30 PROGRAMS FOR THE SPECTRUM AND ZX-81

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Contents

7 LETTERS

BEGINNERS' SECTION

ZX-81

19 FORMULAE REFLEX
20 SLALOM HOOK-UP
21 SCRAMBLER

SPECTRUM

21 ANTI-MISSILE DEFENCE

ZX-81

8 BOXING
27 DUCKSHOOT
28 CRAZY BALLOON
34 INCA GOLD
45 STOCK MARKET
47 DAM BUILDER
53 ENTERPRISE
63 TEACHER'S PET
77 DUCKPOND

SPECTRUM

10 THIEF
12 LAWN MOWER
23 DENBAR
31 CLOBBER CASTLE
33 WEBBED WONDER
39 FORCEFIELD
41 MOSCOW RAID

42 PROGRAM OF THE MONTH SPIRAL TOWER

51 SHARP SHOOTER
55 DUNKIRK
59 SILVERSTONE
66 SCROLLVADERS
72 CARD GAMBIT
78 PING PONG
82 CAROL

Managing editor
Nigel Clark

Managing production editor
Harold Mayes MBE

Design
Elaine Bishop

Program Reviews
Rebecca Ferguson

Group advertisement manager
John Ross

Advertisement executive
Frank Humphrey-Gaskin

Editorial/production assistant
Dezi Eramindondou

Managing director
Terry Cartwright

Chairman
Richard Hease

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Telephone
All departments
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Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6*isp" means six inverse spaces and "(g4:4*i4:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

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SP 12/83

LETTERS

ZX-81 Scroll

BEING a regular reader, I was surprised to find an unnecessary program for a ZX-81 in the October edition. I am referring to Machine Code Scroll. The thing which is unnecessary about it is that it scrolls from the bottom to the top of the screen.

Any established ZX-81 user will know that the one-word command of "SCROLL" will replace the tedious task of entering the D Jones program. I see no advantage in using the machine code unless it clears quicker; in any case a simple entering of TAB 31; after your printing of characters solves that.

Apart from that program, the magazine is still wonderful for games for the ZX-81 and Spectrum.

An example of using "SCROLL" is:

```
10 SCROLL
20 PRINT "EXAMPLE OF SCROLL"; TAB 31;
30 GOTO 10
```

The ";TAB 31;" is so that when you Stop the program and press CLS and NEW-LINE it clears much quicker than without the "TAB 31;"

Garry Philips,
Dunblane,
Perthshire.

Graphics

I AM WRITING to see if you can give me some help with a problem.

In Protector, line 1005 has a bit in it where all the "A"s are underlined. Whenever I do the line under the a's I always get a mistake sign. the only way in which I can enter the line is either "-a-a-a-a-a-a-" or missing out the line completely "a a a a a", when I miss out the line and run it the game works fine except for the bottom section where the line layers and laser are still in numbers and letters. I have tried it in other games as well and the same thing happens. I use the line symbol on the 0 key because its the only line symbol I can find on the computer.

Graeme Rowe,
Penn, Bucks.

WE HAVE received several queries regarding underlined letters in Spectrum programs and lower-case letters in ZX-81 programs. These, and all other graphics instructions, are explained at the foot of the Contents page each month.

More 1K Programs

I HAVE just been reading the letters page in the August issue. I disagree with D Ferrier. This month there were 11 16K programs and three 1K programs for the ZX-81. I find the 1K games helpful as I am a learner with a 1K ZX-81. If there were fewer 1K programs I would not be able to write my own programs when I get a RAM pack. So perhaps just half as many 1K programs as 16K?

Andrew Johnson, aged 13,
Freckleton,
Preston.

Save Memory

I BUY your magazine every month and in the August issue I noticed, in the Letters section, a letter asking "Why use 'GOTO VAL "50"' when you can use "GOTO 50"? We all know that the shorter the statement, the less memory it uses". Surprisingly, that is not the case and I am writing to explain why.

The simple answer is that numbers—other than line numbers—used alone in statements like "GOTO 50" use seven bytes per digit. Numbers used in statements like 'GOTO VAL "50" ' use only one byte per digit, as they are in string form. That, therefore, helps to conserve precious RAM.

Another good way of conserving memory is to use a 'LOAD and RUN' line—a SAVE line—at the end of the program, followed by a RUN line to run the program after saving—and loading. After doing that, you then enter the variables in 'Direct' form (no line numbers). For example, using:

```
LET A=50
LET B=100
LET C=1
```

instead of

```
10 LET A=50
20 LET B=100
30 LET C=1
```

saves 49 bytes.

Changing the subject, from memory I found a bug in the ZX-81 Invaders program in the August issue. Each time I pressed the FIRE button, a large, black splodge shot quickly up the far left-hand side of the screen, instead of coming out of my gun as any good bullet should. I checked my listing against yours—apart from the machine code part, which is just double-dutch to me—for any programming errors but I could find none. I therefore conclude that either my faithful ZX-81 does not like having Space Invaders played on it or your listing is incorrect and should take pride of place in the Errors and Mishaps section.

Thank you for a great magazine and some great programs.

Dave Cartwright,
Grantham, Lincs.

Good Programs

I NOTICED in the July edition of *Sinclair Programs* that in Light Cycles, line 700 was slightly erased. The best program in that issue was undoubtedly Defender, which was slightly long. I then went to my local shop and bought the August *Sinclair Programs* issue; I programmed Spec-Vaders and found it was not worth programming because it was almost impossible to reach 1,000 points. Tank Duel was a good program, so was Labyrinth.

Sanjay Chokshi, aged 14,
Dagenham, Essex.

Pontoon

FOR THOSE who have no sound, a unit can be made from one of the cheap radios. It is done by disconnecting the wires at the earphone socket, joining them together and insulating them.

Then take a lead from the signal connection to the centre terminal of the volume control—a suitable lead with the correct plugs—one plugged into the radio and the other in the earphone socket of the computer. The only snag is to remember to change over when loading.

I think it could be overcome by putting another socket at the side of the one on the radio and connecting together the two signal points.

Also remember to detune the radio to the Off-station part of the dial. I find it an asset when putting in a program, as I can tell if a command is going in by the clicks.

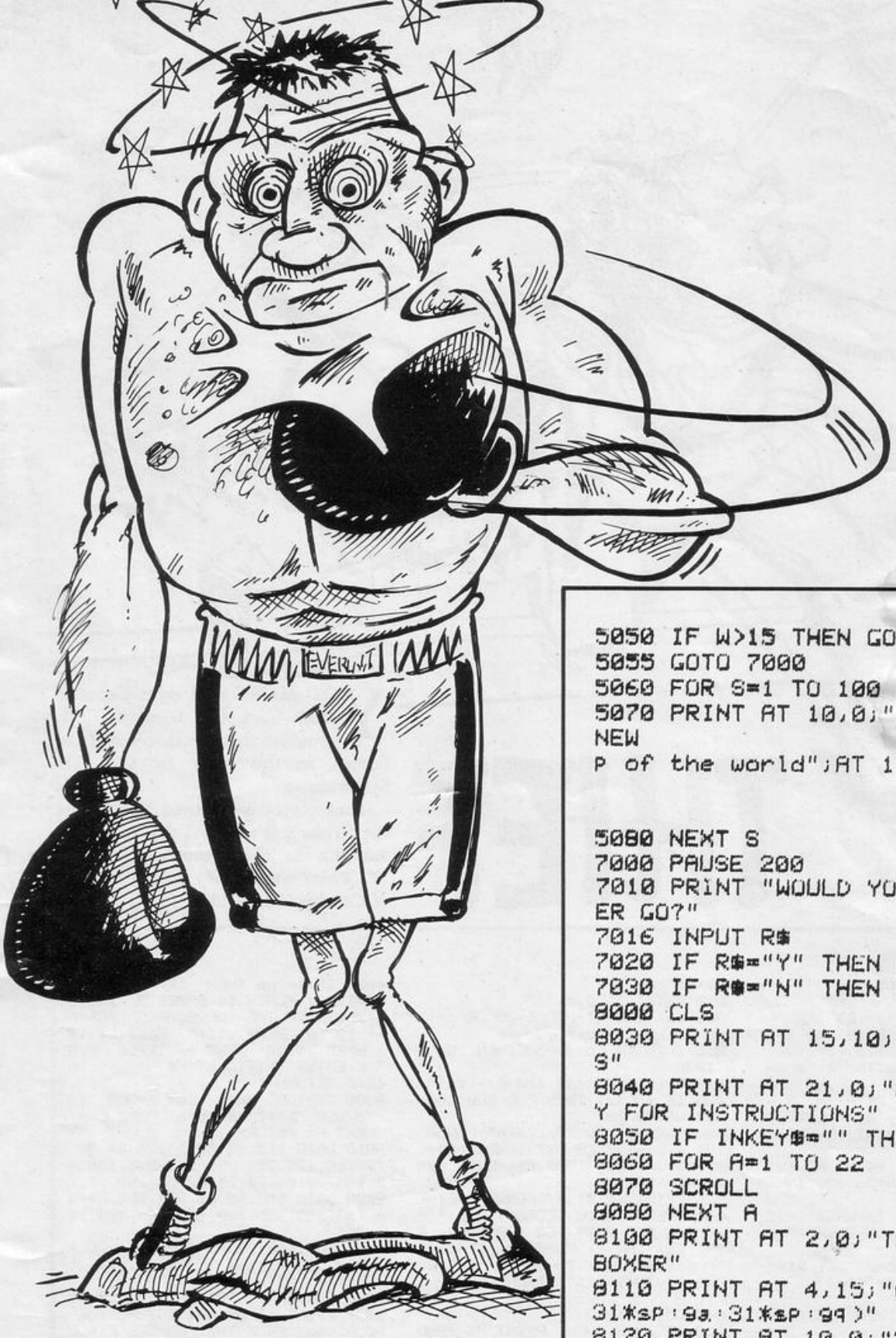
May I point out an error in program Good for the Roses, page 9, September issue? The variable hhx has not been given a value; nor has it been put in by a "LET" statement.

C Fowler,
Sheffield.

In subroutine 7000 HHX is defined.

BOXING

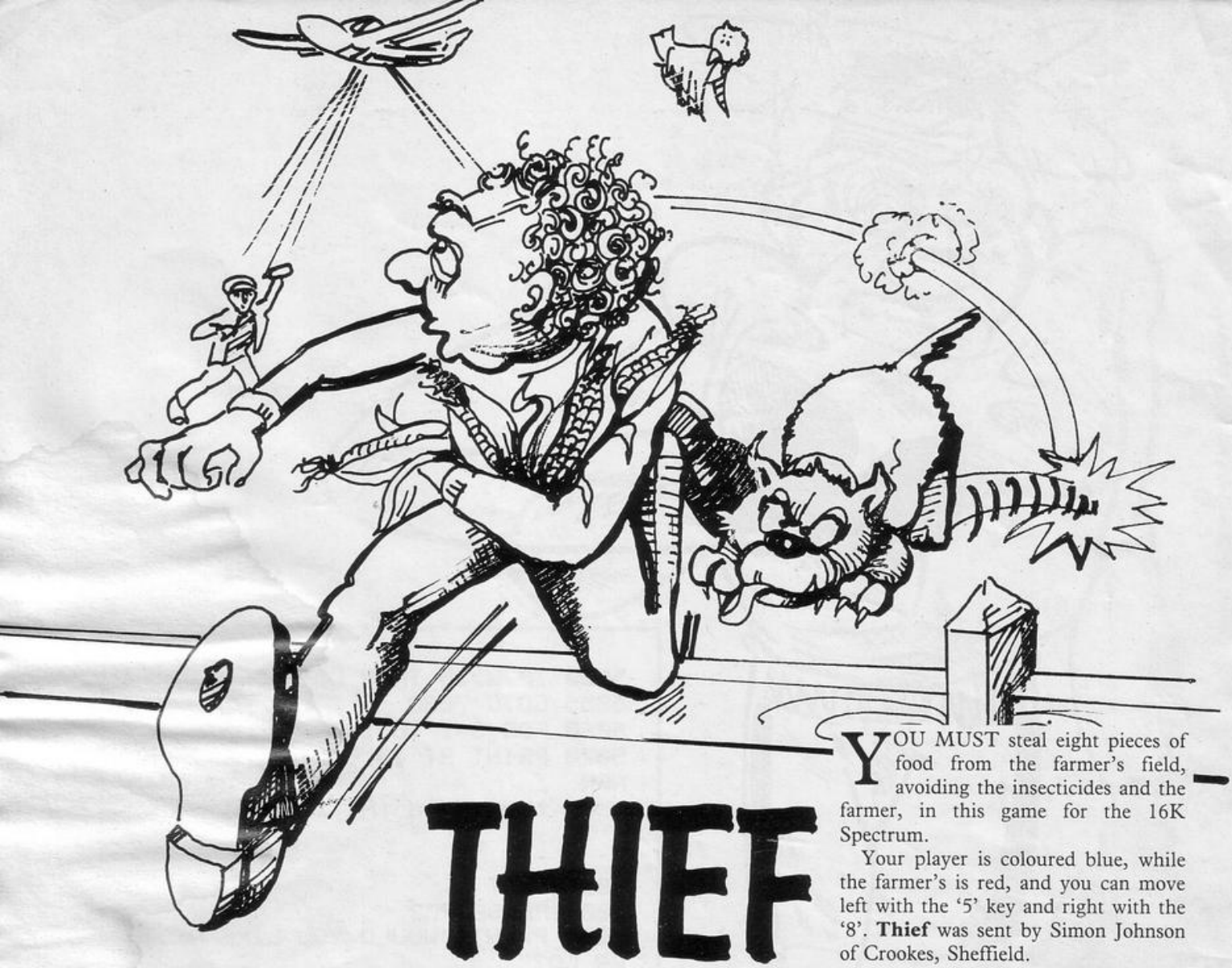
```
   1 REM "BOXING"
   2 GOTO 8000
   3 LET G=22
   4 GOSUB 3000
   5 LET G=22
   8 LET W=0
  10 FOR A=5 TO 25
  12 LET G=22
  20 PRINT AT 15,A;"(9s)"
  30 NEXT A
  40 FOR B=13 TO 15
  45 PRINT AT B,5;"(9a)";AT B,25
;"(isP)"
  50 NEXT B
  60 LET F=7
  70 PRINT AT 14,F;" (9w) ";AT 1
3,F;" (99) ";AT 12,F;" (isP) ";A
T 11,F;" O "
  80 LET V=INT (RND*3)
  82 IF V=1 THEN LET F=F+1
  85 IF V=0 THEN LET F=F-1
  86 IF V=2 THEN GOSUB 1500
  87 IF F<7 THEN LET F=7
  88 IF F>23 THEN LET F=23
 210 PRINT AT 14,G;" (99) ";AT 1
3,G;" (9a) ";AT 12,G;" (isP) ";A
T 11,G;" O "
 220 IF INKEY$="8" THEN LET G=G+
1
 225 IF INKEY$="5" THEN LET G=G-
1
 230 IF INKEY$="0" THEN GOSUB 20
00
 231 IF G-2=F AND INKEY$="0" THE
N GOSUB 4000
 232 IF F+2=G AND V=2 THEN GOSUB
 4500
 235 IF G>=22 THEN LET G=22
 236 IF G<=6 THEN LET G=6
 240 GOTO 70
1500 PRINT AT 12,F+2;"(97)O";AT
12,F+2;"(97)O";AT 12,F+2;"  "
1550 RETURN
2000 PRINT AT 12,G-1;"O(97)";AT
12,G-1;"O(97)";AT 12,G-1;"  "
2010 RETURN
3000 CLS
3010 PRINT "WHAT IS YOUR NAME?"
3020 INPUT N$
3025 CLS
3040 LET H=INT (RND*4)
3045 IF H=0 THEN LET A$="CLUBBER
 LANG"
3050 IF H=1 THEN LET A$="ROCKY"
3055 IF H=2 THEN LET A$="APOLLO"
3600 IF H=3 THEN LET A$="MUHAMID
 ALI"
3700 PRINT AT 3,0;"IN THE BLACK
CORNER IS ";TAB 4;N$;AT 6,0;"AND
 IN THE GREY CORNER IS ";TAB 4;A
$
3710 PAUSE 300
3720 CLS
3730 RETURN
4010 PRINT AT 1,0;"THE WINNER IS
 ";N$
4011 PRINT AT 11,F;"  ";AT 12,F;
"O ";AT 13,F;"(isP)";AT 14,F;"(9
9;99)"
4020 GOTO 4700
4510 PRINT AT 1,0;"THE WINNER IS
 ";A$
4511 PRINT AT 11,G;"  ";AT 12,G;
"  ";AT 13,G;"  ";AT 14,G;" (9w;
9a;96)O"
4512 PAUSE 200
4513 CLS
4515 GOTO 5000
4700 PAUSE 200
4720 LET W=W+1
4722 IF W=14 THEN PRINT AT 21,0;
"THIS ONES FOR THE CHAMPIONSHIP"
4723 PAUSE 50
4725 CLS
4730 GOTO 10
5000 IF W=0 THEN PRINT AT 10,0;"
YOU MAY AS WELL RETIRE"
5010 IF W>0 AND W<=3 THEN PRINT
"NOT BAD FOR A BEGINER"
5020 IF W>3 AND W<=6 THEN PRINT
"YOU MADE a.meture boxing champ"
5030 IF W>6 AND W<=10 THEN PRINT
 "YOU ARE NOW A PROFFESIONEL"
5040 IF W>10 AND W<=15 THEN PRIN
T "YOU LOST IN THE WORLD
  CHAMPIONSHIP"
```



```
5050 IF W>15 THEN GOTO 5060
5055 GOTO 7000
5060 FOR S=1 TO 100
5070 PRINT AT 10,0;"YOU ARE THE
NEW                    boxing cham
p of the world";AT 10,0;"
                                  "
5080 NEXT S
7000 PAUSE 200
7010 PRINT "WOULD YOU LIKE ANOTH
ER GO?"
7016 INPUT R$
7020 IF R$="Y" THEN GOTO 1
7030 IF R$="N" THEN STOP
8000 CLS
8030 PRINT AT 15,10;"BY G.TOPLAS
S"
8040 PRINT AT 21,0;"PRESS ANY KE
Y FOR INSTRUCTIONS"
8050 IF INKEY$="" THEN GOTO 8050
8060 FOR A=1 TO 22
8070 SCROLL
8080 NEXT A
8100 PRINT AT 2,0;"THIS IS YOUR
BOXER"
8110 PRINT AT 4,15;"0(31*sp:isp:
31*sp:9a:31*sp:99)"
8120 PRINT AT 10,0;"YOU MOVE HIM
 FOREWARD WITH 5     AND BACKWARD
S WITH 8.           TO MAKE HIM
THROW A PUNCH PRESS 0"
8180 PRINT AT 21,0;"PRESS ANY KE
Y TO START FIGHTING"
8190 IF INKEY$="" THEN GOTO 8190
8195 FOR S=0 TO 22
8196 SCROLL
8197 NEXT S
8199 GOTO 3
```

THE COMPUTER boxer stands at one side of the screen. It is controlled randomly, but fast-moving. Try to knock it out by moving backwards and forwards with keys 8 and 5 and throwing punches with key 0.

