



Vol.5 No.5

March 14, 1983

SNAP/SHOW UPDATES	76
NEWS & CORRECTIONS	77
"MATH QUIZ" (AB)	79
"SWORDFIGHT" (AB) (BB)	80
GAMEPLAYER - G. MOSES & L+M	82
TUTORIAL - BEGINNER 4	84
TUTORIAL - INTERMEDIATE 4	85
"GOLF" (AB)	86
NEW CONTEST by RMH	89
ADS	90



March 14, 1983

Vol.5 No.5

SNAP AND SHOW UPDATES to the program on page 48 were received from Ron Picardi and Bert Holmes. These techniques drastically reduce the amount of memory required to store a picture for future re-display. The program by Ron Picardi uses a string storage method that is limited to a 15 pixel wide swath which keeps the scheme from being adversely influenced by the 16th nibble of a byte.

\*Try the following listing for a SNAP routine for a pixel area of 15 by 15. It uses 30 bytes as opposed to the 450 bytes needed by the scheme of page 48.

\*It works by making each string store the condition of 15 pixels. Each pixel is represented by 2 raised to a power from 0 to 14. Example, a line with pixel 1, 3, and 15 would contain a string number made up of the sum of 1, 4, and 16384. (note that we are using 2 raised to n-1 power). The number 32767 would mean that all 15 pixels were 'on'.

this is the SNAP subroutine:

```
10  FOR Y= A TO B; W=1; Z= Z+1; FOR X= C TO D;
IF PX(X,Y) '(Z)= '(Z)+W
20  IF W< 16384 W = W*2
30  NEXT X; NEXT Y; RETURN
```

now for the DRAW subroutine:

```
50  FOR Y= A TO B; W=16384; Z=Z+1; FOR X= D TO C
STEP -1; IF @(Z)-W> -1 BOX X,Y,1,1,1
60  W= W-2; NEXT X; NEXT Y; RETURN
```

the value of D-C must be 15, while the value of B-C can be 15, or any other positive value."

The next method by Bert Holmes describes a method of storing a 20 x 20 pixel space. In Bert's words:

"With a little effort, the SNAP and DRAW programs can be made almost 15 times more efficient! - and one variation would allow you to move it around the screen without losing previous information.

"The SNAP subroutine uses 8 variables (I used the last 7 'T-Z' but the user could change these to fit his needs.)

S= Subroutine Line Number (It will be 31000 in this example)

T= This value is the top of the memory used to store the picture. I decided to use the Top of Program Memory so it wouldn't move as your program is modified. It is decremented by 2 as each double byte is filled.

U= The Counter to keep track of how many pixels have been accumulated for the active byte. ( 0 is empty, while 15 is full)

V= The accumulated value for the active byte.

W= Width of picture area (whole pixels)

Z= Height of above picture area.

X= Reference position of picture area

Y= Reference position of picture area (the center of the picture area is positioned, as in the BOX command).

These last two items must be set by the CALLing program

30000 S=31000;T= <top of memory (32767) is used in this example>

30005 W= ;Z= <you set these>

30010 V=(Z\*W+15+(RM>0)+2)\*2;GOSUB S

<this stores the number of two-byte values used>

30020 U=Z\*256+W; GOSUB S

<stores the height and width as a single value>

30030 U=0; V=0

<initializes variables for picture>

30040 FOR CY=Y-Z/2 TO Y+Z/2 RM-1

<range of picture vertical extent>

30050 FOR CX=X-W/2 TO X+W/2+RM-1

<range of picture horizontal extent>

30060 U= U+1; V= 2\*U+PX(CX,CY)

<accumulates value and increments count>

30070 IF U=15 GOSUB S; U=0; V=0

<stores value when full and resets value and counter>

30080 NEXT CX; NEXT CY

<end loop statements>

30090 IF U>0 GOSUB S

<stores leftovers, if any>

30100 RETURN

<T=next memory space available for next picture>

31000 %(T)=U; T= T-2; RETURN

<the subsubroutine to store value and update the Top Memory Pointer>

"Using this routine, the 20x20 pixel picture described on page 48 is stored in 58 bytes instead of 800. The ratio would be even better as the picture size increased.

"Now to DRAW the captured picture, we have a similar set of variables, but only U, X, and Y need be specified as the others are in %(T). One can store more than one picture if U is set equal to the picture number (start with 1).

60000 S=61000; T= <top of picture storage area, same as above>

60010 U=U-1; IF U T=T-%(T); GOTO <A LINE NUMBER THAT CONTROLS THE NEXT PICTURE>

60020 T= T-2

<increment pointer>

60030 GOSUB S; Z=U/256; W= RM; GOSUB S; U=0

<get Z, W, U, and set U>

60040 FOR CY=Y-Z/2 TO Y+Z/2+RM-1

<develop vertical range>

60050 FOR CX=X-W/2 TO X+W/2+RM-1

<develop horizontal range>

60060 U= U/2; U= U+1

<extract value increment counter>

60070 BOX CX,CY,1,1,RM

<print pixel if there>

60080 IF U=15 U=0; GOSUB S

<old data used up, get new>

60090 NEXT CX; NEXT CY; RETURN

<end loops>

61000 U=%(T); T= T-2; RETURN

<subsubroutine to retrieve data and update pointer>

"This will print your picture in the area specified by the X,Y coordinates and the stored values of W and Z. In doing so any previous information will be obliterated. If it is desired to save the background information, change line 60070 to

60070 IF RM BOX CX,CY,1,1,3

(—>)

which will reverse or "Exclusive OR" (XOR) the picture with the existing background. Calling the subroutine a second time with the same values will therefore erase the picture, leaving the background."

Ron Picardi adds: If the subroutines were written in assembly code, you would have a true SNAP command, as these routines in Basic are quite slow.

ARRRGHHH, or "RATS!", DEPARTMENT. We found two errors in the last issue - One was caught before we went to the mail room, but I am sure that we missed hand-correcting some copies:-

page 56, correction to Artillery Duel: In Line 350, there should be an @ before (P+1) and (P+2).

page 63, the Music Keyboard program has two faults. The first one requires the the small v seen in line 90 be changed into a down arrow. The second requires that some data be entered:

## CORRECTION TO LAST MONTH'S PIANO PLAYING PROGRAM!

**Program by Mike Peace, Article by George Moses**

Sorry folks, but when I typed up the article and the program furnished by Mike Peace nobody told me you had to load STAR STRING LOCATIONS 0 thru 51 with the following values. Therefore, anybody who typed in Mike Peace's fantastic music keyboard program last month wouldn't be able to get it to work. Just type in the following values after having typed in or loaded the keyboard program to memory. Then, when you run the program you'll be happily surprised!

**Type these in like this, \*(0)=198 etc., using the asterisk array from 0 to 51.**

*(0)=198	*(18)=75	*(36)=29
*(1)=180	*(19)=71	*(37)=28
*(2)=171	*(20)=0	*(38)=26
*(3)=160	*(21)=67	*(39)=0
*(4)=152	*(22)=63	*(40)=24
*(5)=142	*(23)=60	*(41)=23
*(6)=0	*(24)=57	*(42)=22
*(7)=136	*(25)=53	*(43)=20
*(8)=128	*(26)=50	*(44)=19
*(9)=120	*(27)=47	*(45)=18
*(10)=114	*(28)=44	*(46)=17
*(11)=107	*(29)=42	*(47)=0
*(12)=0	*(30)=39	*(48)=16
*(13)=101	*(31)=37	*(49)=15
*(14)=95	*(32)=35	*(50)=14
*(15)=90	*(33)=0	*(51)=13
*(16)=85	*(34)=33	
*(17)=80	*(35)=31	

ANALOG CLOCK ran way too fast for one of our subscribers, who changed the value of R in Line 230 to 466 instead of the indicated 378.

