ASTROCADE STATUS remains about the same. They made a showing at the Ohio State Fair earlier this month, selling units from a booth. The Cosmic Raiders and Solar Conqueror cartridges are in the pipe line now, and have shown up at a couple of distributors. They should be available in stores by the time you receive this.

VIPER ZGRASS STATUS is moving along, though slowly. The first four or five hand soldered units should be moving out to the software developers by the end of this month, so that some programs will be available when the unit becomes available (or shortly thereafter).

ARCADE CABINET We showed a photograph of the "Point of Purchase" (POP) display cabinet that Astrocade provided to dealers, on page 73. The unit has space for the Arcade, 4 controllers, a TV, and plenty of cartridge, etc., storage or whatever. The Santa Cruz Wire & Mfg Co., (408) 423-9211, has reduced the price to $220, FOB 411 Swift St., Santa Cruz, CA 95060, with a quantity break at 5 units. These are new, of course; and Allen Skaggs, 9421 Sunset Dr. Tampa, FL 33610 indicates that he has a source for some used units, so you fellows in the South might drop him a line.

PROGRAM DUMPS If you are interested in seeing what is in a cartridge, we can provide a hex dump at reasonable rates (10¢ a page). This will include the small 16-character 'English' notation at the side, in the standard format. There are about 880 characters on a page. Let me know if you are interested.

BATTING AVERAGE CORRECTION The program on page 138 should be written so that line 270 is split into two. Make the break after the GOTO 300 statement, starting a new line 280 with R=*(17) and so forth.

JOYSTICK MAGAZINE ARTICLE (in the September issue) discusses the "Astro Underground", namely this operation of Newsletter, its advertisers, and you the subscribers. A very positive work, with lots of data (names & addresses of software suppliers) that would be useful to an Arcade owner not familiar with the support that has and continues to be provided.

PEEK & POKE MANUAL Last month's mention (p.137) brought forth the revelation that a small number of the original Manuals are still available. Since Brett Bilbrey is currently too busy to 'modernize' or update the Manual, it looks like the old version will be around for a bit. You can get your copy now by sending $5. This Manual will add to your knowledge of the inner workings of the machine, and help in your programming ability.

ASTROBUG GETTOGETHER is discussed on pages 161 and 162. If there is any chance of your being in the neighborhood, we urge you to attend this gathering of enthusiasts. All the events and features are described by Peggy Gladden, and I'm sure everyone will have a bang-up time!

Catch this **SUPER SALE** from ABC Hobbycraft

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ABC HOBBYCRAFT / 2155 E. Morgan Av. / Evansville, IN 47711

```
1 CLEAR;NT=1;Q=0;N=1;S=100
2 PRINT "SPACE SPIDERS";FOR A=1TO 5000;NEXT A;CLEAR
3 CY=40
10 R=2;F=1;Z=4
20 IF Q<-10;BC=90;W=BC;X=40;Y=30;D=-6;E=0;S=100;R=Q;GOTO S
30 IF Q<100;BC=0;W=BC;X=0;Y=90;D=-12;E=2;S=100;R=Q;GOTO S
40 IF Q<200;BC=203;W=BC;X=0;Y=21;D=-6;E=0;S=100;R=Q;GOTO S
50 IF Q<300;BC=250;W=BC;X=0;Y=31;D=-6;E=0;S=100;R=Q;GOTO S
60 IF Q<400;BC=149;W=BC;X=-25;Y=-20;;D=-5;E=5;S=100;R=Q;GOTO S
100 BOX X,Y,F,F,1;F=F+1
101 IF X<10;IF X>-10;IF Y<10;IF Y>-10;Q=Q-25;CY=40;PRINT Q;*(5)=0;*(6)=RND (5);G
OSUB 2000
105 IF F>15;F=0;CLEAR
110 U=X;V=Y
120 BOX 0,0,3,3,1
130 IF X>0D=D-1
140 IF X<0D=D+1
150 IF Y>0E=E-1
160 IF Y<0E=E+1
170 X=X+D;Y=Y+E
180 IF JY(1)=1;M=44;GOTO 600
190 IF JY(1)=-1;M=-44;GOTO 600
200 IF JX(1)=1;N=85;GOTO 800
210 IF JX(1)=-1;N=-85;GOTO 800
600 A=KN(1)c2
610 IF TR(1)LINE A,M,1;LINE 0,0,2;LINE A,M,2;LINE 0,0,4;CY=40;Q=Q-1;PRINT Q
615 IF TR(1);IF A#0;IF X#0;IF YcX=McA;CLEAR ;F=0;CY=40;Q=Q+10;PRINT Q;T=1;GOSUB
1000
616 IF Q>R+100;S=20
617 IF Q<R;S=20
618 IF Q>500;A=0;GOTO 3000
619 IF BC=149;BOX RND (160)-80,RND (80)-40,1,1,1;FC=RND (256);GOTO 100
620 BOX U,V,F,F,2;GOTO S
800 A=KN(1)c2
810 IF TR(1)LINE N,A,1;LINE 0,0,2;LINE N,A,2;LINE 0,0,4;CY=40;Q=Q-1;PRINT Q
815 IF TR(1);IF X#0;IF N#0;IF YcX=AcN;Q=Q+2;CY=40;PRINT Q;GOSUB 1000
816 IF Q>R+100;S=20
820 BOX U,V,F,F,2;GOTO S
1000 NM=3;NV=15;NT=0;MO=49;VA=15;TA=TA-T
1005 BC=0;FC=7
1006 IF BC=149;T=RND (20);Z=100
1010 IF T<RND (Z)GOTO 1000
1020 TA=TA+10
1030 NT=1
1040 NV=NV-1;VA=VA-1;IF VA=0;`;RETURN
1050 BC=W;GOTO 1040
2000 MO=100;VA=15
2010 NM=0;VR=RND (63);VF=RND (4);MO=MO-1
2020 TA=MO
2030 BOX RND (4)-2,RND (4)-2,RND (5),RND (5),1
2031 IF *(5)=0;*(1)=RND (40)-40;*(2)=RND (40)-40;*(3)=RND (10)-10;*(4)=RND (10)-
10;*(5)=1
2032 LINE *(1),*(2),1
```

STEVE KENNEDY
PO BOX 71
GORMLEY, ONTARIO. L0H 1G0 CAN.

