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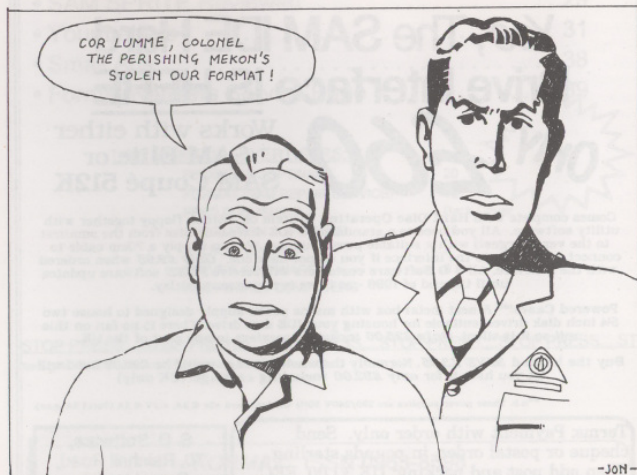
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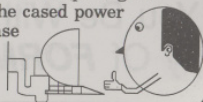
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STOP PRESS.....STOP PRESS.....STOP PRESS.....STOP PRESS.....STOP PRESS.....ST
Starting NEXT MONTH - a new SAM C column by Martin Fitzpatrick.

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NEWS ON 4

PSYGNOSIS TO SPLIT

Industry veteran Psygnosis, who were taken over by Sony two years ago, are looking to go it alone again.

The Liverpool based software company, most famous for its Lemmings series of games, did make a loss in 1995 but it is believed that it has now bounced back to healthy profits. However, there is an apparent conflict of interests in the current set-up, with Sony's obvious bias to their Playstation system causing some problems with the need for Psygnosis to spread its development risks over a wider hardware range. The best option seems to be for Psygnosis to find a new parent company, preferably one not involved in hardware manufacturing.

Investment banking firm SBC Warburg have been appointed to look at all the options available and are keen to stress that Psygnosis, which currently has over 300 staff, will remain a separate entity and not be absorbed into another software company.

DIXONS HIT BY SUNDAY PAPER

The Sunday Telegraph has uncovered stories of High Street electronics retailer Dixons selling second hand goods as new. One story involved a customer who purchased an Apple Mac computer from Dixons in Chichester but returned it because it was unsuitable for his needs. He then went to Currys (owned by the same company) and was sold the Mac that he had just returned.

The paper went on to say that Dixons had been investigated, cautioned or convicted in almost three quarters of England's counties for selling second-hand goods as new.

Dixons claim that they have very strict controls and that the number of cases where this happens is "minuscule" and

that successful prosecutions against the company have been in single figures for each of the past few years.

FALLING PRICES

Console giants Sega and Sony have both suffered from extensive price cutting on their prime products by national chain Toys 'R' Us.

The toy superstores were selling 32bit consoles well ahead of an official Sony price drop. In the US prices have been forced down by lack of demand and by over production. Despite extensive TV and magazine advertising the latest generation of consoles is not making the impact on the European market that the manufacturers were hoping for.

ELITE FOR SAM

Revelation Software have announced that they are working on a conversion for the legendary ELITE for SAM. The game, first launched on the BBC micro in 1983 produced a plethora of clones across most home micro formats and was also converted itself to the Spectrum, CPC, C64 and IBM machines.

Of these conversions, any Elite enthusiast will confirm, the Spectrum version was both the smoothest, most playable and the most feature packed version. It is the Spectrum version that is being used as the basis for the SAM conversion.

The game should be available in the next few months and will come complete with original printed manuals and packaging which Revelation are using as part of the licence agreement. Look out for more news soon.

Credits:

URGENT we need your news. Anything you think other people should know about. Each item printed earns the contributor 3 months extra subscription (please claim when next renewing).

The Editor Speaks

Sorry this month's issue is a little on the late side but, despite my protests, I've been forced to go on holiday. It was just a few days in the Lake District but it has put me behind. The plan was to have a few days away to rejuvenate the old body - it didn't work, I'm just as knackered now as I always am.

Anyway, back to the grind-stone. My comments on the Internet last month produced a few phone calls and letters. No, I'm not on Compuserve, so you can't email me. I did try Compuserve for a week but it was just too much like hard work. AOL seems better (at least they have 28,800 access from Gloucester as against Compuserve's 9600) but, as they don't have business account facilities I only took them up on their free 10 hour period. The Internet and World Wide Web is all well and good if you have the free time but I'm far from being convinced that it is the future for all of us. There is a lot of very interesting and useful information on the system - if you have the determination (or luck) to find it. However, if time permits, I will have another go at some time in the future and will share with **FORMAT** readers any nice things that I find.

On a similar subject, I am aware that there is now a bulletin board running for SAM users who have access to a modem. The number is 01744 614150 and it runs from 12 noon to 12 midnight on Saturdays only. If someone would like to log on and tell the rest of us what is there I would be pleased to see a short article on the subject.

Now, as they say, to something completely different. **BETASOFT**, producers of MasterDOS, MasterBASIC

BetaBasic and lots of other SAM and Spectrum software, has not advertised with us for some time now. The reason? Dr Andy Wright, who also wrote the SAM ROM if you remember, has been very tied up with his full-time job and with his young son Marcus. This has meant he has had little time to devote to Betasoft and so we have reached a deal with him that Format Publications will take over the marketing and distribution of Betasoft's products from now on. The items will be added to the Format Reader's Service Page as we organize duplication masters etc. The first two, MasterDOS and MasterBASIC have been added this month. The other products will come on-stream over the next few months.

Now summer is usually a quiet time of year on the Spectrum and SAM scene so we thought you would welcome something to look forward to - the next Gloucester Show. Yep, we've booked it already. Saturday the 26th October is the day, same venue as always. With this much time to plan we hope to see even bigger crowds than usual. It also gives us time to try and arrange some car sharing to help people get to Gloucester. I would like to hear from anyone who can offer lifts (on a petrol sharing basis of course) and from anyone who needs a lift. Just list your name, location and telephone number on a piece of paper headed CAR SHARE, if you are offering lifts then say how many spaces you have. We will print a list in the August and September mags so people can get in touch with each other and arrange the trip.

Until next month.

Bob Branchley, Editor.



THE HARD DRIVE PACK

Due to Hard drive manufacturers now concentrating on producing 540MB capacity drives upwards, it's very hard to find new drives under 540MB. With this in mind, I have carefully sourced out second hand drives with various capacities from 210MB to 420MB, all are nearly new, modern slimline design with low noise and Formatted/Surface tested for no bad sectors, prices range from £50-£85

I only sell hard drive capacities from 210MB, generally drives under this are the old bulky type which have had a lot of use by ex PC owners, the drives can be noisy and tend to give off more heat than usual. Modern drives are small, energy efficient, low noise and faster disc access.

It may be that software in the near future can split the hard drive into two sections, the first section is to save and load your files from as usual, the second section hold a backup copy of the first section, should the hard drive or directory becomes corrupted you can recover most of your precious data.

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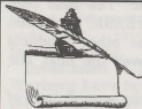
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SHORT SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

Now, for hot flamin' June (and I hope it is, for it's freezing here in May), at the risk of offending those of our readers who have only a SAM, a Spectrum+3 or something with a Discovery Disc Drive, I shall start by completing the bits and pieces that Miles Kinloch sent last month. Firstly, so that you'll have something to type in and therefore won't be bored, I'll give you 'Betatest'. "Yer What?" Yerrss; 'Betatest'; come on, you've forgotten already. Last month I featured Miles' 'Betafix'. Yes; I know it's been done before, but this was the definitive version: a version to end all versions. I hadn't, however, got room for a full description of the bugs or of the test program to show them up in original versions of BetaDOS, so here it is now. Indeed, this 'Betatest' contains all sorts of fancy routines to test the bugs that are likely to be in your original BetaDOS, so it's a bit of a fun jobbie, as it were. Just a word of warning. Firstly, arm yourself with a goodly pile of discs with utterly valueless files on them. 'Cos you're likely to have a little dose of corruption here and there. Gottem? Good; let's go.

Most of the features are carefully documented in the REMs, but Miles has added just a few last-minute biro notes to make sure of a few points, and here they are. Line 40 invokes the shadow PEEK function used in Line 120, so take care. In Line 70, the command RANDOMIZE USR 50000 tests the command code RST 8 DEFB 67 (CATs a disc), and is set last in the sequence,

since it is potentially destructive! Make sure you use non-valuable discs for lines 70 on, as the DOS might not write to the correct sector, or might give problems by slamming a sector full of code over something else. Good; all the rest's covered in the REMs. All you've got to do is type it in, find an original BetaDOS disc and have a play - on a COPY of the disc, preferably!

```
10 REM TEST ROUTINES TO REVEAL
    BETADOS BUGS. TRY BEFORE AN
    D AFTER FIXING DOS.
20 REM GOTO appropriate line t
    o test each bug in turn.
30 REM
40 DEF FN s(x)=USR 8
50 OPEN R#4;d1"xxx": STOP : RE
    M This line will only pass
    syntax when OPEN R# bug is
    fixed
60 FORMAT d*: STOP : REM This
    line will only pass syntax
    when FORMAT d* bug is fixed
70 CLEAR 49999: RESTORE 70: FO
    R a=50000 TO 50009: READ d:
    POKE a,d: NEXT a: DATA 221
    ,33,56,199,207,51,207,67,20
    7,255: FOR a=51000 TO 51023
    : READ d: POKE a,d: NEXT a:
    DATA 1,0,2,68,0,42,32,32,3
    2,32,32,32,32,32,4,0,0,0
    ,0,0,0,0: RANDOMIZE USR 5
    0000: STOP : REM This tests
    the command code RST 8 DB
    67 (CATs a disc).
80 CLEAR 49999: RESTORE 80: FO
    R a=60000 TO 60030: READ d:
    POKE a,d: NEXT a: RANDOMIZ
    E USR 60000: DATA 62,1,17,1
    ,200,221,33,72,238,207,68,2
    08,62,2,205,1,22,17,122,234
    ,1,5,0,195,60,32,69,82,82,7
    9,82: POKE 6866,275: STOP
```



```

: REM This tests the command code RST 8 DB 68 (READS a given sector). In this demo, sector 200/1 is loaded to 61000.
90 CLEAR 49999: RESTORE 90: FOR a=60000 TO 60030: READ d: POKE a,d: NEXT a: RANDOMIZE USR 60000: DATA 62,1,17,1,200,221,33,72,238,207,69,2,08,62,2,205,1,22,17,122,234,1,5,0,195,60,32,69,82,82,7,9,82: POKE @6866,275: STOP
: REM This tests the command code RST 8 DB 69 (WRITES a given sector) In this demo, sector 200/1 is saved from 61000. WARNING - DON'T TRY THIS ON AN IMPORTANT DISC!!!
100 CLS : POKE @7642,1: OUT 239,1: PRINT "Drive 1 is now the current drive Remove any disc which is in it and put an UNIMPORTANT disc into drive 2, then press any key. If the 'SAVE @' bug has been fixed, sector 200/1 will now be saved on Drive 2 from address 61000. If the bug is not fixed, the drive motor will just spin indefinitely, and the sector will not be saved unless a disc is inserted in Drive 1 first.": PAUSE 0: SAVE @2,200,1,61000: STOP
110 CLS : POKE @7642,1: OUT 239,1: PRINT "Drive 1 is now the current drive Insert a blank disc in Drive 2 and an unimportant or protected disc in Drive 1. Betados will now try to format the disc in Drive 2 for 100 files, using the special command FORMAT d2,5. However, if the bug in this command has not been fixed, it is Drive 1 which will be formatted instead, since that is the current drive.": PAUSE 0: FORMAT d2,5: STOP
120 CLS : PRINT "Please wait.":