Boxing was written for the 16K ZX-81 by G Toplass of Stoke-on-Trent, Staffordshire.



THIEF

YOU MUST steal eight pieces of food from the farmer's field, avoiding the insecticides and the farmer, in this game for the 16K Spectrum.

Your player is coloured blue, while the farmer's is red, and you can move left with the '5' key and right with the '8'. **Thief** was sent by Simon Johnson of Crookes, Sheffield.

```
1 GO SUB 9000: GO SUB 9600
: LET H$="SDJ": LET hs=150
  2 LET sc=0: LET as=.05
  3 FOR w=1 TO 21: PRINT AT INT
 (RND*18)+2,INT (RND*28)+2; INK
3;"b": PRINT AT w,0; INK 1;"e";A
T w,31;"e": NEXT w
  4 FOR w=0 TO 31: PRINT AT 0,w
; INK 1;"e";AT 21,w;"e": NEXT w
  5 LET c=1: LET d=INT (RND*28)
+2: LET c1=+1
  6 FOR w=1 TO 10: PRINT AT INT
 (RND*18)+2,INT (RND*28)+2; INK
4;"d": NEXT w
  7 PRINT AT 21,0; INVERSE 1;"S
CORE ";sc;AT 0,0;"HIGH SCORE ";h
s;"  ";H$: LET w=0
  10 LET a=19: LET b=2: LET a1=-
1: LET b1=+1: LET a$="(9a)"
  20 PRINT AT a,b;" "
  30 IF INKEY$="8" THEN  LET b1=
+1
  60 IF INKEY$="5" THEN  LET b1=
-1
  66 IF b=1 THEN  LET b1=+1
  67 IF b=30 THEN  LET b1=-1
  68 IF a=1 THEN  LET a1=+1: LET
 a$="(9c)"
  69 IF a=20 THEN  LET a1=-1: LE
T a$="(9a)"
  70 LET a=a+a1: LET b=b+b1
  71 IF ATTR (a,b)=59 THEN  LET
sc=sc+5: LET w=w+1: IF w=8 THEN
 GO TO 3000
  72 IF ATTR (a,b)=60 THEN  GO T
O 1000
 200 PRINT AT a,b; INK 1;a$;AT 2
1,6;sc
 300 PRINT AT c,d;" "
 316 LET c=c+c1: IF c=20 OR c=1
THEN  LET c1=(c1*-1)
 317 IF ATTR (c,d)=57 THEN  GO T
O 1000
 320 PRINT AT c,d; INK 2;"(9a)"
 400 IF RND<as THEN  GO SUB 2000
 900 GO TO 20
1000 FOR x=1 TO 20: PRINT  OVER
1;AT a,b; INK (RND*7);CHR$ (64+(
RND*65)): BEEP .009,-x: BEEP .00
9,-x-2: NEXT x
1030 PRINT AT 21,0; FLASH 1; INK
 6; PAPER 1;"YOU SCORED ";sc;" P
TS": GO SUB 9500: GO SUB 4000: P
RINT £0; INK 1; PAPER 5; FLASH 1
;"PRESS ANY KEY TO PLAY"
1040 IF INKEY$<>"" THEN  CLS : G
O TO 2
1045 GO TO 1040
2000 IF a>10 THEN  PRINT AT (RND
*17)+2,(RND*28)+2; INK 3;"b": RE
TURN
2010 PRINT AT (RND*17)+2,(RND*28
)+2; INK 4;"d": RETURN
3000 FOR v=0 TO 7: FOR x=0 TO 21
: PRINT AT x,0; INVERSE 1; INK v
;" WELL DONE  WELL DONE  WELL DO
NE": BEEP .005,x: NEXT x: NEXT v
3010 PRINT AT 10,7; FLASH 1;"BON
US PTS = 100": BEEP .5,10
3020 LET sc=sc+100: LET as=as+.0
5: IF as=.25 THEN  LET as=.2
3030 PRINT AT 12,7;"GET READY !"
: BEEP .5,5: FOR x=1 TO 100: NEX
T x: CLS : GO TO 3
4000 IF sc>hs THEN  LET hs=sc: P
RINT £0; FLASH 1; PAPER 5; INK 1
;"YOU HAVE THE TOP SCORE": FOR r
=1 TO 10: BEEP .1,10: BEEP .1,12
: BEEP .1,14: NEXT r: INPUT "PLE
ASE ENTER INITIALS";H$
4010 RETURN
9000 RESTORE 9010: FOR r=USR "a"
 TO USR "e"+7: READ m: POKE r,m:
 NEXT r: RETURN
9010 DATA 153,90,60,24,24,24,36,
195,60,126,255,255,255,255,126,6
0,195,36,24,24,24,60,90,153
9020 DATA 153,90,60,255,255,60,9
0,153,255,195,189,165,165,189,19
5,255
9500 FOR s=0 TO -5 STEP -1: BEEP
 .1,s: BEEP .1,s-2: BEEP .1,s-4:
 NEXT s: RETURN
9600 BORDER 7: PAPER 7: INK 0: C
LS : PRINT '"YOU MUST STEAL THE
FOOD (9b) FROM THE FARMERS FIELD
"
9610 PRINT '"BEWARE THE FARMER "
; INK 2;"(9a)"; INK 0;" AND THE
    INSECTICIDES "; INK 4;"d"
9620 PRINT '"COLLECT 8 PIECES OF
 FOOD TO      REACH THE NEXT LEVE
L WHICH WILL BE HARDER"
9630 PRINT '"CONTROLS..."'"5...L
EFT   8...RIGHT"'"IF YOU HIT TH
E SIDES OF THE      FIELD YOU WIL
L BOUNCE OFF THEM"'"YOU START OF
F FROM THE BOTTOM   LEFT"
9640 PRINT £0;"ANY KEY TO PLAY":
 PAUSE 0: CLS : RETURN
```

AGF

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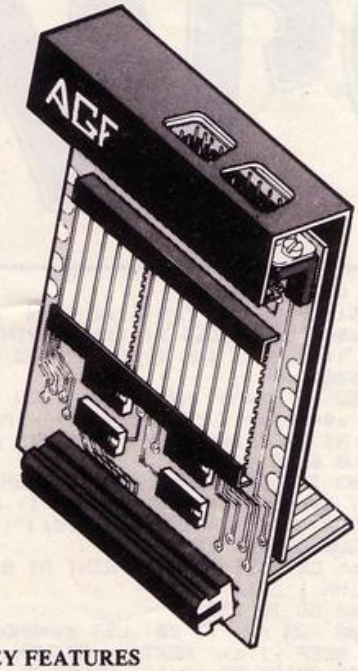
Quick clip-on connections, which are configured from a reference card supplied, allow you to define which of the forty keys are simulated by which action of the Joystick. A pack of ten Quick Reference Programming Cards makes setting for your favourite games even easier. These can be filled in to show at a glance the configuration required and stored in the cassette case of the particular game. When you change to a game using different keys the module is re-programmed in a few seconds.

As with our Interface Module II the Programmable Interface accepts all standard switch Joysticks that are Atari-compatible. Two sockets are available which are connected together for two player games which use the same keys for both players.

The Interface resides in the keyboard address space and does not affect its operation or interfere with any other add-ons. A rear extension edge connector will accommodate expansion of your system.

The unique AGF key simulation principle makes it extremely easy to incorporate Joystick action in your own programs. All eight directions and fire are read by simple BASIC.

With every order comes a free demonstration program called 'Video Graffiti' plus a full set of instructions.



KEY FEATURES

- ★ Programmable design gives TOTAL software support.
- ★ Accepts Atari, Competition Pro, Wico, Starfighter, Quick Shot, Le Stick etc.
- ★ Rear extension connector for all other add-ons.
- ★ Free demo program and instructions.

PACKAGE CONTENTS SUPPLIED

- Programmable Interface Module as illustrated, complete with clip-on programming leads.
- Self adhesive programming chart detailing how to define which key is simulated by UP, DOWN, LEFT, RIGHT, and FIRE. This can be fixed on to the case of your computer or if preferred the protective backing can be left on. The chart is made of a very durable reverse printed plastic and is extremely easy to read.
- One pack of ten Quick Reference Programming Cards for at-a-glance setting to your games requirements. The card allows you to mark the configuration in an easy to read fashion with space to record the software title and company name.
- Video Graffiti demonstration program which is written totally in BASIC to illustrate how all eight directions and fire can be read. This is also a useful high resolution drawing program.
- 12 months guarantee and full written instructions.

JOYSTICKS

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FOR USE WITH OUR INTERFACE Module or VIC 20, Commodore 64, Atari VCS, Atari 400, Atari 800

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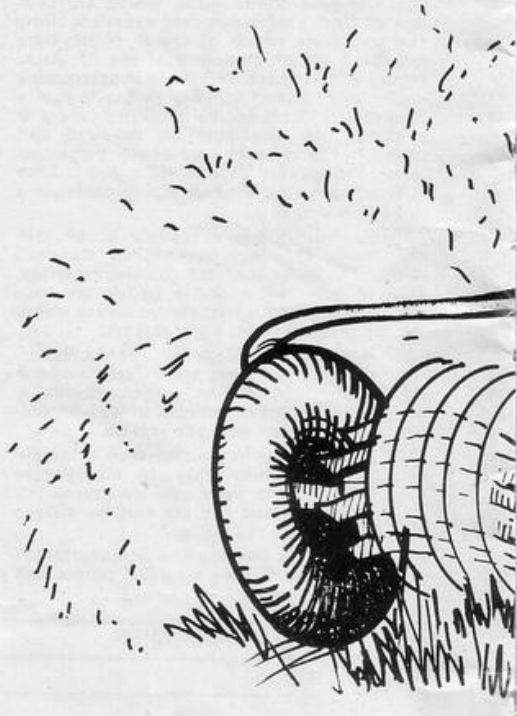
FREEPOST, BOGNOR REGIS, WEST SUSSEX, PO22 9BR

QTY	ITEM	ITEM PRICE	TOTAL
	PROGRAMMABLE INTERFACE	33.95	
	JOYSTICK(S)	7.54	
	PACK(S) QUICK REFERENCE CARDS	1.00	
ONE	VIDEO GRAFFITI	FREE	
ZX81 ☐ ZX SPECTRUM ☐ Please tick		FINAL TOTAL	

DEALER ENQUIRIES WELCOME *EXPORT PRICES ON APPLICATION*

LAWN MOWER

```
  5 LET hi=0
 10 GO SUB 9000
 20 GO SUB 8000
 25 LET gh=0: LET lives=3: LET
oil=500: LET sc=0
 30 IF oil<=0 THEN  GO TO 4000
 40 LET z=5: LET a$="(9a)": LET
 j=-2: LET v=4: LET m=8: LET li=
10: LET col=15: IF lives<=0 THEN
 GO TO 4000
 50 LET d=1
 60 LET lo=lev*10
100 BORDER 4: PAPER 4: CLS
101 FOR x=149 TO 151
102 LET J=J+2
103 IF J=4 THEN  LET J=J+1
110 FOR n=1 TO lo: LET a=INT (R
ND*16)+2: LET b=INT (RND*23)+4:
PRINT AT a,b; INK J;CHR$ x: NEXT
 n
120 NEXT x
130 PRINT AT 0,0; INK 1;"OIL:";
oil;AT 0,23;"SCORE:";sc;AT 20,0;
"LIVES:";lives;AT 20,20;"HI-SCOR
E:";hi
135 PLOT  INK 0;30,160: DRAW  I
NK 0;195,0: DRAW  INK 0;0,-137:
DRAW  INK 0;-195,0: DRAW  INK 0;
0,137
150 PRINT AT li,col; PAPER v; I
NK 0;a$
151 IF oil<=0 THEN  PRINT AT 0,
4; INK 2;"0  "; INK 2; PAPER 7;A
T 0,10;"OUT OF OIL": GO TO 4000
152 IF oil<100 THEN  PRINT AT 0
,12; INK 7; PAPER 2; FLASH 1;"OI
L LOW"
153 IF gh=0 THEN  LET jk=INT (R
ND*70)+1: IF jk=10 THEN  LET b=R
ND*16+2: LET c=INT (RND*23)+4: I
F ATTR (b,c)=32 THEN  PRINT AT b
,c; INK 6; BRIGHT 1;CHR$ 148: BE
EP .05,5: BEEP .05,10: LET gh=gh
+1
154 LET b$=INKEY$
155 IF b$="5" OR b$="6" OR b$="
7" OR b$="8" THEN  BEEP .005,3:
LET sc=sc+1: PRINT AT 0,29; INK
 1;sc
160 IF b$="6" AND li<18 THEN  L
ET a$="(9c)": LET li=li+1: PRINT
 AT li-1,col; INK 7;"(9i)": GO S
UB 6000
161 IF b$="7" AND li>2 THEN  LE
T a$="(9a)": LET li=li-1: PRINT
AT li+1,col; INK 7;"(9i)": GO SU
B 6000
162 IF b$="5" AND col>4 THEN  L
ET a$="(9b)": LET col=col-1: PRI
NT AT li,col+1; INK 7;"(9i)": GO
 SUB 6000
163 IF b$="8" AND col<27 THEN
LET a$="(9d)": LET col=col+1: PR
INT AT li,col-1; INK 7;"(9i)":
O SUB 6000
165 LET oil=oil-1: PRINT AT 0,4
; INK 1;oil;" "
180 GO TO 150
3000 FOR n=1 TO 20: LET zx=RND*5
0: BEEP .1,zx: NEXT n: RETURN
4000 PRINT AT 10,12; PAPER 7; IN
K 1; FLASH 1;"GAME OVER";AT 12,7
; FLASH 0;"ANOTHER GAME (Y/N)?":
 PAUSE 10
4005 IF sc>hi THEN  PRINT AT 2,9
; INK 1; FLASH 1;"NEW HIGH SCORE
!": FOR n=1 TO 5: BEEP .5,5: BEE
P .05,3: BEEP .05,10: BEEP .05,1
5: BEEP .05,20: NEXT n: LET hi=s
c
4006 IF INKEY$="Y" OR INKEY$="y"
 THEN  GO TO 20
4010 IF INKEY$="N" OR INKEY$="n"
 THEN  GO TO 10000
4020 GO TO 4000
6000 IF SCREEN$ (li,col)<>" " TH
EN  GO TO 7000
6010 RETURN
7000 IF ATTR (li,col)=34 THEN  P
RINT AT 21,7; PAPER 2; INK 7; FL
ASH 1;"You have exploded!": GO S
UB 3000: PAUSE 50: LET lives=liv
es-1: CLS : GO TO 30
7010 IF ATTR (li,col)=32 THEN  P
RINT AT 21,7; PAPER 0; INK 7; FL
ASH 1;"You've hit a rock!": GO S
UB 3000: PAUSE 50: LET lives=liv
es-1: CLS : GO TO 30
7020 IF ATTR (li,col)=37 THEN  P
RINT AT 21,2; PAPER 1; INK 7; FL
ASH 1;"Sliced a rose! Oil spilla
ge!": GO SUB 3000: PAUSE 50: LET
 oil=oil-100: CLS : GO TO 30
7030 IF ATTR (li,col)=102 THEN
PRINT AT 21,4; INK 7; FLASH 1;"5
0 gallons of extra oil!": FOR n=
1 TO 50: PRINT AT 0,10; FLASH 1;
 INK 7; PAPER 2;"REFUELLING": LE
T oil=oil+1: PRINT AT 0,4; INK 2
;oil: BEEP .05,n: NEXT n: PRINT
AT li,col; PAPER 4;" ": PRINT AT
 0,10;"              ";AT 21,4;"
                    ": LET gh=0:
 GO TO 150
7040 LET oil=oil-50: GO TO 150
8005 BORDER 3: PAPER 6: CLS
8010 LET c$="LAWN-MOWER": FOR n=
1 TO 10: PRINT AT 2,n+10; INK 0;
"(9d)";AT 2,n+9; INK 2; FLASH 1;
c$(n): PAUSE 10: NEXT n: PRINT A
```



YOU ARE a gardener with a large expanse of lawn to mow. Your fuel is limited and you must avoid the thorny roses, exploding cricket balls and rocks. Do not mow the same area twice or you will be penalised. The terrain becomes even more hazardous in levels two and three.

