ARCADIAN DELAY has been primarily caused by the news reported in the next paragraph. In order to get the latest data available, we held up production until after the Consumer Electronic Show. Further news as we hear of it...

LATEST ASTROCADE NEWS   On December 30, Astrocade, Inc. filed for legal protection from creditors, under provisions of Chapter 11 of the Federal Bankruptcy Code.   On January 12, they appeared before a Federal judge in Columbus - and I would expect that they provided a plan for reorganization, and an outside "Administrator" was selected to oversee the administrative operations.   There will probably be a period of 45-60 days for the court to review the proposal, and the plan will either be accepted as is, or with some negotiation. The court may appoint a Receiver to look after creditors' interests.

What can happen? Well, since they filed under Chapter 11, it indicates they want to keep going, just need a breather. So it would seem that there are two positive possibilities: 1> The existing administrative structure remains, but with a new set of players in management, along with a financial scheme that infuses new money.   The financiers would probably have some say in the members of that team.   2> An external organization buys the assets and liabilities, produces the product, and brings their assets and managerial expertise to rejuvenate the system.

MEANWHILE there is a larger-than-ever software void, and the third party vendors are trying to supply programs to individuals, stores, and distributors. If your local store wants product, have them contact our advertisers.   These advertisers are now considering the production of games in the cartridge format, where you just have to plug in the game just like a Videocade. At the moment, I know both Esoterica and L&M are looking into this.   These programs would be "burned" into an EPROM (Erasable Programmable Read Only Memory), and placed on a printed circuit board that would be inside a cartridge box, thereby eliminating any tape-loading problems. As a side benefit, programs up to 8K can be generated, with a quality equal to the factory output.

ARCADIAN SIZE this month is back to the old system, as we had to go to Plan "B". Don Gladden, who puts together the tutorial section underwent some surgery recently, successfully, I should add, and of course, he had more pressing things on his mind. We expect Don to be back riding herd on all the knowledge out there pretty soon.   As you can also see, we are in continual dire need of program material, so I'll reinterate the call for program stock - please.

ADDED MEMORY STATUS   (An on-going title) Needless to say, the current events are delaying the production of the Add-On. I don't see how they can obligate much money to that project until some order is developed in the affairs of the Arcade unit.   BUT DON'T GIVE UP HOPE because... my elves tell me that there is a 99% chance that the Zgrass rights will be picked up by one of the third party vendors, and a device of similar specifications will be built in the near future.   Confirmation and real data are expected by the next issue.

LONG AWAITED "MUNCH KID" CARTRIDGE GAME now available through one of our subscribers is a version of that old standby P-C M-N that will make your Atari friends envious. It contains the eater and his four buddies, pills, and charms.   Available only to subscribers of the ARCADIAN - send a check for $30 to Phillip Harris, Apt 227, 2464 El Camino Real, Santa Clara, CA 95051.   I have made an arrangement with Phil for our Canadian subscribers, they can make a check out to Robert Fabris for CAN$36, and I'll transfer funds for Phil. This is a plug-in cartridge, not a cassette.

CROWN OF ZEUS CORRECTIONS

There are several errors in the data listing on page 10 of the Vol.5 No 1 issue of the Arcadian which cause problems when playing levels 3 and 4.   The correct data values are:

J(73)=6000	U(150)=10
J(74)=10	J(160)=23005
U(128)=30069	U(161)=25201
U(129)=9901	@(168)=27006
@(136)=21048	J(169)=28301
U(137)=27201	J(170)=10
@(138)=1000	@(187)=10000
U(148)=23005	U(188)=26048
U(149)=4500	U(189)=27901