```

```

POKE 23728,1: LOAD @1,1,11,16384: POKE 23728,0: LET c=FN s(15058)+256*FN s(15059): CLS : PRINT "A LOAD error has occurred by deliberately trying to load a non-existent sector. The internal system variable at 15058/9 is now ";c;," which is ("not " AND c<>275); the correct value.": PRINT "Now try to snapshot this program on an unimportant disc, and the chances are it will not work properly, possibly corrupting any other files which are on the disc." AND c<>275: REM LOAD @/SAVE @ error bug
130 STOP
140 CLEAR 49999: RESTORE 140: FOR a=50000 TO 50022: READ d: POKE a,d: NEXT a: DATA 22,1,33,56,199,207,65,221,33,5,6,199,207,53,17,0,64,1,0,27,207,55,207,56,201: FOR a=51000 TO 51023: READ d: POKE a,d: NEXT a: DATA 1,0,0,10,0,4,84,69,83,84,83,67,82,69,69,78,3,0,27,0,64,0,0,0,0: PRINT "When you press a key, a demo file called TESTSCREEN will be saved.": PAUSE 0: RANDOMIZE USR 50000: CLS : PRINT "If you can read this, the bug has been fixed, as you have returned to BASIC successfully.": STOP: REM This tests command code RST 8 DB 53 (opens a file).
150 CLS : PRINT "Insert an unprotected disc in drive 1, then press any key. A data array will then be saved onto the disc under the filename you enter, but if the problem with using a capital 'D' in SAVE and ERASE commands hasn't been fixed, the Spectrum will simply crash afterwards.": PAUSE 0: INPUT "Filename? "; LINE a$: DIM b$(100): SAVE D1;a$: DATA b$(100): CLS : PRINT "The file has now been saved and since

```

```

e you can read this, no crash has occurred and the bug has therefore been fixed.
": STOP
160 CLS : PRINT "Insert a disc in Drive 1, and a file will be created on it and then opened RND. The file will then be printed to using PAPER 6 but if the bug is not fixed, this will cause a 'No sense in BASIC' error. Also, INPUT will be tested with the text "THIS SHOULD NOT BE PRINTED" coming before the variable. If the file is closed and read back, then if you were in 128K mode, the above text will be in the file. (You'll need to do a CLOSE R#4 as a direct command if the error occurred.)";R#0; AT 0,10;"PRESS ANY KEY": PAUSE 0
170 CLS : PRINT "WHEN YOU PRESS A KEY, A FILE "TESTFILE" WILL BE CREATED AND OPENED RND.": PAUSE 0: CLS : CLEAR R#: POKE 23728,1: ERASE d1"TESTFILE": POKE 23728,0: OPEN R#4;d1"TESTFILE"RND: PRINT R#4;" THIS TEXT IS WHAT YOU SHOULD SEE": POINTR#4;2: INPUT R#4;"THIS TEXT SHOULD NOT BE PRINTED",a$: CLOSE R#4: OPEN R#4;d1;"TESTFILE"RND: PRINT R#4; PAUSE 6: CLOSE R#4: CLS : MOVE d1"TESTFILE" TO R#2: STOP
9999 SAVE d1"BETATESTER"

```

All right: you've had the fun bits now. Now I'm going to include the notes on the bugs which are cured by 'Betafix'. C'mon; stop giggling; this is IMPORTANT!

BUGS FIXED

1. OPEN# command. If you omit the IN or OUT at the end, the DOS will not accept the syntax if there is another statement following in the same line, i.e. if a colon is the next character after the command. (This bug also affects

G+DOS).

2. FORMAT command. There are two bugs here:-

a) The specified form FORMAT d1,n etc. ignores the drive specified and just formats the last drive you used.

b) The form FORMAT d* will not pass syntax.

3. Command codes. These are, perhaps, the most serious of all the BetaDOS bugs, as they affect many commercial programs which call the DOS from machine-code. Once the command codes are fixed, the great majority of such software will then run with BetaDOS without any problems. A few examples are the PLUS D converted version of Tasword 128, Hackers' Workbench, (SD Software), Profile (Glensoft), Disc-Kit, PLUS D-converted Art Studio, and several of Betterbytes' utilities. Six codes altogether are faulty, as follows:

a) Codes 52 and 53. The problem here is the alternate HL register pair being corrupted, resulting in a crash after returning to BASIC from a USR call which involves these commands.

b) Code 56. The routine called by RST 8 DB 56 has not been changed from the one in the PLUS D ROM which G+DOS uses. This is fine with BetaDOS too, except for discs which have been formatted with more than 80 files: such discs would invariably be corrupted as a result. (Code 56 serves to close a file from machine code, i.e. to create an entry for it in the directory).

c) Code 67. This is the code used to CAT a disc, and is fatally flawed. Any attempt to use it will almost always crash the Spectrum and may possibly corrupt the DOS at the same time.

d) Codes 68 and 69. The equivalents of SAVE @ and LOAD @. These two always return signalling a DOS error, regardless of whether there has, in reality, been

such an error. See also No. 4.

4. LOAD @/SAVE @ commands (and command code equivalents). If there has been an error during a LOAD @ or SAVE @, e.g. a write-protected disc, etc., this results in a wrong value being left in one of the DOS system variables. Consequently, if you then type RUN to re-boot the DOS, the process will stop prematurely with an 'end of file' message. Also, if you try and make a snapshot, it will be improperly saved and run the additional risk of corrupting other files on the disc. (Typing CLEAR # resets the variable, but this is hardly the ideal solution to the problem, for example if any streams were open at the time, or if the error had come about through the command codes and an exit to Basic was impossible, etc.).

5. SAVE @ command. There is a problem with the routine which spins the drive for about a second to ensure the motor is up to speed before it writes the sector. It takes no account of the drive specified, merely spinning the motor of the last drive used. This is fine if you happen to have a disc in both drives, otherwise the last drive will spin indefinitely until a disc is inserted in it.

6. Use of a capital 'D' in SAVE and ERASE commands. Contrary to appearances, the auto-CAT which occurred with G+DOS when using the capital 'D' has not, in fact, been fully disabled in BetaDOS. The CAT actually still takes place: it's just that you can't see it as its stream is altered to make it CAT to the Basic workspace instead of to the screen. In these circumstances, no checks are made on the amount of workspace memory available, etc., and this can sometimes cause problems, especially if an INPUT has been used previously as this also uses the workspace.

7. MOVE command. The form MOVE #s

TO d1"name" (not documented in the PLUS D manual) has two serious bugs. The first is that the directory entry created for the new file, although it will exist, won't be visible in the catalogue. The second problem arises when you are using this form of the MOVE command, if the filename has already been used. If you then type 'n' at the 'Overwrite' prompt, using CLEAR # or CLOSE # afterwards will lock up the Spectrum. This is because some pointers won't have been reset, and both CLEAR # and CLOSE # will then get confused about how much memory to reclaim. (This bug also affects G+DOS).

8. BetaDOS function-calls, e.g. DEF FN s(x)=USR 8 etc. Potentially, there could be a problem with the 128K editor if these were typed as direct commands, particularly the ones concerned with opentype files, i.e. FN e, FN 1 and FN p. The 128K editor is fussy about the value of the IX register pair (or rather, to be more precise, the contents of (IX+1) if non-zero), when it's in the process of editing a line. The latter three functions use IX themselves, so this should really be set correctly afterwards for 100% safety. For further details about this problem, see the article 'Plus D Alters' in *FORMAT*, March 1988, (Vol.1, N° 8), as this was something which also affected the previous DOS (i.e. the version before G+DOS 2a).

9. Tape SAVE command. If a null filename or one longer than 10 characters is used, you get 'Nonsense in Basic' instead of 'Invalid file name' with a PLUS D attached. A minor bug, but one that is nevertheless very easy to put right.

10. Printing to Random Access files. There are two bugs here:-

a) The BetaDOS manual states that when you INPUT from a file opened RND, text or control characters coming

before the input variable will be ignored, e.g. INPUT #4;"text";a\$. However, this only holds true for 48K mode; in 128K Basic, such text will still be written to the file, regardless.

b) Using colours in a PRINT command which sends data to the file can cause an error. Embedded controls are OK, but if you use the PAPER, INK etc. tokens in the PRINT statement, e.g. PRINT #4;INK 5;"text", this can generate a 'Nonsense in Basic' report.

ENHANCEMENTS

1. New command. You can now use LOAD dn (or SAVE dn) on its own, which gives you the opportunity to change the current drive without actually having to use the drive to do so. This can be very handy before LOAD Pn, for instance.

2. SAVE...TO... This command has been improved with regard to copying between different drives. The PLUS D system suffers from a shortcoming in that it keeps note only of the track register (drive head position) for one drive. This can sometimes lead to problems, especially when you are copying long files, such as 128K snapshots which can't be done as a single 'pass', as the system becomes confused about the true position of the head. In extreme cases, it can even fail altogether and stop with an error report. Betafix patches the SAVE...TO... routines such that separate records are kept for the track registers of both drives, conferring not only much greater reliability, but also an increase in speed, typically of about 15%.

That's it. The definitive version of Betafix. I feel that all of us who have a Spectrum and PLUS D interface, and that, I suspect, must be the vast majority of the readers of *FORMAT*, owe Miles a debt for sorting all these bugs and fixing them. Three cheers for Miles! Many thanks, mate!

Funnily enough, next I've a letter from

Mr L.G.Baumann, a regular contributor from Cowies Hill, South Africa, who has acquired a PLUS D to use with his Spectrum. He writes that it is a pain trying to get on screen the catalogue of some of his discs which have over 70 files on them, when all you want is to see if there is a particular file there. To avoid the tedium of screening them all, use the 'wild-card' facility, which is there, but not many people seem to know how to use it effectively. For instance, if it is one of the files whose first three characters are 'fil', you can list these economically by doing CAT 1 *fil*. Only the specific files will be screened with their P numbers and other usual details. However, the Free K-Bytes, No of Files and Free Slots are shown in the usual way. Similarly, if you know that part of the middle of the files, for example characters 5 to 7 read 'tim', one can enter CAT 1 "????tim*". Here is an example where the first four letters are 'disc' and is run on drive 2...

* MGT PLUS D DISC 2 CATALOGUE*

6	discread	32	BAS	100
25	discscop	31	BAS	110
42	discfindr	7	BAS	1
57	discray	15	\$.ARRAY	
63	discorgn	59	BAS	5420

Number of Free K-Bytes = 673

75 File(s), 5 Free Slots

Many thanks, Mr Baumann, and nice to hear from you again.

Now back to Andrew Precious of Acomb, York, - you remember we had some of the bits from his Speccytape last month, but that some were left over. It's a bit embarrassing - for once, I've got material in hand. So many thanks, for instance Mick Sleight - this time I've got it and we'll try and put it in in due

course. Anyway, back to Andrew; let's get him finished! So here goes...