Lawn Mower was written for the 16K Spectrum by 13-year-old Matthew Edwards of Egginton, Derby.

```
T 2,20;" "
8012 PRINT AT 8,3; INK 1;"Press
 'Y' for instructions      Or 'P'
 to play the game": PAUSE 0: IF
INKEY$="P" OR INKEY$="p" THEN  G
O TO 8060
8015 FOR n=8 TO 10: PRINT AT n,0
;"
  ": NEXT n
8020 PRINT AT 4,2; INK 1;"The ob
ject of this game is to cut as m
uch green grass as      possible
 before your oil runs   out.";AT
 9,2; INK 0;"avoiding"; INK 2;"
(99)"; INK 0;"(exploding cricket
";AT 10,26;"balls)"
8030 PRINT AT 11,5; INK 0;"""";A
T 11,11;"(gf)(rocks)";AT 13,5;""
"";AT 13,11; INK 5;"(gh)"; INK 0
;"(flowers)"
8040 PRINT AT 15,2; INK 2;"Oil c
an be gained by going to a barre
l which will appear on   the scr
een occasionally."
8050 PAUSE 10: PRINT AT 19,1; IN
K 4;"Use the normal cursor contr
ols";AT 21,5; INK INT (RND*7);"P
ress any key to play": PAUSE 1:
IF INKEY$="" THEN  GO TO 8050
8060 CLS : INPUT "Level of play?
 1,2 or 3 only.";lev: IF lev<1 O
R lev>3 THEN  GO TO 8060
8070 RETURN
9000 FOR n=USR "a" TO USR "i"+7:
 READ a: POKE n,a: NEXT n
9005 RETURN
9010 DATA 0,130,254,254,146,16,1
6,56
9020 DATA 0,120,48,49,63,49,48,1
20
9030 DATA 28,8,8,73,127,127,73,0
9040 DATA 30,12,140,252,140,12,3
0,0
9050 DATA 60,66,126,126,126,126,
126,60
9060 DATA 4,69,85,255,127,117,84
,16
9070 DATA 0,56,124,124,56,0,0,0
9080 DATA 28,62,119,62,28,8,8,8
9090 DATA 127,127,127,127,127,12
7,127,127,127
```

ORWIN SOFTWARE: ZX81 & SPECTRUM

SUPER SOFTWARE AT LOW PRICES

"quantity as well as quality"
Sinclair User, Oct '82

"if each game was on a separate tape and selling for £5 each I would still recommend them"
ZX Computing, Oct/Nov '82

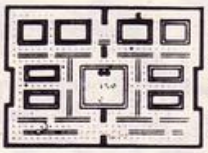
"Easy to operate, graphically impressive and good value for money."
The Times, 11th Dec '82

"Definitely good value for money at £6 . . . A smooth clear display and a relatively fast response from the keys. Graphics are as good as you will ever get on the 81."
What Micro? Nov '83

NEW! FOR 16K SPECTRUM

(will also run on 48K Spectrum)

CASSETTE A **Ten programs for £6**



GHOST GOBBLER Eat the ghosts before the ghosts eat you. Eat a star and you can chase the ghosts for a while.

ALIENKILL Control lasers, rockets and a force-field to stop the aliens from landing.
MOUSETRAP Trap the mouse in the corner but not anywhere else.
REVERSI A game of skill with simple rules but sophisticated tactics. Play against the computer.
LASER DEFENCE Control the laser sight to shoot down the alien ships. Machine code sound routines.

TANK BATTLE For 2 players simultaneously or play against the computer. Each player has 2 rotate controls and move and fire controls. The tanks fire steerable missiles.
PHOEBUS A puzzle.
BLACKSPOT Gobble the stars and avoid running into black spots created by crossing your own path.
CUBE Manipulate a cube any size from 2×2×2 to 7×7×7.
MINEFIELD Collect the crowns while avoiding the mines and the electrified fence.

plus an extra . . .

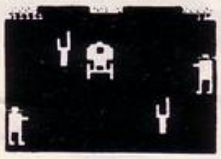
GRAPHIC DEMO Did you know your Spectrum could do all this!?

CASSETTE 1, eleven programs (including 7 in machine code) for 1K ZX81 **£3.80**	**CASSETTE 2**, ten games in Basic for 16K ZX81 **£5**	**CASSETTE 3**, eight programs (including 1 in machine code) for 16K ZX81 **£5**

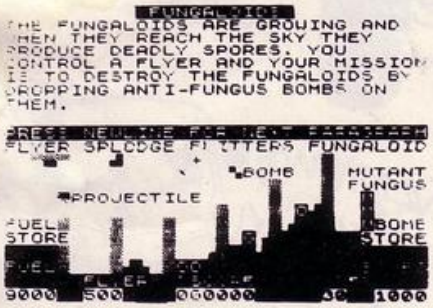
CASSETTE 4 **8 games for 16k ZX81** **£6**

ZX-SCRAMBLE (machine code) with 3 stages.
Bomb and shoot your way through the fortified caves.

GUNFIGHT (machine code)



INVADERS (machine code)



GALAXY INVADERS (machine code)
Fleets of swooping and diving alien craft to fight off.

SNAKEBITE (machine code)
Eat the snake before it eats you. Variable speed. (very fast at top speed).

LIFE (machine code)
A ZX81 version of the well known game.

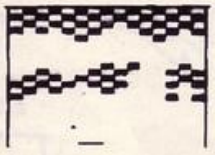
3D TIC-TAC-TOE (Basic)
Played on a 4×4×4 board, this is a game for the brain. It is very hard to beat the computer at it.

7 of the 8 games are in machine code, because this is much faster than Basic. (Some of these games were previously available form J. Steadman).

CASSETTE 5 **8 games for 16k ZX81** **£6**

BYTE-MAN (machine code)
(previously available from Mindseye)

BREAKOUT (machine code)



PLANETOIDS (machine code)
Rotate, move, fire and hyperspace controls. Wide range of choice of speed and difficulty.

DODGEMS (machine code)
Dodge the computer's car while eating the dots.

SPACE RESCUE (machine code)
(previously available from Mindseye)

BLITZ (machine code)

DRAUGHTS (machine code)
Three skill levels.

MERCHANT (Basic)
Make your fortune on trading voyages in the Mediterranean and beyond.

"New polish on old favourites.
. . . the quality of the software and the smooth action displays created on the screen make the programs worthwhile for anyone who has a ZX-81 and plays games using it.
. . . It is pleasant to see that Orwin's kind of quality is available again."
Sinclair User, Sept '83

"Among the best reviewed was Cassette 5 from Orwin Software. For a mere £6, you get eight top-quality games . . .
All the games are of very high quality and would cost £4 or £5 if sold separately . . . Many of the other software houses could learn a lesson from these."
What Micro? Games Supplement, Nov '83

7 of the 8 games are in machine code because it is much faster than Basic.

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sinclair special 5

Inside... New Interface 2 and ROM cartridges! New Software!

TAKING NEW SOFTWARE IN NEW DIRECTIONS

You'll see that this issue of Sinclair Special devotes considerable space to software. Why, when we've so much to say about hardware and peripherals? Simply because at Sinclair we believe in supporting first-class hardware with first-class software.

This month sees the start of a new commitment to education in our catalogue, both for adults and children.

In the field of micro theory, we've programs like Beyond BASIC and Make-a-Chip, which take you from the creation of simple ZX assembler subsets to simulated circuit design projects.

There's Musicmaster, to teach you music terminology, note values and composition.

And if you're keen to beat your Spectrum at chess (which can be hard), you'll certainly want to try Chess Tutor 1, the first program in a complete chess masterclass.

Coming soon...

In the pipeline are many new releases, some of which break completely new ground. LOGO and micro-PROLOG for instance. They're fifth generation languages which will take you and your Spectrum closer than ever before to the creation and application of artificial intelligence.

A formal agreement between Sinclair and Macmillan Education has been announced, the first results of which will be published this autumn. These consist of five programs in a complete early reading course plus the first four of a series of programs based on Macmillan's top selling Science Horizons Scheme. All programs are designed for use in schools or the home.

And with Blackboard software, we're publishing six more home education programs for primary school children. Covering alphabet, spelling and punctuation, each of these programs is a true gem, unlike any other education software, and fascinating to run. Even for adults!

I believe that these new titles represent a major advance in educational software for the home.

New ROM software too!

You may well have heard news of ZX Interface 2 and ROM cartridge programs. You'll find full details of the Interface and its software on the facing page (and there's an order form on the back page too!). These offer an instant games playing facility at unbeatable prices, and expand the possibilities of using your Spectrum in yet another direction.

Alison Maguire

Alison Maguire
Applications Software Manager

SOFTWARE UPDATE

The latest cassette software for ZX Computers

Chess Tutor 1

For 48K RAM Spectrum. **£9.95.**

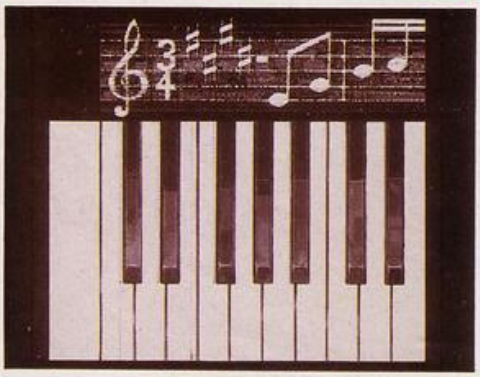
Chess Tutor is a new way of learning all about chess – using your ZX Spectrum.

It starts from the beginning by teaching you about the chess pieces and the way they move – including castling, en passant, promotion, check, checkmate, stalemate and perpetual check.

Then it teaches you the basic tactics – pins, forks, double attacks and skewers.

There are over 120 exercises and over 200 questions for you to answer – with demonstrations and hints from your ZX Spectrum when you want them.

You can choose which parts of the course you want – and even experienced players may be surprised at what they can learn from Chess Tutor.



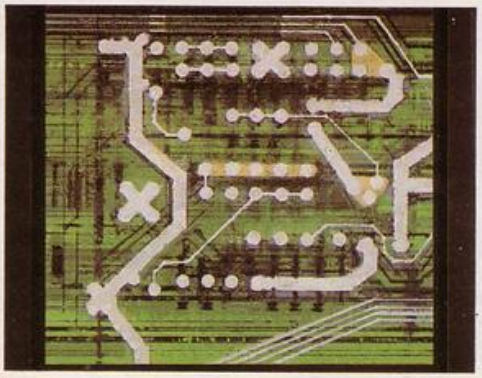
Musicmaster

For 48K RAM Spectrum. **£9.95.**

Musicmaster turns your ZX Spectrum into a musical instrument which will not only play tunes, but will also demonstrate key signatures, durations of notes, and scales.

You can write your own tunes – in any key – play them over and over again, save them on tape, modify them.

You can either write your music on a stave, or place a simple overlay on your Spectrum for a 17-note keyboard.



Make-a-Chip

For 48K RAM Spectrum. **£9.95.**

Make-a-Chip teaches you the basic elements of circuit design, shows you how they fit together, and then lets you design and test your own circuits.

When you have designed a circuit, you can give it inputs and outputs and your ZX Spectrum will check it for you. Then it will run it, or tell you what's wrong so that you can modify it.

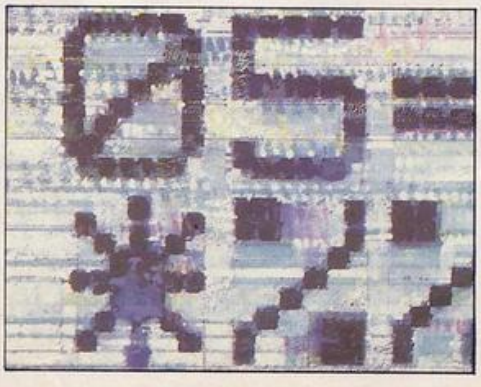
Make-a-Chip is a fascinating way of finding out how computer logic works.

Print Utilities

For 16K and 48K RAM Spectrum. **£9.95.**

Increase the printing and display facilities of your ZX Spectrum with the Print Utilities program.

Print Utilities enables you to enhance your programs by generating characters of eight different sizes which you can place anywhere on your screen.



Beyond BASIC

For 48K RAM Spectrum. **£9.95.**

Takes the agony out of assembler. Takes the mystery out of machine code.

Beyond BASIC gives you a deeper insight into the workings of your ZX Spectrum. It explains what happens inside your micro when you run a program, and it teaches you simple Z80 machine code programming.

A major feature of Beyond BASIC is that it enables you to write your own Z80 assembler programs – then you can actually see on your screen how they affect the ZX Spectrum memory and registers.

ZX INTERFACE 2

The New ROM Cartridge/Joystick Interface

Loads programs instantly! Takes two joysticks! Just plug-in and play!

The ZX Interface 2 is the latest new peripheral for the ZX Spectrum system. It enables you to use new ZX ROM cartridge software: plug-in programs that load instantly. It allows you to use two standard joysticks, without the need for separate, special interfaces.

To use new ZX ROM cartridge programs, just connect Interface 2 to the rear of your Spectrum or Interface 1 and plug in the cartridge of your choice. The program is then loaded, ready to run!

You can use any joystick that has a 9-way D plug. Use one or two of them for extra fun with ZX ROM cartridge or Sinclair cassette programs – or with dozens of other Spectrum-compatible programs!

SEE BACK PAGE FOR ZX INTERFACE 2 AND ROM CARTRIDGE ORDER FORM!

...AND BRAND NEW ROM CARTRIDGE SOFTWARE!

There's already plenty of choice of ZX ROM cartridge programs for your Spectrum. Some are old favourites, in an exciting new form. Others are new.

And now, thanks to ROM cartridge technology, you can run them *all* on a 16K RAM Spectrum, even if they were originally written only for 48K machines!

Every ROM cartridge program loads fast and faultlessly. No wires, no waiting, no worries about loading errors! All of them are affordably priced too, at £14.95.

Backgammon

Everything you need to play the famous and deceptively simple board game. Board, stones, rolling dice and doubling dice are shown in full colour and high resolution. Choose from four levels of skill to suit experts and beginners alike – full rules are included.

Space Raiders

Your skill is all that's stopping successive waves of aliens from destroying Earth. Use your gun base to attack. Shelter behind buildings... move out and blast the passing alien soaceship!

Full-colour high-resolution graphics with sound.

New! PSSST

Robbie the Robot sits in his garden. Help him fetch compost to cultivate his prize Thyrgodian Megga Chrysanthodil. Help him make the right choice of pesticide, to ward off devilish insects. Stop the insects breeding to overwhelming numbers before Robbie's plant has bloomed. PSSST is horticulture with a horrendous twist!

One and two player option, with a host of features including sound effects.

Chess

This sophisticated program does everything you'd expect at board game level, and much more besides.

The high-resolution chessboard and pieces are arranged in a row and column system, so it's easy to key in your moves.

At any stage of the game you can request the computer to suggest a move, reverse roles or change the level of skill.

Full-colour high-resolution graphics.

Planetoids

Dodge and swerve using your thrust button, turn on a planetoid... fire! But beware – the alien ship moves fast to destroy you with cluster bombs. And when it comes to the crunch, use your hyperspace button!

Full-colour high-resolution graphics with sound.

Hungry Horace

Horace is forever being chased around the park by guards.

He steals their lunch, eats pathway flowers and creates chaos in the park by ringing the alarm!

You'll have to be quick to keep Horace out of trouble!

Full-colour high-resolution graphics with sound.

New! Tranz Am

Set in a future time ruled by cars and trophies, in a land where petrol replaces gold, and status is possession of the 8 Great Cups of Ultimate.

