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SPECTRAVIDEO

AUSTRALASIAN USERS GROUP

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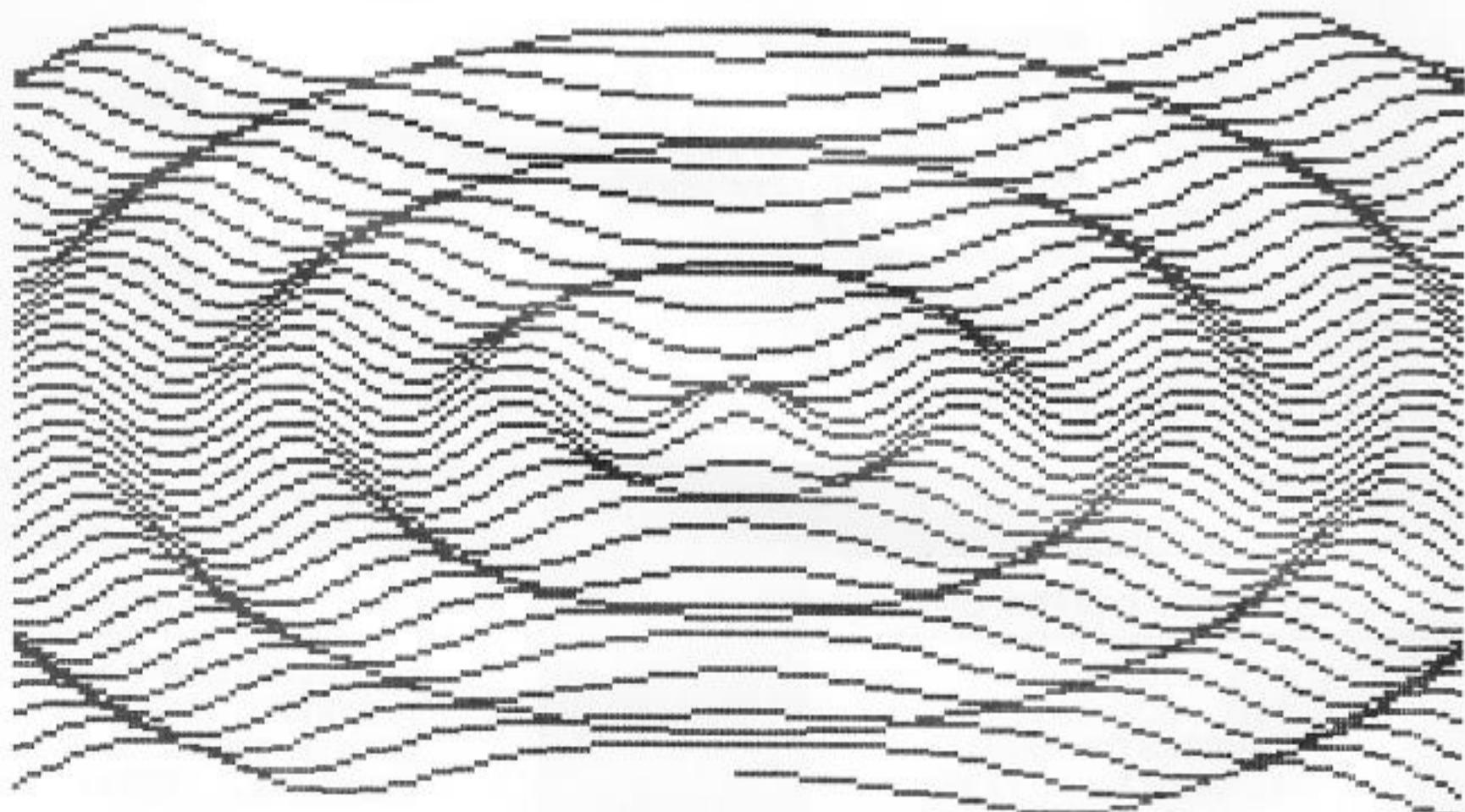
NEWSLETTER INTRODUCTION
by ED.

MSX is actually here at last. With MSX machines in the shops and a good selection of games already available, I think the standard may make it's mark on the computer scene. I hear IBM is about to release its MSX computer in the U.S.A., this is really going to make MSX respectable. We here at the users group would like to thank Steve Yarrow of Rose Music for the prompt arrival of two SV-728's and a Disk Drive. I think we must have been one of the first in Australia to have them.

In this months newsletter we can find the following. Mr. L.A. Dunning again graces our pages with his exploring BASIC series. I rattle on a bit about MSX and Mr. Jim Collins updates you with new library software.

On the programming side of things, we have three excellent pieces of software for your entertainment. The first is called Test Pattern and produces, on the screen a test pattern just like you see on the television, a real plus for aligning your computer with your television set. Next we have Annies Song which is one of many, and I stress many, excellent music programs submitted by Mr. S. Wilson that will appear over the next few months in our newsletter pages. I thought I'd start you off with a short one. Happy typing Ha Ha! This program should work on MSX machines with no modification. Our last program this month is called Game with Graphics. This presents a three dimensional display with the enemy firing towards you. There is no scoring but no doubt you hackers out there will fill in all the necessary bits. Last but not least Eric Clarke from Clarke Electronics has again given us an invaluable tip for the month.

Exploring Basic Pt-12
by L.A. Dunning.

This installment is the fourth part of a discussion about machine code routines (MCRs) and how to use them.
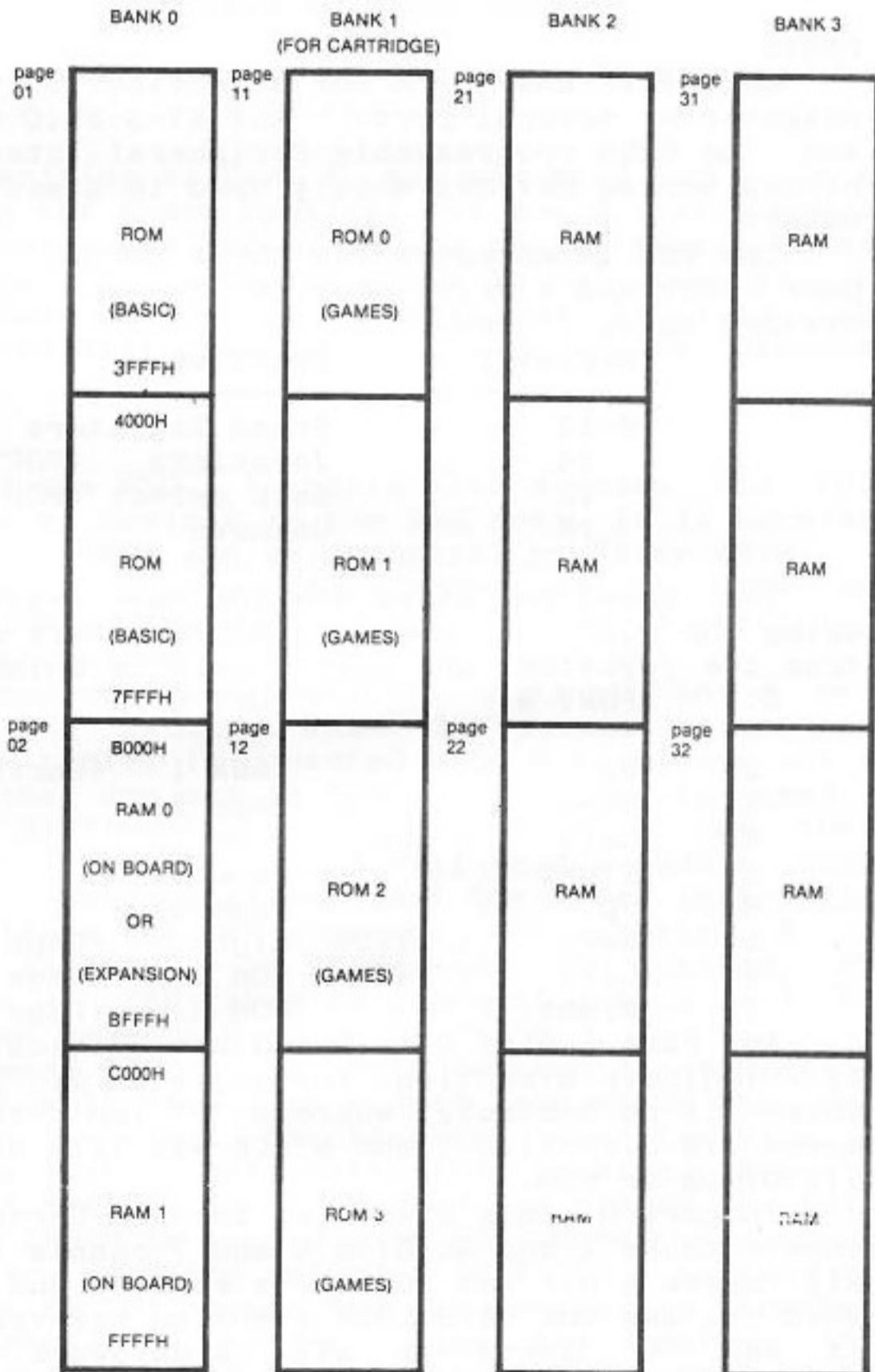
ROM ROUTINES