A MULTI-LEVEL LASER SHOOT-EM-UP. USE TR
FOR A SHOT: USE JX & JY FOR DIRECTION (JX
MUST BE HELD TO ACTUATE): HITS BY JX
ARE 2PTS, BY JY ARE 10 PTS. LEVELS
DETERMINED BY BC (RED, BLACK, GREEN,
BLUE, YELLOW) YELLOW IS HYPERSPACE
WITH SPIDER MOTHERSHIP (100 PTS). DON'T
LET SPIDER GET YOU!

```
2033 IF *(1)>0*(3)=*(3)-1
2034 IF *(1)<0*(3)=*(3)+1
2035 IF *(2)>0*(4)=*(4)-1
2036 IF *(2)<0*(4)=*(4)+1
2037 *(1)=*(1)+*(3);*(2)=*(2)+*(4)
2040 C=C+1;BOX 0,0,30,30,2;IF C<200;GOTO 2000
2045 IF *(6)=5;GOTO 2000
2050 C=0;RETURN
2998 NT=0;CY=10;PRINT "ALL SECTORS & HYPERSPACE  LEVELS CLEARED OF PHANTOM SPACE
  SPIDERS
2999 FOR A=1TO 5000;NEXT A;CLEAR ;A=0
3000 MO=49;VA=15;VB=15;VC=15;NM=1;NV=15;TA=0;TB=0;TC=0
3001 TA=TA+2;TB=TB+4;TC=TC+8;IF TC<500;GOTO 3001
3030 A=A+5
3040 FC=FC+1;IF FC=256FC=8
3050 LINE 0,43,4
3060 LINE A,0,1
3070 LINE 0,-43,1
3080 IF A<260;GOTO 3030
3090 A=0;GOTO 2998
```

BLUE RAM PRINTER FUNCTIONS. The following data was received from Dave Carson, P.O.Box 39, Kipton, OH, 44049, relating to the utilization of the NEC 8023 printer in conjunction with the Blue Ram. This data is printed directly from Dave's letter, so that you can see what the results are for the various commands given. By using the "TV=nn" statements in a program, the printer will automatically shift into and out of the desired effect, as you desire. Dave also notes that setting switch 2-1 to "ON" will cause zeros to be 'slashed' (∅).

1.TV=14   GIVES: ENLARGED

2.TV=15   TURNS OFF ENLARGED

3.TV=27;TV=88   GIVES UNDERLINE

4.TV=27;TV=89   TURNS OFF UNDERLINE

5.TV=27;TV=81   GIVES COMPRESSED

6.TV=27;TV=69   GIVES ELITE FONT(12 CPI)

7.TV=27;TV=80   GIVES PROPORTIONAL SPACING

8.TV=27;TV=78   RETURNS TO PICA FONT(10 CPI) FROM ELITE, COMPRESSED, OR PROPORTIONAL SPACE.

9.TV=27;TV=33   GIVES DOUBLE STRIKE

10.TV=27;TV=34   TURNS OFF DOUBLE STRIKE

BOOLEAN (TRUE OR FALSE) LOGIC
DON GLADDEN

A NIFTY CHARACTERISTIC OF OUR COMPUTER THAT CAN SOMETIMES BE USED TO SAVE MEMORY AND SPEED UP A PROGRAM IS ITS ABILITY TO RECOGNIZE 'TRUE' OR 'FALSE' AS NUMERIC VALUES (ONE AND ZERO). IF YOU ARE NOT FAMILIAR WITH THIS METHOD, THE FOLLOWING WILL DEMONSTRATE:

```
PRINT (2+2=4)          (GO)
```
WE GET '1' RETURNED, WHICH MEANS 'TRUE'.
```
PRINT (2+2=5)          (GO)
```
THIS TIME WE GET A ZERO. (FALSE). ALL MATHEMATICAL EXPRESSIONS ARE EVALUATED BY THE COMPUTER THIS WAY. HOW CAN WE USE THIS TO OUR ADVANTAGE? WELL, AS USUAL, IT TAKES A BIT OF HEAD-SCRATCHING, BUT CAN BE WELL WORTH THE EFFORT IN MANY CASES. AT TIMES WE WILL FIND THAT ONE FORMULA USING BOOLEAN MATH CAN ELIMINATE MANY 'IF' STATEMENTS AND COMBINE THEM ALL INTO ONE LINE, THEREBY (USUALLY) SAVING PROGRAM SPACE FOR OTHER GOODIES. NOTE- THIS METHOD DOES NOT ALWAYS SPEED UP A PROGRAM, EVEN THOUGH IT MAY TAKE UP LESS SPACE. (BY EXECUTING A FORMULA RATHER THAN CHECKING 'IF' STATEMENTS EACH TIME, THE COMPUTER IS PROBABLY DOING MORE WORK, AS IT SIMPLY CHECKS EACH 'IF' STATEMENT IN THE FORMER CASE, AND IF NOT TRUE, JUMPS DIRECTLY TO THE NEXT LINE WITHOUT FURTHER EXECUTION). THE BEST WAY TO FIND OUT WHICH METHOD IS THE FASTEST IS TO SIMPLY TRY BOTH WAYS.

HERE ARE SOME 'BEFORE AND AFTER' EXAMPLES OF HOW TO APPLY THESE METHODS:

```
>10 CLEAR
>20 FOR A=1TO 30
>30 CX=20
>40 IF A<2ICX=-20
>50 IF A<1ICX=-60
>60 IF CY<-32CY=40
>70 PRINT #2,A
>80 NEXT A
```

WHAT THIS SHORT PROGRAM DOES IS SIMPLY PRINT THREE COLUMNS OF NUMBERS IN 10'S. LINES #30 THROUGH #50 TELL THE COMPUTER THE HORIZONTAL POSITION OF WHERE TO PRINT THE NUMBERS. WE CAN ELIMINATE THESE THREE LINES (AND TWO 'IF' STATEMENTS) WITH THIS:

```
>30 CX=-60+((A>10)+(A>20))b40
```

THIS LINE WILL LOOK AT THE VALUE OF 'A', AND ADJUST THE CX VALUE TO THE SAME AS THE 'IF' STATEMENTS FROM THE PREVIOUS PROGRAM. IT WILL SET IT TO -60 PLUS 40 IF A IS MORE THAN TEN OR PLUS 80 IF IT IS MORE THAN TWENTY. LINE #60 CAN ALSO BE CHANGED TO ELIMINATE THE 'IF' STATEMENT:

```
>60 CY=CY+(CY<-32)b80
```

THIS WILL ADD EITHER ZERO OR EIGHTY TO OUR CY VALUE. (TO PUT IT BACK TO THE TOP OF THE SCREEN WHEN NECESSARY). HERE'S ANOTHER GOOD EXAMPLE: SUPPOSE WE WANT A "FLIP-FLOP" FLAG (WHEW!) IN OUR PROGRAM. THAT IS, WE WANT A

VARIABLE TO TOGGLE IT'S VALUE FROM ONE TO ZERO AND BACK TO ONE AGAIN EACH TIME. THE OBVIOUS WAY WOULD BE THUS:

```
>100 IF A=0A=1
>110 IF A=1A=0
```

THIS WORKS, BUT IF WE THINK A LITTLE...

```
>100 A=(A=0)
```

THAT'S ALL! SIMPLE ISN'T IT?

REMEMBER TO TEST BOTH WAYS TO MAKE SURE YOU HAVE USED THE MOST EFFICIENT.

