Landing System (ILS), dual VORs (radio naviga-

Whenever the aircraft descends below 600 feet, its altitude can also be judged by the shadow it casts on the ground. This shadow appears even when the sky is gray and overcast.



The Solo Flight plane's instrument panel substitutes digital readouts for most of the dials found on standard instrument panels. Pitch angle, flap setting, heading, rate-of-climb, and bearing from VOR navigation stations are all seen on digital displays. Though the Solo Flight altimeter looks like a standard altimeter, it skips the "8" and "9" positions.

Simulated aeronautical charts of Kansas, Colorado and Washington are included in the Solo Flight package. Each chart contains diagrams of seven airports and two VOR stations. Several approach plates are also included. At the close of your flight, the game is also able to plot your course on a map.

"From delivering the mail to shooting down enemy fighters, each one of our simulation programs is based on complex real-life experiences," Stealey said, "and our programs put you in the middle of those experiences. We want you to have fun while you feel what it would be like to be a jet fighter pilot."

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Bill Stealey of Microprose



Stealey, an Air Force Academy graduate, helped train more than 200 pilots to Fly T-37 jets. He has also piloted massive C-5A Galaxy cargo planes in the United States and Europe. Today, Stealey flies A-37 jets for the Pennsylvania Air National Guard's 103rd Tactical Air Support Squadron. He has logged over 3,000 hours in the air.

Meier has been writing Atari simulation games since 1982. His first game, Hostage Rescue, is a simulation of the 1980 Iranian Hostage helicopter rescue attempt. Meier and Stealey met at an Atari user's group meeting.

Most recently, Meier and Stealey

tion equipment), and realistic altitude and airspeed indicators.

SIMPLE FLYING

Though the Solo Flight aircraft simulates a sophisticated light plane, it is simple to fly. Even keyboard pilots who ignore the instruction booklet should have little trouble staying aloft.

The bottom half of the game's screen reproduces instrument panel data. However, the top half is not the view from the cockpit window. Instead it's a rear view of the aircraft superimposed on the horizon. Depth is gauged by comparing the size of this aircraft to the sizes of runways and other nearby ground checkpoints.

41 November 1984

bonus game

You awaken with a headache and total amnesia. You don't know where you are or even what your name is. And what is this strange power you now possess? Every time you use it, you hear a loud noise! You would like to move around and find out more, but there's a small problem. Monsters are everywhere and they're trying to kill you! Welcome to Adventure Island ...

This game combines elements of fantasy role-playing and text adventures. Discovering your identity is the mystery you must solve. Meanwhile, you're a fighter seeking treasure, exploring caves, and doing battle with multitudes of monsters.

If you haven't played fantasy roleplaying games such as Ultima and Temple of Apshai before, you should know about the relationship between experience and hit points. As you travel about in the game, you'll encounter many monsters—at which time you usually have the option of fighting or running. If you fight and vanquish an enemy, you gain experience points. However, each time the enemy strikes you, you lose hit points -which indicate how much more damage you can survive. You die when you have less than one hit point. Higher experience levels benefit you primarily by increasing your maximum hit points. A visit to the inn restores your hit points to full level.

GETTING STARTED

Type in the listing, check it with TYPO, and SAVE two copies, one for a backup. When the game starts, you'll be asked if you want to restart an old game. The first time, type [N][RETURN]. Then you're asked for an experience level. Start with a level of 1. You're likely to be killed right away, but you can always reincarnate your character to restart the game. When you're killed, if you've earned enough experience points by killing monsters and collecting treasure,

by ROBERT LEE

you'll automatically advance a level when you restart.

After you enter your experience level, the program will randomly generate values between 6 and 18 for your character's six traits—the higher the value, the better. Strength is important for attacking monsters and gaining experience. Constitution affects your initial number of hit points. Intuition is useful in finding and examining objects, while intelligence is necessary to locate exits. Speed determines whether you or the monster gets the first blow, and visage determines the likelihood of your being chased by monsters.

Here's a list of commands:

- N North
- S South
- E East
- W West
- Examine everything X (look around)
- G Get
- D Drop
- Inventory and Status I
- F Try it!!
- Attack with sword or thrust A with spear
- T Throw spear
- FP Fire poison arrow
- FS Fire silver arrow
- ET Eat
- DK Drink
- QT Ouit
- SG Save Game

Any other key, including [RETURN] alone, gives you the above list.

USING COMMANDS

Use Get, Drop, Eat, and Drink commands without an object. You'll be prompted to enter the object, at which you must type in the exact name, or the program won't recognize the object. The computer signals you audibly two moves and one move before you must eat and drink. Beware of every object you see or touch. Magic items are used just by touching them, and their effects can be subtle.

When you Attack, the program first checks your inventory for a magic sword, a plain sword, or a spear, in that order. If you have any of these, an attack is attempted. Monsters attack only one at a time, even if there are more than one, and you may fight them only one at a time.

Inventory tells you what you're carrying and how many hit points you've left. You can carry only ten items at a time, although the amount of gold pieces (gp) you can hold is unlimited.

Although you're always informed of visible objects and exits when you enter a room, Examine lets you check this again. Note that this information can change randomly during a game.

Command F is your secret power one of the game's dark secrets. You should know what it is by game's end.

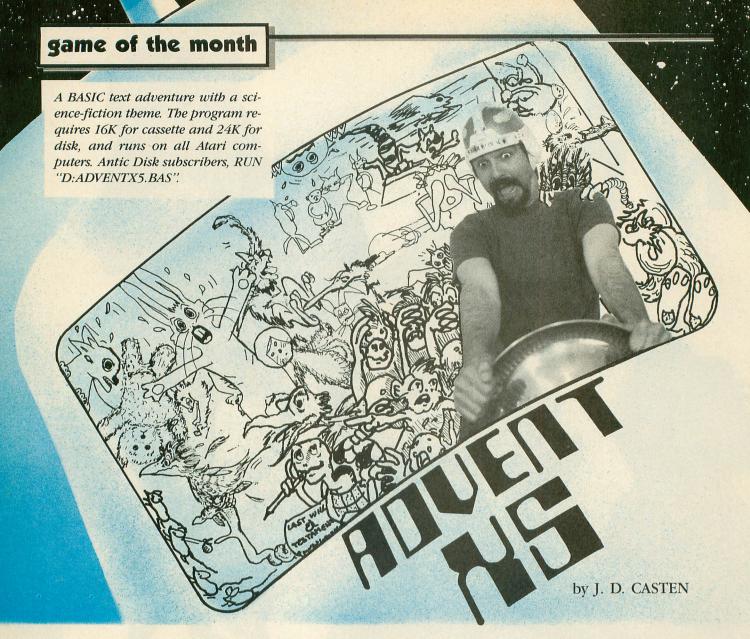
You can save a game on disk or cassette. Saving on cassette takes about two minutes. Game storage on disk uses a file called AI.DAT, so make sure you don't have a file with this name already on your disk, or it will be erased. Happy hunting!

Robert Lee is a medical student who has been programming in BASIC for several years. His special interest is adventure games. A

listing continued on page 53







You're the sole crew member aboard the Advent X-5, a space ship designed to transport small animals. Your most recent mission was to take some animals to a planet called Klybex-6 to test their reactions to its thick atmosphere and low gravity. But on the way to Klybex-6, a meteor storm forced you to crash-land the Advent X-5 on Klybex-7.

You're now stranded on the ship, and must get to the emergency shuttle craft and blast off to the nearest star base . . .

Type in the listing, check it with TYPO, and SAVE an extra backup copy. When you RUN it, you'll see the game menu:

1. Play Game—Plays game currently in memory—picks up where

you left off.

- 2. Load Game—Recall a previous game from disk or cassette.
- 3. Save Game—Save the current game to disk or cassette.
- 4. New Game—Restart old game from the beginning.
- 5. Quit Game—Exit from the program.

To return to the menu during game play, enter QUIT or SAVE. There are no prompts for Load and Save game. If you're using disk, the program uses the filename "ADVENTX5.DTA". If you're using cassette, the computer beeps once for Load and twice for Save. Prepare your recorder, then press [RETURN].

During the adventure, use simple noun-verb phrases to accomplish

tasks. Examples are GET DISK, GO NORTH (can be abbreviated to N), and ENTER DOOR. Directions can usually be abbreviated. You can (and sometimes must) also refer to containers, such as PUT HAT IN BOX, or TAKE SYRINGE FROM CABINET. Good luck!

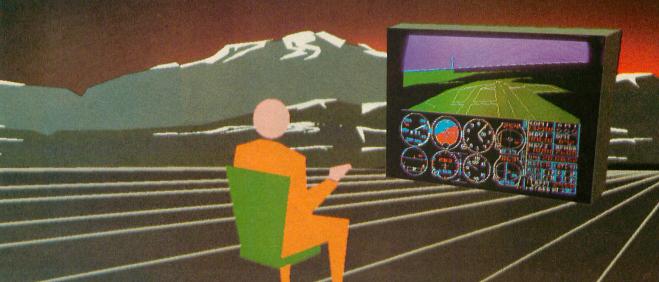
NOTE: Please don't call **Antic** for the solution, but we can assure you that there is one.

J. D. Casten is the author of one of Antic's most popular games ever—
"Risky Rescue" in the April 1984 issue. He has been programming in BASIC since age 13, and is currently writing assembly language games for the commercial market.

listing continued on page 60

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Do-It-Yourself Graphic Adventure

by JERRY A. LEMAITRE

LINDA TAPSCOTT

A graphic adventure/arcade game in three versions—plus instructions for easily customizing the game even more. The program runs on all Atari computers of any memory configuration. Antic Disk subscribers RUN "D:OMNIVENT.BAS".

The prefix omni means, roughly, "all-encompassing." Omniventure is a fast arcade/adventure game written completely in BASIC. You can easily modify it into many different themes that you choose. It's a great practice tool for beginning graphics adventure programmers.

Listing 1 is "Dinoventure." Type it in, check it with TYPO, and SAVE a backup copy or two.

RUN the program and you'll see

your player, a small dancing figure that you can move in eight directions with a joystick. Your path through the randomly-created maze is blocked by two types of obstacles—enemies and walls. There are two kinds of enemies, placed randomly about the playfield. The number of enemies depends on the skill level at which you're playing. To defend yourself, you'll find weapons in various places about the maze. Pick one up by passing over it. If you're carrying a weapon and standing directly beside an enemy, press the fire button to use the weapon (each can only be used once!) and kill the enemy. You need not aim the joystick.

enemy. You need not aim the joystick.
You can also pick up "tools"
throughout the maze. Each of these
can be used once to break through a

"wall" (or whatever your non-moving obstacles may be), similarly to destroying an enemy with a weapon.

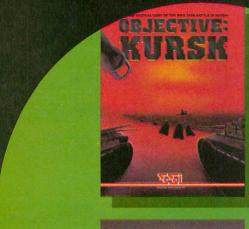
Lastly, but not least, are the treasures. Pick up as many of these as you can. They are also randomly placed, and the number depends on the skill level.

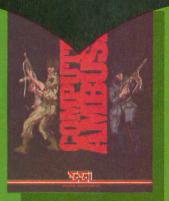
You can only carry one item (excluding treasure) at a time. Whenever you want to go to another screen, touch the wiggling 'space warp' line at the top of the screen. Your goal is to pick up the highest amount of treasure points.

You start with three players, with figures representing the number of remaining players displayed in the upper right corner.

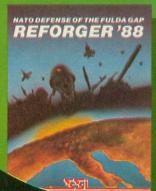
continued on page 49

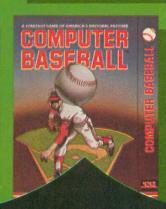
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OMNIVENTURE continued from page 46

DRAGOVENTURE AND ROBOVENTURE

Listing 1, the main program, is already set up for Dinoventure. Listings 2 and 3 provide alternate data for the variant games—Dragoventure and Roboventure. Type them in and LIST them to disk or cassette. To convert Dinoventure, first LOAD the main program, then ENTER Listing 2 or 3. Antic Disk subscribers LOAD "D:OMNIVENT. BAS", then ENTER "D:DRAGVENT. LST" or ENTER "D:ROBOVENT.LST". If you want to speed up the game, you can get rid of a delay loop by changing line 500 to:

500 CH=CH+1:POKE 756,CH(CH): IF CH=1 THEN CH=-1.

CUSTOMIZING OMNIVENTURE

Here's a step-by-step method for creating your own Omniventure games.

- 1. Think up a title and a theme for your game, and determine what type of obstacles, enemies, weapons, tools, and treasures are best suited for your theme.
- 2. Change the REM statements in lines 2 and 3 to show your name and the new title.
- 3. Change line 9010. Make A\$ your weapon's name, B\$ the tool's name, and C\$ your prefix for '-venture' to make up the title. NOTE: the length of both A\$ and B\$ should equal nine—pad with spaces if necessary. Also, C\$ shouldn't contain more than seven characters.
- 4. See Figure 1 to find which lines change for the title screen.
- 5. Change the numbers in line 10030 to represent the colors you want. Here's how: a) choose the number you want from Figure 2. b) Add a number between 0 and 15 for brightness (0=very dark, 15=very

light). c) Figure 3 shows which color registers are used for the game's various elements. Find the corresponding POKE in line 10030, then change the second number (the one after the comma) to the one you've selected.

- 6. Draw your figures on graph paper so they fit into an eight-by-eight square, then calculate the eight data values for each character. For each row, add up the values of the columns containing filled-in squares (the bits are "on"). See Figure 4. Also see "Character Graphics" (Antic, February 1984) for further information on developing custom characters. Design two images or 'frames' each for enemies and treasures. This creates a sort of animation when the program alternates between the two images.
- 7. Use Figure 5 to place the data from step 6 into the program. In lines 9230–9250, place data after the first number as shown in Figure 5.

PROGRAM TAKE-APART

100-	300	Move man and
		adjust for carrying
		an object
310-	440	Check for fire but-
		ton and use
		object being carried
500		Delay loop and
		alternate character
		frames
510-	570	Move antagonists
6000-	6200	Death routine
9000-	9020	Title screen and
		dimension strings
		and variables
9030-	9266	Initialize character
		set
9270		Set movement
		variables
9300-	9390	Welcome screen
10000-	10110	Draw playfield and
		position characters

(note: I did cheat a bit by using a Machine-Language subroutine to copy the character sets but it doesn't affect game play.)

Jerry A. LeMaitre is a high school student in Collingwood, Ontario. He is currently starting his own business selling software and computer accessories.

Figure	1
Welcome	Screen

line	subject
9320	weapon
9330	tool
9340	treasure
9350	antagonist #1
9360	antagonist #2
9370	obstacle #1
9380	obstacle #2

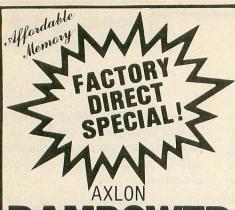
Figure 2 Colors

color	number
grey	0
gold	16
orange-brown	32
red-orange	48
pink	64
purple	80
purple-blue	96
blue	112
blue	128
light-blue	144
turquoise	160
green-blue	176
green	192
yellow-green	208
orange-green	224
light-orange	240

Figure 3 POKE Numbers

subject	POKE
antagonists	708
obstacles	709
treasures	710
tools, weapons	s 711
you	711
background	712

continued on next page



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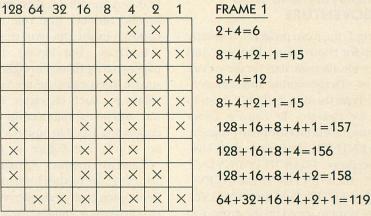
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Figure 4 **Creating Characters**



The data for this character is: 6,15,12,15,157,156,158,119

128	64	32	16	8	4	2	1	FRAME 2
			×	×				16+8=24
	130	×	×	×	×			32+16+8+4=60
				×	×			8+4=12
				×	×	×	X	8+4+2+1=15
	×		X	×	×		×	64+16+8+4+1=93
×			×	×	×			128+16+8+4=156
×			×	×	×	×		128+16+8+4+2=158
2005	×	×	×		×	×	×	64+32+16+4+2+1=119

The data for this character is: 24,60,12,15,93,156,158,119

Figure 5 **Data Lines**

line number	data for
9060 DATA	(antagonist #1,
	frame 1)
9070 DATA	(antagonist #2,
	frame 1)
9080 DATA	(obstacle #1)
9090 DATA	(obstacle #2)
9100 DATA	(weapon)
9110 DATA	(tool)
9120 DATA	(treasure, frame 1)
9230 DATA 2,	(antagonist #1,
	frame 2)
9240 DATA 3,	(antagonist #2,
	frame 2)
9250 DATA 8,	(treasure, frame 2)

A

listing continued on page 64

SOFTWARE LIBRARY

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ERROR FILE

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DISK SUBSCRIBERS: You can use all these programs immediately. Just RUN the correct filenames shown at the beginning of each accompanying article.

ERROR FILE

Following are the known program listing errors from the most recent issues of **Antic**. See the *Help* page in this issue for any additional last-minute corrections. If an error is not shown on these pages, all programs seen in **Antic** should RUN as published. The vast majority of problems that people have in getting a program to work properly are caused when they make common typing mistakes.

RISKY RESCUE

April '84

Runs as published.
Readers are having problems with inverse closed parenthesis' in lines 610– 730. They all look different but are all the same character.

UPDATE DISKS WITH NOTE AND POINT

April '84

Line 160 should read GOTO 610. Lines 410, 440, 470, 500 and 530 should all begin: INLEN=LEN(USER\$).

MATH WIZARD

April '84

The 17th string character in line 50 should be an inverse zero. This will generate the proper Typo table.

MATCHBOX TIC-TAC-TOE

April '84

Change line 2078 to: 2078 CLOSE #3:RETURN

SPACED-OUT NUMBERS

July '84

For non-XL machines, change line 31040 as follows: 31040 D = INT (VAL(C\$)/INT($100^2 \land (68-B(0)) + 1.0E-03$)).

COLOR FINETUNER

June '84

The second line of the fragment of assembly code labelled "INSTAL" should read: LDX #CHECK1/\$100. The last line of the first section of code labelled "CHECK 2" should be: BNE EXIT. The second line of "FCOLOR" should be LDA PCOLRO.X.

LITTLE BROTHER GROWS UP

April '84

Various components listed within the article are incorrect. Go by the schematic which is correct.

6502 DISASSEMBLER

March '84

Will not run in ValForth; requires FigForth or Atari APX Forth. In Screen #30, lines 10 & 13 should read: 10 0< IF DROP DROP I 0 LEAVE 13 0 VARIABLE POINTER.

ESCAPE MAZE

March '84

Add the following line: 75 HIT=0.

RECALL

August '84

To get this program to run, you must first LIST it to disk or cassette. Type NEW and then type DIM QQ\$(1). After this, ENTER the program. SAVE this version which will run from then on without the preliminaries.

CREEPY CAVERNS

August '84

In line 10, change M0(N,5) to M0(P,5). In line 349, there is a Y0 (Y-ZERO) that should be YO (with capital letter O). This first change will prevent an error 3 and the second an error 9.

AMODEM

July '84

There is an error in the instructions of the R-Receive procedure (and others that mention filenames). Do not include quotes when typing in a filename during the run of the program.

LISTING CONVENTIONS

Our listing printouts represent all ATASCII characters as they appear on the video screen. You generate some characters by a single keystroke, for example, the regular alphabet. Others require a combination or sequence of keystrokes. In this table, ESC means *press and release* the escape key before pressing another key. CTRL or SHIFT means *press and hold* the control or shift key while simultaneously pressing the following key.

