

FORMERLY THE CURSOR GROUP

THE BASIC EXPRESS

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THE BASIC EXPRESS

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WHAT'S HAPPENING ?

by

Fred Cornett

Yes, we've done it again, a double issue. Have no fear, your subscription is for a certain number of issues, not months!

The "Add-under" has hit some serious snags. AstroVision had a contract with "Dave Nutting and Associates" to produce prototype units by the middle of March 81, which they subsequently pushed back to June 1981, in time for the CES in Chicago.

Stories regarding the why's and wherefore's abound, and this journal is not attempting to find or fix blame, all we can do is try to put the stories in a semblance of order.

"Nutting and Associates" did indeed produce three "Add-under" units for the CES in Chicago. However, instead of being prototypes, they were really "UV1's" with low-resolution boards crammed into the add-under cases that AstroVision provided. After the show, "Nutting and Associates" disassembled the three units, since they needed to return the parts to other projects.

Dave Nutting and Associates is composed of some of the most brilliant people in the Micro-Computer/Video Game industry. They are however, a subsidiary of Bally Manufacturing Corporation, and therefore

have a huge commitment to Midway and Bally to crank out new software and hardware for their Penny Arcade games and gambling equipment. This tremendous drain on their creative time leaves little for prototyping an add-under for AstroVision. Hopefully, this "Catch-22"

situation will be resolved soon, as AstroVision is chafing at the bit to get the "Add-under" on the market.

Problems such as this continue to plague AstroVision in other areas as well! Cartridge shipment has been held up a long time waiting for a heat shrink wrap machine, the machine recently arrived only to find that E.F.

Johnson was out of instruction inserts. Hopefully cartridge shipment will resume soon!!!

Bally Home Computer unit shipments have been extremely sparse for three months. This situation has been created by a myriad of reasons; one of the suppliers of RF shielding drilled the holes on the wrong side of the shields; E.F. Johnson has been out of RF Modulators; parts were not being received for Hand Controls; Custom Chip supplies had run low, etc., etc., etc. ...

AstroVision is totally revamping their product stock procedures, and switching personnel around to maximize efficiency and ship great quantities of stock.

Dan Dawson, heretofore President of

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AstroVision has resigned, and the man replacing him has a materials control background, this change suggests a deep commitment to turning things around!

I do not find these problems terribly dismaying, as this type of thing seems to be the Micro-Computer industry standard. It would be very easy to compose a list of ten different successful companies with similiar stories, for instance, are you aware that Mattel has not been shipping Intellivision product for over four months? Also, Mattel's computer add-on is so inadequate and overpriced from the user standpoint, that none of the "hackers" in this country care if it is ever released!

I strongly feel that all of AstroVisions product delivery problems will be ironed out by the end of August, and we'll find ourselves armpit deep in Bally products. I also believe the add-under will become a reality by January, and you will find in in retail stores then. The top level at AstroVision has gone through a distillation process, and what remains appears to be a management team!

Alternatives

If you've been dying to get your hands on a keyboard, more memory, and a new, more powerful BASIC language, BOY, do we have good news for you!!!

Our July 1981 issue will feature four new product reviews, two of which, are memory add-ons. The "VIPER" is a 16K add-on and the "BLUE RAM" a 4K add-on. The Viper also features a new 8K BASIC language with POINT, CIRCLE & SNAP commands, plus much, much more!!

For the first time, we will be reviewing a new ROM cartridge that plugs in the front of your Bally like a game cartridge, called the "MACHINE LANGUAGE MANAGER", which comes with a new keypad overlay card and a 60+ page manual. This product is aimed at the beginner as well as the knowledgable, and is tremendous!! This cartridge is not an AstroVision product, and will be available in July along with both add-on's.

We will also be reviewing a very excellent printer-the EPSON "MX-80", which works with the Bally.

All in all, our July 1981 issue is shaping up as the best issue ever! Don't miss it!! Please check the address portion of this journal for a "THIS IS YOUR LAST ISSUE" stamp.



It is sometimes difficult to ascertain the correct number of spaces with a PRINT statement. To facilitate ease of input, we are using the special character "■" to designate a SPACE where ever confusion could exist.



MESSAGE FROM THE LOST TRIBE

by
Gregg Cattanach

Long, long ago and once upon a time..... there lived a tribe on a lost island. The tribe and the island have both disappeared but they left a message for all mankind to live by. Key in this program, found by Gregg in a floating bottle, and read the message for yourself!

```
5 CLEAR ;NT=1;PRINT "■■■■",
10 a(1)=65;a(2)=69;a(3)=73;a(4)=79;a(5)=8
5
11 a(6)=33;a(7)=46;a(8)=63;a(9)=44;a(10)=
45;a(11)=58;a(12)=59
20 FOR X=1TO RND (4)
30 TV=RND (26)+64
35 IF RND (3)=1GOTO 50
40 TV=a(RND (5))
50 NEXT X
60 IF RND (5)#1TV=32;GOTO 20
70 R=RND (7)+5;TV=a(R);IF R=10GOTO 20
75 IF R<9TV=32
80 TV=32;IF RND (3)=1IF R<9PRINT ;PRINT ;
PRINT "■■■■";GOTO 20
90 GOTO 20
```



Man is still the best computer that we can put aboard a spacecraft -- and the only one that can be mass-produced with unskilled labor.

-Wernher von Braun



:RUN MAKER

by
ANDY GUEVARA

One of the least documented features of Bally Basic that I've seen is the :RUN command to input machine language programs from tape. Nowhere is the information on how it works to be found!! Being primarily a machine language type, I felt it was time to puzzle it out of the Bally Basic disassembly listing.