Driving your Super Blown Red Racer, use your skill to outwit and crash the Deadly Black Turbos. Use your instruments to locate and collect the trophies – before you overheat or run out of fuel.

A program with outstanding multi-directional movement, graphic features, and a playing area equivalent to more than 600 times actual screen area.

Horace and the Spiders

Guide Horace on the hazardous journey to the cobwebbed house full of poisonous spiders.

Safely in the house, you must move along cobwebs, choose a spot... and jump on it! The spiders will be in a frenzy – scuttling to repair their precious web.

And when a spider is spinning a new section, you're safe to attack and destroy it!

Kill all the spiders, and a new web appears... with even more spiders to catch.

Full-colour high-resolution graphics.

New! Cookie

You're Charlie the Chef, who keeps his ingredients locked in the larder. But if the ingredients escape, they bring the inedible Nasties with them!

You must daze the escaping ingredients with flour bombs, and knock them into the mixing bowl. Stop them getting into the dustbin, at all costs! And beware of Nasties that get into the mixing bowl!

Cookie is fast-moving panic in the pantry, with a cast of real characters. A program to make you smile – and sweat!

New! Jet Pac

As Chief Test Pilot of the Acme Interstellar Transport Company, your task is to deliver and assemble spaceship kits. On your way round the galaxy, you're free to collect precious stones and gold.

The catch? Rocket fuel is precious and scarce. And the aliens don't take kindly to the theft of their valuables. You'll need your wits and your lasers!

With a host of features, including multi-directional movement, explosions, sound effects and one and two player option.

ZX MICRODRIVE

NOW ON RELEASE

The ZX Microdrive System – as you'd expect from Sinclair – is unique to the world of computing. It's a compact, expandable add-on system which provides high-speed access to massive data storage. With just one Microdrive alone (and Interface 1), you'll have at least 85K bytes of storage, the ability to LOAD and SAVE in mere seconds, the beginnings of a local area network of up to 64 Spectrums, *and* a built-in RS232 interface! The cost? Less than £50 for each Microdrive.

How to get ZX Microdrive

Spectrum owners who bought direct from us, by mail order, have been sent full details. Order forms are being mailed in strict rotation, so if you haven't yet received your order form please bear with us. We're making good progress in meeting the huge demand.

If you didn't buy your Spectrum by mail order, don't worry. Send us the form from the bottom of this page. We'll add your name to the mailing list, and send you details by return.

Each Microdrive costs £49.95. Interface 1 costs £49.95, but just £29.95 if purchased with a ZX Microdrive. Extra ZX Microdrive cartridges: £4.95.

How to order

Simply fill in the relevant sections on the order form below. Note that there is no postage or packing to pay on some purchases. Orders may be sent FREEPOST (no stamp needed). Credit card holders may order by phone, calling 01-200 0200, 24 hours a day. 14-day money-back option, of course. Please allow 28 days for delivery.

sinclair

Sinclair Research Ltd, Stanhope Road, Camberley, Surrey, GU15 3PS. Telephone: (0276) 685311.

To: Sinclair Research Ltd, FREEPOST, Camberley, Surrey, GU15 3BR.

ORDER FORM

Section A: Hardware

Qty	Item	Code	Item Price £	Total £
	ZX Interface 2	8501	19.95	
	ZX Spectrum – 48K	3000	129.95	
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	Postage and packing: orders under £90	0028	2.95	
	orders over £90	0029	4.95	
			TOTAL £	

Section B: Software **ROM CARTRIDGE PROGRAMS**

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		TOTAL £	

*I enclose a cheque/postal order made payable to Sinclair Research Ltd for £

*Please charge to my Access/Barclaycard/Trustcard account no:

*Delete/complete as applicable.

Signature

Mr/Mrs/Miss

Address

SPR 912

(Please print)

ZX Microdrive information request

Please add my name to the Microdrive Mailing List, *and* send me a colour brochure with full specifications of ZX Microdrive/Interface 1 ☐ *(tick here)*. You can use the above form to send us your name and address.

BEGINNER

```
  10 PRINT AT 5,0;"       THIS IS
 A PROGRAM TO             SHOW 3
DIFFERENT                 MATHMAT
ICAL FORMULA              IT COUL
D BE USED AS              A PERMA
NAT REMINDER              OR FOR
MATHS HOMEWORK....."
  20 PAUSE 500
  30 CLS
  90 PRINT "          FORMULA"
  95 PRINT "          *******"
  96 PRINT " (3*9a.)"
 100 PRINT " (3*9a.)"
 110 PRINT " (3*9a.)   AREA OF A
RECTANGLE"
 120 PRINT " (3*9a.)"
 130 PRINT " (3*9a.)"
 135 PRINT " (3*9a.)"
 140 PRINT "             L X B = A
"
 150 PRINT

 160 PRINT "   ENTER LENGTH PRES
S ENTER
           THEN ENTER BREADT
H"
 170 INPUT A
 180 INPUT B
 185 LET C=A*B
 190 PRINT AT 14,3;A;" X ";B;" =
";C
 200 PRINT
 210 PRINT "   AREA = ";C
 220 PAUSE 200
 230 CLS
 240 PRINT "          FORMULA"
 250 PRINT "          *******"
 260 PRINT
 270 PRINT " (9a.)"
 280 PRINT " (2*9a.)      AREA OF
 RIGHT ANGLED"
 290 PRINT " (3*9a.)     TRIANGLE
"

 300 PRINT " (4*9a.)    L X 1/2H"
 310 PRINT
```

FORMULÆ

```
 320 PRINT "          ENTER LENGT
H THEN                ENTER HEIGH
T"
 330 INPUT D
 340 INPUT E
 350 LET F=D*(E/2)
 360 PRINT
 370 PRINT "          ";D;" X 1/2
 ";E;" = ";F
 390 PRINT "          AREA = ";F
 400 PAUSE 200
 410 CLS
 420 PRINT "           FORMULA"
 430 PRINT "           *******"
 440 PRINT "      (9d)"
 450 PRINT "    (3*9a.)   AREA OF
 A CIRCLE"
 460 PRINT "   (5*9a.)"
 470 PRINT "    (3*9a.)   2 X PI
X R"
 480 PRINT "     (9s)     "
 490 PRINT "           OR D X PI"
 500 PRINT
 510 PRINT "           ENTER DIAM
ETER"
 520 INPUT G
 530 LET H=G*3.14
 540 PRINT
 550 PRINT "           ";G;" X 3.
14 = ";H
 560 PRINT
 570 PRINT "           AREA = ";H
 580 PAUSE 400
 590 CLS
```

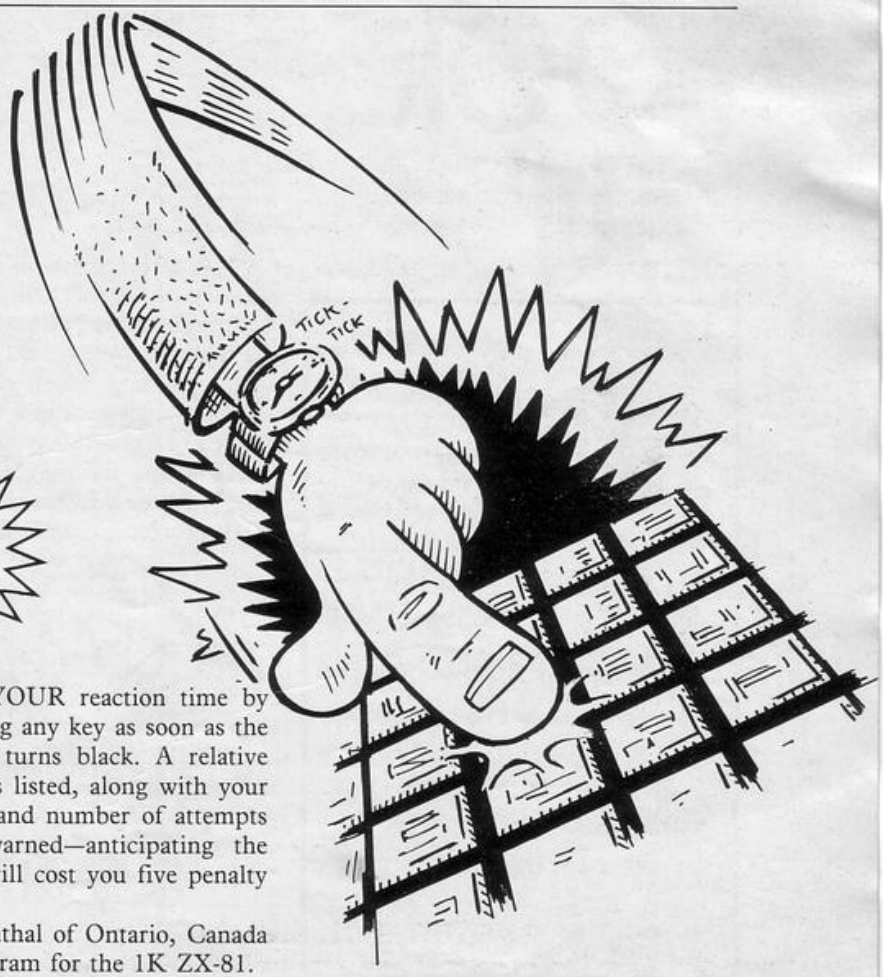
OLIVER STOCKTON of Saltdean, Sussex has written a maths program which calculates the area of rectangles, triangles and circles. He wrote it to help him with his homework and thought it might be of use to other students.

Formulae is for the 16K ZX-81.

REFLEX

```
   5 RAND
  10 LET U=0
  15 LET V=0
  20 SLOW
  25 LET P=0
  30 PRINT "READY? ..."
  40 LET R=30+INT (RND*60)
  50 LET I=0
  60 LET I=I+1
  70 IF INKEY$<>"" THEN GOTO 200
  80 IF I<R THEN GOTO 60
  90 FAST
 100 CLS
 110 LET T=0
 120 LET T=T+1
 130 IF INKEY$="" THEN GOTO 120
 135 SLOW
 140 PRINT "TIME = ";T;
 145 IF P>0 THEN PRINT " + ";P;"
 = ";T+P;
 147 PRINT
 150 LET U=U+T+P
 160 LET V=V+1
 170 PRINT "AVERAGE = ";INT (U/V
+.5)
 175 PRINT "TURNS = ";V
 180 GOTO 25
 200 PRINT "TOO SOON-PENALTY OF
5"
 210 LET P=P+5
 220 GOTO 30
```

BEGINNER



TEST YOUR reaction time by pressing any key as soon as the screen turns black. A relative **Reflex** time is listed, along with your average score and number of attempts so far. Be warned—anticipating the black screen will cost you five penalty points.

Jeffry Rosenthal of Ontario, Canada wrote the program for the 1K ZX-81.

SLALOM

BEGINNER

STEVE RICKARD, aged 14, of Clwyd, South Wales sent **Slalom,** a part-machine-code program. Dodge the markers as you descend the piste, 1=left and 0=right. When you crash your score is displayed; press any key for the ski lift.

Rickard has had a ZX-81 for six months and this is his first foray into machine code.

Type-in the following machine code loader first:

10 Rem
20 For f=16514 to 16522
30 input m
40 print f,m
50 poke f,m
60 next f

Then run the program, type in the numbers below one at a time, followed by enter:

1,0,0,42,14,64,78,201

When the program finishes (0/0), delete lines 20–60, then enter the main Slalom program.

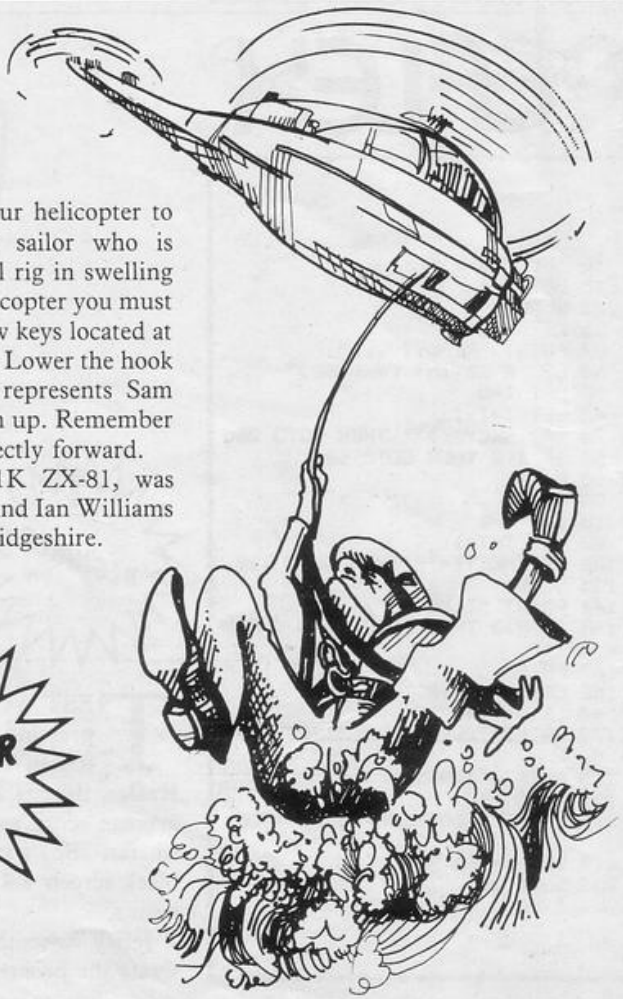
```
  10 REM .............
  12 PRINT AT 1,10;"SKI-RUN";AT
5,0;"KEYS:      1=LEFT          0=
RIGHT";AT 16,0;"PRESS ANY KEY TO
 START GAME"
  13 IF INKEY$="" THEN GOTO 13
  14 CLS
  15 LET A=10
  17 FOR F=1 TO 9999
  20 PRINT AT 10,RND*30;"T"
  30 SCROLL
  50 PRINT AT 7,A;
  60 IF USR 16514=57 THEN GOTO 1
00
  70 PRINT """"
  80 IF INKEY$="0" THEN LET A=A+
1
  90 IF INKEY$="1" THEN LET A=A-
1
  95 NEXT F
 100 PRINT AT 19,10;"SCORE:";F
 110 PAUSE 9999
 115 CLS
 120 RUN
```

HOOK-UP

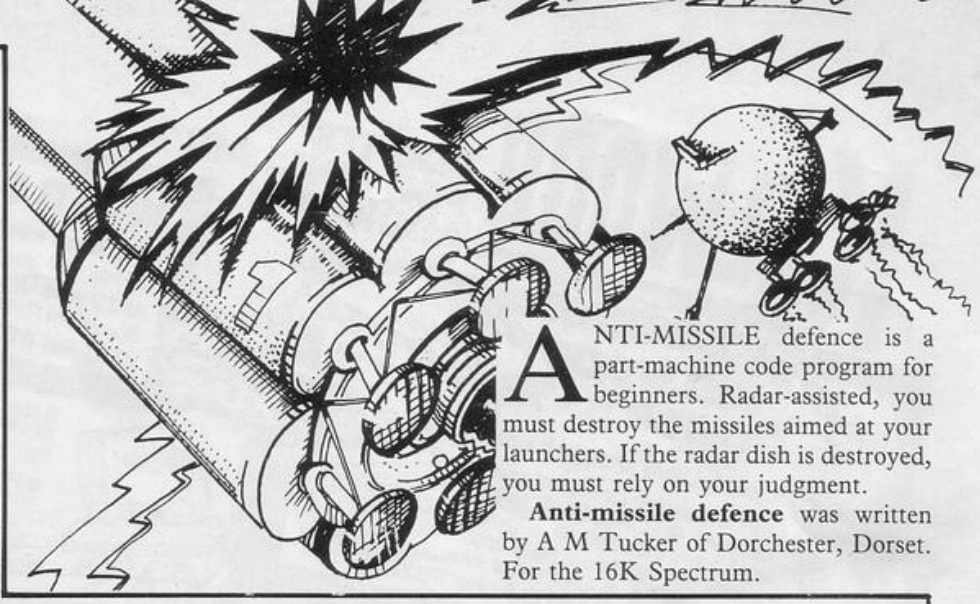
TAKE OFF in your helicopter to rescue Sam the sailor who is trapped on an oil rig in swelling seas. To control the helicopter you must use the cursor and arrow keys located at the top of the keyboard. Lower the hook to the '$' sign which represents Sam and then try to pick him up. Remember that you cannot fly directly forward.

Hook-up, for the 1K ZX-81, was sent by Andrew Evans and Ian Williams of Huntingdon, Cambridgeshire.