The Atari logo key () "toggles" inverse video for all alphanumeric and punctuation characters. Press the logo key once to turn it on; press again to turn it off. In the XL line there is no logo key; inverse video is controlled by the Reverse Video Mode key. Decimal values are given as reference, and correspond to the CHR\$ values often used in BASIC listings. Please note that the boxes around the special characters in the NORMAL VIDEO table are included only for visual reference. These boxes do not appear in the listed programs.

	NORMAL VID	EO		INVERSE VID	EO
FOR THIS	TYPE THIS	DECIMAL VALUE	FOR THIS	TYPE THIS	DECIMAL
	CTRL ,	Ø		JIL CTRL ,	128
F	CTRL A	1	•	JL CTRL A	129
	CTRL B	2	•	八 CTRL B	130
E	CTRL C	3	23	八 CTRL C	131
H)	CTRL D	4	Ð	JIL CTRL D	132
5	CTRL E	5	0	JL CTRL E	133
	CTRL F	6		ルCTRL F	134
	CTRL G	7		JIL CTRL G	135
	CTRL H	8		JIL CTRL H	136
	CTRL I	9		JL CTRL I	137
	CTRL J	10		JIL CTRL J	138
	CTRL K	11	E	JIL CTRL K	139
	CTRL L	12		JIL CTRL L	140
	CTRL M	13		JIL CTRL M	141
	CTRL N	14		JLCTRL N	142
	CTRL O	15	<u> </u>	JIL CTRL O	143
	CTRL P	16		JIL CTRL P	144
Œ	CTRL Q	17	G	JILCTRL Q	145
	CTRL R	18		JILCTRL R	146
Œ	CTRL S	19		JILCTRL S	147
	CTRL T	20		JLCTRL T	148
	CTRL U	21		JILCTRL U	149
	CTRL V	22		JILCTRL V	150
⊞	CTRL W	23		JILCTRL W	151
<u> </u>	CTRL X	24		JILCTRL X	152
	CTRL Y	25		JILCTRL Y	153
9	CTRL Z	26		八CTRL Z	154
E	ESC ESC	27		ESC	
€ €	ESC CTRL —	28		SHIFT	
	ESC CTRL =	29		DELETE	156
€	ESC CTRL +	30	D	ESC	
	ESC CTRL *	31		SHIFT	
•	CTRL .	96		INSERT	157
1	CTRL;	123	C	ESC	
	SHIFT ==	124		CTRL	
FS	ESC			TAB	158
	SHIFT		5 2	ESC	
F	CLEAR	125		SHIFT	
•	ESC DELETE	126	_	TAB	159
	ESC TAB	127		JILCTRL .	224
			0	JICTRL;	251
			<u></u>	JUSHIFT =	252
			18.3	ESC CTRL 2 ESC	253
				CTRL	
			13	DELETE	254
			E C	ESC	234
				CTRL	
				INSERT	255

O ADVENTURE ISLAND

LISTING 1

O REM ADVENTURE ISLAND BY ROBERT LEE ANTIC MAGAZINE

1 GOTO 10

2 ? :? "PRESS RETURN TO CONTINUE"; :INP UT CS:? "W":RETURN

3 V=0:FOR W1=A TO U:V=V+INT(RND(0)*T): NEXT W1: V=V+U: RETURN

4 GOSUB 340:GOTO 149

5 ? :RESTORE S+N1:FOR X=A TO N2:READ X \$,Y,ZZ:? X;")";X\$;:FOR Z=A TO 15-LEN(X 5):? ".";:NEXT Z

6 ? Y;: IF Y<H THEN ? " ";

7 ? " GP": NEXT X

8 ? :? "'TELL ME THE # OF ITEM YOU WAN SAY NONE IF YOU'RE DONE. " : RETUR

10 0=0:A=1:B=2:C=3:D=4:E=6:F=8:G=9:H=1 0:I=B*H:J=H*H:K=J*J:R=F*J:S=G*J:Q=C*E: A1=171:5Y=660:Y5=430

12 0X=12:0Y=13:DIM C5(I),E(I),F(B),W(A),S(D),TM(A1,D),X\$(120),T1\$(I),T2\$(I), MS (D), MXS (D)

13 GRAPHICS Q:POSITION A.D:? #E," ADVENTURE ISLAND": FOR X=A TO S:N

14 GRAPHICS 0:POKE 710.254:POKE 709.24 4:POKE 83,37

15 ? :? "RESTORE OLD GAME(Y/N)";:INPUT CS:IF CS O'Y" THEN GOTO Q

16 GOSUB 2950:GOSUB 2920:? :? "EXPERIE NCE LEVEL: ";LL:GOSUB 640:GOSUB 630:GO SUB B:GOSUB 450:GOSUB B

17 GOSUB 92:GOSUB 380:GOTO 150

18 GOSUB 750

19 TRAP 19:? :? "EXPERIENCE LEVEL";:IN PUT LL: IF LL A THEN 19

20 T=E:U=C:GOSUB C:CS=V:GOSUB C:CI=V:G OSUB C:CW=V:GOSUB C:CO=V:GOSUB C:CD=V: GOSUB C:CH=V

40 GOSUB 640:? :? "TRY ANOTHER CHARACT ER (Y/N)"; :INPUT C5:IF C5="Y" THEN 20

59 GOSUB 759

64 T=F:U=C:GOSUB C:GP=V+C:GP=INT(GP*D)

65 GOSUB 630:OLDHP=HP

66 GOSUB B

90 RESTORE K+J*X1+Y1:READ L.MS,X5:GOSU B I*J

91 GOSUB 92:GOTO 130

92 RESTORE K+J*X1+Y1:READ L,M5,X5:IF L EN(X5) () A THEN ? X5: RETURN

93 ON ASC(X\$)-64 GOTO 94,95,96,97,98,9 9,100,101,102,103,104,106,108,109,110,

94 ? "JELLO BRICK ROAD": RETURN

95 ? "DIMLY-LIT CAVES": RETURN

96 ? "SEEMINGLY ENDLESS ROWS OF RED DO RIC COLUMNS.": RETURN

97 ? "GHOULISH COOLISH GREENISH FOREST ": RETURN

98 ? "HOT MUGGY SWAMPLANDS": RETURN 99 ? "BENEATH A GREAT PINK SANDSTONE W ALL": RETURN

100 ? "CURIOUS GARDEN OF WILD FLOWERS"

: RETURN

101 ? "A CUBICLE INSIDE THE TEMPLE": RE

102 ? "HALL OF MIRRORS": RETURN

103 ? "GLOWING UNDERGROUND RIVER": RETU

104 ? "IN A NARROW CRACK-LIKE TUNNEL": RETURN

106 ? "ANCIENT WEED-OVERGROWN ROAD PAV WITH HUGE BLOCKS OF GRANITE.": RET ED

108 ? "GOLDEN BEACH": RETURN

109 ? "HIGH WHITE CHALK CLIFFS": RETURN

110 ? "THE SHINING SEA": RETURN

111 ? "BARREN ROCKY ISLET": RETURN

120 INPUT X5:? : RESTORE 999: FOR C1=A T O Q-A:READ CS

121 IF XS=CS THEN RETURN

122 NEXT C1:GOSUB C*J:C1=0:RETURN

125 IF CN=DC THEN ? "THIRSTY?":HP=0:G0 TO 350

126 IF CN=FC THEN ? "HUNGRY?":HP=0:GOT 0 350

127 CN=CN+A: RETURN

130 GOSUB 380:GOSUB H*J:IF TM(L,D)>O A ND INT(RND(O)*(CD+SCD)/F)=O THEN GOSUB 340

149 GOSUB 560

150 ? :? "ENTER COMMAND: MOVE NUMBER "

151 ? "EAT BY MOVE ";FC;" ";"DRINK BY MOUE "; DC: IF CN> = FC-A OR CN> = DC-A THE N ? """;

153 GOSUB 120:IF C1 (A THEN 150

154 C2=C1:ON C1 GOSUB SY, SY, SY, SY, 380,

470,530,450,580,75,75,75,75,1100,1200, 625,2900

155 GOSUB 125:ON C2 GOTO D.90.0.0.D.D. D.D.D.D.D.D.D.D.D.601,150

199 ? "A MAID ASKS 'WOULD YOU BE WANTI ANY FOOD OR DRINK'(Y/N)"; : INPUT C S:IF CS="N" THEN 213

200 ? "SHE SHOWS YOU A MENU."

? :? "FOOD & DRINK":GOSUB 5 201

205 TRAP 213: INPUT T: IF T A OR T>N2 TH EN 205

206 IF W=H THEN 211

207 RESTORE S+T+N1-A:READ X5,Y,ZZ:IF G P-Y<0 THEN 210

208 FOR II=H TO I:IF E(II) <> O THEN NEX TIL

209 GP=GP-Y:E(II)=N1+T-A:W=W+A:? "'O.K . '":? "'YOU HAVE ";GP;" GP CREDITS LEF T. '":F2=A:GOSUB 500:GOTO 211

218 GOSUR 629

211 GOSUB 627:GOTO 201

213 ? "THE MAID LEAVES YOU...": RETURN 270 ? "THE BLACKSMITH ASKS 'DO YOU WAN ARMOR OR WEAPONS' (Y/N)"; : INPUT C\$

:IF C5="N" THEN 285

271 ? "HE SHOWS YOU A LIST."

continued on next page

272 ? :? "ARMOR & WEAPONS": GOSUB 5 277 TRAP 285: INPUT T: IF T A OR T G THE N 277 278 IF W=H THEN 283 279 RESTORE S+T: READ X5, Y: IF GP-Y<0 TH EN 281 280 GP=GP-Y:E(T)=E(T)+A:W=W+A:? "'O.K. ":? "'YOU HAVE "; GP; " GP CREDITS LEFT . "":GOTO 283 281 GOSUB 629 283 GOSUB 627:GOTO 272 285 ? "HE LEAVES YOU...": RETURN 300 ? :? "N NORTH":? "5 SOUTH":? "E EAST":? "W WEST":? "X EXAMINE":? "G GET": 7 "D DROP" 305 ? "T INVENTORY & STATUS":? "F ?? ??":? "A ATTACK WITH SWORD/SPEAR":? " THROW SPEAR" 310 ? "FP FIRE POISON ARROW":? "FS FIR E SILVER ARROW": ? "ET EAT": ? "DK DRINK ":? "OT QUIT":? "SG SAVE" 315 RETURN 340 IF TM(L,D)=0 THEN 353 341 ? "YOU'RE UNDER ATTACK!": AC=G+SAC: IF E(G)>0 THEN AC=AC-A 342 Z=0:FOR X=E TO F:IF E(X)>0 THEN Z= (X-5) *B 344 NEXT X:AC=AC-Z 346 RESTORE R+TM(L,C):READ X5,MH,MAC,M A, MD: X=I-AC-MH: FOR Y=A TO INT(RND(0)*M A) +A 348 IF INT(RND(O)*I)+A+SCD<X THEN ? "C RUNCH! A GLANCING BLOW!": GOTO 352 349 ? "OW! YOU'VE BEEN HURT!": HP=HP-CI NT(RND(O)*MD)+A):? "HIT POINTS LEFT: " : HP 350 IF HP (A THEN ? "KYOU'RE DEAD. K": FO R X=A TO J:NEXT X:POP :GOTO 601 352 NEXT Y 353 RETURN 360 MX5=M5:X=0:IF INT(RND(0)*(CI+5CI)/ B)>0 THEN 370 362 FOR Y=A TO D:IF MS(Y,Y) <>"O" THEN H=X+A 363 NEXT Y:IF X=0 THEN 370 366 FOR Y=A TO INT(RND(O)*X)+A 367 Z=INT(RND(0)*D)+A:IF MX5(Z,Z)="0" **THEN 362** 369 MX5(Z,Z)="0":NEXT Y 370 ? "YOU CAN MOVE: "; 371 FOR DR=A TO D:IF MX5(DR,DR)="0" TH EN 377 372 ON DR GOTO 373,374,375,376 373 ? " N ";:GOTO 377 374 ? " 5 ";:GOTO 377 375 ? " E ";:GOTO 377 376 ? " W"; 377 NEXT DR 378 IF MX5="0000" THEN ? "NOWHERE"; 379 ? " ":RETURN 380 GOSUB 400:GOSUB 420:GOSUB 360:RETU RN 400 F1=0:T15="":T25="":V1=0:V2=0:Z1=0: Z2 = 0402 IF TM(L,A) <> 0 AND INT(RND(0)*(C+5C W))>O THEN RESTORE S+TM(L,A): READ T15, V1, Z1:? "OBJECTS: "; T15:F1=A 403 IF TM(L,B) <> 0 AND INT(RND(0)*(C+5C W))>0 THEN RESTORE S+TM(L,B):READ T25, V2, Z2:? "OBJECT5: "; T25:F1=F1+B 404 IF F1=0 THEN ? "OBJECTS: NONE":GOT 0 407

405 IF INT(RND(O)*((CW+SCW)/C))=0 THEN 497 406 IF Z1+Z2>0 THEN ? "BEWARE OF THE O BJECTS!" **407 RETURN** 420 ? "MONSTERS: ";: IF TM(L,D)=0 THEN "NONE": GOTO 423 421 RESTORE R+TM(L,C):READ X5:GOSUB 49 0:? P;" "; K5; : IF P>A THEN ? "S" 422 IF P=A THEN ? "" **423 RETURN** 430 IF TM(L,D)=0 THEN 420 431 WS=0:0N C1-G GOTO 432,435,437,437 MM=A:MN=A:IF W(A)>O THEN WS=A:? "C 432 HOP!": GOTO 442 433 IF E(A)+E(B)=0 THEN GOSUB 449:? "5 WORDS OR SPEARS.": RETURN 434 ? "KILL!!!": GOTO 442 435 IF E(B)=0 THEN GOSUB 449:? "SPEARS ": RETURN 436 MM=0.75:MN=1.5:X=B:Y=B:GOSUB 539:? "SWISH!": GOTO 442 437 IF E(C)=0 THEN GOSUB 449:? "BOW.": RETURN 438 IF C1-G=C AND E(D)=0 THEN GOSUB 44 9:? "POISON ARROWS.":RETURN 439 IF C1-G=C THEN MM=0.5:MN=1.5:X=D:Y =D:GOSUB 539:? "TWANG!":GOTO 442 440 IF E(5)=0 THEN GOSUB 449:? "SILVER ARROWS . " : RETURN 441 MM=0.5:MN=0.75:X=5:Y=5:WS=WS+B:GOS UB 539:? "TWANG!" 442 RESTORE R+TM(L.C): READ X5, MH, MAC, M A. MD. MS 443 ON MS GOTO 444,445,447,448 444 GOSUB 670: RETURN 445 IF WS=A OR WS=C THEN GOSUB 670:RET URN 446 GOTO 448 447 IF WS=B OR WS=C THEN GOSUB 670:RET URN 448 ? "NO EFFECT.": RETURN 449 ? "YOU HAVE NO "; : RETURN 450 ? "MANUFAMORNY":? :? GP;" GP CREDITS ":FOR X=A TO I:IF E(X)=0 THEN 455 452 Z=E(X):Y=X:IF X>G THEN Y=E(X):Z=A 453 RESTORE S+Y: READ X5:? Z;" "; X5; : IF Z>A THEN ? "5" 454 IF Z=A THEN ? " " 455 NEXT X 457 ? :? "HOT POURTS":? :? HP;" HIT PO INTS (";:? INT(HP*J/OLDHP);"% OF TOTAL ": RETURN 470 GOSUB 627: IF W=H THEN 482 472 ? "GET WHAT"; : INPUT X5: IF X5="" TH EN 472 473 IF X5<>T15 AND X5<>T25 THEN ? "IT" 5 NOT HERE.": GOTO 482 474 ? "GOT IT.": IF X5=T15 THEN X=TM(L, A):TM(L,A)=0:T15="":F1=F1-A 475 IF X5=T2\$ THEN X=TM(L,B):TM(L,B)=0 :T25="":F1=F1-B 476 IF X<H THEN E(X)=E(X)+A:W=W+A:GOTO 481 477 RESTORE S+X:READ X5,Z,ZZ:IF ZZ=A T **HEN 482** 478 IF ZZ>A THEN F2=A:F3=0:G0SUB 500:I F F3=A THEN 476 479 FOR Y=H TO I:IF E(Y)=O THEN E(Y)=X :W=W+A:GOTO 481 480 NEXT Y 481 GOSUB 627

482 RETURN 490 P=INT(TM(L,D)):IF INT(TM(L,D)*J)-P *J>O THEN P=P+A **491 RETURN** 500 TRAP 501:GOSUB 500+ZZ:RETURN 501 POP : RETURN 502 VX=X-I:S(VX)=S(VX)+F2:RETURN 505 VX=X-24:5(VX)=5(VX)+F2*H:RETURN 506 F3=A:X=INT(RND(O)*67)+A:IF X=44 TH EN 506 507 RETURN 508 SCW=SCW+J*F2:RETURN 509 SCW=SCW-J*F2:RETURN 510 SCI=SCI+J*F2:RETURN 511 SCI=SCI-J*F2:RETURN 512 W(A) = W(A) + F2: SCS = SCS - F2: RETURN 513 SAC=SAC+J*F2:RETURN 514 W(A)=W(A)+F2:SCS=SCS+F2:RETURN 517 SAC=SAC-J*F2:RETURN 518 F(A)=F(A)+F2:RETURN 519 F(B) = F(B) + F2 : RETURN 520 IF F2=A THEN HP=HP-INT(RND(O)*OLDH P1:605UB 624 521 RETURN 522 IF F2=-A THEN X1=0X:Y1=0Y:GOTO 526 523 RETURN 524 IF F2=-A THEN X1=19:Y1=H:GOTO 526 525 RETURN 526 POP :POP :? "TELEPORTED!":GOTO 90 530 ? "DROP WHAT"; : INPUT CS: IF CS="" T **HEN 530** 532 FOR Y=A TO I:IF E(Y)=0 THEN 536 533 X=E(Y):IF Y<H THEN X=Y 534 RESTORE S+X: READ XS, Z, ZZ 535 IF X5=C5 THEN 538 536 NEXT Y 537 ? "YOU DON'T HAVE ONE.":GOTO 547 538 ? "THUD." 539 CT=0:IF TM(L,A)=0 THEN TM(L,A)=X:G OTO 544 540 IF TM(L,B)=0 THEN TM(L,B)=X:GOTO 5 541 Z1=INT(RND(0)*A1)+A:IF TM(Z1,A)=0 THEN TM(Z1, A) = X: GOTO 544 TM(Z1,B)=0 THEN TM(Z1,B)=X:G0T0 544 543 CT=CT+A: IF CT<H THEN 541 544 W=W-A:IF Y<H THEN E(Y)=E(Y)-A:GOTO 547 545 E(Y)=0:IF ZZ>A THEN F2=-A:GOSUB 50 547 RETURN 560 FOR Z=A TO D:IF M\$(Z,Z)="0" THEN 5 562 IF INT(RND(O)*CH/C)>O THEN 572 563 X=0:Y=0:ON Z GOTO 564,565,566,567 564 Y=0:NR=8:GOTO 568 565 Y=-A:NR=A:GOTO 568 566 X=A:NR=D:GOTO 568 567 X=-A:NR=C 568 RESTORE K+J*(X1+X)+Y+Y1:READ L1,X5 :IF TM(L1,D)=0 OR X\$(NR,NR)="O" THEN 5 72 569 IF TM(L,D)>O AND TM(L,C) <> TM(L1,C) **THEN 572** 570 TM(L,C)=TM(L1,C):TM(L,D)=TM(L,D)+T M(L1,D):TM(L1,C)=0:TM(L1,D)=0 571 IF TM(L,D)>0 THEN ? "INCOMING MONS TERS!": GOSUB 420 572 NEXT Z **573 RETURN**

