

EXPANDABLE COMPUTER NEWS

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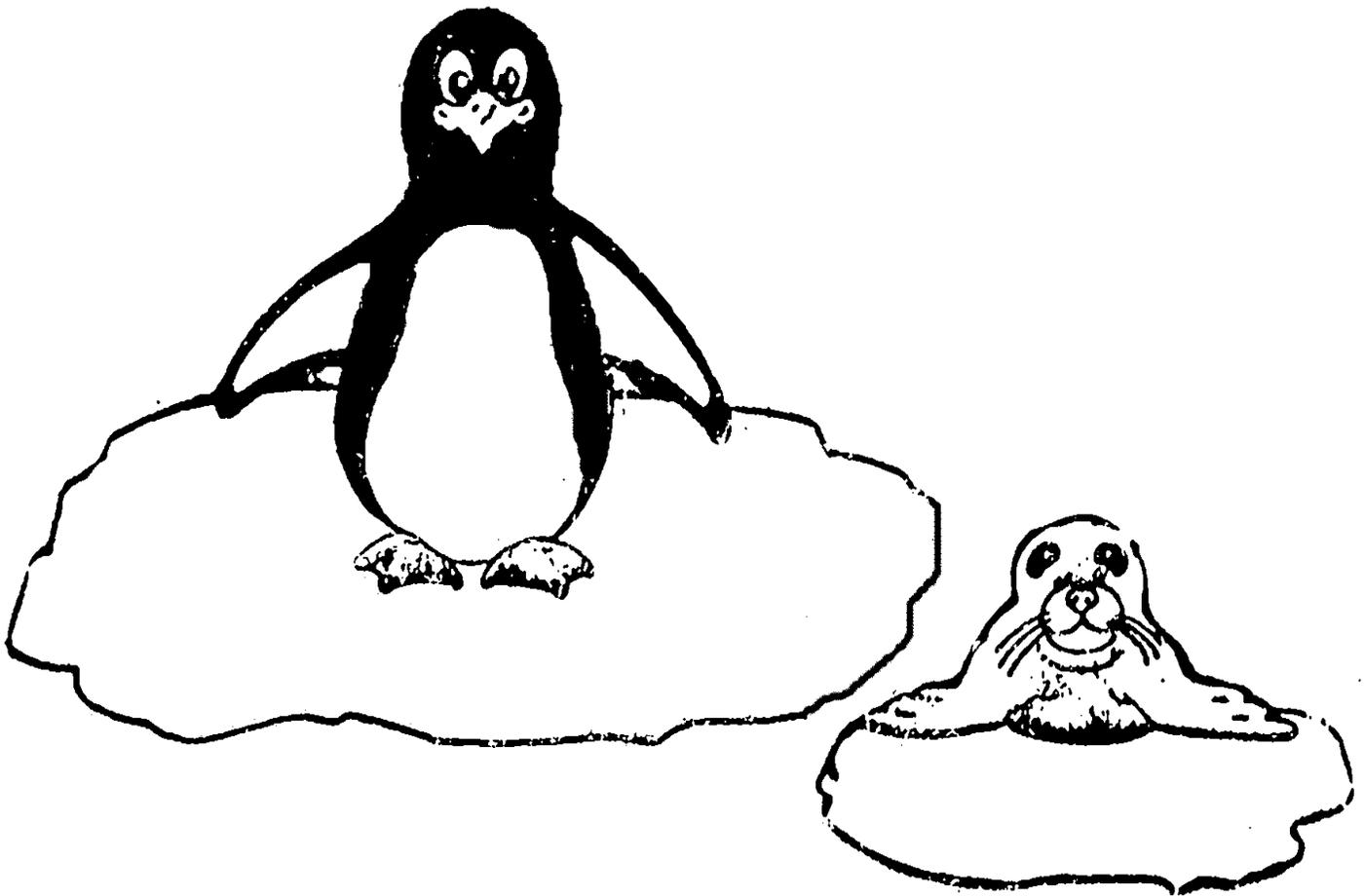


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Ramblings From The Ridge

by D. Sage

As usual things are a mess around here. I really don't know where to start. We have had a recurring heat wave with temperatures up to 110 degrees and the accompanying brown-outs.



Needless to say I am not one to tempt fate by running my computers under those kinds of conditions. As a result, I lost several days of work on this issue.

We have also been doing some reassessment of our priorities. For those of you who don't know it, in addition to publishing ECN, I have a full time job with the State of Missouri and also operate a small woodworking business. Needless to say the woodworking has suffered from a lack of attention.

All this leaves me with little time of my own. Occasionally my wife and I need to get away from all of this. Doing so may result in periodic delays in answering mail and in getting out ECN. Although we will always try to get the next issue out on time, it will not always make it. Don't worry if we are late, we fully intend to continue to support the ADAM but we have to keep our sanity in order to do that. If you call on Saturday and get no answer, we are probably gone for the day but will be back. Try to be patient. If you have an emergency you can call us at other times as long as you don't call after 9 p.m. central time.

Since I mentioned my woodworking, I might as well give myself a little plug. A sample of our work recently appeared in an excellent craft book, THE GOODFELLOW CATALOG OF WONDERFUL THINGS-GIFTS UNDER \$50, which is published by Chilton Press. It will be available in most book stores and our work appears on page 152.

Computerfun magazine, formerly Electronic Fun with Computers and Games, recently announced their departure from the publishing business. We are sorry to see them go. We have noted a number of computer magazines have recently died, mostly due to a lack of advertising revenues. One thing about this field - there always seems to be a lot of comings and goings.

We also have some good news. The Computer Entertainer and Video Game Update which reviews games for all systems recently announced that they are offering a discount to User's Group members. Write them to find out how you can receive a monthly subscription for \$17 instead of the regular \$22. Write them at: Computer Entertainer, 12115 Magnolia Blvd., #126, No. Hollywood, CA 91607.

We have reorganized the newsletter again. Programs will now be listed at the end of ECN rather

than with their accompanying articles. Program listings now come directly from our ADAMs and are reduced to save space. This will eliminate all proofreading errors. It may not eliminate all bugs, but we will try.

We again want to thank everyone that has sent materials for ECN. Unfortunately we can't use everything we get. In addition we often have to reduce the length of materials and have to test all programs.

Sometimes you may find that your program has been totally rewritten. You didn't do anything wrong necessarily, but we felt by rewriting it, it would be easier for others to understand.

Because we are receiving a lot of game reviews, we will probably not spend time doing those reviews ourselves. We cannot afford to buy every cartridge that comes out, so we will focus our resources on other products.

This brings us to another problem - money. Sometime next year we will probably be forced to raise the cost of our subscriptions. We will do everything we can to keep the rate as low as possible but we do have to cover our costs. If you order anything from our advertisers, we would appreciate it if you would tell them that you saw their ad in ECN.

I recently talked to Shirrel Rhoades, Publisher of Family Computing magazine. He indicated that they had mailed the first free issues of the magazine to all ADAM owners whose addresses they received from Coleco. If you own an ADAM and have not received your copy of Family Computing, then either you failed to send in your warranty card or Coleco has not yet sent your address to them.

Remember the User Bulletin Board column is for your use. If you are looking for something or have some ADAM games or books you would like to buy or sell, you can list it in that column.

West Hartford Happenings

by D. Sage, Editor

If the number of books published about a computer is any measure of success, then the ADAM ought to be the biggest hit ever. Where are all of these books coming from?

There are two titles by Timothy Orr Knight: Using and Programming the ADAM and Basic BASIC Programs for the ADAM.



Also available soon will be Discovering Science on Your ADAM with 25 Programs, by the Talcott Mountain Science Center. Even though many of these books cover a lot of the same ground, their availability should help sell the ADAM.

Coleco continues to reaffirm their strong support for the ADAM as evidenced by their recent announcement of a number of advertising campaigns.

First Coleco announced a \$15 million campaign to coincide with the beginning of the school year. The focus of the campaign will be education. The advertising will likely start out slowly and increase as the Christmas season nears. Coleco also announced the ADAM Family Scholarship Program. This program will award a \$500 four year scholarship to qualifying buyers. Those eligible will receive \$125 at the end of each successfully completed academic year. The offer will run from Sept. 1 through December 31. Details on this offer will be available in advertising and at point of purchase.

Our sources indicate that the disk drive, modem and memory expansion unit are in production. We look for them to start appearing by the end of september. If you have trouble locating and ADAM products, you can now order them all directly from Coleco. If you have a MasterCard or VISA you can get faster service by placing your order over the toll free number (1-800-842-1225). Software is also beginning to appear and availability should accelerate as fall progresses.



Infocom continues to indicate that their adventure games will be available for the ADAM. The latest word is that they are currently working on the adaptations, but will not give an anticipated release date. No word yet on the format.

For those of you who are growing impatient, remember the Commodore 64 was out for almost a year before software began appearing. That computer was heavily criticized for a lack of software. One thing you can do is write the software companies, ask them about their ADAM offerings, and indicate that you would like to see their products available for the ADAM. As has been suggested by a number of readers, you can set up a form letter in SmartWriter and simply change the name and address for each company you want to contact. Believe it or not such letter writing efforts do work. The more of you that get involved the faster there will be results. If you like your ADAM tell others how great it is. I still have not seen any other

computer with the ADAM's capability at a price that is competitive.

What About The Competition?

by D. Sage, Editor

The battle between Commodore and Atari has begun. This could be good news for Coleco. So far the battle has only resulted in lawsuits and not any new products.

Jack Tramiel's Atari has indicated that the Atari 800XL will be supported, but there has been no mention of support for other products.

The 7800 game system is sitting in a warehouse with no word from the company on its future. Atari plans to move on higher end markets and appears to be trying to reach an agreement to acquire the Mindset computer or a comparable Japanese product. Commodore jumped in and acquired Amiga.

Amiga has been a producer of joysticks, but displayed a sophisticated computer at CES. That computer uses the same chip as Apple's Macintosh.

Atari has sued Amiga over chips they were supposed to develop for Atari that are now rumored to be part of their computer. Commodore had earlier sued a number of their former staff who had joined Atari. Commodore alleged theft of trade secrets. Commodore appears to be proceeding with the new Model 16 and Plus-4. We will see. I think both of these machines are a real mistake.