BEGINNER



```
  1 LET T=0
  2 LET C=VAL "20"
  3 LET L=VAL "10"
  4 PRINT AT 17,3;"$"
 11 PRINT AT 18,0;"----------
----------"
 12 PRINT AT 18,2;"(3*INV+)"
 30 PRINT AT L,C;"(9h i$P i97i*)
";AT L-1,C-1;"---+--";AT L+1,C;"J
"
 35 LET T=T+1
 40 PRINT AT L,C;"(4*$P)";AT L-
1,C-1;"(6*$P)";AT L+1,C;" "
 46 IF INKEY$="0" THEN  PRINT
 T
 47 IF T>50 THEN  GO TO 81
 48 IF INKEY$="0" THEN  GO TO 8
2
 60 LET C=C+(INKEY$="8")-(INKEY
$="5")
 65 IF INKEY$="8" THEN  PRINT A
T L,C;"*(97i9W)";AT L-1,C-1;"---+
---"
 66 IF INKEY$="8" THEN  GO TO 4
0
 70 LET L=L+(INKEY$="6")-(INKEY
$="7")
 80 GO TO 30
 81 PRINT AT 12,17;"TIME UP"
 82 STOP
```



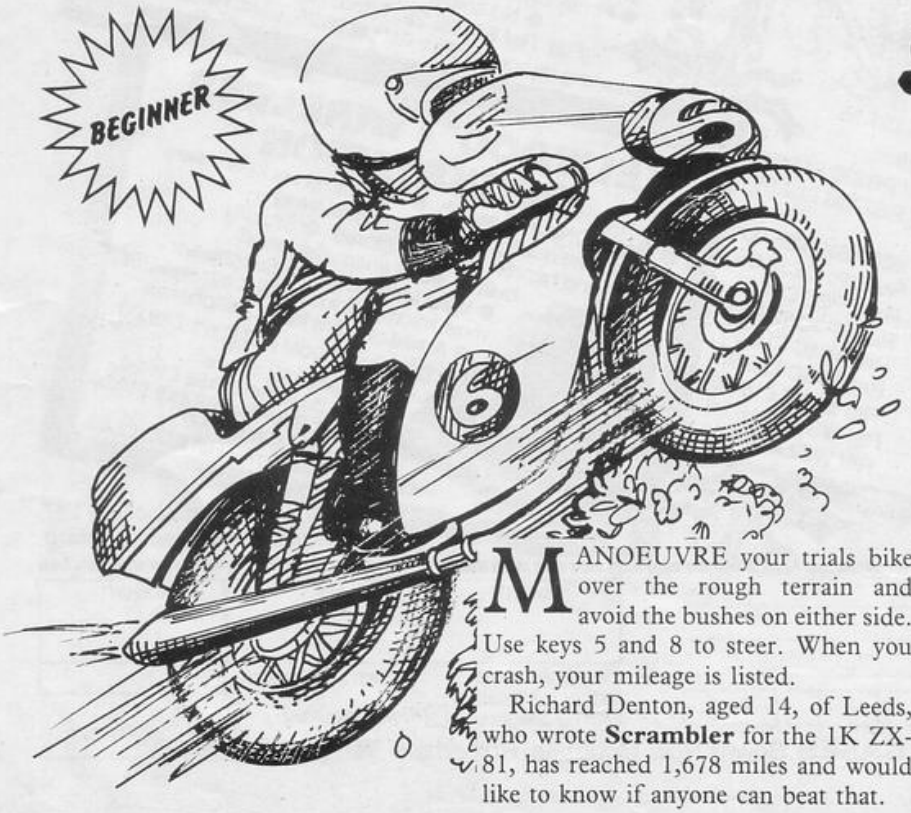
ANTI-MISSILE defence is a part-machine code program for beginners. Radar-assisted, you must destroy the missiles aimed at your launchers. If the radar dish is destroyed, you must rely on your judgment.

Anti-missile defence was written by A M Tucker of Dorchester, Dorset. For the 16K Spectrum.

```
  20 DATA 62,0,230,7,87,33,0,88,
6,3,197,6,0,126,230,248,178,119,
35,16,248,193,16,242,201
  30  DATA 22,20,7,143,16,2,147,
16,0,143,32,a,143,16,2,147,16,0,
143,32,a
  40  DATA 143,16,2,147,16,0,143
,32,a,a,16,1,148,16,0,17,13,127,
1,36,0,205,60,32,201
  50 CLEAR 32499: FOR n=32500 TO
 32570: READ a: POKE n,a: NEXT n
  60 PAPER 6: INK 6: PRINT AT 8,
3;: FOR n=1 TO 12: PRINT "* ";:
NEXT n: PRINT "*"
  70 PRINT AT 9,3;TAB 28;AT 10,3
;"* ANTI MISSILE DEFENCES *";AT
11,3;TAB 28
  80 PRINT AT 12,3;: FOR n=1 TO
12: PRINT "* ";: NEXT n: PRINT "
*"
  90 FOR n=1 TO 4: PAUSE 20: POK
E 32501,1: RANDOMIZE 0*USR 32500
: PAUSE 60: POKE 32501,6: RANDOM
IZE 0*USR 32500: NEXT n
 100 INK 0: PAPER 7: CLS
 110 PRINT AT 8,0;"Steer missile
s left with z,";TAB 15;"right wi
th m."'''"(If your radar aerial is
 hit      you cannot steer missil
es)."'''"Use either key to fire m
issiles."
 120 DATA 60,24,a,126,60,24,a,a,
42,65,0,129,0,129,66,30,129,0,66
,a,0,36,0,24,a,a,a,a,a,60,36,102
,2,2,4,12,56,200,24,126
 130 FOR n=0 TO 39: READ a: POKE
 USR "a"+n,a: NEXT n
 140 PRINT £0;"Press any key to
start."
 150 IF INKEY$="" THEN  GO TO 15
0
 160 CLS : PRINT : LIST USR 3256
1
 170 PRINT  PAPER 4;AT 21,0,,
 180 LET g=1: LET h=1: LET i=1:
LET J=1: LET n=0: LET t=n
 190 LET f=0: LET a=19: LET b=13
: LET x=0: LET y=b: LET q=b: LET
 v=RND-.5: LET z=v
 200 PRINT AT x,y;"(9a)"
 210 IF INKEY$<>"" THEN  LET f=1
 220 IF f THEN  PRINT AT a,b-5;"
*" AND g;AT a,b;"*" AND h;AT a,b
+5;"*" AND i
 230 IF a=x%f AND (b-5=q%g OR b=
q%h OR b+5=q%i) THEN  GO TO 360
 240 FOR w=1 TO 25: NEXT w
 250 PRINT AT x,y;" ";AT a,b-5;"
 " AND g;AT a,b;" " AND h;AT a,b
+5;" " AND i
 260 LET x=x+1: LET y=y+z*(y<31
AND y>0): LET q=INT (y+.5)
 270 LET a=a-(a>0)*f*((a+x)/2<>I
NT ((a+x)/2))
 280 LET b=b+((INKEY$="m")-(INKE
Y$="z"))*f*J*(a<18)
 290 IF CODE SCREEN$ (x,y)=0 THE
N  LET t=t+(q=8 OR q=13 OR q=18)
: LET g=g*(q<>8): LET h=h*(q<>13
): LET i=i*(q<>18): LET J=J*(q<>
23)
 300 IF x=20 THEN  PRINT AT x,y;
"c": BEEP .25,-35: FOR w=1 TO 30
: NEXT w: PRINT AT x,y;" ": GO T
O 190+130*(t=3)
 310 GO TO 200
 320 PRINT AT x,y;" ";AT 18,0;"H
its scored:";n;" Launchers hit:"
;t
 330 INPUT "For another game pre
ss ENTER "; LINE z$
 340 IF z$<>"" THEN  STOP
 350 CLS : GO TO 160
 360 LET n=n+1: PRINT AT x,y;"(9
b)": BEEP .05,6: BEEP .02,6: FOR
 w=1 TO 30: NEXT w: PRINT AT a,0
;TAB 31: GO TO 190+130*(n=10)
```

ANTI-MISSILE DEFENCE

BEGINNER



BEGINNER

SCRAMBLER

MANOEUVRE your trials bike over the rough terrain and avoid the bushes on either side. Use keys 5 and 8 to steer. When you crash, your mileage is listed.

Richard Denton, aged 14, of Leeds, who wrote **Scrambler** for the 1K ZX-81, has reached 1,678 miles and would like to know if anyone can beat that.

```
  1 FOR A=0 TO 10
  2 PRINT AT A,13;"*   *"
  3 NEXT A
  4 LET M=0
 10 LET A=13
 20 LET B=15
 25 LET R=INT (RND*4)+1
 27 LET A=A+(R>2.5 AND A<28)-(R
<2.5 AND A>0)
 30 PRINT AT 10,A;"*   *"
 50 SCROLL
 55 LET M=M+1
 60 LET B=B+(INKEY$="8")-(INKEY
$="5")
 70 PRINT AT 0,B;"V";AT 1,B;
 80 IF CHR$ PEEK (PEEK 16398+25
6*PEEK 16399)="*" THEN GOTO 200
 90 GOTO 25
203 CLS
210 PRINT "      YOU TRAVELLED "
;M;" MILES";AT 2,9;"AGAIN? (Y/K)
"
240 PAUSE 40000
245 CLS
250 RUN
```

KELWOOD ADD-ITS FOR SINCLAIR ADDICTS

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ZX81 Ref **WSZX** £9.75

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Ref. **MS** £7.50

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Six versions of this indispensable unit complete your computer.
All have SAVE/LOAD and ON/OFF switching and a housing for the transformer.
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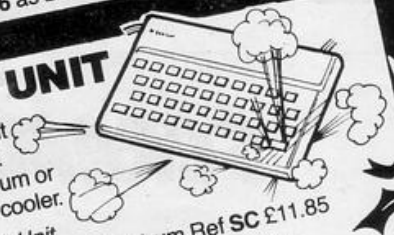
COOL-IT UNIT



Takes the heat out of your computer.
Lets your Spectrum or ZX81 run much cooler.

Separate Cool-it Unit
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● Firmly clamps Ram-Pack to computer ● No glue ● No solder ● Easily removed
Flat: Ref **SW** £5.25. Tilted: Ref **STW** £6.25
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All prices include VAT and postage and packing

Name _____

Address _____

QUANTITY	REF	AMOUNT
	TOTAL ENCLOSED	

Please send me further information with no obligation ☐ *Tick if required*

Access/Barclaycard No ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

KELWOOD COMPUTER CASES Downs Row, Moorgate, Rotherham **Tel: (0709) 63242**

DENBAR is an obnoxious fly which jumps from segment to segment of your cake. Move your red fly-swatter to hit **Denbar,** moving it left with 5 and right with 8. Denbar cannot be killed but you score points each time you hit it.

Written for the 16K Spectrum by Simon Licence of Canvey Island, Essex.

DENBAR

```
  5 GO SUB 9500
 10 GO TO 9000
 20 PLOT 48,72: DRAW 80,16: DRA
W -64,-64: DRAW -16,48
 25 RETURN
 30 PLOT 48,72: DRAW 80,16: DRA
W -80,16: DRAW 0,-32
 35 RETURN
 40 PLOT 48,104: DRAW 80,-16: D
RAW -64,64: DRAW -16,-48
 45 RETURN
 50 PLOT 64,152: DRAW 64,-64: D
RAW -16,80: DRAW -48,-16
 55 RETURN
 60 PLOT 112,168: DRAW 16,-80:
DRAW 16,80: DRAW -32,0
 65 RETURN
 70 PLOT 144,168: DRAW 48,-16:
DRAW -64,-64: DRAW 16,80
 75 RETURN
 80 PLOT 192,152: DRAW -64,-64:
 DRAW 80,16: DRAW -16,48
 85 RETURN
 90 PLOT 208,104: DRAW -80,-16:
 DRAW 80,-16: DRAW 0,32
 95 RETURN
 100 PLOT 192,24: DRAW -64,64: D
RAW 80,-16: DRAW -16,-48
 105 RETURN
 110 PLOT 192,24: DRAW -64,64: D
RAW 16,-80: DRAW 48,16
 115 RETURN
 120 PLOT 144,8: DRAW -16,80: DR
AW -16,-80: DRAW 32,0
 125 RETURN
 130 PLOT 112,8: DRAW 16,80: DRA
W -64,-64: DRAW 48,-16
 135 RETURN
1000 IF INKEY$="5" THEN  GO SUB
 (a*10): LET a=a-1: IF a=1 THEN
 LET a=13
1010 IF INKEY$="8" THEN  GO SUB
 (a*10): LET a=a+1: IF a=14 THEN
  LET a=2
1020 INK 2: GO SUB (a*10): INK 7
1030 PRINT AT x,y; INK 4;"a"
1040 LET c=c+.2: IF c>1 THEN  LE
T c=0: LET p=INT (RND*13): GO SU
B 4000
1050 PRINT AT 1,1;s;AT 17,1;t;"
 ": LET t=t-1
1060 IF t=0 THEN  GO TO 8000
1070 IF p=a THEN  LET s=s+5: FOR
  n=0 TO 10: OUT 228,16+0: OUT 22
8,0: NEXT n
1080 GO TO 1000
4000 PRINT AT x,y;" ": GO SUB (p
*10)+5000
4010 RETURN
5020 LET x=14: LET y=9: RETURN
5030 LET x=11: LET y=8: RETURN
5040 LET x=7: LET y=9: RETURN
5050 LET x=4: LET y=12: RETURN
5060 LET x=4: LET y=16: RETURN
5070 LET x=4: LET y=19: RETURN
5080 LET x=7: LET y=22: RETURN
5090 LET x=11: LET y=23: RETURN
5100 LET x=14: LET y=22: RETURN
5110 LET x=17: LET y=19: RETURN
5120 LET x=19: LET y=15: RETURN
5130 LET x=18: LET y=12: RETURN
7010 PRINT  INK 2;"ZX Spectrum"'
' INK 4;"    DENBAR WARS"
7020 PRINT AT 7,0; INK 4;"a a a
a a a a a a a a a a a a"
7030 PRINT ''' INK 6;"
                      "''''"  S
.Licence 1983"'''"PRESS ANY KEY T
O PLAY A GAME"
7040 PAUSE 0: PAUSE 0: PAUSE 0
7050 GO TO 9010
8000 BORDER 1: PAPER 1: INK 5: C
LS
8005 RESTORE 9540
8010 FOR n=1 TO 15: READ a: BEEP
 .05,a: NEXT n
8025 IF s>hs THEN  LET hs=s
8030 PRINT AT 10,10;"SCORE=";s'"
        HI=";hs'''"    ANY KEY
 FOR ANOTHER GAME"
8040 PAUSE 0: PAUSE 0: PAUSE 0:
PAUSE 0
9000 BORDER 0: PAPER 0: INK 7: C
LS
9005 GO TO 7000
9010 CLS : FOR n=20 TO 130 STEP
10: INK 7: GO SUB n: NEXT n
9020 LET a=2: LET s=0
9030 LET c=0: LET x=14: LET y=9:
 LET p=2: LET t=500
9040 PRINT AT 0,1;"SCORE";AT 16,
1;"TIME": PRINT £1;"  S.Licence
1983"
9050 GO TO 1000
9500 LET hs=0: FOR n=0 TO 7: REA
D a: POKE USR "a"+n,a: NEXT n
9510 DATA 146,84,56,254,56,84,56
,84,146,0
9540 DATA 2,5,2,5,2,4,7,4,7,0,4,
0,4,5,9,5,9
9550 RETURN
```

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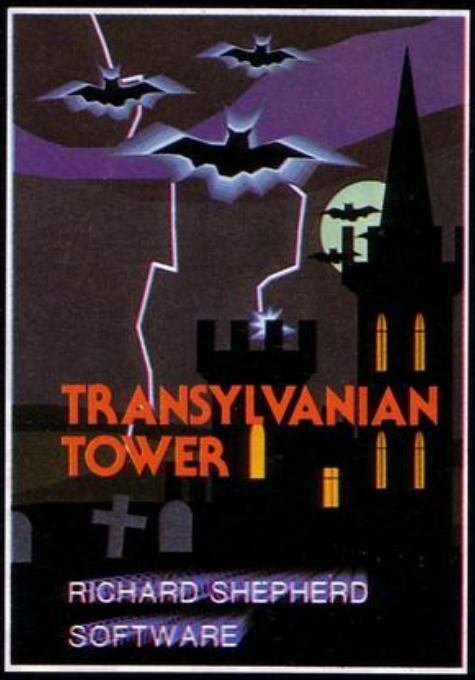

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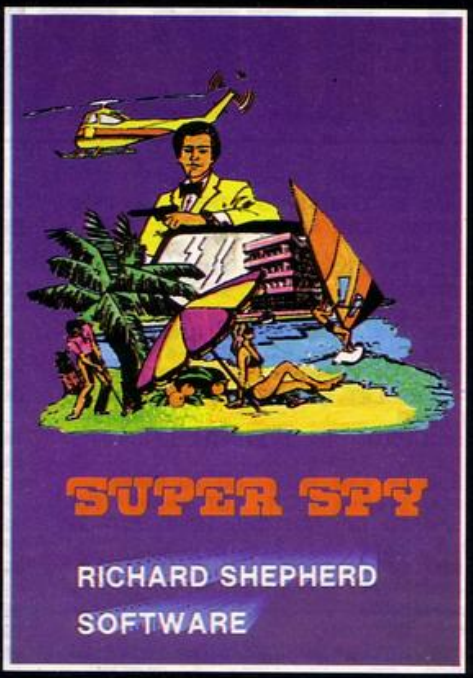