RESET really reset? Just what does happen when the Reset button is pressed? One of our subscribers got the impression that recovery of the program is possible because he saw some memory with program material for a fleeting moment after a Reset. Another will o' the wisp? ... or a real possibility???

NEWS of sorts... in different areas...

**ASTROCADE** We haven't been able to learn any concrete news about the Astrocade situation. I guess they just aren't saying anything publicly until the court agrees to whatever negotiations are proposed. Rumors are out that a large company has put at least enough money into the company to allow release of cartridges this month. Some proof of this was the return of Nitron to production after a forced siesta. Neither have we heard any news from the court proceedings, but the new administrator seems to be doing well.

**ADD-ON** or whatever... We are waiting for the last signature to be placed on the legal papers before indicating the principals involved. In the meanwhile, the producing company is busily at work to get the addition into production, with an April goal. The specifications will be virtually the same as those presented by Astrocade, especially the major ones -64K RAM, Zgrass, tape drive control, compatibility with CP/M and a future disc system, etc. Every effort is being made to hold the published Astrocade price of \$600.

**DELIVERY** of the Muncher cartridge started on March 6, only a couple of weeks late (hardly anything in this field) We should have all the cartridges that were ordered by March 6 in the mail by March 14. If you are interested in this gobble-em-up game, available to subscribers only, better get your order in before it is too late. Ordering information is on p.45.

**NEW ORLEANS** user group prospects - we had a note on page 56, with a bad telephone number for Matt - it should start with 486 instead of the indicated 480.

**PRINTER INTERFACE WITH BLUE RAM** We recently made the connection between the Blue Ram's parallel printer interface and the NEC PC-8023A-C printer. The connector that comes with the Blue Ram interface plugs directly into the NEC, and the NEC's switches are set as follows: Number 1 00000CCC and Number 2 00000CCO.

We are now using this printer for the extended memory programs.

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#HEI-1008.....	Sanyo Slim Model 5 Cassette Unit.....	\$39.95
#HEI-1009.....	Data Tapes with Hard Styrene Cases.....	10 for \$ 9.00
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P.S. - next  
 meeting on  
 March 26



March 14, 1983

Vol.5 No.5

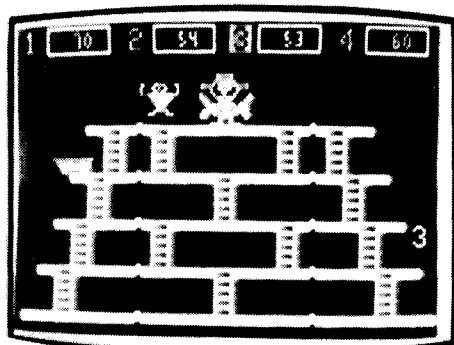
```

1 .146 641 641 641000000
2 .H00H0HH00N0LL0HH000
3 GOSUB 4;GOSUB 6;GOSUB 5;GOSUB 11;GOSUB 7;GOSUB 5;CLEAR ;GOTO 100
4 FC=RND (32)*8;BC=FC-B1;RETURN
5 NT=T;FOR Z=NT0 N+M;MU=X(Z);NEXT Z;NT=1;RETURN
6 T=5;N=-24573;M=21;RETURN
7 T=20;N=-24549;M=19;RETURN
9 PRINT " ";RETURN
11 FOR Z=0TO 999;NEXT Z;RETURN
12 GOSUB 19;GOSUB 16;GOSUB 20;GOSUB 16;GOSUB 6;GOSUB 5;RETURN
13 GOSUB 19;GOSUB 17;GOSUB 20;GOSUB 17;GOSUB 7;GOSUB 5;RETURN
14 X=30;Y=0;A=-2;B=1;GOSUB 15;B=-1;GOSUB 15;X=-30;A=2;GOSUB 15;B=1;GOSUB 15;RETU
RN
15 FOR Z=1TO 15;LINE C,D,4;LINE C+X,D+Y,1;X=X+A;Y=Y+B;NEXT Z;RETURN
16 T=0;FOR Z=1TO 5;LINE C-15,D,4;LINE C,(D-5)-T,2;LINE C+15,D,2;T=T+1;NEXT Z;GOS
UB 18;RETURN
17 T=0;FOR Z=1TO 5;LINE C-10,D-7,4;LINE C,D-T,2;LINE C+10,D-7,2;T=T+1;NEXT Z;GOS
UB 18;RETURN
18 BOX C-5,D+5,4,4,2;BOX C+5,D+5,4,4,2;RETURN
19 C=-35;D=-20;GOSUB 14;RETURN
20 C=35;GOSUB 14;RETURN
21 H=1;I=2;RETURN
22 H=3;I=1;RETURN
23 H=2;I=3;RETURN
24 H=4;I=5;RETURN
25 H=1;I=5;RETURN
26 H=6;I=1;RETURN
27 H=3;I=7;RETURN
28 H=5;I=2;RETURN
29 H=3;I=4;RETURN
30 H=7;I=2;RETURN
31 H=5;I=6;RETURN
32 H=1;I=4;RETURN
33 H=5;I=3;RETURN
34 H=8;I=3;RETURN
36 PRINT " NO! BUT KEEP TRYING!";RETURN
37 PRINT " FANTASTIC!";RETURN
97 GOSUB 36;GOSUB 13;RETURN
98 GOSUB 37;GOSUB 12;RETURN
99 G=RND (30);GOSUB 20+RND (14);J=G*X;K=G*I;L=G*X*I;RETURN
100 GOSUB 99;PRINT " TRY TO FIND THE
110 PRINT " G.C.F. AND L.C.M.
120 PRINT " OF THESE NUMBERS
130 CY=0;PRINT #10,J," & ",#0,K,"
140 CY=-40;INPUT " G.C.F.="Z;GOSUB 9;IF Z=GGOSUB 98;GOTO 160
150 GOSUB 97;PRINT " THE G.C.F. WAS ",#0,G," ";GOSUB 11
160 FOR Z=-4TO -44STEP -1;BOX 0,Z,160,1,2;NEXT Z;GOSUB 4
170 INPUT " L.C.M.="Z;GOSUB 9;IF Z=LGOSUB 98;GOTO 190
180 GOSUB 97;PRINT " THE L.C.M. WAS ",#0,L," ";GOSUB 11
190 FOR Z=0TO 80;BOX Z,-23,1,40,2;BOX -Z,-23,1,40,2;NEXT Z;GOSUB 4;GOSUB 99;GOTO
130

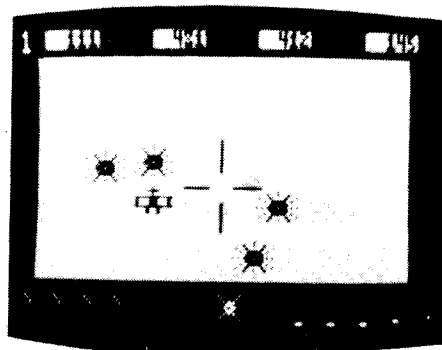
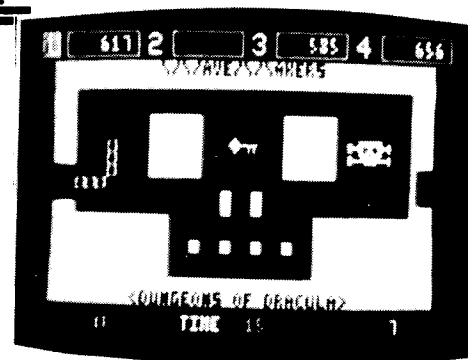
```

Joe Peoples  
310 Sail Fish Lane  
North Philadelphia, OH 44663

This is an educational program to develop skills in determining the Greatest Common Factor and the Least Common Multiple, at grade levels 7 - 9. Change values in lines 21 - 34 to get a new series of questions.