'FX' gives you access to a large number of optical screen effects (well, that's how Andrew puts it). It's all in one small block of code: enter the start address when required and make a note of the various effects which can be POKEd in. The effect can be changed at any time without the risk of a crash, provided you type in the POKE correctly! This means you need to save only one copy of the code, enabling you to save memory! Here's the code: type it in! Now!

```
10 CLEAR 24999
20 INPUT "Start address?";a
30 IF a<25000 THEN GOTO 20
40 LET l=24
50 FOR p=a TO a+1-1: READ b: P
  OKE p,b: NEXT p
60 INPUT "Save code (Y/N)?";s
  $: IF s$="Y" THEN SAVE "FX"
  CODE a,l
70 PRINT "Effects are:"
80 FOR z=1 TO 7: READ n,e$: PR
  INT "POKE ";a+11;";n,e$:
  NEXT z
90 PRINT "'POKE ";a+9;";24 for
  display only'"POKE ";a+9;
  ";27 to include";"attribut
  es"'Initialise with'"RAN
  DOMIZE USR ";a
100 STOP
110 DATA 62,0,6,8,33,0,64,17,0,
  24
120 DATA 203,0,35,27,187,32,249
130 DATA 186,32,246,5,32,237,20
  1
140 DATA 6,"Scroll left"
150 DATA 14,"Scroll right"
160 DATA 46,"Blur"
170 DATA 22,"Ink fill left"
180 DATA 30,"Ink fill right"
190 DATA 38,"CLS left"
200 DATA 62,"CLS right"
```

'Fader' is, essentially, well, er, a fader. Choose where you want it stored, and use the USR call to fade...

```
10 CLEAR 24999
20 INPUT "Start address?";a
30 IF a<25000 THEN GOTO 20
```

```
40 LET l=54
50 FOR p=a TO a+1-1: READ b: P
  OKE p,b: NEXT p
60 INPUT "Save code (Y/N)?";s
  $: IF s$="Y" THEN SAVE "Fad
  er"CODE a,l
70 PRINT "Initialise with'"RA
  NDOMIZE USR ";a
80 STOP
90 DATA 6,8,17,0,3,33,0,88,126
  ,203
100 DATA 191,203,183,203,111,32
  ,8,203
110 DATA 103,32,4,203,95,40,2,2
  14,8
120 DATA 203,87,32,8,203,79,32,
  4,203
130 DATA 71,40,1,61,119,35,27,6
  2,0,187
140 DATA 32,216,186,32,213,16,2
  05,201
```

'Flash Fader' is a variant, shorter than 'fader', and gives a flashing effect to any cell with a PAPER greater than 0 or with FLASH or BRIGHT enabled; a bit like the special effects in a very dodgy movie from the 70's. The same rules apply as for 'fader'

```
10 CLEAR 24999
20 INPUT "Start address?";a
30 IF a<25000 THEN GOTO 20
40 LET l=30
50 FOR p=a TO a+1-1: READ b: P
  OKE p,b: NEXT p
60 INPUT "Save code (Y/N)?";s
  $: IF s$="Y" THEN SAVE "Fad
  er"CODE a,l
70 PRINT "Initialise with'"RA
  NDOMIZE USR ";a
80 STOP
90 DATA 62,0,6,0,33,0,88,17,0
100 DATA 3,78,185,40,4,6,1,13
110 DATA 113,35,27,187,32,243,1
  86,32
120 DATA 240,184,200,24,228
```

Screen Spiller is a more interesting version of Instant Pic. It draws a previously loaded screen onto the screen in a rather less boring way than Instant Pic, which we printed last month. The same rules apply as for Instant Pic. Do

make sure that the code (35 bytes) and the SCREEN\$ file (6912 bytes) do not overlap!

```
10 CLEAR 24999
20 INPUT "Start address?";a
30 IF a<25000 THEN GOTO 20
40 LET l=35
50 FOR p=a TO a+1-1: READ b: P
  OKE p,b: NEXT p
60 INPUT "Address of SCREEN$ f
  ile?";f
70 IF f<25000 THEN GOTO 60
80 POKE a+14,f-256*INT (f/256)
90 POKE a+15,INT (f/256)
100 LET f=f+6144
110 POKE a+1,f-256*INT (f/256)
120 POKE a+2,INT (f/256)
130 INPUT "Save code (Y/N)?";s
  $: IF s$="Y" THEN SAVE "Ins
  tantPic"CODE a,l
140 PRINT "Initialise with'"RA
  NDOMIZE USR ";a
150 STOP
160 DATA 33,0,0,17,0,88,1,0
170 DATA 3,237,176,62,64,33,0,0
180 DATA 17,0,40,1,0,24,229,213
  ,197
190 DATA 237,176,193,209,225,18
  6,200
200 DATA 20,24,243
```

Many thanks, Andrew.

Next, I have a message from Greece. Bob mentioned last month that he had had a little badge with the inscription 'In Spectrum we trust!' Well, he hasn't a monopoly on them: I've got one, too! And a snippet for Short Spot. Trouble is, it's got some interesting spelling in it, and it's also therefore not entirely clear. And it's printed in *hewge* letters on a dodgy dot-matrix printer, and then embellished in green biro, so that I can reproduce it only with difficulty. So I am doing, in all its glory, *with no alterations, additions or corrections*, and I leave it to you to think about it.... I deny all responsibility for this - there was no disc for me to check....

```
5 INK 5: BORDER 0 PAPER 0
10 CLEAR 60000
```

20 PRINT "April 1996 hardcore vegetarian (h.c.v.) at the keyboard"

```
30 PRINT
40 PRINT "Spectrum Not Dead (S
  .N.D.) group from grece. Th
  is program put uber 2 color
  s in one chartacter cell. T
  hat is never hapen again!(t
  hat i know.) but, wait for
  more work from S.N.D."
50 PRINT AT 8,9;"No bals and b
  abols all the time...And no
  w some-thing to make happy
  all the spectrum freaks: wr
  ite to us to sent you absol
  itle free one rosete with t
  he message <<in spectrum we
  trust>>"
60 PRINT "S.Kanelis dafnomili
  37A (37A not just 37),11471
  Neapoli ExArhia Athens GRE
  CE": PAUSE 1300
70 FOR f=61000 TO 61041
80 READ a: POKE f,a: NEXT f
90 DATA 243,62,3,6,8,197,245,
  33,0
100 DATA 88,17,1,88,1,255,2, 23
  7,176
110 DATA 3,0,64,1,0,4,106,203,
  63,119
120 DATA 35,11,120,177,32,246,
  241,193
130 DATA 61,16,221,201,0,0,0
140 PRINT AT 18,27;"graphic cap
  s-shift 5": REM they've pri
  nted the graphic, but it's
  not in my word-processor!
150 FOR r=0 TO 5: RANDOMIZE USR
  61000+RND*r: NEXT r: PRINT
  AT 18,27;" ": REM this is
  an empty space between two
  quotes!
160 FOR r=0 TO 5: RANDOMIZE USR
  61000+RND*5: NEXT r: GOTO
  140
```

The 'Free rosete' (sic) referred to in line 50 is going to be the badge, since this came wrapped up in foil, and was labelled 'rosete'. I have annotated lines 140 and 150 with REMs, as I can't do Spectrum graphics in Lotus Ami Pro!

Many thanks to the hardcore Greek vegetarians!

I'm still getting trouble with Roman numeral conversion programs. Here's yet another, and as Matthew Webster of Aldington, Chorley, Lancs took the trouble to write last month, then send me an improved version this month, I guess I'd better do something about it. So here it is. It's in Spectrum Basic, and, claims Matthew, will run on the PLUS D or SAM with minimal adjustment. Here it is.....

```

10 POKE 23658,8: REM Caps lock
   on
20 INPUT "1:Arabic to Roman""
   2:Roman to Arabic ";c
30 IF c=2 THEN GOTO 1000
40 IF c<1 THEN GOTO 10
100 INPUT "Number for convertin
   g? "; LINE a$
110 PRINT a$
120 LET r$=""
130 IF LEN a$=3 THEN GOTO 200
140 IF LEN a$=2 THEN GOTO 220
150 IF LEN a$=1 THEN GOTO 240
160 LET m$a$=(TO LEN a$-3): LE
   T a$a$(LEN a$-2 TO )
170 FOR m=1 TO VAL m$
180 LET r$=r$+"M"
190 NEXT m
200 LET b$="M": LET f$="D": LET
   s$="C"
210 GOSUB 300: REM Hundreds
220 LET b$="C": LET f$="L": LET
   s$="X"
230 GOSUB 300: REM Tens
240 LET b$="X": LET f$="V": LET
   s$="I"
250 GOSUB 300: REM Units
260 PRINT "Becomes": PRINT r$
270 STOP
300 LET d=VAL a$(1): LET a$a$(
   2 TO )
310 GOTO 400+d: REM Determine w
   hich letter sequence
400 RETURN
401 LET r$=r$+s$: RETURN
402 LET r$=r$+s$+s$: RETURN
403 LET r$=r$+s$+s$+s$: RETURN
404 LET r$=r$+s$+f$: RETURN
405 LET r$=r$+f$: RETURN
406 LET r$=r$+f$+s$: RETURN
407 LET r$=r$+f$+s$+s$: RETURN
408 LET r$=r$+f$+s$+s$+s$: RETU

```

```

RN
409 LET r$=r$+s$+b$: RETURN
1000 INPUT "Numerals to convert
   ?" LINE r$
1010 PRINT r$
1020 LET a=0
1030 LET r$=r$+****: REM Preven
   t error when reading end of
   string
1040 FOR r=1 TO LEN r$-1
1050 IF r$(r)="M" THEN LET a=a+
   1000: NEXT r
1060 IF r$(r)="C" AND r$(r+1)="
   M" THEN LET a=a-100: NEXT r
1070 IF r$(r)="C" AND r$(r+1)="
   D" THEN LET a=a-100: NEXT r
1080 IF r$(r)="C" THEN LET a=a+
   100: NEXT r
1090 IF r$(r)="D" THEN LET a=a+
   500: NEXT r
1100 IF r$(r)="L" THEN LET a=a+
   50: NEXT r
1110 IF r$(r)="X" AND r$(r+1)="
   C" THEN LET a=a-10: NEXT r
1120 IF r$(r)="X" AND r$(r+1)="
   L" THEN LET a=a-10: NEXT r
1130 IF r$(r)="X" THEN LET a=a+
   10: NEXT r
1140 IF r$(r)="V" THEN LET a=a+
   5: NEXT r
1150 IF r$(r)="I" AND r$(r+1)="
   X" THEN LET a=a-1: NEXT r
1160 IF r$(r)="I" AND r$(r+1)="
   V" THEN LET a=a-1: NEXT r
1170 IF r$(r)="I" THEN LET a=a+
   1
1180 NEXT r
1190 PRINT "Becomes": PRINT a
1200 STOP

```

Many thanks Matthew. Y'know, I must have struck a chord - I've been *inundated* in converters after putting that item in Short Spot. I'm sure we've had enough of them now, so Matthew's is utterly, butterly, positively the last Roman/Arabic converter I'm considering for 1996. So there.

Next, I've a little note from Peter Williamson of Sleaford, Lincolnshire, who writes about READ functions of lines of DATA. One of the problems when using these is that the line of data first

listed in the program is always read first. When only one READ is being used, there's no problem, but if you want two or more READ activities, then the setting of the lines of data becomes a headache. Peter tried various ways to control the READ function, such as putting a READ function and the relative data lines in a procedure. It didn't make any difference. The data first listed was read, not the stuff in the procedure. Dandruff time...

