SOFTWARE FROM BETASOFT

GAMES MASTER FOR THE SAM COUPE:

At last YOU can create stunning games and demos for the Coupe, with fast, smooth, animated sprites, complex sound effects, missiles, platforms, lifts, detailed backgrounds etc. No programming expertise required! Most of a game's design is specified by the menu-driven editor, which lets you edit graphics, animation, movement, sprite collision actions, sound effects, masking, control keys etc. A simple but very fast compiled language controls some features. A complex demo with animated bouncing sprites passing over and under each other, in front of a background, can be written with just a few commands to start the sprites off. (Once started, the sprites can act by themselves.) The editor produces stand-alone ROM-independent CODE programs that are free from any copyright restrictions - so you can sell your masterpiece! Impressive demonstration programs and an extensive sprite library are included to get you started. Backgrounds and sprites can also be grabbed from any Mode 4 screen and edited.

SIX SPRITE PLANES PLUS BACKGROUND
BIG SPRITES - UP TO A THIRD OF THE SCREEN AREA
TRUE COLLISION DETECTION ON SPRITE EDGE
SMOOTH, FAST PIXEL MOVEMENT OVER 100 ON-SCREEN SPRITES
POWERFUL EASY TO USE EDITOR COMPILED CONTROL LANGUAGE
COMPLEX MOVEMENT PATTERNS AND ANIMATION SEQUENCES
STEREO SPRITE-FOLLOWING SOUND EFFECTS

Written by Dr Andy Wright, author of the Sam ROM, MASTERDOS and MASTERBASIC, the program works with 256K or 512K RAM and ROM 2.0 and above. A comprehensive manual is included.

GAMES MASTER COSTS JUST £24.99 INCLUSIVE OF POSTAGE AND PACKING (ADD £1 IF OUTSIDE EUROPE). SPECIAL PRICE TO INDUG MEMBERS: £22.50 (QUOTE MEMBERSHIP NUMBER)

NEW !! Secrets of the SAM ROM revealed! The complete ROM 3 source listing on disk, extensively commented by the programmer, Andy Wright. Addresses and memory contents are included to make comparison with the actual ROM easy. The viewing program lets you move lightning-fast through the listing with various step sizes, perform searches, or list any part to a printer or (with MasterDOS) a disk file. A must for the serious SAM user! Just £9.95.

FILE MANAGER - The flexible file program. Files up to 780K. Requires MasterDOS and MasterBasic v1.7 or later (updates are free if you return your original disk. Enclose an SAE if you're not buying anything.) £12.99

MasterDOS - The DOS for the serious user. Faster, easier to use and more reliable than SAMDOS. Now available EXCLUSIVELY from BETASOFT. Offers RAMdisk and clock/calendar support, subdirectories, BACKUP, serial and random access files, multi-sector READ and WRITE AT, and much more! £15.99.

MasterBASIC - The much-praised SAM Basic extension adds many new commands for graphics, sound, printing, data-handling, improving DOS, searching and editing programs, etc. £15.99.

STILL AVAILABLE: Beta DOS for the PLUS D. More files per disk, much faster, random-access files, file compression, BACKUP and many other features. Fully compatible with existing disks and files. Only £9.95. BETA BASIC for the Spectrum (48K/128K+/+2) adds over 100 new commands and functions to Spectrum Basic. Versions available for Disciple/+D, Discovery, or Tape/Microdrive. A classic for just £15.95!

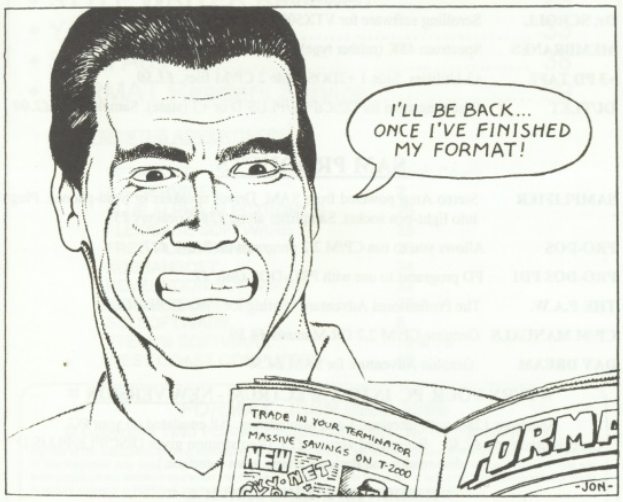
Prices include P & P. Make cheques and postal orders payable to:
BETASOFT, 24 WYCHE AVENUE, KINGS HEATH, BIRMINGHAM, B14 6LQ

Vol. 6 - Nº 12. August 1993.

FORMAT

FOR SPECTRUM AND SAM USERS

(Incorporating Sinclair & Sam Computing)



We Have What It Takes To Survive

£1.25 (UK R.R.P.) ISSN 0963-8598.

B.G.SERVICES

64, Roebuck Road, Chessington, Surrey, KT9 1JX. Tel: 081-397-0763.

SPECTRUM PRODUCTS

+2A MOD KIT	Converts a black +2A into a genuine +2 with TWO expansion ports. This allows the PLUS D to operate properly. Includes replacement ROM, two port FIXER2 and full fitting instructions + manual updates. ***£17.50***.
THE FIXIT	Converts the +3 and +2a expansion port so that some 48K add-ons will work.. Single port version ***£9.50***, double port version ***£10.50***.
VTX5000	***SPECIAL OFFER*** - V23 direct connect modem with viewdata software in ROM. Version for 48K or gray +2 (+2A/+3 users need FIXIT) - ***£10***.
PD TAPE 01	Comms software for VTX5000, VTX711 and RS232s. ***ONLY £1.50***.
Dr. SCROLL	Scrolling software for VTX5000. ***£4.00***.
MEMBRANES	Spectrum 48K (rubber type) keyboard membranes. ***£5.00***.
+3 PD TAPE	+3 Utilities. Side 1 +3DOS. Side 2 CP/M files. ***£1.50***.
OUTLET	Disc magazine for DISCiPLE/PLUS D or +3 (state). Sample Issue ***£2.00***

SAM PRODUCTS

SAMPLIFIER	Stereo Amp powered from SAM. Drives speakers or head-phones. Plugs into light-pen socket. Samplifier alone ***£20***. Speakers ***£5***.
PRO-DOS	Allows you to run CP/M 2.2 programs on SAM. ***£27***.
PRO-DOS PD1	PD programs to use with PRO-DOS ***Only £1***
THE P.A.W.	The Professional Adventure Writing for PRO-DOS. ***£16.50***
CP/M MANUALS	Genuine CP/M 2.2 DR Manuals ***£6.50***
DAY DREAM	Graphic Adventure for SAM ***£4.50***

¤ TURN YOUR PC INTO A SPECTRUM - NEW VERSION ¤

Spectrum 128K with Interface 1 and Microdrives. All emulated on your PC. Unregistered copy ***£2.50*** Registered version ***£15***. (Registration gives DISCiPLE/PLUS D disc reader and design for tape input interface.)

¤ RIBBON RE-INKING SERVICE ¤

Star, Citizen and other standard fabric ribbons re-inked for £1.50 each + return postage.

Please allow 28 days for delivery. All prices include UK postage and packing. Overseas customers please add £2 on modems; PRO-DOS and +3 CP/M, add £1 on all other items. Please make cheques/postal orders payable to B.G.Services.

CONTENTS

Vol.6 N°12. August 1993.

- News On 4 4
- The Editor Speaks 5
- Data Recording With Beta Basic 7
- Problem Solving - Part 6 17
- Short Spot 20
- Ohm's Carpet 21
- The Help Page..... 25
- STYLE WRITER Reviewed 29
- Your Letters 33
- Small Ads 38
- FORMAT Readers Service 39

THIS MONTHS ADVERTISERS:-

BETASOFT	Back Cover
B.G.SERVICES	2
BLUE ALPHA ELECTRONICS	26
FLEXIBASE SOFTWARE	28
FRED PUBLISHING	28
KOBRAHSOFT	24
REVELATION SOFTWARE	32
RICHARDSON & CO	28
S.D.SOFTWARE	6
STEVE'S SOFTWARE	14 & 15
WEST COAST COMPUTERS	16

FORMAT **ISSN 0963-8598**

© Copyright 1993 FORMAT PUBLICATIONS. All Rights Reserved.

No part of this publication may be reproduced, in any form, without the written consent of the publisher. The purchaser of this magazine may copy program material published herein for his or her own personal use and provided that any such programs are erased if and when the purchaser disposes of this magazine in any way. While every effort is made to ensure accuracy in FORMAT the publisher will not be held liable for any errors or omissions.

FORMAT is published by **FORMAT PUBLICATIONS.**
34, Bourton Road, Gloucester, GL4 0LE, England.
Telephone 0452-412572. Fax 0452-380890.

Printed by D.S.Litho. Gloucester. Telephone 0452-523198.

NEWS ON 4

LEMMINGS FOR SAM

Some people said it could never be done but FRED Publishing have pulled of the software coup of the year by obtaining a license to produce a Sam version of the classic LEMMINGS game.

Despite the deal costing more than 'an arm and a leg' Colin McDonald decided the game was worth it. This will be only the second license deal of its type on Sam. SAMCO licenced Prince Of Persia from Domark and promptly had one of the biggest sellers ever on Sam and FRED looks set to repeat that success.

On every computer LEMMINGS has appeared on it has gone straight to the top of the charts. The Sam version should be out in the next few months. Keep an eye on FRED's advert.

NEW SPECTRUM KEYBOARD

West Coast Computers have promised to look into producing a new add-on keyboard for the Spectrum, possibly using the SAM keyboard which has an extended matrix.

They would like to hear from anyone who could design the interface required.

EXETER MAIL STILL IN DISARRAY

Exeter's new multi-million pound sorting office is still having problems nearly three months after it first opened.

The local evening paper, the Express and Echo, revealed that the Royal Mail's new state-of-the-art sorting office still has a mountain of first and second class letters unsorted. Local businesses are left waiting days - even weeks - for vital letters and cheques to be delivered.

New computer controlled equipment keeps breaking down and staff shortages due to holidays and sickness are not making things any better. Extra staff have been drafted from other sorting offices to help but the backlog doesn't seem to be going down.

Revelation Software, who are of course based in Exeter, tell us the post is still getting through to them but is usually taking around three days longer than it should. Their dispatching is unaffected by the mail problems as that is handled by us in Gloucester on their behalf.

SAM TO HAVE WIMP SYSTEM

Revelation are to launch a full blown WIMP system for SAM this Autumn. Windows, Icons, Mouse and Pointer systems (now often called a GUI - Graphical User Interface) are fast becoming the norm on PCs and the like. Windows 3.x has sold millions of copies on the PC and it is now becoming rare to find new software that will run unless Windows is present. Already many hundreds of Sam owners have a mouse attached to their computer but without a good WIMP package there is little they can do with them.

DRIVER, as the new package is called, gives you a 'point and click' user interface to run programs and handle files. Utility programs are provided to do most of the hard work of running your computer so even the non-programmer can now carry out quite complex tasks on Sam without difficulty. Software writers will be able to obtain full technical details that will enable them to use DRIVER's system code for their own purposes.

News Credits: M.R.Smith.

URGENT we need your news. Anything you think other people should know about. Items printed earn contributor 3 months extra subscription (please claim when renewing).

The Editor Speaks

Oh boy! The last issue of volume six. Yet another year gone and quite a few more grey hairs to show for it.

Next month will see a new look to FORMAT as we move most of the artwork production from the BBC to a PC. Now that we have a laser printer the BBC's software just can't do it justice. Sad, but after all the loyal work it has put in over the last six years, the BBC deserves a rest.

Of course not everything can change over-night, there is still a lot of stuff already on BBC disc. Now I know that at one time there was a program written to run on a PC which would load text files direct from BBC discs - but try as I have, I can't find a copy of the program anywhere. If any reader has a copy then please, PLEASE get in touch - I will make it worth your while.

Anyway, back to this month. Jenny has announced (much against my better judgement) that she needs a holiday (as if working for me isn't one long holiday). So she's deserting me for the last two weeks in August (I'll get lonely but she don't care). If you have any technical problems during those two weeks then the hotline will still be open, but if you have any membership queries etc, please leave them untill she returns at the start of September - thanks very much.

Talking of membership queries, there have been one or two people who have rung us recently in order to give us their change of address. If you are on the move could you please let us know in writing - this helps to keep our records straight and avoids errors creeping into your new address. Provided we receive your new address before the end of a month we can amend our files in time to get the following months issue to the right address. Please remember to include your new postcode and don't forget to quote your membership number.

Right, now down to the news you have all been waiting for. The Gloucester show/get-together is now set for Saturday 13th November from 10.30am to 4pm. Later than the original plan - but it does have an advantage in that it is nearer to Christmas. The venue we have chosen on the outskirts of Gloucester has plenty of parking and is on a main bus route from the city centre.

We will have as many stalls as we can selling Spectrum and Sam items and there will also be a number of demonstrations and discussion groups going on throughout the day.

Tickets will cost £2 on the door or £1.50 if ordered in advance. People who have already registered an interest will get first priority if tickets look like selling out. There will also be a family ticket (for two adults and any number of kids) priced at £5 (£4 in advance).

To order tickets send a cheque and an SAE for your tickets to be returned in. There is a limit to the number the hall will hold so send off as soon as you can. We will also send you a map of how to get there. All advanced tickets will also have a lucky number on them with spot prizes being announced on the day.

We look forward to seeing lots of you in Gloucester on the day.

And finally, thanks for putting up with me for another year - back next month to start our 7th year of publication.

Bob Brenchley, Editor.

SD Software

SPECMAKER AND OPUS PC-SUITE

SPECMAKER The simplest Spectrum emulator for your SAM. 1000s of 48K programs work without the need for any conversion. Most other programs need only minor changes. All the extra SAM keys work in Spectrum mode. Uses SAM's parallel printer port and up to 360K of SAM memory as a RAMDISK. PLUS D and all OPUS disks* can be loaded into SPECMAKER and saved to SAM disk. Can now convert files between Messenger & SPECMAKER format and so save on valuable disk space. Supplied on 3.5" disk *Master Dos & Master basic required for single density OPUS

PC-Suite. From the author of SPECMAKER S.D. Software brings you PC-SUITE. Now you can transfer your IBM data files by reading and writing IBM disks on your Sam. PC-Suite will let you format IBM disks on Sam. Write Sam basic programs on your PC.AT. Use PC-Suite to copy Sam data files to PC disk and print them on a high quality laser printer. Many more uses.

nb. Not a PC emulator.

UNIDOS Version 2 of the incredible new DOS from Steve Warr for the PLUS D and DISCIPLE. Same DOS file for both systems. Random files. Sub directories. Hundreds of files on one disk. Hidden files. Protected files. Copy files of any length. Incredibly versatile screen dump routines. Error trapping. Many more features. Compatable with all Spectrums*. Over 20 programs now included on the disk. * +2A/+3 restricted to 48K mode.