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(AB) & (BB) if Line 220 is modified

```

1 .SWORDFIGHT
2 .BY BRIAN HILDEBRAND
10 Z=0;E=0;D=0;J=0;A=-30;K=30
20 IF JX(1)=1A=A+6
30 IF JX(2)=1K=K+3
40 IF JY(1)=-1D=D-5
50 IF JY(2)=-1J=J-5
60 IF JX(1)=-1A=A-3
70 IF JX(2)=-1K=K-6
80 IF JY(1)=1D=D+4
90 IF JY(2)=1J=J+4
100 CLEAR ;BOX A,D,5,5,1;LINE A,D,4;B=KN(1)/3;C=ABS(B);LINE 42+A-C,-B+D,1
110 LINE K,J,4;BOX K,J,5,5,1;R=KN(2)/3;O=ABS(R);LINE O-42+K,R+J,1
120 LINE K,J,4;LINE O-42+K,R+J,1
130 IF 42+A-C<K+3 IF 42+A-C>K-3 IF -B+D<J+3 IF -B+D>J-3 Z=Z+1;CX=K;CY=J;TV=42;G
OSUB 200;CY=40;PRINT Z,;PRINT #10,E;FOR M=1TO 50;NEXT M
140 IF O-42+K<A+3 IF O-42+K>A-3 IF R+J<D+3 IF R+J>D-3 E=E+1;CX=A;CY=D;TV=42;GOS
UB 200;CY=40;PRINT Z,;PRINT #10,E;FOR M=1TO 50;NEXT M
150 IF TR(1)=1PRINT Z,;PRINT #15,E;FOR M=1TO 200;NEXT M;GOTO 10
160 GOTO 20
200 CX=-15;CY=30;PRINT "TOUCHE"
210 P=15;Q=50
220 MO=25;VA=P;TA=Q;Q=Q+2;FOR M=1TO 30;NEXT M;P=P-1;IF P=8RETURN
230 GOTO 220

```

SWORDFIGHT is a first program by Brian, and is included herein to give the game makers the germ for a new game. This would actually be a subroutine where one needed a swinging arm (sword) and readout if a touch was made. Other routines would put a body around the arm, move the complete body around, add background, etc. Let us know if you come up with something!

Use the joystick to position the 'base' and the knob to rotate the sword. The computer will automatically tell you if you've made the touch, while the trigger will start over.

For BB users, there's an opportunity in Line 220 for you to apply the lessons given by George Moses on page 58.

Brian Hildebrand  
55 Sparrow Bush Lane  
Milford, CT 06460

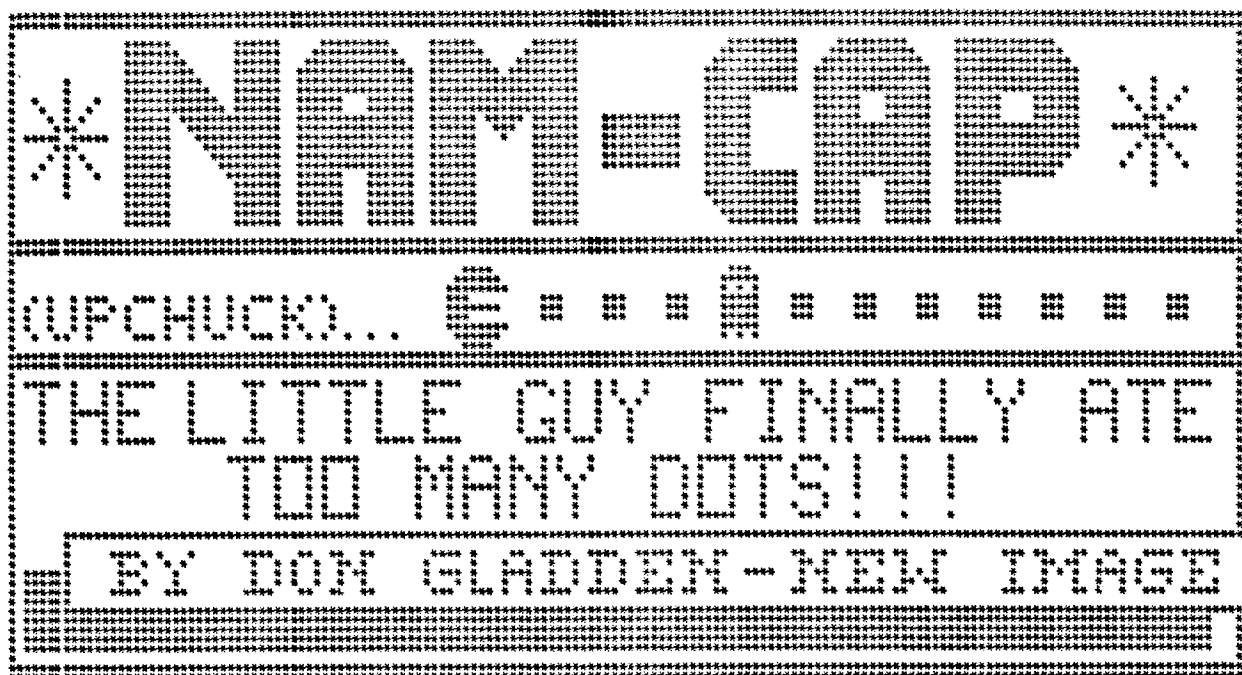
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# THE GAME PLAYER

by Michael Prosis

turns his attention to . . .

- 1) MUSIC  
George Moses Co.
- 2) SECRET OF PELLUCITAR  
L&M Software, Tape 15

## MUSIC

Feast your ears Arcade fans, to that which is truly beautiful; the sound of music.

Few Arcade owners are aware that their Bally/Astrocade computer system is capable of producing full-bodied, harmonious, three-part music. Not musical "beeps", but the actual simulated sound of an organ, or a calliope, or, if so programmed, a complete orchestral presentation.

George Moses, the pioneer in fine music programming, has done an excellent job in producing several taped computer programs of music for the Astrocade BASIC, and at a modest price, too.

Those who have heard his music programs via the Astrocade have been overwhelmingly impressed by the quality and real-to-life sound produced.

The gentleness of "Silent Night", the emotion of "O Come Immanuel", and the joy of "Joy To The World" are but three of 27 Christmas songs faithfully reproduced on Tape #2. Simply by :INPUT; RUN GO, you can enjoy an hour of non-stop music.

Tape #3 is the choice for Jazz fans, for 14 of Scott Joplin's ragtime classics are presented here.

And Classical? Tapes #1 & # 5 will bring to your ears some of the works of J.S. Bach. Tape #5, the Sinfonia To Cantata 29, is quite beautiful, and an excellent bargain for \$5.00.