As you are probably already aware, the Spectravideo ROM is nothing more than a group of MCRs and tables as designed by MICROSOFT. On most computers you can't normally get rid of it, and it just sits in there eating up memory. While using basic proper, the ROM is neccesary to enable a program to be run. When using MCRs however there are two things you can do with the ROM: get rid of it or use it! The bulk of this part will deal with the first option and some spinoffs due to it.

MEMORY BANKS

You are probably aware of advertising claims that the SV has 80K of RAM and 32K of ROM, but may not be sure what it means. Examine Diagram 1. A normal unexanded SV318 comes with a ROM in page 01 and RAM in page 02 from C000H to FFFFH. An unexpanded SV328 comes with the above including the missing RAM from 8000H to BFFFH; it also has an extra 32K ram on page 21. In both cases there is an extra 16K video memory but this is "off-line" and can only be accessed via a port, as was demonstrated in earlier parts.

The RAM modules that plug into the expander add pages 22, 31 and 32. When an SV is turned on, pages 01 and 02 are normally active and the others inactive (henceforth called bank on/off). If the ROM discovers a CP/M disk is in a drive, it reads a bootstrap program into high memory and from there turns bank 21 on and then loads the rest of the system. Thus, an SV328 can run CP/M by

BANK 0	BANK 1 (FOR CARTRIDGE)	BANK 2	BANK 3
page 01	page 11	page 21	page 31
ROM (BASIC) 3FFFH	ROM 0 (GAMES)	RAM	RAM
4000H ROM (BASIC) 7FFFH	ROM 1 (GAMES)	RAM	RAM
page 02 8000H RAM 0 (ON BOARD) OR (EXPANSION) BFFFH	page 12 ROM 2 (GAMES)	page 22 RAM	page 32 RAM
C000H RAM 1 (ON BOARD) FFFFH	ROM 3 (GAMES)	RAM	RAM

just adding the controller and drives - an SV318 requires the memory expansion to do so.

Assuming you own a 328 or expanded 318, you should be able to switch in and out various banks at will. The main advantage of this is that you can have a bigger program or routine to run, or an extra area to dump values or screen display. In basic (with the memory expansion) you can switch to an alternate bank by using the SWITCH statement. This was covered in an earlier installment. What SWITCH does is to turn page 22 on and repeat part of the initialisation process on that bank. It is possible to duplicate this procedure in an MCR.

Bank 0 is used by basic, bank 1 is used by the cartridge and bank 2 is used by CP/M. Bank 3 therefore is at the users disposal. There is a program available for the SV328 that converts it (mostly) to an MSX machine and this probably uses page 21 to store the new basic. This is a good example of the bank switching technique at work.

PORTS

We will now turn our attention to two devices hooked to the computer by several ports - the AY-3-8910 sound generating block (PSG) and the 8255 Programmable Peripheral Interface (PPI). Together these blocks access devices mostly used in games: sound chips, joysticks, et cetera.

The PSG is accessed via three ports; a "latch" port (88H), a read port (90H) and a write port (8CH). The PSG has 17 registers which are divided up as follows:

Register	Function
0-13	Sound Registers
14	Joysticks (PORT A)
15	Bank select (PORT B)
16	Unknown

The sound registers are the same registers that can be accessed using the SOUND statement in BASIC. Port A is used to input direction from the joysticks and port B selects which banks are used.

BIT	PORT A			PORT B	
0	Up	\		BANK 1	(Cartridge)
1	Down	\	STICK	Page 21	
2	Left	/	ONE	Page 22	
3	Right	/		Page 31	
4	Up	\		Page 32	
5	Down	\	STICK	Light	(Caps lock)
6	Left	/	TWO	ROM 2	(Page 12)
7	Right	/		ROM 3	(Page 12)

In Port A bits 0 to 3 indicate directions for joystick 1, bits 4 to 7 indicate directions for joystick 2. If a bit is set to "1" then there is no contact, whereas "0" indicates there is. If STICK 1 was moved in direction 2 and STICK was left untouched, port A would be 11110110B or F6H.

In port B, bit 0 enables the ROM Cartridge (bank 1). Bits 1 to 4 enable banks 2 and 3. Bits 6 and 7 enable the upper half of bank 1. In all cases a bit set to "0" is enabled and "1" is disabled. Bit 5 is used to set the CAPS LOCK light on however in this case "1" turns it on and "0" turns it off. A hardware disable ensures that two

conflicting pages cannot be turned on simultaneously.

How do you access the registers? To read or write to a register requires use of the "latch"; port 88H sets which register is to be accessed. Use the following routines to read/write a register:

BASIC	Z80	FUNCTION
OUT&H88,RR	LD A,RR OUT(88H),A	Sets register to be accessed, RR equals register number. Latch remains set to register until reset to another value.
VV=INP(&H90)	IN A,(90H)	Read from register. VV = variable used to store value.
OUT&H8C,WW	LD A,WW OUT(8CH),A	Write to register. WW = value to go to register.

With the exception of writing to Port B, you can read and write to any of the registers. Using the above routines you could create sounds in machine code, read the joysticks and of course change memory banks. The main point to remember when swapping banks is not to put the routine to do this on the bank that is being disabled. If it is, then whatever is on the new bank will then be executed, or the computer might hang in a dead loop.

THE PPI

Since I have discussed the PSG, I should also discuss the PPI. This controls a similar set of devices as the PSG does. It is accessed by ports A (98H), B (99H), C (96H) and word control register (97H).