SPECFILE+ Now a Spectrum data filing program that never gets out of date. Specfile+ holds a massive 28K of data and by using data compression makes it seem like much more. Very fast CASE selective and complex searches. Designed to be added to so it grows as you do. This program is a must have for any one with data to hold.

INDUG PRICES		NON MEMBERS
Specfile+	£ 9.95	£12.95
UNIDOS	£19.95	£25.95
Createfile Manual	£ 5.50	£ 6.50
Specmaker	£ 9.95	£12.95
Specmaker Upgrade	£ 6.50	£ 8.00
PC Suite	£19.95	£25.95
IBU* /SAMIBU	£ 3.50	£ 4.90
DBU*	£ 4.00	£ 5.50
File Convertor*	£ 4.50	£ 5.30
Hackers Workbench*	£ 8.50	£ 9.90

Don't forget to say if ordering for PLUS D or DISCIPLE and the size of disk required. (PLUS D, 3.5 inch 80T will be sent otherwise)

* GDOS programs still available *

PLEASE Add £0.50 Postage (£1.20 OUTSIDE UK)

DO NOT FORGET YOUR INDUG MEMBERSHIP NUMBER

S D Software, 70 Rainhall Road, Barnoldswick, Lancashire, England. BB8 6AB.

DATA RECORDING WITH BETA BASIC

By:- Derek Crabtree.

Can you keep track of your income and deductions? Do you loose your P60? Do you need to keep track of up to 18 items of numerical data which can be entered for every month for a year? It was problems such as these that encouraged me to write a data recording program which is versatile and can easily be adapted to suit your own needs.

It is written for the 48k Spectrum using Beta Basic, it has a number of very useful procedures that can be incorporated into your own programs. For example the information can be "INPUTted" and edited at appropriate places on the screen and it also includes a "pull-down" menu and a calculator facility.

So to use the program you will need the Beta Basic utility. This is a very extended version of Basic which is available in several versions including one on disc for the PLUS D working with a 48k or 128k Spectrum. It can be obtained from Betasoft, Wyche Avenue, Kings Heath, Birmingham, B14 6LQ.

Judging from the programs that I have seen, the Sam Coupé seems to use similar instructions, the program may work on that machine but I cannot tell.

At the heart of the program is a procedure that I have called "b_number". It was developed by Ian Brown and published in the Beta Basic Newsletter Nº3, with the name "Readnumber". This enables the programmer not only to input a number anywhere on the screen but also to state its minimum and maximum values, and to stipulate whether its a decimal and/or whether it is a negative number. Although I do not use negative numbers in this program I have left this feature in the procedure as you may wish to make use of it in your own programs.

As we build the full program I will give you each of the main routines and, where I think it is needed, a short test program (which will not be part of the finished program of course).

So, here is the first routine.

Procedure To Input A Number.

```
500 REM ******* b_number ******
510 DEF PROC b_number REF number,lin,
    col,min,max,dec,neg
520 LOCAL a$,b$,c$
530 DEFAULT dec=0,neg=0
540 LET valid=0,b$="",c$=">"
550 DO UNTIL valid
560 LET length=LEN b$+1,a$="",b$=""
570 PRINT INVERSE 1;AT lin,col;c$+ ST
    RING$(length," "): DO UNTIL a$=CH
    R$ 13
580 GET a$
590 IF a$=CHR$ 12 AND LEN b$>0 THEN L
    ET b$=b$( TO LEN b $-1)
600 IF neg AND a$="-" AND b$="" THEN
    LET b$=a$
610 IF (a$>="0" AND a$<="9") OR (dec
    AND a$=".") THEN LET b$=b$+a$
620 PRINT BRIGHT 1; INVERSE 1;AT lin,
    col;b$+c$+" "
630 LOOP
640 IF b$<>"" THEN IF VAL b$<min OR V
    AL b$>max THEN BEEP .1,10: ELSE :
     PRINT INVERSE 1;AT lin,col;b$+"
    ": LET number=VAL b$: LET valid=1
650 LOOP
660 END PROC
```

Program To Test The Above Procedure.

```
1000 REM ******* TEST 1 *******
1010 BORDER 0: PAPER 0: INK 7: CLS
1020 PRINT AT 8,5;"Enter a number"; AT
     10,5;"between -10 and 100 "
```

```
1030 b_number n,10,25,-10,100,1,1
1040 PRINT AT 12,5;"O/K- ANY KEY TO RU
     N AGAIN"
1050 PAUSE 0: RUN
```

In the original procedure the variable c$ in line 540 was designated as a flashing square as it was written; c$ = CHR$ 18 + CHR$ 1 + " " + CHR$ 18 + CHR$ 0.

As I have used a CSIZE 5,6 in my program this did not work very well as the paper area was too large. So I have omitted the flashing facility and substituted the ">" symbol for the blank space. Also as I have used black paper I have included INVERSE 1 in lines 570, 620 and 640, after the PRINT statement, as well as BRIGHT 1 in line 620. These could obviously be adapted if you wished to use the procedure for other purposes.

When typing the procedure notice the single space in between the quotes in lines 570, 620 and 640. Notice too that the program numbers are fairly low. This is because the procedure is called quite often and it speeds up the execution if it is placed near the top on the main program.

Test it for yourself with the test program which is not part of the final data program. If you change the 1 in line 1030 to a zero, you will find that you will no longer be able to enter a negative number. In a similar manner altering the penultimate 1, to a zero will prevent you entering a decimal.

The second important procedure is for the "pull-down" menu, (who needs an Apple Mac?). This again was printed in the Beta Basic Newsletter (sadly no longer published, but I thing Betasoft will supply back-issues), in this case issue 9. This routine allows the programmer to choose the titles for the options. The variable AA determines the position of the menu on the screen and can be anything between 1 and 4. The default value is 1, but I have chosen 4 for my program so that the menu prints on the right hand side of the screen.

"Pull Down" Menu Procedure

```
400 REM ****** pull menu ******
410 DEF PROC  b_pull DATA: LOCAL opti
    ons,a$,q$,b$,a,b,c,d,choice: DEFA
    ULT aa=1
420 DIM q$(10): LET a$="",options=0:
    DO : READ q$: LET q$(2)=SHIFT$(1,
    q$(2)): LET a$=a$+q$+CHR$ 13,opti
    ons=options+1: LOOP UNTIL NOT  IT
    EM(): LET a=(aa-1)*56+8,b=options
    *8,c=167,d=72
430 GET i$,a-1,c,10,options+1;1: WIND
    OW 2,a,c,d,b: LET a=a-1,d=d+1: PL
    OT a,c: INK 6: DRAW 0,-b: DRAW d,
    0: PLOT a+1,c-b-1: DRAW d,0: DRAW
     0,b: WINDOW 2: PAPER 7: INK 0: C
    SIZE 7,8: OVER 2: CLS 2: PRINT a$
    ( TO LEN a$-1);AT 0,0; PAPER 6; I
    NK 0; OVER 2;z$
440 LET choice=1: DO : GET b$: EXIT I
    F b$=CHR$ 13
450 IF b$=CHR$ 11 THEN ROLL 3: LET ch
    oice=-1+choice+1*(options AND cho
    ice=1): ELSE : ROLL 2: LET choice
    =1+choice*(choice<options)
460   LOOP : WINDOW 0: CLS 2: INK 7:
    PLOT OVER 0;a,c;i$: POKE 65535,ch
    oice: END PROC
```

Hide Menu Procedure.

```
900 REM ****** hide menu ******
910 DEF PROC b_hide
920   WINDOW 0: PLOT OVER 0;175,167;i
    $: PRINT #0; PAPER 2; INK 7; AT 1
    ,0;" PRESS ANY KEY TO CONTINUE ":
     PAUSE 0
930 END PROC
```

Test Program For Menu Procedures.

```
1000 REM ******* TEST 2 ********
1010 LET aa=4,z$="           ": BORDER
     0: PAPER 0: CLS: PRINT INK 7; STR
     ING$(704,"y")
1020 b_pull " hide"," run again"," sto
     p"
1030 LET x=PEEK 65535
1040 ON x: b_hide: GOTO 1000: STOP
1050 CLS: PRINT "FINISHED
```

It was written by Paul Field, and in the orignal program the window area used by the menu was stored in a variable that was LOCAL to the procedure. I have used the variable i$ for this purpose and have omitted it

from the LOCAL variables stated in line 410. This was because I wanted to use the data stored in this variable elsewhere in the program to hide the menu. The procedure to do this is shown from line 900 to 930.

Paul also suggested that the variable "choice" could be made global by removing it from the LOCAL list. In this way it could be used in the main program too. He has achieved this as the value of the option chosen is poked into the memory location at 65535 and is PEEKed into the variable choice at the end of the procedure.

In Paul's original program he used spaces where I have used the variable z$. I have chosen to use this in the procedure as it also used in the main program where it serves a similar purpose of printing 10 spaces to highlight choices. In the menu I have made this yellow whereas in the main program it is printed as white paper. The instructions at line 450 ensures that this yellow band can be moved up and down in the menu with the cursor controls.

There are also other cosmetic changes that I have made to the PAPER and INK colours to suit my own program. If you wish to use this procedure for your own purposes you may need to experiment to find out which best suits the current attributes you are using.

Once again, try it for yourself with the test program.

The final procedure that can be used on its own, separate from my data program is a routine that allows the operator to use the computer as a calculator. Owners of the 128k Spectrum have this facility built into the ROM but I believe that it is difficult to access it from a program.

Procedure For Calculator Function.

```
700 REM ***** calculator ******
710 DEF PROC b_cal: LOCAL ok,w,xs,ys,
    a$,t$,v$: LET w= AND(PEEK 57407,1
    27),xs=PEEK 57370,ys=PEEK 57371:
    GET t$;0,175,11,8;1: WINDOW 3;0,1
    75,88,64
720 WINDOW 3: PAPER 6: INK 1: CSIZE 5
    ,8: CLS : LET v$="0": DO
730 DO: LET ok=1: INPUT PAPER 2; INK
    7;" 'ENTER' to return "; PAPER 0
    ;" "; LINE a$: EXIT IF a$="": FOR
     f=1 TO LEN a$: IF a$(f)<"*" OR a
    $(f)="," OR a$(f)>"9" THEN LET o
    k=0
740 NEXT f
750 IF a$(f-1)<"0" OR a$(f-1)>"9" THE
    N LET ok=0
760 EXIT IF ok
770 LOOP
780 EXIT IF a$=""
790 PRINT TAB 0;a$;: LET a$=(v$ AND (
    a$(1)<"0" OR a$(1)>"9"))+a$,v=VAL
     a$,v$=a$: PRINT TAB 8; USING "##
    ####.##";v: LOOP : CLS 3: PLOT CS
    IZE 8;0,175,t$: WINDOW w: CSIZE x
    s,ys: END PROC
```

Program To Test Calculator Procedure.

```
1000 REM ******* TEST 3 ********
1010 BORDER 0: PAPER 0: CLS: PRINT INK
      7;STRING$(704,"z")
1020 b_cal
1030 PRINT AT 8,5; PAPER 2; INK 7;"The
     result was ";v;#0; PAPER 6; INK
     0;" PRESS ANY KEY TO RUN AGAIN ":
     PAUSE 0: GOTO 1010
```

This procedure was originally published in Beta Basic Newsletter Nº10, although I have made some changes to it. When I used the original procedure I noticed that if the number was entered with only the mathamatical function immediately following, for example 1+, then the program would stop. I have therefore incorporated an error trapping feature between lines 730 to 770 to overcome problems such as this.

Another problem that I found was that after using the calculator the result disappeared when the window was restored and by the time I was back with the main program I had sometimes forgotton the result. The result is stored in the variable v, which in the original procedure was LOCAL, so it did not exist outside the routine. I therefore removed it from the LOCAL list to allow the results to be

permanently displayed. Once again there were other small changes to the attributes to suit my own requirements.

Try it for yourself with the test program.

Now for the main program. The variables are assigned with the routine from line 9000 onwards. The array t$() stores the first three letters of each month. This is used to show which month is being worked on and to check the selection when wishing to view the entries for a particular month. Notice that the first month in the DATA sequence is April, but this can of course be changed if required. The procedure c_number is used to obtain the relevant year for the program and as it goes from April of one year to March of the next this number is manipulated so that the variable y$ shows the start and finishing years, eg 1992/3.

Main Program
Variable Initilisation Section.

```
9000 REM **** initialisation ***
9010 DIM p$(9,10): DIM d$(9,10): DIM t
     $(12,3): DIM p(13,9): DIM d(13,9)
     : LET z$="          ",c=1,x=0,y=4
     ,month=0,aa=4,v=0
9020 FOR f=1 TO 12: READ t$(f): NEXT f
9030 BORDER 0: PAPER 0: INK 7: CLS
9040 PRINT CSIZE 10,12; INK 6;"INCOME
     DATA "
9050 PRINT BRIGHT 1;AT 3,0;"Enter year
               >": b_number year,3,23
     ,1991,2011
9060 PRINT AT 0,14; CSIZE 10,12; INK 6
     ;" FOR ";year: LET y$=STR$ (year+
     1),y$=STR$ year+"/"+y$(3 TO 4)
9070 PRINT AT 3,0; PAPER 3; INK 7;" EN
     TER TITLES FOR DATA    "
9080 PRINT INK 7; PAPER 1;AT 5,0;" PAY
     MENTS "; AT 5,18; PAPER 2;" DEDUC
     TIONS "
9090 WINDOW 1,0,120,256,120
9100 WINDOW 1: PAPER 0: BRIGHT 1: INK
     7: CSIZE 5,6: CLS 1:
9110 PRINT WINDOW 0;AT 20,8; PAPER 2;
     INK 7;" CURSORS TO MOVE "; INK 0;
      PAPER 6'" X to EXIT 'ENTER' for
     title "
9120 FOR f=1 TO 9: PRINT AT (f-1)*2,0;
     f;TAB 30;f: NEXT f
9130 LET c=1
9140 PRINT INVERSE 1;AT x,y;z$
9150 DO
9160 GET k$
9170 PRINT INVERSE 1; OVER 1;AT x,y;z$
9180 LET x=x+(2 AND k$=CHR$ 10)-(2 AND
      k$=CHR$ 11): IF x<0 OR x>16 THEN
      LET x=0
9190 LET y=y+(30 AND k$=CHR$ 9)-(30 AN
     D k$=CHR$ 8): IF y<4 OR y>34 THEN
      LET y=4
9200   LET c=(x+2)/2
9210 EXIT IF k$="x" OR k$="X"
9220 IF k$=CHR$ 13 THEN INPUT AT 0,0;
     PAPER 2; INK 0;("Payment " AND y=
     4);("Deduction " AND y=34); "Titl
     e:"; FLASH 1;(c); FLASH 0;":";"Ma
     x 10 Letters"'x$: IF y=4 THEN LET
      p$(c)=x$: PRINT AT x,y;p$(c): EL
     SE : LET d$(c)=x$: PRINT AT x,y;d
     $(c)
9230 PRINT INVERSE 1; OVER 1;AT x,y;z$
9240 LOOP
9250 GOTO 200
9260 DATA "APR","MAY","JUN","JUL","AUG
     ","SEP","OCT","NOV","DEC","JAN","
     FEB","MAR"
```

The arrays p$() and d$() hold the titles for the Payments and Deductions respectively, whereas the arrays p() and d() hold the values that the operator INPUTs for these titles. Notice that these last two arrays are dimensioned for 13 rather than for the 12 months of the year. The reason for this is that the 13 set can hold the sum of all the previous entries.