The younger readers of THE GAME PLAYER probably have no idea who Bach or Scott Joplin are, but how about John Lennon and The Beatles? The Beatles coming from the Arcade? Well, not yet. George has presented Jazz and Classical, but has not yet made available that certain type of music that is probably most popular with the greatest majority of Bally/Astrocade owners: Rock & Roll. THE GAME PLAYER, and those people he has spoken with, enthusiastically urge Mr. Moses to turn his talents to producing a cassette program of, as a suggestion, Beatle music. The music of the Beatles has wide appeal to a wide age group, and would probably be a hot seller for The George Moses Co. But whatever the choice, a program of light rock music would certainly be appreciated by many.

To find out more or to receive a catalog, you can write to George Moses Co. at P.O. Box 686, Brighton, MI. 48116.

## SECRET OF PELLUCITAR

Here's another winner from L&M Software. And guess what? Along with fine game play, this game has excellent musical accompaniment by none other than George Moses.

SECRET OF PELLUCITAR features the finest pre-game presentation this player has seen to date. Before the actual game itself loads, a brilliant display of artwork, featuring the Starship Enterprise, flashing colors, oscillating sounds, and a neat musical selection are presented for your amazement.

In this one or two player game, the television screen will display a large dome, filled with an intricate maze of tunnels that lead downward toward an inner-dome, which contains a city of sky scrapers. Your mission is to maneuver a blip through these tunnels, into the city and, finally, to a pedestal at the city's center.

There is a choice of skill levels, from one to five. The player starts with a score of 20,000 points, and loses points from that figure each time he runs into something. In the two-player version, you will be treated to different sound effects and colors from the one-player version, and a different tune. There are four different musical selections between the two versions. In addition, you may select a difficulty level of one to nine, as you compete against the other player.

In both versions, the player(s) must contend with the "Mysterious Force", a small square that moves somewhat randomly throughout the playfield, blocking tunnels and in some instances, creating momentary shortcuts.

SECRET OF PELLUCITAR was described as enjoyable by all who played it. The machine language programming and cartridge quality of this game make it worth its \$15.95 price. If there is any negative point concerning SECRET OF PELLUCITAR, it is only that it is somewhat difficult to see, due to the intricacy of the playfield which makes its details small. This is not the kind of game you want to play on a 13 inch or smaller television screen.

All things considered, this L&M game should prove enjoyable to most. Although it is not the type of game that would be described as "exciting" or "action-packed", it is entertaining; and that's the bottom line to any game.

COMING UP next month in THE GAME PLAYER, a look at Wavemaker's latest release, "L.T.", and one of the newer cassette games from Esoterica, Inc.

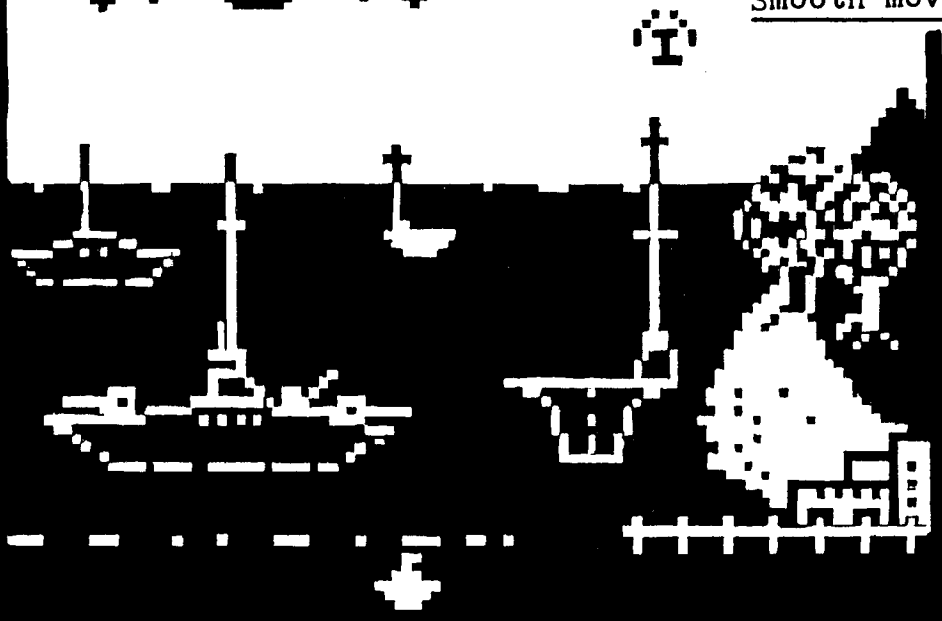




# NAUTILUS

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The 7th fleet is engaged in the top secret mission, code named Akreon, the shipping of our first star drive engine to it's final destination. Presently the 7th fleet is moored just off the coast of Scorpion, a small island in route.

You are the commander of the atomic powered attack sub, Nautilus. Your mission is to protect the fleet during it's stay in the harbor. The watch is proceeding smoothly, when suddenly you are startled to attention by a general alarm. You hurry to your battle station where the radio officer gives you the report of a UFO coming in fast.

You watch the radar screen in puzzlement. The object grows in size as it nears. It's shape resembles a bird, no..NO it's more like a bat of tremendous size! Then as it begins to move menacingly back and forth above the fleet you suddenly realize with a sinking feeling, your worst fear, there is no doubt, it's Exitor. The devilish alien battle star commander is bent on destroying the star drive engine to stop mankind from exploring the galaxy and reaching the stars beyond.

Thank goodness the Nautilus is equipped with the latest, most powerful, particle beam weapon devised by man. Your beam accelerator shoots out highly charged sub atomic particles in a narrow accurate beam. You order the beam generator up to full power and prepare for action.

Exitor carefully piloted the huge bat-like battle star into a sweeping pattern well above the 7th fleet and released one of his well armed battle drones. This should be enough to sink the fleet and destroy the star drive engine.

The drone pod descended to an altitude in range of the ships. The pod popped open and the drone made an attack run hitting one of the ships. Exitor smiled in vengeful satisfaction. All was going well, but now before his very eyes, the sea seems to swell and light up as your particle beam breaks through and rises swiftly to it's target. In a wink of an eye the battle drone is gone! Exitor immediately releases another drone and quickly arms the battle star's photon lazars.

The battle lines are now only too clear. You must destroy the drones before they sink the fleet and evade Exitor's lazars at the same time. An awesome feat and it won't be easy. Are you up to it? To win you will need to mount a historic assault on the alien.

Normally, a picture this detailed in 3-dimension would require more memory than is available in the Astrocade program section. We have utilized a special arcade feature called mass screen memory. There is almost 4K of memory available in this way. The game operation is contained in the 1.8K program memory section, while the machine graphic utilize specially encoded memory sections. By using all three in a unique way this game, with expanded graphics and smooth flowing motion, is possible. It is equivalent to about 6K of memory.

3-D TIC TAC TOE - Another of L & M's 3 dimensional display games with three levels of game play. Players can win in any of the 3 dimensions. The computer will check all moves for validity, indicate the winner and light up the winning 3 squares. Beautifully presented in 4 colors.

**SOFTWARE** 8599 Framewood Dr.  
Newburgh, IN 47630

83

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## ##GRAPHICS## <BOX-LINE> DON GLADDEN

THIS ARTICLE WILL SHOW YOU HOW TO USE THE "BOX" AND "LINE" COMMANDS FOR CREATING GRAPHICS IN BASIC. THEY ARE BOTH FAIRLY SIMPLE TO USE, AS WE SHALL SEE.