580 OP=0:? :? "YOU HEAR A LOUD NOISE."

581 IF TM(L,D)=0 THEN OCH=CH:CH=0:GOSU B 560:CH=OCH:GOTO 596 582 IF INT(RND(0)*(E+SG))=0 THEN 596 583 Y=0:IF OP>D THEN 596 584 Z=INT(RND(0)*D)+A:IF M\$(Z,Z) <>"0" **THEN 587** 585 Y=Y+A:IF Y>E THEN 596 586 GOTO 584 587 X=0:Y=0:ON Z GOTO 588,589,590,591 588 Y=A:GOTO 592 589 Y=-A:GOTO 592 590 X=A:GOTO 592 591 X=-A TM(Z,C) <> 0 AND TM(Z,C) <> TM(L,C) THEN OP=OP+A:GOTO 583 594 TM(Z,C)=TM(L,C):TM(Z,D)=TM(Z,D)+TM(L,D):TM(L,C)=0:TM(L,D)=0:G0SUB 420 596 RETURN 601 FOR II=A TO G:RESTORE S+II:READ X5 Y:GP=GP+E(II)*Y:NEXT II 602 FOR II=H TO I:IF E(II)>O THEN REST ORE S+E(II):READ X\$,Y:GP=GP+Y 603 NEXT II:? :? "YOUR WEAPONS AND TRE ASURES HAVE ALL BEEN SOLD." 614 GP=INT(GP):EP=EP+GP:EP=INT(EP*CS/G):OLDLL=LL:LL=LL+INT(EP/C/J) 615 GOSUB 640:GOSUB 630:? :? "EXPERIEN CE POINTS: ";EP:? :? "LEVEL: ";LL 617 ? :? "START OVER WITH THIS CHARACT ER (Y/N)"; : INPUT CS: IF CS="N" THEN END 620 GOSUB 750:GOSUB 640:IF LL>OLDLL TH EN GOSUB 759:GOTO 64 621 HP=OLDHP:GOTO 64 624 IF HP<A THEN POP :POP :POP :GOTO 3 625 RETURN 627 IF W=H THEN ? "YOU CAN'T CARRY ANY MORE." **628 RETURN** 629 ? "'YOU HAVE ";GP;" GP CREDITS LEF T. '": ? "'YOU DON'T HAVE ENOUGH GOLD. '" : RETURN 630 ? :? "HIT POINTS : "; HP:? :? "GOLD PIECES : "; GP:RETURN 640 ? :? "CHARACTER TRAITS":? :? "STRE NGTH.....; CS:? "INTELLIGENCE..."; CI :? "INTUITION...."; CW 641 ? "CONSTITUTION ... "; CO:? "SPEED";CD:? "VISAGE.....";CH:RET URN 660 IF MX5(C1,C1)="0" THEN ? "YOU CAN' T.":C2=A:GOTO 667 661 X=0:Y=0:ON C1 GOTO 662,663,664,665 662 Y=A:GOTO 666 663 Y=-A:GOTO 666 664 X=A:GOTO 666 665 X=-A 666 X1=X1+X:Y1=Y1+Y:C2=B 667 RETURN 670 X=INT((19-MAC-(CD+SCD)/D)*MM):IF I NT(RND(O)*I)+A<X THEN ? "YOU MISSED!": **GOTO 678** 671 ? "A HIT!": Y=INT(RND(O)*(E+CS/H+SC S)*MN)+A:IF Y<A THEN Y=INT(RND(O)*C)+A 672 Z=Y/MH:IF Z>A THEN Z=A 673 GOSUB 490: OP=P: TM(L,D) = TM(L,D) - Z: I F TM(L,D) <0.01 THEN TM(L,D)=0 674 GOSUB 490:GOSUB 420:? "MONSTER TYP

continued on next page

E'S HIT DICE: "; MH:? "POINTS OF DAMAGE

DONE: ":Y 675 IF OP>P THEN ? "YOU KILLED THE ";X 5;"!":EP=EP+MH^B*F:GOTO 678 676 ? "YOU WOUNDED THE "; X5;"." 678 RETURN 680 ? "THE PAWNBROKER ASKS, YOU WANNA SELL SOMETHING' (Y/N)"; : INPUT C5:IF C5= "N" THEN 699 681 ? "SELL WHAT"; : INPUT C5: IF C5="" T **HEN 681** 682 FOR Y=A TO I:IF E(Y)=0 THEN 686 683 X=E(Y):IF Y<H THEN X=Y 684 RESTORE S+X: READ X5, Z, ZZ 685 IF X5=C5 THEN 688 686 NEXT Y 687 2 "'YOU DON'T HAVE ONE. "": GOTO 698 688 Z=Z-INT(RND(0)*Z*0.4):IF Z=0 THEN ? "'I CAN'T USE THAT. "": GOTO 698 689 ? "'I'LL GIVE YOU "; Z;" GOLD PIECE S":? "FOR IT. '(Y/N)"; :INPUT C5 690 ? "'O.K. '": IF C5 (>"Y" THEN 698 691 GP=GP+Z:W=W-A:IF Y<H THEN E(Y)=E(Y)-A:GOTO 697 692 E(Y)=0:IF ZZ>A THEN F2=-A:GOSUB 50 697 ? "'YOU GOT A TOTAL OF "; GP;" CRED IT5. " 698 ? "'ANYTHING ELSE TO SELL' (Y/N)"; : INPUT C5:IF C50"N" THEN 681 699 GOTO 285 750 ? :? "INITIALIZING...": W=0:5C5=0:5 AC=0:5CW=0:5CI=0:5CD=0:EP=0:CN=A:FC=30 :DC=T:56=0 751 X1=0X:Y1=0Y:FOR X=A TO I:E(X)=0:NE XT X:RESTORE K 752 TRAP 754: READ X, X5, X5, X5 753 TM(X, A) = ASC(X\$(A, A)): TM(X, B) = ASC(X \$(B,B)):TM(X,C)=A5C(X\$(C,C)):TM(X,D)=A SC(X5(D,D)):GOTO 752 754 F(A)=0:F(B)=0:W(A)=0:FOR II=A TO D :S(TT)=0:NEXT II 757 ? ""; : RETURN 759 T=F:U=LL:GOSUB C:HP=V:IF CO=Q THEN HP=HP*D 761 IF CO=17 THEN HP=HP*C 762 IF CO=15 OR CO=16 THEN HP=HP*B 763 IF CO<7 THEN HP=LL 764 RETURN DATA BLACK ORC, 7, 7, 1, 5, 1 801 DATA SKELETON, 5, 6, 1, 5, 3 803 DATA MAMMOTH, 12, 5, 2, 8, 1 804 DATA SABER TOOTH TIGER, 11,5,2,7,1 805 DATA MONK, 6, 7, 1, 3, 1 806 DATA MONK-EY, 4, 4, 1, 2, 1 807 DATA RAINBOW WORM, 16,7,1,8,1 808 DATA METAL STATUE.9.0.1.7.1 809 DATA ORC CHIEFTAIN, 8, 6, 1, 5, 1 810 DATA FOUR-HEADED HYDRA.24.4.4.6.2 SILVER DRAGON, 40, 1, 3, 9, 1 DATA 812 DATA HORRID WES-LEY, 1, 1, 1, 1, 4 813 DATA CEREBUS, 19,5,3,6,1 814 DATA NASTY DOGGIE, 4, 5, 1, 3, 1 815 DATA LAVA TROLL, 9, 0, 1, 6, 4 VAMPIRE BAT, 2, 1, 2, 1, 1 816 DATA 817 DATA WALKING PIRANHA, 2, 0, 3, 2, 1 818 DATA WERE-BEAR, 13, 5, 1, 5, 3 819 DATA WERE-WOLF, 9, 4, 1, 6, 3 820 DATA WERE-RABBIT, 6, 3, 1, 7, 3 SILVER KNIGHT, 8, 1, 1, 6, 1 DATA 822 DATA TGOR. 5. 6.1.4.1 823 DATA GHOULISH DEMON, 9, 5, 1, 6, 2 824 DATA RUBBER KNIGHT, 8, 1, 1, 6, 2

825 DATA WRAITH, 7, 4, 1, 3, 3 826 DATA CYCLOPS, 15,5,1,7,1 827 DATA FOOT-SOLDIER, 6, 6, 1, 4, 1 828 DATA LOCH NESS MONSTER, 14,4,1,6,1 829 DATA TOAD, 3, 2, 1, 1, 1 DATA BOA CONSTRICTOR, 5, 4, 1, 2, 1 830 831 DATA WHITE UNICORN, 13, 4, 3, 7, 2 832 DATA OSTRICH, 5, 5, 1, 3, 1 833 DATA WOOD GNOME, 9, 4, 1, 7, 3 DATA SKELETAL HORSE, 9, 4, 2, 5, 3 834 DATA SUNDAY DRIVER, 6, 6, 1, 4, 1 836 DATA DINOSAUR, 20, 3, 1, 8, 1 837 DATA CYBERNETIC TANK, 999, 0, 6, 50, 838 DATA LAND-SEA SHARK, 7, 4, 1, 7, 1 844 DATA 59,54,71,73,58,71,60,54,72 DATA PLAIN SWORD, 15,0 902 DATA SPEAR, 17,0 903 DATA LONG BOW, 20,0 904 DATA POISON ARROW, 2,0 905 DATA SILVER ARROW.5.0 906 DATA LEATHER ARMOR, 20,0 DATA CHAIN MAIL, 30,0 908 DATA PLATE ARMOR. 40.0 909 DATA IRON SHIELD, 10,0 910 DATA RADIUM STATUETTE, 26,0 911 DATA GOLD NUGGET, 12,0 912 DATA IVORY DRAUGHTS SET, 42,0 913 DATA GOLD BAR, 46,0 914 DATA POT OF GOLD, 33,0 915 DATA BAG OF SILVER, 17,0 DATA CASKET OF GEMS, 66,0 917 DATA DEAD ATARI 400,40,6 918 DATA FIRESTONE, 50,0 919 DATA BAG OF ORICHALCS, 100, 0 920 DATA BLACK PEARL NECKLACE, 15,0 921 DATA BLUE SPHERE, 5, 2 922 DATA RED PYRAMID, 5, 2 923 DATA YELLOW CUBE, 5, 2 924 DATA GREEN BOX,5,2 925 DATA FIRESTONE, 50, 5 926 DATA AMETHYST, 50,5 927 DATA RUBY, 50,5 928 DATA TOPAZ,50,5 929 DATA BLUE HOPE DIAMOND, 75,0 930 DATA SILLY PUTTY, 1,6 931 DATA CANNONBALL,9,0 932 DATA BATS BREATH, 6, 6 933 DATA CHARIOT WHEEL, 25,0 934 DATA FLAMING DRAGON SWORD, 25, 14 935 DATA WHITE HAIR,0,8 DATA BLACK WOOD SPEAR, 19,1 937 DATA 16K GOLD CHIP, 13, 0 938 DATA CRACKED CLAY PITCHER, 0, 20 939 DATA GREEN ORB, 29,9 940 DATA JADE NECKLACE, 33, 13 941 DATA PHILOSOPHERS STONE, 7, 1 7 LAYERED SHIELD, 15, 17 942 DATA 943 DATA IRON PINCERS, 3, 0 945 DATA SUNKINGS CROWN, 70, 11 DATA CUNYS SKULL,0,10 947 DATA ROCK, 0, 18 948 DATA KNISH, 4, 18 949 DATA STEW, 5, 18 950 DATA MUTTON, 6, 18 951 DATA PORK CHOPS, 7, 18 952 DATA STEAK, 8, 18 953 DATA CIDER, 4, 19 954 DATA ALE,5,19 955 DATA WINE, 6, 19 956 DATA MEAD, 7, 19 957 DATA LEADEN LIQUID, 33, 19 958 DATA SACK OF MAGIC BEANS, 2, 18

959 DATA PUDDLE, 0, 19 960 DATA DOM PERIGNON, 4, 19 961 DATA MERCURY PUDDLE,1,19 962 DATA FUNGUS BREAD, 0, 18 963 DATA FORBIDDEN FRUIT, 2, 18 964 DATA OSTRICH MCNUGGET, 0,18 965 DATA YELLOW RIBBON, 5, 18 966 DATA ROCK. 0.0 967 DATA PEBBLE, 0, 6 968 DATA DOUGHNUT HOLE, 0, 22 969 DATA CUTLASS, 20, 12 970 DATA SILVER OVOID, 15, 24 971 DATA HONDA, 100, 0 972 DATA PLUMED HELMET, 18,0 999 DATA N.S.E.W.X.G.D.I.F.A.T.FP.FS.E T, DK, QT, SG 1000 IF L=73 THEN N1=A:N2=G:GOSUB 270: RETURN 1001 IF L=89 THEN GOSUB 680: RETURN 1002 IF L=58 THEN HP=OLDHP:N1=48:N2=G: GOSUB 199: RETURN 1008 IF L=136 AND TM(134,D)+TM(136,D) < A THEN GOSUB 1300:POP :C1=16:GOTO 601 1050 RETURN 1100 IF F(A) (A THEN ? "YOU HAVE NO FOO D.":GOTO 1199 1105 ? "EAT WHAT"; : INPUT C5: IF C5="" T HEN 1105 1106 FOR X=H TO I:IF E(X)=0 THEN 1111 1109 Y=E(X):RESTORE S+Y:READ X5,Z,ZZ 1110 IF X5=C5 THEN 1113 1111 NEXT X 1112 ? "YOU DON'T HAVE ONE.": GOTO 1199 1113 IF Y=58 THEN HP=OLDHP:SG=E 1114 IF Y=63 THEN ? "SINNER!": GOTO 112 1115 IF Y=62 THEN ? "YEECH! TASTES LIK E POTSON!": HP=0:GOTO 350 1118 IF ZZ=Q THEN FC=CN+Y: JX=A: GOTO 11 20 1119 ? "YOU CAN'T EAT THAT.": GOTO 1199 1120 F(JX)=F(JX)-A:E(X)=0:W=W-A 1130 ? "AAHHH! THAT WAS 50,50 GOOD!" 1199 RETURN 1200 IF F(B) (A THEN ? "YOU HAVE NO DRI NK.": GOTO 1299 1205 ? "DRINK WHAT"; : INPUT CS: IF CS="" THEN 1205 1206 FOR X=H TO I:IF E(X)=0 THEN 1211 1209 Y=E(X):RESTORE S+Y:READ X5,Z,ZZ 1210 IF X5=C5 THEN 1213 **1211 NEXT X** 1212 ? "YOU DON'T HAVE ONE.": GOTO 1299 1213 IF Y=61 THEN ? "GURGLE, GURGLE.":H P=0:GOTO 350 1214 IF Y=57 THEN HP=OLDHP 1216 IF ZZ=19 THEN DC=CN+Y-23: JX=B:GOT 0 1128 1219 ? "YOU CAN'T DRINK THAT.": GOTO 12 99 1299 RETURN 1300 ? :? "THE WALLS BEGIN TO GLOW. SU DDENLY, FIERY RUNES APPEAR IN THE AIR 111111:7 1301 RESTORE 844: QK=E: GOSUB 1304:? " I 5 YOUR NAME AND "; : QK=C: GOSUB 1304:? : ? "IS THE SECRET OF YOUR POWER!" 1303 ? :FOR X=A TO J:NEXT X:RETURN 1304 FOR II=A TO OK: READ X: X=X+5(B):? CHR5(X):: NEXT II: RETURN 1600 IF S(C)/B(>INT(S(C)/B) AND S(A) (H

50 1620 IF S(A) (A THEN GOTO 1650 1635 GOSUB 3000 1639 IF LEN(CS) (>E THEN 1649 1640 IF CS(E,E) (>CHRS(80) THEN 1649 1645 RETURN 1649 ? "'GNORW! "" 1650 ? "A BLUE FORCE FIELD PUSHES YOU BACK!": X1=X1+A: RETURN 1660 ? "THE GUARDIAN RIPS YOU TO SHRED 5111 1661 HP=0:POP :GOTO 350 1800 IF S(D)/B(>INT(S(D)/B) AND S(B) (H THEN GOSUB 1850: GOTO 1660 1810 IF TM(53,D)+TM(68,D)+TM(84,D)+TM(67, D)>0 THEN GOTO 1850 1820 IF S(A) (H OR S(B) (A THEN GOTO 185 1835 GOSUB 3000 1839 IF LEN(C\$) <> E THEN 1849 1840 IF C\$(5,5) <> CHR\$(90) THEN 1849 1845 RETURN 1849 ? "'GNORW! "" 1850 ? "A RED FORCE FIELD SLAMS YOU BA CK!":X1=X1+A:RETURN 2000 IF L=1 THEN GOSUB 1600: RETURN 2002 IF L=67 THEN GOSUB 1800: RETURN 2004 IF L=135 THEN GOSUB 2100: RETURN 2006 IF L=48 THEN GOSUB 2200:RETURN 2050 RETURN 2100 IF S(A)+S(B)+S(C)+S(D)=44 THEN ? "TELEPORTED!":X1=X1-A:RETURN 2101 IF S(A)/B > INT(S(A)/B) AND S(C) <H THEN GOSUB 2150: GOTO 1660 2110 IF TM(131,D)+TM(135,D)>0 THEN GOT 0 2150 2120 IF S(A)+S(B) (I OR S(C) (A THEN GOT 0 2150 2135 GOSUR 3000 2140 IF LEN(C5) (>D THEN 2149 2141 IF C5(D,D) <> CHR5(80) THEN 2149 2145 RETURN 2149 ? "'GNORW! "" 2150 ? "A YELLOW FORCE FIELD SHOVES YO U BACKVIOLENTLY!": Y1=Y1+A: RETURN 2200 IF S(B)/B > INT(S(B)/B) AND S(D) <H THEN GOSUB 2250: GOTO 1660 2210 IF TM(48,D)+TM(47,D)>0 THEN GOTO 2250 2220 IF 5(A)+5(B)+5(C) <30 OR 5(D) <A TH EN GOTO 2250 2235 GOSUB 3000 2239 IF LEN(C5) <> 5 THEN 2249 2240 IF C5(C,C) (>CHR5(76) THEN 2249 2245 RETURN 2249 ? "'GNORW! "" 2250 ? "A GREEN FORCE FIELD CRUSHES YO UR FACE AND PUSHES YOU BACK!": X1=X1-A: RETURN 2900 CN=CN-A:TRAP 2914:GOSUB 2950:IF X S="D" THEN ? :? "INSERT DISK. PRESS RIA MURRY; : INPUT X5: GOTO 2905 2904 ? :? "POSITION TAPE. PRESS RECORD & PLAY, THEN RETURN." 2905 X5=CHR\$(155):OPEN #A,F,O,C\$ 2906 ? #A; X1; X5; Y1; X5; LL; X5; C5; X5; CI; X 5; CW; X5; CO; X5; CH; X5; SG 2907 ? #A;CD;XS;OLDHP;XS;HP;XS;GP;XS;E P; X5; W(A); X5; F(A); X5; F(B)