Basically, what the :RUN command does is open the tape input port and throw whatever characters come in into memory starting at address 4000 Hex (16384 Decimal), which is the first byte of screen RAM. As it loads, you can see it making tracks across the top of the screen. It continues to load bytes (by a happy coincidence an ASCII character with parity is 8 bits long) until an internal counter says stop, which it does after 128 bytes have been loaded. At this point, an immediate jump is executed to address 4000 Hex and the loaded program starts. Unfortunately it is 128 bytes, no more, no less, meaning shorter programs have to pad the ending with zeroes. Longer programs will have to incorporate the loader and direct the loading to another area in memory.

What the following program does is allow a machine language program, coded in Hexadecimal, to be input and stored on tape. Once stored, all you gotta do is :INPUT and run the tape. Your program starts by itself.

Standard Color Generator

The "Standard Color Generator" program listed following the :RUN Maker will display a series of color bars which can be used to set the colors on your TV set. When entering this example, DO NOT enter the addresses (i.e., 4000:). They are shown only for reference.

After you have keyed in the :RUN Maker, press RUN and GO, then fill in the HEX codes as stated in the "STANDARD COLOR GENERATOR" listing, IN ORDER, by pairs, followed by GO. If finished before 128 has been entered, key-in "xx" (mult. signs) to stop the input mode. For example, the "STANDARD COLOR GENERATOR" ends with pair #69. Zero-padding to #128 is done automatically by the program.

If you find a mistake too late to use the ERASE key, you can still recover by hitting the HALT key, then typing in the following:

```
FOR N=##TO 128;GOTO 20
```

where ## is the number of the offending byte (make sure you type this line in without a line number!!).

Notes.....

A couple of notes: The ERASE key does work, but only on the current byte and looks a little funny in operation. Pressing the ERASE key will start the current byte over, placing it to the right of your original entry. Also do not be disturbed by what the Bally puts on the screen as it writes to the tape port... most of the HEX codes are not displayable as ASCII characters. The program works because the tape port gets data before the Bally Basic screen routines get a chance to change it all to "?".

LAST NOTE: When running your machine language program (such as "STANDARD COLOR GENERATOR"), don't let the cursor drop so far as to cause the screen to scroll, as this will cause the program to scroll right out of memory as well. If your cursor is approaching the bottom of the screen, you can pull it up by keying in a "CY=Ø".

The machine language program can be stopped by typing :RETURN, and restarted by typing CALL 16384.

```
::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: ::: :::
```

:RUN MAKER

```
3 CLEAR
5 FOR N=1TO 130;@ (N)=0;NEXT N
10 PRINT "INPUT HEX CODE,■XX=STOP
15 FOR N=1TO 128
20 PRINT N,":":
25 A=KP;TV=A
27 B=KP;TV=B
30 IF B=31GOTO 20
35 C=KP;TV=C;IF C=31GOTO 20
36 IF C#13GOTO 200
40 IF (A=98)+(B=98)GOTO 100
50 C=A;GOSUB 250;IF F=ØGOTO 200
55 A=Cx16
60 C=B;GOSUB 250;IF F=ØGOTO 200
70 @ (N)=A+C
80 NEXT N
100 PRINT ;PRINT "START RECORDING...HIT■
ANY KEY WHEN READY
110 A=KP
```

```

120 CLEAR ;NT=1;:PRINT ;PRINT ".";PRINT
"
125 PRINT "CLEAR
127 PRINT "CY=20;:RUN
130 FOR N=1TO 130
135 FOR A=1TO 10;NEXT A
140 TV=@(N)
150 NEXT N
155 CLEAR
160 :RETURN ;PRINT "DONE
180 STOP
200 PRINT "ERROR
210 GOTO 20
250 IF (C<48)+(C>57)x(C<65)+(C>70)F=0;RE
TURN
255 F=1
260 IF C<65C=C-48;RETURN
270 C=C-55;RETURN

```

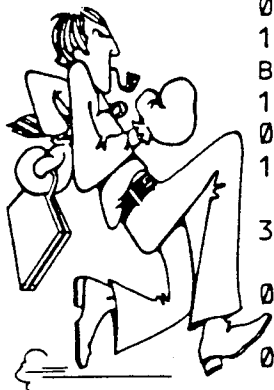
```

01 0E 42 .LD BC,420EHBAR
SIZE
FF .SYSTEM
1C .SEFB RECTAN
C1 .POP BC;GET COUNT
10 F3 .DJNZ HERE;LOOP
BACK TILL B=0
C3 9C 24 .JP 249CH;BACK
TO BASIC
402C: 00 17 .COLOR TABLE--
COLOR,X POS'N
55 24
AA 33
FF 3F
00 4C
55 57
AA 64
FF 71

```

KEY-IN HEX PAIRS

| HEX ADDRESS (REF ONLY) | HEX PAIRS (KEY-IN) | COMMENTS (REF ONLY) |
|---------------------------|-----------------------|---|
| 4000 | F3 | .DI |
| | FF | .SYSSUK |
| | 00 | .DEFB 00;MLTPL CALL |
| | 17 | .DEFB SETOUT |
| | B6 | .DEFB B6H;BLNK LINE |
| | 13 | .DEFB 13H;R/L BNDS |
| | 08 | .DEFB 08H;INT. MODE |
| | 19 | .DEFB COLSET;SET COLORS |
| | 3C 40 | .DEFW 403CH;ADDRESS OF LIST |
| | 03 | .DEFW EXIT;STOP MULTI-CALL |
| | 01 6E 48 | .LD BC,486EH;WHITE BORDER |
| | 3E 55 | .LD A,55H;COLOR #1 |
| | 11 14 06 | .LD DE,0C14HXY POS ITION |
| | FF | SYSTEM |
| | 1C | DEFB RECTAN |
| | 21 2C 40 | LD HL,402C;LOAD TABLE ADDRESS |
| | 16 09 | .LD D,09H;BAR #1 Y POSITION |
| | 06 08 | .LD B,08H;NUMBER OF BARS |
| | C5 | PUSH BC;SAVE COUNT |
| | 7E | .LD A,(HL);GET COLOR FROM TABLE |
| | 23 | .INC HL;UPDATE POINTER |
| | 5E | .LD E,(HL);GET X POS'N FROM TABLE |
| | 23 | .INC HL;UPDATE POINTER |