### BOX

THE "BOX" COMMAND DOES JUST WHAT YOU'D THINK...IT DRAWS A BOX ON THE SCREEN. YOU TELL THE COMPUTER WHERE TO DRAW IT, WHAT SIZE TO MAKE IT, AND WHAT 'TYPE' OF BOX TO DRAW. HERE'S HOW:

```
>10 CLEAR
>20 BOX 0,0,50,20,1
```

NOTICE THAT WE FOLLOW THE "BOX" COMMAND WITH FIVE VALUES. LIKE IN ANY OTHER CASE, THEY CAN BE EITHER NUMBERS, (DIRECT VALUES), OR VARIABLES. THE FIRST TWO VALUES TELL THE COMPUTER WHERE TO CENTER THE BOX HORIZONTALLY AND VERTICALLY. LIKE THE CX AND CY VALUES, THE FIRST (HOR.) VALUE CAN RANGE FROM -80 (LEFT SCREEN) TO 79 (RIGHT SCREEN), THE SECOND VALUE FROM -44 (BOTTOM) TO 43 (TOP). THE THIRD AND FOURTH VALUES TELL HIM WHAT SIZE IN PIXELS\* TO MAKE IT HORIZONTALLY (WIDTH) AND VERTICALLY (HEIGHT). THE LAST VALUE TELLS HIM WHAT 'TYPE' OF BOX TO DRAW. THERE ARE FOUR 'TYPES':

- 0-INVISIBLE
- 1-FOREGROUND COLOR
- 2-BACKGROUND COLOR
- 3-REVERSE

SO WHAT WE JUST TOLD HIM IN OUR SHORT PROGRAM WAS: "DRAW A BOX AT 0,0 (CENTER OF SCREEN), 50 PIXELS WIDE AND 20 PIXELS HIGH AND MAKE IT THE FOREGROUND COLOR. NOW ADD LINE #30:

```
>30 BOX 0,0,40,10,2
```

THIS TIME WE PUT A SMALLER BOX ON TOP OF THE FIRST BOX AND MADE IT THE BACKGROUND COLOR. A 'REVERSE' BOX SIMPLY REVERSES ALL COLORS THAT IT LANDS ON. (BC TO FC AND FC TO BC). TO ILLUSTRATE:

```
>10 CLEAR
>20 CX=-15;CY=0
>30 PRINT "HELLO"
>40 BOX 0,0,12,12,3
```

NOTE: IF YOU TRY TO DRAW A BOX AND IT DOES NOT SHOW UP, YOU'VE PROBABLY OVERLAPPED THE SCREEN BOUNDARIES. YOU CANNOT EXTEND ANY PART OF A BOX OUTSIDE OF THE LIMITS MENTIONED ABOVE. IF YOU TRY TO, IT SIMPLY WILL NOT DRAW.

### LINE

LIKE THE 'BOX' COMMAND, 'LINE' DOES JUST THAT. (DRAWS A LINE). WITH THIS COMMAND, WE ONLY USE THREE NUMBERS. THE FIRST TWO TELL WHERE TO DRAW THE LINE TO (HOR. AND VER.), AND THE LAST TELLS WHAT 'TYPE'. (SAME AS 'BOX'). THE FIRST LINE YOU DRAW WILL START

AT 0,0 (CENTER OF SCREEN), AND EACH SUCCESSIVE LINE WILL START WHERE THE LAST ONE FINISHED. TRY THIS:

```
>10 CLEAR
>20 LINE 20,0,1
>30 LINE 20,20,1
>40 LINE 0,20,1
>50 LINE 0,0,1
```

NOW, WHAT IF WE WANT THIS SQUARE THAT WE'VE DRAWN CENTERED EXACTLY ON THE SCREEN? SINCE OUR FIRST LINE DRAWN STARTS AT 0,0, WE MUST DRAW AN 'INVISIBLE', (ZERO), LINE FIRST.

```
>10 CLEAR
>20 LINE 10,10,0 (THIS STARTS OUR DRAWING
                  POINT AT 10,10 INSTEAD
                  OF 0,0).
```

```
>30 LINE -10,10,1
>40 LINE -10,-10,1
>50 LINE 10,-10,1
>60 LINE 10,10,1
```

USE THIS PROGRAM TO INPUT LINE VALUES AND EXPERIMENT:

```
>10 CLEAR
>20 CY=40;INPUT X,Y,Z
>30 LINE X,Y,Z
>40 GOTO 20
```

### SUBROUTINES <GOSUB-RETURN>

A 'SUBROUTINE' IS USED IN A PROGRAM GENERALLY WHEN YOU ARE GOING TO DO THE SAME THING A NUMBER OF TIMES AT DIFFERENT SPOTS IN YOUR PROGRAM. A 'GOSUB' IS VERY SIMILAR TO A 'GOTO', EXCEPT THAT THE COMPUTER REMEMBERS EXACTLY WHERE HE WAS WHEN HE JUMPED TO THE SUBROUTINE, AND AS SOON AS HE SEES 'RETURN', HE COMES RIGHT BACK. TO ILLUSTRATE WE'LL RUN A SHORT "RND ART" PROGRAM. (STUDY IT...IT WILL HELP YOU UNDERSTAND SOME OF THE THINGS WE'VE LEARNED.)

```
>10 CLEAR ;FC=7;BC=0 (BC=BLACK FC=WHITE)
>20 FOR A=0 TO RND (40) (START COUNTING
    +40STEP RND (4)*2 FROM 0 TO 41-80
    WITH RANDOM STEP
    2,4,6 OR 8.)
>30 BOX 0,0,A,A,3 (DRAW A REVERSE BOX
                  CENTER SCREEN,
                  SIZE AxA.)
>40 NEXT A (KEEP COUNTIN')
>50 FOR B=1 TO 2000; (TIME DELAY.)
    NEXT B;CLEAR
>60 CY=0;PRINT "NEXT (GET READY FOR NEXT
    PATTERN ONE.)
>70 FOR B=1 TO 2000; (SAME AS #50.)
    NEXT B;CLEAR
>80 BC=BC+40;GOTO 20 (CHANGE BC, DO IT
    AGAIN.)
```

NOTICE LINES #50 AND #70 ARE EXACTLY THE SAME! LET'S CHANGE THEM INTO A SUBROUTINE BY ADDING LINE #100, AND CHANGING 50 & 70:

\*A 'PIXEL' IS THE SMALLEST DOT THE COMPUTER CAN DRAW.

```
>50 GOSUB 100
>70 GOSUB 100
>100 FOR B=1 TO 2000:NEXT B: CLEAR : RETURN
```

NOW THE PROGRAM DOES EXACTLY THE SAME THING, BUT SAVES MEMORY EACH TIME YOU USE THE SUBROUTINE IN YOUR PROGRAM. WE ONLY USED IT TWICE HERE, SO WE ONLY SAVED ONE BYTE, BUT THE SAVINGS REALLY MULTIPLY EACH ADDITIONAL TIME WE USE IT.

BY NOW, YOU SHOULD BE ABLE TO GO BACK THROUGH SOME OF THE SHORT PROGRAMS IN THE ARCADIAN AND THE BASIC MANUAL AND SEE JUST WHAT THEY ARE DOING. REMEMBER--ONE OF THE BEST WAYS TO LEARN IS TO TAKE SOME OF THESE PROGRAMS AND CHANGE SOME VALUES IN THEM, THEN OBSERVE WHAT HAPPENS.