1610 IF TM(A,D)+TM(B,D)>0 THEN GOTO 16

continued on next page

THEN GOSUB 1650: GOTO 1660

2908 ? #A;W; X\$; CN; X\$; FC; X\$; DC; X\$; SCS; X 5;SAC;X5;SCW;X5;SCI;X5;SCD 2909 FOR X=A TO D:? #A;5(X):NEXT X:FOR X=A TO I:? #A;E(X):NEXT X 2911 FOR X=A TO A1:FOR Y=A TO D:? #A;T M(X,Y):NEXT Y:NEXT X 2912 CLOSE #A:? :? "EDONE.": RETURN 2914 CLOSE #A:? :? "MERROR.": RETURN 2920 TRAP 2930:IF X5="D" THEN ? :? "IN SERT DISK. PRESS RETURN"; : INPUT X5:GOT 0 2924 :? "POSITION TAPE. PRESS PLAY, 2924 2 THEN RETURN." 2924 OPEN #A, D, O, C5: INPUT #A; X1, Y1, LL, CS.CT.CW.CO.CH.SG 2925 INPUT #A; CD, OLDHP, HP, GP, EP, X, Y, Z: W(A) = X : F(A) = Y : F(B) = Z2926 INPUT #A; W, CN, FC, DC, SCS, SAC, SCW, S CI, SCD: CN=CN+A 2927 FOR X=A TO D:INPUT #A;Y:5(X)=Y:NE XT X:FOR X=A TO I:INPUT #A;Y:E(X)=Y:NE KT X 2929 FOR X=A TO A1:FOR Y=A TO D:INPUT #A; Z: TM(X, Y) = Z: NEXT Y: NEXT X: GOTO 2912 2930 GOSUB 2914:POP :GOTO 15 2950 ? :? "CASS/DISK(C/D)"; :INPUT X5:C s="C:":IF X5="D" THEN CS="D:AI.DAT" 2951 RETURN 3000 ? "THE VOICE OF THE GUARDIAN HISS ES,":? "'TAHW SI EHT KIGAM DRUW'";:INP UT CS:RETURN 10513 DATA 67,00E0,ALTAR-STONE SLAB UP HELD ON A DAIS BYKNEELING CHERUBS ... + L+ 10612 DATA 84.NOEO.H. *: 4 F 18613 DATA 68, NSOW, HALL OF STONED GIAN TS. TO THE WEST IS A RED GLOW., .. ** 10614 DATA 53,05E0,H, */ + 10711 DATA 97, NOEO, H, **+ 10712 DATA 85,NSOW,H, **** 10713 DATA 69, NSOO, DOME-SHAPED ROOM, A HOT AMBER SPHEREFLOATS NEAR THE ROOF EMITTING RAYS., B(** 10714 DATA 54, NSOW, H, **** 10715 DATA 42,05E0,H, +B-1 10720 DATA 166,00E0,0,**& m 10721 DATA 169, OSEO, PIRATE FRIGATE, SE I 10808 DATA 163, NOEO, M, VB ** 10809 DATA 160,0SEO, AHZ FISSION BOMB C RATER EVERYTHING SHINES! - 1 -10810 DATA 101.NOEO.C. 48/-10811 DATA 98, NSEW, H, **** 10812 DATA 86, NSEO, H, **/-10813 DATA 70,NSEO,H, ♥~#F 10814 DATA 55, NSEO, H. Y /-10815 DATA 43, NSEW, H, << ** 10816 DATA 28,05E0,C,**/1 10820 DATA 165,00EW, M, ---10821 DATA 168, NOOW, P, **** 10822 DATA 171,05E0,P, VC** 10908 DATA 162, NOEW, M, " " ** 10909 DATA 159,05EW,A,*** 10910 DATA 102, NOOM, C, ***14 10911 DATA 99, NSOW, C./:/-10912 DATA 87, NSOW, C, W/AF 10913 DATA 71, NSEW, C, ♥▶♥♥ 10914 DATA 56, NSOW, C, . AF 10915 DATA 44,NSOW, C, **/1 10916 DATA 29,050W, C, Bu 74

10921 DATA 167, NSOO, CLIFF OVERLOOKING THE SHINING SEA, **** 10922 DATA 170,000W,0,**& 11008 DATA 161, NOOW, M, **** 11009 DATA 158, NSOW, A, C/ IF 11010 DATA 157, NSOO, A, **** 11011 DATA 156, NSOO, A, *; ** 11012 DATA 155, NSOO, A, VB IF 11013 DATA 72, NSEW, SIGN READS 3 MILES TO THE TEMPLE OF SEZEEN.,=/** 11014 DATA 138, NSEO, SMALL ILL-KEPT CEM ETARY. MUSHROOMS ABOUND HERE., . I 11015 DATA 137, NSOO, L,;/** 11016 DATA 30, NSEO, F,; > ** 11017 DATA 23,NSOO,F,B/-F 11018 DATA 17, NSOO, F, **+F 11019 DATA 11,NSOO,F, *** + 11020 DATA 5,050W, N, 4. ** 11106 DATA 127, NOEO, K, *; ** 11107 DATA 121, NSOO, K, W. NF 11108 DATA 115,0500,K,*** 11109 DATA 109, NSEO, K,;/FF 11110 DATA 103,05E0,K, 4/44 11112 DATA 88, NOEO, STRAW COTTAGES, B; ** 11113 DATA 73, NSEW, TWO EYE'S BLACKSMIT H SHOP, *** 11114 DATA 57, OSEW, LACY MARBLE CATHEDR AL. *** 11116 DATA 31,00EW,F, **** 11117 DATA 24, NOEO, STABLES. (PHEW!) TH ERE IS A GIGANTICWOODEN HORSE HERE! . */ 11118 DATA 18, NSEO, SOUTHWEST TURRET , * 40 40 40 11119 DATA 12.NSER.GUARDS' RROMS. *** 11120 DATA 6,0SEO, NORTHEAST TURRET. TH CAN BE SEEN THRU A SLI E SHINING SEA T WINDOW.,; "** 11121 DATA 1,00EO, TINY WHITE CUBICLE W ITH NICE THICK PADDING 11205 DATA 132, NOEO, J, * "rr 11206 DATA 128,050W, J, ♥/ ₽ 11207 DATA 122,00E0, ORC STORE ROOM, --- F 11208 DATA 116, NOEO, ORC COMMON ROOM,;> 11209 DATA 110,050W, ORC GUARD ROOM, **+ 11210 DATA 104, NOEW, DARK CAVERNOUS MOU TH--THE ENTRANCE TO THE CAVES!, +/" + 11211 DATA 100, NSOO, SIGN READS 5 MILES TO THE CAVES OF PURB., **** 11212 DATA 89, NSEW, THREE EYE'S PAWN SH OP, *** 11213 DATA 74, NSEW, TOWN SQUARE OF THE VILLAGE OF MAG. A LAUGHING MAD MAN CR IES 'BEWARE!'., +*** 11214 DATA 58, NSEW, ONE EYE'S TAVERN, BD 11215 DATA 45, NSEO, SIGN READS 3 MILES TO THE CASTLE OFPICCUH., WIF 11216 DATA 32, NSEW, OUTER GATE ROOM. TH E 12-TON IRON GATES ARE AJAR! . *; ... F 11217 DATA 25, NSEW, INNER GATE ROOM. TH E INDESTRUCTIBLE INNER GATES HAVE BEEN SHATTERED! . ** IF 11218 DATA 19, NSEW, MAIN HALL. ON THE W ALL IS AN ANCIENT TAPESTRY DEPICTING A BLACK SWIRLING WHIRLARY, 98** 11219 DATA 13, NSEW, SERVANTS' QUARTERS, 4/1 F