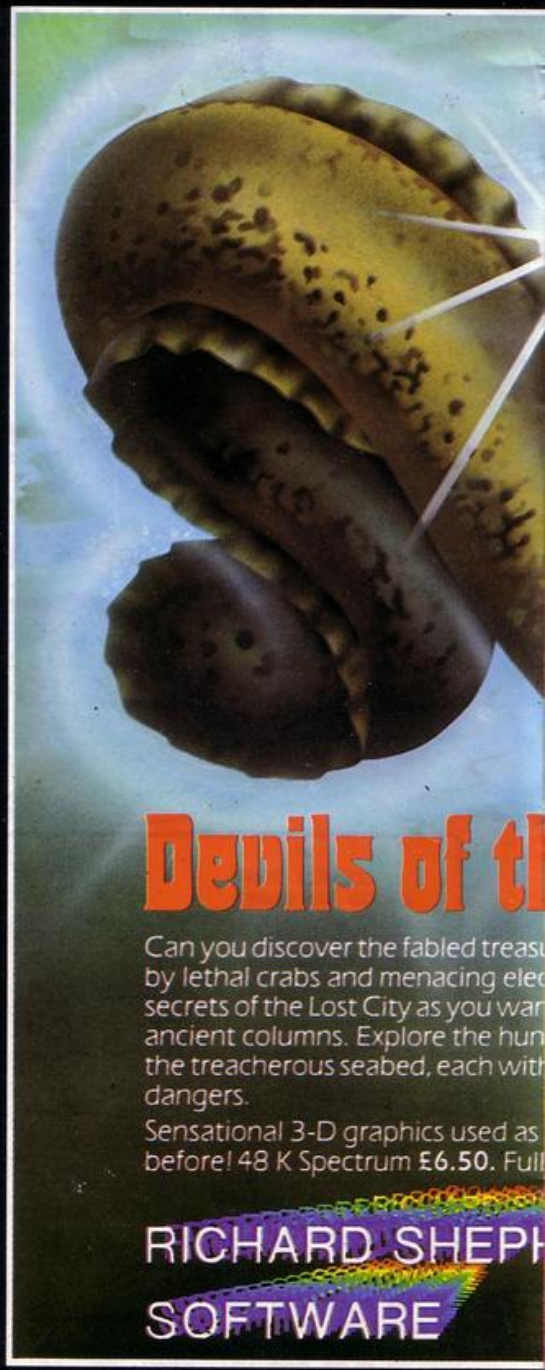

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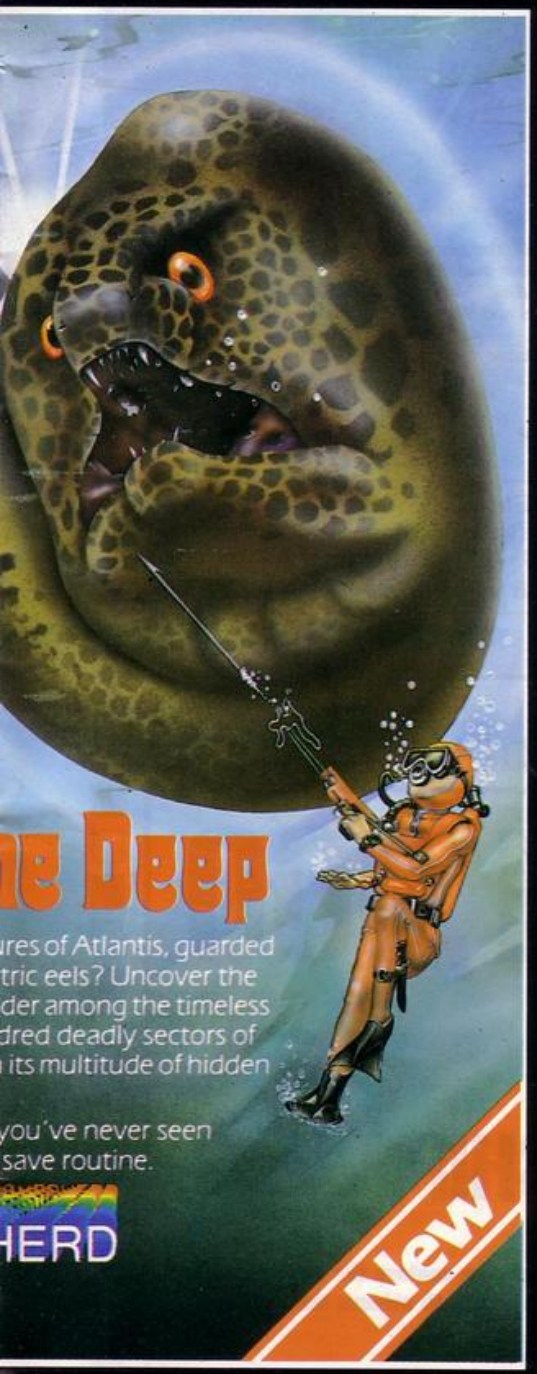

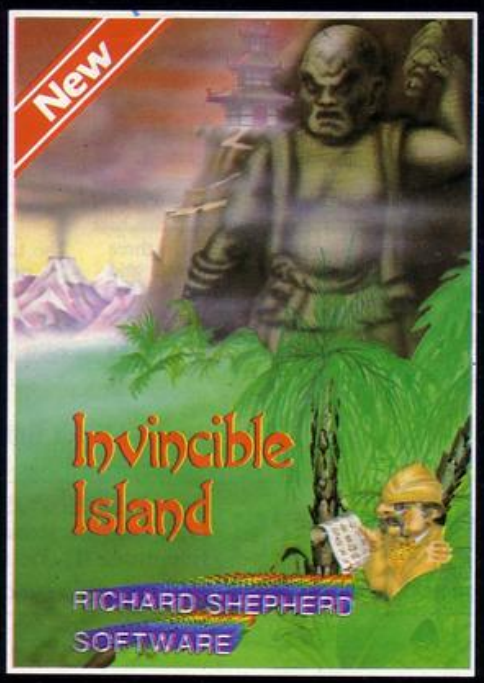

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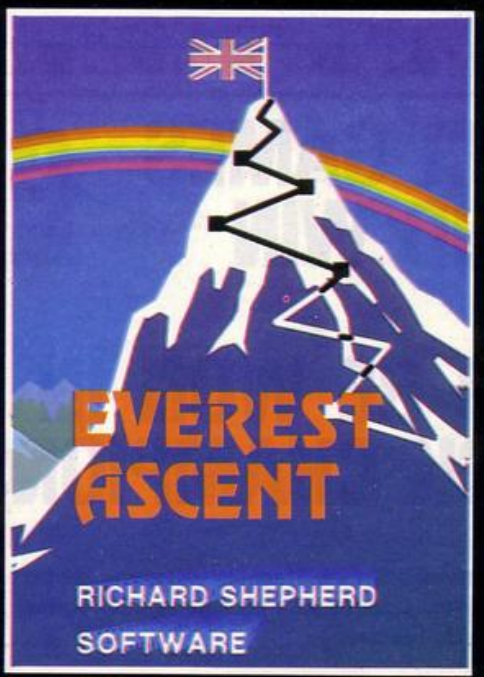

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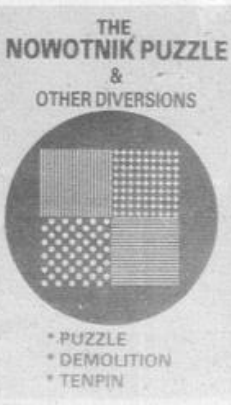

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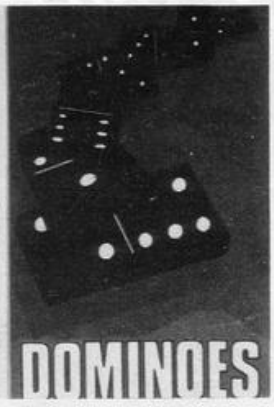

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SP11

DUCK SHOOT

DUCKS fly overhead. Move left with 5 and right with 8. Fire at the ducks with 0 and shoot down as many as possible.

Duck Shoot was written for the 16K ZX-81 by Neil Manning of Southport, Merseyside.

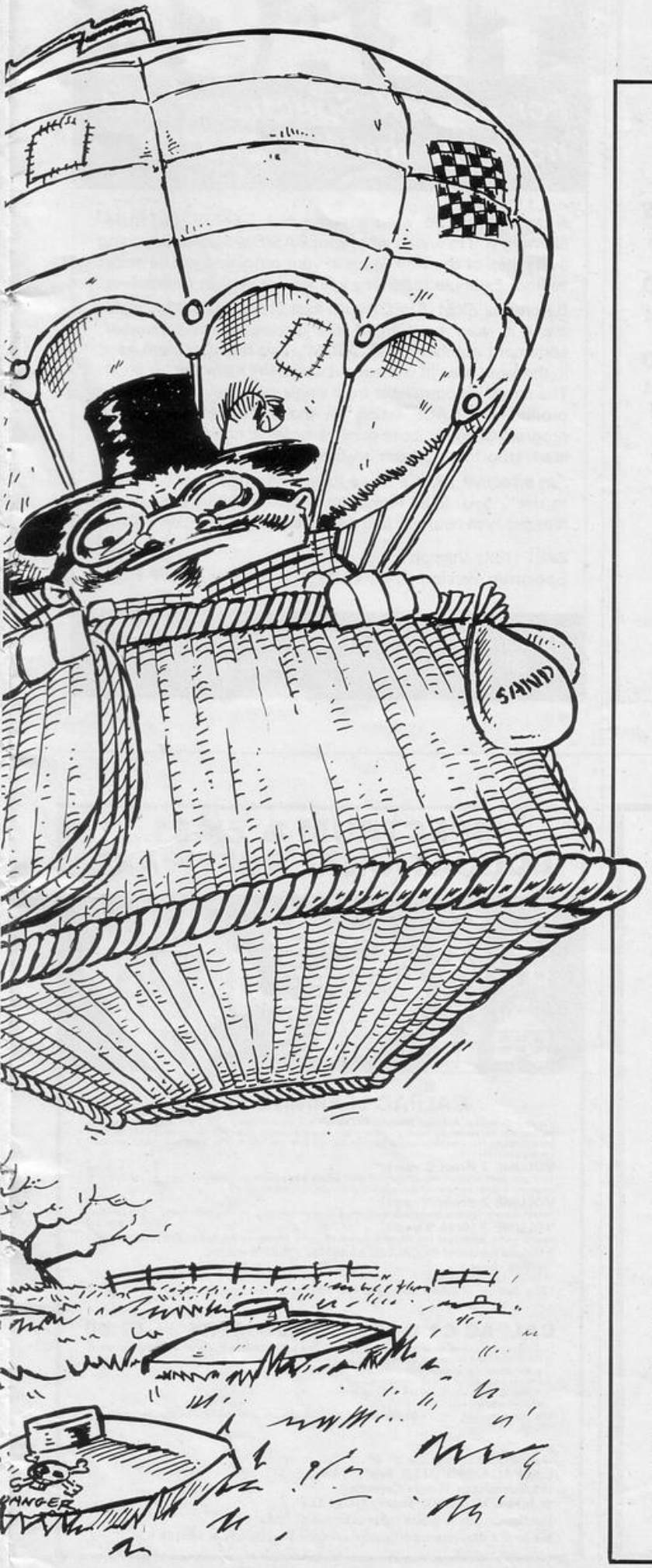
```
  1 LET A=20
  2 LET B=15
  3 LET SCORE=0
  4 LET BULLETS=20
  5 LET SHOT=1
  6 LET E=1
  7 LET N=1
  8 LET C=1
  9 LET FIRE=0
 10 GOSUB 3000
 14 REM ***MOVE DUCK***
 15 GOSUB 100
 16 REM ***SHOOT GUN***
 17 GOSUB 200
 25 LET SCORE=SCORE+SHOT
 30 IF FIRE=1 THEN LET BULLETS=
BULLETS-1
 31 LET FIRE=0
 35 IF BULLETS=0 THEN GOTO 1000
 40 GOTO 15
 51 FOR N=1 TO 21
 52 PRINT AT N,0;"(32*isP)"
 53 NEXT N
 54 LET C=INT (RND*10)+1
 55 LET D=INT (RND*2)+1
 56 IF D=, THEN LET D=-1
 60 IF D=1 THEN LET E=0
 65 IF D=1 THEN LET D$="(isP+1)
+isP)"
 70 IF D=-1 THEN LET E=31
 75 IF D=-1 THEN LET D$="(isP+1
<+isP)"
 80 RETURN
 100 IF E=31 OR E=0 OR SHOT=1 TH
EN GOSUB 50
 105 LET SHOT=0
 110 LET E=E+D
 120 PRINT AT C,E;D$
 130 RETURN
 200 PRINT AT 20,0;"(32*1/)"
 220 IF INKEY$="8" THEN LET B=B+1
 230 IF INKEY$="5" THEN LET B=B-
1
 235 PRINT AT A,B;"(1/+11+1/)"
 250 IF INKEY$<>"0" THEN GOTO 34
0
 260 LET FIRE=1
 300 FOR N=19 TO C STEP -1
 310 PRINT AT N,B+1;"(1.)"
 320 PRINT AT N,B+1;"(isP)"
 324 REM ***CHECK FOR KILL***
 325 IF N=C AND B=E THEN LET SHO
T=1
 326 IF N=C AND B=E THEN GOTO 20
00
 330 NEXT N
 340 RETURN
1000 PRINT AT 0,0;"YOU HAVE USED
 YOUR LAST BULLET"
1010 PAUSE 100
1012 CLS
1015 PRINT AT 0,0;"DUCKS SHOT=";
SCORE
1020 PRINT AT 5,0;"ANOTHER PRESS
 N/L"
1030 IF INKEY$="" THEN GOTO 1030
1040 GOTO 1
2000 PRINT AT C,E;"(i*)"
2010 PRINT AT C,E;"(isP)"
2020 FOR N=C TO 20
2030 LET E=E+1
2035 IF E=29 THEN LET E=E-1
2040 PRINT AT N,E;"(i<+i)"
2045 PRINT AT N,E;"(2*isP)"
2047 PRINT AT 20,0;"(32*1/)"
2050 NEXT N
2060 RETURN
3000 PRINT AT 5,10;"DUCK SHOOT"
3010 PRINT AT 7,2;"IN THIS GAME
YOU HAVE TO SHOOT AS MANY DUCKS
AS POSSIBLE"
3020 PRINT AT 10,2;"YOUR CONTROL
S ARE THE CURSORS,";AT 11,2;"AND
 0 TO FIRE THE GUN"
3030 PRINT AT 12,5;"PRESS N/L TO
 START GAME"
3040 IF INKEY$="" THEN GOTO 3040
3050 CLS
3060 PRINT AT 10,10;"GOOD LUCK"
3070 RETURN
```

CRAZY BALLOON

MANOEUVRE your balloon through the minefield, using keys 5 to 8. Avoid the deadly mines. If you make contact with a mine you will lose one of your three lives but if you reach level 10 you will be awarded an extra life. If you rescue injured people you will be awarded extra points.