WE HAVE NOW COVERED ALL OF THE "COMMAND WORDS" USED IN ASTRO AND BALLY BASIC. HERE THEY ARE FOR REVIEW:

**PRINT-**  
USED WITH QUOTATION MARKS TO PRINT TEXT OR WITHOUT TO PRINT VALUES.

**RUN**  
RUNS ANY PROGRAM IN MEMORY

**LIST**  
LISTS ON THE SCREEN ANY PROGRAM IN MEMORY.

**FOR-TO-STEP-NEXT**  
USED IN "FOR-NEXT" LOOPS FOR COUNTING.

**GOTO**  
TELLS HIM TO JUMP TO ANOTHER LINE NUMBER.

**GOSUB**  
SAME AS "GOTO", BUT HE COMES BACK WHERE HE LEFT OFF WHEN HE SEES "RETURN".

**RND**  
FOR PICKING RANDOM NUMBERS.

**IF**  
TELLS HIM "CHECK TO SEE IF THIS IS TRUE. IF SO, CONTINUE ON THIS LINE. IF NOT, MOVE ON TO THE NEXT LINE."

**CLEAR**  
CLEAR THE SCREEN OF ALL TEXT AND/OR GRAPHICS

**LINE**  
DRAW A LINE TO X,Y.(TYPE OF LINE.)

**BOX**  
DRAW A BOX AT X,Y,NO. OF PIXELS WIDE,NO. OF PIXELS HIGH,TYPE OF BOX.

**INPUT**  
STOP. WAIT FOR A VALUE TO BE INPUT FROM THE KEYPAD, THEN CONTINUE.

IN OUR NEXT LESSON, WE WILL COVER THE "TWO-LETTER VARIABLES" AND ASCII VALUES. WE'LL ALSO DISSECT A SHORT GAME PROGRAM TO SEE JUST WHAT IT DOES.

DON GLADDEN  
59400 NINE MILE ROAD  
SOUTH LYON, MI 48178  
(313) 437-3984

## GETTING THE MOST OUT OF 1800

DON GLADDEN

"WHY DO YOU LIKE THE ASTROCADE SO MUCH? IT ONLY HAS TINY BASIC, AND ONLY 1800 BYTES OF PROGRAMMING." DID ANYONE EVER ASK YOU THIS QUESTION IN A COMPUTER STORE OR SOMEWHERE ELSE? WELL MOST OF US HAVE HEARD IT A NUMBER OF TIMES, BUT WE REALIZE THE POTENTIAL THAT THIS LITTLE MACHINE HAS. JUST TAKE A LOOK AT SOME OF THE PROGRAMS THAT HAVE BEEN WRITTEN FOR OUR "LITTLE" 1800 BYTES. 'ARTILLERY DUEL', THREE VOICE MUSIC, AND MANY PROGRAMS COMPARABLE WITH SOME THAT I'VE SEEN WRITTEN FOR UP TO 16K OF MEMORY.

BUT NOW THE QUESTION IS: "HOW DO THEY DO IT?". WHILE IT IS TRUE THAT THE ARCADE HAS ONLY 1800 BYTES AVAILABLE WITHOUT ADD-ON MEMORY, THERE ARE MANY SHORT-CUTS AND TIME AND MEMORY SAVERS BUILT INTO THE 'TINY BASIC' THAT WE USE. I AM GIVING YOU JUST A FEW OF THE WAYS THAT I HAVE FOUND TO CUT DOWN ON MEMORY USAGE, AND MAKE YOUR PROGRAMS A LITTLE BETTER. REMEMBER--THE MORE MEMORY YOU SAVE, THE MORE YOU CAN ADD TO YOUR PROGRAM.

1---PUT ALL OF YOUR SUBROUTINES AT THE BEGINNING OF YOUR PROGRAM. FIND OUT WHICH SUBROUTINES ARE CALLED THE MOST, AND WHICH ONES SHOULD BE EXECUTED THE FASTEST. USE ONE-DIGIT LINE NUMBERS FOR THESE. THEN IT WILL ONLY TAKE TWO BYTES TO CALL THE SUBROUTINE IN YOUR PROGRAM. (E.G. GOSUB 5), AND THEY WILL ALSO EXECUTE FASTER. THIS IS BECAUSE THE ARCADE EXECUTES 'GOSUBS' AND 'GOTOS' BY GOING TO THE BEGINNING OF THE PROGRAM, AND SEARCHING UNTIL IT FINDS THE SUBROUTINE. IT DOES NOT GO DIRECTLY TO THE SUBROUTINE. WHEN DOING THIS, USE LINE #1 FOR INITIALIZING AND TELLING HIM WHERE TO GO (SOMETIMES I'D LIKE TO!!!) TO BEGIN THE PROGRAM. EXAMPLE: >10 A=0:B=0:GOTO 50

2---IF YOU ARE USING EITHER A 'GOTO' OR A 'GOSUB' MANY TIMES TO A LINE NUMBER WITH MORE THAN ONE DIGIT, AND YOU HAVE A VARIABLE AVAILABLE, TRY SETTING THE VARIABLE TO THE VALUE OF THE LINE NUMBER USED. THEN AGAIN, IT WILL ONLY TAKE YOU TWO BYTES TO USE 'GOTO 0' INSTEAD OF 'GOTO 1500'. (FIVE BYTES.)

3---A GOOD GENERAL RULE TO FOLLOW TO SAVE MEMORY IS TO CRAM IT!!! THE MORE STATEMENTS YOU CAN GET ON A LINE, THE FEWER CARRIAGE RETURNS, WHICH COST ONE BYTE EACH, YOU WILL HAVE TO USE. THIS WILL ALSO MAKE YOUR PROGRAM RUN FASTER. NOTE: DO NOT ADD ANYTHING AFTER AN 'IF' STATEMENT THAT YOU WANT TO BE EXECUTED WHEN THE 'IF' IS FALSE. THE BASIC WILL NOT EVEN SEE IT!!! AND, OF COURSE, YOU WOULD NOT ADD ANYTHING AFTER 'RETURN' ON A SUBROUTINE.