403C

```


AC .GREEN
86 .YELLOW
07 .WHITE
00 .BLACK
CD .CYAN
5A .RED
2B .MAGENTA
F9 .BLUE

```

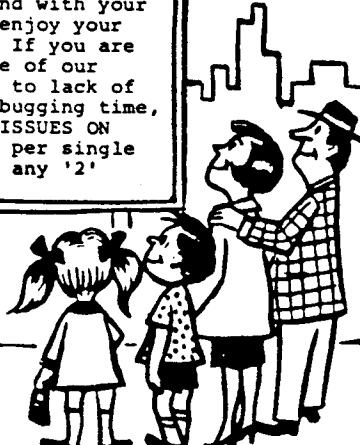



EDITORS NOTE: After you have transferred your machine language program onto tape using the :RUN Maker program, to get the program to load the machine language software back into the Bally from tape, type in :INPUT and GO (you do not have to use the :RUN because the :RUN Maker program placed a :RUN on tape).

TIME SAVER



Now you can have more time to spend with your family AND enjoy your Bally too!! If you are missing out on some of our great programs due to lack of programming and debugging time, why not order our ISSUES ON TAPE today! \$3.95 per single Issue or \$7.50 for any '2' Issues.





A treasure chest
of information, programs, helpful hints, tutorials, games, etc., await you!! The key to receiving this knowledge lies in getting our "BACK ISSUES". If you do not have all of our issues you are missing out on using your Bally to its greatest capacity. Order today.
We never print the same information twice

BACK ISSUES AVAILABLE

VOL. I Complete (6 issues - January 1980 thru July 1980)
Contains: Electric Bill Analysis, Instructions for adding a Full-sized ASCII Keyboard; Peek n' Poke; Hex to Decimal Converter, Instructions for adding a printer, DMA Graphics, Product reviews, Byte Saving Hints, Galactibattle, Othello, 3-Voice Music, Floating point math, Camel, Wumpus, etc., etc.,

VOL. 2, Issue 1 (August) Contains: Cursor Inventory Control (Business Software); "Connect Four" (a professional quality game); software for the Computer Ear (Anderson Research) - Fun With Music.

VOL. 2, Issue 2 (September) Contains: ASTROVISION ACQUIRES BALLY - an Editorial; Spider Web (Graphics Program); Reverse (Game); Design (a Graphics Program); Match Quiz (an Education Program); Note Match (an Education Program).

VOL. 2, Issue 3 (October) Contains: Peek n' Poke Tutorial; Critter - a Machine Language Program that creates a non-blinking FAST moving character; Poor Mans Memory Expansion (a tutorial); Sideswipe (car driving game); We Three Kings of Orient Are (3-Voice Chord Music); Machine Language Graphics Tutorial.

VOL. 2, Issue 4 (Nov/Dec) Contains: "ZGRASS32" Add-Under info; New game cartridges; Programming Contest; Complete Bally Game Cartridge description; Chess program; Software reviews.

VOL. 2, Issue 5 (Jan/Feb) Contains: Winter CES News; Bio-Rhythms Compatability Analysis program; Towers of Hanoi game; Executive Time Card Calculator program; How to display all 256 colors on screen at the same time; 1's & 5's game program; Line Resequenece program.

VOL. 2, Issue 6 (March) Contains: New Basic Cartridge - a review; Metric Converter program; Dirty Programming Tricks (Helpful Hints) and these programs: Morse Code Simulator; Hamurabi; Treasure Island.

VOL. 3, Issue 1 (April) THE BASIC EXPRESS contains: Bally Unit Tune-up; ZGRASS Language (review by Tom Meeks); Darts (game); Beauty of the Loop (tutorial); Yahtzee (game); Diamond (graphics); Match (game); Sound Port Study (tutorial).

SEND: \$1.75 per back issues desired - or \$9.75 for Volume 1 complete and \$9.75 for Volume 2 complete to: THE BASIC EXPRESS, P.O. Box 266, North Hollywood, CA 91603.
C.O.D. orders accepted on Complete Volumes only.



FOX and HOUNDS

by
D. Drescher

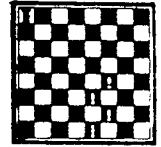


Fox and Hounds written by Dan Drescher of Esoterica Limited, is a checkers type game. You get 4 pieces located at the bottom of the board, and the Computer gets one piece at the top of the board. The game object is to box the Computer into a corner eliminating any further moves. You may only move forward on black squares. Computer may move backward. Computers object is to move into your bottom squares.

To move your pieces, position the small white Cursor (using Joystick) on piece to be moved and squeeze trigger, then position Cursor on new position and

squeeze trigger. Computer will not allow illegal moves.