ANOTHER SHORT-CUT AND BYTE SAVER IS TO USE COMPUTED GOTO'S AND GOSUB'S. THE BEST WAY TO EXPLAIN THESE IS WITH AN EXAMPLE.

```
>10 CLEAR
>20 INPUT A
>30 IF A=1GOTO 100
>40 IF A=2GOTO 200
>50 IF A=3GOTO 300   ....ETC.
```

THIS CAN EASILY BE SHORTENED TO:

```
>10 CLEAR
>20 INPUT A
>30 GOTO Ab100
```

WE HAVE AGAIN ELIMINATED ALL OF OUR 'IF' STATEMENTS AND SHORTENED THINGS UP. YOU MAY HAVE TO PLAN YOUR LINE NUMBERS TO FIT THE ROUTINE, BUT IT IS WELL WORTH IT. IF YOU HAVE A MENU-DRIVEN PROGRAM WITH QUITE A FEW ITEMS ON THE MENU, YOU CAN USE THIS ROUTINE WHICH IS VERY EASY TO CHANGE IF YOU HAVE ANY MORE ITEMS TO ADD IN THE FUTURE:

```
>1 CLEAR ;GOTO 10
>2 PRINT "ENTER TEXT";RETURN
>3 PRINT "EDIT";RETURN
>4 PRINT "LIST";RETURN
>5 PRINT "FILE";RETURN
>10 FOR A=1TO 4
>20 PRINT #1,A,"-",
>30 GOSUB A+1
>40 NEXT A
>50 INPUT A
>60 GOTO Ab100
```

NOW ANY TIME YOU HAVE SOMETHING TO ADD, JUST ADD LINE #6, #7, ETC. AND CHANGE THE LOOP IN LINE #10 TO THE NEW NUMBER OF ITEMS ON THE MENU. NOTICE ALSO THAT WE USED THE VARIABLE 'A' MORE THAN ONCE. THIS IS ALWAYS PERMISSABLE WHEN YOU DO NOT NEED THE VALUE STORED ANY MORE IN YOUR PROGRAM.

DON GLADDEN
59400 NINE MILE ROAD
SOUTH LYON, MICHIGAN
            48178

::

NOTE TO AUTHORS:
WE AGAIN WOULD LIKE TO PUT OUT AN APPEAL FOR TUTORIALS AND ARTICLES. IF YOU CAN WRITE ABOUT ANYTHING, PLEASE LET ME KNOW. IT DOES NOT HAVE TO BE LONG, JUST INTERESTING! JUST SEND IT HAND-WRITTEN, AND WE'LL DO THE REST.

```
 1 .
 2 .BIORHYTHMS
 3 .FACT OR FICTION
 4 .BY CATHY COLLINS
 5 .
 6 A=85;GOTO 500
 9 PRINT ;INPUT " MONTH NUMBER"M," DAY"D," YEAR 19--"Y
10 IF (D<0)+(D>31)+(M<0)+(M>12)GOTO 9
15 T=Yc4;T=T+D-5+(Y-20)b365
20 IF RM=0IF M<3 T=T-1
25 IF M=1GOTO 45
30 FOR L=1TO M-1;T=T+30;IF L=2 T=T-2
35 IF L#2IF L#4IF L#6IF L#9IF L#11 T=T+1
40 NEXT L
45 RETURN
50 GOSUB 9;R=T;S=R-B+1;P=Sc23;P=RM;Q=0
55 IF (RM=0)+(RM=11)Q=1
60 E=Sc28;E=RM;F=0;IF (RM=0)+(RM=14)F=1
65 I=Sc33;I=RM;H=0;IF (RM=0)+(RM=16)H=1
70 C=0;IF (Q=1)+(F=1)+(H=1) C=1
75 RETURN
95 CLEAR ;FOR L=1TO 23;BOX -63+Lb4,*(L),1,1,3;NEXT L
100 FOR L=1TO 28;BOX -63+Lb4,*(L+23),1,2,3;NEXT L
110 FOR L=1TO 33;BOX -63+Lb4,*(L+51),2,1,3;NEXT L
120 FOR L=0TO 33;BOX -63+Lb4,8,1,3,3;NEXT L
130 LINE -63,8,4;LINE 69,8,3
150 BOX -63+Pb4,*(P),3,3,3;BOX -63+Eb4,*(E+23),3,4,3
160 BOX -63+Ib4,*(I+51),4,3,3
170 CY=40;CX=13;PRINT "P=";BOX 31,40,1,1,3
174 CY=32;CX=13;PRINT "E=";BOX 31,32,1,2,3
176 CY=24;CX=13;PRINT "I=";BOX 31,24,2,1,3
180 CY=-32;RETURN
500 CLEAR ;BC=7;PRINT "WHAT IS YOUR BIRTHDATE?
510 GOSUB 9;B=T
520 PRINT "ENTER TODAY'S DATE
530 GOSUB 50;O=S;PRINT "YOU ARE",O," DAYS OLD
540 PRINT "TODAY IS",;IF C=0PRINT " NOT",
550 PRINT " CRITICAL";FOR L=1TO 2000;NEXT L;GOSUB 95
600 PRINT " BIORHYTHM SURVEY INPUT   HELP=1  OR  END=2",;L=KP
620 IF L#49GOTO 500
630 CLEAR ;SM=0;BC=7
640 PRINT "PLEASE HELP WITH BIORHYTHM
650 PRINT "SURVEY. ENTER CODE BELOW  TO INPUT THE DATE WHEN YOU
670 PRINT " 1= HAD AN ACCIDENT OR ANOTHER PHYSICALLY BAD DAY
680 PRINT " 2=  HAD A BAD FIGHT WITH FAMILY OR FRIENDS OR A BAD EMOTIONAL DAY
690 PRINT " 3= FAILED A TEST OR HAD A BAD INTELLECTUAL DAY
700 PRINT " 4= FORGOT DATES",;J=KP-48;IF (J<1)+(J>4)GOTO 500
720 IF J=4Z=Z+1;GOTO 900
730 GOSUB 50;IF J=1U=U+1;IF Q=1U=U+1;IF Q=0PRINT "NOT ",
750 IF J=2G=G+1;IF F=1N=N+1;IF F=0PRINT "NOT ",
780 IF J=3W=W+1;IF H=1X=X+1;IF H=0PRINT "NOT ",
790 PRINT "CRITICAL"
800 IF A<130A=A+3;*(A)=B;*(A+1)=S;*(A+2)=J
900 PRINT ;PRINT "THANK YOU";GOTO 500
```

CATHY COLLINS
713 BRADFORD DR
FT. WALTON BEACH FL 32548

The waiting is almost over...
Z-GRASS 1200 is coming
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The *Z-GRASS 1200* expansion makes your **ASTROCADE** into a professional home computer system that far outstrips any comparably-priced system on the market. Half the secret is the **Z-GRASS** computer language, developed to be the easiest language to learn and use! The other half is the range of features that are STANDARD on the *Z-GRASS 1200*. Take a look at these specifications:

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If you change your mind **anytime** before delivery, **ABC Hobbycraft** will allow you to take your deposit out in trade in any **ASTROCADE** merchandise, so you risk nothing to order now! Moreover, we have a special bonus for those who order in advance of delivery!