The word control register sets the "mode" of the PPI and is initialy set to 10010010B by the ROM. This register is best left alone until you possess a technical manual for the 8255 PPI.

Port A is used to read several functions. Bits 0 to 3 read connected paddles (which so far as I know don't yet exist) and graphics tablet. When the tablet is conected bits 0 and 1 are set to "1"; when disconnected they are set to "0". Attempting to read a paddle or pad output is a difficult and complicated affair and there are routines in ROM to do this. 3280H (PDL) will read a paddle. 32BDH (PAD) will read a graphic tablet. In either case the first instruction is a call to 1AA9H which loads the USR argument into register A. By already doing this you can make calls to 3283H and 32C0H instead. PDL takes an argument from 1 to 4, PAD takes an argument from 0 to 3. PDL will return a integer number between 0 - 255 at F925H.

When PAD takes an argument of 0 it attempts to read the tablet. If the tablet is not there it will fall into a dead loop which can only be broken by resetting the computer. Checking the lower two bits of Port A before calling this routine will solve this problem. Assuming the tablet is connected, X and Y values are read and placed in FE2CH and FE2DH respectfully and FE25H is loaded with FFH. When the argument is 1 or 2 these locations are read and returned in F925H, so they are not updated until another PAD(0) occurs and the surface is touched. Despite a reference to PAD(3), I couldn't find any routine that detected a switch on the tablet. This is no great loss however as the tablet I possess has no switch!

Bits 4 and 5 of Port A indicate if the fire buttons on joysticks 1 and 2 are pressed. A "0" indicates contact, "1" indicates no contact.

Bit 6 is set by having either PLAY, FASTFORWARD or REWIND keys pressed on the cassette player: a "1" indicates none of these keys is pressed, a "0" indicates any of them are. This bit is used by BASIC to produce a 'PRESS PLAY / & RECORD' message. Bit 7 is used to read the cassette itself and its state is dependent upon what is written on that cassette.

Port B is used to read the keyboard matrix and will produce a simple eight bit value based on the keys pressed. Port C is used as a latch port and to output to the cassette. Bits 0 to 3 are used to select which keyboard row to "strobe". To read a row of keys, use the following procedures:

BASIC	Z80		Function
OUT &H96,RR	LD	A,RR	Sets Row. RR = Row read.
	OUT	(96H),A	
VV=INP(&H99)	IN	A,(99H)	Reads Row. VV = Value returned

A fuller discussion of this process will be found in part 8 of this series.

Bit 4 of port C controls the cassette motor. Sending a "1" to this bit turns it off, sending a "0" turns it on. Bit 5 is used to write information to the cassette tape while saving a program / data file / memory block. Bit 6 enables the 2nd audio channel on the cassette tape. Setting it to "1" will enable it, setting it to "0" will disable it. Finally, bit 7 mixes the sound data from the PSG, though I have no further information about this as yet.

MSX SCREEN 1

If you have played with an MSX machine you have noticed that the screen modes are different. SCREEN 1 is actually an implementation of Graphics mode I on the VDP, which was discussed in part 7 of this series. This is a natural games mode because it utilises simple character definitions, you can redefine the colours of blocks of characters and you can put sprites on the screen at the same time!

Listing MSX COLOR demonstrates the redefining of colour blocks while in this mode. It will only work on an MSX computer. This has been tested on both a Toshiba and modified SV computer (the SV ran an MSX converter program, which changes the basic but not the ports used by the computer) and works on both.

Those with MSX computers will also find two additional graphics statements: BASE and VDP. BASE is used to determine where the tables used by the video chip are. This is a function only but is very useful for implementing your own arrangement. VDP is actually a copy of what was last sent to the eight write-only video registers (0-7) and a copy of the VDP register which is read only (8). Changing these registers by means other than basic will probably invalidate these values. The advantage of this feature is that you can effectively read the current state of the video chip, making it easy to alter.

Earlier articles in this series (parts 3 - 7 to be precise) have dealt with the function and operation of the video chip and new readers who own MSX computers will find these in the S.A.U.G. 1983/84 year book; another good reason to buy it!

NEXT PART

In the next part I will talk about utilising the ROM routines

inherant in the Spectravideo ROM to your best advantage. This will be the final segment dealing with Machine code. To wet your appetite until then, listing OK will demonstrate one way to change BASIC. Written by Robert Brinkworth, it enables the user to place their own message instead of the normal "Ok" prompt.

OK
by : R. Brinkworth

This Program may be entered using the 'INPUT' program from Newsletter 2 - 2 (NOV 84).
Send $1 to S.A.U.G. for printout of article.

```
NA    10 REM "OK" by Robert Brinkworth
AM    20 REM  -  Dumps routine to high memory
AN    30 MS!=&HFFC0:ML%=15:GOSUB200
OJ    40 REM  -  C$ contains message: maximum          of 255 bytes long
                 !
EA    50 C$="Prompt Message"
EP    60 REM -    Dumps C$ to memory
AP    70 FORL=1TOLEN(C$):POKE&HFFCF+L,ASC(MID$(C$,L,1)):NEXT
DE    80 REM -    Dumps linefeed & carraige            return + end of s
                 tring
AN    90 MS!=&HFFCF+L:ML%=3:GOSUB200
FI   100 REM -  Redirects vector to above             routine
CO   110 MS!=&HFE8E:ML%=3:GOSUB200
DB   120 NEW
BH   200 FORI=0TOML%-1:READV$:POKEMS!+I,VAL("&h"+V$):NEXT:RETURN
CE   300 DATA CD,63,64,21,D0,FF,CD,05
FO   310 DATA 1B,E1,21,C4,09,E5,C9
BO   320 DATA 0D,0A,00
BN   330 DATA C3,C0,FF
END
```

COLOR.MSX (M.S.X. COMPUTERS ONLY.)
by : L.A. Dunning

This Program may be entered using the 'INPUT' program from Newsletter 2 - 2 (NOV 84).
Send $1 to S.A.U.G. for printout of article.

```
BB    10 REM MSX COLOR CHANGE                      by L.A.Dunning
BH    20 REM Works only on MSX computers
EG    30 SCREEN1:FORA=0TO255:VPOKEBASE(5)+A,A:NEXT
NH    40 LOCATE1,10:INPUT"Which set to change (0-31)";B$:B=ABS(VAL(B$)):I
         FB>31GOTO40
AK    50 LOCATE1,14:INPUT"Which colors (in hex)";V$:V=ABS(VAL("&h"+V$)):I
         FV>255GOTO50
CD    60 VPOKEBASE(6)+B,V:GOTO40
END
```