Crazy Balloon was written for the 16K ZX-81 by Glyn Emmett of Glamorgan.

```
   2 LET Z$="********************"
   3 GOSUB 9000
   5 LET J$="ZX81"
  10 LET H=1000
  20 LET LI=3
  30 LET L=1
  40 LET B$=" "
  60 LET S=0
  61 LET BONUS=1000
  70 LET X=20
  80 LET Y=29
  81 LET J=15
  90 PRINT AT 0,0;"(32*9h)";AT 2
1,0;"(32*9h)"
 100 FOR F=1 TO 20
 110 PRINT AT F,0;"(9h)";AT F,31
;"(9h)"
 120 NEXT F
 130 PRINT AT 1,1;"(isP)BONUS.(i
sP)";AT 2,1;"(9e:isP)9oal(isP:9r
)"
 131 LET AB=2
 140 PRINT AT 1,23;Z$( TO 8);AT
2,24;Z$( TO 7);AT 3,25;Z$( TO 6)
;AT 4,26;Z$( TO 5);AT 5,27;Z$( T
O 4);AT 6,28;Z$( TO 3);AT 7,29;Z
$( TO 2);AT 8,30;Z$( TO 1)
 150 PRINT AT 20,1;Z$( TO 18)
 160 PRINT AT 18,10;Z$( TO 14)
 170 PRINT AT 17,21;Z$( TO 10)
 180 PRINT AT 19,1;Z$( TO 4);AT
18,1;Z$( TO 3);AT 17,1;Z$( TO 2)
 190 PRINT AT 16,26;Z$( TO 5);AT
 15,27;Z$( TO 4);AT 14,28;Z$( TO
 3);AT 13,29;Z$( TO 2);AT 12,30;
Z$( TO 1)
 200 PRINT AT 16,4;Z$( TO 14)
 210 PRINT AT 15,1;Z$( TO 2)
 220 FOR F=8 TO 16
 230 PRINT AT F,18;Z$( TO 1)
 240 NEXT F
 250 FOR F=18 TO 24
 260 PRINT AT 14,F;Z$( TO 1)
 270 NEXT F
 271 PRINT AT 12,12;"i"
 272 PRINT AT 11,16;"i"
 273 PRINT AT 9,19;"i"
 280 FOR F=1 TO 6
 290 PRINT AT F,18;Z$( TO 1)
 300 NEXT F
 310 FOR F=1 TO 17
 320 PRINT AT 10,F;Z$( TO 1)
 330 NEXT F
 340 PRINT AT 11,17;Z$( TO 1);AT
 12,16;Z$( TO 2);AT 13,15;Z$( TO
 3);AT 14,14;Z$( TO 4);AT 15,13;
Z$( TO 5)
 350 PRINT AT 3,1;Z$( TO 1);AT 3
,8;Z$( TO 1)
 360 FOR F=4 TO 8
 370 PRINT AT F,10;Z$( TO 1)
 380 NEXT F
 381 LET LL=1
 391 LET X=20
 392 LET Y=29
 393 LET J=15
 400 PRINT AT X,Y;"b"
 401 PRINT AT X,Y;" "
 405 LET LL=INT (RND*2)+1
 406 IF LL=2 THEN PRINT AT 10,5;
"*"
 407 IF LL=1 THEN PRINT AT 10,5;
B$
 410 IF INKEY$="7" THEN LET J=1
 420 IF INKEY$="6" THEN LET J=3
 430 IF INKEY$="5" THEN LET J=4
 440 IF INKEY$="8" THEN LET J=2
 450 IF J=1 THEN LET X=X-1
 460 IF J=2 THEN LET Y=Y+1
 470 IF J=3 THEN LET X=X+1
 480 IF J=4 THEN LET Y=Y-1
 490 PRINT AT X,Y;
 500 LET Z=PEEK (PEEK 16398+256*
PEEK 16399)
 510 IF Z=174 THEN LET S=S+50
 511 IF Z=23 OR Z=136 THEN GOTO
700
 520 LET BONUS=BONUS-1
 521 PRINT AT 10,5;"*"
 530 IF X=4 THEN IF Y>1 AND Y<8
THEN GOTO 550
 540 GOTO 400
 550 LET S=S+BONUS
 560 CLS
 561 LET L=L+1
 562 IF L=10 THEN LET LI=LI+1
```




```
 570 PRINT AT 10,10;"LEVEL=";L;A
T 12,10;"LIVES=";LI;AT 14,8;"LET
S ATTACK"
 571 PRINT AT 16,10;"SCORE=";S
 580 PAUSE 100
 581 CLS
 590 GOTO 61
 700 LET LI=LI-1
 710 IF LI<=0 THEN GOTO 900
 720 PAUSE 50
 730 GOTO 391
 900 CLS
 910 PRINT AT 10,10;"game over";
AT 12,12;"SCORE=";S
 920 IF H>S THEN GOTO 950
 930 PRINT AT 20,0;"PLEASE ENTER
 NAME"
 940 INPUT J$
 941 IF S>H THEN LET H=S
 950 PRINT AT 14,2;"HIGH SCORE="
;H
 960 PRINT AT 16,4;"BY ";J$
 970 PAUSE 500
 980 CLS
 990 PRINT "AGAIN (Y/N)?"
 991 INPUT A$
 992 IF A$="Y" THEN GOTO 20
 993 IF A$="" THEN GOTO 20
1000 STOP
9000 CLS
9001 PRINT TAB 8;"CRAZY BALLOON"
9010 PRINT ,,"MANOUVERE YOUR BAL
LOON THROUGH    THE MINE-FIELD.A
VOIDING THE"
9020 PRINT "ALWAYS PRESENT deadl
y MINES.IF  YOU MAKE CONTACT WIT
H ONE YOU   WILL LOSE ONE OF YOU
R 3 LIVES   BUT IF YOU GET TO LE
VEL 10 YOU  WILL BE AWARDED AN E
XTRA LIFE."
9030 PRINT
9040 PRINT "USE KEYS:"
9050 PRINT TAB 10;"5=LEFT";TAB 1
0;"8=RIGHT"
9060 PRINT TAB 10;"6=DOWN";TAB 1
0;"7=UP"
9070 PRINT ,,"BEWARE OF THE ELEC
TRIC FENCE    WHICH SURROUNDS TH
E MINE-FIELD. IF YOU RESCUE THE
INJURED PEOPLE""i""YOU WILL GAIN
 EXTRA POINTS."
9090 PRINT AT 13,22;"HIT ""S"""
9100 PRINT AT 14,22;"TO START"
9110 PRINT AT 13,22;"        ";AT
 14,22;"          "
9120 IF INKEY$<>"S" THEN GOTO 90
90
9130 CLS
9140 RETURN
9990 SAVE "CRAZY BALLOOn"
9999 RUN
```

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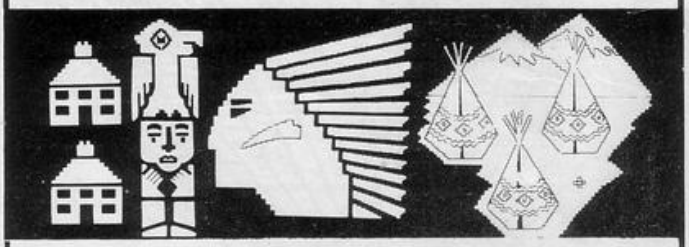

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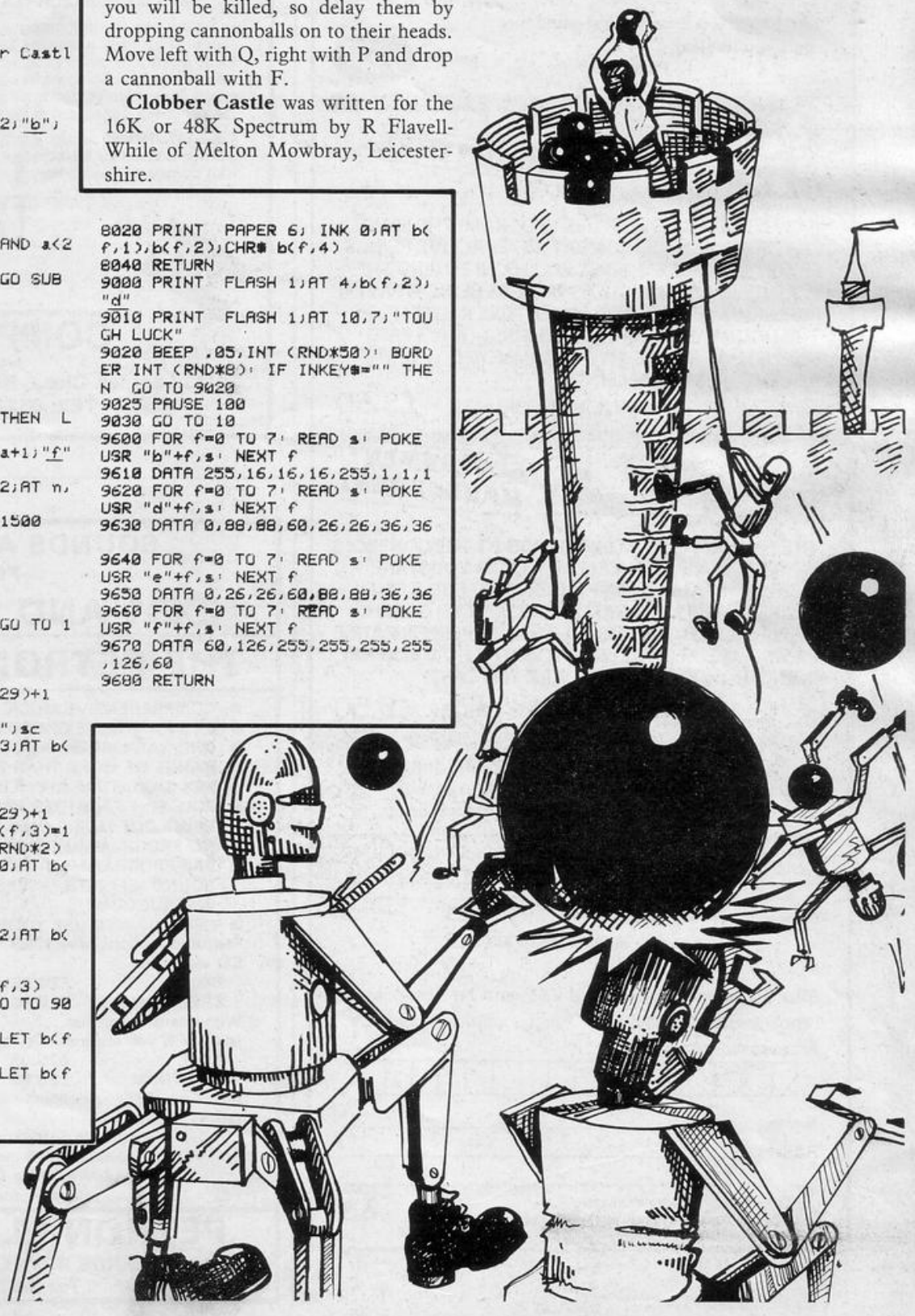
CLOBBER CASTLE

YOU STAND on the battlements of your castle, which is being assailed by commando-style robots. If a robot reaches the battlement you will be killed, so delay them by dropping cannonballs on to their heads. Move left with Q, right with P and drop a cannonball with F.

Clobber Castle was written for the 16K or 48K Spectrum by R Flavell-While of Melton Mowbray, Leicestershire.

```
  5 GO SUB 9600
 10 BORDER 5: BRIGHT 1: PAPER 5
 CLS
 20 DIM b(10,4)
 30 LET a=5: LET sc=0
 90 PRINT AT 1,9;"Clobber Castl
e"
100 PRINT AT 4,31;""
110 FOR f=1 TO 17*32
120 PRINT  PAPER 6; INK 2;"b";
130 NEXT f
140 GO SUB 7000
200 FOR f=1 TO 10
210 GO SUB 8000
215 FOR h=1 TO 5
220 PRINT AT 4,a;" f "
230 LET a=a+(INKEY$="p" AND a<2
9)-(INKEY$="q" AND a>0)
240 IF INKEY$="f" THEN  GO SUB
1000
490 NEXT h
500 NEXT f
550 GO TO 200
1000 PRINT AT 4,a+1;" "
1005 LET bh=0
1010 FOR n=5 TO 20
1020 IF ATTR (n,a+1)=112 THEN  L
ET bh=1
1025 PRINT  PAPER 6;AT n,a+1;"f"
1026 BEEP .025,0-n
1027 PRINT  PAPER 6; INK 2;AT n,
a+1;"b"
1030 IF bh=1 THEN  GO TO 1500
1050 NEXT n
1060
1070 RETURN
1500 LET sc=sc+10
1560 FOR j=1 TO 10
1570 IF b(j,2)=a+1 THEN  GO TO 1
590
1580 NEXT j
1590 LET b(j,1)=18
1595 LET b(j,2)=INT (RND*29)+1
1600 LET b(j,3)=b(j,3)+1
1610 PRINT AT 0,0;"Score=";sc
1620 PRINT  PAPER 6; INK 3;AT b(
j,1),b(j,2);CHR$ b(j,4)
1630 RETURN
7000 FOR f=1 TO 10
7010 LET b(f,2)=INT (RND*29)+1
7020 LET b(f,1)=18: LET b(f,3)=1
7021 LET b(f,4)=147+INT (RND*2)
7025 PRINT  PAPER 6; INK 0;AT b(
f,1),b(f,2);CHR$ b(f,4)
7030 NEXT f
7040 RETURN
8000 PRINT  PAPER 6; INK 2;AT b(
f,1),b(f,2);"b"
8005 BEEP .025,-30
8010 LET b(f,1)=b(f,1)-b(f,3)
8015 IF b(f,1)<=4 THEN  GO TO 90
00
8016 IF b(f,4)=147 THEN  LET b(f
,4)=148: GO TO 8020
8017 IF b(f,4)=148 THEN  LET b(f
,4)=147
8020 PRINT  PAPER 6; INK 0;AT b(
f,1),b(f,2);CHR$ b(f,4)
8040 RETURN
9000 PRINT  FLASH 1;AT 4,b(f,2);
"d"
9010 PRINT  FLASH 1;AT 10,7;"TOU
GH LUCK"
9020 BEEP .05,INT (RND*50): BORD
ER INT (RND*8): IF INKEY$="" THE
N  GO TO 9020
9025 PAUSE 100
9030 GO TO 10
9600 FOR f=0 TO 7: READ s: POKE
USR "b"+f,s: NEXT f
9610 DATA 255,16,16,16,255,1,1,1
9620 FOR f=0 TO 7: READ s: POKE
USR "d"+f,s: NEXT f
9630 DATA 0,88,88,60,26,26,36,36

9640 FOR f=0 TO 7: READ s: POKE
USR "e"+f,s: NEXT f
9650 DATA 0,26,26,60,88,88,36,36
9660 FOR f=0 TO 7: READ s: POKE
USR "f"+f,s: NEXT f
9670 DATA 60,126,255,255,255,255
,126,60
9680 RETURN
```



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WEBBED WONDER

IN THIS GAME for the 16K Spectrum you have to move your spider round the screen to collect money. The keys to do it are Q, W, E, A, D, Z, X and C in the direction relative to the S key. If you land on your own web trail you will die.

Initially the bank manager will accept £10, then £20, then £40. When you have £70 it will be transferred to a Swiss bank account.

Webbed Wonder was sent by Tim Pilling of Aston-under-Lyne, Lancashire.

```
  10 FOR a=1 TO 7
  20 READ b
  30 POKE USR "c"+a,b
  40 NEXT a
  50 DATA 60,126,219,219,255,189
,165,165
  60 LET s=0: LET h=0: LET p=0: 
LET sw=0: LET 9=2
 100 LET lo=INT (RND*19)+1: LET 
co=INT (RND*29)+1: LET ln=lo: LE
T cn=co
 110 LET lp=INT (RND*19)+1: LET 
cP=INT (RND*29)+1
 120 IF lp=lo AND cP=co THEN  GO
 TO 100
 200 PLOT 248,168: DRAW -241,0: 
DRAW 0,-161: DRAW 241,0: DRAW 0,
160
 210 PRINT AT 0,0;s
 220 PRINT AT 0,5;"MONEY IN THE
 BANK £";h
 290 PRINT AT 21,4;"MONEY IN SWI
SS BANK £";sw
 250 PRINT AT lo,co;"c"
 260 PRINT AT lp,cP;"£"
 300 LET a$=""
 301 LET a$=INKEY$
 310 IF a$="q" THEN  LET ln=lo-1
  LET cn=co-1
 320 IF a$="w" THEN  LET ln=lo-1
 330 IF a$="e" THEN  LET ln=lo-1
  LET cn=co+1
 340 IF a$="d" THEN  LET cn=co+1
 350 IF a$="c" THEN  LET ln=lo+1
: LET cn=co+1
 360 IF a$="x" THEN  LET ln=lo+1
 370 IF a$="z" THEN  LET ln=lo+1
: LET cn=co-1
 380 IF a$="a" THEN  LET cn=co-1
 385 IF LEN a$=0 THEN  GO TO 301
 390 IF ln=21 OR ln=0 THEN  LET
 ln=ABS (ln-20)
 395 IF cn=31 OR cn=0 THEN  LET
 cn=ABS (cn-30)
 400 IF SCREEN$ (ln,cn)="#" THEN
  LET s=s-9: BEEP .2,2: GO SUB 1
000
 410 IF SCREEN$ (ln,cn)="£" THEN
  LET s=s+1: IF s>39 THEN  GO SU
B 5000
 411 IF SCREEN$ (ln,cn)="£" THEN
  BEEP .1,-50+s*2.4: GO SUB 2000
: GO SUB 1000
 415 PRINT AT 0,0;s: IF s<10 THE
N  PRINT AT 0,1;"_"
 420 PRINT AT lo,co;"£": PRINT A
T ln,cn;"c"
 425 LET lo=ln: LET co=cn
 430 GO TO 301
1000 LET lp=INT (RND*19)+1
1010 LET cP=INT (RND*29)+1
1020 IF lp=ln AND cP=cn OR lp=lo
 AND cP=co THEN  GO TO 1000
1030 PRINT AT lp,cP;"£"
1040 IF s<0 THEN  GO TO 3000
1050 IF s=10+h THEN  CLS : LET h
=h+s: LET s=0: GO TO 100
1060 RETURN
2000 IF h+s+sw>p THEN  LET p=h+s
+sw
2010 LET bl=INT (RND*19)+1: LET
 bc=INT (RND*29)+1
2020 IF SCREEN$ (bl,bc)="£" THEN
  PRINT AT bl,bc;" ": BEEP .1,s*
.5: RETURN
2030 GO TO 2010
3000 LET z=69
3001 BEEP .1,z
3002 IF z>-59 THEN  LET z=z-1: G
O TO 3001
3003 CLS : PRINT AT 10,8;"PEAK S
CORE = ";p: PAUSE 0: CLS : LET p
=0: GO TO 60
5000 PRINT AT 0,0;s: IF h+s+sw>p


 THEN  LET p=h+s+sw: LET sw=sw+7
0: LET 9=9+1
5001 LET z=-60
5002 BEEP .1,z
5003 IF z>68 THEN  GO TO 5005
5004 LET z=z+1: GO TO 5002
5005 PRINT AT 0,0;" ------------
--------------------": FLASH 1: PR
INT AT 21,4;"MONEY IN SWISS BANK
 >";sw: PAUSE 0: FLASH 0
5006 INK 7: PAPER 0: PRINT AT 10
,3;">PRESS ANY KEY TO CONTINUE":
 INK 0: PAPER 7: PAUSE 0: PAUSE
0
5007 CLS : LET s=0: LET h=0
5008 GO TO 100
```