. . . .

```
  6 .PROG. M-III 2/23/82      72 BOX 0,E,Bx2,Bx2,3
  7 . S.KENDALL               74 NEXT E
 10 CLEAR ;BC=119             80 NEXT C
 20 FOR A=12TO 24STEP 2       84 FOR W=1TO 600:NEXT W
 30 FOR C=1TO 30              90 BC=RND (17)x8+116
 40 B=RND (A)x2               92 BOX 0,0,158,86,3
 52 FOR D=-60TO 60STEP 5     100 NEXT A
 54 BOX D,0,B,B,3            110 STOP
 56 NEXT D
 70 FOR E=-30TO 30STEP 10
```

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THE BIT FIDDLER'S CORNER
BY
ANDY GUEVARA

Hello again! Last month we covered a little bit of binary and Hexadecimal code and talked a little about what bytes are. This month, knowing that the Z-80 responds to these 8 bit lumps called bytes, we'll go over how and where to put them into memory.

But first, to help you along with Hex numbers, I've put in this handy-dandy table.

HEXADECIMAL COLUMNS					
6	5	4	3	2	1
HEX = DEC	HEX = DEC	HEX = DEC	HEX = DEC	HEX = DEC	HEX = DEC
0 0	0 0	0 0	0 0	0 0	0 0
1 1 048 576	1 65 536	1 4 096	1 256	1 16	1 1
2 2 097 152	2 131 072	2 8 192	2 512	2 32	2 2
3 3 145 728	3 196 608	3 12 288	3 768	3 48	3 3
4 4 194 304	4 262 144	4 16 384	4 1 024	4 64	4 4
5 5 242 880	5 327 680	5 20 480	5 1 280	5 80	5 5
6 6 291 456	6 393 216	6 24 576	6 1 536	6 96	6 6
7 7 340 032	7 458 752	7 28 672	7 1 792	7 112	7 7
8 8 388 608	8 524 288	8 32 768	8 2 048	8 128	8 8
9 9 437 184	9 589 824	9 36 864	9 2 304	9 144	9 9
A 10 485 760	A 655 360	A 40 960	A 2 560	A 160	A 10
B 11 534 336	B 720 896	B 45 056	B 2 816	B 176	B 11
C 12 582 912	C 786 432	C 49 152	C 3 072	C 192	C 12
D 13 631 488	D 851 968	D 53 248	D 3 328	D 208	D 13
E 14 680 064	E 917 504	E 57 344	E 3 584	E 224	E 14
F 15 728 640	F 983 040	F 61 440	F 3 840	F 240	F 15
0 1 2 3	4 5 6 7	0 1 2 3	4 5 6 7	0 1 2 3	4 5 6 7
BYTE		BYTE		BYTE	

To show how it works, we'll do a few Hex to decimal conversions, since a lot of people don't believe that Hexadecimal is a real number system. As you recall, Hex is a base 16 number system. This means there are 16 distinct numbers per column. In base 10, the numbers for any column are 0 thru 9. So it is for Hex...except we have to invent characters for the numbers above 9. To make them rememberable, we'll make those characters A thru F.

Take a look at the columns under the heading "1" on the table. The numbers under the heading "HEX" are the Hexadecimal numbers (clever, right?). Notice the corresponding values on the right. It's all the same until you get to A. Like with decimal, when you get to the largest value you can have in a column, to make the value one larger, you put a zero then add one to the next column on the left. Like going from 9 to 10. Except it's F to 10. Anyway, let's do a few examples.

Since we're working with numbers 4 digits long, we'll only use the columns labeled 1 thru 4. Let's take the number 4000H. The "H" is there to identify it as a Hex number. To convert, take the leftmost digit, and find it in the table under "4". To the right of the digit will be its decimal equivalent. You should have found 16,384. The remaining three digits are zeroes, and equate to zeroes in decimal. Adding up all the equivalences gives us 16,384, as you might have guessed. As you probably already know, this is the value of the first address in RAM memory. But more on that in a bit. Let's do FFFFH.