What happened to the Sinclair QL? Now there is a machine with a lot of potential. We haven't heard anything about this machine since June.

Where's the Japanese invasion? Looks like they are taking a wait and see attitude. If anyone is going to make a move it should be apparent by the next issue. Until then we will be waiting, watching, and listening. If you hear a good rumor, send it to us.

The ADAM SmartWriter Program And Printer

by George Knochel

For ADAM owners who purchased the ADAM in 1983 or maybe January 1984, here are a few tips:

1. Turn on your ADAM, then press the "R" while holding down the "CONTROL" key. At the bottom of your screen a blue box will appear with the version of your SmartWriter word-processing program. If the version is "R80" or above, you have a souped-up program free of bugs. If below "80", then you have the reason for most of your problems. Since the SmartWriter program is on a chip, you should take your Memory Console to the nearest Honeywell Customer Service Center to have the program (chip) replaced. Call Coleco first at 1-800-842-1225.

2. Is your printer jamming letters together at the end of sentences? Does it sometimes print to the left

of the left margin? Does it not align letters one above the other? Then you need a trip to a Honeywell Customer Service Center. For \$39 they will repair it as good as new. They repaired mine in only one day. If your printer prints garbage, that is probably due to an old version of SmartWriter.

For all ADAM owners, regardless of when you purchased ADAM:

1. To delete text fast, use the "CLEAR" key, then the "CLEAR SCREEN" key. If you use "HI-LITE", press the "HOME" key and the left or right arrow key together, and the cursor will zip very fast across the screen, underlining everything in red.

2. Your local Honeywell dealer sells ADAM hardware/software at reasonable prices. This includes ribbons, data packs, and an extra digital data drive. Look up "Honeywell" in the white pages and call them to find out prices.

3. You can use SmartWriter to edit and make mass changes to your SmartBASIC programs. Just "GET" your program from the tape. But beware - you may make a syntax error and not find out until you run your program.

4. The new programs "SmartFiler" (a data base) and "Smart Letters and Forms" (72 preformatted letters/forms) have been getting very good reviews so far. They are said to be very easy to use, and powerful in performance. These two programs are also integrated -- which means that they can be used alone or in conjunction with all "Smart..." software, such as SmartWriter.

5. There is a bug in SmartWriter (all versions), which explains why the "FAN-FOLD" and "AUTO-PAGE" options of "PRINT" do not work correctly. It is simply because when the "RETURN" key is used to indicate a blank line, it spaces 1 1/2 lines, instead of 1 line. If you add all these 1/2 lines up, you will see that that's how many extra lines are spaced before your first line prints on the next page. There is really no solution to this, other than to try adjusting the vertical bottom margin to compensate for all those 1/2 lines.

6. In general, if you have any problems, just call Coleco first, from 8:30 a.m. to 10 p.m. (EST). A representative will help you determine the problem. They have always been very nice with me.

Assembling Graphics:

Changing Text And Background Colors

by D. Sage, Editor

Many thanks to Tony Johnson of Mississauga, Ontario for the assistance he has provided in unlocking ADAM's graphics.

Beginning with this issue we will be including a

regular column dealing with graphics, machine language and assembly language. Originally an article on sprites was planned as the first installment of this column, however those programs are not yet complete. We are working on a sprite editor and when that reaches a satisfactory stage we will include it in a future issue.

This article will provide you with a demonstration program (the program listing appears at the end of ECN rather than with this article) that will allow you to change the background and text colors using two machine language routines. While these articles will focus on graphics, they can also be used as a tutorial for learning machine and assembly language programming.

For those of you who are interested in learning assembly language programming on the ADAM, I would recommend that you obtain one of the following books: Z-80 USERS MANUAL, Joseph J. Carr, Reston Publishing Co.; Z80 ASSEMBLY LANGUAGE PROGRAMMING, Lance R. Leventhal, Osborne/McGraw-Hill; 8080/Z80 ASSEMBLY LANGUAGE, Alan R. Miller, Wiley Books; and other such books. In addition, if you are interested in working with graphics, you need to obtain a copy of Texas Instruments Data Manual for Video Display Processors (TMS9918A/TMS9928A/TMS9929A) from Texas Instruments, P.O. Box 1443, Houston, TX 77001. I don't have a price on that book.

Fortunately the ADAM uses a number of system routines that simplify accessing the video chip (VDP) and the 16K of video memory (VDP ram). These routines are accessed by CALL statements.

The video chip supports several graphics modes: text, graphics 1, graphics 2, and multi-color. These are not the same as the modes used by BASIC. In reality, SmartBASIC's Text mode does not use the video chip's text display mode. This is the reason for the limitation to 32 column lines.

Technically the video chip is capable of supporting 40 column lines without graphics capabilities. We are assuming this mode was not utilized for text because it prevents the use of multi-color screens and mixed text/graphics displays.

ADAM's Basic Text mode will allow you to use sprites with text. You probably are asking, what does this have to do with changing text and background colors? Unfortunately the answer is, a great deal.

Changing the background color is relatively easy. It involves changing one value in the VDP register (register 7). In VDP text mode that one value would also effect text color, but in the VDP graphics modes it only effects the background color. The text color is controlled by a table stored in VDP memory (the color

table). This color table contains 32 entries each of which must be changed to alter the color of all text. Each value controls the color of 8 graphics images or text characters stored in another part of VDP memory. The values effect the color of the character and its corresponding background. Now we have two background colors. I told you this was confusing. In order to eliminate some of the confusion, our program will set the text background to transparent so that the screen background will not be altered.

The program should clarify how all this is accomplished. Line 10 sets LOMEM at 32100. This is done to make room for the data and machine language routines used by the program. Line 30 sets the values of "s", "x", and "z". These values will be used as the beginning memory locations for storing data, etc. In line 40 "c" is set to zero and line 50 dimensions "ck". Lines 100-130 contain the machine language routine that will be used for changing the background color. These numbers translate to the following assembly language instructions:

<u>VALUE</u>	<u>LOCATION</u>	<u>A/L PNEUMONIC</u>	<u>COMMENT</u>
245	30000	PUSH AF	Save Register
229	30001	PUSH HL	"
213	30002	PUSH DE	"
197	30003	PUSH BC	"
253	30004		
197	30005	PUSH Y	"
14	30006		
1	30007	LDC, 1	Black Screen
6	30008		
7	30009	LDB, 7	VDP Reg. 7
205	30010		
32	30011		
253	30012	CALL \$FD20	C to Reg. 7
253	30013		
225	30014	POP Y	Restore Regs
193	30015	POP BC	"
209	30016	POP DE	"
225	30017	POP HL	"
241	30018	POP AF	"
201	30019	RETURN	End

You will notice that some of the assembly language statements require only one value while others require more.

The first part of this routine involves PUSHing a number of register values onto something that is called the stack.

This is done in order to save these values. Because these registers (AF, HL, DE, BC, Y) are used by a number of ADAM's CALL routines, I have made it a practice to save them all in all of my routines.

Next a value (1) is stored in the C register. Later in the program this value will be changed by our program. This is the value that determines the background color of the screen. The value "7" is then stored in the B register (LDB,

7). This number determines which VDP register will be changed. CALL \$FD20 (hexidecimal values are processed by \$ sign) is a system routine that loads the VDP register designated by storage register B with the data stored in register C.

After that the registers we pushed at the beginning of the program are all POPped. This restores their original values before our machine language routine was executed. Our program will execute this routine by CALLing 30000. The routine will execute and return to the program just like a GOSUB statement.

Lines 150-180 contain the data for the machine language routine that will be used for changing the text color. The following is the assembly language translation for that routine.

<u>VALUE</u>	<u>LOCATION</u>	<u>A/L PNEUMONIC</u>	<u>COMMENT</u>
245	31000	PUSH AF	Save Regs
229	31001	PUSH HL	"
213	31002	PUSH DE	"
197	31003	PUSH BC	"
253	31004		
197	31005	PUSH Y	"
58	31006		
27	31007		
252	31008	LDA, (\$FC1B)	Contents 64539
253	31009		
33	31010		
32	31011		
0	31012	LDY, 32	# of Entries
33	31013		
00	31014		
125	31015	LDHL, \$7D00	Data Location
17	31016		
00	31017		
00	31018	LDDE, \$0	First Entry
205	31019		
44	31020		
253	31021	CALL \$FD2C	Load VDP Ram
253	31022		
225	31023	POP Y	Restore Regs
193	31024	POP BC	
209	31025	POP DE	
225	31026	POP HL	
241	31027	POP AF	
201	31028	RETURN	End

Again the registers are pushed to save them. Then the contents of a memory location the location of which is specified by a hexidecimal value (\$FC1B) are stored in register A. This value is a table number (4) that designates the color table in VDP ram. The Y register is then loaded with a value of 32. There are 32 entries in the color table, so it will be necessary to change all the entries to insure that the text color will be changed for all text. Register HL contains the starting address (32000) of the data that will be entered. The information stored in register DE

indicates which entry in the color table is the first to be changed. A zero indicates the first entry. CALL \$FD2C, calls the system routine. This routine then takes the 32 data entries that are stored beginning at 32000 and loads them into the VDP ram area used by the color table beginning with entry zero and ending with entry 31 for a total of 32 entries. The registers are then popped and control is returned to the program.

Lines 200-210 contain the data values used for each of the 15 text colors. Lines 900-920 store the background machine language program in memory as was previously indicated. Lines 1000-1020 store the text color routine.

Line 1030 reads the data from lines 200-210 and stores it in the dimensioned variable "ck". Line 1040 calls the color choice subroutine at line 2010. Line 1050 checks for zero which will terminate the program. Line 1060 pokes location 30007 with the background color value.

Line 1100 calls the background color routine. Lines 1110-1130 poke the 32 text color values into memory locations 32000 to 32031. Line 1140 calls the text color routine. The program then returns to line 1040 to get another set of colors (line 1150). Line 1220 sets the screen back to BASIC text mode and line 1230 terminates the program.

Lines 2000-2150 contain the color choice subroutine. This subroutine allows you to pick a screen background color and text color. It also allows you to exit the program. In addition the routine prevents you from selecting the same text and background colors. If you did this you could not see your text.