See Esoterica's advertisement in this issue for a terrific new game called "Wild catter", which allows you to become an oil baron managing whole oil fields and keeping one step ahead of the IRS man. You'll love it! (\$9.50 including Bomb Squad)



```

4 G=0
5 CLEAR ;NT=0
6 BC=79;M=0
7 I=RND (100);W=0
8 Q=RND (10)
9 CX=-40;CY=-39;PRINT "FOX AND THE HOUN
DS
40 X=-32;Y=32
50 FOR A=1TO 32
60 BOX X,Y,8,8,1
70 IF A=1BOX X,Y,6,6,2
80 IF A>28+GBOX X,Y,6,6,2;BOX X,Y,4,4,1
90 IF X=16Y=Y-8;X=-40
100 IF X=24Y=Y-8;X=-48
105 X=X+16
110 NEXT A
120 LINE -36,-28,4;LINE -36,36,1
125 X=-32;Y=32
130 LINE 28,36,1;LINE 28,-28,1
131 LINE -36,-28,1
140 P=-30;L=-27;J=0
150 BOX P,L,2,2,3
155 Q=RND (10)
160 IF JX(1)BOX P,L,2,2,3;P=P+JX(1)x8;BOX
P,L,2,2,3
165 IF JY(1)BOX P,L,2,2,3;L=L+JY(1)x8;BOX
P,L,2,2,3
170 IF TR(1)IF PX(P,L+3)=0IF PX(P-3,L+3)=
1GOTO 600
180 GOTO 160
200 IF L=0(1)+8IF TR(1)IF PX(P-2,L+3)=1G
TO 650
210 IF JX(1)BOX P,L,2,2,3;P=P+JX(1)x8;BOX
P,L,2,2,3
220 IF JY(1)BOX P,L,2,2,3;L=L+JY(1)x8;BOX
P,L,2,2,3
230 GOTO 200
250 BOX 0,-37,160,10,2
251 CX=-75;CY=-39
252 W=W+1;IF W=2GOTO 2000
253 IF W>3IF W<9IF Q>5GOTO 2000+Q
254 IF W>7IF Y<-8GOTO 2020
366 IF PX(X-6,Y-8)=1IF M=10M=0;GOTO 4000
370 IF PX(X+5,Y-8)=1GOTO 2700
390 IF PX(X-6,Y-8)=1GOTO 4000
400 IF PX(X-6,Y+8)=1GOTO 5000
402 IF PX(X+5,Y+8)=1GOTO 5100
410 GOTO 500

```

```

500 CLEAR ;PRINT "LETS TRY THAT AGAIN,LUC
KY";G=G+1
510 FOR A=1TO 2000
520 NEXT A
530 GOTO 5
600 BOX P-3,L+3,7,8,1;BOX P,L,2,2,3;@ (1)=
L
610 GOTO 200
650 BOX P-2,L+3,6,6,2;BOX P-2,L+3,4,4,1
;BOX P,L,2,2,3;GOTO 250
1000 NT=3
1010 FOR A=1TO 16
1020 MU="3";BOX X,Y,6,6,3
1030 NEXT A
1040 NT=0;RETURN
2000 GOTO 2001
2001 PRINT "HI, MY NAME IS BALLY";GOTO 2
100
2005 PRINT "HA HA HA HO";GOTO 2100
2006 PRINT "THAT MOVE IS A JOKE";GOTO 21
00
2007 PRINT "YOU ARE NEW AT THIS GAME";GO
TO 2100
2008 PRINT "OH GOOD! AN EASY OPPONENT";G
OTO 2100
2009 PRINT "OH BROTHER!";GOTO 2100
2010 PRINT "DON'T MAKE IT TOO EASY!";GOT
O 2100
2020 PRINT "WELL, YOU ARE FINISHED!";GOT
O 2100
2100 GOTO 366
2700 IF PX(X-6,Y-8)=0IF PX(X-3,Y-16)=0IF
PX(X+13,Y-16)=0M=10;GOTO 5000
2710 IF PX(X-6,Y-8)=0IF PX(X-3,Y-16)=0M=
10;GOTO 5000
3000 GOSUB 1000
3030 BOX X,Y,8,8,1
3035 X=X+8;Y=Y-8
3040 BOX X,Y,6,6,2
3045 IF Y=-24RUN
3050 GOTO 140
4000 IF PX(X-3,Y-16)=0IF PX(X-14,Y-16)=0
GOTO 5100
4500 GOSUB 1000
4530 BOX X,Y,8,8,1
4535 X=X-8;Y=Y-8
4540 BOX X,Y,6,6,2
4545 IF Y=-24RUN
4550 GOTO 140
5000 IF Y=32GOTO 500
5005 IF X=-32GOTO 5100
5010 GOSUB 1000
5030 BOX X,Y,8,8,1
5035 X=X-8;Y=Y+8
5040 BOX X,Y,6,6,2
5050 GOTO 140
5100 GOSUB 1000

```



```

5110 IF Y=32GOTO 500
5120 IF X=24GOTO 5000
5130 BOX X,Y,8,8,1
5135 X=X+8;Y=Y+8
5140 BOX X,Y,6,6,2
5150 GOTO 140

```



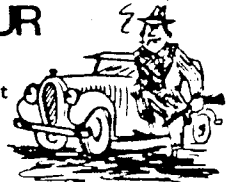
DON'T LOSE YOUR PROGRAM...

because of poor quality audio tape not designed to be used with a computer.

IF you have wanted high quality, glitch free, computer digital tape cassettes but didn't want to pay the price (\$3.50 each or more)--- it's time for you to try "CUROSUR" brand tape!!!!

WE give you "10" of the very best, highest quality, C-30 "Computer Digital Tape Cassettes" and we include the poly boxes for only \$15.99.

WHY take chances on losing your favorite program -- order a case of C-30 tapes today. Send us your check or money order (\$15.99) or call and we'll ship your order C.O.D.



CONNECT-THE-DOTS

by

Gregg Cattanach



The intent of this program originally written to improve the coordination and dexterity of our 5 year old son, Michael, and to fulfill his desires to draw on the T.V. screen using the Bally Arcade's number one hand control to its fullest extent, i.e. joystick, trigger, and knob.