11220 DATA 7,0SEW, EMPTY STORE ROOM. SP

10920 DATA 164, NOEW, ROCKY ROAD, *; **

```
IDERS AND SLUGS DRIP VENOMOUS VITRIOL
              RAFTERS., BOOF
FROM THE
11221 DATA 2,00EW, TORTURE CHAMBER. TO
THE WEST IS A BLUE GLOW. A BROKEN SK
ELETON LIES
             ON THE RACK., ++--
11302 DATA 134, NOEO, I, ****
11303 DATA 134, NSEO, I, ****
11304 DATA 134,05E0, I, ****
11305 DATA 133, NOOW, J, * "r-
11306 DATA 129,05E0, J, *Bm
11307 DATA 123, NOOW, ORC CHIEFTAIN'S QU
ARTERS. ON THE WALL IS A MURAL OF
A PINK TROLL . . *+ ++
11308 DATA 117, OSEW, ORC LIVING QUARTER
5. 441
11309 DATA 111, NOEO, B, ****
11310 DATA 105,0SEW, B, *; **
11312 DATA 90, NOOW, BRICK COTTAGES, ***
11313 DATA 75, NSEW, MARKET PLACE OF THE
 FOUR EYES, 4/44
11314 DATA 59,050W, LOG CABINS, ****
11315 DATA 139,00EW,L, */**
11316 DATA 33,00EW,F, ****
11317 DATA 26, NOOW, SOUTHEAST TURRET. Y
OU CAN SEE A
                 DENSE FOREST THRU THE
 WINDOW. . *; **
11318 DATA 20, NSOW, GUARDS' ROOMS, ***
11319 DATA 14, NSEW, THE MINOR HALL. AN
EVIL VIOLET FLAMEGYRATES ON THE MANTLE
PLACE., 3-**
11320 DATA 8, OSEW, LIVING QUARTERS. EVE
                 STRANGELY WARPED., ***
RYTHING IS
11321 DATA 3,00EW, DUNGEON. THE BARS AN
D SHACKLES ARE ALL RUSTY AND CORRODED
 NOW. . ** P
11402 DATA 136, NOEW, THE INFINIT CRYSTA
L ROOM, ** **
11403 DATA 134, NSEW, I, ****
11404 DATA 134, NSEW, I, ***
11405 DATA 134,0500, I, ****
11406 DATA 130, NOEW, B, *;_\
11407 DATA 124, NSOO, B, ***
11408 DATA 118,05EW,B, W; F1
11409 DATA 112, NOEW, B, ****
11410 DATA 106,0000, LAVA PIT. THERE SE
EMS TO BE NO WAY OUT . , D'. F
11413 DATA 76,00EW, SIGN READS 3 MILES
TO THE FOREST OF ELBCH., B; **
11414 DATA 141, NOEO, L, B; **
11415 DATA 140,050W, L, ** +
11416 DATA 34, NOOW, F,;!"4
11417 DATA 27, NSOO, F, $$$
11418 DATA 21,05E0,F,*4**
11419 DATA 15, NOOW, GUARD'S ROOMS, ****
11420 DATA 9.NSOW, VAULT & ARMORY, FX*+
11421 DATA 4.0SOW, SHORT ARCHED TUNNEL,
: - - - -
11502 DATA 134, NOOW, I, ****
11503 DATA 134, NSOW, I, ****
11504 DATA 134,050W,I,;/"F
11505 DATA 135, NOOO, CHAMBER OF TEL-EPO
, /E ##
11506 DATA 131,050W, LEDGE IN FRONT OF
A YELLOW CHAMBER, *** +
11507 DATA 125, NOOO, B, Vm **
11508 DATA 119,050W, B, B/**
11509 DATA 113, NOOW, B, ***
11510 DATA 107, OSEW, B, B; **
11511 DATA 143, NOEO, L, ****
11512 DATA 142, NSOO, L, ****
11513 DATA 77, NSOW, D, */**
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11515 DATA 46, NOEO, E, ***
11516 DATA 35,05E0,E,*/+
11518 DATA 22, NOOW, F, *H**
11519 DATA 16,NS00,F, *B**
11520 DATA 10,0500,N, */**
11607 DATA 126, NOOD, THE WIZARD'S SECRE
T ROOMS!, J+F
11608 DATA 120, NSOO, DARKNESS. TO THE S
OUTH IS A LIGHT! . *: **
11609 DATA 114, NSOO, B, ****
11610 DATA 108, OSEW, B, / " **
11611 DATA 144,00EW, L, 4_54
11612 DATA 91, NOEO, G, -. **
11613 DATA 78,05E0,G, *. **
11614 DATA 61,00EW, WILD CRAB APPLE TRE
E ORCHARD,??←F
11615 DATA 47,00EW, SWAMP. A GREENISH G
LOW EMANATES FROMTHE EAST. . ****
11616 DATA 36,00EW, E, ****
11709 DATA 153, NOEO, L, ****
11710 DATA 154, NSOW, CAVE MOUTH, ****
11711 DATA 145,00EW, TIME PORT #1,/; **
11712 DATA 92,00EW,G, ****
11713 DATA 79,00EW,G, ****
11714 DATA 62,00EW,D,****
11715 DATA 48,000W, A BRACKISH SPRING B
UBBLES UP FROM A MOUND AT THE BASE OF
A TREE. . . + L+
11716 DATA 37,00EW,E, *B**
11809 DATA 152,00EW, L, ****
11810 DATA 150,0000, CRATERED NUCLEAR B
ATTLEFIELD, *B% F
11811 DATA 146,00EW, ASPHALT PARKING LO
T, WG# F
11812 DATA 93,00EW,G, ****
11813 DATA 80, NOOW, G, *** +
11814 DATA 63, OSEW, D, ****
11815 DATA 49, NOEO, E, B/**
11816 DATA 38,050W,E,****
11909 DATA 151,000W, BACK GATE, ****
11910 DATA 148, NSEW, SILVER DOME. A SIG
N READS OPERATOR REQUIRED FOR 2-WAY O
PS., *F**
11911 DATA 147,050W, WIERD BUILDINGS. 0
                 AN ANTI-MATTER POWER
NE OF THEM IS
 PLANT., ***
11912 DATA 94, NOOW, G, B: **
11913 DATA 81,NS00,G,♥;→F
11914 DATA 64,05EW, D, C/E"
11915 DATA 50, NOEW, IMMENSE BLUE LAKE C
OVERED BY BLACK SHANS.,; ++
11916 DATA 39,05E0,D,****
12010 DATA 149,0000, PRIMEVAL RAIN-FORE
ST, **51
12012 DATA 95, NOEO, A BROKEN CIRCLE OF
STANDING STONES, *; -
12013 DATA 82, NSOO, FIELD OF SUNFLOWERS
. 4B44
12014 DATA 65, NSOW, D, 44 44
12015 DATA 51, OSEW, D, ****
12016 DATA 40,00EW,D,****
12112 DATA 96, NOOW, MEADOW OF EAT-YOU-A
LIVE FLOWERS, e ***
12113 DATA 83, NSOO, MONOLITHIC STONE RU
INS, - \
12114 DATA 66, NSOO, FIELD OF WHITE MOON
FLOWERS, ***
12115 DATA 52,050W, D./. **
12116 DATA 41,000W, AN OLD OAK TREE CAS
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continued on next page

11514 DATA 60,05EW,D, *; ! F

TS A DAPPLED LADE .. +A! I

SHADOW OVER A QUIET G

TYPO TABLE

Variable checksum = 2879836

Line	num	range	Code	Length
0	-	10	LM	604
12	7-	20	DM	528
40	-	96	DV	486
97		110	FY	459
111	20 ±	153	JC	391
154	_	209	UT	540
210		283	NU	431
285	-	346	JH	507
348	_	370	PZ	399
371	-	402	ET	348
403	-	432	TK	426
433		442	TF	504
443	-	455	HM	325
457	-	481	DA	466
482	-	510	LM	263
511		524	PA	261
525	u de e	540	CR	297
541	<u>-</u> -	566	MD	379
567		584	0E	414
585	-	602	GD	388
603		630	OL	523
640	7 /-	671	FQ	501
672	-	685	EE	469
686		750	FT	501
751	1-6	802	NN	387

803	- 814	MC	333
815	- 826	LE	316
827	- 838	DO	339
844	- 911	MQ	271
912	- 923	Jū	286
924	- 935	CR	255
936	- 948	HL	284
949	- 960	YB	224
961	- 972	MT	263
999	- 1111	TL	407
1112	- 1206	ZE	419
1209	- 1303	LN	459
1304	- 1661	EK	345
1800	- 2004	NM	381
2006	- 2150	NZ	371
2200	- 2905	ZE	481
2906	- 2926	YY	513
2927	- 10712	QH	507
10713	- 10814	JC	381
10815	- 10914	RM	246
10915	- 11014	SW	379
11015	- 11112	GM	258
11113	- 11208	QE	503
11209	- 11217	RS	548
11218	- 11307	PU	531
11308	- 11320	TY	501
11321	- 11414	ZA	414
11415	- 11506	LT	337
11507	- 11519	EM	246
11520	- 11709	OK	375
11710	- 11813	YX	373
11814	- 12010	BI	432
12012	- 12116	NQ	388

game of the month

ADVENT X-5

LISTING 1

1 REM ADVENT X-5

2 REM BY J.D. CASTEN

3 REM ANTIC MAGAZINE

5 Z=0:0= NOT Z:H=100:C=0+0:A=150:B=C*H :GRAPHICS Z:POKE 559, Z:GOTO 1000

10 GOSUB 15000:GET #0,Y:IF (Y<32 OR Y> 90) AND Y > 126 AND Y <> 155 THEN POKE 70 2,64:POKE 694,Z:GOTO 10

15 IF Y=155 THEN RETURN

20 IF (Y=126 AND L=0) OR (L=31 AND Y<> 126) THEN 10

25 IF Y=126 THEN L=L-0:I\$=I\$(0,L):? "4 ";:GOTO 10

30 ? CHR5(Y)::I5(L)=CHR5(Y):L=L+0:GOTO 10

50 IF J>52 AND 0(2) <255 OR J>58 THEN ? " (it's closed)":RETURN

55 ? " (it's open)": IF J>52 THEN L=0

100 L=Z:POKE 82,0:D=Z:IF 0(70)=Z AND 0

(0)>21 THEN ? "K to see!!! w:D=n

It's too dark

105 IF O(Z)>28 AND O(Z)<33 AND O(16)<2 55 THEN ? " Every thing is blurry!!! ":D=0

110 RESTORE 9000+0(Z):READ L5,D5:Y=Z:I F D THEN 145

112 ? "KYOU're ";L\$;". PYOU see:":FOR J =0 TO 62

115 IF O(J)=O(Z) THEN RESTORE J+9500:R EAD L5:? L5;".":Y=0:IF J<61 AND J>46 T HEN GOSUB 50

117 NEXT J: IF NOT Y THEN ? "Nothing s pecial."

120 ? "Obvious exits:":L\$="NorthSouthE astawestauparabowna":FOR J=0 TO 6:IF A SC(D\$(J))>99 THEN ? "-Out";:GOTO 130 125 IF ASC(D\$(J)) THEN J=J-0:? "-";L\$(J*5+0, J*5+5);: J=J+0

126 IF O(Z)=C THEN IF J=O THEN ? "-Out

130 NEXT J:? "-" 145 POKE 82,Z:? "←-- "; : POKE 82,0 147 IF L THEN ? "The card is glowing." 150 0(64)=0(64)+0:IF 0(64)=60 THEN 0(6 5)=0(65)+0:0(64)=Z:IF 0(65)=12 THEN 99 154 IF 0(73)=30 THEN 160 155 IF O(Z)=7 AND O(15)=255 THEN ? "Th e barbell pulls you down!":FOR J=0 TO 250:NEXT J:0(Z)=30:GOTO H 160 IF (O(Z) <21 AND O(Z)>17 AND O(6) <2 55) OR (O(Z)>28 AND O(Z) <33 AND O(18) < 255) THEN 9997 165 IF O(Z) <> 39 AND O(66) THEN ? "The alien devours you!!!":GOTO 8000 170 0(66) = Z: IF 0(Z) = 0(23) THEN ? "The alien is opening it's mouth.":0(66)=0 175 IF 0(67) AND 0(67) <9 THEN 0(67)=0(67)+0:? "You're bleeding!":IF 0(67)=8 THEN ? "You bled to death!": GOTO 8000 180 IF 0(67)=Z AND 0(Z)=32 THEN ? "The shark bit you.":0(67)=0 185 IF O(71) AND (O(9)>H AND O(9)<>110 AND O(9) (>131) THEN ? "The fuel burst s into flames!":GOTO 8000 190 O(71)=Z:IF O(9)=255 THEN O(71)=0:? "The fuel is VERY hot!" 200 0(73)=0(Z):55="":5=Z:F=Z:L=0:I5="" :? "[ommand:";:GOSUB 10:? :F5=I5:K=Z:L 205 IF LEN(F\$) <3 THEN F\$(LEN(F\$)+0)=" ":GOTO 205 210 LS="GO WALRUNENTCRASWICLIJUMSAYTEL ASKYELSCRDROLEAPUTRELI LOOEXADESSEERE AGETTAKCRAPICHOLCATUSEPRETURCUTINV" 215 L\$(103)="SAVPUSOPEQUISHONORSONEASW ESUP DOWOUTN S E W U D O " 220 F=54-USR(ADR(MS),53,ADR(LS),ADR(FS)): IF F>46 THEN F=F-7 225 K=K+0:IF F=47 OR K=0+C THEN ? "I d on't understand that.":GOTO B 230 L=Z:IF F>39 THEN L=5+0*(5=Z):5=F-3 9:F=L:IF L<14 THEN GOTO B+H 240 IF F=L THEN K=C:GOTO 225 250 Y=Z:Q=Z:FOR J=O TO LEN(I\$):TRAP 26 0:IF IS(J, J)=" " THEN SS=IS(J+0):IF OT Y THEN Y=J+0 255 IF I\$(J, J+C)="IN " OR I\$(J, J+C)="F RO" THEN Q=J 260 NEXT J:I=Z:IF Y=Z THEN S=63:GOTO B 265 LS="WATCARBOOCONBANSUIPLAKEYFUEBAG KNIGUNPISBATBARMASPAPSNOTREFERSHASHAAL IMONROBBOXBOXDIACABBUTTANSPESCRADV" 270 Ls(103)="SHUAQUFISROOAQUPOOCHACAGV **ENVENVENVENELEELEELEELEELEELEDOODOODOO** DOODOODOODOODOUNIKLY" 275 5=63-USR(ADR(MS),62,ADR(L5)+I,ADR(551)+1/3 280 IF 5=63 THEN 5=F:F5=55:TRAP 205:F5 =5\$(0,0):GOTO 205 285 IF S<63 THEN IF O(S) <>O(Z) AND O(S) <> 255 THEN I=5*3:GOTO 275 290 IF 5>62 THEN F5="-":GOTO 205 300 ON F GOTO 350,350,350,350,350,350, 0,450,775,500,500,500,500,500,400,400 301 ON F-25 GOTO 400,400,400,400,800,8 00,800,650,775,1015,800,600,1015,650 350 IF 5>7 THEN 375

352 IF 5=7 THEN 365 355 IF D\$(5,5)=""" OR ASC(D\$(5))>99 TH EN ? "You can't go that way.":GOTO B 357 IF 0(Z)=24 AND S=0+C AND 0(7)<255 THEN ? "Robot says: ▶Improper identific ation Passage denied.": GOTO A 360 O(Z)=ASC(D\$(S)):GOTO H 365 IF 0(Z)=C THEN 0(Z)=0(69):GOTO H 367 FOR J=O TO 6:IF ASC(D\$(J))>99 THEN O(Z)=ASC(D\$(J))-H:GOTO H 370 NEXT J:? "You can't go that way.": GOTO B 375 IF 5<53 AND 5>46 THEN 0(69)=0(Z):0 (Z)=2:GOTO H 380 IF 5=34 THEN O(Z)=39:GOTO H 381 IF 5=35 THEN 900 382 IF 5<47 AND 5>42 THEN 0(Z)=(5=43)* 11+(S=44)*13+(S=45)*10+(S=46)*9:60TO H 383 IF 5<59 AND 5>52 AND 0(2)<255 THEN ? "It's closed":GOTO B 384 IF 5<59 AND 5>52 THEN O(Z)=(5=53)* 6+(S=54)*4+(S=55)*15+(S=56)*14+(S=57)* 27+(5=58)*38:GOTO H 390 IF 5=40 THEN O(Z)=7:GOTO H 392 IF 5=36 THEN O(Z)=33:GOTO H 393 IF 5=38 THEN ? "a long way down ▶ Ju mp-wwhheee-THUD!!!>You missed the swim ming pool>Broken neck!!!":GOTO 8000 399 ? "Nope.":GOTO B 400 IF Q THEN GOSUB 700:GOTO 725 405 IF 5>20 THEN ? "You can't get that ":GOTO B 410 IF O(S) ↔ O(Z) THEN ? "I don't see it.":GOTO B 415 IF 0(68)=0(72) THEN ? "You can't c arry any more.":GOTO B 420 0(68)=0(68)+0:0(5)=255:GOTO H 450 IF 0 THEN GOSUB 700:GOTO 750 455 IF 0(5) <255 THEN ? "You don't have it.":GOTO B 460 0(68)=0(68)-0:0(5)=0(Z):GOTO H 500 IF 5=63 THEN GOTO H 502 RESTORE 5+9500-9*(5=41):READ L5,L5 :IF LEN(LS)>0 THEN ? LS 505 IF L5="+" THEN ? "Sharkit brand" 507 IF S=17 THEN ? "reads: >shuttle cod e:";C\$ 510 IF 5=0 THEN L5="00":L5(3-LEN(5TR\$(0(64))))=STR\$(0(64)):? "Time-";0(65);" :":L5 517 IF L5="-" THEN ? "Nothing special. 522 IF 5=42 THEN 0(24)=35 525 IF 5<>39 THEN 530 526 ? "You see:":FOR J=Z TO 37:IF O(J) =32 THEN RESTORE 9500+J:READ L5:? L5;" 527 NEXT J 530 FOR J=0 TO 28:IF O(J)=5+H THEN RES TORE 9500+J:READ Ls:? Ls;" is in it." 535 NEXT J 545 GOTO A 550 TRAP B:? IS(Y);".":IF 5>6 OR O(Z) < >2 THEN GOTO A 555 0(69)=(5=0)+(5=2)*4+(5=3)*5+(5=4)* 3+(5=5)*15+(5=6)*34:? "Speaker says: >Y es sir.":GOTO A 600 IF 5=26 AND 0(8) <255 THEN ? "It's locked":GOTO B 605 IF S=26 THEN 0(5)=Z:0(27)=8:0(28)=

continued on next page

8:GOTO H

649 ? "Nope.":GOTO B 650 ? "USEing what?":GOTO B 700 S5="":I=Z:FOR J=0 TO Q-2:IF I5(J, J)=" " THEN SS=IS(J+0) 705 NEXT J:IF S5="" THEN ? "Nope.":POP : GOTO B 710 L=63-USR(ADR(MS),62,ADR(LS),ADR(SS 715 IF L=62 THEN ? "Nope.":POP :GOTO B 720 RETURN 725 IF O(L) <>5+H THEN ? "I don't under stand.":GOTO B 730 S=L:GOTO 415 750 IF O(L) <255 THEN 5=L:GOTO 455 755 O(L)=5+H:O(68)=O(68)-O:GOTO H 775 Y=Z:? "You have:":FOR J=0 TO 20:IF O(J)=255 THEN RESTORE 9500+J:READ Ls: ? L5;".":Y=0 780 NEXT J:IF NOT Y THEN ? "Nothing." 785 GOTO A 800 IF S=5 AND (O(5) <255 OR O(67)=Z) T HEN ? "Nope.": GOTO B 805 IF S=5 THEN ? "O.K.":0(68)=0(68)-0 :0(5)=Z:0(67)=20:GOTO A 810 IF S=22 AND O(11) (255 THEN ? "noth ing to cut it with.":GOTO A 815 IF (5=11 OR 5=22) AND 0(22)=32 AND O(17)=Z THEN ? "a piece of paper plop s out.":0(17)=32:GOTO A 820 IF 5=13 AND ((O(Z)>28 AND O(Z) <33) OR O(14) (113) THEN ? "Pistol does not work.":GOTO A 825 IF 5=13 AND 0(Z)=0(23) THEN ? "Zza aappp!!!":FOR J=0 TO 250:NEXT J:0(23)= 0:0(66)=Z:GOTO H 830 IF 5=13 THEN ? "The laser beam is absorbed.":GOTO A 835 IF S=12 AND O(Z) <> 0(21) THEN ? "Th e spear shoots out a rope pulls it bac k in":GOTO A 840 IF S=12 THEN ? "You hit the shark! ":0(21)=Z:0(22)=32:FOR J=0 TO 250:NEXT J: GOTO H 845 IF 0(72)=5 AND S=15 THEN ? "You fe el stronger!":0(72)=6:60TO A 850 IF 5=28 THEN ? "It clicks You hear a humming sound.":0(70)=0:60TO A 855 IF S=30 AND O(9) <> 131 THEN ? "read S: NO FUEL": GOTO A 860 IF 5=30 THEN 9999 865 ? "Nope.":GOTO A 900 L=0:I\$="":? "Enter shuttle code:"; :GOSUB 10:IF ISOCS THEN ? " FAULTY " :GOTO A 905 O(Z)=21:GOTO H 1000 DIM 0(73),F\$(C+0),S\$(C+0),C\$(C+0) ,L5(186),D5(6),I5(30),M5(60):OPEN #0,4 , Z, "K": C5=5TR5 (INT (RND (Z) *900+H)) 1005 MS="hhallhallhallhallhak vikomp/He PU+RN+1-5ME KNZOP/RUP/SUP/SUST+EXI+":RESTO RE 1025:FOR J=Z TO 73:READ L 1010 O(J)=L:NEXT J 1015 GOSUB 5000: L=PEEK(560) +256*PEEK(5 61) : POKE L+8,7: POKE L+9,6: POKE 710, Z:P OKE 708,70:POKE 711,26 1020 7 " >>> ADVENT X-5 by id CasteD":CLOSE #2:POKE 82,14:? ">1. P1 ay game >2. Load game >3. Save game" 1025 ? "4. New game > 5. Quit >> Choice: ";:POKE 752,0:GET #0,Y:Y=Y-48:IF Y<0 0 R Y>5 THEN 1015 1030 GOSUB 5000: ON Y GOTO 100,2000,300

0,8020 1035 GRAPHICS Z:END 1100 DATA 1,1,103,129,129,104,39,14,14 ,22,26,12,34,36,23,6,35,0,25,34,34,32, 0,18,0,24,8,0,0,5,21,21,2,3,18,20,28 1105 DATA 32,17,34,6,2,35,3,5,22,36,1, 3,4,5,15,34,4,6,14,15,28,36,38,27,17,1 ,2,-1,6,0,0,0,0,0,0,5,1 2000 L=2005:GOTO 4000 2005 CLOSE #2:0PEN #2,4,Z,IS:FOR J=Z T 0 73:GET #2,K:O(J)=K:NEXT J:INPUT #2;C 5:GOTO 1015 3000 L=3005:GOTO 4000 3005 CLOSE #2:0PEN #2,8,Z,I5:FOR J=Z T 0 73:PUT #2,0(J):NEXT J:PRINT #2;C5:G0 TO 1015 4000 IS="D:ADVENTX5.DTA":TRAP 4005:GOT 0 L 4005 IF PEEK(195)=138 THEN TRAP 4010:I 5="C:":GOTO L 5000 GRAPHICS Z:POKE 82,0+0:FOR J=675 TO 689: POKE J.Z: NEXT J: RETURN 8000 ? "You're dead." 8010 ? "Pplease press RETURE"::GET #0 . Y : RIIM 9001 DATA on the ships bridge, ***** 9002 DATA in a voice activated elevato r, ***** 9003 DATA in a computer room, ***** 9004 DATA in a cafeteria, ***** 9005 DATA in a medical lab, ***** 9006 DATA in a recreation room, ****** 9007 DATA swimming in the pool, j***** 9008 DATA in the power control room,/* *** 9009 DATA in an air duct, **** 9010 DATA in an air duct, "z **** 9011 DATA in an air duct,gw *** 9012 DATA in an air duct, ** *** 9013 DATA in an air duct,i****. 9014 DATA in the captain's quarters, ** *** 9015 DATA in a crew's sleeping barrack 5, 444444 9016 DATA in a tubular corridor, rvvvv 9017 DATA on an observation deck, ***** 9018 DATA on the surface of Klybex-7,+ *+0** 9019 DATA on the surface of Klybex-7,+ ---9020 DATA in a giant crater, **-*** 9021 DATA in the escape shuttle,x**** 9022 DATA in a fuel storage area, ***** 9023 DATA in an engine room, ***** 9024 DATA in the west cargo hold, ** * 9025 DATA at a loading dock, €♥ ┗ ♥♥ 9026 DATA in the east cargo hold, *** -9027 DATA in a tubular corridor,♥️ ♥♥♥♥ 9028 DATA in a compression chamber, *** 9029 DATA in an aqueduct, +! **** 9030 DATA at the bottom of the pool, → + 44/4 9031 DATA in an aqueduct, +**** 9032 DATA in an aquarium, ***** 9033 DATA at an aquaduct outlet, ↓□♥♥♥♥ 9034 DATA in a giant terrarium, ***

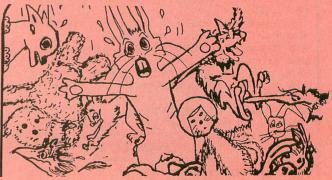
```
9035 DATA in a primate room, x*****
9036 DATA in a water control room, ****
9037 DATA in a tubular corridor, ********
9038 DATA in a tubular corridor, ***
9039 DATA in an air lock, v***+*
9501 DATA a wrist watch,-
9502 DATA a plastic card, It's red. ≯rea
ds: > DOOR
9503 DATA a book, reads: MON TO KILL AN
ATTENUE a laser pistol (with a batt
erybin it) on the alien.
9504 DATA a container, a red cross is o
nit
9505 DATA a bandage,+
9506 DATA a space suit, It has oxygen
9507 DATA an ID plate, reads: >RoboID: C
AP 594C53) Carry at all times.
9508 DATA a key, reads: ▶P.B.K.
9509 DATA puddy fuel, It's green & glow
Pni
9510 DATA an asbestocine bag,-
9511 DATA a knife,+
9512 DATA a spear gun,+
9513 DATA a laser pistol,-
9514 DATA a battery, Dura-Sell brand
9515 DATA a barbell, 300 lbs & water-pr
9516 DATA a swimming mask,+
9517 DATA a piece of paper,-
9518 DATA a snorkelizer,+
9519 DATA a tree, it's a baby oak
9520 DATA a fern,-
9521 DATA a shark, it's a great white
9522 DATA a dead shark, it's very dead
9523 DATA an alien, one mean dude
9524 DATA a monkey, it's a chimplit's h
ead is shaved
9525 DATA a robot, Gaurd-O-Matic kind
9526 DATA a large box, reads: National it
s metalbit's bolted to the floorbit's
locked
9527 DATA a large open box, reads: Nowe
r level a dial is in it
9528 DATA a dial, it turns
9529 DATA an open cabinet, a red cross
is on it
9530 DATA a button, it's flashing
9531 DATA a fuel tank, reads: Puddy Fue
e ans
9532 DATA a speaker/microphone, says: №
ay deck name then exit
9533 DATA a computer screen, reads: Fast
eroid collision-12:00 shuttle code los
t in pool) shark is sick to stomach
9534 DATA the Advent X-5,-
9535 DATA the escape shuttle,-
9536 DATA an aqueduct outlet,-
9537 DATA a fish.≯some coral.≯sea weed
9538 DATA a rec. room 20 feet below,-
9539 DATA an aquarium,-
9540 DATA a swimming pool, it's deep
9541 DATA a chart: | Uplez
Norec Wesox—Eafop Sourk_/
    Dowes ,-
9542 DATA a cage, a monkey is in it
9543 DATA a vent, It's open
9544 DATA a vent, It's open
9545 DATA a vent, It's open
9546 DATA a vent, It's open
9547 DATA an elevator,-
```

9548 DATA an elevator,-9549 DATA an elevator,-9550 DATA an elevator, -9551 DATA an elevator,-9552 DATA an elevator, -9553 DATA a red door,-9554 DATA a red door,-9555 DATA a red door,-9556 DATA a red door,-9552 DATA a red door.-9558 DATA a red door. -9559 DATA a blue door,-9560 DATA a blue door. -9561 DATA the universe, lots of stars 9562 DATA the surface of Klybex-7,a sh uttle is to the west 9997 ? "You can't breath!!!":GOTO 8000 9998 FOR J=0 TO 7:? "BB000MMM!!!":NEXT J:? "An asteroid hit Klybex-7":GOTO 8 aaa 9999 FOR J=O TO 10:? "Congratulations! !!":NEXT J:? "You blasted off and safe ly made it to a local star base." 10000 GOTO 8010 15000 POKE 16,64:POKE 53774,64:RETURN

TYPO TABLE

Variable checksum = 227567

Line	num		Code	Lengt
1	e Hitto	55	нн	507
60		120	KD	507
125	_	160	NA	582
165		190	AF	553
200	-	230	KR	532
240		280	50	502
285	-	355	BV	540
357		383	LO	552
384	4 -	415	LF	521
420		525	IR	489
526		650	TE	516
700	$\pm 1 \pm 1$	785	Z0	419
800		825	*I	534
830	_	900	SN	559
905	-	1020	HE	514
1025	a -	3000	MS	508
3005	_	9005	NZ	485
9006	-	9017	UI	388
9018	-	9029	шн	405
9030	-	9502	GB	385
9503	-	9514	ZE	421
9515	-	9526	AW	397
9527	_	9538	ZZ	493
9539		9550	511	340
9551	_	9562	SR	270
9997		15000	ug	273
.0111	1.1	11 1 1 1 1		



OMNIVENTURE

LISTING 1

1 REM ANTIC MAGAZINE 2 REM OMNIVENTURE 3 REM BY JERRY LEMAITRE 4 REM 80 GOSUB 9000 90 GOTO 9270 100 S=PEEK(632):MOV=0:P=PEEK(POS+MOV(S)):IF NOT P THEN MOV=1:POKE 77,0:GOTO 300 110 IF P=141 THEN MOV=0:GOSUB 10040 120 IF P=2 OR P=3 THEN 6000 130 IF P=198 THEN POSITION 10,22:? #6; A5:CARRY=1:MOV=1:50UND 0,12,12,8 140 IF P=199 THEN POSITION 10,22:? #6; B5:CARRY=2:MOV=1:50UND 0,12,12,8 150 IF P=136 THEN SC=SC+100:POSITION 4 ,22:? #6;5C:MOV=1:50UND 0,10,10,10 300 IF MOV THEN POKE POS, 0: POS=POS+MOV (S): POKE POS, MAN 310 F=PEEK(644): IF F OR CARRY <> 1 THEN 320 FOR I=5 TO 14:SWG=POS+MOV(I) 330 SOUND 0,1+50,8,8:IF PEEK(SWG)=2 OR PEEK(SWG) = 3 THEN POKE SWG, 204:5C=5C+2 5:POSITION 4,22:? #6;50 340 FOR T=1 TO SK*2:IF POS(T)=SWG THEN FLAG(T)=0 350 NEXT T:NEXT I:POSITION 10,22:? #6; " NOTHING ":CARRY=0:FOR I=5 TO 14:P=PO S+MOV(I): IF PEEK(P) = 204 THEN POKE P,0 360 NEXT I:SOUND 0,0,0,0 400 SOUND 0,0,0,0:IF F OR CARRY <> 2 THE N 500 410 FOR I=5 TO 14:SWG=POS+MOV(I) 420 SOUND 0,1+50,8,8:IF PEEK(SWG)=68 0 R PEEK(SWG)=69 THEN POKE SWG, 204 430 NEXT I:POSITION 10,22:? #6;" NOTHI NG ": CARRY=0: FOR I=5 TO 14: IF PEEK(POS +MOV(I))=204 THEN POKE POS+MOV(I),0 440 NEXT I:SOUND 0,0,0,0 500 CH=CH+1:POKE 756,CH(CH):FOR I=SK*7 TO 70:NEXT I:IF CH=1 THEN CH=-1 510 MST=MST+1:IF MST>SK*2 THEN MST=1 NOT FLAG (MST) THEN 600 530 M=POS(MST):M1=INT(M/20):P1=INT(POS /281:MAU=(PAS-P1*28)M-M1*281-(PAS-P1*2 0<M-M1*20)+20*(P1>M1)-20*(P1<M1) 540 P=PEEK(POS(MST)+MOV):IF P AND P<>M AN THEN 600 550 POKE POS(MST), 0:POS(MST) = POS(MST) + MOV: POKE POSCMST), COL (MST) 570 IF POS=POS(MST) THEN 6000 600 GOTO 100 6000 P=0:SOUND 0,72,12,10:MEN=MEN-1:CO LOR 0:PLOT 16+MEN, 0:POKE POS, 204:FOR I =1 TO 111:NEXT I 6010 POKE POS, 203: FOR I=1 TO 222: NEXT I:SOUND 0,0,0,0:IF MEN THEN 6200 6020 POSITION 5,4:? #6;"GAME OVER":POS ITION 4,6:? #6;"PRESS FIRE!" 6030 IF PEEK(644) THEN 6030

6050 GOTO 90 6200 POSITION 5,5:? #6;"WOT DITED!":FOR I=0 TO 10:FOR I1=0 TO 70:SOUND 0,I1,1 0,10-I:NEXT I1:NEXT I:GOTO 10040 9000 DIM MOV\$ (39) : RESTORE 9001: FOR I=1 TO 39:READ A: MOVS(I, I)=CHRS(A):NEXT I 9001 DATA 104,104,133,215,104,133,214, 104,133,217,104,133,216,104,133,218,10 4,170,160,0,177,214,145,216 9002 DATA 200,208,4,230,215,230,217,20 2,208,242,198,218,16,238,96 9008 DIM A5(9), B5(9), C5(7), CH(1), MOV(1 5), FLAG(20), POS(20), COL(20) 9010 AS=" CLUB ":BS=" MACHETTE":CS= " DINO" 9020 GRAPHICS 18:POSITION 7,4:? #6;C5; "-":POSITION 7,6:? #6;"VENTURE" 9030 CH(0)=PEEK(106)-8:CH(1)=CH(0)-8:D =USR (ADR (MOV5),57344,CH(0)*256,1023) 9040 FOR A=1 TO 13:FOR I=0 TO 7:READ B :POKE CH(0)*256+A*8+I,B:POKE 708,B:NEX I:NEXT A 9050 DATA 7,15,30,56,48,0,192,192 9060 DATA 6,15,12,15,157,156,158,119 9070 DATA 0,0,195,102,60,24,0,0 9080 DATA 102,255,189,153,24,24,24,60 9090 DATA 0,4,10,20,10,30,63,0 9100 DATA 6,15,15,31,30,56,96,192 9110 DATA 15,24,24,24,24,60,24,24 9120 DATA 40,2,152,61,28,129,40,0 9130 DATA 24,60,24,60,90,24,36,36 9140 DATA 255,255,255,255,255,255, 255 9150 DATA 0,0,24,60,60,60,60,60 9160 DATA 137,74,36,192,3,36,82,145 9170 DATA 0,32,80,136,5,2,0,0 9200 D=USR(ADR(MOV\$),CH(0)*256,CH(1)*2 56, 19231 9210 READ A: IF A=-1 THEN RETURN 9220 FOR I=0 TO 7: READ B: POKE CH(1)*25 6+A*8+I,B:POKE 708,B:NEXT I:GOTO 9210 9230 DATA 2,24,60,12,15,93,156,158,119 9240 DATA 3,0,0,0,126,219,129,0,0 9250 DATA 8,20,64,25,188,29,64,18,0 9260 DATA 9,24,60,24,126,24,24,36,66 9266 DATA 13,0,2,5,136,80,32,0,0,-1 9270 MOV(5)=21:MOV(6)=-19:MOV(7)=1:MOV (9)=19:MOV(10)=-21:MOV(11)=-1:MOV(13)= 20: MOV (14) =-20 9300 GRAPHICS 1: POKE 710,0: POKE 756, CH (0):POSITION 6,0:? #6;"Malcoma!":POSIT ION 6,1:? #6;"******* 9310 ? #6:? #6;")-this is you!" 9320 ? #6:? #6;" &-club-for animals" 9330 ? #6:? #6;" '-knife-for plants" 9340 ? #6:? #6;" (-diamond-100 pts." 9350 ? #6:? #6;" ";CHR\$(34);"-tyrannos 9360 ? #6:? #6;" #-Pterodacty1-25" 9370 ? #6:? #6;" 5-cypress tree"

9380 ? #6:? #6;" x-ginkgo plant"

9390 TRAP 9390:? CHR\$(125);"Select Ski

6040 IF SC>HS THEN HS=SC

11 Level.1-10"::INPUT SK:IF SK<1 OR SK >10 OR INT(SK) <> SK THEN 0 10000 TRAP 44444: GRAPHICS 17: POKE 756, CH(0):COLOR 173:PLOT 1,1:DRAWTO 18,1:C OLOR 10:PLOT 0,20:DRAWTO 19,20 10010 PLOT 0.0:DRAWTO 0.23:DRAWTO 19.2 3:DRAWTO 19,0:POSITION 1,21:? #6;"65#" ;HS:POSITION 1,22:? #6;"ETHO" 10020 POSITION 1.0:? #6;C5;"VENTURE!": POSITION 10,21:? #6;"carrying:":POSITI ON 11,22:? #6;"NOTHING" 10030 POKE 708,103:POKE 709,215:POKE 7 10,31:POKE 711,40:POKE 712,192 10035 COLOR 137:PLOT 17,0:PLOT 18,0:ME N=3:5C=0 10040 COLOR 32:FOR I=2 TO 19:PLOT 1,I: DRAWTO 18, I: NEXT I: FOR I=0 TO 20: FLAG(I)=1:P05(I)=77:NEXT I 10050 FOR I=0 TO 150: COLOR INT(2*RND(0)+4):PLOT INT(18*RND(0)+1),INT(18*RND(0)+2):NEXT I:COLOR 32:PLOT 5,19 10060 DRAWTO 15,19:FOR I=0 TO 10-5K:CO LOR INT(2*RND(0)+134):PLOT INT(18*RND(0)+1), INT(18*RND(0)+2): NEXT I 10070 COLOR 168:FOR I=0 TO 6-5K/2:PLOT INT (18*RND (0) +1) , INT (18*RND (0) +2) : NEX 10080 SCR=PEEK(88)+256*PEEK(89):TOP=5C R+40:POS=SCR+389:MAN=201:POKE POS,MAN 10090 FOR I=1 TO SK*2:COL(I)=INT(2*RND (0) + 2)10100 POS(I)=INT(360*RND(0)+40+SCR):P= PEEK(POS(I)):IF P=74 OR P=2 OR P=3 OR P=MAN THEN 10100 10110 POKE POS(I), COL(I): NEXT I: GOTO 1

TYPO TABLE

Variable checksum = 744834

Line	num	range	Code	Length
1	_	150	VF	595
300	_	400	PW	505
410		530	MC	546
540		6200	UH	595
9000		9030	TH	569
9040	=	9150	ON	429
9160	_	9270	TV	560
9300	$\varepsilon =$	9380	MM	507
9390	_	10020	RL	503
10030		10060	FW	571
10070	-	10110	МТ	381

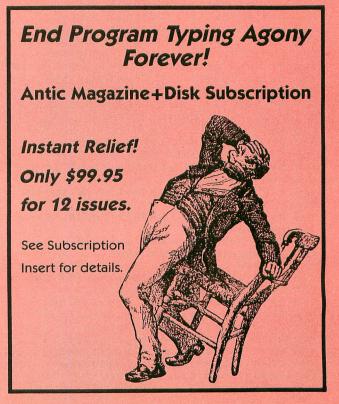
LISTING 2

ZKE	1	DKHGUVENTURE
9010	A5="	SWORD ":B\$=" HAMMER ":C\$=
" DR	160" ·	
9060	DATA	97,243,55,246,52,48,121,246
9070	DATA	0,28,118,222,247,127,30,0
9080	DATA	239, 239, 239, 0, 127, 127, 127, 0
9090	DATA	123,123,123,0,222,222,222,0
9100	DATA	0,0,32,255,32,0,0,0
9110	DATA	0,0,96,126,96,96,0,0
9120	DATA	0,42,0,157,56,254,127,255
9230	DATA	2,24,60,49,119,182,48,121,24
6		
9240	DATA	3,24,60,108,126,110,58,30,28

9250 DATA 8.0.20.65.28.56.254.127.255
9310 ? #6:? #6;")-this is you!"
9320 ? #6:? #6;" &-Sword-For animals"
9330 ? #6;" '-hammen-For walls"
9340 ? #6:? #6;" (-gold-100 pts."
9350 ? #6:? #6;" ";CHR\$(34);"-green dr
EFOD-25"
9360 ? #6:? #6;" #-ochre jelly-25"
9370 ? #6:? #6;" \$-brick wall"
10030 POKE 708.183:POKE 709.9:POKE 710
.27:POKE 711.40:POKE 712.32

LISTING 3

ROBOVENTURE 9010 A5=" PHAZOR ":B5=" DEACTOR ":C5= " ROBO" 9060 DATA 60,110,60,126,90,24,20,40 9070 DATA 0,8,28,62,28,8,0,0 9080 DATA 255,0,255,0,255,0,255,0 9090 DATA 255,129,189,165,165,189,129, 255 9100 DATA 0,124,127,28,16,16,0,0 9110 DATA 0.0,100,42,100,0,0,0 9120 DATA 0,40,2,88,26,64,20,0 9230 DATA 2,60,118,60,126,153,24,40,20 9240 DATA 3,8,42,28,127,28,42,8,0 9250 DATA 8,0,20,64,26,88,2,40,0 9310 ? #6:? #6;")-this is you!" 9320 ? #6:? #6;" &-Phazor-for droids" 9330 ? #6;" '-deactor-for walls" 9340 ? #6;" (-biochip-100 pts." 9350 ? #6:? #6;" "; CHR\$ (34);"-Fobodroff **1**-25" 9360 ? #6:? #6;" #-blippot-25" 9370 ? #6:? #6;" 5-terminoid" 9380 ? #6:? #6;" x-electrowall" 10030 POKE 708,29:POKE 709,136:POKE 71 0.198:POKE 711.40:POKE 712.208



WINDOWS

LISTING 1