TEST PATTERN
by : M. Johns

This Program may be entered using the 'INPUT' program from Newsletter 2 - 2 (NOV 84).
Send $1 to S.A.U.G. for printout of article.

```
LD      10 REM    Test Pattern Generator + Clock
BK      20 REM    on SV-328    by    M. Johns
FN      30 REM
CN      40 ONINTERVAL=50GOSUB470
EB      50 DEFINTA-Z:SCREEN0,0:COLOR7,4
EN      60 PRINTTAB(13)STRING$(14,"_"):PRINTTAB(13)CHR$(27)"p TEST PATTERN
           "CHR$(27)"q":PRINT:PRINT:PRINT"Enter current time.":PRINT:PRINT"
           Clock will commence directly after":PRINT"seconds are entered.":
           PRINT:PRINT"To exit from pattern hit ESC."
KA      70 I=13:K=12:I$="Hours    (hh) ":B$=" ":GOSUB430:H=J:H$=J$
NC      80 I=15:K=59:I$="Minutes (mm) ":B$="0":GOSUB430:MT=J/10:MU=JMOD10:M
           T$=LEFT$(J$,1):MU$=RIGHT$(J$,1)
LJ      90 I=17:K=59:I$="Seconds (ss) ":B$="0":GOSUB430:ST=J/10:SU=JMOD10:S
           T$=LEFT$(J$,1):SU$=RIGHT$(J$,1)
D6     100 F=0: INTERVALON
CH     110 COLOR,14,1:SCREEN1
IF     120 CIRCLE(128,96),93,15,,,1.4:PAINT(128,4),15
BP     130 FORI=8TO248STEP16:LINE(I,0)-STEP(0,191),15:NEXT
FG     140 FORI=0TO191STEP16:LINE(0,I)-STEP(255,0),15,BF:NEXT
JD     150 J=1:K=15:FORI=0TO176STEP16:LINE(0,I)-STEP(7,15),J,BF:LINE(249,I)
           -STEP(7,15),J,BF:SWAPJ,K:NEXT
FD     160 LINE(0,0)-(255,191),15,B
AA     170 FORI=74TO146STEP18:READK:LINE(I,56)-STEP(23,31),K,BF:NEXT
BD     180 DATA11,7,3,13,6
DL     190 FORI=1TO4:FORJ=1TO12/(5-I):LINE(56+I*24+(5-I)*(J-1)*2,104)-STEP(
           4-I,31),1,BF:NEXTJ,I
DD     200 FORI=1TO26:READA,B,C,D,E:LINE(A,B)-STEP(C,D),E,BF:NEXT
CE     210 DATA24,17,15,78,2,40,17,15,30,5
CF     220 DATA40,145,15,30,9,24,96,15,79,6
BH     230 DATA24,0,0,191,15,216,17,15,78,10
CK     240 DATA200,17,15,30,4,200,145,15,30,8
BO     250 DATA216,96,15,79,12,200,16,0,159,15
AP     260 DATA216,48,0,96,15,107,10,41,13,1
DB     270 DATA88,24,12,15,1,108,24,0,15,1
BB     280 DATA155,24,12,15,1,164,56,17,31,4
BI     290 DATA64,88,127,15,1,120,72,15,47,1
AO     300 DATA64,96,72,0,15,128,72,0,47,15
AM     310 DATA80,136,47,15,1,128,136,31,15,14
AD     320 DATA100,152,56,15,1,104,168,47,13,11
AJ     330 DATA120,168,15,13,6,145,88,46,15,1
CH     340 FORI=72TO136STEP16:LINE(I,88)-STEP(0,15),15:NEXT
AC     350 J=1:K=14:FORI=80TO168STEP8:LINE(I,40)-STEP(7,15),J,BF:SWAPJ,K:NE
           XT
AN     360 FORI=96TO144STEP16:IFI=128THENNEXTELSEREADJ:COLORJ:LOCATEI,136:P
           RINT"▓▓":LOCATEI+10,136:PRINT"▓":LOCATEI,144:PRINT"▓▓":LOCATEI+1
           0,144:PRINT"▓":NEXT
BJ     370 DATA14,15,15
HF     380 LOCATE116,13:COLOR15:PRINT"TEST":LOCATE108,156:PRINT"PATTERN"
BE     390 INTERVALOFF:FORI=1TO5:GOSUB470:NEXT:INTERVALON
AJ     400 LOCATE142,92:COLOR15:PRINTH$+": "+MT$+MU$+": "+ST$+SU$:F=-1:PLAY"1
           64":N=70
```

```
GH        410 IFINKEY$<>CHR$(27)THEN410
CJ        420 INTERVALOFF:COLOR 7,4:SCREEN0:END
MB        430 LOCATE0,I,1:PRINTCHR$(27)"K"I$;:INPUTJ$:J=VAL(J$)
GG        440 IF(J=0ANDJ$<>"0")ORLEN(J$)>20RJ<00RJ>KTHENLOCATE15,I,0:PRINTCHR$
              (27)"KINVALID ";:FORJ=1TO800:NEXT:GOTO430
AB        450 IFLEN(J$)=1THENJ$=B$+J$
B0        460 RETURN
MI        470 IFP0THENSU$=RIGHT$(STR$(SU),1):IFFTHENN=72:LOCATE184,92:COLOR1:P
              RINT"■":LOCATE184,92:COLOR15:PRINTSU$
ME        480 IFP1THENST$=RIGHT$(STR$(ST),1):IFFTHENN=60:LOCATE178,92:COLOR1:P
              RINT"■":LOCATE178,92:COLOR15:PRINTST$
OD        490 IFP2THENMU$=RIGHT$(STR$(MU),1):IFFTHENN=48:LOCATE166,92:COLOR1:P
              RINT"■":LOCATE166,92:COLOR15:PRINTMU$
OK        500 IFP3THENMT$=RIGHT$(STR$(MT),1):IFFTHENN=36:LOCATE160,92:COLOR1:P
              RINT"■":LOCATE160,92:COLOR15:PRINTMT$
AK        510 IFP4THENH$=RIGHT$(STR$(H),2):IFFTHENN=24:LOCATE142,92:COLOR1:PRI
              NT"■■":LOCATE142,92:COLOR15:PRINTH$
JM        520 PLAY"n=n;":P0=0:P1=0:P2=0:P3=0:P4=0
GA        530 SU=(SU+1)MOD10:P0=-1:IFSU=0THENST=(ST+1)MOD6:P1=-1:IFST=0THENMU=
              (MU+1)MOD10:P2=-1:IFMU=0THENMT=(MT+1)MOD6:P3=-1:IFMT=0THENH=(H+1
              )MOD13:P4=-1:IFH=0THENH=1
CB        540 RETURN
END
```


COMPUTER MANUAL

SOON TO BE A MOVIE

MY NEW SV-728
by P. Deckert

Surprise! Surprise! I finally received a telephone call to say that the SV-728 Computers had arrived and I could come and collect mine.

In due course I returned home with a new 728 computer and Disk Drive. My 10 year old son met me at the door and helped me carry the computer up the stairs into the computer room. (If only he was that enthusiastic with the dishes.)

The sons eagerness was mainly due to the fact that we had received some Activision Games about two weeks earlier and he had been longing to try them out.

It didn't take long to plug it all in and turn it all on. However one problem we immediately ran into was the fact that the SV-728 does not come with a cassette cable. But luckily I had the right bits in my junk box and soon had a cable made up. I pity someone who buys the SV-728 and is not handy with a soldering iron, as the cassette cable is not the sort of thing you can buy made up from your local Electronics Shop. As a service to members I have made some of these cables. Please refer to the advertisment on th last page of this Newsletter.

Anyway the son soon had the first tape in the cassette recorder (Ghostbusters) and was impatiently pacing up and down waiting for it to load. After what seemed to be a very long few minutes the game started. I won't go into details of the game as it and some others we have seen (They include: Decathlon, River Raid, Pitfall II, H.E.R.O., and Beam Rider) will be reviewed soon. Let me just say that they are quite brilliant and Ghostbusters has to be seen to be appreciated.

While the son was busy saving the world and avoiding being Slimed, I sat back and had a serious look at the new machine.