Beginning with the INITIAL PROGRAM, first select the number of points needed to draw an outline of any desired object on the T.V. screen by rotating KN(1) until a number between 30 and 120 appears on the screen. Then press TR(1) to select the number of points desired. As a rule of thumb...

30 points: Number required for a simple figure like the head of a horse; a good starting point to learn the game.

50-100 points: Range most often selected to draw objects of interest like a horse, airplane, etc.

300 points: Maximum number limited by string memory (approx.). Line 30 in the program limits # of points to 120, because the younger players loose interest beyond this point.

Next select the scale factor from 1 to 10 to determine how fast the "BLINKING CURSOR" moves as the joystick, JX(1)/JY(1), is moved. The lower the scale factor, the slower the "BLINKING CURSOR" moves which

means an object can be drawn in finer detail.

THE CHALLENGE.....

By simultaneously pressing the trigger, TR(1), while moving the joystick, JX(1)/JY(1), dots will be placed on the screen to form an outline of the desired object, say a horse. This is the part of the game that requires good hand-eye coordination and dexterity, especially for younger children. It is very easy to move the "BLINKING CURSOR" to various positions on the screen, however, it is fairly difficult to place the desired series of dots in the sequence required to outline the object in mind! Herein lies the real challenge of the game, to learn how to place a series of dots on the screen, some separated by spaces (by moving the joystick without continuously pressing the trigger) to form an interesting, imaginative figure!

AFTER THE POINTS.....

When the selected number of points (P) has been reached by pulling the trigger P times, the program will automatically "connect-the-points" and draw the figure imagined by the child or adult.

Once the object has been drawn, the foreground color (FC) may easily be changed by turning the knob KN(1). Then by simply pulling the trigger TR(1), the screen will clear and the Bally will be ready to draw another object.

The "ENHANCED VERSION" of this program will cause the speed of the "BLINKING CURSOR" to vary depending upon the position of KN(1) when placing dots on the screen. Using this version, part of the object may be drawn with closely spaced dots, whereas the "body" outlined with dots spaced farther apart. This requires some practice and is recommended for an older age group, say 8 years and up!

.....

```

9  NT=0;BC=240;X=0;Y=0;A=0
10 CLEAR ;FC=135
20 PRINT "#### OF POINTS (KN):
30 CY=40;CX=48;PRINT #1,(KN(1)+128)÷20x10
40 IF TR(1)P=(KN(1)+128)÷20x10
50 GOTO 30
60 PRINT "#####SCALE (1-10):
70 CY=32;CX=48;PRINT #1,(KN(1)+128)÷24
80 IF TR(1)S=(KN(1)+128)÷24;GOTO 100
90 GOTO 70
100 PRINT ;PRINT ;PRINT "###GET READY TO C
ONNECT-###THE-POINTS BY PRESSING TR(1)
WHILE MOVING JX(1)#####AND/OR JY(1)..

```

```

110 PRINT ;PRINT "###PRESS TR(1) TO START
120 BOX 0,-32,140,10,3
130 IF TR(1)GOTO150
140 GOTO 120
150 CLEAR
160 X=X+JX(1)xS
170 Y=Y+JY(1)xS
180 IF TR(1)=0BOX X,Y,1,1,3
190 BOX X,Y,1,1,2-TR(1)
200 IF TR(1)BOX X,Y,1,1,1;@A=X;@A(P+1)=
Y;A=A+1
210 IF A=P+1GOTO 230
220 GOTO 160
230 CLEAR ;LINE @0,@P+1,2;FOR N=1TO P;
LINE @N,@N+P+1,3;NEXT N
240 FC=4+(KN(1)+136)÷8x8
250 IF TR(1)GOTO 9
260 GOTO 240

```

ENHANCED PROGRAM.....

For the ENHANCED PROGRAM you will need to make a few changes to the INITIAL PROGRAM. YOU WILL NEED TO CHANGE THESE LINES:

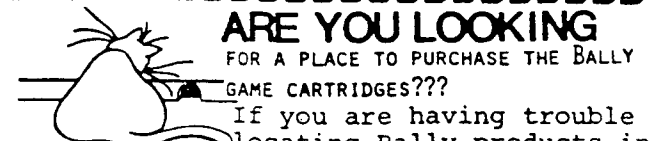
```

40 IF TR(1)P=(KN(1)+128)÷20x10;GOTO 60
60 PRINT "#####SCALE FACTOR: KN(1)
70 PRINT ;PRINT ;PRINT "###GET READY TO
CONNECT-###THE-POINTS BY PRESSING TR(1)
) WHILE MOVING JX(1)#####AND/OR JY(1)
)...
80 PRINT ;PRINT "###PRESS TR(1) TO START
90 BOX 0,-32,140,10,3
100 IF TR(1)GOTO 120
110 GOTO 90
120 CLEAR
130 S=(KN(1)+128)÷24
140 X=X+JX(1)xS
150 Y=Y+JY(1)xS
160 IF TR(1)=0BOX X,Y,1,1,3
170 BOX X,Y,1,1,2-TR(1)
180 IF TR(1)BOX X,Y,1,1,1;@A=X;@A(P+1)
=Y;A=A+1
190 IF A=P+1GOTO 210
200 GOTO 130
210 CLEAR ;LINE @0,@P+1,2;FOR N=1TO P
;LINE @N,@N+P+1,3;NEXT N
220 FC=4+(KN(1)+136)÷8x8
230 IF TR(1)GOTO 9
240 GOTO 220

```

DELETE LINES 250 AND 260

OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO



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OLD GLORY by

E. D. Groebe

THIS PROGRAM USES ONE OF THE MANY BALLY ROM SUBROUTINES TO DRAW A COLOR PICTURE OF THE AMERICAN FLAG. USE OF THE COLOR PORTS 0 TO 3, PLUS PORTS 9 & 10, WITH THE ON-BOARD SUBROUTINE, DEMONSTRATE SOME FEATURES WHICH YOU CAN USE FOR YOUR OWN PICTURE CONSTRUCTION.