March 14, 1983



Vol.5 No.5

```
10 CLEAR ;FB=140;BC=248;FC=7;FA=170;NT=0;CF=L.
20 CY=40;PRINT "    HOW MANY PLAYERS?
22 PRINT "    ENTER 1 TO 4
24 PRINT ;PRINT ;PRINT "    1,3,OR 4----USE JY #1
26 PRINT "    2 PLAYERS USE 1 AND 2
28 N=KP
29 IF (N<49)+(N>52)GOTO 20
30 IF N=49N=1
32 IF N=50N=2
34 IF N=51N=3
36 IF N=52N=4
38 CLEAR ;PRINT "    HOW MANY HOLES?
40 PRINT "    9 OR 18
42 Q=KP;IF Q=57Q=9
44 IF Q#9Q=18
100 FOR Z=1TO N;@ (Z)=0;NEXT Z;B=0;IF Q=9 FOR H=1TO 9;GOSUB 3600
101 IF Q=18 FOR H=1TO 18;GOSUB 3600
102 FOR P=1TO N;U=0;J=0
104 IF P=1 G=13+RND (50);I=15+RND (15);T=13+RND (50);R=13+RND (50);S=13+RND (50)
;B=B+I*5;K=G+6-RND (12);L=I+3-RND (6)
105 CLEAR ;BOX 43,0,78,87,5;GOSUB 1000;Y=-16;GOSUB 1100;T=T+18;GOSUB 1100;T=T-1
8;Y=0;GOSUB 1200
106 Y=10;GOSUB 1300;E=40;F=-41;BOX E,F,1,1,7
142 LINE 3,-43,0;LINE 3,43,7;LINE 79,43,7;LINE 79,-43,7;LINE 3,-43,7
144 PRINT "    HOLE #",#1,H;PRINT " PAR ",#1,I*5," ",#1,I*20,"YD.
146 W=RND (4);M=(RND (6)-1)*5;PRINT " WIND:",;TV=93+W;PRINT #3,M,"MPH",
147 CY=8;CX=-71;PRINT "PLAYER SCORE",
148 CX=-56;CY=0;PRINT #1,P,#7,U
150 IF N>2A=A+JX(1);IF A>16 A=1
151 IF N<3A=A+JX(P);IF A>16 A=1
152 IF A<1 A=16
153 X=2;Y=2;GOSUB 800+A
154 LINE -40,-20,0;BOX -40,-20,60,30,4;BOX -40,-20,2,2,7;LINE X*7-40,Y*7-20,7
155 IF N>2C=C+JY(1);IF C>9C=1
156 IF N<3C=C+JY(P);IF C>9 C=1
157 IF C<1 C=9
170 CX=-71;CY=-40;PRINT "CLUB:",#1,C;;IF C=1 PRINT " WOOD",;GOTO 180
172 PRINT " IRON",
180 IF N>2 IF TR(1)=0GOTO 150
181 IF N<3 IF TR(P)=0GOTO 150
200 U=U+1;NT=10;MU=C;NT=0
202 IF J=1 GOTO 3100
205 FOR Z=1TO 26(10-C)
210 IF Z#11 GOTO 219
212 D=0;IF M>5 D=1
214 IF W=1 Y=Y+D
216 IF W=2 X=X-D
217 IF W=3 Y=Y-D
218 IF W=4 X=X+D
219 E=E+X;F=F+Y;BOX E,F,1,1,3
220 IF E>3 IF E<79 IF F<43 IF F>-43 J=0;GOTO 240
230 GOTO 4000
240 IF E>6-9 IF E<6+8 IF F>1-8 IF F<1+8 J=1
250 IF J=0 IF PX(E,F)=0 GOTO 4000
290 NEXT Z
291 IF J=1 GOTO 3000
295 GOTO 148
```



GOLF presented on these two pages, is a modified version of a popular game we printed in volume 3. I do not plan to reprint published programs, unless there is some advantage to do so. In this case, the program has been modified (with the previous author's concurrence) to take advantage of some of the enhancements available in the Extended Basic language. This program will not run in either BB or AB. I ran the tape in Blue Ram, and printed from it.

```

801 Y=0;RETURN
802 Y=1;RETURN
803 RETURN
804 X=1;RETURN
805 X=0;RETURN
806 X=-1;RETURN
807 X=-2;RETURN
808 X=-2;Y=1;RETURN
809 X=-2;Y=0;RETURN
810 X=-2;Y=-1;RETURN
811 X=-2;Y=-2;RETURN
812 X=-1;Y=-2;RETURN
813 X=0;Y=-2;RETURN
814 X=1;Y=-2;RETURN
815 Y=-2;RETURN
816 Y=-1;RETURN
1000 BOX G,I,4,12,6;BOX G,I,10,10,6;BOX G,I,14,8,6;BOX G,I,16,4,6;POINT K,L,4;RE
TURN
1100 BOX T,Y,2,10,7;BOX T,Y+2,4,2,7;BOX T,Y,6,2,7;BOX T,Y-2,8,2,7;RETURN
1200 BOX R,Y,2,18,7;BOX R,Y,6,14,7;BOX R,Y,10,10,7;BOX R,Y,14,6,7;BOX R,Y,18,2,7
;RETURN
1300 BOX S,Y,12,5,7;RETURN
3000 @(<5)=G;@(<6)=I;G=41;I=0;BOX G,I,78,87,4;BOX G,I,16,48,5;BOX G,I,40,40,5;BOX
G,I,56,32,5;BOX G,I,72,16,5
3010 @(<7)=K;@(<8)=L;K=41+(K-@(<5))b4;L=(L-@(<6))b4;BOX K,L,3,3,4;E=41+(E-@(<5))b4;F=
(F-@(<6))b4;BOX E,F,1,1,3;BOX 41,0,79,84,3
3015 IF ABS(E-K)<2 IF ABS(F-L)<2GOTO 3500
3017 GOTO 148
3100 FOR Z=1TO 2b(10-C)
3110 E=E+X;F=F+Y;BOX E,F,1,1,3
3120 IF ABS(E-K)<2 IF ABS(F-L)<2 GOTO 3500
3130 IF E>3 IF E<79 IF F<43 IF F>-43 GOTO 3140
3135 GOTO 4000
3140 NEXT Z;GOTO 148
3500 CY=0;CX=30;PRINT "SUNK!";@(<P)=@(<P)+U
3501 CX=-56;CY=0;PRINT #1,P,#7,U
3505 G=@(<5);I=@(<6);K=@(<7);L=@(<8)
3510 GOSUB 3610;NEXT P;NEXT H
3600 CLEAR ;PRINT " PAR=",#1,B;FOR Z=1TO N;PRINT " PLAYER",#2,Z,"=",#1,@(<Z),#4,@
(<Z)-B;NEXT Z
3610 FOR O=1TO 3000;NEXT O;IF H>Q CY=-10;CX=-33;PRINT "<GAME OVER>";GOTO 3620
3611 RETURN
3620 CF=SM.;CY=-30;PRINT " TO PLAY AGAIN WITH SAME # PLAYERS
3630 PRINT " AND SAME # HOLES PRESS #1
3640 PRINT " TO CHANGE PRESS #2
3645 CF=L.;CC=7
3650 O=KP;IF O=50RUN
3660 IF O=49GOTO 100
4000 CY=-20;CX=-59;PRINT "PENALTY";NT=40;MU=60;MU=60;MU=60;NT=0;U=U+1;GOSUB 3610
;GOTO 148

```

Treasure Island/fox & Hounds

\$15.95

1. You have just been given an old pirate map. Somewhere on the map is the spot that marks the hidden treasure. You must take turns with an opponent uncovering the clues that will lead you to the riches - but watch out for the 'pirate attack'! Will you be the first to claim the reward?
2. fox & Hounds is a classic new version of an old game. It's you with 4 pieces against the computer with only one! Move 'checkers style' to prevent the computer from intruding into your territory. We guarantee that you will not beat the computer twice in a row.

Wildcatter/Bomb Squad

\$15.95

1. All the excitement of the old time oil wildcatters! Take charge of your small company as you explore for oil. Study the geological data, calculate the risks, and make the smart investment. You could become a wildcat millionaire! Computer gives all necessary data for one to four players. Holds production and income information for up to ten wells per player. Keeps the running account of income and expenses right down to the dollar. Full graphics and sound.
2. A bomb has been discovered at police headquarters. In order to disarm it you will need: the eye of an eagle, the steady hand of a brain surgeon, the deductive powers of Sherlock Holmes, and the heart of a Kamikaze pilot. Oh yes, you will also need BADCOR (Bomb Analysing Disposable Computerized Robot). Can you diffuse the bomb before it blows you up?