As first impressions go, the SV-728 looks so much like the SV-328 that you have to blink and look very close a second time to see the difference. The first main feature that stands out is the very large Cartridge Slot in the middle behind the keyboard, the other noticable difference is the slight change in the keyboard.

Although the keyboard feels different (I think it might be due to the fact that my SV-328 has suffered many hours with my pounding the keyboard). The difference are minor with just a few keys changed to give the necessary MSX keyboard. Of course the BASIC is different in minor ways as well, but I won't go into that as I have already mentioned some of the differences when I wrote about the Yamaha MSX computer some months ago.

The SV-728 has a Centronics port at the back which is a big PLUS. The Joystick ports are on the left side of the case instead of the right side as with the 328. The Disk Drive does not need an expander but plugs straight into the back of the computer. The Disk Drive has over 300k of storage both in BASIC and CP/M. Also included with the disk drive is MSX-DOS which is the environment used by BASIC. CP/M and MSX-DOS allow the interchange of programs which means you can run your favorite CP/M programs in the MSX environment. The CP/M that is supplied with the 728 Disk Drive has some very nice features such as being able to read other disk formats which include SV-328, Osborne, Kaypro, and Bondwell.

One thing I noticed is that you can only plug one Disk Drive into the 728. However the software allows for this so if you ask for something from Drive B: the computer will prompt you to swap disks. With this feature and over 300k of storage (which is twice the capacity of SV-328 disks) most people will not be after a second disk drive anyway. A fuller look at the SV-728's CP/M and MSX-DOS will be presented at a later date.

Back to the computer itself. Well the son is still madly catching Ghosts and the wife just came up the stairs and asked us to turn down the volume on the monitor since listening to the Ghostbusters theme song for the last half an hour was getting on her nerves.

We viewed the computers display on the monitor through it's built in modulator and through direct Video input. Both ways gave excellent picture quality, although the direct Video output from the computer was still noticably better.

There are two disappointments with the 728. The first was that there are no cassettes (Games or otherwise) with the 728. This I think is a mistake as both competitors, the Sony HIT BIT and the Toshiba HX-10 come with programs on cassette which gets you started. The second disappointment was the manual. It is almost an exact replica of the SV-328 manual except that where ever the word SV-328 appeared in the old manual, the word MSX is substituted. I am pleased to say most of the errors have been corrected, but not all. The manual only gets you going by explaining but a few of the many powerful commands. I have already seen some books published by Melbourne House which are a must to buy if you own an MSX machine, more on them later also.

There is not much more to say. The computer runs all the MSX software I have on tape and cartridge. It has had a pretty hard run these past few weeks and performed flawlessly.

ANNIES SONG

by : S. Wilson

This Program may be entered using the 'INPUT' program from Newsletter 2 - 2 (NOV 84).
Send $1 to S.A.U.G. for printout of article.

```
H6      10 ' Annie's Song
HC      20 REM "BY S. WILSON"
DI      30 PLAY"t7518s0m10000r4.","t75116v8o4r16daf#ad","t7518v8o3d.o2a."
CH      40 PLAY"r4.","r16dagad","d.a."
GB      50 PLAY"r4.","r16daf#ad","o3d.o2a."
CJ      60 PLAY"r4.","r16dagad","d.a."
FP      70 PLAY"r4.","r16daf#ad","o3d.o2a."
CL      80 PLAY"r4.","r16dagad","d.a."
MM      90 PLAY"r4o5d","r16daf#ad","o3d.o2a."
CL     100 PLAY"dc#o4b","r16dagad","d.a."
KN     110 PLAY"o5m20000d4.","b4.","l16go3dbdbd"
IB     120 PLAY"m30000c#2r8m10000o4b16b16","a4.f#4f#16f#16","o2ao3eo4c#o3eo
           4c#o3eo2bo3f#af#af#"
CA     130 PLAY"bo5c#d","gab","l16go3dbdbd"
ME     140 PLAY"o4am50000f#2..m10000a16a16","f#d2..f#16f#16","df#af#af#c#f#
           af#ao2bo3f#af#af#"
EL     150 PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AE     160 PLAY"m20000d4.","b4.","o2go3dbdbd"
HF     170 PLAY"m30000c#2r8o4m10000b16b16","a4.g4g16g16","o2f#o3c#ac#ac#o2e
           bo3go2bo3go2b"
HD     180 PLAY"bo5c#d","gab","go3dbdbd"
KM     190 PLAY"m50000c#2..r8m10000d16d16","g2..r8g16g16","o2ao3eo4c#o3eo4c
           #o3eo2ao3eo4c#o3eo4c#o3eo2ao3eaeae"
KD     200 PLAY"dc#o4b","ggg","o2ao3eaeae"
EE     210 PLAY"m20000o5d4.","b4.","o2go3dbdbd"
IC     220 PLAY"m30000c#2r8m10000o4b16b16","a4.f#4f#16f#16","o2ao3eo4c#o3eo
           4c#o3eo2bo3f#bf#bf#"
LF     230 PLAY"bo5c#d","gab","o2go3dbdbd"
JG     240 PLAY"o4am50000f#2r4.m10000a","f#d2..r8f#","df#af#af#c#f#af#af#o2
           bo3f#af#af#
EM     250 PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AF     260 PLAY"m20000d4.","b4.","o2go3dbdbd"
FL     270 PLAY"m30000c#2r8m10000o4b","a4.g4g","o2f#o3c#ac#ac#o2ebo3go2bo3g
           o2b"
DP     280 PLAY"o5c#de","abo5c#","o2ao3egege"
JF     290 PLAY"m60000d2..r4","l16o4r16daf#adr16dagadr16daf#ad","l8d.o2a.d.
           a.o3d.o2a."
GJ     300 PLAY"m10000dc#o4b","r16dagad","d.a."
KP     310 PLAY"o5m20000d4.","b4.","l16go3dbdbd"
ID     320 PLAY"m30000c#2r8m10000o4b16b16","a4.f#4f#16f#16","o2ao3eo4c#o3eo
           4c#o3eo2bo3f#af#af#"
BO     330 PLAY"bo5c#d","gab","l16go3dbdbd"
MC     340 PLAY"o4am50000f#2..m10000a16a16","f#d2..f#16f#16","df#af#af#c#f#
           af#ao2bo3f#af#af#"
EN     350 PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AG     360 PLAY"m20000d4.","b4.","o2go3dbdbd"
HH     370 PLAY"m30000c#2r8o4m10000b16b16","a4.g4g16g16","o2f#o3c#ac#ac#o2e
           bo3go2bo3go2b"
HM     380 PLAY"bo5c#d","gab","go3dbdbd"
JP     390 PLAY"m50000e2..r8m10000d16d16","g2..r8g16g16","o2ao3eo4c#o3eo4c#
           o3eo2ao3eo4c#o3eo4c#o3eo2ao3eaeae"
```

```
KB   400  PLAY"dc#o4b","ggg","o2ao3eaeae"
E6   410  PLAY"m20000o5d4.","b4.","o2go3dbdbd"
BJ   420  PLAY"m30000e2r8m10000d16d16","o5c#4.o4b4b16b16","o2ao3eo4c#o3eo4
          c#o3eo2bo3f#bf#bf#"
LA   430  PLAY"dc#o4b","bag","o2go3dbdbd"
HL   440  PLAY"o4am50000f#2r4.m10000r8","f#d2..r8f#","df#af#af#c#f#af#af#o
          2bo3f#af#af#
E0   450  PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AH   460  PLAY"m20000d4.","b4.","o2go3dbdbd"
FN   470  PLAY"m30000c#2r8m10000o4b","a4.g4g","o2f#o3c#ac#ac#o2ebo3go2bo3g
          o2b"
I0   480  PLAY"o5c#d.e16","abo5c#","o2ao3egege"
LH   490  PLAY"m60000d2..r8m10000d","116o4r16daf#adr16dagadr16daf#ad","18d
          .o2a.d.a.o3d.o2a."
CP   500  PLAY"dc#o4b","r16dagad","d.a."
LB   510  PLAY"o5m20000d4.","b4.","116go3dbdbd"
IF   520  PLAY"m30000c#2r8m10000o4b16b16","a4.f#4f#16f#16","o2ao3eo4c#o3eo
          4c#o3eo2bo3f#af#af#"
BM   530  PLAY"bo5c#d","gab","116go3dbdbd"
MA   540  PLAY"o4am50000f#2..m10000a16a16","f#d2..f#16f#16","df#af#af#c#f#
          af#ao2bo3f#af#af#"
EP   550  PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AI   560  PLAY"m20000d4.","b4.","o2go3dbdbd"
HJ   570  PLAY"m30000c#2r8o4m10000b16b16","a4.g4g16g16","o2f#o3c#ac#ac#o2e
          bo3go2bo3go2b"
HK   580  PLAY"bo5c#d","gab","go3dbdbd"
KB   590  PLAY"m50000e2..r8m10000d16d16","g2..r8g16g16","o2ao3eo4c#o3eo4c#
          o3eo2ao3eo4c#o3eo4c#o3eo2ao3eaeae"
JP   600  PLAY"dc#o4b","ggg","o2ao3eaeae"
EI   610  PLAY"m20000o5d4.","b4.","o2go3dbdbd"
BL   620  PLAY"m30000e2r8m10000d16d16","o5c#4.o4b4b16b16","o2ao3eo4c#o3eo4
          c#o3eo2bo3f#bf#bf#"
KO   630  PLAY"dc#o4b","bag","o2go3dbdbd"
JC   640  PLAY"o4am50000f#2r4.m10000a","f#d2..r8f#","df#af#af#c#f#af#af#o2
          bo3f#af#af#
FA   650  PLAY"abo5c#","f#ga","o2ao3f#af#af#"
AJ   660  PLAY"m20000d4.","b4.","o2go3dbdbd"
FP   670  PLAY"m30000c#2r8m10000o4b","a4.g4g","o2f#o3c#ac#ac#o2ebo3go2bo3g
          o2b"
JA   680  PLAY"o5c#d.e16","abo5c#","o2ao3egege"
JB   690  PLAY"m60000d2..r4","116o4r16daf#adr16dagadr16daf#ad","18d.o2a.d.
          a.o3d.o2a."
AP   700  PLAY"r4.","t75116v8o4r16daf#ad","t7518v8o3d.o2a."
BD   710  PLAY"r4.","r16dagad","d.a."
PL   720  PLAY"f#1...","s0o5d1...","s0o4a1..."
AE   730  FORT=1TO5000:NEXT
     END
```
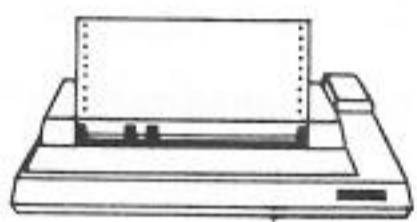