PROGRAM DESCRIPTION

- 10 SET NOTE TIME & COLOR PORTS FOR MUSIC
- 20 SET COLOR PORTS FOR DRAWING
- 30-50 DRAW 7 RED STRIPES
- 60-70 DRAW BLUE FIELD
- 80-100 DRAW 5 ROWS OF 6 STARS EACH
- 110-130 DRAW 4 ROWS OF 5 STARS EACH
- 140-160 PRINT TITLE
- 170-195 MUSIC (STARS & STRIPES FOREVER)
- 200-250 COLOR SUBROUTINE (43)



```

10 NT=8;&(10)=0;&(9)=50;BC=122;GOSUB 170
20 NT=0;CLEAR ;&(0)=7;&(1)=7;&(2)=122;&(
3)=240;&(9)=0;&(10)=180
30 A=20200;W=7723;X=-22013
35 Y=17988
40 FOR G=0TO 1440STEP 240;GOSUB 200
50 NEXT G
60 W=3115;X=-235;G=0
70 GOSUB 200
80 W=299;X=-4095;Y=Y+80
90 FOR G=0TO 640STEP 160
95 FOR K=0TO 5;GOSUB 200

```

```

96 NEXT K
100 K=0;NEXT G
110 Y=Y+81
120 FOR G=0TO 480STEP 160
125 FOR K=0TO 4;GOSUB 200
126 NEXT K
130 K=0;NEXT G
140 CY=40;PRINT "■■■■■■■■OLD■■GLORY■■■■■■■■
■■■■■■■■■■1981
160 FOR Z=0TO 5000;NEXT Z;RUN
170 PRINT "5000504330+23300000+2330+23503
4000200220+1220+124000003235006000200
180 BC=7;PRINT "00x50x50x4x3x30+x2x3x3000
0+x2x3x30+x2x3x4x3x27x2000
190 BC=240;PRINT "x10x10x107x1-x30x2x1x80
00x1x2x3x5x1x2x3x556x3x2000x1
195 BC=7;RETURN
200 %(A)=-43
210 %(A+2)=W
220 %(A+4)=X
230 %(A+6)=Y+G+2xK
240 %(A+8)=-13871
250 CALL A;RETURN

```



PROGRAM EXPLANATION.....

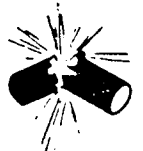
You are probably very familiar with the music portion of this program because it's covered in the BALLY instruction manual. However there are many things your BALLY can do which are not covered. One of them is the use of the on-board subroutines & the color ports. (ED. NOTE-- for more information refer to Peek n' Poke manual)

Line #10 includes &(10)=0 which will blank the screen so that none of the numbers show while the music plays. It lifts a curtain over the screen. After the music line #20 drops the curtain by setting &(10)=180. (you can try other values) Setting it to 200, for example, drops it low enough so you see the program clutter at the bottom.

Of perhaps even more interest is the use of the &(9) instruction. It is normally set at 50. However by setting it to 0 we open up the possibility of using the four color ports. This chart shows their setting for this program. The binary number of each port is important. As will be shown in Table #2, they determine part of a hex quad that is used to set the B register in the sub-routine.

COLOR PORTS:

- &(0) : port (0)→00 (white=7)
- &(1) : port (1)→01 (white=7)
- &(2) : port (2)→10 (red=122)
- &(3) : port (3)→11 (blue=240)

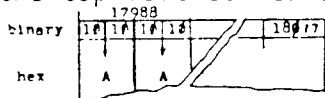


You may have noticed in other applications that the program clutter appears at the top of the screen when $\&(9)=0$. You have to be careful that your graphics don't overlap that program or you destroy it. So while you're developing the program set $\&(0)=1$ (gray)-and you'll see it. However for your final program set $\&(0)$ and $\&(1)$ equal to the same value and the clutter will disappear.

In this program line #35 sets the location of the top left corner of the flag. It's low enough to avoid overlap with the program. You can try shifting the flag position by changing the number in line #35. Remember the screen is 40 bytes wide, so increasing the value of Y by 10 would shift it by 1/4 the screen width to the right. Like wise increasing Y by 40 would lower it one line of the 88 total lines.

STRIPES.....

Now let's set up lines for drawing the 7 red stripes, each 3 lines high and 30 bytes wide, with the top left corner at 17988.



Each of the four pixels of the byte are coded with the port binary number--in this case 10 for port 2.

The four binary numbers, in groups of two, ie. (1010) (1010), translate to AA in hex. You can refer to Table #1 to easily get this conversion. This red stripe must be repeated seven times with three lines between each. The loop in line #40 does it.

FIELD.....

Similarly, the blue field is 2 lines high and 12 bytes wide. The binary color data for each byte is (1111) (1111) or FF in hex. Since it's drawn just once, no loop instruction is needed.

STARS.....

To create the stars the next step is to identify one pixel of a byte as white and the rest blue.



Table #1 can be used to see that (1111) (1100) translates to FC.

The starting position is down two lines from the top left corner. Since each lower adjacent byte is 40 more, two lines down is $17988+80=18068$. This pattern needs to be repeated 6 times horizontally and 5

times vertically. The loops in line #90 and 95 do this and thus care for 30 of the 50 stars.

Twenty more have the same color coding (FC) but start one byte to the right (+1) and down four lines (+160) from the corner starting point. ($17988+160+1=18149$) Line #120 and #125 repeat it 5 times per line for 4 lines.