Graphics programs such as this are valuable in programming games, but are also useful in designing a wide range of programs. Manipulation of text and screen colors can be used in data base, word processing, accounting or a wide range of other programs to set off certain information on the screen. Even if you have no desire to learn machine or assembly language programs, the routines here can be used as is in Basic programs. The only thing you probably will have to do is renumber the lines to fit your program.

The Shape of Things to Come

by J. Hicks

Since sprites are not supported by current releases of BASIC, good graphics are difficult. Fast graphics are even worse and easy to code graphics are too much to ask for. In dealing with these problems most sources tell you to get out the graph paper, buy a "hex" calculator, and jump through each

hoop in sequence. I just could not buy that approach and I already have a "hex" calculator, my ADAM.

After several false starts and many sheets of crumpled paper, I ended up with the Shape Maker program (see program listings at the end of ECN).

This program can be useful in building a library of shapes for use in your BASIC programs. The output of this program are decimal equivalents of the hex numbers used to create your shape. These numbers need only be typed into data statements to be put to use.

While it is not necessary to understand the program to use it, I have included an overview. This may assist you in writing your own development tools.

The first step in the program, line 20, involves reserving memory space for your shape table and to save the numbers used to define it. This is done by reserving high memory, HIMEM: 51455, and defining an array, DIM a(100).

Lines 50-60 read the data from line 40 to set up the shape table pointers common to all one entry shape tables. Line 70 clears the shape table to prevent leftover data from interfacing with our masterpiece. Line 80 does the same for the storage array. Line 90 tells ADAM where the shape table resides in memory. Lines 130-190 accepts input and converts that input into instructions for the computer.

The complete command list is given below. The requested direction code is loaded to the table in line 200 and the shape table updated in 210. Line 220 advances one frame in the table unless the last command was an "x". I have only allowed room for 100 frames so line 230 keeps us below that limit.

A shape table of any larger size would take too long to draw. The final output of the program is produced in lines 2000-2020 and is directed to the printer. If you desire to save the table to tape, you can easily modify this section to use the BSAVE command instead of lines 2005-2020.

Line 3000 is a subroutine used to enter graphics mode and set the scale and color. I have used a scale of 2 for easy viewing. It's not Picasso but it works.

Shape Maker Commands

<u>Command</u>	<u>Action Taken</u>
q	end shape and print codes
x	erase last frame
e	erase entire shape
u	draw next frame up
d	draw next frame down
l	draw next frame left
r	draw next frame right

Random

Program by J. Hicks

Article by D. Sage

The random program stems from a program written by D. Sage in the last issue. Instead of generating random numbers for use by the program, it generates a different negative seed for each execution of the program. This will insure that programs do not become boring by always giving the same responses. After test running this program, delete lines 25-40 and save it to a tape as a starter for all programs that use random numbers. If you renumber it, be sure to change the GOTO in line 1010.

Snakerider

Program by Mike Elsila

Article by D. Sage

Snakerider is an ADAM version of Surround. The game is designed for two players who must guide their "snake" so as to not run into the border, the other player's snake or their own snake's tail. I modified the game to include speed control. This makes the game suitable for all ages. While the concept of the game is simple it demands fast reactions to keep from crashing.

The program listing is well commented, so there is no need to go into a line by line discussion. Just type it in and have fun. Try tinkering with this game. With a little work you could add a one player option or other variation.

Sounds Like Music Again

by D. Sage

This issue we are including a more detailed music playing program which is based on last issue's Piano program and the assistance of James Biggs of Fort Wayne, Indiana. Music Player (program listing appears at the end of ECN) is designed to play any music that you want to code. It includes capabilities for using all three voices, variable duration, and variable volume control. The program eliminates most of the messy calculations employed in other programs.

Using the table provided in this article you can code your own song and play it. Music Player already includes a rendition of London Bridge. To play another song, simply substitute your coded data for the DATA statements (lines 305-360).

For each note you wish to play you have to code the voice, the note value, the duration, and the volume. If you look at line 305 in the program, you will see four values: 1, 13.4, 16, 0. The first of these designates voice 1; the second value, 13.4, is Hi C; the third is a duration of 16 which is equivalent to a

1/8th note; and the fourth sets the volume to zero which is the maximum loudness. By using more than one voice you can code chords.



ADAM restricts you to a maximum of 3 voices for music, so you can only specify voice 1, 2, or 3. Anything else will be ignored by the program. You are restricted to essentially three octaves when selecting music codes. These range from a value of 53.7, low C, to 7.1, high B (see table of note values).

Duration will depend on the note you are using. The values are as follows: 1/16th=8, 1/8th=16, 1/4th=32, 1/2=64, and a whole note=128. If you want to change the overall speed at which a song plays, you can change line 290 which sets the tempo (tm=15). By lowering the value of "tm" you will speed up the song; by increasing it you will slow down the song. Volume can range from zero (loud) to 15 (very soft).

Let's take an example to illustrate this. Say you want to code a high C on voice 2; it is a half note of moderate volume. Using the information previously given and the note table, you would code the voice=2, the note=13.4, the duration=64, and the volume=7 or 8. This would give you the following values for your data statement: 2,13.4,64,8.

I will not discuss the entire program this time. This one is well commented and most of the music generation was covered in last issue. One thing you should note is that line 30 is used to detect an out of data error that will occur when the READ statement at line 1010 reads all of the DATA in lines 305-360.

When this happens the program goes to line 3310, shuts off all of the sound and then terminates. You should now be ready to code and play your own songs.

NOTE TABLE

<u>Note</u>	<u>Code</u>	<u>Note</u>	<u>Code</u>	<u>Note</u>	<u>Code</u>
lo C	53.7	C	26.9	hi C	13.4
lo C#	50.7	C#	25.3	hi C#	12.7
lo D	47.8	D	23.9	hi D	12.0
lo D#	45.2	D#	22.6	hi D#	11.3
lo E	42.6	E	21.3	hi E	10.7
lo F	40.2	F	20.1	hi F	10.1
lo F#	38.0	F#	19.0	hi F#	9.5
lo G	35.8	G	17.9	hi G	9.0
lo G#	33.8	G#	16.9	hi G#	8.5
lo A	31.9	A	16.0	hi A	8.0
lo A#	30.1	A#	15.1	hi A#	7.5
lo B	28.4	B	14.2	hi B	7.1

Adam's Companion (Book Review)

by On C. Lam

Title: Adam's Companion

Author: Ramsey J. Benson & Jack Rochester

Publisher: Avon Books, New York, NY

Length: 394 pages

Price: \$9.95

I have found it! The technical details on how to make music on the ADAM! This is the book that Coleco should have used as part of their manual instead of Russ Walter's incomplete gray manual. This is the way a manual should have been written for the ADAM user. I rate it a 9.

Editor's Note: We have received several reviews on this book with a wide range of evaluations. The comments have generally been positive until the reader started trying to use the programs included. It appears that at least on some ADAMs a number of the programs do not work. We have ordered this book from a variety of sources and have yet to receive a copy.

On at least one occasion Coleco has acknowledged problems with the book. We will provide a careful analysis of the routines in the book as soon as possible and will try to make available any corrections necessary.

If anyone has entered the program on a data pack and cannot get them to run properly, we would be happy to take a look at them and try to find the problems. Until we can provide an in depth review, I have to recommend caution in buying this book.

Things To Do With Your Coleco Adam Computer (Book Review)

by Joe Blenkle

Author: Jerry Willis, Merl Miller & Cleborne Maddux

**Publisher: New American Library, 1633
Broadway, NT, NY 10019 (Signet Books)**

Length: 181 pages

Price: \$3.95 paperback

Rating: 6

In picking up this book I thought it would be chock full of programs. Not so. Instead, the book contains in depth descriptions of hardware and software now available and soon to be available for the machine.

Being far from complete (which is nearly impossible), the book still does an adequate job in describing some of the items currently available. Its descriptions of other software, however, appear to be based on versions for other computers. As long as no major changes are made in the translations, there is nothing wrong with this.

Game, business, home and personal software are

all described in detail. Hardware, however, is skimmed over with only a small chapter in the back of the book. If all the items mentioned actually appear, ADAM users certainly have something to look forward to in the future.

While this book doesn't present any programming or other useful information (except for the glossary in the back), it's still interesting reading for the price and will give ADAM users an idea of what to expect for the ADAM.

32 Basic Programs For The Coleco ADAM (Book Review)

by Joe Blenkle

Author: Tom Rugg & Phil Feldman

**Publisher: Dilithium Press, 8285 S.W. Nimbus,
Beaverton, OR 97005**

Length: 274 pages

**Price: \$19.95 (book), \$24.95 (Data Pack), \$39.95
(Package)**

Rating: 7

If you're too lazy to type in all those lengthy programs found in books, 32 Basic Programs might be the book for you.

This book comes with or without a digital data pack containing all the programs ready to run. Considering the length of some of the programs, it would be a good idea to buy the package.

The book is divided into six sections containing applications, educational, game, graphics, math and miscellaneous programs. Some are interesting and some not so. In the applications section the book has programs to balance your checkbook, figure gas mileage, loan payments and chart biorhythms.

The educational section provides several interesting programs of the "quiz" variety, while the game section has a couple of interesting games where you can play against the computer.

The graphics section contains four demonstrations, mostly of the type that hit all the magazines when the ADAM first came out. The math section contained only one program of interest to myself. That program allows you to make graphs on the screen.

The miscellaneous programs aren't worth mentioning unless you are into figuring the powers of integers up to 250 digits long or generating Pythagorean triplets and the like.

While everything in this book doesn't interest me, there are enough that do to make it worthwhile. Other ADAM owners will probably find some worth in the programs I don't like.

32 BASIC Programs is a good all-around package that will probably appeal to everyone. There are

enough programs in it so that it gives you quite a bit for your dollar and being written in Basic, it gives you the opportunity to modify the existing programs to suit your needs.

This book is above average, but still not top of the line. I feel the authors put one too many junk programs in it to fill up space. There are programs that are useful and ADAMites should take a close look in the store before they decide to buy.

Coleco Adam User's Handbook (Book Review)

by Joe Blenkle

Title: Coleco Adam User's Handbook

Author: Weber Systems, Inc. Staff

Price: \$9.95

Rating: 7

There is a seeming glut of ADAM "User's Handbooks" on the market now. This one probably won't be the last.