Fly-by-night computer outfit
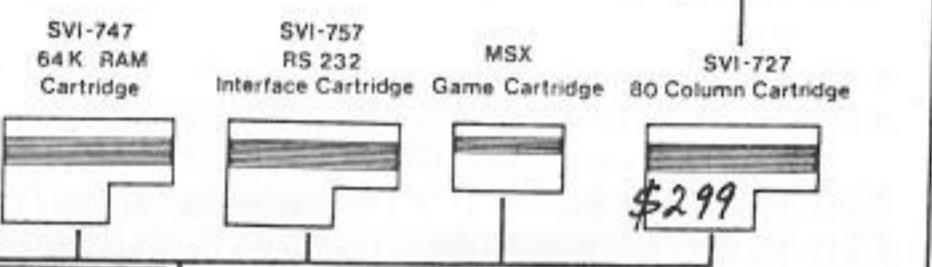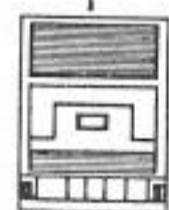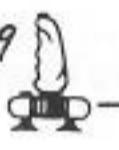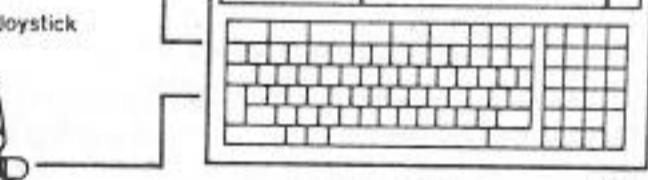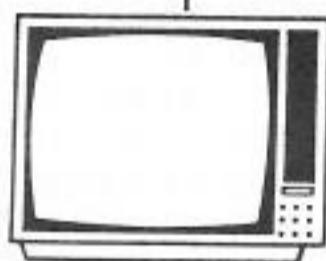
TIP OF THE MONTH   CLARKE ELECTRONICS JUNE 85

If you have an 80 column card in your system you may have noticed the 50 cycle
weave of the screen image. Coupled with the fact that SVI set up the screen with
only one scanning line between each row of characters it promted me to fix the
problem. Below is a BASIC program to modify the operating parameters of the 6845 CRT
Controller used in the 80 column card. If a permanent fix is required the bios
listing supplied by the users group is available.

```
150 FOR I = 0 TO 9                    'Set up loop to alter 10 values
160 OUT 80,I                          'Set up register No in 6845
170 READ A                            'Get data value from table
180 OUT 81,A                          'Set data value into 6845 register
190 NEXT I                            'Loop back and set another reg.
200 DATA 109,80,91,8,29,11,24,27,0,9  'Data table of register values
```

Starting from the first value in the DATA string to the last........

REG.	Value		
0)	109	Horizontal Total Register	This is the one to fiddle with to fine tune the 50 cycle weave.
1)	80	Horizontal Displayed Reg.	Number of characters on the line
2)	91	Horizontal Sync Position	Positions the picture on the screen
3)	8	Horizontal Sync Width	Timing trimmer register
4)	29	Vertical Total Register	Together with REG. 5 determines
5)	11	Vertical Total Adjust	the vertical frequency
6)	24	Vertical Displayed Reg.	Number of character rows on screen
7)	27	Vertical Sync Position	Vertical position of picture
8)	0	Interlace Mode reg.	No interlace
9)	9	Max Scan line Addr. Reg.	Number of scan lines used for character