This one's easy too. Since F is the last entry in every column, we take the last corresponding number in each of the four columns and add them together:

$$61,440 + 3,840 + 240 + 15 = 65,535$$

which is the highest 4 digits can go. The same operation applies for any Hex number conversion. So, let's get on to other things.

As luck would have it, each byte in memory has its own unique address. This address is a number, two bytes (sixteen bits) long. Being sixteen bits, the address can be a value from zero to 65,535 (affectionately known as 64K) in decimal, which is zero to FFFF in Hex. The designers of the Astrocade decided to assign certain address ranges to specific purposes. For instance, the system programs in ROM (Read Only Memory-you can't change it), start at address 0000 and procede to address 1FFF in Hex, which is 8191 in decimal. Starting at address 2000H and going on up to 3FFFH is address space available for plug-in cartridge ROM. There is no physical memory at this range of addresses until a cartridge is put into the slot.

RAM memory (standing for Random Access Memory, which doesn't really say that it's alterable, although it is) starts at address 4000H (16384 decimal). This is where all user programs, variables, and graphics go. It continues on to 4FFFH which is the last address used by the Astrocade. All of this RAM area, believe it or not, is mapped to the TV screen. It's where you put information when you want it to show on the screen. There are tricks to hide it when you don't want it to show, but we'll get to that in our segment on graphics.

When you add external memory to the system, you have to make it respond to the addresses above 5000H so that you don't interfere with memory inside the Astrocade. This added memory is not mapped to the screen, so it's entirely available for programs and data. We'll explore the implications of that idea later also.

Got all that? I didn't think so, but let's forge ahead anyway. You can see that unless we have external RAM, we can only use the address space from 4000H to 4FFFH for our programs. All the rest is previously assigned. We'll get into particular addresses a little later when we start putting together programs of our own.

This seems like a pretty good place to close it up. Next time, we'll take a look at the Z-80's instruction set, and get a feeling for how the registers are used. Who knows? Before long we may be able to figure out what Mike Skala was talking about in his column on graphics. Hang in there!

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San Diego, CA 92111-0010

"SNAP" & "SHOW"
ON THE BALLY 4K
by ED GROEBE

Two of the new commands on the BALLY expansion units allow you to copy a picture from the screen, store it in memory and then display it again. These two commands are called SNAP (to save & store) and SHOW (to display).

Well you can do the same kind of thing with the 4K BALLY. Of course it's not as easy, but the process can be shown with program below. It will copy and display a 20 x 20 pixtel picture in the screen's center.

```
5 CLEAR;BOX Ø,Ø,2Ø,2Ø,1;BOX Ø,Ø,1Ø,1Ø,3
1Ø NT=Ø;Z=Ø;FOR CY=-1ØTO 9;FOR CX=-1ØTO
   9;@(Z)=PX(CX,CY);Z=Z+1;NEXT CX;
   NEXT CY
1ØØ CLEAR ;IF KP<1GOTO 1ØØ
2ØØ FOR Z=ØTO 399;CY=Z÷2Ø+1;CX=RM;
   BOX CX,CY,1,1,@(Z);NEXT Z;CX=-79
```

PICTURE

Instruction 5 will put a picture of a box in the designated area, as an example. Any other picture can be substituted for this box, so long as it's in the 2ØX2Ø pixtel space in the center of the screen.

SNAP

The function of instruction 1Ø is to scan the area to be copied, pixtel by pixtel -- from left to right across 2Ø pixtels and progressively up 2Ø lines through the designated area.

The condition of each of these 4ØØ pixtels is stored in memory as a string, starting at @(Ø) and ending at @(399).

A "1" is stored if the pixtel is "on" and a "Ø" is stored if it's "off". These 1's & Ø's are used later, when the picture is reproduced, for setting the last condition of the "BOX" command.

When the scan is completed and the status of each pixtel is stored, instruction 1ØØ will clear the screen and wait for you to press any key. When you are ready to see the picture displayed, press any key on the keypad.
SHOW

By following instruction 2ØØ the computer will step through the 4ØØ memory locations, calculate the corresponding pixtel location from the value of Z and draw a box, one pixtel high and wide.