Peter's not the one to be beaten by a trivial problem like this, though. He's got a solution: not a universal solution, for it will work only with SAM, though there might be ways round it with the Spectrum. First you put the data into a string, and you leave it there until just before you need it. Then, and only then, you put it into a data line just prior to use with the KEYIN command. After the data line is read, it is then deleted from the program. SAM accepts DELETE 250 TO 250 quite happily, so the data in line 250 can immediately be cleared after use.

The following test program illustrates the method. Incidentally, one can put either numerical or alphabetical data into a string, e.g. LET A\$="1,2,3,4,5" or LET A\$="A", "B", "C", "D" is allowed.

The program for numerals is:-

```

10 LET B$="5,6,7,8"
20 LET a$="1,2,3,4"
30 KEYIN "200 DATA"+A$
40 FOR X=1 TO 4
50 READ J
60 PRINT J;
70 NEXT X
80 DELETE 200 TO 200

```

The printout is 1234, although this information comes from the second data statement in the listing.

For alphabetic or mixed data, the

program is:-

```

10 LET B$="A", "5", "B",
   "6"
20 LET A$="C", "8", "D",
   "9"
30 KEYIN "200DATA "+A$
35 FOR X=1 TO 4
40 READ J$
50 PRINT J$;
60 NEXT X
70 DELETE 200 TO 200

```

And in this case, the printout is C8D9.

Peter also mentions that he had trouble in the past where there were data lines at the end of the program, also a sequence where data had to be saved with the line:-

```
1210 SAVE M$ DATA B$( )
```

This line was earlier in the listing than the actual DATA lines, and the READ function kept on producing error conditions. It turned out that the command was trying to use the B() as data because the word DATA appeared in the SAVE command!

Many thanks, Peter. Nice one. I tell you what: couldn't you achieve the same effect with a Spectrum and a +D drive by MERGEing various overlays with the main program? I guess you could. How about a *short* program to do something useful, readers, which invoked this principle? Look forward to hearing from you all.

Please keep all your snippets coming to me; without them I can't put a column together. Please send them to:-

**John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
WR10 2LX.**

See you next month.

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The HELP PAGE

Edited By:- Ray Bray.

George Wrzesien of Dereham, Norfolk, provides our first question for this month. He wishes to know if he can integrate the PCG DTP fonts into The Last Word in order to make his Fujitsu DX2100 printer produce output more like an inkjet printer. Unfortunately the answer to this is no. When printing a document, TLW sends the standard character codes to the printer which then uses it's own character sets to produce the printed page. Under this regime the only way to change the printed output is by selecting the various styles provided by the printer. Most printers also allow customized character sets to be downloaded to the printer RAM, which gives the facility to produce various fonts, but the printing of these characters with TLW would still be limited to the standard draft and NLQ output of the printer.

The high quality output of the DTP Typeliner program is mainly achieved by triple-pass dot graphics printing (which is something which TLW is not designed to do), and has little to do with the fonts being used. The way that you can utilise the printing capability of the PCG Typeliner is to transfer your TLW files to PCG Wordmaster, reduce them to an ASCII file, and print them using Typeliner. However, it can be rather an onerous task re-aligning the text, particularly if it contains any tables or many inset passages, but I have only used this process on the odd occasion and perhaps it becomes easier with practice.

Our next question concerns file transfers from a Psion 3a palmtop computer to a Spectrum +2. Derek

Crabtree of Weybridge Surrey wonders whether it would be possible to transfer text files from the Psion to Tasword2 via the RS232 link. He also comments that the RS232 socket on the Spectrum seems to be blocked by the MGT interface, which would require the interface to be removed every time the link was used, is there any way around this? With reference to the feasibility of transferring the files, yes this is possible. You will have to purchase the Comms Unit for the Psion, which I believe will cost you about £65, and you will need the software for the Spectrum which has been developed by Cliff Jackson, which I can provide on receipt of a formatted disc and stamped addressed envelope. The files need to be in ASCII form and preferably 64 characters per line. Regarding the problem of the disc interface blocking the RS232 socket, if you can obtain one of the old interface two-way adaptors such as the Currah Slot, this would move the MGT interface out sufficiently to enable the RS232 plug to be inserted (I recall that one of the main electronic component mail order firms was selling an uncased version of the Currah Slot last year). Failing this, you could always make up a short flying lead with a six pin GPO socket (or a DIN socket) and solder it to the existing socket terminals bringing it out the back of the case through the gap above the socket.

We now turn to another one of those perennial printer problems. H.Smart of Selkirk was recently having trouble in getting a Tasman printer to work with Tasword 2, and he purchased an Epson RX80 printer hoping that his problems

would be over. Although this printer works reasonably well, he is unable to get all the print options to function and, in particular, the underline facility will not work. Unfortunately, although the RX80 is made by Epson, it does not support all of the Epson printer codes, however I would have thought it would have included the standard underlining codes. Looking at the copy of the Tasword printer codes you forwarded with your letter, there appears to be some odd ones included and I cannot see the codes for underlining listed. The codes for underline ON are 27,45,48 and the codes for OFF are 27,95,49. You say that you do not have a printer handbook and, so far, you have had no reply to your request to see if one is still in print. I do not have a list of the codes for this printer so all I can do is ask you to let me know which facilities you can't obtain and I will send you the standard codes to try. If any reader has a list of codes for the RX80 I would appreciate a copy so that we can help Mr Smart and any others in the same position, or if anyone can confirm that the RX80 meets the minimum Epson standard "ESC/P-80", then I already have a list of those codes.

Sam-C is the subject of our next query sent in by John Saunders of Chalfont St. Giles, Buckinghamshire. John sent a plea for help with getting the 'scanf' function to assemble error free, as each time he includes it in a program he gets the error message "CALL scanf undefined symbol". The history of this function seems to get worse as time goes by, which is a pity as it is (in my view), the most useful function for making an input from the keyboard. In the initial issues of SAM-C it worked as it should do and no problems were experienced, but in the most recent issue it became one of those functions which were covered by the general statement in the accompanying leaflet which said; "In order to compile some files it may be

necessary to turn the Smart Compiling off". Unfortunately it was not stated what Smart Compiling was or why it might be necessary to turn it off, and it was left to the user to discover first, whether or not it was a syntax fault which caused the failure to compile (which is not always easy for a newcomer), and then to make the logical connection with the need to turn off the Smart Compiler. To complete the history, in the first issue of SAM VISION the function scanf doesn't even exist, requiring programs which included 'scanf', written using SAM-C, to be amended to use the non-standard 'input' function (which prints spurious characters to the screen in addition to the required input). Having given you the history, the answer to your problem is; with the last issue of SAM-C you need to select OPTIONS/COMPILER/Smart Compiling Off to be able to compile 'scanf', but if you are using SAM VISION you will have to replace 'scanf' with one of the two 'input' functions.

I cannot recall when we last had a query concerning the construction of add-on projects for Spectrum, let alone SAM. Tony Wood of Hackney, London has been a keen Spectrum project constructor for many years and now wishes to turn his hand to projects for SAM. To this end he has three queries; what SAM address ports are already dedicated to other uses, has anyone a circuit for a SAM address decoder, and could we explain the use of Pin 1A of the expansion port as he has read the explanation in the manual but is still confused. On the question of port usage, MGT set out to keep a register of ports which were used by all new software and hardware to avoid any future conflicts but that fell into abeyance when MGT went out of business. All I can say is that, if you are only interested in building projects privately, then as long as you avoid the range 224 to 255 you

should be alright as any conflicts which might arise can be dealt with simply. With regard to a SAM address decoder, the only reference I can find is the decoder used in the Kaleidoscope project which was sold in kit form and was briefly described in the MGT SAM Disc Magazine. Perhaps one of our readers can either supply a copy of the circuit for that decoder or come up with a general purpose address decoder for SAM? Finally, with reference to the purpose of Pin 1A, in simple terms what the Manual is saying is that if you wish to use an external device whilst a SAM Bus is connected, then in addition to the normal signals being sent to the edge connector for controlling the device, you must send a signal to Pin 1A, setting it low for read or high for write, before proceeding with data transfer.

The next letter arrived a couple of months ago but I have only recently had time to have a good look at it. Jack Law of Upper Norwood, London, sent me a morse code practice program for Spectrum which he thinks might have come from an early issue of Format or from one of those other magazines which have since sunk without trace! In fact the program appeared in the July 1990 issue of Format and, just to impress you on how good our data retrieval system is Jack, you wrote to Bob in 1990 about this very program and your letter appeared in the November 1990 issue! Jack now has two queries about the program. Firstly he finds that the speed program produces is about 20% slower than that selected by the user. Secondly, how does the program know how to stop after transmitting 48 groups of 5 letters and is there any way of altering this to give say 100 words or even go on sending till the user wishes to stop it?

The speed of the program is controlled by the four pokes listed in lines 15, 20, 25, and 30, (see page 15 of **FORMAT** July 1990). The first two pokes set the

beep duration for the dot and the dash, and the second two pokes set the duration of the gap between each dot and dash and the gap between characters. The latter is trebled to give the space between words (i.e. five characters). Obviously it is undesirable to alter the duration of the dots and dashes so the last two pokes are the ones which should be adjusted. I found that changing the statement INT(560/W) in line 25 to INT(380/W), and changing INT(1100/W) in line 30 to INT(600/W) produced the correct speed whilst retaining a reasonable balance in the sound of the morse. You might like to play around with this to get the sound to suit you. It must be said that there will always be a slight variation in speed measured over a period of one minute as the length of each morse character varies so much.

The number of characters transmitted is controlled by the statement FOR A = 1 TO 288 in line 35. This defines the number of random characters generated (in groups of 5 followed by a space), therefore 288 divided by 6 gives 48 words. If you wish the program to send, say 100 words, then change 288 to 600. When increasing the number of characters transmitted, you must ensure that the A\$ and B\$ arrays are large enough to store the data. The machine code program knows when to stop by reading the code 255 which is added by line 60 of the Basic program. With reference to the feasibility of achieving continuous output, because of the way that the program is configured it is not possible to alter it to run until the user wishes to stop it, as all the characters are generated and stored before transmission. For continuous transmission the random characters would have to be generated and transmitted sequentially and, to achieve the speed range required, I think the whole program would have to be re-designed and written in machine code.

Finally, I have received a letter of appreciation from John Williamson for the help I was able to give him recently, (many thanks for that John), and in his letter he mentioned a couple of 'bugs' he has come across on SAM and wondered if it was just his machine which was playing up or if other readers have come across them. The first problem arises when a mistake is made when typing in a program line. The error indicators come up and on traversing the cursor to the point of error and entering the correction, it is found that the text later in the line is degraded, often with graphics characters or random keywords. The only solution is to delete the line completely and start again. The second problem concerns a program line which cannot be listed to. On entering LIST and the line number, the cursor goes to two lines beyond the one LISTed. Once again, the only cure is to delete the line and retype it.

The first thing to say about this is that I have experienced the first problem several times in the past so it isn't just a fault with your machine. There seems to be an imperfection in the design of the Editor which gives rise to this, but as it doesn't occur very often one can live with it. I have also experienced the second problem with listing a line. I have no idea of the reason for this fault but I have a sneaking suspicion that it must be tied up with paging, but I can't imagine why re-typing the line should cure it. Another glitch which I have experienced a couple of times is also to do with a corrupt line. In this case a corrupt line appeared for no apparent reason in the middle of the program listing. On both occasions the program was over 20 Kbytes long. In one instance a routine in the program was being developed to search for a string in an OPEN type file held in RAMdisc, but on the other occasion the program was nothing out of the ordinary. In both

instances the only cure was to switch off and load the program again.