This book is one of the best organized I have seen. The information is complete and easy to understand. While I can't give the book a bad rating because of its contents and structure, I have got to question the usefulness of yet another "SmartBasic Manual." This book contains nothing not already covered by previous books of this type. I recommend you compare before buying.

The Coleco ADAM Entertainer (Book Review)

by Harry L. McDonald

Author: Brian Sawyer

Publisher: Osborn/McGraw Hill, 2600 Tenth St., Berkley, CA 94710

Length: 190 pages

Price: \$12.95

Rating: 8

I waited a long time for this book. I ordered it months ago when the publisher announced it and another book for the ADAM. One was canceled and this book was enlarged beyond its original announced size.

The book contains 30 fairly complex programs, most of which are games. Bearing in mind that the ADAM is also a ColecoVision game machine, the games are unimpressive. A novice programmer could become quite expert by typing in and studying the programs. A wealth of subroutines can be gleaned from the volume, an intention of the author who has provided subroutine blocks in the programs' construction.

I must confess that I have not yet tried any of the programs. I am just not interested, but for some it could be a lot of fun. This book is original, but will not interest everyone.

The Coleco ADAM Entertainer (Book Review 4-2)

by Joe Blenkle

Author: Brian Sawyer

Publisher: Osborn/McGraw Hill, 2600 Tenth St., Berkley, CA 94710

Length: 190 pages

Price: \$12.95

Rating: 10

One of the better books to come out recently for the ADAM is this one. The programs make use of both high and low resolution graphics, joystick and keypad, and while some are quite lengthy, they are well worth the effort to type in. Some of the programs even make use of the printer.

Sawyer has gone to surprising care to make the graphics in some of the games above average and even more surprisingly, most of the games are actually fun to play, not just dull ones thrown together so the author can make a buck.

Some of the more noteworthy programs are "Fruit Detective," in which you must find the right numbers and types of fruits; "Hangman," the traditional game; "Missile Monitor," a Missile Command clone in which you protect cities from missile attack; and "World Conquest," in which you battle the ADAM to conquer the world.

Of the five books I've purchased so far this is far the best program oriented book I've seen.

Programming ADAM: Home Applications in the BASIC Language (Book Review)

by Joe Blenkle

Author: Edward Claflin and John Heil

Publisher: Banbury Books, 353 West Lancaster, Wayne, PA 19087

Length: 320 pages

Price: \$14.95 at J.K. Gill

Rating: 10

Finally, a book that actually was able to teach me something about programming ADAM. After months of frustration trying to figure out what does what in BASIC by using the manual supplied by Coleco, a book shows up that answers my questions.

This book is a must for all ADAM owners. It is one of the best written and understandable books I've ever seen on the subject and if it can make me understand BASIC, it can make anyone understand BASIC. Finally...the joy of having a Data File explained in detail. It even includes an interesting program for recording weather data for every hour and every day in an entire month. Or, as it points out, the data file program can be just as easily used for recording it for a whole year.

Programming ADAM covers the subject in very

clear detail and is arranged in a manner where in each chapter the concepts are presented first, then the words applicable for that section, and then finally the actual explanations of the subject matter. Sample programs are scattered throughout the book to demonstrate what the authors are talking about. Of particular interest are the before mentioned Weather Array File, a Recipe File, and a word game in which ADAM will take preprogrammed words, scramble the letters and leave it to you to unscramble them. The game even features difficulty levels.

If you've been having any problems understanding the programming of ADAM, I'd highly recommend this book to get you on the right track.

Product Review: Prostick III

by Maureen Zabel

Product: Prostick III Joystick

Manufacturer: Newport Controls Div., Cal-Tron Corp., Rt. 2, Box 8, Dixon Lane, Bishop, CA 93514

Price: \$23.97 at Toys R Us

Warranty: Five year free repair or replacement

Non Warranty replacement: \$15

Rating: 7 1/2

This joystick is lightweight yet sturdily constructed. The stick control has a ball at the top and extends far enough up from the base to allow large hands a comfortable grip, yet is short enough for small hands to easily manipulate.

During the many hours of use by our family, response has always been immediate and smooth both in-hand and on-screen. There is a nice long cord (about 70") which may be a nuisance to some but great for us. There's no tugging sensation as with a shorter coiled cord and when two people play there is no danger of being assaulted by a flying elbow because the players must huddle together on short tethers.

The best feature is the fire/speed control. A single 1-3/4" long bar does it all. It is a real "press it, feel it" control located on the front side of the base. One end of the bar controls the firing capability, the other controls the speed (or a second firing function) and pressing the center of the bar controls both functions at once. The instruction booklet comments on the preferred use of the index finger for control and we find it to be quite true.

An easily removable plastic insert at the base of the stick control allows movement of the stick in either only four or all eight directions. The four-direction setting "allows only horizontal and vertical motion - dramatically improving response for maze-type games."

That is not completely true, because it is easier to

play Mouse Trap in the eight-direction setting. Using only four directions causes the mouse to stutter and miss corners, usually plowing into a cat.

On the other hand, Junior performed much better in Donkey Kong Jr. when the four-direction was used.

There was noticeable but minor on-screen hesitation with Buck Rogers and Time Pilot but the ships still performed adequately. Individual experimentation is necessary to determine what setting for which game is best for you.

If you are looking for a complete replacement of ADAM's controllers, Prostick III is not for you. It does not have a keypad, but plugs directly into ADAM and has a short lead off the plug into which the Coleco controller is inserted.

The only serious complaint our family has about this product is its size. At a little over 3" wide at the grip and 1-1/2" thick an average or smaller hand may experience some difficulty wrapping around it. Even here, though, the fire/speed bar position solves the problem. It allows the hand to grasp just the side of the base and still maintain control of the bar.

Product Review: Briefs

by Jerry Scholl

After 6 months or so of famine I have received the following software in the last 20 days. I have not digested it all but can say a thing or two.

I had my local book store order the book and data pack, 32 Basic Programs for the Coleco Adam from Dilithium Press. These are for the most part well explained, usable and interesting programs, well explained and usable and interesting programs, well worth the \$39. One complaint, I can't see and practical home applications for any of the six math programs.

On July 29, I purchased Coleco's SmartLogo for \$69 at Lional Playworld in Denver. I have only had it for two days but that

is long enough to make this statement -- Whatever flaws there were and are in the documentation and performance of Coleco's SmartBasic are NON-EXISTENT in SmartLogo. This is the complete

antithesis of SmartBasic. The hardcopy documentation is colorful, interesting, complete and correct. There is also a fine tutorial that makes the book come alive. SmartLogo is a fun powerful language and an absolute must for anyone's library



if they are at all interested in sounds, music and graphics as well as graphic games programming.

I also obtained two tapes from Tapeware Technologies as advertised in the July issue of Family Computing Magazine. These are filled with more technical information than any I have seen. For those Adam users who may be struggling with SmartBasic and have a hard time learning from a book, these materials will be a god-send. The tutorials are so extensive that if you memorized them and their "hands on" programming examples, you could throw away your SmartBasic manual. For beginner or expert, you can't go wrong with this \$29.95 purchase. (Editor's Note: We have had one report that the early documentation for these materials was not very good. This problem may have been corrected, but until we receive a copy we cannot verify that).

My review of SmartBasic Bonanza from Martin Consulting (See Family Computing July ad) would be filled with about fifty superlatives. This data pack of 15 programs and instruction booklet is the best. If you can only afford one software package make it this. This data pack includes a mini-assembler, disassembler, home finance program, educational games, sound generator, music, typing tutor, filing system, label printer, adventure game and more. You will never spend \$34.95 more wisely.

**Product Review: Educational Programs
by Norman Castro**

Product: Educational Programs (Capitals, Math, Spelling, Annuity)

Manufacturer: Data Backup, Box 335, Iona, ID 83427

Requirements: ADAM

Media: Digital Data Pack

Warranty: None mentioned

Price: \$6.95 + \$1.00 for shipping & handling

At long last a real program for the ADAM. The four programs are indeed written in Basic so that you can list it - and here is the best part: you can modify these to your special requirements. Since I am very interested in learning to do some programming these four programs do offer you some good examples of subroutines that you can use over and over.

The first program is Annuity. You have two options, the first "For Payment" will ask you to answer the following questions: Years to finance? How many payments per year? Annual % rate and Loan size which will give you what each payment will be.

The second option is labeled "Payoff" and you will be asked: How many payments per year? Annual percentage rate? Loan size? And payment? -- which

will give you this statement: "IT WOULD TAKE --- YEARS." It is an elementary program that may not be used often by me.

The second program is Capitals & States. This program is very, very good. You have three options with this one. The computer gives you the state and you give the capital or the computer gives you the capital and you give the state or the "Bonus" is a complete listing for either the screen or the printer (this has a built in pause). After all 50 practice questions the program will let you know how many were missed out of the 50.

The third program is Math/Calculator. This one allows you to do a variety of calculations. It did not take me long and it was a pleasure to use this program.

The fourth program is Spelling. The best part is that you get to enter your own personal spelling list. First it will ask you how many words in the list. Next you will enter words until you are finished. The bonus to me is that you may correct/change any words to a new or re-spelled word until you are satisfied. This could help you in a foreign language. The program will give you the complete word list for you to check over before you start. Once you start one word will show on the blank screen until you press return. Then just the word number will be given and you have to spell the word correctly. This could use an automatic 5 to 8 second delay between screens. If you spelled the word wrong it will be spelled correctly for you along with your spelling. Once the word list is completed the program will show you how many were missed.

I consider this Education package an excellent value for the price. It took only 17 days from order to delivery.

**Product Review: Disassembler
by D. Sage**

Product: z-80 Machine Code Disassembler

Author: George A. Havach, 550-27th Street, #202, San Francisco, CA 94131

Requirements: ADAM

Media: Digital Data Pack provided by purchaser

Price: Send a blank data pack and \$10 to the author

Rating: 8

Those of you who plan on learning and doing assembly language programming will have a need for a disassembler. George Havach has put together such a product at a reasonable price. Simply put, a disassembler decodes machine language and translates in into assembly language instructions. While the written documentation for this program is

relatively sparse, the program itself is straight forward and provides easy to follow instructions. The program is written in Basic and uses the Smart keys to control the various options. The Smart keys allow you to output the screen to the printer, stop the program, continue disassembly from the current address, return to the original address, and scan memory for imbedded data or text. We have found this program to perform quite well and although disassemblers have limited application, we feel that this one performs as well as any other that we have seen written in Basic.