Each box will either be "white", if the value of @(Z) is"1"; or "black", if the value is "Ø".

In this program the reproduced picture is shown in the screen area to the right and above the center. With a different program,the area to be copied and the place it's displayed could be under control of a joystick.
MEMORY

Each pixtel condition requires a memory location which in turn requires two bytes for storage. This demonstration requires 8ØØ bytes to store the 4ØØ pixtel conditions. Because of this it's not practical to copy a picture much bigger than this and still leave enough memory space to have a useful program.

EDGE SOFTWARE

48

A recent tutorial in the Arcadian detailed the "hows" of getting a program to tape using the Astro-Basic. Some programs are just too tightly packed to get all the necessary data into the program itself. Using the old Bally-Basic, this information could be put on tape as a PRINT statement immediately after the listing for the program. The new Astro-Basic does not permit this. So, how do you get information such as variable values, string values, colors, and port values to tape when you don't have room for them in the program?

The string and variable values (including BC and FC) are simple. Just input their values in un-numbered statements after inputting the program, and they'll dump out with the rest of the program automatically with the usual :PRINT command.

The Astro-Basic, however, does not seem to dump the value of &(9) its friends &(0) through &(3). (Or any other port, for that matter.) The solution to this problem is to record a short, numbered program containing this data immediately in front of the main program on the same tape. The final command in the program should be :INPUT. Once both programs have been recorded, the combination can be loaded into the Arcade with the command :INPUT; RUN GO. What happens is that the first program loads, runs (loading your values in), opens the interface, and loads the main program. This erases the first short program, but keeps the values that it provided. One problem with this method is that, to play the game, you must first press HALT to turn off the interface, then WORDS RUN GO.

Also, the dumping of the screen image by the Astro-Basic is great for including instructions, reference to rules in the Arcadian, or a label of the game's title. After the program has been entered, but before it has been recorded on tape, enter a short, un-numbered program such as CLEAR; PRINT "ARTILLERY DUEL GO. Now the screen will clear, your message is printed, and it will be stored along with the game's program on tape with the usual :PRINT command. When the game is input later into the ARCADE from the tape, your message will reappear before the game starts.

I"ve used these two concepts to make the award-winning "Bally Black Box" compatable with the Astro-Basic. First, I input and recorded this program:
    10CLEAR;&(9)=81;&(0)=142;&(1)=142;&(2)=0;x(3)=0
    20:INPUT
Then, I entered the program for the BALLY BLACK BOX. In un-numbered statements, I entered the variable values given, including those for colors. Next, I entered this program, again without a line number:
    CLEAR;PRINT "TO PLAY, PRESS HALT...THENINPUT 'GOTO 40' GO
My message appeared on the screen, as described in the above section. The final step is to record the program immediately after the short program already recorded. To load the game back into the Arcade, enter :INPUT; RUN GO. The computer will load the short program, divide the screen as directed, load the second program (with the proper colors and variable values) and prompt how to start the game.
(One more thing for this particular game....I found it necessary to delete all the information after FOR N=5 TO 8 in line 48. This will only cause a problem if the game has to be halted and started again.)

dwy

SNEAK UP AND BITE YA DEPARTMENT

By the time that volume 1, number 6 of ARCADIAN had hit the streets (May 1979) it was apparent that there were two configurations of on-board ROM. Calls to some ROM subroutines worked on some machines but not on others.

H. A. R. D. has just spent an exasperating two months trying to produce game tapes in 2000 baud Astrobasic that would load on the customer's machine. The problem was that all PRINT statements in our programs were producing characters that were offset by one letter AND one pixel on our customers' machines: the string "ABC" would come out "BCD" and slightly off-center.