```
1 REM WINDOWS BASIC DEMO
2 REM BY JERRY WHITE & DAVE CULBERTSON
3 REM ANTIC MAGAZINE
100 GRAPHICS 0: POKE 752,1: JIF=120
110 DIM A5(961), D5(97), B5(241), W5(116)
. C5 (61)
120 ? :? "CREATING W5": FOR ME=1 TO 116
:READ IT: WS (ME, ME) = CHR5 (IT) : NEXT ME
130 ? :? "CREATING CS":FOR ME=1 TO 61:
READ IT: CS (ME, ME) = CHRS (IT) : NEXT ME
140 A5=".":A5(960)=".":A5(2)=A5:A5(961
7="10"
150 A$(131,154)=" Windows by Jerry Whi
te "
160 A$(171,191)=" and Dave Culbertson
show ** Milital you ** "
180 D$(52,97)=" Want
                       ** MIERE **
you want <del>xxxxxxxxxxx</del>**
190 B5=""":B5(240)="":B5(2)=B5:B5(241
)=""
200 B$(35,55)="
                All sizes / kinds
210 B$(92,119)=" Work in ANY graphics
mode "
220 B$(157,178)="You are FREE from the
-
230 B$ (188, 201) =" ATART Editor!"
240 GRAPHICS 0:POKE 752,1:?
250 X=USR(ADR(C$), ADR(A$))
260 X=USR(ADR(C$), ADR(D$))
270 X=USR(ADR(C$), ADR(B$))
280 SOUND 0,0,2,2:GOSUB 370:GOSUB 340
290 SOUND 0,2,2,2:GOSUB 340:GOSUB 370
300 IF LFLG=0 THEN LIST 470,670:LFLG=1
310 COUNT=COUNT+1:IF COUNT>=4 THEN GOS
UB 380:GOSUB 390:GOSUB 380:JIF=10
320 IF COUNT>=7 THEN GRAPHICS 0:? :? "
BASIC":? "IS";:END
330 GOTO 280
340 IF JIF=10 THEN LOF=41
350 IF JIF=120 THEN LOF=39
360 X=USR(ADR(W$), ADR(D$), 412, 8, 12, LOF
):GOSUB 390:RETURN
370 X=USR(ADR(WS), ADR(AS), 0, 24, 40, 40):
GOSUR 390: RETURN
380 X=USR(ADR(WS), ADR(BS), 285,8,30,40)
:GOSUB 390:RETURN
390 POKE 540, JIF: SOUND 0,0,0,0
400 IF PEEK(540) THEN 400
410 RETURN
420 DATA 104,104,133,206,104,133,205
430 DATA 104,141,1,6,104,141,0
440 DATA 6,104,133,208,104,133,207
450 DATA 104,104,133,209,104,141,3
460 DATA 6,104,141,2,6,165,88
470 DATA 133,203,165,89,133,204,24
480 DATA 165,203,109,0,6,133,203
```

```
520 DATA 209,208,241,169,0,198,207
530 DATA 197,207,208,6,197,208,240
540 DATA 30,198,208,24,152,101,205
550 DATA 133,205,144,3,230,206,24
560 DATA 165,203,109,2,6,133,203
570 DATA 165,204,109,3,6,133,204
580 DATA 24,144,197,96
590 DATA 104,104,133,204,104,133,203
600 DATA 160,0,177,203,170,201,0
610 DATA 240,44,41,96,201,0,208
620 DATA 6,138,9,64,24,144,22
630 DATA 201,96,240,20,138,41,64
640 DATA 201,0,208,6,138,73,32
650 DATA 24,144,5,138,9,32,73
660 DATA 64,145,203,200,208,210,230
670 DATA 204,24,144,203,96
```

TYPO TABLE

Variable checksum = 205504

Line	num	range	Code	Length
1		170	TB	533
180	-	290	VK	535
300	_	410	ดผ	500
420	-	530	EL	363
540	_	650	MD	336
660	_	670	FI	55

LISTING 2				
0100 ; WINDOWS				
0110 ; BY DAVE CULBERTSON				
0120 ; ANTIC MAGAZINE				
0130 ; EQUATES				
0140 SCRN = SCB ;Beg Adr of windo				
W				
0150 ASTR = \$CD ;Adr of data stri				
ng				
0160 OFFS = \$0600 ;Offset into scre				
en				
0170 ; (upper left corner of box)				
0180 ; ELEMENT SEGMENT SPEC'S				
0190 ELEM = SCF ;# of elements				
0200 ELEW = 5D1 ;Element width				
0210 ELEO = \$0602 ;Element offset				
0220 ; (Upper left corner of element)				
0230 ;				
0240 *= 50600 ; RELOCATABLE				
0250 PLA ;Get # OF Prams of				
ff stack				
0260 ; GET ADDRESS OF DATA STRING				
0270 PLA				
0280 STA ASTR+1				
0290 PLA				
0300 STA ASTR				
0310 : GET OFFSET FROM BEG OF SCREEN				
0320 PLA				
10320 FER				

STA OFFS+1

0330

490 DATA 165,204,109,1,6,133,204 500 DATA 160,0,177,203,170,177,205 510 DATA 145,203,138,145,205,200,196

LISTING 3

```
0340
         PLA
0350
         STA OFFS
0360
    ; GET # OF ELEMENTS FOR WINDOW
0370
         PLA
9389
         STA ELEM+1
9399
         PLA
0400
         STA ELEM
0410 ; GET ELEMENT UTDITH
9429
         PLA
0430
0440
         STA ELEW
0450 ; GET ELEMENT OFFSET
0460
         PLA
         STA ELEO+1
9479
9489
         PLA
         STA ELEO
9499
0500 ; INITIAL SET-UP
                     ;Adr OF 5.M. (Lo)
         LDA 558
9529
         STA SCRN
0530
         LDA 559
                      ; Adr of S.M. (Hi)
0540
         STA SCRN+1
0550 ; ADD OFFSET TO SCRN VALUE
0560 ; Initially this routine sets-up
0570 ; the upper left corner of the
MSRM : Window.
0590 BO CLC
         LDA SCRN
0600
         ADC OFFS
0610
         STA SCRN
8628
0630
         LDA SCRN+1
0640
         ADC OFFS+1
0650
         STA SCRN+1
0660 ; SWAP SCREEN & STRING
0670 C1 LDY #0
                     ;Width Counter
0680 C2 LDA (SCRN), Y
0690
         TAX
0700
         LDA (ASTR), Y
0710
         STA (SCRN), Y
0720
         TXA
0730
         STA CASTRI, Y
0740
         INY
0750
         CPY ELEW
9769
         BNE C2
0770 ; CHECK FOR ANOTHER ELEMENT
                     ; Check Lo Byte.
9789
         LDA #R
9799
         DEC ELEM
                     : Sub 1.
                      ;Is it zero?
ARAA
         CMP ELEM
                      ; No then C3.
0810
         BNE C3
0820
         CMP ELEM+1
                      ; Is Hi byte zero?
0830
         BEQ EX
                      ; Yes - exit.
0840
         DEC ELEM+1
                      ; No then sub 1.
0850 ; INDEX STRING FOR NEXT ELEMENT
0860 C3 CLC
                      ;Add index to
0870
         TYA
9889
         ADC ASTR
                      :string pointer.
9899
         STA ASTR
9999
         BCC DØ
0910
         INC ASTR+1
    H UPDATE SCREEN POINTER
0920
9939
         CLC
0940 D0
         LDA SCRN
                         Then Add
0950
         ADC ELEO
         STA SCRN
                         ELEO to SCRN
969
         LDA SCRN+1
0970
agga
         ADC ELEO+1
8998
         STA SCRN+1
                      ; Go do next Eleme
1000
         CLC
nt.
1010
         BCC C1
1020 ; ALL DONE RETURN TO BASIC
```