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Evansville, IN 47711
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24-hour order line!

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MUSIC PROCESSOR COMMANDS PART II
A TUTORIAL
BY GEORGE MOSES

IN THE JUNE '83 ISSUE OF ARCADIAN (PAGE 128) WE DESCRIBED THE PROCEDURES TO USE THE BLUE RAM BASIC "PLAY" COMMAND. THIS ARTICLE WILL CONTINUE WHERE WE LEFT OFF. HERE WE'LL DESCRIBE EVERY COMMAND BUILT INTO YOUR MUSIC PROCESSOR. THE FORMAT WE WILL FOLLOW WILL BE THE "OP CODE" IN HEX, FOLLOWED BY A DESCRIPTION OF WHAT THAT COMMAND DOES.

THE COMMANDS:
00 THRU 7F
A NUMBER IN THIS RANGE IS TAKEN AS A CONTROL BYTE WHICH SPECIFIES DURATION IN SIXTIETHS OF A SECOND. THE DURATION BYTE IS FOLLOWED BY THE DATA TO PLAY. (SEE JUNE ARTICLE, PAGE 128)

80H THRU 87H
THE VALUE OF THE NEXT BYTE WILL BE LOADED INTO THE PORT NUMBER DESCRIBED BY THE LOWER 3 BITS OF THE ABOVE NUMBER PLUS 10H. EXAMPLE OF THIS: 80 . THE NEXT BYTE WILL LOAD PORT 10H OR 16 DECIMAL, THE MASTER OSCILLATOR. SO, 80 23 SETS THE MO TO 23H. 81 WILL BE FOLLOWED BY A VALUE TO LOAD PORT 11H. AND SO ON ALL THE WAY TO 87H TO LOAD PORT 17H (NOISE)

88H THRU 8FH
THE NEXT 8 BYTES WILL LOAD PORTS 17H, 16H, 15H, 14H, 13H, 12H, 11H AND 10H RESPECTIVELY AND YOU'LL HAVE TO LOAD THEM ALL (EVEN WITH ZEROES) BECAUSE THE MUSIC PROCESSOR WILL BE EXPECTING ALL 8 BYTES OF DATA TO STORE

90H
THE NEXT BYTE IS THE STRING FORMAT IDENTIFIER, TELLING THE COMPUTER WHICH PORTS'RE GOING TO BE LOADED IN THIS STRING FORMAT. THE FORMAT WILL BE ONE DURATION BYTE, FOLLOWED BY THE BYTES TO LOAD EACH PORT EXPECTED BY THE PROCESSOR ACCORDING TO THE FORMAT YOU SELECTED.

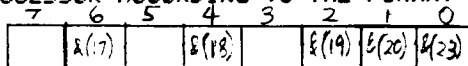| 7	6	5	4	3	2	1	0
	A(17)		B(18)		C(19)	C(20)	N(23)

FIG. 1
THE NUMBER OF BYTES THAT WILL FOLLOW THE DURATION BYTE IS EQUAL TO THE NUMBER OF BITS SET IN POSITIONS 0, 1, 3, 5, AND 7 OF THE STRING FORMAT IDENTIFIER. EXAMPLE:

```
90H    ;NEXT BYTE IS STRING FORMAT IDENT.
C0H    ;IN BINARY C0 IS 1100 0000. EXPECT
       ;ONE BYTE DEFINING TONE A AFTER EACH
       ;DURATION BYTE.
0FH    ;DURATION BYTE OF 15/60THS OF A SEC.
19H    ;LOAD VOICE A (PORT 11H) WITH A FREQ.
       ;OF 19H
0FH    ;DURATION OF 15/60TH OF A SECOND.
30H    ;VOICE A=30H
```

AND SO ON, UNTIL YOU CHANGE THE FORMAT OF THE STRING.

91H THRU AFH
ARE THE COMMANDS TO REPEAT A SOUND STRING. THIS WILL PUSH A NUMBER ON THE MUSIC STACK EQUAL TO THE LOWER 4 BITS PLUS ONE. EXAMPLE: 91H=1001 0001 IN BINARY. YOU CAN SEE THE LOW 4 BITS EQUALS 1. IF THE NUMBER PUSHED ON THE STACK EQUALS THE LOWER 4 BITS PLUS ONE, THAT NUMBER WILL BE ONE PLUS ONE, OR TWO! IF YOU WISH THE STRING TO BE PLAYED TWICE, BEGIN THE STRING WITH THE 91H AND END THE STRING WITH A C0H WHEN THE C0 IS ENCOUNTERED THE

NUMBER ON THE STACK WILL BE DECREMENTED BY ONE AND THE PROGRAM BRANCHES TO THE ADDRESS SPECIFIED BY THE NEXT TWO BYTES. THAT ADDRESS SHOULD BE THE BEGINNING OF THE STRING TO BE REPEATED. AFTER PLAYING THE STRING TWO TIMES AND DECREMENTING THE NUMBER STORED ON THE STACK TO ZERO, THE PROGRAM WILL SKIP THE 2-BYTE ADDRESS FOLLOWING THE C0 AND GO ON TO THE NEXT PIECE OF DATA STORED. SO THE REPEAT COMMAND, 91H THRU AFH WILL PUSH THE NUMBERS 2 THRU 16 ON THE STACK. JUST SELECT THE ONE YOU WANT AND PLACE IT AT THE BEGINNING OF YOUR STRING!

B0H
THE NEXT TWO BYTES CONTROL VOLUME IN PORTS 16H AND 15H RESPECTIVELY. B0 77 07 SETS THE VOLUME PORT 16H TO 77H AND PORT 15H TO 07, SETTING THE VOLUMES OF ALL 3 VOICES TO 7. (PORT 16H CONTROLS VOL. A WITH THE LOWER NIBBLE AND VOL. B WITH THE UPPER NIBBLE).

C3H
JUMP TO ADDRESS SPECIFIED BY NEXT 2 BYTES
```
C0 00 80 ;JUMP TO ADDRESS 8000H AND
         ;CONTINUE PLAYING DATA FROM THERE
```

CAH
CALL ADDRESS SPECIFIED BY NEXT TWO BYTES AND PUSH RETURN ADDRESS ON THE STACK.