The variable c is used as a counter whilst x and y are the printing positions. As already stated the variable aa is used to determine the position of the menu and z$ is 10 spaces and is used to highlight various choices the operator can make.

The lines 9120 to 9200 are used to enable the operator to move the highlighted z$ around the screen with the use of the cursors. When ENTER is pressed the appropriate title is recorded and printed at its location. Up to 10 letters can be used for this label. In order to make a clearer presentation line spaces in the list

are perfectly acceptable. This will occur automatically whenever a particular line is not selected.

For example I used the following titles for my program:-

	PAYMENTS	DEDUCTIONS
1	BASIC	TAX
2	OVERTIME	GNI
3	MISC	SUPER
4	THIS LINE NOT USED	
5	SUB TOTAL	SUB TOTAL
6	MISC	MISC
7	EXPENSES	NOT USED
8	THIS LINE NOT USED	
9	TOTAL	TOTAL

I am sure though that you would prefer to use your own titles.

When the variables are assigned the program goes to line 200 where the display screen is printed.

Screen Printing Routine.

```
200 REM ***** print screen ****
210 WINDOW 0
220 BORDER 0: PAPER 0: INK 7: CLS: PR
    INT CSIZE 10,12; BRIGHT 1; INK 5;
    " * ";y$; " INCOME DATA *"
230 PRINT PAPER 1; BRIGHT 1;AT 5,0;"
      PAYMENTS    ";AT 5,18; PAPER 2;
    "  DEDUCTIONS  "
240 WINDOW 1,0,120,256,120
250 WINDOW 1: PAPER 0: BRIGHT 1: INK
    7: CSIZE 5,6: CLS 1
260 FOR f=1 TO 9: PRINT AT (f-1)*2,0;
    p$(f);" >" AND p$(f)<>z$; TAB 29;
    d$(f);" >" AND d$(f)<>z$
280 NEXT f
290 PRINT WINDOW 0; AT 21,5; CSIZE 5,
    6; PAPER 5; INK 0;"Result of last
     calculation ="; USING "######.##"
    ;0
```

OK, now we need to give the user a menu so he can do things. Lines 300 to 340 are used to display the options for the menu. After a choice has been made from the menu, the program finds the routine that is appropriate for that choice, carries out the instructions then returns to line 340. Other menus could be written just as easily.

Routine To Get The Menu.

```
300 REM ****** get menu *******
310 b_pull " see Month"," add Month",
    " sum Data"," save Data "," print
    "," hide Menu"
320 LET x=PEEK 65535
330 ON x:b_month:b_add:b_sum:GOTO 300
    0:b_print:b_hide
340 GOTO 300
```

Here the program is sent again to line 300 for the menu. Instead of a GOTO, it might be suggested that a DO LOOP could have been used. This would however have caused a problem if SAVE was selected. In this case the return address would have been saved on the stack and not cleared when the program was re-loaded. This would eventually mean that with several saves the stack would have become cluttered with unwanted information and after a time the program would run out of memory.

A similar problem occurs with the variables xos and yrg which are used by Beta Basic itself. If these are not cleared the program eventually chokes itself. For this reason the lines 30 to 100 are used to delete these extra variables. Deleting the variable a$ which is used in this routine does not effect any other variable of the same name used in the main program.

Routine To Clear
Unwanted Beta Basic Variables.

```
 20 REM removing extra xos,yrg
 30 RANDOMIZE USR 58419
 40 DO
 50 EXIT IF PEEK ( DPEEK(23627)+32)<>
    184
 60 POKE  DPEEK(23627)+32,65
 70 POKE  DPEEK(23627)+33,29
 80 POKE  DPEEK(23627)+34,0
 90 DELETE a$
100 LOOP
```

The save routine is between lines 3000 to 3040. One of the slight drawbacks of the PLUS D is that it turns off the Beta Basic utility. For this reason after the save the program goes to the beginning of the program where it encounters RANDOMIZE USR 58419 which turns the utility back on.

Main Save Routine.

```
3000 REM ***** save program ****
3020 PRINT AT 21,0; PAPER 2; INK 7;"SA
     VE ONTO 1 OR 2 DISCS ? "; PAPER 0
     ;TAB 31: INK 7:b_number n,21,25,1
     ,2
3030 FOR f=1 TO n: SAVE df;"PAY"+y$ LI
     NE 1: VERIFY df;"PAY"+y$: NEXT f
3040 GOTO 1
```

Notice that the progam saves itself under the title of "PAY", this is linked to the variable y$ which carries the year. This is saved with the instruction LINE 1, so that when the program is loaded back it autoruns from line 1. Once again the program encounters the delete routine and the switch on instruction.

When the variables have been assigned then the operator should select "add month" from the main menu.

Procedure To Get Next Month.

```
1000 REM ****** add month ******
1010 DEF PROC b_add
1020 LET ok=1,month=month+1,k=month
1030 IF month>12 THEN PRINT #0; PAPER
     2;INK 7;"                ENTRY FULL
                ": PAUSE 50: LET ok=0,mo
     nth=12
1040 IF ok THEN PRINT AT 3,0; PAPER 5;
      INK 9; CSIZE 11; " MONTH; ";t$(m
     onth);" "; PAPER 0;TAB 23;: b_ent
     ries: b_select
1050 END PROC
```

The variable ok is used to check that the month number does not exceed 12. The variable k carries the month number for the printing routine called b_entries.

Procedure For Adding/Printing Items.

```
 800 REM **** print entries ****
 805 DEF PROC b_entries
 810 REM ***** total items *****
 815 LET p(k,5)=0,d(k,5)=0,p(k,9)=0,d(
     k,9)=0
 820 FOR f=1 TO 4
 825 LET p(k,5)=p(k,5)+p(k,f): LET d(k
     ,5)=d(k,5)+d(k,f)
 830 NEXT F
 835 FOR F=6 TO 8
 840 LET p(k,9)=p(k,9)+p(k,f): LET d(k
     ,9)=d(k,9)+d(k,f)
 845 NEXT f
 850 LET p(k,9)=p(k,9)+p(k,5): LET d(k
     ,9)=d(k,9)+d(k,5)
 855 REM ***** print items *****
 860 WINDOW 1: FOR f=1 TO 9: IF p$(f)<
     >z$ THEN PRINT AT (f-1)*2,12; INK
      7; USING "#######.##";p(k,f)
 865 IF d$(f)<>z$ THEN PRINT AT (f-1)*
     2,41; INK 7; USING "#######.##";d
     (k,f)
 870 NEXT f
 875 END PROC
```

This procedure serves two functions. Firstly it totals all the entries up to entry 5. This is because I have used this entry as a sub total, it then adds all the items and puts the result in entry number 9, as I have used this as a total. If you wish to adapt the program you may not of course require this facility.

Its second purpose is to print the values, and again it will only print them where there is a title in the Payment or Deduction column.

When the program returns from this procedure it is then immediately sent to another procedure b_select. This is the hub of this data program and lies between the lines of 5000 and 5270. This routine deals with INPUTting or editing the data.

Edit And Select Routine.

```
5000 REM ***** edit/select *****
5010 DEF PROC b_select
5020 LET z=0,c=1,x=0,y=12,startx=0
5030 DO : LET startx=startx+1: EXIT IF
      p$(startx)<>z$: LOOP
5040 LET x=(startx*2)-2
5050 PRINT #0;AT 0,4; PAPER 2; INK 7;"
      CURSORS TO MOVE ";INK 0; PAPER 6
     '" M for Menu 'ENTER' for entry "
5060 WINDOW 1: PRINT INK 7; INVERSE 1;
      OVER 1;AT x,y;z$
5070 DO
5080 GET k$
5090 PRINT INK 7; INVERSE 1; OVER 1;AT
      x,y;z$
5100 LET y=y+(29 AND k$=CHR$ 9)-(29 AN
     D k$=CHR$ 8): IF y<12 OR y>41 THE
     N LET y=12
```



```
5110 IF (y=41 AND d$(c)=z$) OR (y=12 A
     ND p$(c)=z$) THEN : DO UNTIL x>16
     : EXIT IF (y=41 AND d$(c)<>z$) OR
      (y=12 AND p$(c)<>z$): LET x=x+2:
      LET c=(x+2)/2: LOOP
5120 IF x>16 THEN LET x=(startx*2)-2,y
     =12,c=(x+2)/2
5130 DO
5140 LET x=x+(2 AND k$=CHR$ 10)-(2 AND
      k$=CHR$ 11): EXIT IF x<0 OR x>16
5160 LET c=(x+2)/2
5170 EXIT IF (p$(c)<>z$ AND y=12) OR (
     d$(c)<>z$ AND y=41)
5180 LOOP
5190 IF x>16 OR x<0 THEN LET x=(startx
     *2)-2,y=12,c=(x+2)/2
5200 IF k$="m" OR k$="M" THEN  b_entri
     es: b_pull " calculate"," main Me
     nu": WINDOW 1: LET z=PEEK 65535:
     ON z: b_cal
5210 EXIT IF z=2
5220 PRINT WINDOW 0; PAPER 5; INK 0;AT
      21,23; CSIZE 5,6; USING "#####.#
     #";v
5230 IF k$=CHR$ 13 THEN INK 7: INPUT ;
     : b_number n,x,y,0,99999.99,1: IF
      y=12 THEN LET p(k,c)=n: PRINT AT
      x,y; USING "#######.##";p(k,c):
     ELSE : LET d(k,c)=n: PRINT AT x,y
     ; USING "#######.##";d(k,c)
5240 PRINT INK 7; INVERSE 1; OVER 1;AT
      x,y;z$
5250 PRINT #0;AT 0,4; PAPER 2; INK 7;"
      CURSORS TO MOVE "; INK 0; PAPER
     6'" M for Menu 'ENTER' for entry
     "
5260 LOOP
5270 END PROC
```

The lines betweeen 5100 and 5190 ensure that the highlighted bar, indicating where the values may be entered,' is never printed where there is not a title. The variable startx is used to find the first title in the payment list and it is to this position the bar returns if the x or y co-ordinates try to exceed the stipulated printing area. If the value of p$ is the same as z$, in other words if p$ is a blank, the highlighted bar moves on by the addition of 2 to the x value. If m is pressed b_entries is re-called.

After this is printed the menu is revealed. If "calculate" is selected then b_cal is called. If "continue" is selected then as there is no second instruction given after the ON statement in line 5200 the program simply continues. If "main menu" is selected the the program exits the loop as PEEK 65535 must be 3 and the program returns to line 340.

If ENTER is pressed, then k$=CHR$ 13 and the procedure c_number is called to allow the value to be entered. If y=12 then the entry is made to the Payments otherwise the entry is made to the Deductions.

There are only a few more procedures required. The first is to see the entries for a particular month, the routine for this is called b_month.

Procedure For Seeing Items.

```
2000 REM ****** see month ******
2010 DEF PROC b_month
2020 LET ok=0: DO
2030 INPUT PAPER 2; INK 7;"Enter month
     to view ";m$: LET m$= SHIFT$(1,m$)
2040 IF LEN m$>=3 THEN FOR f=1 TO 12:
     IF t$(f)=m$( TO 3) THEN LET ok=1,k=f
2050 NEXT f
2060 LOOP UNTIL ok
2070 PRINT INK 6; BRIGHT 1;AT 3,0; CSI
     ZE 11; PAPER 5; INK 9;"MONTH; ";t$(k);
     " "; PAPER 0;TAB 23
2080 b_entries
2090 b_pull " calculate"," edit Data",
     " return"
2100 LET x=PEEK 65535
2110 ON x: b_cal: b_select
2120 PRINT WINDOW 0; PAPER 5; INK 0;AT
      21,23; CSIZE 5,6; USING "#####.##";v
2130 END PROC
```

The INPUT m$ is converted into capitals and the variable ok is used to check if a match is made with the month data. If no match is found ok remains zero and the loop returns to the INPUT statement. If the month is found the variable k carries the month number to be printed in b_entries.

The next procedure totals the entries for the months. Two loops are therefore required, the inner one to go through the individual items for each month and the outer one to go from the first month to current month.

SC_DTP and MASTERDOS £37

SC_DTP

£25.00 Desk Top Publishing with Full Wordprocessor

This Advert was produced using SC_DTP the 99% Machine-code utilty.

Desk Top Publishing allows you to organize text and graphics together to produce professional printouts to the printer

SC_DTP allows you to plan your layout on screen so what you see is what you get on your print

The whole design area can occupy upto 2 SAM Screen$ across (1024 pixels) and 4 SAM Screen$ down (768 pixels).

Graphics, Screen$ and Flash! files can be loaded from Disc and parts of the screen placed on the large design area. You can also design your own graphics within the program.

SC_DTP also has a built in full word-processor allowing you to type in your text with full editing, searching etc.

Word-processor text can then be set in a choice of 48 typeface designs ranging in size from 8 to 24 pixels high. You then position your text just where you want it, proportionally spaced out around graphics.

You can load Spellmaster, Secretary and Outwrite text files into SC_DTP.

Special 'ready designed' layouts supplied for labels and other jobs, can be re-configured to meet your exact needs.

Output can be made to most modern 9 pin Printers or you can make enhanced hi-res 'gray scale' outputs to many 24 pin Printers.

SC_DTP works with or without a Mouse.

More fonts and other enhancements later this year but don't delay - buy now and upgrades will be supplied FREE as thay are ready.

SC_DTP Requires a 512k Sam and MasterDos.

SC_ASSEMBLER £12.50 99% Machine code Utility for the Sam

If you have been reading the much praised articles in the Format Magazine "Machine Code Without the Tears" by Carol Brooksbank and are new to the fascinating world of Machine code. SC_ASSEMBLER is the ideal program to help you, thanks to the unique automatic autolab editor designed to help the absolute beginner.

'Format' Vol 1 no12 "A delight to use, it's certainly the one for me. Highly recommended by Carol Brooksbank

SC_FILER £12.50 99% Machine code Utility for the Sam

SC_FILER is a powerful Database program allowing massive storage of data. You can set up the database to your exact requirements, with fields of any size, position, colour and charset in 4 different Mode 3 layouts and printouts.

SC_MONITOR £15.00 99% Machine code Utility for the Sam

SC_MONITOR is an essential utility to use with an Assembler to help understand and debug machine code programs.

Single step each opcode to see what it does and the effects it has on flags, registers, memory and the screen. Various special types of breakpoints will help pinpoint bugs and resets in programs.

Unlike other monitors (incl CP/M) this monitor copes with all opcodes, paging without Sam crashing.

There is also a super fast intelligent disassembler that can also disassemble backwards!

SC_PD3 £2.50 Public Domain Software

Spectrum 48K Emulator (Rom supplied on Disc), Disc Directory Utility, Two Screen$ file compressors, Clone Disc Copier.

SC_AUTOBOOT £15.00

The all New chip brought up to date with some of the earlier problems with ver 1.0 cured.