Product Review: Antarctic Adventure

by Joe Blenkle

Product: Antarctic Adventure game cartridge

Manufacturer: Coleco

Requirements: ADAM/ColecoVision & Joystick

Media: Cartridge

Price: \$29.97 at Toys R Us

Rating: 8

It never pays to plan out what games you want to buy in advance because there is always a game you never hear about that suddenly appears and it looks so good that you just have to get it. Such is the case with Coleco's Antarctic Adventure. The game may have thrown my budget off a wee bit, but I'm not at all sorry I bought it.

The object of the game is to guide your "plucky" penguin explorer on a goodwill mission to visit a number of ice stations scattered through the Antarctic.



Along the way you must avoid ice puddles and crevasses and the snoopy seals that suddenly pop up in your path to see what you are doing.

I've found this game to be a refreshing change from other games, as you are not engaged in some life or death struggle fighting aliens and the like, but instead are in a race against the clock to reach the next base before your time is out. There is no dying in this game, only a little frustration as you glide over the ice.

To gain additional points you can pick up flags along the way and as your journey requires a lot of energy, you need to grab the flying fish that jump out of the holes in the ice for even more points.

The graphics in this game are nothing short of superb. They are very close to cartoon quality and

along the line of "B.C.'s Quest For Tires." The game itself is simple, but there are enough variations of terrain and obstacles to keep it interesting. The penguin is well drawn on the screen, although viewed from the back for much of the game (he turns around upon reaching an ice station and does a little wave/salute as music plays and a flag is raised over the station). The seals and fish are superb, with a little nosey grin on the seal as he pops up and the fish actually wriggle through the air as they jump, just like real ones.

Looking over my collection of games, I can't think of any that can match this game in graphic quality and there are none that I'd rather play. Though the premise is simple, the game is a lot of fun.

There are a total of 10 ice stations you must visit during the game. I've only been able to reach five so far. What happens after the 10th I do not know. With the increasing difficulty between each station it may be awhile before I find out.

Editor's Note: I first saw this game played on a 25 inch screen and knew I had to have it. This game is great for the whole family, and though a little difficult for the smaller members it is not impossible. I even found the Coleco joystick to work remarkably well with this game. I have to give this a strong recommendation.

Product Review: Star Wars

by Jeff Silva

Product: Star Wars game cartridge

Manufacturer: Parker Bros., P.O. Box 1012, Beverly, MA 01915

Requirements: ADAM/ColecoVision & Joystick

Media: Cartridge

Price: \$37.97

Warranty: 180 days

Rating: 8

Star Wars is a new cartridge that is based on the original arcade game by Atari. You are in the seat of Luke Skywalker's X-Wing Fighter, firing at Imperial Tie Fighters (including Darth Vader's ship) while dodging or blasting their enemy fireballs. Each hit on your ship reduces your nine section energy shield by one.

In the second screen, you must again dodge fireballs as you try to blast the Death Star laser towers. If you survive this you find yourself in the Death Star trench avoiding fireballs and catwalks. Here you must call upon the FORCE as you attempt to hit the main reactor port on the floor of the trench, which will, if successful, destroy the Death Star.

This game has very good graphics, sound effects, including the Star Wars theme and R2D2 and is



about as close to the vector graphics of the arcade game as one could expect on a home system.

Playwise, the game is very challenging. The first screen really wears you out as you try to blast enemy ships and those irritating fire balls. The controls on your fighter take a little getting used to. To me, this game gets too hard a little too quickly. I find myself wanting the game to last a little longer. Graphics are slightly disappointing when the Death Star is destroyed, because there is no graphic except for a flashing screen with the message, "You've Destroyed the Death Star." I guess you can't have everything and this game is challenging and a lot of fun.

Product Review: Star Wars

by Joe Blenkle

Product: Star Wars game cartridge

Manufacturer: Parker Bros., P.O. Box 1012, Beverly, MA 01915

Requirements: ADAM/ColecoVision & Joystick

Media: Cartridge

Price: \$37.97

Warranty: 180 days

Rating: 6

The graphics in this game are an exact duplicate of the arcade version. The bad news is that your fighter is virtually impossible to control with almost any joystick available.

Editor's Note: The problem with this game is not your joystick as can be true with other games. Onscreen response of your X-Wing Fighter is the result of the software itself. There is nothing realistic about the kind of response provided by this game. Sometimes I get the impression that games like this are never field tested. This game had a lot of potential but as was the case with some early first person games for the Atari 2600 it comes up short on playability which is the most important criteria by

which a game is rated. All the graphics in the world cannot make a bad game good.

Product Review: War Games

by On C. Lam

Product: War Games game cartridge

Manufacturer: Coleco

Requirements: ADAM/ColecoVision & Joystick

Media: Cartridge

Price: \$24.95 at Service Merchandise

Rating: 10

War Games is a strategic simulation of the United States being attacked by the Soviets. It is also based on the MGM/UA movie of the same name.

The people at Coleco used the best of ADAM's high resolution graphics in creating this game. The U.S. strategic map looks just like the one in the movie. The object of the game is to defend the U.S. from enemy missiles, subs and bombers that come from all directions.

You have missiles, fighters, attack subs and a killer satellite at your disposal. You are at the controls of NORAD and have command of six sectors of the United States.



When the game begins, it is greeting you as Professor Falken. Then you are given a choice of levels 1-8, with the lower levels the easiest. Then the battle begins! The attackers begin with a few missiles and bombers which increases as the game progresses. You have a limited amount of time to defend the country. If you are successful in holding off the attackers before the national DefCon status reaches one then you save humanity. If you don't, watch out!

This game requires use of the keypad to select the sectors to defend and choose your weapons. Not all weapons work against all enemy weapons. The screen displays DefCon status and warns of an attack. If enough of the sector DefCons reach 2 or 1 then the NORAD computer starts a 60 second countdown for launching a retaliatory attack. You must raise the DefCon status to stop the countdown.

This game combines the best of reflexes and strategy. The player must decide which weapons to use to order a defense and must decide quickly. The graphics are the best I have seen, even better than games for other computers.

Product Review: Super Cobra

by Joe Blenkle

Product: Super Cobra game cartridge

Manufacturer: Parker Bros., P.O. Box 1012, Beverly, MA 01915

Requirements: ColecoVision - according to Parker Bros. this cartridge was not tested on ADAM and it appears that early versions will not work correctly on the ADAM. All other Parker Bros. cartridges are not supposed to have this problem.

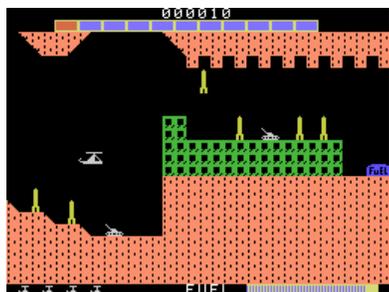
Media: Cartridge

Warranty: 180 days Price: \$9.97 at Toys R Us

Rating: 9

The object of this game is to guide a helicopter through terrain consisting of mountains, valleys, tall buildings, and tunnels to reach the treasure found on the 11th screen or section.

In reality, section is a better description, as this is not an ordinary 11 screen game. Instead, the screen scrolls and each section is made up of numerous screens, all interconnected, making it more like 100 screens.



One unusual aspect of this game is that once your last helicopter is destroyed, you have the option of starting the game from where your last chopper went down, or from the very

beginning. your score resets to zero, however, for either option.

A time limit in the form of an ever decreasing fuel supply is placed on the game. You may replenish your fuel supply by blowing up a fuel depot. Running out of gas causes your helicopter to fall from the sky.

Your helicopter is equipped with bombs and a rapid fire machine gun, both of which you will need to escape the artillery, rockets, flobbynoids, roof bombs, fire balls and other assorted dangers. Not all hazards are found on all screens.

The graphics are good, the sound realistic and Super Cobra is a lot of fun to play. Each section of the game presents an ever increasing challenge, with the 10th especially hard.

After flying into the 11th section, you must land on top of the treasure, pick it up, and carry it over to the building in front of you, at which point you will begin back at screen 1. Unlike other games, Super Cobra starts as soon as you turn it on. There are five seconds of music and off you go.

If you like non-stop action, I would definitely recommend this game.

Product Review: Spectron

by Daniel H. Antolec

Product: Spectron game cartridge

Manufacturer: Spectravideo Int., Ltd., P.O. Box 350, Plainview, NY 11803

Requirements: Adam/ColecoVision with joystick and keypad controller

Media: Cartridge

Warranty: 90 days Price: \$25.99 suggested retail

Rating: 7

Spectravideo has entered the ColecoVision software field with a colorful invasion theme game, featuring an eight option menu, high score display, bonuses and a maximum possible score of 999,999.

Spectron combines the best elements of classic games such as Space Invaders, Demon Attack and Galaxian, with a few new twists. The result is an innovative, ever-challenging shoot-em-up.

With but a single play screen, the player guides his horizontally mobile land based Spectron fighter across the bottom of the playfield, in a uniquely limited area. Overhead a swarm of ever moving multi-colored Shalix fighters are poised to attack.

The object is to destroy the enemy ships and prolong your survival, which is not long in this tough game.

High resolution graphics are creatively used to depict a beautiful landscape of a defense base on planet Spectra. Depth is represented by well drawn and colorful

mountains, an alien moon and military installation. The blackness of space is pierced by the colorful sparkling stars. A pleasant musical tune serenades the player as the first swarm arrives, and a Spectron fighter rolls into position.



Three Spectron units wait in reserve. Shalix fighters are two types: Hombits and Sinkers. Hombits are satisfied with dancing across the sky, Space Invaders style, raining masses of bombs. Sinkers though are more intelligent, selectively breaking formation and dive bombing ala Galaxian.

A multi-layer colorful shield above the Spectron provides brief protection and Sinkers who penetrate the shield will lay bombs beneath the Spectron. Bombs cannot be destroyed and when the tenth is planted...you may as well reach for the reset.