D0 THRU DFH
CALL RELATIVE (PLUS LOWER 4 BITS), PUSH THE RETURN ADDRESS. EXAMPLE FOLLOWS:
```
D8    ;CALL CURRENT PROGRAM COUNTER AD-
      ;DRESS +8 AND PUSH RETURN ADDRESS
      ;ON THE STACK
```

C0H
DECREMENT COUNTER THAT YOU PUSHED ON STACK WITH THE 91H THRU AFH COMMAND, THEN JUMP TO THE ADDRESS SPECIFIED BY THE NEXT TWO BYTES IF COUNTER IS NON-ZERO. SKIP NEXT 2 BYTES, POP COUNTER IF IT IS ZERO.

C9
POP ADDRESS STORED ON STACK. RETURN TO THAT ADDRESS AND CONTINUE FROM THERE.

E0
REVERSE SLUR INDICATOR. WHEN THIS COMMAND IS ENCOUNTERED IT ALLOWS NOTES TO SLUR FROM ONE CHORD TO THE NEXT WITH NO SILENCE IN BETWEEN IF THE SLUR INDICATOR IS "ON" AND THE E0 HEX COMMAND COMES UP AGAIN THE SLUR WILL TURN "OFF" AND YOU WILL HAVE A STACCATO EFFECT IN THIS STATE EACH CHORD WILL BE "CLIPPED" BY 1/60TH OF A SECOND OF SILENCE BEFORE THE BEGINNING OF THE NEXT CHORD

E1
SILENCE FOR A DURATION STORED IN NEXT BYTE. (00 THRU 7FH), THEN CONTINUE MUSIC.

F0
ALL SOUND OFF. ZERO ALL SOUND PORTS. ABANDON READING ANY FURTHER DATA. END OF STRING

WELL. I HOPE THIS ANSWERS A FEW QUESTIONS ABOUT THE MUSIC PROCESSOR. NOW SOME OF YOU MAY BECOME GREAT SOUND EFFECTS PROGRAMMERS LIKE SCOT NORRIS. WHO DID ALMOST ALL OF THE AUDIO WORK ON THE CARTRIDGES YOU HAVE IN YOUR BALLY ARCADE SLOTS. HAPPY NOISE MAKING!

GEORGE MOSES
P.O. BOX 686
BRIGHTON. MI
    48116

PRIZE WINNER!

```
3 .LOCKSMITH
4 .BY DON CRIDER
5 .20 30 60 8000070080000
8 &(0)=123;&(1)=123;&(2)=80;&(3)=80
10 CLEAR ;L=0;J=30;BC=8;FC=12;&(9)=44
20 NT=3;CX=-25;CY=20;PRINT "LOCKSMITH";GOSUB 600
30 CX=-55;CY=-20;PRINT "DIFFICULTY? (1-3)";K=KP
40 IF K=49S=15;GOTO 90
50 IF K=50S=15;L=1;GOTO 90
60 IF K=51S=10;GOTO 90
70 GOTO 30
90 FOR F=1TO 7
100 V=RND (16)b10c2-30
110 @(F)=V;NEXT F
120 F=1;D=0;&(9)=7;CLEAR
130 FOR H=11TO 17
140 @(H)=@(F);F=F+1;NEXT H
150 G=30;FOR F=11TO 17;IF @(F)>67@(F)=-45
155 IF @(F)<-47@(F)=65
160 NEXT F
170 BOX 10,G,120,5,1;G=G-S
180 IF G<-30GOTO 200
190 GOTO 170
200 H=11;G=30
210 BOX @(H),G,7,5,2
220 H=H+1;G=G-S;IF G<-30GOTO 240
230 GOTO 210
240 A=40
250 NT=0
260 A=A-2;CX=11;CY=A;PRINT "`",
270 NT=3;MU=Ac6+58
280 B=PX(10,A-6);IF BGOTO 310
290 IF A<-30GOTO 610
300 GOTO 250
310 NT=0
320 FOR A=ATO 40STEP 2;CX=11;CY=A
330 BOX 10,A-3,3,4,2;PRINT "`",
340 NT=2;MU=Ac6+58
350 NT=0;NEXT A
370 BOX -65,0,8,68,2
380 CX=-65;CY=J;PRINT "a"
390 J=J+(JY(1)b5);IF J<-30J=-30
400 IF J>30J=30
410 IF JX(1)M=JX(1)b5;GOTO 430
420 GOTO 370
430 D=D+1
440 IF J=30@(11)=@(11)+M;@(15)=@(15)+M;@(17)=@(17)+M;GOTO 150
450 IF J=20@(12)=@(12)+M;@(15)=@(15)+M;GOTO 150
460 IF J=15@(12)=@(12)+M;@(14)=@(14)+M;GOTO 150
470 IF J=10@(13)=@(13)+M;@(17)=@(17)+M;GOTO 150
480 IF J=0IF S=15IF L=1@(13)=@(13)+M;@(12)=@(12)+M;GOTO 150
490 IF J=0IF S=15@(13)=@(13)+M;GOTO 150
500 IF J=0GOTO 560
510 IF J=-10@(15)=@(15)+M;@(13)=@(13)+M;GOTO 150
520 IF J=-15GOTO 560
530 IF J=-20@(16!=@(16)+M;@(12)=@(12)+M;GOTO 150
540 IF J=-30IF S=15@(15)=@(15)+M;@(13)=@(13)+M;GOTO 150
550 IF J=-30@(17)=@(17)+M;@(14)=@(14)+M;GOTO 150
560 @(14)=@(14)+M;@(11)=@(11)+M;GOTO 150
600 FOR T=500TO 1STEP -1;NEXT T;RETURN
610 NT=3
620 FOR Y=-24540TO -24518STEP 2
630 Z=%(Y)c256;IF RM=13GOTO 660
640 MU=RM;IF Z=13GOTO 660
650 MU=Z;NEXT Y
660 &(9)=128;FC=123
670 CLEAR ;CX=-68;CY=20
680 PRINT "YOU MADE IT IN",#3,D,#3," MOVES!
690 GOSUB 600
700 CX=-55;CY=-16;PRINT "1.FOR SAME LOCK
710 CX=-55;PRINT "2.FOR NEW LOCK
720 K=KP;IF K=49GOTO 120
730 IF K=50GOTO 10
740 GOTO 720
800 A=A+JX(1)
810 CX=-60;PRINT A
820 &(9)=A
830 GOTO 800
```
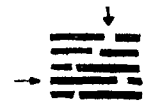
DON CRIDER
1755 GAYLORD
MUSKEGON MI 49445

OBJECT - LINE UP SLOTS WITH ARROW
AT TOP
JX MOVES SLOTS
JY SELECTS LINE

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PLAIN BASIC TALK
BY KEN ZIEL

AN EDITORIAL SERIES FOR NON-HACKERS THAT WANT TO KNOW HOW & WHY

HOW DOES THE ARCADE DO IT'S MATH?

HAVE YOU EVER TRIED TO FIGURE OUT WHAT HEX NUMBER YOUR DECIMAL NUMBER EQUATES TO? MAYBE YOU MIGHT WANT TO SEE JUST HOW THE 'ARCADE' WORKS INSIDE! THIS ARTICLE MAY BE OF SOME ASSISTANCE!