```
0100 ; ATASCII TO SCREEN CONVERTER
0110 ; BY DAVE CULBERTSON
0120 ; ANTIC MAGAZINE
0130 ;
0140 ; Equates
0150 LOC = 5CB
                      ; Address of data
string.
0160 :
0170
         ₩=
             50600
                      :RELOCATABLE
0180 ; Get params from stack
                      GET # OF PARM'S.
0190
         PLA
0200
         PLA
                      GET HI LOC.
0210
         STA LOC+1
                      :STORE IT.
0220
         PLA
                      GET LO LOC.
0230
         STA LOC
                      STORE IT.
0240 ; BIT THIDDLING BEGINS HERE!
0250 5
                      ; ZERO POINTER.
         LDY #A
         LDA (LOC), Y ; GET # FROM STRIN
0260 B
0270
                      COPY IT INTO 'X'
         TAX
9289
         CMP #A
                      ; IS IT END OF STR
ING?
0290
         BEQ F
                      ; YES, GOTO 'F'.
0300
         AND #96
                      ; MASK BITS 32 & 6
4.
         CMP #0
0310
                      ; IS IT 3RD GROUP?
         BNE C
                      ; NO, GOTO 'C'.
0320
0330 ;
           Convert 3rd group
9349
         THA
                      ; RESTORE #.
0350
         ORA #64
                      ; SET BIT 64 HI.
0360
         CLC
                      ; DONE, GOTO 'D'.
0370
         BCC D
0380 ; CHECK groups 1,2, and 4.
0390 C
                     ; IS IT 4TH GROUP?
         CMP #96
0400
         BEQ E
                      ; YES, GOTO 'E'.
                      ; NO, RESTORE #.
0410
         THA
0420
         AND #64
                      ; IS BIT 64 HI?
         CMP #0
0430
0440
         BNE H
                      ;YES, GOTO 'H'.
0450 ;
         Convert 1st group
0460
                      ;NO, RESTORE #.
                      ;SET BIT 32 LO.
9479
         ENR #32
0480
         CLC
                      ; DONE, GOTO 'D'.
0490
         BCC D
0500 ;
         Convert 2nd group
0510 H
         THA
                      ; RESTORE #.
0520
         ORA #32
                      ;SET BIT 32 HI.
         EOR #64
                      ;SET BIT 64 LO.
9539
0540 ; ALL CONVERTED STORE & DO NEXT
0550 D
         STA (LOC), Y ; PUT CONVERTED BA
CK.
0560 E
                      ; BUMP POINTER +1.
         TNY
         BNE B
                      :TF Y <> 0 GOTO 'B'
0570
                      ; BUMP LOC 1 PAGE.
         INC LOC+1
9589
         CLC
0590
                      ; GOTO '5'.
AGAA
         BCC 5
0610 ; ALL DONE
0620 F
         RTS
```

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1030 EX

CREATE YOUR OWN CURSOR

LISTING 1

100 REM PMCURSOR 102 REM BY JERRY WHITE 104 REM ANTIC MAGAZINE 110 GOSUB 320 120 REM MOVE MACHINE LANGUAGE ROUTINE 130 REM INTO HIGH RAM. 140 FOR ME=0 TO 180:READ IT:POKE ROUTI NE+ME, IT 150 POSITION 26,5:? ROUTINE+ME;:NEXT M E:POKE 752,0 160 REM TELL THE HUMAN WHAT TO DO. 170 POSITION 1,5:? "POKE 752,1 TURNS 0 UR CURSOR ON" 180 ? :? "POKE 752,0 TURNS ATARI CURSO R ON" 190 ? :? "ENTER CURSOR FLASH RATE (1-6 4)"; :TRAP 190: INPUT RATE 200 IF RATE <1 OR RATE > 64 THEN 190 210 POKE ROUTINE+55, RATE 220 ? :? "ENTER CURSOR COLOR (0-255)"; :TRAP 220:INPUT CCOLOR:TRAP 40000 230 IF CCOLOR OR CCOLOR> 255 THEN 220 240 POKE ROUTINE+74, CCOLOR 250 ? :? "WARNING: THIS ROUTINE USES P 260 ? :? "AS P/M RAM (PLAYER 2)." 270 REM TURN ON OUR VBLANK ROUTINE. 280 CURSOR=USR (ROUTINE) 290 REM RETURN CONTROL TO THE HUMAN. 300 POKE 752,1:? :? "BASIC":? "IS"; :EN 310 REM SETUP SUBROUTINE. 320 GRAPHICS 0:POKE 752,1:POKE 82,1:PO KE 83.39 330 REM ROUTINE=SAFELY UNDER THE 340 REM DISPLAY LIST OF ANY GR MODE. 350 ROUTINE=(PEEK(106)-33)*256 360 ? :? "PLAYER CURSOR BY JERRY WHITE 370 ? :? "MACHINE LANGUAGE ROUTINE ADD RESS="; ROUTINE 380 ? :? "STORING DATA AT LOCATION ";: RETURN 390 REM DATA FOR MACHINE LANGUAGE 400 REM PLAYER CURSOR ROUTINE. 410 DATA 104,165,212,24,105,36,133,212 420 DATA 165,213,105,0,133,213,162,7 430 DATA 160,144,177,212,157,0,6,136 440 DATA 202,16,247,164,212,166,213,16 450 DATA 7,76,92,228,173,240,2,240 460 DATA 124,173,43,2,240,4,169,0 470 DATA 240,6,173,8,6,24,105,8 480 DATA 141,8,6,48,104,160,255,169 490 DATA 0,153,0,6,136,192,8,208 500 DATA 248,169,10,141,194,2,141,20 510 DATA 208,169,1,141,111,2,141,27 520 DATA 208,169,0,141,10,208,169,0 530 DATA 141,7,212,169,2,141,29,208

540 DATA 169,58,141,47,2,141,0,212 550 DATA 166,85,164,84,165,87,13,147 560 DATA 2,240,12,173,191,2,201,4 570 DATA 208,35,152,24,105,20,168,138 580 DATA 10,10,105,48,141,2,208,152 590 DATA 10,10,10,105,39,168,162,7 600 DATA 189,0,6,153,0,6,136,202 610 DATA 16,246,76,98,228,169,0,141 620 DATA 2,208,76,98,228 630 DATA 0,0,0,0,0,0,0,240 640 REM DATA IN LINE 630 IS THE 650 REM PLAYER CURSOR SHAPE.

TYPO TABLE

Variable checksum = 178926

num	range	Code	Length
	190	ID	394
_	310	BF	388
_	430	RH	452
_	550	СВ	379
	650	CM	287
		num range - 190 - 310 - 430 - 550 - 650	- 190 ID - 310 BF - 430 RH - 550 CB

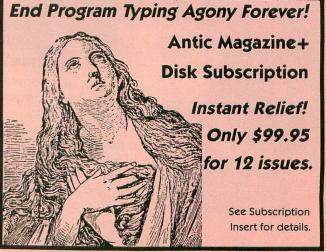
LISTING 2

1280 ;

1000 ; LISTING 2 PMCURSOR SRC 1010 ; PLAYER CURSOR BY JERRY WHITE 1020 : AND CARLOS REYES 1030 : 1040 ; System Equates 1050 : 1060 ROWCRS=\$54 1070 COLCR5=\$55 1989 DINDER=557 1090 FR0=5D4 1100 SRTIMR=\$22B 1110 SDMCTL=\$22F 1120 GPRTOR=526F 1130 TXTROW=\$290 1140 TXTCOL=5291 1150 TINDEX=5293 1160 BOTSCR=52RF 1170 PCOLR2=52C2 1180 CRSINH=52F0 1190 HPOSP2=5D002 1200 SIZEP2=5D00A 1210 COLPM2=5D014 1220 GRACTL=SD01D 1230 PRIOR=5D01B 1240 DMACTL=SD400 1250 PMBASE=\$D407 1260 SETUBUESE45C 1270 XITUBU=5E462

ı				
I	1290	;Pro	gram Equa	ites
ı	1300	;		
ı	1310	PSTA	RT=0	
	A STATE OF THE OWNER, SHOWING		ER2=PSTAR	
				r+5600 ;Shape data
			OR=10	
		PRAT		
	1370		SH=PSHAPE	
			1 from Re	SIC Where ROUTINE
				ess of this routine
ı	1400	; CUR	SOR=USR CR	ROUTINE
ı	1410	;		
1	1420	*=5	4000	;Relocatable
	1430			
	1440			Im anguments-0
	1450		FRO	;# arguments=0 ;FR0=INIT
	1470			,, KO-INI
	1480		#MAIN-IN	IIT&SFF
	1490		FR0	
1	1500	LDA	FR0+1	
	1510	ADC	#MAIN-IN	VIT/5100
	1520		FR0+1	;FR0=MAIN
	1530		#8-1	; Move cursor data
	1540		#SHAPE-N	MAIN+7
	1550 1560		(FRØ),Y	
	1570		PSHAPE,	
ı	1580			
ı	1590	DEH		
ı	1600	BPL	LOOP	
	1610		FR0	;Enable VBLANK
	1620		FR0+1	
	1630		#7 SETUBU	Deferred
	1650		SEIVBV	;Return
	1660		rt of the	VBLANK routine
ı	1670	;		
	1680	MAIN		
	1690		CRSINH	; PEEK (752)
	1700		ERASE	;No PM cursor
	1710		SRTIMR	;Key pressed?
100	1720 1730		SKIP	.Vas shau sunsan
	1740		SKTP1	;Yes, show cursor :Forced branch
		SKIP		o, a, a, c, a,
	1760		PFLASH	;Flashing logic
1000	1770			
	1780		#PRATE	
	1790			
	1800 1810		PFLASH	LEUDEDD INVITATION
	1820		ERASE #255	;Cursor invisible ;Clear the player
	RAM			, over the Prayer
	1830	LDA	#0	
	1840	LOOP:	1	
	1850		PLAYER2,	Y
	1860	DEY		
950	1870		#8 LOOP1	
	1890		#PCOLOR	;Init PM variable
100	5			72.7.1
100	1900	STA	PCOLR2	;Player 2 color
	1910	STA	COLPM2	
200	1920	LDA		是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
	1930		GPRIOR	
	1940		PRIOR	
	1950		SIZEP2	
	1000	2111	JIZEPZ	