After a Shalix horde is destroyed, another appears with different colors or shapes or both in a new formation and movement similar to Demon Attack.

The action is fast and furious; Spectron's cannon seems slower than Uncle Sam's tax returns. In addition Sinkers frequently change tactics making them difficult targets. Battle sounds are enhanced by the claxxon warnings when the Spectron supply is less than three, adding to the frenzy. As is always true with games of this nature, the bad guys will triumph. The player, however, is treated to a grand finale of light and sound when the Shalix pummel poor Spectra. Frankly I enjoy the end of the game as well as the beginning.

Spectron lacks much strategy, and it is very hard to achieve high scores. Yet this game compensates with super graphics and sound effects. It must be the most beautiful game in my library.

Had the programmer added additional playscreens or a scrolling effect, this too may have been a classic.

The documentation is poor, despite the abundance of playscreen images. Misprints and poor grammar abound. Some matters are ignored, such as how to identify bombs. The silver packaging and sharp cover illustration are eye catching.

Product Review: Rocky Super Action Boxing

by Daniel H. Antolec

Product: Rocky game cartridge

Manufacturer: Coleco

Requirements: Adam/ColecoVision with Super Action Controllers

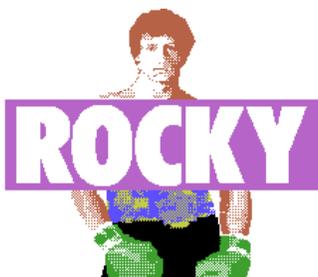
Media: Cartridge

Warranty: 90 days Price: \$34.95 suggested retail

Rating: 10

Coleco has programmed a masterpiece boxing simulation, in the best of ColecoVision. Rocky offers the standard eight option menu, one player (against either opponent), or two player, pause control and even a demonstration mode. Watching the video combatants slug it out is nearly as fun as playing the game!

After the menu selection, a beautiful graphic image of Rocky glides to center stage accompanied by the Rocky theme. The player is then treated to a



ringside seat view with Rocky Balboa on the left and Clubber Lang on the right. A referee crouches in the middle of the ring, waiting for the action. An overhead light illuminates the canvas

and a scoreboard shows the round, time remaining, and fatigue and daze indicators for each fighter.



High resolution graphics excite every pixel on screen as the fighters finest features are seen, from their bulging muscles to their typical hair styles. Even the referee is properly clad in a bow tie and even his fingers can be seen as he bobs and shuffles about, watching for fouls.

Use of the super action controllers allows unique interaction with realistic control of the player's video surrogate. The joystick controls vertical and horizontal movement within three unseen horizontal levels. This allows the fighter to dance about, looking for openings and advantageous positions from which to find a momentary weakness in the opponent.

The four triggers control head punches, body punches, guarding and ducking. The regular joystick/keypad can be used, but you are only able to use the two punches. The fighters can swiftly and smoothly "float like a butterfly, sting like a bee." Human players will need all their skill, as the computer provides a more than adequate challenge. Should the fighters get too close, the balding referee steps in to break up the clinch.

A clever feature is the use of fatigue and daze indicators. Body punches cause fatigue and slow down the fighter. Head punches daze the fighter, cause some fatigue, but will eventually lead to a knockdown. Fatigue can be relieved only during the between round intermissions. Curiously only a little daze is cleared up during the rest, and simply dancing about is the best remedy. If the fighter becomes too dazed the indicator goes black and the crowd chants for a knockout. Should the fighter be struck again, his knees buckle and he drops to the canvas with an unpleasant "thud." The referee rushes over to begin the count.

Sound effects are good as fans whistle and cheer throughout the contest. Rounds are scored by points, according to punches and knockdowns. The winner is determined by either a knockout or total points at the end of the bout. The champ wears a golden belt and with arms raised in victory the Rocky theme is played again. The documentation is very good, graphics and sound great, and game play combines realistic strategy and tactics in a professional combination. Editor's Note: I concur fully with rating this game a 10.

Product Review: Super Action Football

by Jason Hirsch

Product: Super Action Football game cartridge

Manufacturer: Coleco

Requirements: Adam/ColecoVision with Super Action Controllers

Media: Cartridge

Rating: 8

Football, the long awaited cartridge from Coleco, is finally available. On offense you can pass, run, handoff, fake handoffs, kick field goals and extra points, and punt. On defense you can blitz, score safeties, make interceptions, and sack the quarterback.

Before a play begins you must program your offensive blocking and select a pass route for your



flankerback is desired. After the play begins you can control one of three players: the quarterback, flankerback or halfback. If you take control of the flankerback you will automatically end any preprogrammed pass pattern.

You may pass to either of the two backs or proceed to run the ball. On defense you may program one of four rushing patterns or blitz. During the play you have control of either the safety or the right or left linebacker.

Football is divided into two fifteen minute halves. You may not call a time out and first downs do not stop the clock. There is no overtime in the event of a tie.

After a kickoff it can be difficult for the offense to pick up the ball. Also if the defense recovers the ball they take possession whether or not the offense touches it. This can be a little frustrating. Nevertheless this game is a good representation of the sport. It may confuse those who are unfamiliar with the rules of football. Since it appears that this will be the only version of football for ColecoVision/Adam

it is a must for gridiron fanatics. Others should carefully consider the game before making a purchase.

Editor's Note: The documentation for this game is quite detailed and even contains a play book that is 34 pages long. The offense is fairly difficult to run but with practice it can be quite enjoyable.

Product Review: Gyruus

by Francis Sifers

Product: Gyruus game cartridge

Manufacturer: Parker Bros., 190 Bridge St., Salem, MA 01970

Requirements: Adam/CV, joystick/keypad

Media: Cartridge

Warranty: 180 days

Price: \$34.99

Rating: 5

The object of this game is to get from Neptune to Earth. Along the way you must land on each planet. However, to do this you must first battle a formation of enemy ships prior to landing. The enemy formation shows up in the center of the screen and the player's ship is on the outer perimeter. The game player must circle the enemy formation and try to destroy the enemy as they fly out of formation. After the enemy formations have been sent to that great computer in the sky, your ship automatically lands on the planet. Then after a brief pause...very brief...it is on to the next planet.

The only options to this game are 1 or 2 player. Instead of holding the joystick to the right to circle clockwise and left to go counter-clockwise you must move the joystick in a circular pattern. Also there is no provision for holding the fire button down for rapid fire so the player must continue to press and release the fire button until his finger drops off. I have tried this game with both the ColecoVision and



Spectravido joysticks, but neither seem to help. The graphics are nothing to talk about, but the music is nice. After playing Q*Bert I was very disappointed with the quality of this game.

Product Review: Space Fury

by Maureen Zabel

Product: Space Fury game cartridge

Manufacturer: Coleco

Requirements: Adam/ColecoVision, joystick

Media: Cartridge

Warranty: 90 days

Price: \$19.95 at Toys R Us

Rating: 5

Your spaceship maneuvers around and fires single shots at the aliens who are hurling both themselves and their bombs at you. Move your ship in any direction to the edge of the screen and your ship disappears only to pop up again at the opposite side of the screen.

Moving your joystick to the right causes the ship to rotate clockwise, left counterclockwise. You have to be careful because the ship rotates very quickly. Too much english on the joystick and you will overcorrect or send your ship spinning off into space. The speed



control is touchy also. After you release the speed button your ship continues to glide for awhile. Using nudges to turn and short burst to move is the best strategy. Point are awarded for the destruction of each alien or group of aliens. You also get bonus points according to how fast you complete the round.

Graphics are simple and rather primitive. Your spaceship is a small red caret and the aliens are colored geometric shapes. After each of the first three rounds your ship gets to dock with a mother ship that bears a resemblance to the head of an open

pair of pliers. The type of firepower your ship has depends on which mother ship you dock with.

The first few times you play this game it is fun. It doesn't take long to figure the game out and then boredom sets in. The same screen over and over again becomes tedious. Space Fury is definitely not great, not even good, maybe just o.k.

High Scores

As indicated in our last issue we are going to give the high score business a try. If participation does not increase by the next issue this column will be dropped. If you are interested in participating, send your scores to: Joe Blenkle, 6229 Channing Drive, No. Highlands, CA 95660.

COLECOVISION / ADAM HIGH SCORES

<u>GAME</u>	<u>PLAYER</u>	<u>LEVEL</u>	<u>SCORE</u>
Antartic Adventure.	Joe Blenkle	-	150,460
B.C.'s Quest	Joe Blenkle	1	13,320
Super Buck Rogers	Tom Earnest	1	814,339
Destructor	Joe Blenkle	1	85,140
Donkey Kong	Tom Earnest	1	363,000
Super D.K.	Joe Blenkle	1	251,000
Super D.K. Jr.	Jason Hirsch	1	218,100
Frogger	Joe Blenkle	Slow	11,820
Gorf	Joe Blenkle	1	12,100
Heist	Joe Blenkle	-	96,782
Miner 2049er	Joe Blenkle	-	78,785
Mousetrap	Joe Blenkle	1	1,535,090
Nova Blast	Joe Blenkle	Cadet	97,400
Pitfall	Joe Blenkle	-	64,862
Popeye	Kari Elsila	1	109,600
Q*Bert	Joe Blenkle	1	461,575
Quest for Quintana	Tom Earnest	1	91,900
Time Pilot	Kari Elsila	1	89,500
Turbo	Joe Blenkle	1	135,060

Glitches, Bugs, Errata, Etc.

- The new data drives have a spring clip which holds the data pack in place. In some cases this spring clip provides too much downward pressure on the data pack. It may be necessary to bend the clip upwards to relieve the excess pressure. The new drives are faster than the old ones, but tend to create slack in the data pack tape. This can lead to I/O Errors. There is nothing wrong with the data pack, just remove it and tighten the tape by turning one spool with a pencil. The new drives also have a different switch which tells ADAM that a data pack is present in the drive. The spring clip may on occasion hold the data pack out far enough that the switch is not depressed all of the way. To resolve this simply insert the data pack and gently push it into the correct position.

- Occassionally you may have difficulty retrieving a program or file from a data pack when the file is stored all the way to the left side of the tape or when

the file is split between the two ends of the tape. If you notice that something is being stored at the end of a tape, save it again under another name as an added precaution.