John Williamson suggested that we should start a "Bugs Gallery" for SAM. If anyone has experienced any other unusual bugs I will be glad to pass them on.

That's all we have for this month. Please keep sending your problems/answers to the following addresses:-

Anything SAM or General Purpose:-

Ray Bray (**FORMAT** Help Page),
Spring Cottage, Bourne Close,
Porton, Salisbury, Wilts, SP4 0LL.

Anything +3, CP/M:-

Mike Atkins (**FORMAT** Help Page),
70, Rudgwick Drive,
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128K KEYPAD?

By:- Paul Farrow.

History

Amidst the hype and speculation prior to the UK launch, in 1986, of the Spectrum 128, reports described a plug-in keypad that would be available for the machine which would provide additional editing capabilities.

Unfortunately, Sinclair Research did not launch it along with the Spectrum 128 and so, after Amstrad had purchased the rights to the Spectrum later that year, the fate of the keypad was sealed. Amstrad's Spectrum+2 did in fact retain the keypad routines and so can support one, but Amstrad did not release the keypad. With the Spectrum+2A and +3, Amstrad totally redesigned the Spectrum hardware and the ROM code to match, and as a consequence the keypad routines were discarded. Amstrad were definitely not going to produce any keypads.

However, back in late 1985 the decision was taken to launch the Spectrum 128 in Spain prior to its UK release, and to package the plug-in keypad with the new machine. It seems the UK had a large stock of unsold Spectrum+ machines, and the delay was intended to allow time for these to be sold. Not too surprisingly, the Spanish keypad is fully compatible with the UK Spectrum 128, and this article intends to describe my findings after studying the protocol used to communicate with such a keypad. The detail should be sufficient to enable readers to design and build

their own compatible keypads for use with a Spectrum 128 or Spectrum+2.

Appearance

The keypad is similar in appearance to the Spectrum 128 casing, with the same style of keys. Its measures 82mm by 150mm by 18mm deep, it has the same distinctive embossed parallel lines across it with the raised Sinclair logo in the top left hand corner, and has four tiny circular rubber feet on its base. The keypad connects to the Spectrum 128 via a 350mm long coiled cable emanating from the top left hand edge of its casing. The key layout of the keypad is shown in Figure 1.

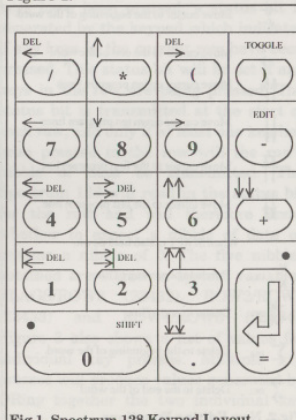


Fig 1. Spectrum 128 Keypad Layout.

Method Of Operation

The keypad circuitry is based around a PIC1652 microcontroller which then communicates serially with the Spectrum 128 via the RS232 Keypad socket. The Spectrum 128 has additional software built into the 48K Basic ROM which polls this socket periodically and interprets any codes received from it. These codes are then passed on to the Editing ROM which performs the appropriate editing function. The keypad is only scanned when in 128K mode and so the extra editing functions are not available when in 48K Basic. The keypad keys can be used for selecting items from the pop up menus, for editing in 128 Basic mode, and entering data and arithmetic operators in Calculator mode.

DEL	Delete character to the left
←	Delete character to the right
DEL	Delete character to the right
→	Delete character to the right
TOGGLE	Toggle between upper and lower screens
←	Move cursor to the beginning of the word
→	Move cursor to the end of the word
↑↑	Move cursor up ten program lines
↓↓	Move cursor down ten program lines
↑↑	Move cursor to the first program line
↓↓	Move cursor to the last program line
When SHIFT is also held down:	
← DEL	Delete to beginning of line
→ DEL	Delete to end of line
← DEL	Delete to the beginning of the word
→ DEL	Delete to the end of the word

Fig.2. New Editing Functions.

Figure 2 lists the editing functions available when in 128K BASIC mode. Note that all of these functions are in fact available from the normal keyboard via certain key press combinations (see my letter on page 8 in *FORMAT* Vol.8, No 12).

How It Works

The software that handles these extra editing functions is contained within the Editing ROM of the Spectrum 128; the communication routines to the keypad are all contained within the 48K Basic ROM. These communications routines are stored in the unused locations at the end of the standard Spectrum ROM, from address 14446 (386E hex) onwards. These locations would normally all hold 255 (FF hex), and so utilising this area should not cause any incompatibility problems (the only case I have come across is with The Artist drawing package which uses some of these locations to invert its text messages). These communications routines are accessed via a patch which has been inserted in the normal keyboard scanning routine at location 74 (004A hex). It simply makes a call to address 14446 where a check is made to see if the machine is in 128K mode and hence whether to scan the keypad or not. An immediate return is made to the keyboard scanning routine if in 48K mode, otherwise a call is made to address 14914 (3A42 hex).

The routine at address 14914 monitors the FRAMES system variable and will only attempt to scan the keypad upon every other keyboard scan. In this way, the keyboard scanning routine is not continually slowed down. After this check, a call to address 14752 (39A0 hex) returns the state of the keypad. If any

keys were being pressed, then key repeat and decoding are performed to produce a key code which is then stored in system variable LAST_K (23560). A 128K BASIC program could monitor the keypad by examining the contents of LAST_K, although only the numeric and arithmetic operator ASCII codes are returned. This is due to the ROM code knowing that it is currently running a BASIC program and hence the keypad could not possibly be producing editing codes. When editing a BASIC program the codes returned in LAST_K for the new editing functions are all above 160. The codes for existing editing functions, i.e. DELETE, EDIT and the cursor keys, are the standard Spectrum control codes.

The code at address 14752 attempts to scan the keypad by first checking the contents of system variable ROW2/ROW1 (23433). This holds a counter which must reach zero before the keypad will be read. This counter is initially set to 76 and is decremented every time an attempt is made to scan the keypad. What this means is that an actual scan of the keypad only occurs three seconds after the keypad is connected or the Spectrum 128 is powered up. When this counter reaches zero, a poll is sent to the keypad and an acknowledgement is expected. If this reply is not received, then the counter is reset to 76 and a fresh attempt at establishing communications with the keypad will not occur for a further three seconds. While communications has not yet been established with the keypad, system variable FLAGS/ROW3 (23432) will hold 1; this will change to 0 when the Spectrum 128 polls the keypad. After a successful poll, the FLAGS nibble of 23432 will be set to 15 and then each row of the keypad is read in. The order is row

KEY	23432	23433	23434
No Key	240	0	0
/	240	8	0
*	240	4	0
(240	2	0
)	240	1	0
7	240	128	0
8	255	64	0
9	240	32	0
-	240	16	0
4	248	0	0
5	244	0	0
6	242	0	0
+	241	0	0
1	240	0	128
2	240	0	64
3	240	0	32
ENTER	240	0	16
0	240	0	8
.	240	0	2

Fig.3. Codes From Different Key Presses.

5, 4, 1, 2 and finally 3, with each row's data consisting of 4 bits - one bit for each key in that row. Note that row 1 refers to the top row of the keypad. To avoid wasting time reading in rows where no keys have been pressed, a status bit is generated by the keypad which indicates if any keys in the current row have been pressed. This status bit will be set if any keys in the row are being pressed. The status bit is transmitted at the start of each row, and only if at least one key has been pressed in the row will the row's nibble of data be transmitted. The Spectrum 128 will read in the status bit for the row and will therefore know whether to expect a nibble of data or assume a nibble of 0. The five nibbles obtained are stored in system variables FLAGS/ROW3 (23432), ROW2/ROW1 (23433) and ROW4/ROW5 (23434). Figure 3 also shows a list of values for individual key presses. Multiple key presses will produce values generated by ORing together the two individual key values.

The Details

The Spectrum 128 controls communications to the keypad socket (and also to the RS232 socket) via the I/O register 14 of the AY-3-8912 programmable sound generator. This register contains 8 bits which control the following functions:-

BIT	FUNCTION
0	KEYPAD PIN 2 (OUT)
1	KEYPAD PIN 4 (OUT)
2	RS232 PIN 5 (CTS OUT)
3	RS232 PIN 3 (RXD OUT)
4	KEYPAD PIN 3 (IN)
5	KEYPAD PIN 5 (IN)
6	RS232 PIN 4 (DTR IN)
7	RS232 PIN 2 (TXD IN)

Both the KEYPAD and RS232/MIDI sockets are driven by MC1488 and MC1489 RS232 driver and receiver ICs, and hence a logic 1 is represented by -12V and a logic 0 by +12V. The KEYPAD socket consists of six connections with pin 6 being on the side with the clip mechanism. The pin functions are:-

PIN	FUNCTION
1	0V
2	REG 14 BIT 0 (OUT)
3	REG 14 BIT 4 (IN)
4	REG 14 BIT 1 (OUT)
5	REG 14 BIT 5 (IN)
6	+12V

Note that communications to the keypad only utilises pins 1, 2, 5 and 6.

Timing Details

All Spectrums operate at a clock frequency of 3.5469MHz with each machine language instruction taking at least four clock cycles (T-states). The following section describes the timing

details of the communications protocol in terms of the number of T-states taken at each stage, and so you may find it useful to translate these into timing diagrams.

The Spectrum 128 polls the keypad via a call to 14648 (3938 hex), and if successful will enter a loop 50 T-states later which reads in the five keypad rows. At 28 T-states into this loop a call is made to 14552 (38D8 hex) to read the current row's key press status bit. If this bit is 0 then there were no keys pressed in that row and so the loop is repeated for the next row 88 T-states later. If a key was pressed then the row's nibble of data is read in. This happens 42 T-states later via a call to 14559 (38DF hex). Upon returning from this routine, the Spectrum 128 takes 188 T-states to store the nibble before the loop is repeated for the next row.

The timing involved in polling the keypad occurs as follows. The Spectrum 128 sets the output line, bit 0, high (logic 1) and expects the input line, bit 5, from the keypad to already be high. If this is the case, the Spectrum 128 will set bit 0 low (logic 0) and will wait up to 3593 T-states for the keypad to set bit 5 low. When this occurs, the Spectrum 128 will set bit 0 high; this takes 100 T-states. It then waits up to 3917 T-states for the keypad to set bit 5 high in response. When this happens, the Spectrum 128 takes 100 T-states before it sets bit 0 low. It then waits 4121 T-states before reading in a nibble of data from the keypad, via a call to 14559. Bit 2 of this nibble must be set; the states of the other bits is unimportant. Upon obtaining the nibble, it takes 57 T-states to exit the poll routine.