At first we thought it might be the tape quality. We spent a bundle having custom cassettes loaded with high-quality Agfa PE-651 tape. No good ... the problem remained. We next suspected the recorder. Out went the trusty old Panasonic Slimline to be replaced by a TRS-80 CCR-81 computer cassette recorder. Still no dice ... the characters remained jumbled on everyone else's machines but our own. That was the worst part ... we couldn't duplicate the problem! Everything loaded perfectly in our own shop. At the suggestion of one of our dealers, we even tried a new Astrobasic cartridge. No deal ... the problem wouldn't go away. Finally, in desperation, we bought another Arcade. Aha! We now had two Arcades sitting side by side on the bench, and they couldn't talk to each other! There are at least two different types of Arcades out there. The difference lies in the on-board ROM, which is five bytes off-standard between the two. I have christened these two machines "The 3159" and "The 3164" based on the address of the "GAME OVER" character string in each. A machine-language monitor dump of the ROM was changed. Who knows why?... there was a bug that was fixed, perhaps. Most of you have the 3159 machines, but there are a number of you with 3164 machines who are tearing your hair out or perhaps giving up in disgust because you can't load anyone else's programs.

Here's a quick test. Type in the following on your Arcade:

CLEAR; %(19904)=-43;%(19906)=12341;%(19908)=27651;%(19910)=3164;%(19912)=
-13871; CALL19904

If the words "GAME OVER" appear at the top of your screen, you've got the
                     3164 configuration and you are stuck. The newer
                     3159 configuration will only print the word "OVER".
                     If you change %(19910) to 3159, you will get the
                     entire "GAME OVER" on the 3159 machine.

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THE GAME PLAYER

by Michael Prosise

1) **GAMEPACK G1**
   H.A.R.D. Software

2) **CANDY MAN**
   L&M Software

<u>GAMEPACK G 1</u> (A five game tape)

This month my panel of players sampled the five-game cassette tape GAMEPACK G1, from HARD Software, and these players were unfortunately left somewhat less than excited about the tape's contents. Specifically all, including this reviewer, were a bit surprised at the overall lack of quality of the five games, considering the fancy advertising and up-to-now good reputation associated with HARD.

The five games on the GAMEPACK, which sells for a wallet-pinching $18.00, are Micro Pac, Caterpillar, Tic Tac Tollah, The Paper Chase, and Galactic Hitchhiker.

<u>MICRO PAC</u> is a colorful imitation of the coin-op PAC MAN, with nice graphics and three levels of difficulty. HARD has done an excellent job at reproducing the PAC MAN playfield in BASIC onto the TV screen. It even looks better than Atari Pac Man. But unfortunately that is where the applause stops, for MICRO PAC just does not "feel" or play like the popular PAC MAN game, and there is one major drawback in playing the game: the ghosts do not stay in the maze, they move freely through walls.

The most disappointing feature to most of the players was the speed of the ghosts and the Micro Pac-man, which was slow, so-o-o slow, dead slow. It took nine minutes to clear the maze of dots, plus the 55 seconds the arcade required to draw the playfied. Granted, difficulty level three is faster, but impossible to play due to the ghosts ability to go through the walls.

The root of the problem with MICRO PAC is, that apparently there are no Machine Language routines in the actual game play, although the graphics are Machine Language. That is why it plays so slowly, and why only one character at a time can move on the screen. In addition, no "clean-up" routines were programmed, with the result being that debris is left scattered throughout the playfield, such as half a ghost, etc. This could be an excellent game, if it were programmed completely in Machine Language; but it's not, and so is mediocre at best.

<u>CATERPILLAR</u> is very similar to the coin-op CENTIPEDE. In this game you control the left-right movement of a shooting device at the bottom of the screen, and try to shoot the head off of a slowly descending "caterpillar" and an occasional spider. Again, this game does not appear to be in Machine Language and thus plays somewhat slowly, but not too slowly. Our players found the game "cumbersome".