TABLE #1

| Decimal | Hex/Binary | Hex | Decimal/Quad | Hex/Decimal Quad |
|---------|------------|-----|--------------|------------------|
| 0 | 0000 | 0 | 0(16) | 0(16) |
| 1 | 0001 | 1 | 4096 | 256 |
| 2 | 0010 | 2 | 8192 | 512 |
| 3 | 0011 | 3 | 12288 | 768 |
| 4 | 0100 | 4 | 16384 | 1024 |
| 5 | 0101 | 5 | 20480 | 1280 |
| 6 | 0110 | 6 | 24576 | 1536 |
| 7 | 0111 | 7 | 28672 | 1792 |
| 8 | 1000 | 8 | 32768 | 2048 |
| 9 | 1001 | 9 | 36864 | 2304 |
| 10 | 1010 | A | 40960 | 2560 |
| 11 | 1011 | B | 45056 | 2816 |
| 12 | 1100 | C | 49152 | 3072 |
| 13 | 1101 | D | 53248 | 3328 |
| 14 | 1110 | E | 57344 | 3584 |
| 15 | 1111 | F | 61440 | 3840 |



WORKSHEET.....

TABLE #2

| Color Pattern | # System | Register | | | | Start Location HL |
|---------------|----------|-------------|--------------|--------------|----------------|-------------------|
| | | Sub-Routine | Bytes/Line E | # of Lines D | Pattern Data B | |
| Red Stripes | Decimal | 43 | 30 | 3 | AA | 17988 |
| | Hex | 2B | 1E | 03 | AA | - |
| | Hex Quad | 1E2B | | AA03 | | - |
| | Decimal | 7723 | | -22013 | | 17988 |
| Blue Field | D | 43 | 12 | 21 | - | 17988 |
| | H | 2B | 0C | 15 | FF | - |
| | H Q | 0C2B | | FF15 | | - |
| | D | 7115 | | -235 | | 17988 |
| Stars 6/row | D | 43 | 1 | 1 | - | 18068 |
| | H | 2B | 01 | 01 | FC | - |
| | H Q | 012B | | FC01 | | - |
| | D | 200 | | -4005 | | 18068 |
| 5/row | D | 299 | | -4095 | | 18149 |

All of this data for each color pattern can be entered in a work sheet to keep the decimal and hex numbers straight. See Table 2 which summarizes the data for each of the registers, and the appropriate starting point for each pattern. Look at Table 2 for the red color pattern data to see how the worksheet can help.

First we enter the decimal values. We want Sub-routine 43. Each stripe is 30 bytes wide, 3 lines high and the start location is 17988. Notice that we already know the hex values for the pattern, so we can skip entering any decimal values for register B. (convert decimal to hex: 43 becomes 2B, 30 becomes 1E, etc.)

Next we group the hex pairs in groups of four (hex quads), remembering to reverse the order; ie. 2B and 1E becomes 1E2B.

Now we use Table 1 to convert these hex quads to a decimal number that the BALLY can understand.

For example: $1 \rightarrow 1 \times (16)^3 = 4096$
 $E \rightarrow 14 \times (16)^2 = 3584$
 $2 \rightarrow 2 \times (16)^1 = 32$
 $B \rightarrow 11 \times (16)^0 = 11$

7723



With these final decimal numbers available we can set up the program to call in the sub-routine. FFD5 (-43 in decimal) will fetch the sub-routine.

$\%(20200) = -43$
 $\%(20202) = 7723$ (see Table 2)
 $\%(20204) = -22013$ "
 $\%(20206) = 17988$ "
 $\%(20208) = -13871$



A value of -13871 will return from the sub-routine to the place left in the original program.

To activate this, use the instruction CALL 20200 and a single red stripe will appear.



If you're wondering what happened, a review of the Peek n' Poke manual may help. This particular program uses variables W to Y in locations 210 to 230 so they can be used successively for each color pattern. It also conserves on memory and keeps a larger screen area clear for the picture.

Try your hand at the use of this color sub-routine for your own designs.

MANUALS+MANUALS+MANUALS

1. Bally On-Board ROM Sub-Routines. Explains the use of the on-board routines which allow you to perform such things as you find in the "Machine Language Programs" in Cursor. Includes ASCII Standard & Nonstandard Character Sets, Cassette Memory Structure; Output Ports; Input Ports; Bally Data Base Locations; Bally Memory Locations; and On-Board ROM BK Hex Dump. \$3.99
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WHAT-ZIT is a fun game using your powers of logic, reason and deduction. The object is to guess a number the computer picks, using clues from the screen. Two difficulty levels are provided. Level one allows the computer to choose a 4 digit number with no individual digit greater than 5 or less than 1. Level two again allows the computer to choose a 4 digit number, with no individual digit greater than 9 or less than 1. To choose a digit squeeze the trigger when the number you want lights up. Should you wish to keep any digits from a previous guess, squeeze your trigger when the blank square lights up. After you have entered your fourth number the computer will tell you: 1. How many of the digits are in the right place and are correct. 2. How many of the digits are correct but in the wrong place. 3. How many of the digits are wrong. Just to make it interesting the computer does all of this but does not tell you which number is which. Anytime you want to quit and find out what the computer's number is, squeeze your trigger when you see the "GIVE" sign. The number of tries you have made is always displayed in the lower right hand corner of the screen. At the end of the game, should you wish to play another, squeeze your trigger and a new game will begin.

```

5 CLEAR ;NT=1;BC=80;FC=135;CX=-51;CY=8;
  PRINT "DIFFICULTY 1 OR 2";CX=-21;INPU
  T "INPUT ?"T;IF T>2GOTO 5
10 IF T=1K=5;GOTO 25
20 K=9
25 CLEAR ;CY=22;CX=-58;PRINT "RIGHT■■■■■
  ■■■■■WRONG";CY=4;CX=-51;PRINT "RIGHT
  # WRONG PLACE";CY=-16;CX=-59
30 PRINT "YOUR #■■■■■■■■# TRIES";CY=41;C
  X=-18;PRINT "LEVEL ",#1,T;FOR A=32TO
  -32STEP -8;CY=A;CX=75
32 PRINT "?";MU=14;CY=A;CX=-75;PRINT "?
  ";MU=14;NEXT A;FOR X=-63TO 63STEP 6;CX
  =X;CY=32;PRINT "?";NEXT X
38 BOX -75,0,8,73,3;BOX 0,32,142,9,3;BOX
  75,0,8,73,3;S=0;FOR A=1TO 16;@ (A)=0;
  NEXT A
40 FOR B=1TO 4;@ (B)=RND (K);NEXT B;XY=-
  5692;LINE 60,-23,3;XY=-8764;LINE 60,
  -35,3;A=-48;B=-54;BOX -60,-29,1,11,3
50 FOR Z=0TO 9;CY=-29;CX=B;PRINT #1,Z;L
  INE A,-24,4=XY;LINE A,-34,3;A=A+12;B
  =B+12;NEXT Z;BOX -54,-29,11,11,2
60 L=0;M=0;N=0;C=1;X=5;FOR Q=9TO 16;@ (Q
  )=0;NEXT Q
65 GOSUB 180
70 B=-54;FOR Z=0TO K;BOX B,-29,11,11,3;
  FOR A=1TO 30;IF TR(1)GOTO 90