The routine at 14452 to read in a row status bit and the routine at 14559 to read in a row's key data nibble both

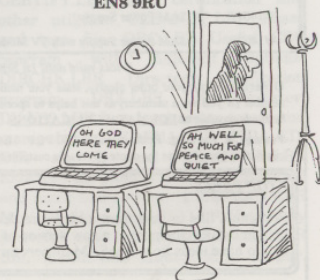
make use of the same loop to read in the required number of bits. Both routines start by specifying how many bits to read in before they make use of the loop to read in those number of bits. Thus their timings are identical. A check is made to ensure that the input line, bit 5, is high; the output line, bit 0, will be low. This check takes 248 T-states. The bit loop is now entered and 105 T-states into this loop, the Spectrum 128 will set bit 0 high. It then waits up to 17643 T-states for the keypad to respond by setting bit 5 low. When this happens the Spectrum 128 will set bit 0 low, taking 90 T-states. Upon detecting this change, the keypad sets bit 5 to the level of the bit to transmit. The Spectrum 128 expects this bit to be available on bit 5 after 662 T-states from the time that it set bit 0 low. It then reads in the bit and sets bit 0 high after a further 153 T-states. The keypad responds by setting bit 5 high. 616 T-states after setting bit 0 high, the Spectrum 128 sets it low again. Bits 0 and 5 will now be back at their original levels. After a further 527 T-states, the loop is repeated if further bits are to be received, else the routine is exited. This exiting occupies an extra 5 T-states.

In the event of the input line, bit 5, being found at the incorrect level, the Spectrum 128 will set bit 0 high and will then abandon communications with the keypad for the next three seconds.

And that's all there is to the protocol. In this article I haven't placed much emphasis on the hardware and software components of the Spectrum 128 keypad and this has been for two reasons. Firstly, PIC microcontrollers have a built in security fuse which, once blown, prevents their ROM code being read out. Hence, it becomes impossible to reverse engineer the code stored in them.

Secondly, the PIC1652 appears to be no longer available and so could not be used as the basis for producing a compatible keypad. It is for these reasons that I have concentrated on the communications protocol as knowledge of it then allows any microcontroller to be used in a new keypad design. I've tried to keep this text concise and yet sufficiently detailed to enable compatible keypads to be successfully built. However, for those that would like further details of the keypad I've produced a booklet of my notes which expands upon this article and includes flow diagrams, timing diagrams, and a commented disassembly of the Spectrum 128 keypad routines. Details of the keypad hardware including circuit diagram and PCB layout are also provided and suggestions for producing your own compatible keypad are not forgotten. The booklet is available for £2.50 (£3.00 outside the EC) which covers the cost of production and postage. If you would like a copy of this booklet or have any other questions regarding this article then please write to me at:-

Paul Farrow
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STOP PRESS

We would like to hear from a hardware designer with experience working with RAM to help in the development of a new version of the 1Mb RAM Pack for SAM. We would also like to have ideas from any SAM owners for new hardware projects.

By:- John Guthrie.

Welcome to this, the second Pro-DOS column. Remember in the last column, we had a tip from Matthew Hunt about batch files, well I did not finish it off, so here goes. Try batch file called CAVE.BAT, to optimize the speed of Colossal Cave, a text adventure game only on the FDOS disc that comes with the Pro-DOS program and Quest disc 2. So make sure you have the BATCH and copy files you did previously on ramdrive before running it:-

```
b: copy a:advent.* b:
b: copy a:eadvent.* b:
b: copy a:saveadv.* b:
b:
advent
```

Save this onto your disc with Colossal Cave on it, or transfer it to ramdrive before using b:batch.cave to run it. So that now, definitely closes the tip from Matthew Hunt.

Now for some of the software you can get for use with Pro-DOS:-

Quest Pro-DOS Adventure Compilation - Discs 1&2, these were produced by one of David Ledbury's incarnations - Quest Software, where you can get them now I'm not sure but you should be able to track down a copy from someone.

Disc 1 includes:-

Corya The Warrior Sage - Parts 1&2
Desmond & Gertrude
Teacher's Pet
Velma's Coming to tea

Disc 2 includes:-

Treasure Island - Parts 1 & 2
Mutiny On The Bounty

Davey Jones's Locker
Miser, The Taxman Cometh
Base - Parts 1 & 2
Legacy
Cook Island - Parts 1 & 2
Test - Parts 1 & 2
Island 22

Also you can get A Hitch Hiker's Guide to the Galaxy as well, I must add that the above mentioned discs are text adventures only.

And now to utilities, the mainstay of Pro-DOS, the FDOS CP/M PD & Shareware Library contains lots of discs, over future Pro-DOS Pages I will try to list many of them for you. Let's start with one labelled **FILE & DISC UTILITIES**. Here are a list of the files on the disc with a brief description:-

ACOPY21A.LBR Copy program, by attributes. AUTOMENU.LBR Front end allowing running of COM. files from menu. B29V304.LBR New Sweep type file manipulation program. CERTIFY.LBR Disc certification and other utilities. CLEANUP.LBR Erase and type file. ORC.LBR Useful CRC program with different options. DIRCHK.LBR Directory verification program. DRX.LBR Disc indexer. DV-V89.LBR Low level sector access and manipulation. EDIT11.LBR PIP, ED, DIR all in one. EXACTDIR.LBR Extended dir program. FBAD70.LBR Find and mark bad sectors. FILETRAN.LBR Multiple file copier. FIP.LBR Extremely powerful copy program. LEON23.LBR Run .COM files from within library.

MAIN11.LBR Directory maintenance program. MEGADISK.LBR DPB'S for many CP/M formats. MS901126.LBR Maxisweep disc maintenance program. NC.LBR Newcopy back-up utility. NSWP207.LBR Newsweep father of Maxisweep. PASSWORD.LBR Add password protection to .COM files. PIPE18.LBR Fast file copier. SANDR.LBR Search and replace file. SAP.LBR Sort and pack directory in alphabetical order. SD132.LBR Super dir many features. SPZ32.LBR Super zap file editor. UUENCODE.LBR UUENCODE and DECODE for file transfer on UNIX systems. WIS103.LBR Where IS that file? searches all user areas on all drives. XCCP.LBR Extended CCP command recall etc. ZX3.LBR Extended Directories, UNerase files etc.

These are just some of the thousands of programs you can get for the Pro-DOS system, mainly through Public Domain - we will look at more in the future.

Since I wrote the first Pro-DOS page I have received a few letters. I will try to answer through this column as quickly as I can.

The first to arrive was from John Cleveland, he asks me to remind you that Pro-DOS is not CP/M as such, but rather an emulator of CP/M, most of the time that is quite alright, however, sometimes, there can be problems. For instance, he reports a problem using version 1.44 of Mallard Basic. On Pro-DOS he gets an instant CP/M prompt, this is because the line interrupts of this program are disabled and so program will return to CP/M prompt. Mallard Basic version 1.29 had line interrupts enabled so it will run under Pro-DOS.

John also points out that Brian Gaff is now operating under his own name and has dropped the title B.G. Services.

So now to another letter, this one is

from Peter Deane, who has an Epson PX-8 laptop computer which runs CP/M 80 and the Wordstar word-processor. He poses the following questions:-

1. The format of Pro-DOS is for the Amstrad PCW 8256, but the PX-8 has a different format. So he cannot run the two together. Is there anyway that you can alter the formats, so the two systems can work together?

I don't know myself. Is there anybody out there who can.

2. Is it possible to get hold of Wordstar (the word-processor he is using on the PX-8) for Pro-DOS and can he transfer Wordstar text files between any of SAM's word-processor's i.e. TASWORD, DTP, STYLE WRITER, THE SECRETARY and OUTWRITE? Yes, using ASCII file then transferring this to any of the word processor's of the SAM, I should try FDOS PD to see if they have a CP/M 2.2 version of Wordstar.

In answer to your last question about the PIP command, Pro-DOS does not have this command, only COPY command.

I will close now, see next article. I'll just finish with a few addresses:-

My address

**John Guthrie, 203, Long Lane,
Bolton, Lancs, BL2 6EX.
Tel. 01204 416874**

Brian Gaff (formerly B.G.Services) for the Pro-DOS LITE program and CP/M manuals.

**Brian Gaff, 64, Roebuck Road,
Chessington, Surrey, KT9 1JX.
Tel. 0181 287 4180**

For list of public domain and shareware discs, send an SAE to:-

**FDOS CP/M PD & Shareware.
1, Mapperton Close,
Canford Heath, Poole,
Dorset, BB18 8AF.**

SAM SPRITE

Reviewed By:- Carol Brooksbank.

Fred Publishing have brought us a new sprite design program - Sam Sprite. On loading, the program detects the presence of a mouse and uses it for control, but if you are not mad about mice, keys Q,S,O,P act as cursor keys, and keys M,N replace the mouse buttons. These can be redefined, but certain keys are reserved for use by the program and cannot be selected for cursor movement. Unfortunately, these reservations include the arrow keys, which means that you can't select the most obvious ones. However, Q,S etc. are used as cursor keys by so many programs that most of us can take to them fairly easily. Mouse control is splendid if you have it. There are hot keys to toggle between mouse or keyboard control, and joystick control is an alternative option.

The main menu gives you the choice of sprites or background figures, each in two sizes, 8x8 pixels and 16x16 pixels. Whichever you choose, you then move to a screen which displays a collection of empty boxes. You can either click on one box to select a frame or choose another page of frames. There can be up to 256 frames in a file. Selecting a frame takes you to the edit screen.

At this screen, you can design a frame for a sprite, or load a file of existing sprites from disc, which will then fill the appropriate frames in the file. When you return to the frame screen after loading, the boxes in use display a thumbnail representation of the frames stored in them. An existing frame can be edited or new ones added. There can be several different sprites in a file, because start

and end frame numbers are specified when a sprite is animated.

The editing area is very easy and convenient to use. You select a colour for each mouse button (or corresponding keyboard key), and button colours can be changed at any time. Pixels are coloured by clicking on an enlarged grid at the top of the screen with the appropriate button. There is a true size representation of the sprite area displayed as well, so that you can check the final effect as you go along.

Returning to the frames display will now show any new frame in its place. If you want to make a related frame for animation, it can be copied to the next box, and then edited. You are not limited to copying one frame at a time, but you can't copy frame one, say, to frames two to eight in one operation. If you want eight copies of your original frame, you copy it once to the frame next to it, then copy the two to the next two, and finally copy the four to the last four. It is a rather fiddly way of doing things.

You can change the colours in the palette, and four ready-defined palettes are available - the one used by the program, the Sam standard, the Sampaint standard and a grey scale. Any or all of these can be redefined to suit your own requirements. There are also 'fade' and 'brighten' keys, which will make every colour in the palette darker and lighter respectively. Any palette changes will affect every sprite in the file, so if you are adding sprites to an existing file, you have to stick to the file's palette or change the colour of the sprites you already have.

The editor screen allows you to turn, mirror, flip, invert, scroll, or clear the frame, or to fill with either of the button colours. All the menu options can be selected by clicking on the menu or by a comprehensive collection of hot keys. You can also grab sprite frames from a pre-loaded screen, or put them onto a screen which can be saved in SCREEN\$ format.

Mask creation is very easy. You select MASK, and can then overlay the current frame into the editor grid, and replace all the pixels where the background is to show through by palette number 15, and the sprite areas by palette 0. The colours in these palettes are irrelevant. Once a mask has been created, it is always displayed below the real-size display of the sprite. If you are editing background figures (which will be stationary in your program) there is no mask creation option.

Animation can be tested. You select the frames to be involved, whether they are to loop or repeat (loop will display the frames in sequence and then in reverse sequence, over and over again - repeat keeps to the original sequence), and the speed can be varied. A frame can be edited while animation is running, so that you can see the exact effect of the changes you make. There is also a palette cycling option, which can be used to give a different form of animation. Palette cycling is particularly useful for things like twinkling stars or falling snowflakes.