The graphics are fair and the sound effects minimal. Also, there are three levels of difficulty to select. In general, those who played the game grew tired of it very quickly.

<u>TIC TAC TOLLAH</u> is, as you can probably guess, a tic-tac-toe game and a pretty nice one. The graphic display of the Ayatollah is excellent, even though it is not in color.

In this version of tic-tac-toe, you play against the computer. But even if you win, you lose, 'cause that's the kinda' guy the Ayatollah is, and that's what makes this particular tic-tac-toe game interesting.

<u>THE PAPER CHASE</u> is very strange. That was the first reaction from our players. In this game, a man and a woman stand on opposite sides of a pyramid of toilet paper, and try to beat the other at grabbing first the roll that "lights up". Unfortunately there exist no combination of words that can accurately describe that scenario. It <u>is</u> really strange.

Graphically, it looks pretty good, even though it is in black and white. There are no sound effects, and overall was described by most of us here as just plain boring.

<u>GALACTIC HITCHHIKER</u> is an exercise in frustration. It is extremely difficult to play. In fact, three players simply threw up their hands and walked away, and the other's eventually gave up trying to just understand the game. Galactic Hitchhiker should go take a hike.

In summary, GAMEPACK G1 did not rate too highly. For reasons unknown, the folks at HARD have not yet up-graded their games to Machine Language, as have, for example, WAVEMAKERS and L&M SOFTWARE. The result, for the consumer, is a product of lesser quality than could be made available. Getting five games on one tape may well seem a bargain, but remember, it is <u>quality</u>, not quantity, that makes a true bargain

CANDY MAN

Speaking of quality and bargains, L&M Software offers both in their soon to be released game titled CANDY MAN, a challenging and beautifully animated game based on the PAC MAN concept.

You, the player, are the Candy Man, and must race through a checkerboard type maze eating up lifesavers, worth 20 "calorie" points each, while trying to avoid the Jokers and Gremlins that not only chase after you, but also hover near the last lifesavers to prevent you from eating them. You start out with three men, utilized one at a time.

Those who played CANDY MAN all said they enjoyed it very much, and were quite impressed with the cartridge quality animation of the characters, which total six in all.

Those characters, called Jokers and Gremlins, each have moving arms, legs, heads and eyes! This is perhaps the main feature of CANDY MAN that really sets it many notches above the other chase games. For in almost every other chase game you are merely a square being chased by another square. But in CANDY MAN, there are up to seven animated, moving characters on the screen at one time. L&M, who hope to have CANDY MAN also available as a plug-in cartridge ("Videocade") sometime next year, seems to be quickly rising to the top and taking the lead as a manufacturer of quality games for the ASTROCADE.