- Some of you have expressed concern about ADAM's absence from Wards Fall/Winter catalog. Never fear, ADAM will appear in their Christmas catalog.
- Some owners of very early ADAM's have experienced problems with music and sound programs. Try raising LOMEM and moving the machine language routine accordingly. These problems appear to apply to all BASIC programs using sound.
- The Atari Defender cartridge does not work properly on stand alone ADAMs.
- You can substitute a question mark for the BASIC word PRINT.
- Individual records in a file can be altered only by using random access files. Otherwise you must read and write the entire file if you change just one record.
- Data packs will store only 32 files and programs.
- Do not use your BASIC tape to store files or programs.
- Some readers want to know if they should buy a second data drive or wait for the disk drive. A disk drive will make your system more versatile, but it will cost more than a second data drive. If you can afford it, I would recommend the disk drive. It will really complement your system.
- A monitor can be hooked up to the ADAM expansion module #3. Talk to your Honeywell service center. There are some problems with doing this.
- Carlton Caldwell sent in the following information on the ADAM: "If anyone is trying to use a monitor with the ADAM, they may need to insert a series of pot in the input path. The composite video output is too hot (high level) for most monitors. I tried mine with two monochrome monitors and the new combination monitor/tv from Sears. The pot fixed the problem. The new Sears monitor is an excellent display device. I have also modified the audio connection by installing an RCA phono plug and using a shielded cable to decrease stray noise." Carlton would like to know if there are any other ADAM hardware hackers out

there? How about a hardware column? Carlton has also designed and built a separate power supply for the ADAM so that the ADAM printer can be disconnected.

- We hope to have a review of Search for the Ruby Chalice by next issue.
- If you get the cursor past the return symbol, try using the down cursor command to unlock the keyboard.
- Tony Barnert - Instructions for Miner 2049er are bad. If you want to play any level, enter "6453#" followed by the level you want to play (*=10, #=11) when the game asks for the number of players.
- If you have SmartLogo you may want to join the Young People's LOGO Association, P.O. Box 855067, Richardson, TX 75048. This is a good group. They publish a magazine and have a program exchange.
- If your ADAM memory console dies after the warranty has expired, Honeywell will replace or repair it for \$129.35
- Remember if you have a problem with your printer margins getting out of line, try spraying a little WD-40 on a cloth and wipe the rint head guide bars. This should correct the problem.
- If you have two data drives and opening the door to one causes the other door to open, you probably installed the second drive a little crooked. Loosen your mounting screws and move the second drive to the right.
- When saving parts of text in SmartWRITER don't get fancy. There are limitations to the extent which you can piecemeal a file in one save.
- If you are getting hearts printed on your screen when opening or closing files, all you have to do is execute HTAB 1 before using the DOS command - PRINT CHR\$(4).
Here is an example: 100 HTAB1:PRINT CHR\$(4);"OPEN testfile". This is especially important when closing files. To eliminate question marks when inputing data from a file simply add a backspace - CHR\$(8) - following each input statement. Example: 100 INPUT A\$:PRINT CHR\$(8).
- You do not need to open or close programs, only those files that are created by a program.

User's Bulletin Board

- For those of you who wanted a program that teaches typing skills, such a program is part of the SmartBASIC BONANZA data pack available from Martin Consulting (See address in the listing of mail order companies).
- S. Cole would like to see some graph programs in ECN. Anyone have any to contribute? He would also like to see some one-line programs.
- The following people wanted their addresses printed here. I assume they would like to hear from other ADAM owners.

Tommy L. Earnest Jr.
Box C-86
Concord College
Athens, WV 24712

Bill Golden
6407 Cambridge Park
Mentor, OH 44060

- Books For Sale - Things To Do With your Coleco ADAM by Jerry Willis, \$2; 32 Basic Programs For The Coleco ADAM (Book & Data Pack) by Tom Rugg & Phil Feldman, \$12; Coleco ADAM User's Handbook by the WSI Staff, \$5; ADAM's Companion by Ramsey Benson & Jack Rochester, \$5; Coleco ADAM Entertainer by Brian Sawyer (30 Programs), \$6. All books in good condition Prices are approximately 50% off regular price. These were bought primarily for review in ECN. Send SASE and indicate what book you want. I will notify you if it is available. Joe Blenkle, 6229 Channing Drive, No. Highlands, CA 95660.

ECN Program Library I Correction

The MAILLIST program in the ECN Program Library I appears to have a bug in it.

If you try to create a new file with only one record you will get an error: Bad Subscript Error in 9070. The problem is caused by the program attempting to sort one record file. To correct this bug enter the following line:

```
9007 IF ct=1 THEN RETURN
```

That should correct the problem. Once a file has been successfully created you will not have this error.

Program Library II is progressing. As soon as it is complete we will let you know. Until then send us your original contributions.

User Group News

Our list of ADAM groups continues to grow. I have noticed that we have a number of subscribers in the Seattle area, but no user's group. Come on gang, certainly someone out there has enough free time to start a group. Harry McDonald reports that his group is doing quite well. I hope all of the groups will keep us posted on what they are doing. Listed below is our current list of groups.

LOCAL GROUPS

Norman Castro
809 West 33rd Ave.
Bellevue, NE 68005
402/291-4405

Harry L. McDonald
1222 Division St.
Charleston, IL 61920

Robert R. Marentes
9425 N. 38th Ave.
Phoenix, AZ 85021

Metro Adam User's Group
Russell Williams
414 W. 149th St.
New York, NY 10031
212/208-0645 (9am-5pm)

Adam Users of El Paso
Dick Lewin
6308 Falling Star
El Paso, TX 79912

Bill & Nancy Rahn
12426-15th St. S.
Afton, MN 55001
612/436-6577

Victor L. Watfrod
P.O. Box 777
Russellville, AL 35653

Steve Chamberlain
120 E. 4th St.
Bloomsburg, PA 17815
(Wants to help start a group)

NATIONAL GROUPS

Taylor Barcroft
Adam User's of America
P.O. Box 6307
Huntington Beach, CA
92615
714/841-1771

Al Gerson
Adam User's Group
P.O. Box P
Lynbrook, NY 11563
516/746-0066

Raymond So
71-11 Ingram St.
Forest Hills, NY 11375

Towcester Micro User's
P.O. Box 9
Towcester
Northhamptonshire
England NN12 7QG

ADAM Microhackers
David Kennedy
236 McKibben St.
Suite 19
New York, NY 11206

#1 Adam User's Group
Jay Foreman
P.O. Box 3761
Cherry Hill, NJ 08034

ADAM

ADAM Products By Mail

The following companies are known to sell ADAM products by mail order. If there is a known charge for their catalog we have listed that also. Unfortunately we do not have the space to list the products they carry. If you order from any of these companies, let us know how you like their products and service. If you purchase programs or products send us a review. Those companies which we have dealt with are indicated by an asterisk. So far we have not had any problems with the products we have ordered for ADAM.

Sunrise Software 2829 W. Northwest Hwy. Suite 904 Dallas, TX 75220 214/352-3999 No Catalog - See ad	* Data Backup Box 335 Iona, Idaho 83427 SASE Video Heaven, Inc. P.O. Box 144C Holland, MI 49423 616/392-2877 Powerbyte Software Box 579 Gwynedd Valley PA 19437 215/643/7666 Internat. Computing Order Processing P.O. Box 176 Patterson, NC 28661 Alpha-1 1671 East 16 th St. Suite 140 Brooklyn, NY 11229 Catalog Free DHA Hobby Crafts 5204 Midmoor Rd. Monona, WI 63716 SASE FutureVision P.O. Box 34 N. Billerica MA 01862 Davansan Software S. 1829 Glenrose Rd. Spokane, WA 99203
Video Take Out P.O. Box 4702 No. Hollywood, CA 91607 Orders 1/800/22VIDEO Catalog Free	
Pappas Products P.O. Box 4007 Rapid City, SD 57709	
Command Computers 9229 Todd Dr. #104 Birmingham, AL 35206 205/833-9376	
M.W. Ruth Co. 510 Rhode Island Ave. Cherry Hill, NJ 08002 609/667/7526 Catalog Free	
C & C Distributors Box 76 Stratford, NJ 08084	
ADAMWARE 711 Pecan, Dept F-7 Texarkana, AR 75502 Free List	
* Martin Consulting 94 Macalester Bay Winnipeg, Manitoba Canada R3T 2X5	

* Tapeware Technology P.O. Box 95691 Atlanta, GA 30347 404/498-3831 Free List	H& E Enterprises P.O. Box 30756 Honolulu, HI 96820 \$3.00
---	---

PROGRAMS

SCREEN COLOR CHANGER by D. Sage

```

10 LOMEM :32100
15 REM screen color changer
20 REM by D. Sage
30 CLEAR: s=30000: x=31000: z=32000
40 c=0
50 DIM ck(15)
90 REM background color routine
95 REM push registers
100 DATA 245,229,213,197,253,197
105 REM black background;vdp reg 7
110 DATA 14,1,6,7:REM LDC, 245;LDB, 7
115 REM store color in vdp register 7
120 DATA 205,32,253:REM call FD20
125 REM pop registers and return
130 DATA 253,225,193,209,225,241,201
140 DATA 256
145 REM text color routine
147 REM push registers
150 DATA 245,229,213,197,253,197
152 REM use color table-4
155 DATA 58,27,252:REM LDA,(FC1B)
157 REM number of entries
160 DATA 253,33,32,0:REM LDY,32
162 REM data is at 32000
165 DATA 33,00,125:REM LDHL,7DOOH
167 REM start at entry zero
170 DATA 17,00,00:REM LD DE,OH
172 REM change text color vdp ram
175 DATA 205,44,253:REM CALL FD2C
177 REM pop registers and return
180 DATA 253,225,193,209,225,241,201
185 DATA 256
195 REM color data
200 DATA 16,32,48,64,80,96,112
210 DATA 128,144,160,176,192,208,224,240
890 REM store background color routine
900 READ a:IF a=256 THEN 930
910 POKE s+c, a
920 c=c+1:GOTO 900
930 c=0
990 REM store text color routine
1000 READ a:IF a=256 THEN 1030