```

```

80 NEXT A;BOX B,-29,11,11,3;B=B+12;NEXT
Z;GOTO 70
90 CY=-6;CX=P;BOX B,-29,11,11,3;IF Z=0Z
=@(X)
100 GOSUB 180;C=C+1;NT=1;PRINT #1,Z;MU=1
4;MU=16;MU=14;@(X)=Z;X=X+1;NT=0;IF C
=5GOTO 120 --
110 FOR Q=1TO 100;NEXT Q;GOTO 65
120 S=S+1;FOR Y=1TO 4;IF @(Y)=@(Y+4)L=L+
1;@(Y+12)=1;@(Y+8)=1;IF L=4GOTO 150
130 NEXT Y;FOR Y=1TO 4;FOR U=5TO 8;IF @(
U)=@(Y)IF @(U+4)=0IF @(Y+12)=0@(U+4)
=1;@(Y+12)=1;M=M+1
140 NEXT U;NEXT Y;N=4-(L+M);CY=13;CX=-51
;NT=1;PRINT "+",#1,L,#1,"+", "#####+",
#1,M,#1,"+", "#####+",#1,N,#1,"+";NT
=0
141 CY=-6;CX=48;PRINT #1,S," ";FOR Q=1TO
10;CY=22;CX=-14;PRINT "GIVE??";BOX 0
,22,39,8,2
145 IF TR(1)GOTO 150
147 NEXT Q;NT=0;FC=BC+4+RND (32)x8;GOTO
60
150 BOX 0,14,142,28,2;CX=-17;CY=20;PRINT
"MY # IS";FOR Q=1TO 4;CY=6;CX=-29+(
Qx12);PRINT #1,@(Q);NEXT Q
155 IF L=4&(21)=255;FOR Q=150TO 10STEP -
1;BC=FC;&(19)=Q;BC=80;NEXT Q;&(21)=0
;&(19)=0
160 IF TR(1)GOTO 10
170 GOTO 160
180 P=-74+(Cx12);BOX P-1,-6,11,11,3;BOX
P-1,-6,9,9,3;RETURN

```



Mike Peace of "WaveMakers" has outdone himself with his latest offering-Tape number 9, "PACK RAT" (\$10.95), P.O. Box 94801, Schaumburg, IL 60193.

For those of you familiar with the Penny Arcade game "PAC-MAN" this program is as close to the real thing as you can get in BASIC.

The screen is laid out in a maze type structure with dots spaced in equal intervals. Your object is to go through the maze and gather points by eating the dots until they are all gone. That seems easy enough, until the "PACK RAT" comes after you. The "PACK RAT" has only one object, and that is to eat you. On top of all this is a bonus square in the center of the board that is turned on at random intervals-to collect the bonus, you must reach the bonus square before you eat five additional dots and also before the "PACK RAT" eats you.

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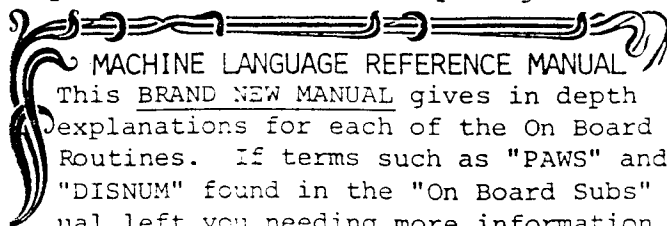
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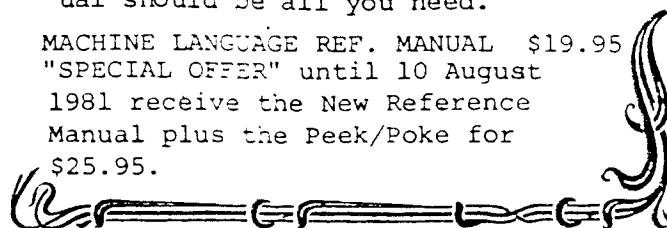
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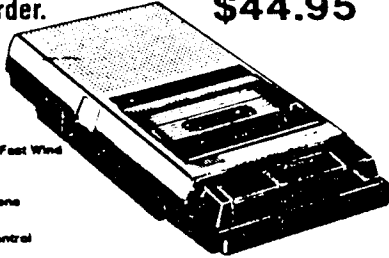




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