The play action continues in CANDY MAN until you clear the screen of lifesavers, or reach 2500 points, at which time the screen turns blue, and like the PAC MAN blue screen, allows you the opportunity to catch and devour the Jokers, each worth 100 points. Also, you receive a bonus man every 2500 points, which helps keep the game going for it's 25 screens.
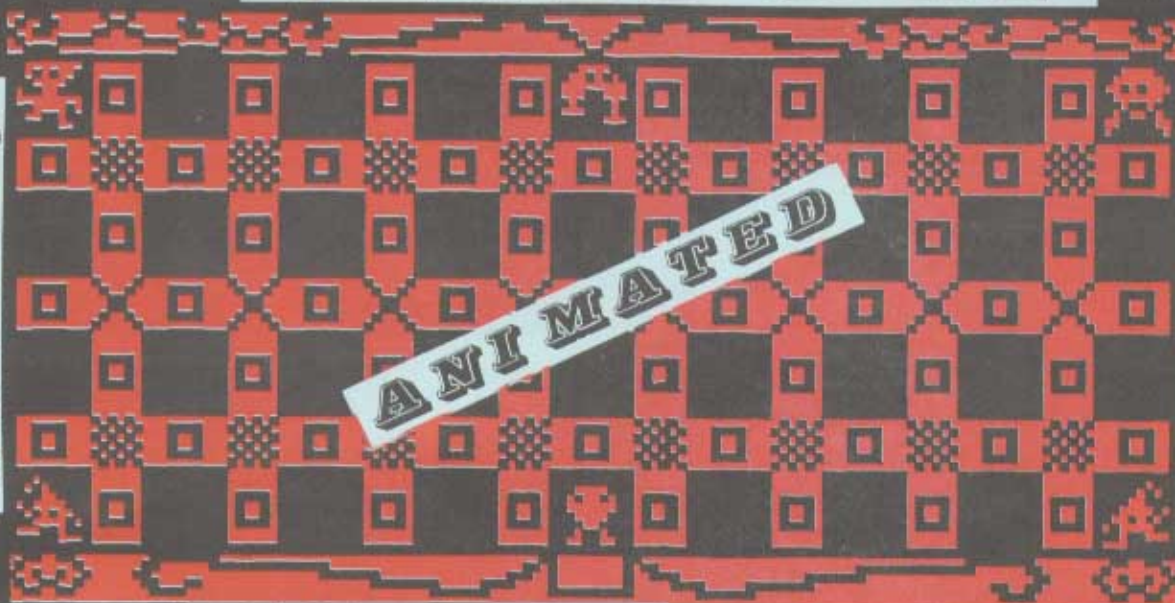
CANDY MAN is a one-player game, and it would be a good game to make into a multi-player game if possible. The sound effects are pleasing to the ear, and the color is good. Due to memory limitations, however, the playfield is only two colors, which may initially make it a bit confusing to tell the Candy Man apart from the Jokers. This is minor and will not detract from the fun the game provides.

On the flip side of the cassette, one will find the game RIVER CITY GAMBLER, an OK dice game, for one to four players.

As a whole, CANDY MAN is a fine game. It does not <u>look</u> like PAC MAN, but it <u>plays</u> like PAC MAN, and fans of the coin-op gobbler should find this L&M game enjoyable. ■

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```
┌─────────────────────────────────────────────┐
│  1  2     4  ▮  6  7     9  10  11  12        │
├───────────────────────┬───────────────────────┤
│ TURN      SCORE       │     DIE #1            │
│      #1=  18          │  ⚀ ⚁ ⚂ ⚃ ⚄ ⚅         │
│      #2=  3           │                       │
│      #3=  42          │     DIE #2            │
│      #4=  15          │  ⚀ ⚁ ⚂ ⚃ ⚄ ⚅         │
│   →  #5=              │                       │
│                       │                       │
│      HMM...           │     DOUBLE            │
├─────────────────────────────────────────────┤
│  ▪ ▪  RIVER CITY GAMBLER  ▪ ▪                 │
└─────────────────────────────────────────────┘
```

This dice game with 1 to 4 players plus The Astrocade for a maximum of five players. Or you can even let "Astrocade" play by itself or leave it out all together, if you wish. The object is to eliminate as many of the numbers at the top of the screen as you can, by eliminating combinations or single numbers equal to the combination of the two dice rolled. A new roll of the dice is made by the Computer each time you have used the previous dice combination. Numbers at the top of the screen can be used only once during a players turn. The computer disallows illegal moves. The low person WINS.
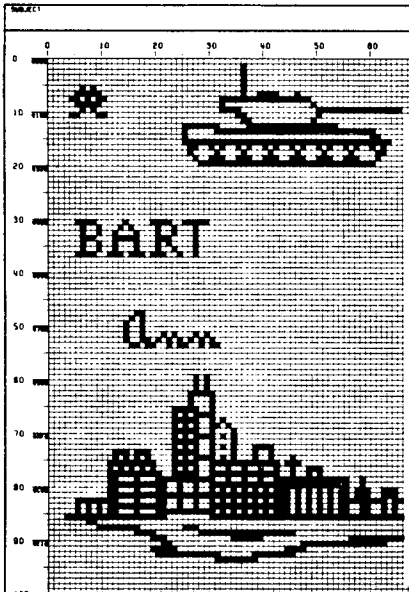
CANDY MAN CONTEST

Everyone has been mentioning the "New Sound" coming from some of my latest games.
Well I guess I'll let you in on how it is done. Most of the music you have heard
from the Astrocade has been a kind of "Organ Music", nothing like what you hear
at the arcades in games like FROGGER and VENTURE and all kinds of others. I made
a small discovery, and it's very simple to do music like the big boys do. here is
a short program and some music from FROGGER, once you get it all keyed in you'll
hear the difference and I'm sure you'll like it.