When you now turn on the coupe there is an instant reset, no need to wait 3 secs. If a Disc is already in the Drive, or you push a Disc in, it will automatically BOOT up.

Now fully 100% compatible with Sam Software, with a mini ROM 3 reset dos routine should you have any problems.

The chip now has an improved reset button to Break into any running program. The chip is easy to fit with an easy to follow manual.

BUY NOW PAY LATER

Just TEL 0223 27515 from 6pm to 9pm with your order. Software sent out next morning with invoice for you to pay later.

STEVES SOFTWARE

7 NARROW CLOSE, HISTON, CAMBRIDGE, CB4 4XX. TEL 0223 235150 From 6pm-9pm

SC_DISC PROTECTOR £15.00

At last, no disc corruptions when turning the power on to Sam or pressing the reset button, thanks to a new piece of hardware from the talents of Edwin Blink.

The unit momentarily takes control of the ASIC, feeding the essential 8MHz clock signal to the disc controller, stopping the controller from corrupting any discs that may be in drives 1 or 2.

The chip unit has 3 colour coded wires sticking out for soldering to Sam's circuit board, a local electrician will be able to fit the unit if you cannot.

Note: The unit works with Sam's built-in drives only.

Special offer: Purchase SC_DISC PROTECTOR and SC_AUTOBOOT together for £27 (save £3) thereby you have a Sam that instantly resets with automatic BOOT up and disc protection.

STEVES SOFTWARE

7, Narrow Lane, Histon, Cambridge, CB4 4XX.

All this information is stored in the 13th array of p() and d(), k is given that value and the program then once again goes to b_entries to print the results.

Procedure For Summing The Entries.

```
4000 REM ***** sum data *****
4010 DEF PROC b_sum
4020 PRINT AT 3,0; CSIZE 11; PAPER 5;
     INK 9; "TOTALS FROM APR TO ";t$(m
     onth);" "
4030 PRINT #0; PAPER 2; INK 7;"
          PLEASE WAIT "
4040 LET k=13: FOR f=1 TO 9: LET p(13,
     f)=0,d(13,f)=0: NEXT f: b_entries
4050 FOR f=1 TO month
4060 FOR x=1 TO 9
4070 LET p(k,x)=p(k,x)+p(f,x)
4080 LET d(k,x)=d(k,x)+d(f,x)
4090 NEXT x
4100 NEXT f
4110 b_entries
4120 END PROC
```

The final procedure is designed to provide a hard copy of the results.

Procedure For Printing To Printer.

```
6000 REM ***** lprint data *****
6010 DEF PROC b_print
6020 LPRINT "DATA FROM APR ";y$( TO 4)
     ;" TO ";t$(month);" "; y$(6 TO ):
      LPRINT
6030 LPRINT " PAYMENTS";TAB 30;" DEDUC
     TIONS": LPRINT
6040 FOR f=1 TO 9
6050 IF p$(f)<>z$ THEN LPRINT TAB 0;p$
     (f);TAB 13; USING "#######.##";p(
     k,f);
6060 IF d$(f)<>z$ THEN LPRINT TAB 30;d
     $(f);TAB 45; USING "#######.##";d
     (k,f)
6070 NEXT f
6080 RANDOMIZE USR 58419
6090 END PROC
```

This only prints the values to the titles that have been selected, the others remain as blank lines.

So I hope that you have found the information in this article interesting and in fact useful enough to incorporate some of the ideas into your own programs.

WEST COAST COMPUTERS

Abernant Centre For Enterprise, Rhyd-y-fro, Pontardawe, West Glamorgan, SA8 4TY.

Below you will find details of the full range of SAM hardware that is now available direct from us.

CODE	DESCRIPTION	PRICE
W1001	SAM - 512K - Single Disc Drive Fitted.	£199.95
W1002	SAM - 512K - Dual Disc Drives Fitted	£274.95
W1003	SAM - 512K - Plus External Drive Interface. [Allows you to use your own DISCiPLE/PLUS D 3½" Drive]	£149.95
W1101	SAM Internal Disc Drive Unit.	£79.95
W1102	Parallel Printer Interface. (SPI)	£24.95
W1103	RS232/Parallel Interface (COMMS).	£34.95
W1104	1 M.Byte External Memory Pack. (Needs MasterDOS).	£79.95
W1105	Card Cage (Sambus) - needs MasterDos for real-time clock.	£49.95
W1106	SAM Mouse System.	£39.95
W1107	External Disc Interface (Includes Parallel Printer Port).	£34.95
W1108	Internal 256K Upgrade (for older SAMs with only 256K)	£29.95
W1201	SAM Power Supply.	£24.95
W1301	SAM Parallel Printer Cable (BBC type)	£9.95
W1302	SAM to TV/Monitor Scart Cable	£9.95
W1303	MIDI Cable Set	£6.95

E.& O.E. Prices valid, subject to availability, until 1st November 1993.

UK Postage & Packing: Add £10 for computers (sent by insured carrier).
All other items add £1 per item (max £5).

Overseas customers: Please write for quote on Airmail Insured Delivery Service.

Write your order clearly on a reasonable sized piece of paper, state your name; address and phone number. Cheques, Postal Orders, Euro-cheques should be made payable to West Coast Computers. We will try to dispatch your orders as quickly as we can - however please allow 28 days to be on the safe side. Some items have to be produced in batches and where this may cause a longer delay we will write to you as quickly as possible.

SPECTRUM TRADE UP DEAL

Due to the fantastic success of our special trade-up deal - where you can trade-in any working Spectrum (with power supply and manual) and get £50 off a new Sam - we are extending the offer until the end of September 1993. (see advert in June FORMAT for details)

PROBLEM SOLVING
WITH YOUR COMPUTER

By:- Don Thomasson.

Our sixth and final article in this series answers our poser from last month about the magic square and shows how squares of larger size may be tackled.

The program offered here will allow 4-by-4-sized magic squares to be worked out, and can easily be modified for the 5-by-5 variety. Before looking at it in detail, however, it will be useful to consider the relatively trivial 3x3 case, where the numbers 1 to 9 have to be arranged so that each line, column and major diagonal adds up to 15.

This total can be made up in just eight ways, all of which will be used in the diagram:-

1+5+9
1+6+8
2+4+9
2+5+8
2+6+7
3+4+8
3+5+7
4+5+6

The number in the centre is part of a column, a row, and two diagonals. It must therefore appear in four combinations, and must therefore be 5. Numbers in the corners are part of a row, a column and one diagonal. They must appear three times, and must therefore be 2, 4, 6 and 8. On this basis, a possible square is:-

2 9 4
7 5 3
6 1 8

All other possible arrangements are rotations or reflections of this.

Determination of viable arrangements for larger squares is more complicated, and there are many more possibilities, but the general principle is that the viable combinations for each line are worked out, and the possible values for a given square can then be found by collating the values for the lines which pass through the square. The program uses five arrays:-

A() contains the given data, fed in by the user.
B() starts as a copy of A, but adds deduced entries.
C() identifies unused numbers by zeroes.
D() holds the viable numbers for lines. E() holds viable numbers for squares.

Subroutine 1000 clears A() and B(), and subroutine 4000 displays an empty grid, from the contents of array B. Subroutine 1200 then allows the input of given data, a zero number erasing and existing entry. A zero row number gives an exit to the next stage, which copies the data into B() and sets up the used numbers in array C (subroutine 1300). The display of B() contents is refreshed.

An opportunity is then given to return to subroutine 1200 to make any changes. Otherwise, subroutine 3500 clears D() and E(), and subroutine 2000 analyses the situation. This takes some time in the early stages, and those who are impatient may like to insert a line 2725 to print out the viable combinations of A, B, C and D. TOTAL may be printed out as well, and the addition of L will show which line is being handled: the rows are numbered 1 to 4, the columns 5 to 8, and the diagonals are 9 and 10. The amount of work being done may come as a surprise.

When subroutine 2000 has set up array D, subroutine 1400 collates the

lines through each vacant square and puts the results in E(). The variable MIN registers the case offering the minimum number of alternatives, and if MIN=1 the only possible number is set in array B and displayed. If MIN=0, there is no solution, and that is reported. If MIN is more than one, there are options in all squares, and the case with minimum alternatives is reported.

The fact that a particular option is reported is no guarantee it will yield a viable solution. The numbers offered should be noted and tried one at a time, the routine returning to subroutine 1200 for that purpose if the anwser to 'Any changes?' is Y or y. If no solution is then found, the next option should be tried.

Note that any numbers deduced earlier in the process are lost, since they may not be viable with the option in use.

If MIN=16, the square is complete, and the routine stops.

The program was originally written for a 5-by-5 matrix, and can be reconverted by altering the constants as follows: 4 to 5; 5 to 6; 9 to 11; 10 to 12 (not in lines 1250 and 4020); 8 to 15; 11 to 21; 15 to 24; 16 to 25; 34 to 65. For this adaptation, you may like to try the two squares in Fig.1.

Listing 1.
Program To Solve 4x4 Magic Squares.

```
 100 DIM A(4,4)
 110 DIM B(4,4)
 120 DIM C(16)
 130 DIM D(16,10)
 140 DIM E(16,4,4)
 150 GOSUB 1000
 160 GOSUB 4000
 170 GOSUB 1200
 180 CLS
 190 GOSUB 1300
 200 GOSUB 4000
 210 INPUT "Any changes ? ";N$
 220 IF N$="Y" OR N$="y" THEN GOTO 170
 230 GOSUB 3500
 240 GOSUB 2000
 250 GOSUB 1400
 260 IF MIN=0 THEN PRINT "No solution"
     : GOTO 210
 270 IF MIN=16 THEN STOP
 280 IF MIN=1 THEN GOTO 230
 290 PRINT " There are options at ";HX
     ",";HY
 300 PRINT "They are; ";
 310 FOR Z=1 TO 16
 320 IF E(Z,HX,HY) THEN PRINT Z;" ";
 330 NEXT Z
 340 GOTO 210
1000 FOR X=1 TO 4
1010 FOR Y=1 TO 4
1020 LET A(X,Y)=0
1030 LET B(X,Y)=0
1040 NEXT Y
1050 NEXT X
1060 RETURN
1200 INPUT "Row ? ";ROW
1210 IF ROW=0 THEN RETURN
1220 INPUT "Column ? ";COL
1230 INPUT "Number ? ";NUM
1240 LET A(ROW, COL)=NUM
1250 PRINT AT 2*ROW,3*COL+(NUM<D10)+10
     ;NUM
1260 GOTO 1200
1300 FOR X=1 TO 16
1310 LET C(X)=0
1320 NEXT X
1330 FOR X=1 TO 4
1340 FOR Y=1 TO 4
1350 LET B(X,Y)
1360 IF A(X,Y)<>0 THEN LET C(A(X,Y))=1
1370 NEXT Y: NEXT X
1380 RETURN
1400 LET MIN=16
1410 FOR X=1 TO 4
1420 FOR Y=1 TO 4
1430 IF MIN=0 OR B(X,Y)<>0 THEN GOTO 1
     550
1440 LET COUNT=0
1450 FOR Z=1 TO 16
1460 LET F=1
1470 IF X=Y THEN LET F=D(Z,9)
1480 IF X+Y=5 THEN LET F=D(Z,9)
1490 LET G=F AND D(Z,X) AND D(Z,Y+4)
1500 LET E(Z,X,Y)=G
1510 IF G<>0 THEN LET COUNT=COUNT+1: L
     ET HZ=Z
1520 NEXT Z
1530 IF COUNT<MIN THEN LET MIN=COUNT:
     LET HX=X: LET HY=Y
1540 IF COUNT=1 THEN LET B9X,YO=HZ: LE
     T C (HZ)=1: GOSUB 4000
1550 NEXT Y
1560 NEXT X
1570 RETURN
2000 FOR K=1 TO 4
2010 LET L=K: LET COUNT=0: LET TOTAL=0
2020 FOR N=1 TO 4
2030 IF B(K,N)=0 THEN LET COUNT=COUNT+
     1
2040 LET TOTAL=TOTAL+B(K,N)
2050 NEXT N
2060 GOSUB 2300
2070 LET L=K+4: LET COUNT+0: LET TOTAL
     =0
2080 FOR N=D1 TO 4
2090 IF B(N,K)=0 THEN LET COUNT=COUNT+
     1
2100 LET TOTAL=TOTAL+B(N,K)
2110 NEXT N
2120 GOSUB 2300
2130 NEXT K
2140 LET L=9: LET COUNT=0: LET TOTAL=0
2150 FOR N=1 TO 4
2160 IF B(N,N)=0 THEN LET COUNT=COUNT+
     1
2170 LET TOTAL=TOTAL+B(N,N)
2180 NEXT N
2190 GOSUB 2300
2200 LET L=10: LET COUNT=0: LET TOTAL=
     0
2210 FOR N=1 TO 4
2220 IF B(N,5-N)=0 THEN LET COUNT=COUN
     T+1
2230 LET TOTAL=TOTAL+B(N,5-N)
2240 NEXT N
2250 GOSUB 2300
2260 RETURN
2300 IF COUNT=0 THEN RETURN
2310 IF COUNT=1 THEN LET A=0: LET B=0:
      LET C=0: GOTO 2700
2320 IF COUNT=2 THEN LET A=0: LET B=0:
      GOTO 2600
2330 IF COUNT=3 THEN LET A=0: GOTO 250
     0
2340 IF COUNT=4 THEN GOTO 2400
2350 FOR N=1 TO 16
2360 IF C(N)=0 THEN LET D(N,L)=1
2370 NEXT N
2380 RETURN
2400 FOR A=1 TO 8
2410 IF C(A)<>0 THEN GOTO 2430
2420 GOSUB 2500
2430 NEXT A
2440 RETURN
2500 FOR B=A+1 TO 11
2510 IF C(B)<>0 THEN GOTO 2530
2520 GOSUB 2600
2530 NEXT B
2540 RETURN
2600 FOR C=B+1 TO 15
2610 IF C(C)<>0 THEN GOTO 2630
2620 GOSUB 2700
2630 NEXT C
2640 RETURN
2700 LET D=34-TOTAL-A-B-C
2710 IF D>16 OR D<=C THEN RETURN
2720 IF C(D)<>0 THEN RETURN
2730 IF A<>0 THEN LET D(A,L)=1
2740 IF B<>0 THEN LET D(B,L)=1
2450 IF C<>0 THEN LET D(C,L)=1
2460 IF D<>0 THEN LET D(D,L)=1
2770 RETURN
3500 FOR X=1 TO 16
3510 FOR Y=1 TO 10
3520 LET D(X,Y)=0
3530 NEXT Y: NEXT X
3540 FOR X=1 TO 4
3550 FOR Y=1 TO 4
3560 FOR Z=1 TO 16
3570 LET E(Z,X,Y)=0
3580 NEXT Z: NEXT Y: NEXT X
3590 RETURN
4000 FOR P=1 TO 4
4010 FOR Q=1 TO 4
4020 PRINT AT 2*Q,3*P+10+(B(Q,P)<10);B
     (Q,P)
4030 NEXT Q: NEXT P
4040 RETURN
```

Saddly, this brings us to the end of this series - I hope you have enjoyed our delve into problem solving. I may be back one day with some more but for now I will leave it up to others to continue the good work.