```
STA PMBASE
1988
1990
      LDA #2
2000
      STA GRACTL
2010
      LDA #2+32+8+16
2020
      STA SDMCTL
      STA DMACTL
2030
     LDH COLCRS
                     ;Check screen mod
2040
2050
     LDY ROWCRS
2060
      LDA DINDEX
     ORA TINDEX
2070
2080
     BEQ SKIP2
                     ;Full screen
2090
     LDA BOTSCR
2100
     CMP #4
     BNE ERASE
                     ; No text window
2110
2120
                     ;Add offset to li
      TYA
ne
     CLC
2130
2140
     ADC #20
2150
      TAY
2160 SKIP2
2170
     THA
                     ; Find hor. pos.
2180
      ASL A
     ASL A
2190
2200
      ADC #48
2210
      STA HPOSP2
2220
                     ;Find vert. pos.
      TYA
2230
     ASL A
     ASL A
2240
     ASL A
2250
2260
      ADC #32+7
2270
                     ; Move cursor into
      TAY
2280
     LDX #7
                     ; position
2290 LOOP2
     LDA PSHAPE,X
2300
2310
      STA PLAYER2, Y
2320
     DEY
2330 DEX
2340 BPL LOOP2
2350
     JMP XITUBU
                     ; RETURN
2380 ;
2390 ERASE
2400 LDA #0
                     ; Move player
2410
     STA HPOSP2
                     ; off screen
2420
     JMP XITUBU
2430 ;
2440 ; Data for underline shape
2450 :
2460 SHAPE
     BYTE 0,0,0,0,0,0,0,240
```



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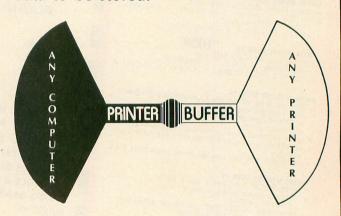
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WINDOWS

Your Atari delivers "The Latest Thing"

by JERRY WHITE and DAVE CULBERTSON

The latest buzzword in the computer world is "windows"—multiple onscreen display areas. This two-part series (to be concluded next month) shows you how to create these multiple display windows with your Atari. Listing 1, the BASIC demonstration program, runs on all Atari computers of any memory configuration. Listings 2 and 3, provided for your information, are Assembly Language source code for the machine language subroutines contained in DATA statements in Listing 1. You need not type these in to use Listing 1. Antic Disk subscribers RUN "D: WINDOWS.BAS".

A simple example of a text window is the bottom four lines of a Graphics 1 screen. If you set the left and right margins for maximum width (with POKE 82,0:POKE 83,39), this window is 40 characters wide by 4 lines long.

You can use the techniques in Listing 1 to define your own window size, and overlay the contents of any screen with any text you'd like to print. Once you've assigned your text to a string variable, it's a simple matter to swap the string's contents with a section of screen memory by invoking the two machine-language subroutines with the USR (User Sub-Routine) command. The text strings used in the BASIC demo program are A\$, B\$, and D\$, and are assigned in

lines 140 to 230. The two assembler routines appear in Listing 1 as DATA statements from lines 420 to 670.

Listing 2 contains the source code for the conversion subroutine, which is called in the BASIC demo in lines 250, 260, and 270. The screen display character values, or Internal Character Set, are the values for characters actually present in screen memory. Since ATASCII and screen display character values are not the same, this routine makes the required conversions. The BASIC demo program (Listing 1) stores the converter subroutine in the string C\$. If we use DATA\$ as the string containing the text to be displayed, the conversion from ATASCII to display characters is as direct as the command:

ASM = USR(ADR(C\$), ADR(DATA\$)).

Listing 3 is the source code for our Window display subroutine, which is stored in the string W\$ in the BASIC demo. This routine is called using the command:

ASM = USR(ADR(W\$),ADR(DATA\$), SOF,LIN,WID,LOF)

See lines 360 to 380 in the BASIC listing.

SOF is the offset distance of the window's top left corner in characters (the size of these units depend on the current Graphics mode) from the upper left corner of our screen. Using continued on next page

Graphics 0, for example, SOF would be 40 if we want our window to be in the leftmost column of the second line from the top.

OPENING YOUR WINDOWS

LIN is the number of lines of text to be displayed, which determines the window's height. WID is the width of each line in characters, and LOF is the offset between the beginning of each successive line. If we want a rectangular window in GR.0, LOF would be 40. We could also have a slanted window by making LOF 39 or 41 (see Listing 1, lines 340 to 360). The BASIC demo program demonstrates rectangular as well as slanted windows.

When using these routines, you must be careful to follow a few simple

rules. The last character in DATA\$ must be a heart character. Type [CTRL][,] to enter the heart at the end of your data display strings. The only other rule is that you supply the proper number of legal parameters in your USR commands. Failure to follow either rule may cause your keyboard to lock up, so be sure to SAVE your programs before testing them.

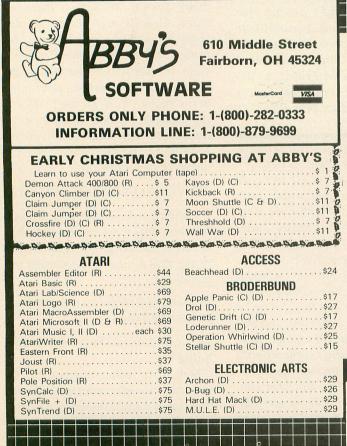
Listing 1 demonstrates just a few ways it's possible to use windows. Let us know when you come up with something new you'd like to share. To help get you started, you might try defining your DATA\$ as 960 characters (plus the heart) then flip an entire GR.0 screen from one display to another. You can use windows to overlay parts of your screen with

warning or error messages. Using a redefined character set, you might also use windows to achieve animation.

Jerry White is an institution in the world of Atari computing and a long-time Antic contributing editor.

Dave Culbertson describes himself as a "computer person" who is wellversed in both hardware and software and who acts as a mediator between the two often-conflicting worlds. He's been active in microcomputing for nine years, and is vice president of Custom Electronics, Inc., which produces applications software for Atari and Apple computers.





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BANNERCATCH =

Scholastic Software, Inc. 730 Broadway New York, NY 10003 (212) 505-3000 \$39.95, 48K—disk

Reviewed by Phil Seyer

Bannercatch is a five-level partnership game of strategy and skill. You and your partner compete on a 64sector playing field against a character named Max. The object of the game is to capture Max's flag with your robots and carry it back to your part of the playing field. Your side has four joystick-controlled, "humanoid" robots. Max also has four robots.

The game is quite involved and comes with a number of items including a detailed instruction manual, a reference card, a secret document marked "for robots only," a colorful bannercatch poster, bannercatch stickers, and playing field map.

The playfield is huge. Only a portion of each of the 64-sectors of the playfield is visible on the screen at once. The screen is split so each partner can view a different part of the field. To keep track of your location, you have to note the sector number you're in and then refer to the playing field map.

Defeating Max and his robots isn't easy. To do it you have to work with your partner and learn how to intercept and decode the secret messages he sends to his robots. That's where an added bonus comes in. Max and his robots communicate in binary code. By playing the game you learn to read binary numbers, an important skill to have if you're interested in computer programming.

Besides defeating Max, another goal is revealing his mysterious face. Each time you win a game, a bit more of Max's face will appear. A special sheet is provided so you can gradually sketch in his face as you win more and

more games.

Interesting sound effects occur when you accidentally bump into something or when you cross the river dividing the playing field. Lively, well-written music helps announce the winner of each game. The action can be quite exciting as you try to elude Max's robots or chase them when they steal your flag. Careful though! I almost broke a joystick running from Tor, one of Max's robots.

SIMULATED COMPUTER I

Carousel Software, Inc. 877 Beacon St. Boston, MA 02215 (617) 437-9419 \$29.95, 32K—disk

Reviewed by Christine A. Lunardini

Have you ever wondered how a computer *really* works? **Simulated Computer** takes you step by step through the internal workings of your computer. The program is an excellent learning tool that encourages and rewards creativity.

Simulated Computer graphically illustrates the series of steps by which information is processed to produce a desired result. Across the top of the main screen is displayed a small keyboard with a set of hands which type in unison with your keystrokes. The keyboard is indirectly connected to the central processing unit (CPU), which is connected, in turn, to a printer. The remainder of the screen is devoted to three rows of boxes, six to a row, numbered for 00 to 23. These are the memory locations. The boxes include special locations for sound, graphic, and color definition.

Another strength of Simulated Computer is its documentation. Once you sit down at the computer, you are led through a series of hands-on tutorials that are clear, concise, and to the point. The tutorials are simple

mathematical and Turtle Graphic exercises that get you right into the program. For example, as you work through the first tutorial, the computer hands at the top of the screen are typing right along with you. But you also see the invisible part of computing—where that series of instructions or data is stored internally, and what happens when you RUN your program.

TITLE BOUT

For the true boxing fanatic, **Title Bout** is a computerized simulation of the sport that lets you play manager to practically any boxer from recent history. The game includes data files for 509 real boxers from Muhammed Ali to Hilario Zapata (flyweight). Also, you can modify existing data files or create your own imaginary super pugilist.

Each boxer's file data profiles every aspect of his ring characteristics, from hitting power and ability to control the fight, to endurance and percentage of punches that actually connect. In all, the program evaluates 19 factors for each fighter in every round. Other factors included are the manager's strategy and fighter's attitude. If you play against the computer, you pick both fighters and the computer picks its strategy and fighter's attitude for each round. Otherwise, two human players make all decisions for themselves.

Each round is depicted graphically with animation and sound effects, but not in real time. The fighting seems to correspond fairly closely to each boxer's historic skills and whatever strategies you select. For realism, quotes like "You're meat" and "Yo mama", attributed to the current pugilists, appear periodically at the bottom of the screen. Muhammed Ali even does a little dance!

\$30.00. Avalon Hill, 4517 Harford Road, Baltimore, MD 21214. Phone (301) 254-5300. Requires disk, 48K.

Information transfer is represented by electrical impulses that surge along circuits, through the CPU which assimilates each piece of information as it is called up and, in turn, sends its own message back to the memory locations. This process continues until all the information in the memory locations has been filtered through the CPU and the results are sent to the printer for output. If you are work-

MEGAFONT II

If you have a dot matrix printer with graphics capability, MegaFont II will put it to good use. You can print in any of ten built-in custom fonts (character sets), or create your own fonts for use with the program. You can also dump Graphics 7 1/2 and Graphics 8 screens in three sizes. The instructions tell you how to convert compressed Micro Illustrator picture files for use with MegaFont.

If you use the standard font, even control and inverse characters are printed exactly as they appear on the screen. Among the other built-in fonts are two styles of script, various "fancy" fonts, italics, and Greek. You can print in two sizes. The large print is fairly light, and the other size is denser but too small. It would have been preferable to make the larger size a big denser.

MegaFont II is a revision of the earlier MegaFont. New features include the capability to type directly to the printer, changeable line spacing, faster operation and two new fonts. MegaFont II works with NEC, Prowriter, Epson (with Graftrax), and compatible printers. It works with Atariwriter, Bank Street Writer (mostly) and Text Wizard (if you print files to the disk), but is not compatible with Letter Perfect unless you have the LJK conversion utility.

\$24.95, XLEnt Software, P.O. Box 5228, Dept A., Springfield, VA 22150. Phone (203) 644-8881. Requires disk, 48K. ing with Turtle Graphics, the output will be a second screen which will display step-by-step the design you are creating.

Simulated Computer also teaches some basics of Assembler language. The tutorials are more directly responsible for the success of this aspect of the program. A series of programming "challenges" at the end of the tutorials, when successfully mastered, is a pleasantly surprising indication of how much you can learn about programming in a relatively short time. They are also positive reinforcement for creating your own programs to run through Simulated Computer.

All in all, Simulated Computer lives up to its promises and deserves the "Best Microcomputer Software Award" it received from *Learning Magazine*. An additional bonus is that the program can be rewarding for children under age 12 whose parents want to take the time to work through the tutorials with them, particularly the Turtle Graphics routines.

BOULDER DASH

First Star Software 22 East 41st Street New York, NY 10017 (212) 532-4666 \$29.95, 32K—disk/cassette \$39.95, 16K—cartridge

Reviewed by Roger Fairchild

Boulder Dash is not only the name of this game, it is also a phrase you may be uttering often while you play. Your task in this scrolling maze game is to collect jewels with a beautifully animated character named Rockford. Pushing boulders out of the way to get to the elusive jewels, Rockford must watch out for falling boulders that shorten his quest. Once the required number of jewels are collected, a secret exit from each level will appear. Most of the time this exit isn't visible from your current location in

the maze, and your search for the exit begins as time to complete the level quickly fades.

Rockford digs his way around much like Dig Dug, but the resemblance ends there. Boulder Dash offers much more variety, with 16 different caves and five levels of difficulty. Out to stop Rockford are Fireflys, Amoeba, Enchanted Walls and many other nasty characters.

Boulder Dash allows four different starting points evenly spaced throughout the levels. This feature allows you to see some of the higher levels that you would not have viewed otherwise. After every fourth level is a short puzzle that provides some interesting diversion.

Boulder Dash is a fast-paced, joystick-busting, arcade-style game that will keep you coming back time after time. The game is suitable on the beginning levels for children and on the higher levels will challenge a dedicated arcade addict. You'll get hours of enjoyment for your software bucks.

OPERATION WHIRLWIND

Broderbund 17 Paul Dr. San Rafael, CA 94903 (415) 479-1170 \$39.95, 48K—disk

Reviewed by Edward Bever

Tanks churn up a riverbank, with infantrymen darting and firing alongside. Behind them, an enemy hulk burns, while in front an officer looks on with a mixture of pride and preoccupation. Victory, according to the box cover, "will provide a decisive breakthrough in the war"; defeat could cause the collapse of the front.

Operation Whirlwind puts you in command of the tank and infantry battalion that must accomplish a criti-

continued on next page

cal mission. You must lead it across the country, surmount natural obstacles as well as enemy resistance, and seize and hold a town. The enemy, controlled by the computer, has prepared defenses and will undoubtedly receive reinforcements. Your skills as a strategist and tactician will be tested repeatedly as you struggle from one phase line to the next, and then turn to defend your conquest.

The game plays like a computerized boardgame, with each unit moved individually in sequence, and combat executed one attack at a time. The computer enhances this format by freeing the player from the need to memorize rules and keeping track of changes in the units' strengths during play. Furthermore, the computer keeps enemy pieces hidden until they fire, and it provides an opponent who is always willing to play.

The game's production values are very high. The documentation is clear and comprehensive. The graphics are first rate (except that on my copy some numerals come out garbled). The program is well structured, easy to operate with joystick or keyboard, and flawless in execution. It is easily learned, and it provides an absorbing challenge through four levels of difficulty.

SONGWRITER

Scarborough Systems, Inc. 25 North Broadway Tarrytown, NY 10591 (914) 332-4545 \$39.95, 48K—disk

Reviewed by Jerry White

Songwriter is designed for children or adults who wish to compose music on their computers and learn about music theory. The attractive package includes a diskette, a well-written 64-page manual, and a cable to connect Atari computers with a monitor or

audio output line (800, 800XL, or 1200XL) to your home stereo or tape recorder.

Songwriter completely avoids the use of standard musical notation. The documentation explains as its reasons that: musical notation is not easily understood, it requires a prior knowledge of music and presents a distorted visual picture of music. While I agree with this, Songwriter is not much use to those who wish to learn how to enter songs from standard sheet music.

The Songwriter program and documentation are well written, and do have significant educational value. The main display simulates a "player piano roll," and option displays are neatly implemented. Computer keyboard options are logical, and include user definable keys for a sequence of keystrokes known as musical ideas. Songs and ideas can be easily edited, loaded, saved on diskette, combined, and printed.

Songwriter comes with 28 songs on disk, ranging from children's songs to classical music. Songs may be played normally, or one note at a time, forward, or backward. Speed and sound quality may be altered as the music is being played. Songwriter can store over 6,000 notes in memory,

and has many other nice features too numerous to explain in a short review.

The only major drawback I found with the program is its inability to store and truly play more than one voice. While it is true that a long sustain may be used to create two sounds at the same time, this is the limit of Songwriter's multi-voice capability. But if you can live with this shortcoming, you will find Songwriter to be a useful musical composition tool, as well as a great way to introduce music to both young and old.

RELAX .

Synapse 5221 Central Ave. Richmond, CA 94804 (415) 527-7751 \$139.95, 16K—disk & hardware

Reviewed by David Duberman

Relax is one of the most unusual products for the Atari ever! It's a biofeedback device that measures electrical activity in the forehead muscles. Potential uses for Relax range from no-hands computer game playing to applications control for handicapped people. You can also use Relax to monitor and possibly reduce stress in continued on page 80

VIDEO BILLBOARD

Video Billboard makes it easy for you to create fancy text display sequences in multiple colors and different sizes of letters. It's a great tool for making title screens, in-store displays, breaking new ground in video poetry, etc.

You can fill the screen with as many as ten lines of thirty characters each, or as few as four lines of fifteen characters—depending on which of the three text sizes you pick.

You choose colors for text and background of each line. For special effects, you can have any lines flashing. You can automatically display a sequence of up to 20 screens from RAM, or up to 180 screens from disk.

The documentation is very clear and full of helpful hints. In addition, fifteen screens of on-line help are available at any time. Also, you can obtain printouts of your screens. If you have a need for an easy-to-use elaborate text display, this program is for you.

\$69.95 from Ronald C. Tinnell, 2221 Windy Drive, Garland, TX 75042. Phone (214) 530-8135 between 6–10 P.M. CST. Requires disk, 48K.

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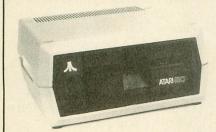
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The measurement of electrical muscle activity is called electromy-ography. When the muscle is tensed, electrical activity increases. Sensors in the Relax headband pick up these tiny signals and send them through an amplifier box to the computer. Synapse software interprets the signals so you can easily see changes in your muscle tension.

The blue corduroy headband contains three disk-like metal sensors. It fastens with Velcro and plugs into the main unit with an eight-foot cord.

The Electromyograph unit connects to joystick Port 1 on an Atari computer. There is an on/off switch with a power LED, and two sliding controls for adjusting the unit's sensitivity. Since the unit (and you) are electrically isolated from the Atari's AC power supply for safety, four AA batteries (alkalines are suggested) are required. The unit drains power constantly whether in use or not, so you should be careful to turn it off when you're through. The LED lights up even when battery power is low, so the best indication of dead batteries is lack of response when using the Relax program.



THE INSTITUTE

The Institute was released in very limited quantities several years ago in a text-only version. Shortly thereafter, work began on this high-resolution graphics version.

This deviously clever game places you in a mental asylum, from which you can only escape in your dreams. When you "solve" one dream, you return to The Institute to solve another. Commands are typical for such games, including compass directions N, E, S, W, NE, etc. Many of the puzzles are extremely challenging (the solutions may strike you as

The first program on the disk, a simple moving graph, is intended for use with the audio cassette. The 25-minute narration consists of suggestions for relaxation, spoken in an ultra-calm voice. Accompanying sounds imply various soothing environments, such as forests and beaches.

Part of the narration ties in with the graph program's display, which shows a vertically oscillating point drawing a trace on a sheet of horizontally moving "paper," much like a lie detector continued on page 82

illogical), so there are 22 encrypted hints included in the instructions.

One of The Institute's best features is its graphics. The cartoon-like drawing style is cute and fun to look at. There are over 60 different colorful high-resolution graphics screens, some of which contain important visual clues that aren't mentioned in the text. If you're moving through a familiar area, you can turn off the graphics for a faster journey. For a real challenge in adventure gaming, try The Institute.

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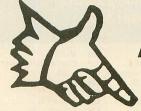
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The vertical "relaxation scale" ranges from 0 to 500, of which you can see 150 points at a time. You start at the top end of the scale (350–500), and use the sliding controls to adjust your trace to the arbitrary beginning point of 450.

When your trace reaches the bottom of the visible part of the scale, you must momentarily stop and switch to the lower range. I've found it surprisingly easy to get below 350, but it takes practice to progress from there. If you have difficulty obtaining a smooth trace, there are keyboard command adjustments to average out the readings and to take fewer readings per unit of time.

The second program, Kaleidoscope, provides a beautiful visual relaxation aid as it measures your relative relaxation. As you relax, colorful changing patterns split horizontally and scroll up and down while more appear. If you tense up, the process reverses.

The third program, Balloon Game, is a colorful Frogger-type game that rewards not only the ability to relax but also the ability to switch quickly back and forth between states of tenseness and relaxation. Your "trace" is replaced by a balloon floating up and down in back-and-forth crosscurrents which carry "good" bubbles (catch them) and "bad" spikes (avoid them).

Balloon Game suggests interesting possibilities for Relax, particularly for the handicapped. Those who are without the use of their limbs may be able to use it for sophisticated control of complex programs.

The Relax workbook, which wasn't ready at review time, will supplement Relax programs with exercises and suggestions for using the system effectively.

Relax provides a valuable service by giving us visible feedback on the state of tension in our muscles, but it's up

continued on page 84

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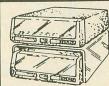


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to us what we do with that information. However, the new availability of bio-feedback programs for the home computer opens up many fascinating possibilities.

MONTEZUMA'S REVENGE

Parker Brothers 50 Dunham Rd. Beverly, MA 01915 (617) 927-7600 approx. \$30, 48K—disk

Reviewed by David Duberman

Parker Brothers' latest arcade conversion, **Montezuma's Revenge** is a graphic action game *par excellence*. It's now available for Atari computers on XL-compatible 48K disk.

You're Panama Joe, an explorer lost in the depths of the Mexican emperor's fortress. The countless rooms of the fortress may each contain jewels, weapons, and other valuable objects. The rooms also hold enemies that you jump over or duck—rolling or bouncing skulls and crawling spiders, plus non-moving snakes.

The variety of rooms seems almost endless. Many rooms contain moving surfaces that dump you unceremoniously into flaming lava pits if you're not agile, causing you to disappear in a puff of smoke. There are ladders for moving vertically and chains for climbing or jumping about. And watch out for the laser gates!

Rooms contain objects that you must pick up in order to progress through the game. Most important are keys, which come in three colors. If you encounter a door without possessing the proper color key, you cannot pass. Pick up jewels for extra points. Earning lots of points gives you extra lives. Possession of a sword lets you vanquish the next enemy you touch, whereupon you lose the sword. If you

find a hammer, you're invulnerable to skulls and spiders for the next five seconds or so.

There's only one (extremely inaccessible) torch at each play level, but you must get it in order to explore the lower depths. The rooms here are dark, and it is possible to explore them without a light, but very risky.

You'll know when you reach the emperor's treasure room, the final room in each level of play. The room is filled with chains and jewels and glows with an eerie light. The only ways to move about are by jumping or climbing from chain to chain.

You can start at any of the first three of the nine levels of play. Each higher level features more and faster enemies, and more dark rooms. If you lose

The variety of rooms seems almost endless.

CITYWRITER

CityWriter is a word processing program aimed at beginning computer users. All commands are immediately accessible via Atari's special keys—Option, Select, and Start. The list of currently available commands always appears in a window at the bottom of the screen. At the start of the program, you can simply press [START] and begin to type in Enter mode.

Edit mode lets you move through the document by character, by line, or by page, search and replace, and type over existing text. Unfortunately, to insert a passage you must type it at the end of the document and then use the text move function to place it correctly.

From the File sub-menu, you can see the disk directory, load a file either by adding it to or replacing text currently in memory, save, erase or rename a file, and format a disk. Finally, Print mode lets you format your hard copy, including page width and length, margin width, beginning page number at top or bottom, single or double-spaced, and right justification. There are no built-in printer control functions for underlining, boldface, etc. However, you get instructions for creating a printer control disk file that lets you use these features if your printer has them.

One major criticism is that the Atari keyclick isn't disabled. This sound can be quite annoying to those in the typist's immediate surroundings. Also there isn't much room for text—only six pages can be held at one time in a 48K Atari's RAM. For beginners, though, this program will probably satisfy most needs.

\$39.95 from Software City, Dept. A, 1415 Queen Anne Road, Teaneck, NJ 07666. Phone toll-free 1-800-421-5300 Ext. R264 or (201) 833-8510.

while playing on the first level, you're allowed to start the next game in the same room in which you died—once only.

The next time you die, you must start over from the beginning. This can be frustrating if you keep getting killed just before you finish a level. It would be good to have the save game option that's standard on most text adventure and fantasy role-playing games. One nice feature eliminates time limits from the game, allowing you to work out a strategy for getting through a room without pressure.



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GUMBALL

(game) Broderbund Software 17 Paul Dr. San Rafael, CA 94903 (415) 479-1170 48K — disk \$29.95

This new action arcade game places you in the Sticky Sole Gumball Factory where you must sort gumballs while avoiding the antics of your zealous supervisor. The game includes quotas, possibilities for promotion and a colorful cartoon.

SCREENSHOOTER I

(hardware) NPC PHoto Division 1238 Chestnut St. Newton Upper Falls, MA 02164 (617) 969-3487 \$169.00



The Screenshooter system gives you a simple way to take photographs of your video display. It includes a hood that fits over your monitor, special lenses, a Polaroid One Step 600 camera with bracket, and second bracket that holds 35mm SLR cameras.

CRITICAL CONNECTION XL VERSION

(Atari-to-CP/M interface) USS Enterprises 6708 Landerwood Lane San Jose, CA 95120 (408) 997-0264 \$175

This 15-foot cable and software package connects the serial port of popular CP/M machines to the Atari disk/printer port. According to preliminary information, an Atari XL computer can be used with the disk drives, printer and keyboard of a system running CP/M.

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future. —ANTIC ED

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(software)
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Each game puts you in the role of a creature (dolphin, lizard or player drifting above the earth) who must face increasing levels of obstacles at stages of life. There are goals in each game, as well as lessons and insights. For instance, in the Dolphin's Pearl you start as a dolphin who must learn to swim, leap, and explore the unseen with sound. Eventually, you attempt to find the secret place that holds the Dolphin's Pearl, while avoiding hunters, harpoons, and deadly sea creatures.

THE INCREDIBLE I

(education)
Sunburst Communications Inc.
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A problem-solving program for ages 11 and up, The Incredible Laboratory requires kids to use trial and error and note-taking to discover how chemicals combine to create colorful and unusual monsters, according to the manufacturers.

MICROPRINT

(hardware) Microbits Peripheral Products 225 Third Ave., SW Albany, OR 97321 (503) 967-9075 \$79.95

MPP claims the MicroPrint, a printer interface for all Atari computers, replaces the 850 interface. It comes with a two year warranty and a four-foot cable with Centronics plug. MicroPrint should be compatible with Epson, NEC, and Prowriter, among other printers.



XL BOSS V1.0

(operating system)
Allen Macroware
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The XL Boss is claimed to be a replacement operating system for Atari XL computers, offering built-in BASIC with a key stroke, access to 4K of extra RAM, pushbutton coldstarts, and instant compatibility (without the Translator disk) with programs such as Letter Perfect, File Manager 800+, Text Wizard and many games not previously compatible with the XL line.

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ou know about Pinball Construction Set, for making your own video pinball games, and Music Construction Set, for composing complete musical pieces with minimum hassle. Welcome to Cursor Construction Set! If you're tired of looking at a square white unblinking cursor, this program is for you.

Type in Listing 1. Check it with TYPO and SAVE a copy.

When you RUN the BASIC program, you're first asked for the cursor flash rate, from 1 to 64. The higher the number, the faster the rate. For starters, try 16.

You're then prompted to enter a cursor color number from 0 to 255. (Your Atari BASIC manual has a chart of the color numbers.) For a bright yellow cursor, try 28. Be careful not to use the background color, or the cursor won't be visible.

When you've entered these two values, the cursor appears and the program ends. You may then LIST and tinker with the program, or issue a NEW command and use your custom cursor on another program. You can even keep your custom cursor when you change graphics modes. To return to the standard Atari cursor, POKE 752,0, and to use our custom cursor, POKE 752,1. The only drawback is

At last . . . you can create a cursor in any color, shape, and blink rate you choose. This short BASIC program works on all Atari computers. Antic Disk subscribers, RUN "D: PMCURSOR.BAS".

that you can't use other Player/Missile Graphics while using the custom cursor. To completely disable the custom cursor routine, press [RESET].

HOW IT WORKS

This program uses Atari's Player/ Missile Graphics capability to set up a "player" as the cursor.

Line 630 contains the data that sets the cursor's shape. As written, the cursor is a thin underline. You modify the shape by changing the data in this line. Listing 2 contains the assembly language source code for the machine language "vertical blank" routine used in Listing 1. You need not enter Listing 2.

Although the machine language routine contained in Listing 1 is relocatable to other memory addresses, it's usually best not to store it as part of a string. When you use the imme-

diate mode, BASIC may move the location of a string in RAM. But the vertical blank routine must remain at a fixed address. So if you need to use immediate mode, keep the routine in a fixed location. This BASIC demo finds a safe location by subtracting 33 pages from RAMTOP (the top of available memory) to insure that the 181-byte routine is stored well below the display list and the screen memory for any graphics mode. If you use only Graphics 0, you could change the 33 in line 350 to 6, leaving more room for your BASIC program.

The program uses Player/Missile Graphics in single-line resolution to create the cursor. The cursor is Player Two, and its data is stored in Page Six, to avoid reserving an additional chunk of RAM for Player/Missile memory.

Antic Contributing Editor Jerry White is co-author of "Windows" which appears elsewhere in this issue. We rushed this piece into print to answer 11-year-old Brian Woodruff's August I/O letter which generated a great deal of reader response.

listing continued on page 68

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