```
10 FOR A=0 TO 28         ----------- SETS UP TO PLAY 29 NOTES
20 TA=*(A)÷100;TB=RM     ----------- SETS TONE A TO FIRST VALUE,TONE B TO SECOND.
30 FOR VA=15 TO 1STEP-1;VB=VA-1 --- ACCENTS VOLUME OF TONE A & B AND FADES OUT TO
40 NEXT VA;NEXT A                   GIVE A CHIME SOUND.
```

To program in the notes for your music program enter this statement without a line
number: FOR A=0 TO 28;INPUT*(A);NEXT A;RUN GO
NOW key in the following values hitting GO after each one is correctly printed on
screen.

3923   3923   4729   4729   3923   3923   4729   4729   3522   3522   3923   3923   4426   0   0

0   3522   3522   3923   3923   4426   0   17   0   3119   3522   3923   4426   4729

After all the values are in the music will play. Just RUN the program to hear it
again. Each of the numbers above represents 2 musical notes and are being stored
together in pairs one each string value. This saves a lot of bytes if you plan to
use it in a program. This full program could fit easily on one line instead of
4 and could be used as a subroutine in a program that could use some nice 2 voice
music. NEXT MONTH I'll give you a program to write the music using a key-board
appearing on your T.V. screen.   MIKE PEACE

© R. Fabris

FOR SALE BALLY ARCADE, good condition; includes 2 controllers, Bally Basic, Gal Inv, Footb, Space Fort, 280Zzap,Arcadian. Price $225. J. Schneider, 31 Northbrook Rd., Spring Valley, NY 10977. 914-352-8879

WANTED Used broken Arcades - motherboard must be stuffed, no missing chips,diodes, resistors, etc., Contact me for possible purchase Jerry Mullins #7 5310 Godfrey Rd., Godfrey, IL 62035 618-456-0821

WE ARE INTERESTED in any programs for educational purposes from grade 4 on up. Don McCalley, Box 712, Sandpoint ID 83864

MUST SELL Bally system like new , 2 controllers, 10 carts old and new, AstroBasic and some programmed games.Vol 4 of Arcadian and newest SourceBook. At least a $700 value - sacrifice for $380 A.J. SanFilippo 25 Branch Brook Dr., Belleville, NJ 07109 201-759-5170

FOR SALE Bally Arcade w/4 controllers, heatshield mod for longer life. Bally Basic, Tape Interface & 10 games: 2002,3,5,8, 3001,2,5, 4002, 5001.2. Take as is $475 Carl Krause 750 Red Wing, Lewisville, TX 75067 214-221-3030 2-6 pm

FOR SALE Arcade unit with AstroBasic, 2 controllers, Gal Inv, Wiz, Amazing Maze, '82 Arcadian, Sourcebook. Excellent condition, used 11 hours. L.Grzelak, 915 N 49 Ave #19, Omaha, NE 68132 402-551-4581

Official confirmation yet to come, but two sources have indicated that there has been a substantial money infusion. Details next time.

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ARCADIAN
Robert Fabris, watchfully waiting
3626 Morrie Drive
San Jose, CA 95127-9990

The SOURCE TCD 959