Best Regards   *Eric S. Clarke.*   Eric S. Clarke

GAME WITH GRAPHICS

by : D. Whitmore

This Program may be entered using the 'INPUT' program from Newsletter 2 - 2 (NOV 84).
Send $1 to S.A.U.G. for printout of article.

```
FL      10 REM □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
ID      20 REM □ □ □              A GRAPHIC GAME              □ □ □
HO      30 REM □ □ □ Written by Deane Whitmore  1985 □ □ □
LJ      40 REM □ □ □              FOR SVI318/328              □ □ □
FP      50 REM □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
CN      60 '
KM      70 COLOR 15,0,0:SCREEN1,2:DEFINTA-Z:R=RND(-TIME):CLEAR1000:CLICKOFF
EH      80 F=1:G=0:C=50:A=4:B=1:GOSUB370
EG      90 F=49:G=48:C=80:A=4:B=4:GOSUB370
AL     100 F=79:G=78:C=90:A=5:B=5:GOSUB370
AE     110 F=89:G=88:C=98:A=5:B=5:GOSUB370
CB     120 F=97:G=96:C=107:A=7:B=4:GOSUB370
BH     130 F=106:G=105:C=110:A=7:B=7:GOSUB370
AN     140 F=109:G=108:C=110:A=8:B=9:GOSUB370
AG     150 F=110:G=111:C=192:A=13:B=5:GOSUB370
EI     160 PSET(0,98),1
BN     170 DRAW"R4F1R2F1R1R4F3R1F6R1F2R3F1R8E1R6F1R2E2R3F1R1E2R2E3R2E4R1E4R
           1E2R2E2R2E1R2F5R1F4R1F4R1F3R1F2R10E1R1E2R1E1R1E1R2E1R2E2R1E1E1R1
           E1R1F2R2E1R1F3R1F1R2F3R1F2R2F1R4F2R3E3R1E3R1E3R1E3R1E5R1E5R1E4R1
           E1R1E2R2E1R2E1R3F1R1F3R1F12R1F2R1F1R1F4R1F4R9E1"
AM     180 LINE(0,120)-(256,120),1
DK     190 PAINT(80,105),1
AA     200 DRAW"BM173,110C11E3R1E3R1E3R1E5R1E5R1E4R1E1R1E2R2E1R2E1R3F1D1G1L
           1G3L1G2L1G3L2G6L1G4L2G2L5G1L5":PAINT(192,100),11:PAINT(200,93),1
           1
JB     210 DRAW"BM45,113R2E2R3F1R1E2R2E3R2E4R1E4R1E2R2E2R2E1R2F1D2G3L2G2L2D
           1G2L3G2L2D1G3L3G1L4":PAINT(78,100),11:PAINT(58,111),11
JL     220 DRAW"BM120,110E1R1E2R1E1R1E1R2E1R2E2R1E1E1R1E1R1F1G3L1G3L2G3L4":
           PAINT(128,106),11:PAINT(136,104),11
BF     230 FORY=120TO190STEP17.5
DL     240 LINE(127,120)-(0,Y),4
CA     250 NEXT
BE     260 FORX=0TO256STEP20
CP     270 LINE(127,120)-(X,190),4
BN     280 NEXT
B6     290 FORY=190TO120STEP-23.2
ED     300 LINE(127,120)-(256,Y),4
CF     310 NEXT
BK     320 Y=122:FORX=0TO10
CM     330 Y=X+Y:LINE(0,Y)-(256,Y),4,BF
CC     340 NEXT
CE     350 LINE(127,114)-(132,119),11,BF
AC     360 GOTO420
CD     370 FORY=FTOCSTEP2
KN     380 LINE(0,Y)-(255,Y),A,BF:NEXTY
CC     390 FORY=GTOCSTEP2
LF     400 LINE(0,Y)-(255,Y),B,BF:NEXTY
CD     410 RETURN
AD     420 FORT=1TO8:READA:A$=A$+CHR$(A):NEXT:SPRITE$(0)=A$
BK     430 FORT=1TO32:READB:B$=B$+CHR$(B):NEXT:SPRITE$(2)=B$
CJ     440 GOSUB760
```

```
CG      450 W=120:Z=180
CD      460 X=127
FJ      470 D=INT(RND(1)*-6)+5:IFD=0THEN470
FJ      480 E=INT(RND(1)*-6)+5:IFE=0THEN480
AK      490 F=INT(RND(1)*2):IFF=0THENY=110ELSEIFF=1THENY=110
GD      500 PUTSPRITE2,(W,Z),15,2
AM      510 S=STICK(0)+STICK(1)
AF      520 K=STRIG(0)+STRIG(1)
AH      530 SPRITEON:ONSPRITEGOSUB810
DP      540 ONSGOSUB560,570,580,590,600,610,620,630
AB      550 GOTO640
CH      560 Z=Z-6:RETURN
GK      570 W=W+6:Z=Z-6:RETURN
CF      580 W=W+6:RETURN
GD      590 W=W+6:Z=Z+6:RETURN
CC      600 Z=Z+6:RETURN
GD      610 W=W-6:Z=Z+6:RETURN
BM      620 W=W-6:RETURN
GD      630 W=W-6:Z=Z-6:RETURN
AK      640 IFX<1ORX>255THEN750
DL      650 IFY>1900RY<10THEN750
AH      660 IFY>1250RY<80THENGOSUB730
AJ      670 IFY>1400RY<30THENGOSUB740
KP      680 X=X-D:Y=Y-E
GL      690 PUTSPRITE0,(X,Y),15,0
AF      700 GOTO500
CF      710 DATA0,0,0,16,56,16,0,0
MN      720 DATA255,128,128,128,128,128,128,128,128,128,255,0,0,0,0,0,255,1,
            1,1,1,1,1,1,1,1,255,0,0,0,0,0
NC      730 VPOKE14338,56:VPOKE14339,124:VPOKE14340,124:VPOKE14341,124:VPOKE
            14342,56:X=X-D-D:Y=Y-E-E:RETURN
MM      740 VPOKE14337,124:VPOKE14338,254:VPOKE14339,254:VPOKE14340,254:VPOK
            E14341,254:VPOKE14342,254:VPOKE14343,124:X=X-D-D:Y=Y-E-E:RETURN
6C      750 VPOKE6912,209:VPOKE14337,0:VPOKE14338,0:VPOKE14339,16:VPOKE14340
            ,56:VPOKE14341,16:VPOKE14342,0:VPOKE14343,0:GOTO460
EO      760 SR$=CHR$(0)+CHR$(18)+CHR$(9)+CHR$(105)+CHR$(23)+CHR$(94)+CHR$(46
            )+CHR$(188)+STRING$(2,112)+CHR$(248)+CHR$(121)+CHR$(159)+CHR$(41
            )+CHR$(36)+CHR$(0)+CHR$(8)+CHR$(80)+CHR$(105)+CHR$(224)+CHR$(217
            )
AD      770 SPRITE$(3)=CHR$(2)+CHR$(30)+CHR$(30)+CHR$(59)+CHR$(240)+CHR$(224
            )+CHR$(97)+CHR$(57)+CHR$(15)+CHR$(2)+STRING$(9,0)+STRING$(4,128)
FA      780 SPRITE$(4)=SR$+CHR$(26)+CHR$(28)+CHR$(5)+STRING$(3,6)+CHR$(14)+C
            HR$(13)+CHR$(217)+CHR$(118)+CHR$(140)
GG      790 SPRITE$(5)=CHR$(32)+CHR$(120)+CHR$(248)+CHR$(240)+CHR$(48)
CI      800 RETURN
AL      810 IFKTHEN820ELSERETURN
EO      820 VPOKE6912,209:VPOKE6920,209:GOSUB880:PUTSPRITE5,(X+1,Y-1),6,5:FO
            RT=1TO80:NEXT:GOSUB880:PUTSPRITE3,(X-2,Y-4),8,3
LF      830 FORT=1TO50:NEXT:PUTSPRITE4,(X-6,Y-8),10,4:FORT=1TO50:NEXT:VPOKE6
            924,209:FORT=1TO50:NEXT:PUTSPRITE3,(X-2,Y-4),8,3
CG      840 FORT=1TO80
IC      850 VPOKE6932,209:FORT=1TO80:NEXT:VPOKE6924,209:FORT=1TO50:NEXT:VPOK
            E6928,209
AC      860 FORT=1TO1000:NEXT
HC      870 SPRITEOFF:VPOKE6920,Z:GOTO750
FM      880 SOUND0,0:SOUND6,30:SOUND7,0:SOUND8,16:SOUND9,16:SOUND10,16:SOUND
            11,0:SOUND12,5:SOUND13,0:SOUND12,26:RETURN
```