The Great American Jigsaw/Hig City Slick

\$15.95

1. Everybody knows where California, Texas and Florida are located, but can you identify the state which the computer has selected at random and drawn in the lower left hand corner of the map? It is surely easy with seven choices from which to pick, but if you really need help the computer will assist you by showing its exact location. 10 pts for the geographer and 5 pts. for the duffer. We give you the three easy states and the other 45 go together like a jigsaw puzzle.
2. Side 2 gives you topographic features and asks for major cities. Red, White, and Blue graphics for a patriotic effect.

Garbersville/Ten Pins

\$15.95

1. GARF is attacking Garbersville! You are the only hope for defense of its good citizens. Will your missiles intercept his bombs in time to save this strategic outpost?
2. Tenpins - an exciting game of bowling complete with hook ball, gutter balls, AMF style pinsetter and every spare situation found in real bowling.

Starship Command/Mini Golf

\$15.95

1. You are sitting at the helm of the 400,000 metric ton starship looking through the front viewing screen into deep space. It is a weary ship. You have already destroyed a Klingon outpost and have just done battle with a Class 1 Cruiser. Suddenly a siren sounds "Red Alert". "Klingon Battle Cruiser" flashes across the sensor read out and suddenly the vessel appears on the screen, very small at first, but getting bigger as he approaches. He's attacking at warp factor 6! Before you react the enemy fires! An alarm sounds! Engineering reports the hit damaged the photon torpedoes. The forward shield is still weakened from the last battle. Another blint fills the screen as its about to hit. You must act quickly! You are not yet in phaser range. What will you do???

Road Toad

\$15.95

1. The old proverbial chicken may have crossed the road to get to the other side but the road toad has slightly different motives. In the tradition of Angela Culp you will prod the toad with the use of your joystick skillfully guiding him through several lanes of traffic that becomes increasingly congested. But watch out for the speed demon in lane 5. He often comes without warning and definitely does not break for toads. (In Smooth Action Machine Language Graphics)\*

Super Slope

\$15.95

1. They called him Super Skier though he'd never had a lesson... And now you take off where he left off. Super Slope is a super skiing program from Esoterica. No experience is necessary. Great Fun! (In Smooth Action Machine Language Graphics)\*

Hangman/Home Budget Keeper

\$15.95

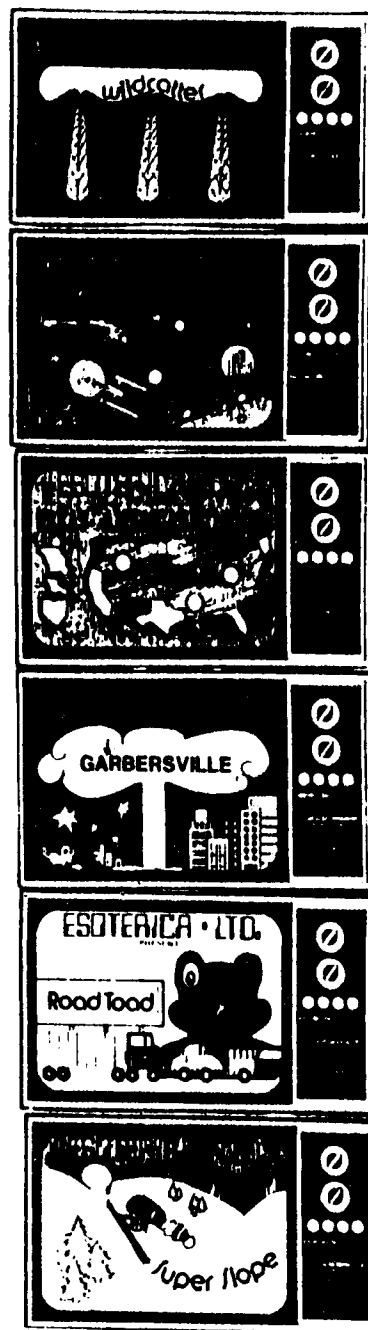
1. Tom Dooley awaits the gallows and only you can grant a reprieve. An educational game of spelling, complete with graphics, 3 playing modes and music.
2. This complete home budget program allows you to store 12 months of financial records on a single 60 minute cassette. Written by George Moses, Distributed by Esoterica Ltd.

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\* This software on cassette tape can be used with New Astrobasic ONLY

February 13, 1983

ARCADIAN Newsletter  
 Bob Fabris, Editor  
 3626 Morrie Dr.  
 San Jose, CA 95127

Bob,

I would like to offer prizes for the best program submitted in the following categories:

1: Renumbering Program for ASTRO BASIC (\$25)

This program would be used to renumber the existing lines in a program along with changing the GOTO's and GOSUB's. These are minimum qualifications, more features may be included.

2: Renumbering Program for Extended BASIC (\$25 )

This program would be used to renumber the existing lines in a program along with changing the GOTO's and GOSUB's. These are minimum qualifications, more features may be included.

3: Variable Lister for ASTRO BASIC (\$25)

This program would list the variables used and the line numbers in which the variables appear. These are minimum qualifications, more features may be included.

4: Variable Lister for Extended BASIC (\$25)

This program would list the variables used and the line numbers in which the variables appear. These are minimum qualifications, more features may be included.

4: Math Routines for ASTRO BASIC or Extended Basic (\$5 ea)

These would be short programs that would accomplish one of the following math routines:

- A: Square Root
- B: Exponentiation
- C: Sine function
- D: ArcSine function
- E: Cosine function
- F: ArcCosine Function
- G: Tangent function
- H: ArcTangent
- I: Logarithms
- J: + Addition
- K: - Subtraction
- L: x Multiplication
- M: / Division

The math routines should permit numbers and angles in radians or degrees to be inputted or outputted with a range of four decimal places. These programs are planned to be used as subroutines in larger programs.

All programs submitted would become public domain. These programs would be presented in future editions of the ARCADIAN as tutorials.

Entries should include a short description of the program, instructions for using the program, and a copy of the program on tape.

Entries in this contest should be sent to Richard M. Houser publisher of the ASTROCADE SOURCEBOOK at the following address, RMH Enterprises, 635 Los Alamos Ave., Livermore, CA 94550

The contest will close on July 1 and the winners will be announced in the August ARCADIAN Newsletter.

ADS

FOR SALE Astrocade with ABasic, 2 controllers, FB, SFort, GP, SBattle, Wizard, PBall, 25 recorded programs, 4L&M tapes, 2 Wavemaker tapes, 4 issues of Arcadian including current sub. Over 500. value for 300. Bob Waida Box 67, Midland PA, 15059 412-643-4323

FOR SALE Football Videocade. \$25 C.Draganov, 164 N.Stevens, Orange CA 92668

FOR SALE Arcade exc. condition, 1 yr old 2 controllers, ABasic, patch cord, 35 games from Arcadian on tape, SWolf, Missile, RBaron, Tanks., \$350 money order. Brian Reiswig, Star Route 143, Brownsville, CA 95919 916-675-2994

FOR SALE Used Bally/AstroVision Videocades at 50% off list- 2001, 2002, 2004, 2005, 2008, 2010, 2011, 3001, 3002, 3005, 5001, 5002. Larry Burchett, Ann Arbor, MI 313 973-1906

REVISION to last month's ad by C. Krause-- change price to "Best offer will be considered."

90

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Robert Fabris, delivering  
3626 Morrie Drive  
San Jose, CA 95127-9990

The SOURCE TCD 959