```

```

1010 POKE x+c, a
1020 c=c+1:GOTO 1000
1030 FOR i=1 TO 15:READ ck(i):NEXT i
1040 GOSUB 2010:REM print choices
1050 IF co=0 THEN 1220
1055 REM change background color
1060 POKE 30007, co
1100 CALL 30000
1105 REM change text color
1110 FOR i=0 TO 31
1120 POKE z+i, ck(c2)
1130 NEXT i
1140 CALL 31000
1150 GOTO 1040
1220 TEXT
1230 END
2000 REM color routine
2010 HOME:PRINT "COLOR CODES":PRINT:PRINT
2020 PRINT " 1-Black    2-Med Green"
2030 PRINT " 3-Lt Green  4-Dk Blue-"
2040 PRINT " 5-Lt Blue    6-Dk Red"
2050 PRINT " 7-Cyan       8-Med Red"
2060 PRINT " 9-Lt Red     10-Dk Yellow"
2070 PRINT " 11-Lt Yel    12-Dk Green"
2080 PRINT " 13-Magenta   14-Gray"
2090 PRINT " 15-White    0-Stop": PRINT
2100 INPUT "Background Color "; cl

```

```

2105 IF cl<=0 THEN co=0:RETURN
2110 INPUT "Text Color "; c2
2115 IF c2<=0 THEN co=0:RETURN
2120 IF cl=c2 THEN PRINT: PRINT "Colors
Identical":GOTO 2020
2130 IF cl>15 OR c2>15 THEN 2010
2140 co=cl
2150 RETURN

```

Shape Maker - Program Listing

by J. Hicks

```

10 REM SHAPE MAKER
15 REM by J. Hicks
20 HIMEM :51455: n=0:DIM a(100)
40 DATA 01,00,04,00
50 FOR i=51456 TO 51459
60 READ b:POKE i, b:NEXT
65 REM clear memory
70 FOR c=51460 TO 51559:POKE c, 0:NEXT c
75 REM clear array
80 FOR i=1 TO 100: a(i)=0:NEXT i
85 REM shape table location
90 POKE 16766, 0:POKE 16767, 201
100 GOSUB 3000
125 REM drawing routine
130 GET a$:IF a$="q" THEN 2000
140 IF a$="e" THEN RUN
150 IF a$="x" THEN n=n-1: a(n)=0:GOSUB
3000:GOTO 200
160 IF a$="u" THEN a(n)=36:GOTO 200
170 IF a$="d" THEN a(n)=54:GOTO 200
180 IF a$="l" THEN a(n)=63:GOTO 200
190 IF a$="r" THEN a(n)=45
200 POKE 51460+n, a(n)
210 DRAW 1 AT 130, 95
220 IF a$<>"x" THEN n=1+n
230 IF n<100 GOTO 130
1990 REM print routine
2000 TEXT:INPUT "enter shape name "; a$
2005 PR #1: PRINT: PRINT a$, " ";
2010 FOR i=0 TO n:PRINT a(i); " "; :NEXT i
2020 PRINT:PR #0
2030 END
2990 REM set graphic parameters
3000 HGR2: SCALE =2: ROT=0: HCOLOR =7:
RETURN

```

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(215) 296-3787

Random - Program Listing

by J. Hicks

```

10 PRINT "press any key": GOSUB 1000:
a=INT(RND(1-x))
20 DEF FN r(x)=INT(1+x*RND(1))
25 x=10
30 FOR a=1 TO 10: PRINT FN r(x); " "; :NEXT a
40 PRINT

```

```

999 END
1000 FOR i=0 TO 99: x=i: y=PEEK(64885): IF y<>13
THEN RETURN
1010 NEXT i:GOTO 1000

```

Snakerider - Program Listing

by Mike Elsila

```

5 REM SNAKERIDER by Mike Elsila
10 REM revised by D. Sage
100 GOSUB 500
110 HOME
115 REM player coordinates
120 x(1)=19: y(1)=19: x(2)=20: y(2)=19
130 GR
140 COLOR =15
145 REM draw border
150 HLIN 0, 39 AT 0:HLIN 0, 39 AT 39:VLIN 0, 39
AT 0:VLIN 0, 39 AT 38
155 REM player direction and color
160 dir(1)=8: dir(2)=2: col(1)=2: col(2)=3
165 REM joystick routine
170 FOR t=1 TO 2
180 p=PDL(6-t):IF p<>1 AND p<>2 AND p<>8 AND
p<>4 THEN 200
190 dir(t)=p
200 IF dir(t)=1 THEN y(t)=y(t)-1:GOTO 220
205 IF dir(t)=2 THEN x(t)=x(t)+1:GOTO 220
210 IF dir(t)=8 THEN x(t)=x(t)-1:GOTO 220
215 y(t)=y(t)+1
217 REM collision detection
220 IF SCRN(x(t), y(t))<>0 THEN 260
225 REM move player
230 COLOR=col(t):PLOT x(t), y(t)
240 NEXT t
242 REM speed control
245 FOR i=1 TO 2*df:NEXT i
250 GOTO 170
255 REM flash
260 FOR a=0 TO 15:COLOR =a:PLOT x(t),
y(t):PRINT CHR$(7):NEXT a
270 TEXT:HOME
280 IF t=1 THEN w=2:GOTO 300
290 w=1
295 REM scoreboard
300 PRINT TAB(5); "*** PLAYER "; w; " WINS! ***"
310 ac(w)=ac(w)+1
320 PRINT:PRINT:PRINT:PRINT:PRINT
330 PRINT TAB(12); "SCORE:": PRINT: PRINT:
PRINT
340 PRINT "PLAYER ONE (BLUE): "; sc(1)
350 PRINT "PLAYER TWO (RED): "; sc(2)
360 VTAB 21:PRINT "PRESS "; :INVERSE:PRINT
" p "; :NORMAL:PRINT " TO PLAY AGAIN."
370 PRINT

```

```

390 PRINT "PRESS "; :INVERSE:PRINT " s ";
:NORMAL:PRINT " TO STOP.";
395 GET a$:IF a$<>"p" AND a$<>"P" AND a$<>"s"
AND a$<>"S" THEN 395
400 IF a$="p" OR a$="P" THEN 110
410 HOME
420 PRINT TAB(6); "*** FINAL SCORE:
***:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
430 PRINT "PLAYER ONE (BLUE): "; sc(1)
440 PRINT "PLAYER TWO (RED): "; sc(2)
450 IF sc(1)>sc(2) THEN PRINT "**** PLAYER ONE
WINS! ****":GOTO 480
460 IF sc(2)>sc(1) THEN PRINT "**** PLAYER TWO
WINS! ****":GOTO 480
470 PRINT "**** IT'S A TIE! ****"
480 GOTO 590
490 REM title screen
500 HOME
510 PRINT TAB(7); "*** SNAKERIDER
***":PRINT:PRINT TAB(8); "by Mike
Elsila":PRINT:PRINT:PRINT
520 PRINT "This is a two player game."
530 PRINT "Each player controls a":PRINT
"different colored SNAKERIDER"
540 PRINT "that is leaving a trail behind.":PRINT
550 PRINT "The object: Do not crash":PRINT "into
a wall, your opponent's"
555 PRINT "trail, or your own trail.":PRINT
560 PRINT "Each player uses a joystick to move;
both joysticks are"
565 PRINT "utilized."
570 VTAB 23:PRINT "ENTER SPEED TO BEGIN:
"
575 PRINT "Fast=1-99=Slow ";:INPUT df
580 RETURN
590 END

```

Music Player - Program Listing

by D. Sage

```

5 LOMEM :29000
10 REM Music Player by D. Sage
20 REM London Bridge
30 ONERR GOTO 3310
200 DATA 58,102,109,211,255,201
210 s=28000:REM memory location
215 REM store ml routine
220 FOR i=s TO s+5
230 READ x:POKE i, x:NEXT i
260 sd=144:REM base voice on
270 qu=159:REM base voice off
280 lc=28006:REM sound value location
290 tm=15:REM tempo
300 REM music data-voice, note, duration, volume
305 DATA 1,13.4,16,0

```

```

310 DATA 1, 13.4, 24, 0, 1, 12.0, 8, 0, 1, 13.4, 16,
0, 1, 14.2, 16, 0
320 DATA 1, 16.0, 16, 0, 1, 14.2, 16, 0, 1, 13.4, 32,
0, 1, 17.9, 16, 0
330 DATA 1, 16.0, 16, 0, 1, 14.2, 32, 0, 1, 16.0,
16, 0, 1, 14.2, 16, 0
340 DATA 1, 13.4, 32, 0, 1, 13.4, 24, 0, 1, 12.0, 8,
0, 1, 13.4, 16, 0
350 DATA 1, 14.2, 16, 0, 1, 16.0, 16, 0, 1, 14.2,
16, 0, 1, 13.4, 32, 0
360 DATA 1, 17.9, 32, 0, 1, 13.4, 32, 0, 1, 16.0,
16, 0, 1, 20.1, 48, 0
1000 REM read voice, note, time, volume
1010 READ nv, n, dn, vo
1020 IF n=0 THEN GOSUB 3210
1030 IF nv=1 THEN GOSUB 3110
1040 GOSUB 2010
1050 GOTO 1010
2000 REM voice routine
2010 IF nv=1 THEN vc=0:GOSUB 3010:RETURN
2020 IF nv=2 THEN vc=32:GOSUB 3010:RETURN
2030 IF nv=3 THEN vc=64:GOSUB 3010:RETURN
2040 RETURN
3000 REM make sound
3010 p2=n
3020 p3=128+vc
3030 POKE lc, p3:CALL s
3040 POKE lc, p2:CALL s
3050 POKE lc, sd+vc+vo:CALL s
3060 RETURN
3100 REM delay
3110 FOR j=1 TO tm*dn:NEXT j
3120 GOSUB 3210:RETURN
3200 REM turn it all off

```

```

3210 FOR k=159 TO 223 STEP 32
3220 POKE lc, k:CALL s
3230 NEXT k
3240 RETURN
3300 REM stop the music
3310 GOSUB 3210
3320 END

```

Information for ADAM Explorers

Disassembler (BASIC listing), memory map, how to modify BASIC. Complete descriptions of sound and video chips, more. Peter Hinkle, 117 Northview Rd., Ithaca, NY 14850

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