0	6	5	0	0
0	0	0	16	10
11	20	0	0	0
9	0	0	15	18
0	13	19	7	0

9	0	0	0	11
0	21	0	12	0
0	0	13	0	4
16	0	7	0	0
0	8	1	24	0

Fig.1. Two 5x5 Magic Squares To Solve.

SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

I'm sorry to report that your normal dose of SHORT SPOT is currently languishing in some Royal Mail sorting office. As a result all I can do this month is to print a few small items that have been squeezed out of recent issues. If anything has already been printed before I'm sorry. **Ed.**

Alan Cox has kindly sent in these little snippets for the Spectrum culled from old mags. Here's an exploding border to combine with a screen. The original authors/publishers are given in REM statements.

```
 10 REM Exploding border
 20 REM by M Birch of Kidderminster
 30 REM SINCLAIR PROGRAMS July 1983
9000 FOR g=1 TO 5
9001 FOR f=0 TO 7
9002 BORDER f
9003 BEEP .02,f
9004 NEXT f
9005 NEXT g
```

Together with a random screech program to scream all over the place whilst the border's going up in smoke.

```
 10 REM Randomized screech
 20 REM by M Hargreaves of Bradford
 30 REM SINCLAIR PROGRAMS April 1984
 40 REM Try a variety of RANDOMIZE US
    R x to give striped borders with
    a 'screech'
 50 REM x=1289,blue/white
          1333,cyan/blue
          1334,yellow/blue
          1290,red/blue
          1292,green/blue
          1288,black/blue
    All these are disabled by BREAK
 60 REM x=1244,magenta/green
          1245,blue/yellow
          1243,red/cyan
    To disable, use BREAK which work
    s after a delay of a two or three
     seconds
 70 REM This is a follow-up to a lett
    er from Gavin Moore of Newbury, w
    ho suggests RANDOMIZE USR 1331
```

CHECKDRIVE is an interesting little procedure from Simon Goodwin. It interrogates SAM's hardware to find out how many disc controllers are fitted to a system. Programmers can use it to make their programs automatically self-modifying to suit 0, 1 or 2 disc drives.

```
 10 REM CHECK DRIVE
 20 REM Copyright 1990 Simon N Goodw
    in
 30 REM Written for MGT, May 1990 -
    P.D.:
 40 REM Message indicates drive CONT
    ROLLER is present!:
 50 CHECKDRIVE 1
 60 CHECKDRIVE 2:
 70 DEF PROC CHECKDRIVE drive
 80 LOCAL p,port
 90 DEFAULT drive=1
100 LET port=215+drive*16
110 FOR p=0 TO 255 STEP 7
120 OUT port,p
130 IF IN port<>p THEN LET p=1000
140 NEXT p
150 PRINT "Drive ";drive;" controlle
    r is ";
160 IF p>999
170 PRINT "absent."
180 ELSE
190 PRINT "present."
200 END IF
210 END PROC
```

Now those are just the sort os SHORT SPOT items that John Wase likes to see. He will be back with his normal (full length) column next month.

Keep your SHORT SPOT items coming to:- John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
WR10 2LX.

OHM'S CARPET

An Easy Way To Keep The Laws.

By:- Peter Last.

For many years I have been carrying in my wallet a small piece of paper, given to me by a teacher who claimed he had copied it from an faded carpet he had found during a visit to the mystic east.

I have found it invaluable over the years for quick reference to Ohms Law.

Recently, re-reading the January'89 issue of FORMAT, the program by HANS MELLAR reminded me of it, so I joined the two together. The main program (Prog.1) does all the hard work and I have included two front end routines. The first is a simple menu routine (Prog.2) while the second is designed to produce, on screen, a copy of that magic piece of paper I have carried for so long. Either routine could be typed in but I think the best way is to type in both routines as separate programs, then you can MERGE either one into the main program and decide which you prefer.

Prog.1 OHMS LAW - MAIN PROGRAM

```
  1 REM * OHMS LAW *
  2 REM * By PETER A LAST. *
 10 CLS
200 REM * If "CARPET" and "MENU" are
    kept as seperate programs you can
     then MERGE either into this main
     programme *
210 LET z$=INKEY$
215 LET z$=INKEY$: IF z$="" THEN GOTO
    215
220 IF z$>"a" AND z$<"n" THEN GOTO 23
    0: CLS
225 GOTO 215
230 IF z$="b" THEN GOTO 2000
620 IF z$="c" THEN GOTO 3000
630 IF z$="d" THEN GOTO 4000
640 IF z$="e" THEN GOTO 5000
650 IF z$="f" THEN GOTO 6000
660 IF z$="g" THEN GOTO 7000
670 IF z$="h" THEN GOTO 8000
680 IF z$="i" THEN GOTO 8100
690 IF z$="j" THEN GOTO 8200
700 IF z$="k" THEN GOTO 8300
710 IF z$="l" THEN GOTO 8400
720 IF z$="m" THEN GOTO 8500
2000 CLS : PRINT "CALCULATING CURRENT
     (I)"
2010 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
2015 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
2020 LET i=e/r
2025 PRINT ''"The CURRENT is ";i;" amp
     ";("s" AND i>1);"."
2030 GOTO 9000
3000 CLS : PRINT "CALCULATING CURRENT
     (I)"
3010 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
3015 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
3020 LET i=w/e
3025 PRINT ''"The CURRENT is ";i;" AMP
     ";("s" AND i>1);"."
3030 GOTO 9000
4000 CLS : PRINT "CALCULATING CURRENT
     (I)"
4010 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
4015 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
4020 LET s=w/r: LET i=SQR (s)
4025 PRINT ''"The CURRENT is ";i;" AMP
     ";("s" AND i>1);"."
4030 GOTO 9000
5000 CLS : PRINT "CALCULATING RESISTAN
     CE (R)"
5010 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
5015 INPUT "Enter Current in AMPs ";i:
      PRINT '"amps=";i
5020 LET r=e/i
5025 PRINT ''"The RESISTANCE is ";r;"
     OHM";("s" AND r>1);"."
5030 GOTO 9000
6000 CLS : PRINT "CALCULATING RESISTAN
     CE (R)"
6010 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
6015 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
```

```
6020 LET r=e*e/w
6025 PRINT '"The RESISTANCE is ";r;"
     OHM";("s" AND r>1);"."
6030 GOTO 9000
7000 CLS : PRINT "CALCULATING RESISTAN
     CE (R)"
7010 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
7015 INPUT "Enter Current in AMPs ";i:
      PRINT '"Amps=";i
7020 LET x=i*i: LET r=w/x
7025 PRINT '"The RESISTANCE is ";r;"
     OHM";("s" AND r>1);"."
7030 GOTO 9000
8000 CLS : PRINT "CALCULATING VOLTAGE
     (E)"
8010 INPUT "Enter Current in AMPs ";i:
      PRINT '"Amps=";i
8015 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
8020 LET e=i*r
8025 PRINT '"The VOLTAGE is ";e;" VOL
     T";("s" AND e>1);"."
8030 GOTO 9000
8100 CLS : PRINT "CALCULATING VOLTAGE
     (E)"
8110 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
8115 INPUT "Enter Current in AMPs ";i:
      PRINT '"Amps=";i
8120 LET e=w/i
8125 PRINT '"The VOLTAGE is ";e;" VOL
     T";("s" AND e>1);"."
8130 GOTO 9000
8200 CLS : PRINT "CALCULATING VOLTAGE
     (E)"
8210 INPUT "Enter Watts ";w: PRINT '"W
     ATTs=";w
8215 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
8220 LET s=w*r: LET e=SQR (s)
8225 PRINT '"The VOLTAGE is ";e;" VOL
     T";("s" AND e>1);"."
8230 GOTO 9000
8300 CLS : PRINT "CALCULATING WATTAGE
     (W)"
8310 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
8315 INPUT "Enter Current in AMPs ";i:
      PRINT '"Amps=";i
8320 LET w=e*i
8325 PRINT '"The WATTAGE is ";w;" WAT
     T";("s" AND w>1);"."
8330 GOTO 9000
8400 CLS : PRINT "CALCULATING WATTAGE
     (W)"
8410 INPUT "Enter Current in AMPs ";i:
      PRINT '"Amps=";i
8415 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
8420 LET w=i*i*r
8425 PRINT '"The WATTAGE is ";w;" WAT
     T";("s" AND w>1);"."
8430 GOTO 9000
8500 CLS : PRINT "CALCULATING WATTAGE
     (W)"
8510 INPUT "Enter Voltage in VOLTs ";e
     : PRINT '"Volts=";e
8515 INPUT "Enter Resistance in OHMs "
     ;r: PRINT '"Ohms=";r
8520 LET w=e*e/r
8525 PRINT '"The WATTAGE is ";w;" WAT
     T";("s" AND w>1);"."
8530 GOTO 9000
9000 PRINT #0;"PRESS ANY KEY"
9005 PAUSE 1: PAUSE 0
9010 GOTO 10
```

Prog.2 OHMS LAW - MENU

```
  3 REM * MENU *
  4 REM * PETER A LAST. *
 20 PRINT "****         OHMS LAW
    ****"
 30 PRINT : PRINT "  VOLTs.  AMPs.  O
    HMs.  WATTs.  "
 40 PRINT : PRINT "From any two of th
    e above known,the others unknown
    may be found."
 50 PRINT : PRINT "WANTED        KNOWN
          KEY"
 60 PRINT " AMPs      VOLTs & OHMs
       B"
 62 PRINT " AMPs      WATTs & VOLTs
       C"
 64 PRINT " AMPs      WATTs & OHMs
       D"
 66 PRINT " OHMs      VOLTs & AMPs
       E"
 68 PRINT " OHMs      VOLTs & WATTs
       F"
 70 PRINT " OHMs      WATTs & AMPs
       G"
 72 PRINT " VOLTs      AMPs & OHMs
       H"
 74 PRINT " VOLTs     WATTs & AMPs
       I"
 76 PRINT " VOLTs     WATTs & OHMs
       J"
 78 PRINT " WATTs     VOLTs & AMPs
       K"
 80 PRINT " WATTs      AMPs & OHMs
       L"
 82 PRINT " WATTs     VOLTs & OHMs
       M"
198 PRINT #0;"PRESS LETTER REQUIRED?"
```


Prog.3 OHMS LAW - CARPET

```
  3 REM * CARPET *
  4 REM * PETER A LAST. *
 15 PLOT 0,0: DRAW 0,175
 20 DRAW 255,-0: DRAW 0,-175
 30 DRAW -255,0
 35 PLOT 0,91: DRAW 255,0
 40 PLOT 124,0: DRAW 0,175
 45 PLOT 90,73: DRAW 0,36
 50 DRAW 68,0
 55 DRAW 0,-36
 60 DRAW -68,0
 65 PLOT 135,110: DRAW 70,65
 70 PLOT 158,100: DRAW 96,45
 75 PLOT 0,33: DRAW 90,45
 80 PLOT 40,0: DRAW 80,72
 85 PLOT 200,0: DRAW -70,72
 90 PLOT 255,30: DRAW -96,52
 95 PLOT 0,145: DRAW 90,-45
100 PLOT 50,175: DRAW 63,-65
105 PRINT AT 1,3;"2";AT 2,2;"I X R"
110 PRINT AT 8,2;"E X I"
115 PRINT AT 1,13;"2";AT 2,12;"E";AT
    3,11;"___";AT 4,12;"R"
120 PRINT AT 2,18;"E";AT 3,17;"___";A
    T 4,18;"R"
125 PRINT AT 2,26;"W";AT 3,25;"___";A
    T 4,26;"E"
130 PRINT AT 7,29;"W";AT 8,28;"___";A
    T 9,29;"R"
135 PLOT 218,100: DRAW 10,20: PLOT 21
    5,105: DRAW 4,-5: PLOT 228,120: D
    RAW 15,0: REM *
140 PRINT AT 12,28;"E";AT 13,27;"___"
    ;AT 14,28;"I"
145 PRINT AT 17,27;"2";AT 18,26;"E";A
    T 19,25;"___";AT 20,26;"W"
150 PRINT AT 19,9;"I X R"
155 PRINT AT 17,4;"W";AT 18,3;"___";A
    T 19,4;"I"
160 PRINT AT 17,17;"W";AT 18,16;"___"
    ;AT 19,18;"2";AT 20,17;"I"
165 PRINT AT 12,2;"W X R"
170 PLOT 10,70: DRAW 6,12: PLOT 7,74:
     DRAW 4,-4: PLOT 17,82: DRAW 38,0
    : REM *
175 PRINT AT 9,13;"W";AT 9,17;"I"
180 PRINT AT 11,13;"E";AT 11,17;"R"
185 FLASH 1: BRIGHT 1: PRINT AT 1,1;"
    L";AT 1,9;"M";AT 1,21;"B";AT 1,30
    ;"C";AT 5,1;"K";AT 5,30;"D";AT 15
    ,1;"J";AT 15,30;"E";AT 15,9;"I";A
    T 15,13;"H";AT 15,17;"G";AT 15,21
    ;"F": FLASH 0: BRIGHT 0
190 PRINT AT 6,5;"OHMS LAW MAGIC CARP
    ET": PAUSE 80: PRINT AT 6,5;"pres
    s letter required": PAUSE 20
```

'Boy, what a day – I could do with a good, stiff milk shake'

'We can't both be the opposite sex'

'I don't think that cat's ever going to get the idea'

LEO
SOFTWARE

We have a very full range of Educational Software for both School and Home use. The range embraces Infant and Junior work, and covers the new NATIONAL CURRICULUM requirements in Maths and English.

Programs are available for the SAM Coupé and all Spectrums from the 48K onwards - even the +2A - and will work in 48K or 128K modes. Programs can be supplied on cassette, microdrive cartridge and most types of disc.

Please send SAE for lists to:-

B.Seymour,
25, Chatsworth Gardens,
Scarborough,
North Yorkshire,
YO12 7NQ.