Sprite file saving is very versatile. The code blocks can be saved in five different formats - alternating sprite/mask bytes (sprite first or mask first); alternating sprite/mask data blocks (again, sprite or mask first); or Gamesmaster format. If you want to reload a sprite file into Sam Sprite you must re-load it in the same format in which it was saved. Backgrounds, having no masks, can only be saved as normal code blocks or in

Gamesmaster format.

There are sample programs on the disc which demonstrate how to use the sprites saved, and there are even extension source code files for Comet or SC_Assembler, and ASCII files for a word processor to help the beginner to get to grips with using sprites.

I found this a very easy program to use, and certainly, mask creation was the easiest I have ever come across. My main criticism is that the sprite sizes are far too small. I could not fit the horse I usually use to test sprite programs into the largest frame size. In order to try out the animation I had to include as much as possible of the horse's legs and leave off its and its rider's heads. By comparison, SCADS allows 32x32 pixel sprites, and Gamesmaster gives the user complete freedom over frame size. The only way of designing a bigger sprite with this program is to design it in blocks and fit them together in your program. You can use the put to screen facility to see what one frame of your large sprite will look like, but you cannot test the animation of the whole sprite at once.

This is, I think, a major drawback. Although the program is much easier to use than the sprite design facilities in SCADS and Gamesmaster, it is only possible to use it if you can manage with very small sprites.

Nevertheless, it is a useful program when you are working in small sizes, and is especially useful to the beginner, who may be put off by the more complicated working methods of the others. The handbook is clear and easy to follow, and the program options are straightforward to use. It is a first-class introduction to the world of sprites, but you will almost certainly need to move to a designer that can handle larger sprites sooner or later.

Sam Sprite is available from Fred Publishing, price £9.99, see their advert on the back page for the address.



YOUR LETTERS

Dear Editor,

I notice in May issue of **FORMAT** that you warn against the use of internal mods that may be fitted to a SAM. Well I bought a SAM at the April show (I gave my other SAM away to my niece) and although it's under guarantee it didn't work properly. It refused to boot up at times just sitting there with the disc drive running. Also it corrupted a few discs. I fitted a Disc protector by Edwin Blink. No more problems.

A computer that doesn't work properly is no good to me. My previous SAM that I've had for a few years also had a Disc Protector and is still working properly although it's on its third keyboard replacement. I've had Spectrums since 1993 and one of them I fitted into a DK-Tronics keyboard. I designed an amplifier and fitted it into the case for improved sound. I also wired a joystick socket direct to the circuit-board doing away with an interface. That Spectrum still works OK

Yours sincerely, Jack Bailey.

First of all, if there was a fault with your new SAM why did you not contact us? Many problems have very simple solutions which would not have invalidated the warranty on your computer.

You mention the Disc Protector. Yes, I am aware that some people claim this is a worthwhile addition, but I have never seen any convincing evidence to justify the claims. OK, if you regularly make the mistake of switching your machine on with a disc in the drive, or if you frequently press the reset button in the

middle of a disc operation, then maybe - once in a while - you will get a disc corruption. But, if a little common sense is used, I have never known a disc to corrupt in a way that would have been prevented by the Disc Protector.

I just felt it was wise to tell readers that, in my opinion, none of the internal mods (including the personalized ROM that was the subject of the original letter) are approved by West Coast and therefore invalidate any warranty on the machine, just as most Spectrum mods were not approved by Sinclair Research and would have voided their warranty.

Of course, once a machine is out of guarantee, if you want to fit bits inside that require soldering or track cutting, then that is up to you. However, it is also worth noting that some items change the electronic characteristics of SAM so there may be problems if you need a repair outside the warranty period. **Ed.**

Dear Editor,

I received the new Comms interface this morning, and checked it by using my printer, so all is ok. I have not yet used it on serial port as I have yet to obtain a TNC.

Thank you for the back up service that we SAM Coupé owners get from **FORMAT**, and your good selves, and this is one of the reasons I think why we are loathed to part with our SAMs.

If ever I feel the need to obtain a PC or IBM computer - which I will one day to get much more RAM - I shall buy a 'Laptop' PC and then my SAM will remain in 'Pride of Place' - so there!

Please print this in **FORMAT**, if you

wish Bob. Regards to all.

Yours sincerely, Brian Jewell.

I must admit to ignorance when it comes to a TNC, perhaps when you get things up and running Brian, you can write a short bit for **FORMAT** and tell us all about it. *Ed.*

Dear Editor,

Ref to my phone call to you on the 17th April concerning 3" Discs. Please find enclosed booklet from a company called Ribbon and Things, 8, Treefields, Buckingham, MK18 1BE. Apart from the 3" discs, they also do printer ribbons. I have found the ribbons are very good.

I have two printers, the one that this letter is written on is a Star LC 100. I found that using Star ribbons the print out is not as clear as it should be, but with the ribbons that I bought from R & B the printout was a lot clearer. This is the 50th letter I've printed out using this ribbon, plus I have printed out full grey scale piccies, about 15 so far and the ribbons are just as good as when I first bought them. Doing the same using the Star ribbons it faded out long before I'd used 40 printouts of letters and pictures. I haven't tried the colour ribbons yet, but a few friends I know have found that they are a lot better than what they were using. Anyway I have enclosed the booklet for you, hope you find it useful.

I would like to say that I do enjoy reading **FORMAT**, I really look at the back issues when I'm working on a project. I also enjoy having real fun converting SAM programs to run on my Grey +2 and on my (Commodore 64).

Anyway one question for you, I would like to ask if you can use fancy fonts with PCG's DTP Program. Also, does it print out on a 9 pin printer, because at the moment I am using the Commodore 64 to get all my fancy type. Please could you help in this matter in next months **FORMAT**, thanks. Ta ra for now, keep

up the good work, hope to see you at the show if I can get up there next time?

Yours sincerely, Phyl Smith.

The DTP package comes complete with a large collection of type faces and was designed to work with 9 pin printers. *Ed.*

Dear Editor,

At the recent Gloucester show I purchased from your good selves (amongst other things) a copy of MasterDos for my SAM. I have at last got round to installing it and on reading through the instruction manual - horrors! I find that I am missing pages 19 to 22. What do these pages contain, is it that important that somebody could have gone to the trouble of stealing them, dangerous for mere mortals to handle, perhaps its the answer to Life, the Universe and Everything, maybe the secret of eternal youth or a sure fire way of winning the lottery. Whatever it is Please, Please can I have a copy.

I have enclosed the offending article. Please send me, ASAP a complete manual so that I can carry on my enjoyment of SAM.

Thanking you in anticipation.

PS Great show, only wish I had unlimited funds to buy everything.

PPS Great Mag!

Yours sincerely, A.T.Jones.

The missing pages simply contained the number 42... *Ed.*

Dear Editor,

For anyone interested I have several rolls of ZX Printer Paper, you can contact me on 0161 9735894.

Yours sincerely, Mr Evans.

Dear Editor,

I have a few queries!

When ordering goods from **FORMAT**, is there always a months wait or is there a 'fast' delivery available at extra cost? I ordered TnT from **FORMAT**, and at the

same time I asked for information on SCADS, well, I received TnT (could have helped if there was more info on the actual box... as is normal with most computer games!) But, despite waiting for a following letter, I received no information at all about SCADS compared to SAM Arcade Creator(?) Which is best? What can it do? How does SCADS compare to SAC? Is SAC still around? I am very unwilling to spend good cash out on something I know nothing about, but the seller of the program seems little interested in giving any information!

Other info wanted.

1. Is there a colouring/drawing package in SAM mode that is aimed at younger users (like the excellent 'kids Art' on the Atari)?

2. I see no mention in any recent **FORMATs**, of joy-sticks? As Atari compatible joy-sticks are hard to come by now (only PC analogue sticks available locally). Is there anybody doing joy-sticks for use on SAM?

3. I noticed that somebody is doing a 'tracking' service for old Spectrum games, but, is there a list/catalogue of Spectrum games on offer, coming out?

4. Is there any sign of a programming 'know how' book coming out for SAM? Something between the manual and the Technical Manual?

5. I have gotten hold of the Spectrum programming books, 'ZX Spectrum Graphics' by D.K.Screenshot (Piers Letcher) books 3 & 4 (Dorling Kindersley Ltd., 1985).

How can I get round the problem of getting the programs to run in SAM not Spectrum mode?

6. Is there a way to make programs saved under 'Lerm' run 'automatically' with just a single press of the 'F9' key? (looking into making it easy for a 7 year old to set up and run SAM by themselves, so the less disc swaps and key presses to get to the actual start of

the game, would be a help).

7. Is there a 'simple' word processor (in SAM mode), that a youngster could use by themselves? (There again, like the 'Kidgraph', 'Kidright' on Atari?) This covers most things, at the moment!

Thanks for your time.

Yours sincerely, E.J.Pettit.

Most orders go out at the same time as **FORMAT**, this is for security reasons with the Post Office. Some years ago we had nightmares with items going missing but we found that consolidating the post into one large batch helped to pin the Royal Mail down when they lost things. I must say that Royal Mail have improved lots over recent years, although they still manage to make the odd item vanish.

There are exceptions, especially spares (like SAM keyboards) which we always try to send out as quickly as possible unless it is just a day or so to **FORMAT** going out.

I didn't think there was any problems with the instructions for TnT. Like most modern games the main instructions, if they are needed, are with the game. The insert just tells you about the game - it 'sets the scene' so to speak.

Now to SCADS. As this is now PD there is no support for the program provided (other than the manual which you can buy at the same time or later. I'm not sure about your reference to SAC which is a new one on me, if you can give more details then I may be able to answer the question for you in a future issue.

As to your other questions. 1) Not that I know of. 2) I think if you try another shop you will find that Atari type joy-sticks are still available. 3) I don't know. 4) I'm still trying to get people to send in material. 5) I've not got copies of these books but I would think that some nice reader will be able to point you in the right direction - over to you readers.

6) Just save the machine code file onto a disc with DOS already on it. Start the filename with the four characters "AUTO" and add the entry point for the machine code as a third number in the save instruction. i.e.
SAVE "AUTOGAME1" CODE start_addr
ess, length_of_code, entry_point
it is as simple as that. And finally 7) I'm not well up on the Atari, but I don't think so. **Ed.**

Dear Editor,

Thanks for sending the latest issue of **FORMAT** to me. I read your review with interest. By now you have only reviewed three programs (actually only two really) and no games. Hope this you will do in another issue.

Or maybe you should not. It is hard to understand, but I received not one letter from any reader of **FORMAT**. I thought our software is good and your reviews also good, but maybe people are not interested in this software (or they are afraid because Germans could send V2 Rocket instead of software, haha). Yes, it is sort of hard humour, because if there be less sales, I will close the British market. I can't accept that only very few are buying, and spreading this to all over this world. Nearly all coder-groups are using SQ-Tracker, but only one customer in Britain bought it. Another Sintech-software I found again in Uruguay, and it found its way through Britain. If Britains are more and more pirating, I will stop sales.

Now on to questions in your review:

Prometheus cannot save directly to disc, but of course you can use Snapshot or (a better way) go into BASIC (with Symbol Shift and "B") and type in the SAVE "name" ADR, LENGTH. Address and Length you can easily find out. It depends on where you set the ORG command. If you want also to save the source-code, best way is to save whole memory. There will never be a PLUS D

version, as it is made for a Czech disc drive. A pity, I know, Prometheus is priced £20 including postage to Britain.