ONE THING THAT YOU SHOULD KNOW IS THAT THE 'ARCADE', AS WELL AS ALL OTHER COMPUTERS, WORKS IN BINARY, WHICH IS THE NUMBER BASE '2'! IT IS MADE UP OF A SERIES OF 'SWITCHES THAT ARE EITHER ON OR OFF! TO MAKE IT SOME-WHAT EASIER TO UNDERSTAND, IT IS A GENERAL PRATICE FOR COMPUTER BOOKS AND ARTICLES TO USE THE NUMBERS 0-(OFF) & 1-(ON)! WITH THIS TYPE OF NUMBERING SYSTEM, WE CAN ONLY ADD, COMPARE, OR 'INVERT'! YOU PROBABLY WONDER HOW COMPUTERS CAN SUBTRACT, MULTIPLY, AND DIVIDE IF THEY CAN ONLY ADD! WHAT THEY DO IS CHANGE THE SECOND NUMBER THAT THEY ARE WORKING WITH TO A 'COMPLEMENT' NUMBER! THIS COMPLEMENT IS DONE INSIDE OF THE Z-80 CHIP! TO MAKE IT EASIER TO UNDERSTAND, LOOK AT THE FOLLOWING EXAMPLE:

THE DECIMAL NUMBER IS - 200
IT'S HEX EQUIVILANT IS - C8
IT'S BASE 2 EQUIVILANT IS - 11001000

OUR 2ND DECIMAL # IS - 50
IT'S HEX EQUIVILANT IS - 32
IT'S BINARY EQUIVILANT IS - 110010

NOW WE WILL TAKE A LOOK AT A BINARY ADDING OF THESE 2 NUMBERS:

```
    11001000
  +   110010
  -----------
    11111010
```

NOW TO GET OUR DECIMAL EQUIVILANT, WE MUST START FROM THE RIGHT-MOST DIGIT (THIS IS KNOWN AS THE LEAST-SIGNIFICANT-BIT OR LSB') THIS BIT WILL EITHER BE THE DECIMAL 1 OR 0! FROM THAT BIT UNTIL THE BINARY NUMBER ENDS. EACH BIT IS 'WORTH' TWICE IT'S RIGHT-HAND NEIGHBOR. IF IT IS 'ON'! THE LEFT-MOST BIT IN ANY BINARY NUMBER IS KNOWN AS THE MOST-SIGNIFICANT-BIT OR MSB! NOW TAKE A LOOK AT OUR ANSWER. THE LSB IS A 0. THIS MEANS IT IS WORTH 0 'POINTS'. THE NEXT BIT IS A 1. IN THIS COLUMN IT IS WORTH 2. THE NEXT IS A 0, SO II IS WORTH 0! NEXT IS A 1. IT IS WORTH 8! ALL OF THE REMAINING NUMBERS ARE 1'S AND THEY ARE WORTH 16,32,64 & 128. NOW THAT WE HAVE FOUND OUT THEIR NUMBERS, ALL WE HAVE TO DO IS ADD ALL OF THESE NUMBERS UP!
2+8=10   10+16=26   26+32=58   58+64=122
122+128=250! SEE HOW EASY THIS IS!
TO MULTIPLY A NUMBER, THE FIRST NUMBER OF

THE 2 GIVEN IS ADDED TO ITSELF THE NUMBER OF TIMES THE 2ND NUMBER SAYS! NOW TO SHOW YOU A HARDER ADDITION, BEFORE WE SEE SUBTRACTION AND DIVISION! TAKE 200 + 100.
THE HEX EQUIVILANT OF 100 IS - 64
THE BINARY NUMBER FOR 100 IS - 1100100

```
    11001000
  + 1100100
  -----------
    100101100
```

NOTICE THAT WHEN TWO "1'S" ARE ADDED, THE RESULT IS A 0, AND A 1 IS 'CARRIED-OVER' TO THE NEXT COLUMN! THIS IS ALMOST THE SAME AS USING "5'S" AND "0'S"! THIS TENCNIQUE MAY BE EASIER FOR YOU TO UNDERSTAND. IF YOU DO DECIDE TO USE THIS WAY, DON'T FORGET TO DIVIDE YOUR "5'S" BY 5 WHEN YOU ARE DONE! NOW LET'S CALCULATE THE ANSWER:
4+8=12   12+32=44   44+256=300
LOOK AT THAT, IT WORKED OUT AGAIN! REMEMBER THAT ALL COLUMNS THAT HAVE 0'S IN THEM DON'T GET ADDED INTO YOUR TOTAL!!! NOW LET'S TAKE A LOOK AT THE "COMPLEMENT" PROCEDURE THAT IS DONE FOR SUBTRACTING AND DIVIDING. WE WILL TAKE THE DECIMAL NUMBER 50 FIRST. WHAT WE HAVE TO DO IS IN SEVERAL STEPS. THE 1ST STEP IS TO FIND THE "1'S" COMPLEMENT OF THE NUMBER. THIS IS DONE BY CHANGING ALL OF IT'S "1'S" TO 0 AND ALL OF IT'S "0'S" TO 1, LIKE THIS:

```
BINARY NUMBER - 00110010
1'S COMPLEMENT - 11001101
```
(NOTICE 'LEADING' 0'S ARE NEEDED TO MAKEIT INTO GROUPS OF 4!)

NOW COMES THE 2ND STEP, DOING A 2'S COMPLE-MENT TO OUR PROBLEM. LET'S SEE A "2'S" COMPLEMENT NUMBER OF 50.
11001101 = 1'S COMPLEMENT (ADD 1 FOR "2'S" COMPLEMENT) OF THE NUMBER 50
THE 2'S COMPLEMENT WILL LOOK LIKE THIS:

```
    11001110
```

NOW WE CAN SUBTRACT THIS NUMBER FROM OUR 200 BY ADDING. LIKE THIS:

```
    11001000
  +11001110
  -----------
  (1)10010110
```

NOW WE MUST 'DROP' THE LEADING 1. THIS 1 IS OUR 'SIGN' MARKER. IF IT IS A 1. IT MEANS THAT THE ANSWER IS POSITIVE! IF 0, THE AN-SWER IS NEGATIVE! WE CAN NOW COMPUTE OUR PROBLEMS ANSWER. LIKE THIS:
2+4=6   6+16=22   22+128=150
HOLY COW! THIS WORKS OUT, TOO!!
TO DIVIDE, JUST SUBTRACT THE 2ND NUMBER AS MANY TIMES AS POSSIBLE. WHEN THE AMOUNT LEFT IS LESS THAN THE 2ND NUMBER, THE REMAINDER IS PLACED INTO THE "RM" VARIABLE! EACH TIME A SUBTRACTION IS DONE, A 'VARIABLE' INSIDE OF THE Z-80 IS 'INCREMENTED' BY 1. THAT IS THE SAME AS USING A PROGRAM LIKE THIS:
```
>10 A=205:B=50:C=0:RM=0
>20 A=A-B
>30 IF A<B RM=A:GOTO 50
```

```
>40 C=C+1:GOTO 20
>50 PRINT #0,"205c50=",C," WITH A REMAINDER
OF ",RM
```