Phone, any time, 0723 372621

KOBRAHSOFT
Spectrum & Sam Coupé Utilities

SAM DICE DISC UTILITY. *NEW!*
Ver. 1.1 compatible with MasterDOS. Features READ, BACKUP, RECOVER erased files/lost data, REPAIR directories, DISC CHECK, LOCK OUT bad sectors, SEARCH for string, RENAME files, FORMAT all or just one track. **Price:- £14.95 on disc, plus £0.45 P&P.**

CD2 TAPE TO SAM DISC UTILITY. *NEW!*
Transfer THE VAST MAJORITY of your Spectrum tapes to SAM disc. Gives superb Spectrum tap compatibility. VERY EASY to use. **Price:- £10.95 on disc, plus £0.45 P&P.**

SAM Z80 MACHINE CODE COURSE. *NEW!*
Learn how to program your SAM Coupé in machine code. FULL course, suitable for all, with an assembler and disassembler. **Price:- £20.00, plus £0.74 P&P.**

SP7 TAPE TO +3 DISC UTILITY.
Transfer Spectrum tapes to +3 disc. Now comes with a BEGINNER'S manual, an ADVANCED user's manual and an Encrypter demo tape. Also a superb DISC CATALOGUER. Will now transfer FULL 128K programs. Includes SP7 Companion - shows how to transfer many games. **Price:- £14.95, plus £0.74 P&P.**

GH1 GAMES HACKER UTILITY. *NEW!*
Shows you how to isolate the code from any game with a view to looking for infinite lives, names etc. Also shows you the tricks the professionals use. Provides hours of interest and fun. Comes with full manual which explains the routines involved. **Price:- £14.95, plus £0.54 P&P.**

DMS +3 DISC MANAGEMENT SYSTEM.
NEW version 1.1, now with printout, high capacity formats AND extended directories. Organize all your disc files. LARGE database; FAST search, EASY to use. **Price:- £14.95, plus £0.45 P&P.**

D.I.C.E. +3 DISC UTILITY.
NEW Version 3.0 with high capacity format, data printout and disassembler, LOCK OUT faulty sectors, RECOVER erased files and much more. Very easy to use "An excellent package", CRASH Oct'88. **Price:- £14.95 on disc, plus £0.45 P&P.**

SPECTRUM MACHINE CODE COURSE.
FULL course from beginner to advanced level. Applies to ALL Spectrums. Suitable even for the complete beginner. FREE disassembler and Editor/Assembler. **Price:- £20.00, plus £0.74 P&P.**

DB2 +3 DISC BACKUP UTILITY.
Backup +3 PROTECTED discs to DISC or TAPE, EASY to use, handles Multi-Loads and now even MORE discs. **Price:- £14.95 on disc, plus £0.45 P&P.**

PLUS 3 DIARY AND FILING SYSTEM.
New Version 1.1 with full printout. Superb filing system/diary/database for the +3 with LARGE database, fast search/retrieve and also Biorhythms. **Price:- £12.95 on disc, plus £0.45 P&P.**

STILL AVAILABLE:-
SD5 Tape to M/D utility; SO5 Tape to Opus utility; MT1 M/D Toolkit; SW1 Tape to Wafadrive utility; CT2 Sam Tape utility; SM1 Multiface Suite; SP7 Companion Vol. 2; SC7 tape backup utility - please ring for FULL details.

MONEY BACK GUARANTEE - BUY WITH CONFIDENCE.
UPDATES:- Send old disc, tape etc, Plus ½ new price for latest version.

Send cheque/P.O. to:- KOBRAHSOFT, Dept. F, Pleasant View, Hulme Lane, Hulme, Longton, Stoke-on-Trent, Staffs, ST3 5BH.

Postage:- U.K. as above, Europe add £1 per item, others add £2 per item. Send SAE (9"x 4") for detailed FREE catalogue. Please mark envelope "ENQUIRY".

FOR MORE INFORMATION PLEASE PHONE 0782 305244.
ACCESS and VISA welcome - please phone above number.
(24 Hour, 7 Day Service for FAST Mail Order)

The HELP PAGE

Edited By:- Kevin Gould.

I would like to start off this month's Help Page by replying to Adrian Platt's letter printed in the June issue of FORMAT.

The Help Page is here for problems that don't need an urgent answer (the problems you need help with in a hurry should be directed to Bob's excellent hotline). Ray, Mike and myself try and answer the questions sent in, hopefully in a way that is easy to understand.

We try to print as much of the question as we can, so the answer will make sense to other readers - many of whom may have a similar problem. I am personally sorry (as the Help Page Editor) that Adrian finds some of the answers (or terms used) beyond his understanding. The only thing I can suggest is that anyone who still does not understand an answer we give should write to us asking for more details. Only with this sort of feed-back can we learn at what level to pitch our answers to meet the needs of the average reader. We don't want to 'talk down' to our readers but neither do we want to blind you with science.

OK, first problem this month. Mr Stephenson wrote with a Tasprint problem. He has a Spectrum +2, Brother HR5 printer and Tasword +2 which worked fine until he bought a PLUS D, now problems.

The answer I'm sorry to say is that Tasprint is not compatible with the PLUS D due to the strange way its print routine works. What it tries to do is overwrite the printer channel (#3) so that it can get a line of print at a time into its own buffer. It then restores the printer channel and outputs the line in hi-res bit image mode to the printer. Alas, both the PLUS D and the DISCiPLE overwrite the printer channel 50 times a second - thereby stopping Tasprint in its tracks. Sorry, but I know of no solution except to switch to Qualitas - a similar type of program but workable on the PLUS D because it gets text from Tasword in a different way.

Next. A couple of letters on the same subject and with the exception of one the same question: Artcon, the conversion program for the OCP Art Studio which used to be advertised in FORMAT, has 10 parts:- 26675,32; 26888,32; 27009,32; 27222,120; 34838,104; 35063,184; 35341,160; 35627,184; 31844,18; 36390,48

What does each part do? Well, I'm not sure why anyone would need to know, Villy Feltman to answer as it was he who wrote the original article.

The additional question being asked by one reader was: Why, in one of the menus (possibly 'misc'), was BASIC or EXIT not included? I don't know, however, apart from a Basic loader the actual program is machine code. As there is no Basic part (unlike say Tasword), there is no need to return to Basic.

Now to SAM. Paul Bloomer (Letters - June 93 refers), wondered why the SECRETARY WP would not perform the automatic date insertion when he had entered the date and time himself (he doesn't have a SAMBUS). Having just incorporated Doug Casterton's splendid modification to date stamp files and make use of sub-Directories (Short Spot May 93 p12), I decided to have a look at the prospects of auto date stamping. The program doesn't appear to use DATE$ for this purpose so I assume that it must use a port to get

BLUE ALPHA ELECTRONICS

We are pleased to be able to offer a full repair service for Sam and Spectrum users. All repairs carry a 3 months guarantee against the same fault recurring.

Sam + PSU + 1 Drive *	£30
New PSU	£20
All Sam Interfaces	£18
Spectrums	£30
Plus D	£18
DISCiPLE	PHONE
MGT Lifetime Drive*	£20

*Disc drive repairs exclude cost of replacement mechanisms.

Please ring before sending items for repair.

* NEW * NEW * NEW *

Ultra-Sonic Joystick Interface

No need for trailing wires anymore. Connect receiver to computer, transmitter to your own joystick and you can play your games from anywhere in the room. Works with most computers which use an Atari standard joystick (phone if in doubt). ***Only £36.99*** incl p&p

ALSO AVAILABLE We can make and supply all types of cables - send us a Stamped Addressed Envelope with detail of cable required (pin-outs, length, etc) and we will send you a quotation.

Send cheque/postal order (Pounds Sterling Only) payable to:- **Blue Alpha Electronics**.

All prices include UK return postage, overseas customers please write for details of cost of postage and insurance.

Blue Alpha Electronics,
Abernant Centre For Enterprise,
Rhyd-y-fro, Pontardawe,
West Glamorgan, SA8 4TY.
Tel: 0269 826260.

the date from the SAMBUS direct. However, for those of you who do not have this hardware all is not lost. All you need to do is to break into the SECRETARY as directed by Doug's piece in Short Spot, insert the line of BASIC listed below and save the modified version of the program.

```
9073 IF a$="d" OR a$="D" AND a=8 THEN
     PRINT AT LI,C; DATE$ : POKE (MD
     + (S*LI+C)), DATE$ : GOTO VAL "
     9055"
```

Another letter concerning the SECRETARY comes from Nick Xylas of Bristol who has been attempting to customise the program to make the default page A4 size instead of 11 inches. For those who don't know, this is necessary if you wish to print using the PRINT RANGE option, otherwise the top lines of the following page are printed at the bottom of the current page. He arranges this by making the paper length 70 and putting blank Headers and Footers on each page so that the text plus these total 70 lines. Unfortunately he found that when he saved the customised program the headers and footers were not saved with it.

Well, I always assumed that headers and footers were saved with the document file as all other parameters are, but even that is not the case, so it looks as though you cannot save this information. Can anyone throw further light on this? The method of using headers and footers seems rather complicated, and the method I use is to set the page length at 64 then set the paper length to 70, and make sure that I leave 6 blank lines at the foot of each page. If you use the auto header/footer option you still have to toggle each line forward once you reach the bottom of the page, otherwise you can overtype the footer area as, unlike the auto-header insert, the footer insert does not scroll the cursor to the next free line! Just to complete the set-up routine, before starting to print set the FORM FEED and PAPER OUT detector ON.

Chris Dodd of Bristol would like to run a piece of E-TRACKER music under interrupts from BASIC and states that the address that needs calling is 32774. However, he has tried using the frame interrupt vector 23266 (5AE2 hex) and this just locks-up the SAM. He does not own an E-TRACKER so he can't use the programs they supply. Unfortunately I am not conversant with the way that this program compiles the music for the various modes it embraces. I assume that this is an interrupt driven machine code music file which you have, otherwise it will cause problems if you try to run it from a vector call. Without more details I am unable to advise you.

Finally, we have a question which is slightly out of the ordinary. Basil Lankester of Little Torrington in Devon, owns an Amstrad NC100 Notepad which has a 9 pin serial interface socket. He wonders whether it is possible to connect it to the SAMCO communications interface so that he can transfer data between the NC100 and SAM (or the other way round).

Whether or not you can achieve this depends upon several factors. Firstly are the data parameters compatible? The serial interface on the SAM can be programmed to adjust the baud rate, stop bits and data bits so hopefully you will be able to match the Notebook's format. Are the voltage and current levels compatible? The standard RS232C interface operates, nominally, at plus and minus 12 volts but most interfaces will work at levels as low as 3 volts, so voltage should not be a problem unless the Notebook operates at the standard 5V logic level (as does the Commodore 64, which also works at the wrong polarity by the way).

However, having said all that, the notes that come with the SAM COMMS Interface state that the serial side is IBM PC/AT compatible - so it looks hopeful!

As you surmised Basil, the wires will need to be crossed over in order for the link to work and will need connecting as follows:-

	2 to 3	
	3 to 2	
SAM PINS	4 to 8	NOTEBOOK PINS
	5 to 5	
	8 to 4	

And that's it for this month. Any questions (or answers if you have them) to:-

Spectrum
Kevin Gould, Format Help Page,
2, Barleyfield Close, Heighington,
Lincolnshire, LN4 1TX.

SAM
Ray Bray, Format Help Page,
'Elmsleigh', 4, Tidworth Road,
Porton, Salisbury, Wiltshire, SP4 ONG.

+3 or CP/M
Mike Atkins, Format Help Page,
70, Rudgwick Drive, Bury,
Lancashire, BL8 1YE.

If you are sending a disc to illustrate your problem then please include a SAE for its return. We can cope with 3½" discs for PLUS D and Sam, or 3" discs on the +3. Please make sure programs do not autorun (but tell us what line they do run from).

sinclair

W.N.RICHARDSON & CO (EEC)

NOW IN STOCK AGAIN

ALL PRICES INCLUDE 17.5% VAT

QL & SPECTRUM PRICES REDUCED
QL £85 SPECTRUM +2 & +2A £70 SP+3 £80

★ MICRODRIVE EXPANSION KIT ★
Includes microdrive & interface 1, booklet, introduction cartridge & flex connector & Wallet of 4 Cartridges...£59.95
As above with extra microdrive £69.95
NEW MICRODRIVES ....£24.95 - 2 for £40 (WITH CONNECTOR)

★ MICRODRIVE CARTRIDGES ★
4 new cartridges in wallet.....£10.00
20 in plastic box with separators.....£50.00
8 new (program cartridges) for (reformatting) in wallets....£15.00
Power Supplies .....48/128k £9.99 plus 2A and 3 £12.25. QL £12

★ PRINTERS ★
ALL PRICES INCLUDE 17.5% VAT
SAMSUNG SP093 80 col, 300 CPS, 50NLQ, 3K Print Buffer Centronics. T/Feed & S/Feed. Paper park facility £149
CANON BUBBLEJET..BJ10EX Portable 142CPS (17CPI) 83CPS (12CPI) 64 nozzle, resolution 360 x 360 D.P.I.....£225

★ 'UNIVERSAL' 3.5" DISK DRIVE FOR MOST MICROS ★
1Mb and 2Mb 3.5" cased, complete with built-in PSU, mains switch & 13 amp plug. EXTERNAL dip switches adapt drive for Spectrum, QL, PC, Atari, Amiga etc. Comes with full instruction book, and free DS/DD disk.
(DS/HD with 2Mb) Price includes free lead
(Spectrum & QL need I/Face) - Disk Drive 1Mb £69 2Mb £89
Additional Leads - for above £12
Uncased 3.5" Disk Drives low profile 1Mb £29 2Mb £36

UK delivery: Please add £9 for PRINTERS etc. Other Items £3 Outside UK add £15. Other items £5. C.W.O. or VISA/ACCESS
Spectrums may be reconditioned
ALL OFFERS SUBJECT TO AVAILABILITY - ORDERS TO:

18-21 MISBOURNE HOUSE, CHILTERN HILL, CHALFONT ST PETER, BUCKS SL9 9UE
FAX: 0753 887149 TEL: 0753 888866

FLEXIPAGE

TEXT AND GRAPHICS AUTHOR FOR BEGINNERS TO EXPERTS

Combines text, graphics and sound.
Interactive, automatic & free format.

PC 3.5" disc: £8. SAM disc: £12
SPECTRUM: £8: Plus D 3.5" and +3 3" disc or tape (Microdrive and Opus compatible).
PCs need SPECTRUM EMULATOR: shareware: £3.50, full registered version: £13.50.

Flexipage exercises: CRIME QUIZ demo. (freeware): £2. ZOO-VIEW information and test: £3. POLICE PATROL 2 beat simulation: £3. OLAF THE VIKING search for Scottish treasure: £3. ROADCRAFT TEST are you up to advanced driving? £5.

Send stamped addressed envelope for further details to:-

FLEXIBASE SOFTWARE,
20, The Parklands, Droitwich Spa,
Worcs, WR9 7DG.

Sam Coupé Disc Magazine

FRED

GAMES - REVIEWS - DEMOS
SCREENSHOTS - INTERVIEWS
and lots more

NOW IN ITS 4th YEAR

The biggest, the longest running and still **THE BEST** for SAM.

Published Monthly

Only £2 per issue
Or 12 issues for £20.

Send Stamped Addressed Envelope for full list of our growing range of SAM software.

Send Cheques/Postal Orders Payable To:
FRED Publishing.
40 Roundyhill, Monifieth, Dundee, DD5 4RZ.
Telephone 0382 535963.

STYLE WRITER

Reviewed By:- Carol Brooksbank.

STYLE WRITER has been around for quite a while, but we did not receive a review copy until the recent takeover of Chezron's SAM software by Fred Publishing. It is a great pity that the former owners did not market it more forcefully, because it is a very good program.

To call STYLE WRITER a word processor is to do it less than justice. It is much more than that. Certainly, it is a word processor. It has most of the features you would expect - wordwrap, justification, block operations, search, search/replace, adjustable margins, preset tabs, and so on.