SQ-Tracker is not easy. But wasn't it the same with E-Tracker? Sound Tracker had no manuals and many people learnt how to program it. I paid a lot for the translation of the manual and even if it is not perfect, I understood it (maybe because I am not British). Original is in Czech language.

Yes, maybe you are right and I should have sent you the whole version, but last time I sent Tango & Magic Dice to only three magazines and pirate copies appeared in the whole of Britain.

SQ-Tracker is an expensive program (it was also expensive for me to buy the licence) so I was afraid that the same could happen again as with Tango. Sorry, I should have trusted you more. You are a very serious guy. If you want, I send the full version. Sorry again.

The price for SQ-Tracker is also £20 including postage. Colour Draw, our newest program is only at £12.50.

Another thing that might interest you. MB 03, the famous disc interface is ready and we are already selling it. MB 03 is the fastest disc interface. Using HD-Drives and formatting to 1.8 MB. It emulates tape in disc system, this means you can load like with tape syntax, very good for multiloop programs, which only has to be copied to disc. You can connect up to 4 drives to MB 03 and you have 128k SRAM (for DOS, BIOS, CACHE and own use, eg. often used utilities). MB 03 is priced £130 and we are selling additional power supply (drives and MB 03 needs extra power) for £17.50 and HD-drives for £28.50. Additional comes the postage with about £10 for all or £5 for only interface.

Rather expensive I know, but these are not our prices. These are prices of the producers. Never mind, for this half-year we have sold already the whole

production, so no new orders could be supplied till July. But we take forwarding orders for next half-year.

Oops, now the last thing, How was the Gloucester Show. Sorry I could not be there. Too much work, too less time.....

Looking forward to hearing from you. Bye.

Yours sincerely, Thomas Eberle of Sintech in Germany.

I think that the major problem with selling your products to the UK market is simply that you are not using a UK agent. The manuals I saw were certainly far from suitable for an English speaking market - especially the one for SQ-Tracker. Whereas most people who use computers understand English (because it is the language that most technical material is written in) very few understand another European language. When I travel in Europe I find that English is the dominant language because, even if it is not the native language of the area, it is usually the second language a person learns. With the television, movie and music industries being so dominated by the Americans (with a little help from us Brits) I've even found pre-school children speaking quite fluent English.

You should also remember that one review and one advert do not in themselves build a business. Consistent advertising gives people confidence in a company.

As to piracy, yes it is a problem. But if you don't allow your products to be sold then you find a lot of people use that as justification for copying your software and passing it around - not a view I hold with as I've said in the past, but I do find a lot who have that point of view.

Finally, the point about saving and loading to disc. If only programmers would put these lines in Basic then they can be altered to match any disc system that comes along. It does not take much

effort to do this and at least it would mean that your programs would run on the DISCIPLE and PLUS D, which after all, are the most wide spread interfaces in the Spectrum world. Look at programs like Tasword 2, it became the word-processor that everyone had simply because it was easy to adapt to any storage device that came along.

And finally, the MB 03 disc interface. We would certainly be interested in printing a review if someone can write one - we have several members in Germany and if one were willing to write a review do you think it would be possible to arrange to loan them one for a couple of weeks for review? Let me know. **Ed.**

Dear Editor,

Is it possible to connect two or more Twoops together so that three or more add-ons can be connected? If so, I might buy another, together with the new 1MB, when its finished.

Yours sincerely, David Laundon.

Yes, no problem, I've had four connected before. **Ed.**

Dear Editor,

Thank you very much for the renewal notice.

I have to say that I was thinking that I would not be renewing my membership as it seems that interest in the ZX Spectrum has all but died. At least I have seen very little of late to interest me.

This is not intended to sound unkindly as I have found over the years lots of interesting programs and routines which I have enjoyed typing in, I do in fact still use quite a few of the programs which have been gleaned from **FORMAT**.

Now that **FORMAT** intend a publication for the uses of MS-DOS type machines I would appreciate it if you would let me know when it is due to come out, I will then renew my

membership to the new magazine.

I cannot claim to be at the forefront of computing as it was some years after the arrival of the ZX Spectrum that I purchased one (around 1988) I think. So now I find myself with yet another item of yesterdays technology - a Trigem 88e PC, with 640K memory, 20meg hard drive and one 5" + 3" floppy drives. I have had the machine for some years now, so I may progress onto a 460 as they too are now yesterdays technology and might be fast enough for an emulator to run specy stuff, now that's an idea!

So thank you for your letter and thanks for **FORMAT**, long may it reign and please let me know of the publication date for the new **FORMAT** PC.

Yours sincerely, D.W.Stokes.

A first issue of **FORMAT** PC is now being worked on and a launch date will be fixed very soon. *Ed.*

Dear Editor,

I've just received the January issue of **FORMAT** and was delighted to read that you propose to launch **FORMAT** PC.

I run both a Spectrum 48+ with PLUS D interface and a 286 PC and would hate to be without either as each has its good points. **FORMAT** has been a great help with the Spectrum and I look forward to **FORMAT** PC filling the same role for the not so up-to-date PCs. A great idea and count on me as a subscriber.

Best wishes and every success with **FORMAT** PC.

Yours sincerely, Peter Page.

Thanks for the words of encouragement Peter. We will be making special offers to existing readers who want to take out dual subscriptions and will let everybody know next month. *Ed.*

Dear Editor,

Two items which may be of some use to

FORMAT readers.

1. Mouse. I was busy slaughtering Orcs when my mouse seized up. I assumed that the problem was mechanical, and that cleaning was required.

Under the mouse is a disc with an arrow, which points to a letter C. Rotate the disc anti-clockwise, so that the arrow points to the letter O.

Turn the mouse over and the disc and ball will fall out. The ball can be cleaned with a piece of damp kitchen towel.

Remove the 3 screws from the base, and lift the cover off.

There are 2 rollers at right angles, which convert the mechanical movement into electrical impulses. There is also a spring loaded jockey roller, this keeps the ball up against the rollers no matter which direction the ball is moving.

Use a DRY stiff brush to remove the accumulated fluff, dead lemmings, and biscuit crumbs, from the rollers and the bearings. Pay particular attention to the jockey roller, as this is not easily accessible.

Do not use oil or grease. Re-assemble the mouse and test.

2. Nokia TV. The News on 4 column in Decembers **FORMAT** mentioned that Tandy were selling the 14" TV with scart socket. I purchased one, and after a struggle I succeeded to get it working. The result was worthwhile. The screen display is so clear, that I can now distinguish an 'n' from a 'm', on my word processor.

The Nokia is high tech with all the gubbings in the Remote Control Unit. I would not call it user friendly, but that I belong to the 'ONSLOW' school of TV adjusters.

Setting up Procedure. Switch everything off. Fit scart cable to TV only. Fit SAM TV output to TV aerial socket. Switch on TV and SAM. The SAM stripes should appear on the screen. Using the remote control, press the BLUE button twice. From the displayed menu, select

the APS function. Press the GREEN button to search for the required channel, when found, press the RED button to store the location in memory.

Switch off everything. Remove SAM TV from aerial socket, and replace normal aerial. Fit scart to SAM.

Switch on TV first and there should be a speckled display. Switch on SAM and a dark screen appears. Press the O button on the remote control and Hey Presto the logo appears.

The scart cable used was Tandy 15-7031.

Yours sincerely, Frank Evans.

Dear Editor,

Following my phone call to yourselves on Monday, I would like to order a copy of Music Maestro for the PLUS D on 3 1/2" disc. This order is still based on the condition I specified then, i.e. it must support the 8912 sound chip used in the 128K Spectrum.

By the way - I haven't heard anything from INDUG for sometime - is that now just integrated into **FORMAT**, or are there any other activities from them?

Yours sincerely, M.R.Prichard.

We started as INDUG, which at first stood for the INdependent Disciple Users Group. However, as things grew we settled on calling the company Format Publications. INDUG is still here, in fact every **FORMAT** reader is an INDUG member - although these days it could be said to stand for the INdependent Disciple, Plus D, Spectrum & SAM users Group and of course there will soon be PC users signing up as well. Remember your INDUG membership number is the 5 digit one on the top line of the label we use to mail your **FORMAT** each month.

And yes, rest assured, Music Maestro works with the 128's sound chip, although it will also produce sound from a 48K as well. *Ed.*

Dear Editor,

I have a Panasonic KX-P2135 24 pin colour printer on which I would dearly like to be able to print SAMPaint screen dumps and text etc., but all I get when I try is assorted letters which bear no relationship at all to what I have on screen. This seems to be the only program that this happens on, I can dump screens from Style Writer with text, write letters on *The Secretary* and print out spread sheets from *Campion* all on the Panasonic with no trouble at all. Having spent a lot of time and paper getting nowhere I thought of **FORMAT** and the hundreds of readers you have, and unless I am the only one with a Panasonic printer and SAMPaint I wondered if anyone could help? It would be very much appreciated.

Yours sincerely, Archie C.Perry.

You have stumbled across one of the major problems with SAM and Spectrum programs Archie, printer drivers (or to be exact, the lack of them).

Programmers of most SAM and Spectrum titles tend to be very poor (like publishers of magazines) and tend to get by with old 9 pin printers often held together by tape and glue. All they need is a copy of the latest listing from the program they are working on.

On the other hand, as a general rule it seems, people who buy nice modern printers don't seem to have the knowledge to write routines to drive them.

OK, some software will work with 24 pin and other modern printers. However, the harder the software pushes the printer it was designed for, the more likelihood that there will be problems with using it with other printer standards. Is there a way out? Yes, I think so. What we need to do is get programmers in touch with printer owners so that they can arrange to 'get things working'. I also think that it is

time we drew up 'standards' for printer drivers so that if, for the sake of argument, a driver was written for an HP Deskjet 600 - then all programs would be able to use the same driver.

This is of course just what happens with Windows programs on the PC, you don't write separate drivers for each program you use the driver the owner has loaded into Windows and which is, more often than not, supplied with the printer these days. It may interest readers to know that on my PC, running Windows 3.11, I've loaded printer drives for my RICOH LP1200 laser printer, an Epson FX850, a Fax/Modem card, an HP Laserjet III and an IBM Proprinter X24. With this mix I can drive almost everything I need to.

I would welcome readers comments on this subject of printer drivers. **Ed.**

Letters may be shortened or edited to fit on these pages although we try to edit as little as possible.

This is YOUR letters page so it is up to you to fill it with interesting things. Come on, get writing, any subject even remotely related to computers. Just keep things as short as you can so we can fit in as many as possible each month. Please write clearly or type your letters. Send them to the address on page 3 or fax them to us on 01452 380890.



"It all started as a computer game and it just got out of hand..."

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SAM USERS UNITE I'm looking for SAM users around the Rainham (Essex) area for talks, exchange ideas, maybe to work on projects. Please call Colin on 01708-508933 or 0378-458518.

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PRICING

Because every fault is different we don't think it is fair to charge a fixed rate. When we receive a machine it is tested and a quote is sent to you for the repair. If you decide for some reason not to go ahead with the repair you are under no obligation.

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FORMAT BACK-ISSUES

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Price: £12.00 per volume.

All issues, from Volume 8 N° 1 (September 1994) to the latest issue, are available separately. To order just quote the Volume and Issue N°.

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Order Code: SPD-05 Price: £7.95

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