END

LIBRARY NOTES
by J. Collins

Following on from last month there are more programs to review and add to the Library List. As well I have an apology to make to two of our contributors re a mix-up in some Wordstar files for my last months article which managed to combine two quite separate programs into one review. See later reviews of the two programs for explanation.

A little bit on **MSX** to start off with and it would appear that the 'invasion' has finally reached our shores. SVI have released the SVI728, and the SVI-EXPRESS portable. The TOSHIBA, SONY, and of course YAMAHA are in the shops, MITSUBISHI and PIONEER are on the way and there are more reports in various magazines on the IBM MSX machine as well. Of course with IBM in the MSX family one could probably say that MSX is now 'respectable' and destined for much bigger things.

I've had my SVI-728 MSX computer for three weeks or so now and have had time to give it a good workout, at least as far as game playing is concerned. The overall quality of the 728 is as good or better than my 328. It has the same good solid feel and the keyboard response is excellent. There are some differences in using the keyboard though as some of the key locations are altered. For example the 'colon' is now accessed by using the Shift-key and the 'semi-colon' is unshifted. This is the reverse of the 328/318 and takes a little getting used to. Several other key positions are changed completely but if you've never used a 328 then I'm sure you will find the 728 keyboard very easy to use. The most obvious difference to my eye was the quality of the picture on my color screen using the inbuilt modulator of the 728 as opposed to the outside modulator of my 328 which is housed in the expansion unit. On the 728 the picture is rock-steady and very clear. There are obvious benefits from having the modulator as an integral part of the computer. Of course the 728 MSX has Direct Video output as well and a seperate socket for Audio output to your video monitor. I've tried the direct-video and it's very good although I've not been able to try it on 80 column software.

Editor is writing a full review on the 728 and the software we've had a look at so I wont say too much on the subject of games here. Some that I've seen have been well known games from other computers ported across to MSX and because no attempt has been made to take advantage of the very much greater graphics and sound ability of the MSX chip-set the screen displays appear to be coarse, the sound-effects aren't up to scratch and they appear to be generally not up to the standard we know can be achieved. That is not the case with those games which have been created for the MSX environment as they are definitely first-class and really use the machine as it was intended. I played a game called Antarctic Adventure which comes in MSX Cartridge from KUNAMI Software of Japan and that is brilliant. SONY have released a cartridge called Computer Billiards (which is actually a very good game of EightBall and nothing to do with billiards) and this is also excellent. More on MSX soon.

Because of pressure of other work Editor has asked me to help

check out some of the submissions from users who responded to his pleas for Newsletter Items. Look to your mailboxes for replies soon and to the Newsletter for the items selected. Any of you who have MSX machines can start sending in your items for the Newsletter now and don't forget those programs you write for sale through the Library......we are always on the lookout for more material. MSX conversions of previous Spectravideo software will also be welcome.

SUPER_IMP/ED

In my review of this program last month the files somehow got mixed up and some paragraphs meant for another review were included. Please go back to last months article and change the title to JOYSTICK_SPRITE_DESIGNER by S. Calder then delete the paragraph which says that you can "superimpose" one sprite over the other and make multi-part sprites etc. All other paragraphs are correct, and make up the complete review of the program as I originally intended it. My apologies to Mr S. Calder and also to Mr P. Grace, both of whom must have been confused to see parts of their programs being discussed in the wrong context.

The price quoted in last months Library List was correct for both of these programs :-

JOYSTICK SPRITE DESIGNER by S. Calder $10.00 plus media costs.

SUPER IMP/ED   by P. Grace $10.00 plus media costs.

BOTH_PROGRAMS_SUITABLE_FOR_CASSETTE_OR_DISK_ON_318s_and_328s

Below you will find the review of the program by Mr P. Grace which is in fact called :-

SUPER_IMP/ED

This is also a "Sprite Editor" type program but is executed in a different manner.

On first firing-up you can elect to read several screens of instructions, or you can go straight into program operation. The instructions are quite comprehensive and clear so you should not have any trouble there. As well as the initial instructions the normal working screen is arranged in such a way as to provide 'prompts' which remind you what the various functions are and how to access them.

You can use any suitable Joystick or the keyboard Cursor keys to move around in the 'editing' area and Spacebar or Trigger takes care of Pen-Up or Pen-Down. As you create your sprite you can see it on-screen in actual size. Sprites created are stored in a series of mini-screens on the right side of your working screen and this allows creation of 'multi-part' sprites and mating the various parts by using the 'superimpose' feature. Colors can be altered at will. Data statements can be created for your sprite creations, and these are output in such a way as to make it very easy to subsequently use them in your programs.

This is a comprehensive Sprite Editor, it is well written, works at good speed, and does what it has to do very efficiently. The author has written very tight code and made full use of the features of our machines.

FIVE GAME SOFTWARE PACKAGE

We have the above package on offer to all members for the extra low price of $10.00 on cassette or $12.00 on Disk if we supply the media. If you wish to supply your own cassette or disk the price for the package is only $6.00. There are five separate games, all different and all new. Their titles are listed below:-

SPACEWAR :: TANK WARFARE :: BIPLANES :: FLAG CHASE :: LIGHT CYCLE

I'm not going to completely review all of the games. They are written in BASIC, they all work well, they come with two pages of instructions on how to play. Any of them could form the kernel of a larger game if you want to try your hand at that.
Order by asking for the SPECIAL GAME SOFTWARE PACKAGE.

ASMED Editor/Assembler with Loader.

FOR USE ON CASSETTE BASED 328 OR 32K MEMORY 318s ONLY

Mr M.A. Perrett has submitted his editor/assembler/loader package for sale through the Library and as stated above it can only be used with a cassette based system. If you want to use it on your 318 you will need at least 32K of inbuilt memory. As you would expect from the name this is a collection of 3 programs which will allow Assembly Language Programmers to get their creations into the correct format for use on SV Computers. I have not fully tested this program, nor has it been through our usual bug-finding. Mr Perrett assures me that it works as he intended and with that proviso we offer it for sale.

It will be supplied on tape with an eight page manual as produced by the author. If any further correspondence is necessary after purchase please address same to Mr Perrett at his home address and not to the User Group. Technical advice on its' use will only be available from the author.

Address for correspondence is Mr M.A. Perrett
                                "ULIDIA"
                                Duck Creek Road
                                Old Bonalbo
                                New South Wales
                                2470

PRICE FOR "ASMED" is $15.00 (cassette supplied by Library), or $11.00 (cassette supplied by purchaser).

That's all I have space for this month so till next issue...

buy, trade & sell