Its operations are sometimes not very sophisticated. If you use search/replace, for instance, if the new word is longer than the one it is replacing, characters will be lost from the end of the line. The maximum line length is 64 characters. If you want to insert something, you must insert character spaces or lines one by one until you have made enough room, and then type in the spaces. Block movements are slow, and if you want to copy a block to several different places you must re-specify the first and last lines of the block involved for each copy.

But, although it is a simple word processor, it is also very efficient. The cursor movement seems very slow when you are trying to move the cursor along the line or up and down the screen, but the program kept up with the fastest typing I could produce, and did not lose any letters even at the move from one line to the next. You soon learn to use the tabs and the "move cursor a screen at a time" option to speed things up a bit.

It is very versatile. All the printer codes can be changed to suit yourself. If you want to swap, say, double strike for superscript, you can not only change the codes, but the description in the codes list can be edited so that when you need to enter a code, you don't have to remember that double strike means superscript, because it can read SUPER in the list of codes to select from. The number of lines per page, and the form length, can be set to suit whatever you are doing. If you save the text file as a document all the printer codes, margin settings and so on are saved with it, so if you have made any special changes for that file only, they will be present when you re-load it. If you have only a simple text file with standard settings, you can save it as a text file and when you re-load that, whatever printer codes were operating before you loaded it will be used.

The maximum file size is 1008 lines. The file is not divided up into pages, and no automatic page numbering is available, but a sign flashes on screen to tell you when you are starting the last line of a page, and its number, so you can enter a page number yourself if you wish. Headers and footers are not available, but because you always know when you have reached the bottom of a page, you can always 'block copy' a header from page 1 to the start of another.

But this program's great strength is that it can also handle illustrations, and if you have a colour printer they can be in colour - not in 16 separate colours like a colour screendump, but in the 8 colours your printer can produce. When using FLASH to prepare your artwork, you need to remember that palettes 0/8 print black, 5/13 orange, and so on. There is a special program included which lets you grab any portion of a mode 4 screen - up to

a full screen - and convert it into an image file which can be used in the program. Up to 10 image files can be used in any one document. They must first be loaded into memory and you can then select an image and place it in position on your page. A shaded square will show you the area occupied by the illustration, so if you want to flow the text round it, you simply adjust the margins and carry on typing. So long as you do not obliterate the top left character of the picture area, you can even run text across the picture if you wish. Fig. 1 shows this effect in action.

Fig.1

STYLE WRITER's other great strength is that it can use hi-res fonts or the built in fonts of your printer, and can even switch between the two, though you can only switch between hi-res and normal modes at the start of a line - not in the middle. Colour, however, can be changed anywhere in a text line, using a control marker.

The program comes with a couple of dozen hi-res fonts, twenty of which are in situ when you load it. There is a font designer for making your own or modifying the ones supplied, and a converter for changing Sam/Spectrum 8x8 matrix screen font files into hi-res fonts. Indeed, some of the fonts supplied I recognise from the FORMAT FONT LIBRARY. If you have the FONT LIBRARY, of course, a morning's work or less will give you 100 hi-res fonts for STYLE WRITER.

Fig. 2 shows you a page, with normal printing (header 4 times height and double width and paragraph 1 double height and normal width selected by embedded printer codes), hi-res printing (rest of text, changing fonts from time to time) and three illustrations. In the original, the illustrations are coloured and the words "FORMAT", "INDUG" and "SAM" are also printed in colour.

If you do not have a colour printer, or have one but wish to work in mono, you simply choose to load the mono version when given the option during the loading process.

Although STYLE WRITER is a simple program, and some of its operations are a bit slow, it is the only Sam program I know that can produce a document with colour illustrations, and also hold all the text, fonts and illustrations for a document of decent length in memory at once - with a 60 line page, you could produce a booklet of 16 A4 pages, provided you needed no more than 10 illustrations or 20 fonts in it. Saving the document saves all the illustrations and fonts along with the text, printer codes and so on.

The printing process is very slow, unless you are printing simple text in your printer's normal fonts in monochrome. Full colour hi-res printing in NLQ mode is a very slow business, even more so if illustrations are involved. Fig. 2 took nearly half an hour to print in colour - and that is less than a whole A4 page. Multiple copy printing is available, but if you are planning to print 100 copies of a 16-page document in glorious colour, I suggest you set the printer going and go away for a week. It may even be still printing when you get back!

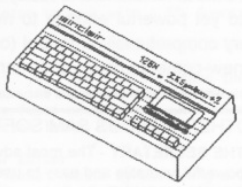
Admittedly this program is rather slow in operation in many areas, and it is far from being a DTP program of the sort PC owners are familiar with. You cannot rescale text or illustrations. But it is nearer to DTP than anything else we have for Sam at this moment. It could do with some better hi-res fonts - most of those provided are straight conversions from screen fonts. Perhaps some of the talented people out there who have designed such marvellous fonts for Typeliner/Wordmaster would like to have a go at this one too.

Meantime, if you are interested in printing illustrated text, have a look at this program. At £9.99 (£9.00 to Indug members) it is a real bargain.

FORMAT

FORMAT is now the only paper-based magazine which supports Spectrum and Sam users.

When *FORMAT* began in 1987, there were a number of magazines - ZX COMPUTING, CRASH, SINCLAIR USER, YOUR SINCLAIR - all devoted to the Spectrum. When COMPUTER SHOPPER came on the scene, it had a useful Spectrum section.



One by one they disappeared. ZX COMPUTING was the first to go, abandoned by its American controlled publishers to make way for a BBC disc user magazine.

CRASH, SINCLAIR USER and YOUR SINCLAIR became shadows of their former selves, concentrating mostly on games and becoming little more than comics. The serious Spectrum user became an ignored species, unless he had the good sense to join INDUG and get his monthly *FORMAT*.

When [illegible] came on the scene, the magazines which survived supported the new machine and were eager for news. Then CRASH died, COMPUTER SHOPPER did away with its Sinclair/Sam section, and a couple of months ago we heard that SINCLAIR USER was closing down. Now YOUR SINCLAIR has come to the end of the road.

But through all this turmoil, *FORMAT* not only lives on, but flourishes. The magazine has grown fatter over the years, and it still concentrates on the serious user - the one who wants to explore his computer, learn how to program it and make it work for him.

Perhaps there is a lesson there. If you lower your sights, you lose your appeal. Keep your standards high and people stay with you. *FORMAT* will survive as long as there are Spectrum and Sam users who want to learn how to get the best out of their computers. And the serious Z80 user is a tough and enduring specimen - like *FORMAT*.

Fig.2 A Sample Page.

NEW RELEASE

CAMPION
The Spreadsheet

NEW RELEASE

For The SAM Coupé or ZX Spectrum

Spreadsheets are one of the most useful tools of the modern computer. **Revelation** - in association with Danish software house *CAMPION* - are proud to present '**CAMPION - The Spreadsheet**' with versions available for both SAM and Spectrum (with DISCiPLE or PLUS D). Featuring over 70 built-in functions and ready made formula, this program is easy to use and yet powerful enough to rival many expensive PC spreadsheets. A very comprehensive manual (over 80 pages with examples) allows even a new-comer to be up-and-running in no time. **Available now at £29-95**

State which computer version and disc size required. **INDUG members price £24-95.**

OTHER SERIOUS SAM SOFTWARE AVAILABLE FROM **Revelation**

- **THE SECRETARY** - The most advanced word-processor available for SAM, powerful, versatile and easy to use. - £14-95 (£12.95)
- **SOUND MACHINE** - Make beautiful music with your SAM - Only £14-95 (£12-95)
- **COMET Z80 ASSEMBLER** - The professional one - £29-95 (£24-95)

Prices in brackets ( ) are for INDUG members.

SAM GAMES AVAILABLE FROM **Revelation**

- **ASTROBALL** - Boldly bounce where no ball has bounced before.
- **MANIC MINER** - The classic game, now three times the size and with the full colour graphics you would expect from SAM.
- **BATZ 'N BALLS** - An arcade nightmare - fiendishly difficult but hours of fun.
- **VEGETABLE VACATION** - Dare you enter a world where alien vegetables have gone wild.
- **WOP GAMMA** - Our latest game. A Super-Fast 'Boulder Dash' game with *Full Screen Scrolling* - '99' Levels.

All games cost £9-95 each *or* £8-95 to INDUG members

MORE NEW GAMES COMING SOON - INCLUDING SPECTRUM TITLES.

- All prices include UK postage and packing. Overseas add £1 surface, £2 airmail.
- Payment by UK cheque, Eurocheque or PO, Payable to Revelation Software.
- Please quote INDUG membership number clearly on order if claiming discount.

Send orders to:-

Revelation Software,
PO Box 114,
Exeter,
Devon,
EX4 1YY.

Revelation Software

REVL-D

YOUR LETTERS

Dear Editor

I have had my Spectrum +2, PLUS D interface and disc drive for a while now, but have only recently purchased this rather basic printer. Unfortunately, over the months I seem to have lost my System Cassette. I wrote to Miles Gordon Technology and asked them to forward me details of how to get hold of one, but I didn't get any reply. I was hoping you might be able to help me!

Also, this letter is written on a small word processor program that I have wrote myself. If I was to try and find some serious software for my PC, what sort of shop should I aim for? I have tried all the local software outlets but all they're interested in is bloody Sega's and Nintendo's.

Finally, how could I transfer programs from a QL Microdrive onto disc? I was given my QL by a friend, but it is in need of repair, and as I am quite happy with my +2, I see no reason to fork out my hard earned cash just to fix an obsolete computer, that has always been renowned for breaking down, and would never be used again.

I hope you can help me in my quest for eternal peace, at one with my +2.

Yours sincerely, J.Fullerton.

Well, quite a lot there. First, you can get a the latest PLUS D system tape (version 2a) from us. Order code FST-90 price £4.50 including p&p. MGT are of course not longer in existence.

You won't find much in the way of serious Spectrum software in the shops anymore but keep reading FORMAT - if it is a available you will find it mentioned in these pages.

As to the QL, it is far from being an obsolete computer. But why would you want to get the software off microdrive? It would only be usable on a QL so I don't see the point of your question. **Ed.**

Dear Editor,

I have a Citizen 120D+ printer and use your Sam Parallel Interface to work with the Sam Coupé.

Could you tell me what connectors, leads etc., I would need for the printer to work with a 48K Spectrum.

Yours sincerely, A.Thomson.

If you use a PLUS D then the same lead will work as with the SPI. Other interfaces usually come with their own special leads. **Ed.**

- - - - -

Dear Editor

Please excuse my enclosing a letter with an order but I am having problems with my printer.

I would like to use your letters page to ask Mr Adam Murdock (Letters Dec '92, Vol 6 Iss 4), to get in touch with me re his user guide to PCG's Desk Top Publisher.

Thanks for an excellent and most informative mag and very useful telephone help line.

Yours sincerely,Bob Hatchett.

Adam, if you are reading this, I can't find your address to pass on to Bob. Could you get in touch. **Ed.**

- - - - -

Dear Editor

Many thanks for your speedy help with my problem on the Campion disc. Yes, I do of course have an SC_Autoboot ROM fitted and this is obviously the trouble.

Now I have to apologize for worrying you unnecessarily. I said I had tried every possible way of achieving a load, but having kept a copy of the disc, I suddenly by pure luck tumbled on the idea of using SC_Filer's program "H" or "H,c".

Having loaded the "H" program and read the directory of the Campion Disc, I then pressed "Q" to quit and

found the Campion disc loaded correctly and the program worked.

I have now made up a disc using Samdos2, followed by the Campion program, and the "H" program.

So, Switch on the computer minus the disc - insert the disc, load "H" brings up the Directory on the screen, then press "Q" to quit. Press, load Campion and away she goes. The printer also works.

Again many thanks for your help.

Yours sincerely, Basil Lankester.

Apparently SC_Autoboot ROM does not clear some areas of memory and this is what caused the crash on loading Campion. Steve's Software tells me that this is mentioned in the documentation with the ROM chip and that a program is supplied on the disc to clear memory in cases like this. Just put it as an Autorun program on your Campion disc and make it load Campion after it has run. **Ed.**

- - - - -

Dear Editor

I've just received my 2nd issue of FORMAT. It's brill! I like understanding Digital Electronics best at the moment. But that's not why I am writing this. PLEASE can you support and review some tape software. Not every single person who has a Spectrum has a PLUS D or a DISCiPLE and as you said, you need a Spectrum to use a PLUS D or a DISCiPLE. So there.

As I watch a lot of SF stuff on the TV, I think the SF mag would be a good idea. Keep up the good work.

Yours sincerely, David Deans.

P.S. I am only 9 years of age so am I the youngest reader of FORMAT?

No you are not the youngest I've come across David - but you must be quite near it.

Tape software is a problem because most serious software is written to run on disc these days. Campion from Revelation may be released on tape later this year but only if they get enough interest from people. These days tapes cost too much - unless they can duplicate lots at one go. **Ed.**

Dear Editor

I'm writing to ask you a few questions for which you can print in FORMAT.

1. I have ROM 2.0 for the Sam Coupé and I wish to upgrade it. A few months ago I was going to order the latest ROM from West Coast (£12) but since then I've heard about another chip called SC_Autoboot (£15) from Steve's Software. This chip is meant to have a ROM 3 reset DOS routine and what I want to know is: does this replace ROM 2 or do I still need ROM 3 and what advantages does this SC_Autoboot chip have over ROM 3? I've never had a disc drive before, I want to know how to format a disc if I use this new chip as I'm told that it automatically boots up discs as soon as you push the disc in.

2. I'm looking for a very good PD service for SAM and preferably one that doesn't rip you off, so can you recommend any PD services that offer good quality PD and fast response?

3.Which is the better game designer 'Games Master' or 'SCADs'?

4.Is it possible to connect an LC200 colour printer to the Coupé?

5.I read from somewhere that you were going to be publishing and writing a new zine later this year and it would mainly be reviewing games for the Spectrum and SAM is this true? and if so what's it going to be called and when is it coming out?

Yours sincerely, Alec Carswell.

OK, from the top. If you have ROM 2 there is no real point in changing to ROM 3. SC_Autoboot has some advantages but also some disadvantages - at the price Steve's Software is charging you could give it a go and see how you get on - changing the ROM chip is easy if you are careful.

PD seems to have died down on SAM which in many ways is good because it means that the effort is going into commercial quality software instead.

If you are into games writing get both Gamesmaster and SCADs. Each has its own features and each is suited to some types of games better than the other.

Yes, you can connect any printer to

SAM given the right interface. For the LC200 you will probably need the SPI and if you get the Colour Dump software everything should work OK.

A games mag is still on the cards, if I can get enough writers that is. **Ed.**

- - - - -

Dear Editor

Regarding the lack of +3 material, I am working on a number of articles which may be of interest and I hope to be able to submit the first within the next couple of months. In order to save you unnecessary work, can you accept Tasword +3 files on 3" disc or should I send Tasword 2 files on tape? Obviously I would prefer to do the former but if you don't have a +3 it will have to be tape or type. Whichever you prefer then please let me know.

Another way to increase the +3 owners' interest would be to release the PD software that was in the S&SC library. If for practical reasons you are unable to do this then I would gladly help. A brief paragraph requesting all ex-members of S&SC to send to me copies of any PD obtained from S&SC with an SAE should result in a large library being assembled and details of this could then be included in future editions of FORMAT. Do you think that this would generate more interest and maybe more members?