NOW LET'S SEE HOW EASY IT IS TO FIND A HEX NUMBER FROM A BINARY NUMBER! THE 1ST THING TO REMEMBER IS THAT THE 'HEXIDECIMAL' (HEX) NUMBERING SYSTEM USES THE NUMBERS 0-9 AND IT USES THE LETTERS A-F. THESE LETTERS TAKE THE PLACE OF THE NUMBERS 10-15. I.E. A=10 B=11 C=12 D=13 E=14 F=15. THE NEXT THING FOR YOU TO REMEMBER IS THAT IT ONLY TAKES 4 BITS OF BINARY NUMBERS TO CREATE ANY OF THESE HEX 'ALPHA - NUMERIC' DIGITS (1111 IN BINARY = F IN HEX, AND 15 IN DECIMAL!). SO IF YOU WERE TO START FROM THE RIGHT-HAND SIDE (ALWAYS!) AND COUNT LEFT 4 BITS, YOU WILL HAVE THE LSB OF YOUR HEX NUMBER! CONTINUE ON IN GROUPS OF 4 FOR THE REMAINING HEX NUMBERS. IF THERE IS NOT 4 BITS IN THE LAST GROUP, ADD "0'S" TO THE LEFT, TO MAKE UP THE DIFFERENCE!! USING THE 'OCTAL' SYSTEM (IT HAS A NUMBER BASE OF 8!) IS DONE SIMILARLY, EXCEPT THAT IN ONLY USES THE NUMBERS 0-7, AND IT ONLY USES 3 BITS IN EACH GROUP FOR IT'S NUMBER. I E 101110 BINARY = 2E HEX OR 56 OCTAL! TRY DOING SOME OF YOUR OWN CONVERSIONS YOU MAY BE SURPRISED AT HOW EASY IT CAN BE TO DO IT!

AS ALWAYS, IF YOU NEED ANY HELP, OR YOU HAVE ANY IDEAS FOR THIS COLUMN, PLEASE WRITE TO DON GLADDEN OR MYSELF! WE WILL BE MORE THAN HAPPY TO HERE YOUR COMMENTS AND/OR YOUR QUESTIONS!!

FOREVER LEARNING AND PROGRAMMING,
KEN LILL
6608 S. CAMPBELL
CHICAGO, IL. 60629

THE GAME PLAYER
by Michael Prosise

takes a pause to
answer the mail ...

THE GAME PLAYER has received numerous inquiries into the status of when Extended Basic (EB) game reviews will begin appearing in this column.

Software manufacturers are anxious to submit EB games to us here, and the consumers who have written indicate they are delaying their purchase of EB games to see what GAME PLAYER has to say about them.

Before I address this situation, let me first thank the many "Arcadians" who have written letters of praise and support. We at the GAME PLAYER headquarters were quite surprised at how many readers of the ARCADIAN turn to THE GAME PLAYER column first. We are pleased that the game reviews are so well received. To quote one writer, "your reviews are the only source of evaluation we have."

The status of EB (or Z-Grass, Blue Ram, or whatever system) game reviews is this: I do not have the funds ($$$) to purchase any add-on system. My game reviews are written entirely on a voluntary basis; I receive no payment for the reviews. (I even have to pay the $15.00 subscription rate for the ARCADIAN just like you!) Costs of mailing and printing are all paid for out of my own pocket. So unfortunately I will not for the time being, be able to provide you, the reader, any reviews of EB games. (Astrocade, however, has agreed to send me advance copies of any future cartridges.) Perhaps a group of software manufacturers will pool their resources and provide GAME PLAYER with an EB system, free of charge. Or perhaps an EB add-on manufacturer will offer to sell a system to me under a very special financial arrangement. Until then, I shall strive to continue to provide all of you with accurate evaluations of Astrobasic (AB) taped games and cartridges.

THE GAME PLAYER invites all software manufacturers to submit their latest AB tapes and/or cartridges for review. Upon receipt of any merchandise, you will be sent a postcard to verify delivery and inform you of our initial impressions before publication.

Best wishes & happy gaming,

Michael Prosise

ASTRO-BUGGY
BY PEGGY GLADDEN

WELL, HERE WE ARE AGAIN, AND I HAVE ALL OF THE ASTRO-BASH INFORMATION FOR YOU. BELIEVE ME, WE ARE GOING TO HAVE SOMETHING GOING ALL DAY, FOR EVERY MEMBER OF YOUR FAMILY!

YOU CAN CHECK OUR FLYER ON THE OPPOSITE PAGE FOR ALL INFORMATION, SUCH AS THE TIME, PLACE AND DATE. IF YOU'D LIKE A MAP, PLEASE SEND ME A S.A.S.E., AND I'LL GET ONE TO YOU AS SOON AS POSSIBLE.

NOW, ABOUT THE GOINGS ON, WE'RE GOING TO HAVE PLENTY! AS I SAID, THERE WILL BE SOMETHING FOR EVERYONE! ESPECIALLY OUR GAME TOURNAMENT. THIS TIME WE'RE RUNNING IT IN FOUR DIVISIONS.

THE FIRST DIVISION WILL INCLUDE ALL KIDS AGE SIX AND UNDER. NOW I REALIZE THAT SOME OF YOU THINK ITS NUTTY HAVING THE TINY TOTS IN A TOURNAMENT, BUT BELIEVE ME, THEY HAVE RIGHTS TOO. AFTER ALL, MY 7-MONTH OLD PLAYED PAC-MAN THE OTHER DAY, AND SHE SCORED A '900'!!! IT DOESN'T MATTER THAT SHE DIDN'T KNOW WHAT SHE WAS DOING, THE FACT OF THE MATTER IS, SHE WAS HAVING A GREAT TIME!

OUR NEXT DIVISION IS FOR ALL KIDS AGE 7-11. YOU SEE, THEY'RE A LOT BETTER THAN THE TINY TOTS, BUT WE DON'T WANT THEM TO GET CREAMED BY THE TEENAGERS!

DIVISION #3 IS FOR AGES 12-18. NOW HERE ARE THE TOUGH GUYS! I WOULDN'T WANT TO COMPETE WITH THIS BUNCH OF VIDEO MANIACS FOR ALL THE TEA IN CHINA! THEY USED TO BE HAPPY WITH FRENCH FRIES AND A COKE; NOW IT'S A JOYSTICK WITH A ROLL OF QUARTERS.