Yours sincerely, Michael Atkins.

I do have a +3 but I don't have a copy of Tasword +3 so you would need to put that on the disc as well. Make sure you send a printed copy of any article then - if we are really stuck - I can get Jenny to type it in on the PC.

I never got any of the +3 PD software from Garner Designs - another promised item that never arrived from him. If anyone has copies of some of the discs I would like to hear from you so we can try and build up a complete set.

Also, while on the subject of Sinclair & Sam Computing, I would like to get hold of copies of issues 2 and 4. Several people have asked about obtaining back copies of S&SC and I would like to make them available but I only have the original artwork for some issues. The same applies to the old +3 User Group news letters. **Ed.**

- - - - -

Dear Editor

I have had to replace my SAM keyboard, purchase a second drive and expand the memory only to find that my original disc drive needs repair.

Unfortunately a repair would cost as much as a new drive, mainly £50 for lining up the heads. This is a sad state of affairs. So I am saving for another drive. The manufacturers of the drives do not want to repair them that's why they charge so much. Its a pity that SAM owners are held to ransom when a small repair is required.

Yours sincerely, S.R.Povey.

The problem is one of economics. The first disc drive I ever purchased cost over £600 and was built like a tank. Each part could be serviced and it came with an alignment disc and a technical manual of about 60 pages.

Today drives are much cheaper - mainly because new ways of putting them together were found. A side effect is that they are almost impossible to repair especially with todays labour charges. However, having said that, most drives should last many years. Keep them clean, avoid vibration or dropping them, and they will, more often than not, give long service. **Ed.**

- - - - -

Dear Editor

I have just received my first issue of FORMAT, and I must say how impressed I was by the standard of the issue. Now that Your Sinclair is disappearing, a magazine such as yours becomes vital for the continuing support for the Spectrum & SAM.

I have had a Spectrum of one sort or another since 1983, and was thinking of upgrading to a '486 PC, but reading through your magazine has made me think that perhaps I should be considering a 512K SAM as an option. My only reservation is the lack of an emulator to allow me to run 128K Spectrum software on a SAM. Whilst in correspondence with Phil Glover at

SCADS, he told me that there may have been such an emulator in development. Has such a beast ever materialized?

Two final queries before I go: 1. I have converted Spectrum +2A to thinking it is and old 'grey' +2 using B.G. Service's conversion kit. However, I have been unable to get a RAM turbo joystick interface to work, even in 48K mode. Can anyone tell me if it is possible to get the RAM Turbo to talk to a +2a, and if not, does anyone know whether there is another dual joystick interface that I could use. I should add that I don't wish to use the SJS1 joysticks.

2. When writing to you, would it be permissible to send files on Spectrum cassettes, using files from either TASWORD 2 or TASWORD 128? If I was able to do this, I could disguise my awful typing!

Yours sincerely, Jon Rose.

A 128K emulator for SAM would require hardware to handle the memory paging and that may still interfere with SAM's internal hardware. It may, given time, be possible to produce an emulator to run selected software but I think it most unlikely that a more general purpose 128K emulator could be produced. I think the question should also be asked "why bother?" With SAM software flowing well and with the vast majority of 48K Spectrum software working - what is there that really calls for a 128K emulator?

And yes, we can cope with cassette if you are not using discs. But make sure we have a printed copy as well. **Ed.**

\- - - - -

Dear Editor

I am an associate member of INDUG, but I have recently sent in my application to become a full member. I have a number of questions to ask, and, if you wish, they can be printed in FORMAT, as other members may wish to know the answers.

Firstly, I seem to be having problems with my PLUS D. I don't know whether it's the interface or the drive, but I seem to get the message "Invalid file name" when I try loading files that previously loaded. The error must be wrong, as the filename was not invalid. Another error I seem to get for no reason is "End of file". Another problem is that my snapshots suddenly become corrupted for no apparent reason. What is going wrong? Is it me or the hardware? I recently bought my PLUS D, and it is very useful, and these problems are really irritating. By the way, I am using G+DOS version 2a, and I have an original Spectrum +2.

I am currently writing a Star Trek the Next Generation game for my Spectrum. It has sampled speech, animation, 100's of screens, and features effects using my own techniques. It works with the PLUS D. I realize that to sell copies of it would infringe copyright, but would I be able to give copies away, providing people supply discs and postage?

Another question, if I used a different operating system, for example BetaDos, would I still have the same problems I am having at the moment?

Do you know how I can get hold of a Videoface? Romatic Robot have sold out.

I noticed an advertisement in your associate membership papers stating "100 screen fonts", What are "Screen fonts"?

I would greatly appreciate any help you could give me with any of the above questions.

Yours sincerely, Daniel Huby.

Another long list of questions - more writing for me - Oh well.

Your disc errors are most probably caused by: a) dirty heads, b) setting the stepping rate in your system file too fast - try 12ms or 18ms, or c) electrical interference - try re-routing the cable away from mains power leads and your TV. Make sure you use good quality discs.

Copyright is a minefield - when the game is finished give me a ring and I will try to point you in the right direction.

Screen fonts are just that, font files to load into a Spectrum/Sam to give you a different typeface on screen. **Ed.**

Dear Editor

Please find enclosed my cheque to renew my membership with FORMAT for my second year.

Since my first taste of FORMAT (Sept.92) I've been totally hooked. Its opened my eyes, given great satisfaction and transformed my life. Like a junkie I find that I am anxiously waiting for the postman to bring my "fix" each month and I have never been disappointed with the quality of its contents only that there is never enough.

May I take this opportunity to say how vital, I think FORMAT is to the Speccy/SAM scene now that Your Sinclair has finally gone the way of may of its predecessors.

Keep up with the great job you and the FORMAT team are doing and keep supplying my "fixes".

Yours sincerely, R.Chowdhury.

My head is now to big to leave the office - so I better get on with some more work.... **Ed.**

\- - - - -

Dear Editor

The letter from Wilf Smith in the July FORMAT sparked me into action. I did not type in the Supergolf game listed in the December issue as I am always suspicious of these large listings working. one small printing error and phut! goes the program. However, Wilf had obviously got the program working and on SAM to boot! Plucking up courage I typed in the program in sections, saving to disc at each break and incorporating Wilf's modifications. Eureka! It worked. Being a golf enthusiast I looked at the programs performance with a critical eye.

Two things were wrong. Firstly I had no fairway only trees between tee and green. Your program was quite baffling when I first studied it but then I was able to locate sections that appeared to do certain things. I found the bit that cut away some of the trees to form the fairway, line 2020 that prints spaces. I had put only 1 space between the inverted commas... putting in two gave me a fairway whilst three spaces gave too much fairway.

Each time I hole out, no matter how many strokes I took, I got the "hole in one" message. This I traced to line 5400.... IF S+P(P,6)=1 THEN etc, etc., I made this read THEN GOSUB 10000. The remainder of line 5400 was then transferred to line 1000 plus a Return instruction at line 10010. I now only get the "hole in one" message when I actually get down in one.

As golf games go it is not bad but lacks the finer facilities. I remember trying out a commercial golf game written for the Electron computer. It was painfully slow but had some nice features. The view of the course changed as the ball moved down the fairways giving one the view a golfer would get when he stood beside his ball. Heaven only knows how this is done. One could also select clubs and strength of hit and direction. There was also a wind blowing which had to be allowed for. It was great, only so very slow. The scenery was cleared after each stroke and the new scene built up. It took as long to play 18 holes on the computer as it would on the actual course.

One other small fault in your program - the random Golf course generated sometimes locates the hole and green away in the rough and not connected to the fairway - not the usual thing with Golf course design!

I found your program basic difficult to understand. My Basic knowledge is built on what the Spectrum and SAM manuals give out. That is pretty limiting hence my suggestion of articles on advance programming.

I also found the layout very puzzling. you start at line 1000 and immediately jump to 5000 and not long after back to 2000 and so on. Line numbering varies also from every ten to consecutive line numbers.

Why also do you put so many statements under one line number? Line 2010 for example, as I typed this in the SAM's key response became more and more sluggish.....quite upsetting.

I'm afraid I have rambled on a bit but I hope my comments are useful.

Yours sincerely, P.J.Williamson.

Wellllllll, where do I start. The

program was originally written for the Spectrum which does not have the greatest of speed. Long line of instructions execute faster than short lines - it is as simple as that in several instances. Also without the long IF that Sam Basic gives, some logic would have required lots of GOTOs (slow) or GOSUBs (very slow) to get the same effects.

Most of the programming tricks have been explained several times in FORMAT but if there is any particular bit of logic that readers can't work out then drop me a line and I will see if we can print an explanation sometime.

As for your comment on Greens, there is nothing in the Golf Course Builder's Handbook that rules a green must be connected to a fairway. In fact, there is no demand for a fairway at all as far as I have heard. **Ed.**

- - - - -

Dear Editor

Just a quick letter to say thanks for the July issue of FORMAT which was as good as ever. The contents page seemed to be a bit mixed up though - the letters and small ads weren't on the pages said on the contents page. But that was just a minor bit and the magazine itself is so good it doesn't really matter.

You said in your editorial that you were moving over to full DTP production in the next few months. In your reply to my letter a couple of months ago you said that you preferred longer letters to be sent in on disc to save Jenny the work. After you move over fully to DTP will this still be alright, i.e. will you be able to put them into DTP okay, or will you have to type all letters in?

Well then, time to go now I think. Keep the great magazine going - it's certainly worth more than the £12 a year subscription cost, what with the magazine and all the extras of being an INDUG member it's great!

Yours sincerely Kev Cooper.

The move to full DTP layout does not affect how things can be sent in. Anything on Sam or DISCiPLE/PLUS D disc is easy to get across to the PC. Thanks for asking anyway. **Ed.**

* * SMALL ADS * *

WANTED 3½" 80 track disc drive for my PLUS D. Must be good condition, with PSU and leads. Will pay £60. Petros Davakis, 12 Themistokleous, 153 42, Athens, Greece.

WANTED Blue Alpha JOY-MOUSE (not the SAMCO one) with mouse and driver software. Will Pay £20. Call David Spark on 0423-880992.

Spectrum Games. All my original Spectrum games for sale (I now own a SAM). All originals, over 200 for just £40. Call Dave on 0273-739706.

WANTED Romantic Robot Video-Face or similar for Spectrum. Tel. Harry Connell on 0429-235580.

BOOKS. Spectrum ROM Disassembly £10, IF1 ROM Disassembly £7, Supercharge Your Spectrum £7. 40 Best M/C Routines £4. Spectrum M/C for the Absolute Beginner £5. Spectrum Micronet Book £4. Teach Yourself Z80 £5. Your Spectrum 1-21 offers please. Phone M.Williams on 0665 577505.

Spectrum Hints 'n Hacks for virtually any Spectrum game. Adventure & Arcade, M/Face pokes. Send SAE and query to Jon Rose, The Annexe, 26 Barrack Lane, Bognor Regis, PO21 4DA. Also Spectrum software, boxed originals, send SAE for list.

WANTED for +2a. Dual joystick interface or pair Cheetah 125 joysticks. Write to Jon Rose (address above).

YOUR ADVERT

Selling, Buying, Pen Friends, etc.

Any PRIVATE advert, up to 30 words (subject to acceptance), will be printed FREE in the next available issue. Any software sold must be original, in working order and with full instructions. The publishers will not be held, in any way, responsible for adverts in this column. Trade advertisers contact the publisher for rates.

SOFTWARE

SAM Coupé SOFTWARE - On 3½" Disc

SAM DEMO DISC #1 Utilities, demos, screens, a game, and lots more. A real bargain for any SAM owner.
Order Code SCD-02 **Price** £1.50

SAMCO NEWSDISC SET Issues 1 to 5 (six discs) packed with things no SAM owner should miss.
Order Code SCD-03 **Price** £12.00

SAMSPEC SOFTWARE
SAM + Spectrum software on one disc.
(3½" or 5¼" - please state on order)

FONT LIBRARY #1. 100 screen fonts plus support software, easy to use on either computer. Special +3 disc available (Spectrum files only) RRP £8.95
Order Code SSD-01 **Price** £6.95

MONEY MANAGER Advanced Personal Budgeting System for both machines, Spectrum version needs 128k/+2 (not +3/+2a). RRP £15.95
Order Code SSD-02 **Price** £12.95

DISCiPLE/PLUS D SOFTWARE
Please state 3½" or 5¼" disc

ARTIST 2 The best art package ever written for the Spectrum. 48K and 128K versions on the same disc with page maker and utility software. RRP £19.95
Order Code SPD-01 **Price** £16.95

UTILITY DISC #1. Six of the best and most useful disc utilities for DISCiPLE or PLUS D. Added bonus program - not to be missed. RRP £9.95
Order Code SPD-02 **Price** £6.95

HARDWARE

PRINTER LEAD Top quality parallel printer lead (BBC Standard). 2 meters long. For use with DISCiPLE, PLUS D or SAM. RRP £9.95
Order Code PPL-01 **Price** £7.95

SAM COUPE TECHNICAL MANUAL Version 3 The real inside info on SAM. As published by SAMCO. RRP £16.99
Order Code STM-01 **Price** £12.95

FORMAT READERS SERVICES

SPI. - SAM's Parallel Interface A full feature Parallel Printer Interface. Totally compatible with SAM's ROM and DOS printing routines and with utility programs like FLASH and TASWORD 2. Uses standard BBC lead (see above). RRP £24.95
Order Code SPI **Price** £19.95

SAM KEYBOARD UNIT Brand new (ex-SAMCO) stock. Easy to fit. RRP £15.95
Order Code SKB **Price** £12.95

SAM POWER SUPPLY Full spec, fully tested, with guarantee. RRP. £29.95
Order Code SPS **Price** £22.95

FORMAT BACK-ISSUES

Volumes 1, 2 and 3 of FORMAT now available only as complete volumes.
Order Code FBI-V1 (Vol.1) **Price** £10.00
Order Code FBI-V2 (Vol.2) **Price** £12.00
Order Code FBI-V3 (Vol.3) **Price** £12.00
All issues, from Volume 4 Nº 1 to the latest issue, are still available separately. To order quote the Volume/Issue Nº. **Price** £1.50 each, (5 or more £1.25 per copy)

FORMAT BINDERS

Hardcover binders to protect your valuable magazines. Each will hold 12 issues, easy to insert/remove.
Order Code FMB-01 **Price** £4.50

- - - - - -

ORDERING

All prices include UK Postage and Packing. Overseas readers please add 10% to total order for extra postage. Please **WRITE YOUR ORDER ON A PIECE OF PLAIN PAPER**, and mark envelope ORDER.

Clearly state Order Code; Title; Quantity required; price & add any postage as above. Remember to quote your membership number or we can't send out your order. Payment in STERLING by Cheque (UK bank), P.O. Euro Cheques or Cash. Make cheques payable to FORMAT. Payment MUST accompany order. Please allow 28 days for dispatch. FORMAT Publications will not be held liable for delays or non-delivery due to circumstances beyond its control.