LAST BUT NOT LEAST, OUR ADULT DIVISION, AGE 19 AND UP (AND UP, AND UP). THIS IS THE GROUP THAT CONTAINS PLAYERS FROM EVERY OTHER DIVISION WE HAVE. THERE ARE SOME OF US WHO SORTA PLAY AT THE GAMES, BLAMING EVERY KILL ON THE NOISE IN THE OTHER ROOM, THE FLY ON OUR NOSE, OR THE RADIO NEXT DOOR. THEN WE HAVE OUR GROUP WHO PLAYS MAYBE ONE OR TWO GAMES WELL, BUT SORTA DISAPPEAR IF WE CAN'T HANDLE THE TOUGH ONES. THEN OF COURSE, THERE'S THE DIE-HARDS. THESE GUYS AND GALS WILL KILL WHEN SOMEONE SNEEZES DURING A GOOD GAME, AND DARE ANYONE TO COMPETE WITH THEIR NEVER DYING TALENT.

A REAL PLUS WE'RE HAVING IS OUR DOOR PRIZE. WE'RE GIVING AWAY A 16K BLUE RAM, AND YOU NEED NOT BE PRESENT TO BE ELIGIBLE. IF YOU'D LIKE MORE INFORMATION, SEND A S.A.S.E. TO THE MICHIGAN ASTROBUGS.

WE'RE ALSO GOING TO HAVE PLENTY OF QUESTION AND ANSWER TIME. NOT ONLY WILL OUR REGULAR GUYS BE THERE; GEORGE MOSES, DON GLADDEN, DAVE IBACH, MARION NALEPA & MIKE TOTH, BUT SEVERAL SOFTWARE COMPANIES WILL HAVE REPRESENTATIVES ALSO. THERE SHOULD BE ENOUGH TIME TO ANSWER JUST ABOUT ANY QUESTION ANYONE COULD COME UP WITH.

SPEAKING OF SOFTWARE COMPANIES, WAIT UNTIL YOU SEE OUR CORNER STORE! WE HAVE SO MANY GOODIES LINED UP, THAT IT'LL TAKE YOU ALL DAY JUST TO LOOK! WE'RE NOT ONLY GOING TO HAVE OUR REGULAR SOFTWARE SALES, WE'RE ALSO GOING TO HAVE SOME MICHIGAN ASTROBUG SPECIAL SURPRISES. THIS DOESN'T JUST MEAN THE ADULTS EITHER. THERE ARE GOING TO BE SPECIALTIES FOR EVERYONE, FROM THE TINY TOTS TO THE AGING ASTROCADER.

WE'RE REALLY TRYING HARD TO MAKE THIS A FAMILY EVENT. WE DON'T WANT YOU WIVES TO THINK YOU HAVE TO STAY HOME WITH THE KIDS. BRING THEM AND JOIN US, PLEASE. WE MAY BE CRAZY, BUT WE SURE HAVE FUN!!!

NOW, ONE OF THE MOST IMPORTANT EVENTS OF THE DAY...DINNER. I COULD NOT BEAR THE THOUGHTS OF ALL OF OUR HARD-WORKING GAME PLAYERS WORKING UP A FRENZIED APPETITE, AND NOT HAVING AN OVERSTOCK OF EDIBLES TO SATISFY THEIR PALATE.

THEREFORE, SEVERAL OF US ARE GOING TO BRING GRILLS, SO WE CAN HAVE A GIGANTIC PICNIC. IF YOU ARE PLANNING ON STAYING FOR EATS, PLEASE BRING THE FOLLOWING: ENOUGH MEAT FOR YOUR FAMILY (BREAD, IF NEEDED), A PASSING DISH (IT'S EASIER IF YOU HAVE DISPOSABLE CONTAINERS), YOUR OWN DRINKS (NO ALCOHOL PLEASE!), AND A DESSERT. THEN, WHEN IT'S TIME TO EAT, WE'LL ALL SHARE OUR PASSING DISHES AND OUR DESSERTS. I DON'T KNOW ABOUT THE REST OF YOU, BUT TO ME IT SOUNDS LIKE A GREAT WAY TO HAVE A LITTLE BIT OF EVERYTHING FOR DINNER.

IF ANYONE FROM OUT-OF-STATE NEEDS ANY HELP FINDING A PLACE TO STAY (I KNOW THAT A LOT OF YOU ARE COMING A DAY EARLY), PLEASE FEEL FREE TO CALL US, AND WE'LL TRY TO HELP YOU ALL WE CAN. WE'RE REALLY EXCITED ABOUT GETTING TO MEET SO MANY OF YOU, AT LAST.

ALSO, IF YOU HAVE ANY QUESTIONS WHATSOEVER, AGAIN FEEL FREE TO WRITE OR CALL. AFTER ALL, WE'RE HERE TO KEEP ALL OF THE ASTROCADERS TOGETHER, SO LET'S 'GO FOR IT'!!!

IF ANYONE OUT THERE WOULD LIKE TO SELL ANYTHING AT OUR CORNER STORE, PLEASE FEEL FREE TO LET US KNOW. WE SELL ALL PROGRAMS THAT ARE YOUR OWN, AS WELL AS OTHER ASTROCADE RELATED ITEMS. IF YOU'D LIKE TO DO SO, DROP US A LINE AS SOON AS YOU CAN.

REMEMBER, IF YOU WISH TO JOIN OUR GROUP, SEND A CHECK OR MONEY ORDER FOR $5.00 (U.S. FUNDS) TO COVER ONE YEARS MEMBERSHIP. WE ALSO HAVE TWO CLUB TAPES FOR SALE, AT ONLY $4.50 EACH (PRICE INCLUDES POSTAGE). ALSO, IF YOU HAVE A GROUP THAT WE COULD JOIN, OR AT LEAST HEAR FROM, LET US KNOW ABOUT THAT, TOO. WE'LL GLADLY PRINT AN ARTICLE ABOUT YOUR GROUP AND ITS ACTIVITIES.

WRITE TO...
MICHIGAN ASTROBUGS
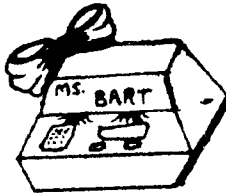59400 NINE MILE RD.
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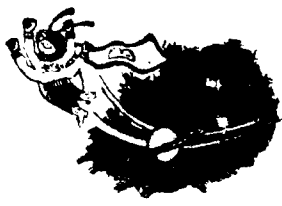
★ MICHIGAN ASTRO BUGS ★

ATTENTION

★ VIDEO BUGS! ★

COMING SOON...

ASTRO - BASH!

MS. BART

SEE...

* ASTROCADE IN ACTION
* LIVE DEMONSTRATIONS
* NEW SOFTWARE & HARDWARE
* LEARN BASIC PROGRAMMING
* GAME TOURNAMENTS
* THE GUYS BEHIND THE SCENES

SUNDAY, SEPT. 25, 1983

10AM - ???

for information
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ADS:

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