INCA GOLD

```
   1 GOTO 9200
  10 LET R=INT (RND*5)+1
  20 DIM N(5)
  40 LET F=INT (RND*5)+1
  50 FOR L=1 TO 5
  60 LET N(L)=F
  70 NEXT L
  80 FOR L=1 TO 5
  90 LET N(L)=N(L)+R
  92 LET R=R+R
  94 NEXT L
  95 PRINT AT 0,0;
 100 FOR L=1 TO 4
 110 PRINT N(L);" ";
 120 NEXT L
 130 PRINT "?"
 140 PRINT
 150 PRINT "WHAT IS THE NEXT NUM
BER?        PRESS ANY KEY WHEN Y
OU KNOW"
 165 IF INKEY$<>"" THEN GOTO 170
 166 LET TM=TM-1
 167 IF TM<=0 THEN GOTO 8000
 168 PRINT AT 0,20;"TIME:";TM;"
"
 169 GOTO 165
 170 INPUT I
 172 LET TMS=TMS+TM
 174 LET S$="
           "
 175 PRINT AT 0,0;S$;AT 2,0;S$;A
T 3,0;S$
 180 IF I=N(5) THEN GOTO 9000
 190 GOTO 8000
1000 FAST
1005 LET A=0
1010 LET B=31
1020 LET C=21
1030 FOR L=1 TO 14
1040 FOR F=A TO B
1050 PRINT AT C,F;"(1sP)"
1060 NEXT F
1070 LET A=A+1
1080 LET B=B-1
1090 LET C=C-1
2000 NEXT L
2040 LET TM=TI
2050 LET TMS=0
2055 SLOW
2060 PRINT AT 20,0;"
        "
2070 PRINT AT 18,16;"    ";AT 19
,16;"    ";AT 20,16;"    "
2080 PRINT AT 15,12;"    ";AT 16
,14;"  (9h) ";AT 18,10;"       "
2090 PRINT AT 15,10;" ";AT 16,10
;" ";AT 17,10;" "
3000 PRINT AT 14,18;" ";AT 15,18
;" ";AT 16,18;" ";AT 13,15;"
";AT 9,15;" "
3010 LET H$="(9h)"
3020 PRINT AT 10,14;"(5*9h)";AT
11,14;"(5*9h)"
3030 PRINT AT 20,15;H$;AT 18,15;
H$;AT 15,11;H$;AT 18,12;H$;H$;AT
 14,18;H$;AT 12,15;H$;AT 8,15;H$
3040 PRINT AT 4,15;"(9q 9w)";AT
5,14;"(9t 2*97 9y)";AT 6,14;"(95
) *(98)";AT 7,14;"(95) (2*1sP)"
3050 PRINT AT 20,3;"(9h)   (9h)
(9h)"
3060 LET X=19
3070 LET Y=0
3080 PRINT AT X+1,Y;
3090 LET P=PEEK (PEEK 16398+256*
PEEK 16399)
4000 PRINT AT X,Y+1;
4010 LET Q=PEEK (PEEK 16398+256*
PEEK 16399)
4020 PRINT AT X-1,Y;
4030 LET W=PEEK (PEEK 16398+256*
PEEK 16399)
4040 PRINT AT X,Y-1;
4050 LET E=PEEK (PEEK 16398+256*
PEEK 16399)
6010 IF P=136 OR W=136 OR E=136
OR Q=136 THEN GOTO 8
6012 IF Q=23 THEN GOTO 9100
6015 PRINT AT X,Y;"(1*)"
6016 PRINT AT X,Y;" "
6020 LET X=X+(INKEY$="6" AND P=0
)-(INKEY$="7" AND W=0)
6030 LET Y=Y+(INKEY$="8" AND Q=0
)-(INKEY$="5" AND E=0)
6040 GOTO 3080
8000 FOR L=1 TO 19
8010 PRINT AT 20,L;"(99)"
8015 NEXT L
8018 PRINT AT X,Y;"(1*)"
8020 PRINT AT 1,0;"SORRY BUT YOU
 ARE TRAPPED"
8030 PRINT "THERE IS NO ESCAPE .
.......";
8040 PRINT AT 0,0;"LAST NO.=";N(
5);" NOT ";I
8050 GOTO 9112
9000 PRINT AT X+1,Y;" " AND P=13
6;AT X,Y+1;" " AND Q=136;AT X-1,
Y;" " AND W=136;AT X,Y-1;" " AND
 E=136
9010 GOTO 3080
9110 PRINT AT 0,10;"**WELL DONE*
*";AT 2,0;"YOUR SCORE WAS:";TMS
9120 PRINT AT 3,0;"PRESS ANY KEY
 TO TRY AGAIN "
9130 IF INKEY$="" THEN GOTO 9130
9140 CLS
9160 GOTO 9500
9240 PRINT AT 0,1;"    ***** INC
A GOLD*****"
9250 PRINT TAB 5;"TO GET THE INC
A GOLD";TAB 5;"YOU MUST REACH TH
E";TAB 5;"TOP OF THE INCA TEMPLE
,"

9300 PRINT TAB 5;"THE DOORS(9h)
) HAVE LOCKS.";TAB 5;"THEY WILL
ONLY OPEN IF";TAB 5;"YOU GIVE TH
E CORRECT";TAB 5;"COMBINATION WH
EN ASKED,"
9380 PRINT TAB 5;"THE WRONG ONE
AND YOU";TAB 5;"ARE TRAPPED FORE
VER."

9390 PRINT TAB 5;"USE KEYS CURSO
R";TAB 5;"KEYS TO MOVE"
9420 PRINT "*****PRESS ANY KEY T
O START*****"
9430 IF INKEY$="" THEN GOTO 9430
9500 CLS
9520 PRINT "PLEASE ENTER LEVEL O
F DIFFICULTY****50 TO 1000****"

9522 PRINT
9523 PRINT "(THE LOWER THE HARDE
R THE GAME)"
9524 INPUT TI
9526 IF TI>1000 OR TI<50 THEN GO
TO 9524
9528 CLS
9610 GOTO 1000
9620 SAVE "INC£"
9630 RUN
```

YOUR AIM is to reach the gold at the top of the Inca Temple. Move with cursor keys 5 to 8 until you reach a door. Each door must be opened by the correct combination and any error means that you will be trapped there for ever.

Inca Gold was written for the 16K ZX-81 by K Royles of Rhyl, Clwyd.

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ONE TO EIGHT PLAYERS: Innovative design also enables you to put up to eight Tricksticks on a single Spectrum. Each Trickstick comes with its own interface and the interfaces simply plug into each other. So games playing need no longer be a solitary occupation, and the kids won't have to fight for their turn any more.

SOFTWARE COMPATIBLE: Trickstick is compatible with any software which will work with the old-fashioned Kempston joystick.

PROGRAMMABLE: A low cost adaptor performs the technically simple job of making the Trickstick programmable, and compatible with ANY software.

NO MOVING PARTS: Small plastic-coated metal pads on the Trickstick detect how hard you are pressing by picking up electrical radiation from your fingers. This is then amplified and fed into the interface. So there are no moving parts at all;—not even the fire buttons. This arrangement was proved in competitive trials to give the greatest control and potential for spectacular skill.

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USE THE COUPON OR THE PHONE: Trickstick and Attaktics are in stock and available now. Trickstick including interface is £28. Attaktics is £7.50 if ordered with a Trickstick and £10 on its own. The Programmable Adaptor is £10 for Trickstick owners and £15 for others. The Training Tape is Free with each Trickstick. Or call us for the name of your local stockist.

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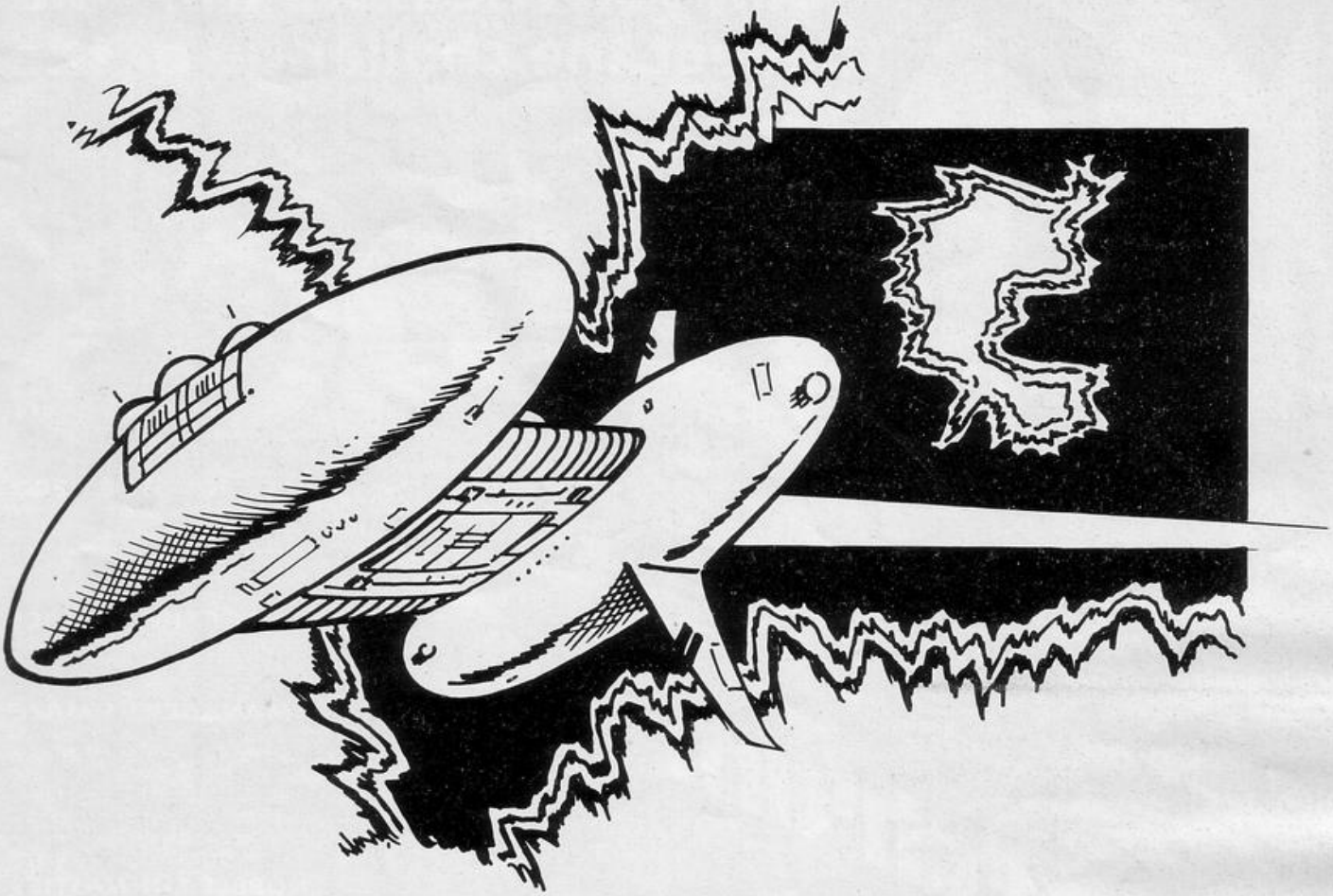

FORCEFIELD

YOUR CRAFT appears on the left-hand side of the screen and must travel through the gaps in the forcefield to reach the right-hand side. Skilful flying on your first flights may succeed in destroying the edges of the forcefields nearest to the gaps and thus make subsequent flights easier. Move down with A and up with L.

Forcefield was written for the 16K or 48K Spectrum by G Woolnough of Coventry, West Midlands.

```
 100 GO SUB 9000
 150 PAPER 0: BORDER 0: CLS
 175 LET b=0
 200 INK 7: PRINT AT 0,0;"Flight
:  Score:      Best:"
 205 PRINT AT 1,0; INK 6;"■"; IN
K 5;"aaaaaaaaaaaaaaaaaaaaaaaaaa
aaa"; INK 6;"■"
 210 FOR n=2 TO 20 STEP 2
 220 PRINT AT n,0;"■";AT n+1,0;"
b"
 230 PRINT AT 21,0; INK 6;"■"; I
NK 5;"aaaaaaaaaaaaaaaaaaaaaaaaa
aaaa"; INK 6;"■"
 240 NEXT n
 255 INK 2: FOR n=2 TO 20: PRINT
 AT n,31;"e": NEXT n
 260 INK 7: FOR j=7 TO 27 STEP 5
: FOR n=2 TO 20: PRINT AT n,j;"d
": NEXT n
 270 FOR m=1 TO 3: LET k=INT (RN
D*18)+2: PRINT AT k,j; INK 0;"■"
: NEXT m: NEXT j
 275 LET sc=1000: LET fl=0
 280 REM SHIP
 285 LET q=INT (RND*9)+1
 290 LET q=q*2: LET q=q+1
 310 LET w=1
 311 PRINT AT 0,7;fl: PRINT AT 0
,16;sc;"  "
 312 IF fl=10 THEN  GO TO 420
 315 LET fl=fl+1: PRINT AT 0,7;f
l
 319 PAUSE 25
 320 INK 6: PRINT AT q,w;"c"
 325 FOR k=1 TO 8: NEXT k: BEEP
.01,20
 330 PRINT AT q,w;" "
 350 IF ATTR (q,w+1)=2 THEN  GO
TO 1000
 360 IF ATTR (q,w+1)=5 THEN  GO
TO 2000
 370 IF ATTR (q,w+1)=7 THEN  GO
TO 3000
 375 LET q=q+(INKEY$="a")-(INKEY
$="l")
 395 LET w=w+1
 400 GO TO 320
 420 FOR N=2 TO 20: PRINT AT N,4
;"                              ": PA
USE 7: NEXT N
 421 IF sc>b THEN  LET b=sc
 422 PRINT AT 0,28;b
 425 PRINT AT 5,3;"WOULD YOU LIK
E ANOTHER GO?": BEEP .01,4: BEEP
 .02,5: PRINT AT 7,15;"(Y/N)": F
OR N=0 TO 4: BEEP .01,N: NEXT N
 430 IF INKEY$="" THEN  GO TO 43
0
 440 IF INKEY$="y" THEN  PRINT A
T 5,3;"
    ";AT 7,15;"      ";AT 0,7;"
": GO TO 260
 450 IF INKEY$<>"y" THEN  PRINT
AT 10,10;"SO BE IT.FAREWELL.": S
TOP
1010 FOR n=1 TO 10
1020 BEEP .01,INT (RND*30)
1030 NEXT n
1040 LET sc=sc+200
1999 GO TO 280
2000 PRINT AT q,w;" "
2010 FOR n=16 TO 8 STEP -1
2020 BEEP .01,n
2040 LET sc=sc-100
2050 PRINT AT q,w; INK 5;"a"
2999 GO TO 280
3010 FOR n=15 TO 10 STEP -1
3020 BEEP .01,n: BEEP .01,n-3
3030 NEXT n
3040 LET sc=sc-100
3999 GO TO 280
8999 STOP
9000 FOR k=1 TO 5: FOR n=0 TO 7:
 READ a: POKE USR (CHR$ (143+k))
+n,a: NEXT n: NEXT k
9010 DATA BIN 11111111,BIN 00000
000,BIN 11111111,BIN 10101010,BI
N 01010101,BIN 11111111,BIN 0000
0000,BIN 11111111
9020 DATA BIN 10100000,BIN 10101
000,BIN 10100100,BIN 10100010,BI
N 10100001,BIN 10100010,BIN 1010
0100,BIN 10101000
9030 DATA BIN 11111100,BIN 00111
000,BIN 00111100,BIN 11111111,BI
N 00111100,BIN 00111000,BIN 1111
1100,BIN 00000000
9040 DATA BIN 11100001,BIN 11010
001,BIN 11001001,BIN 11000111,BI
N 11000111,BIN 11001001,BIN 1101
0001,BIN 11100001
9050 DATA BIN 00000001,BIN 00100
110,BIN 10111100,BIN 01011100,BI
N 01011100,BIN 10111100,BIN 0010
0010,BIN 00000001
9300 RETURN
9999 SAVE "FORCE" LINE 1
```

Can you rise from the void to meet the challenge of the

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dk'tronics

MOSCOW RAID

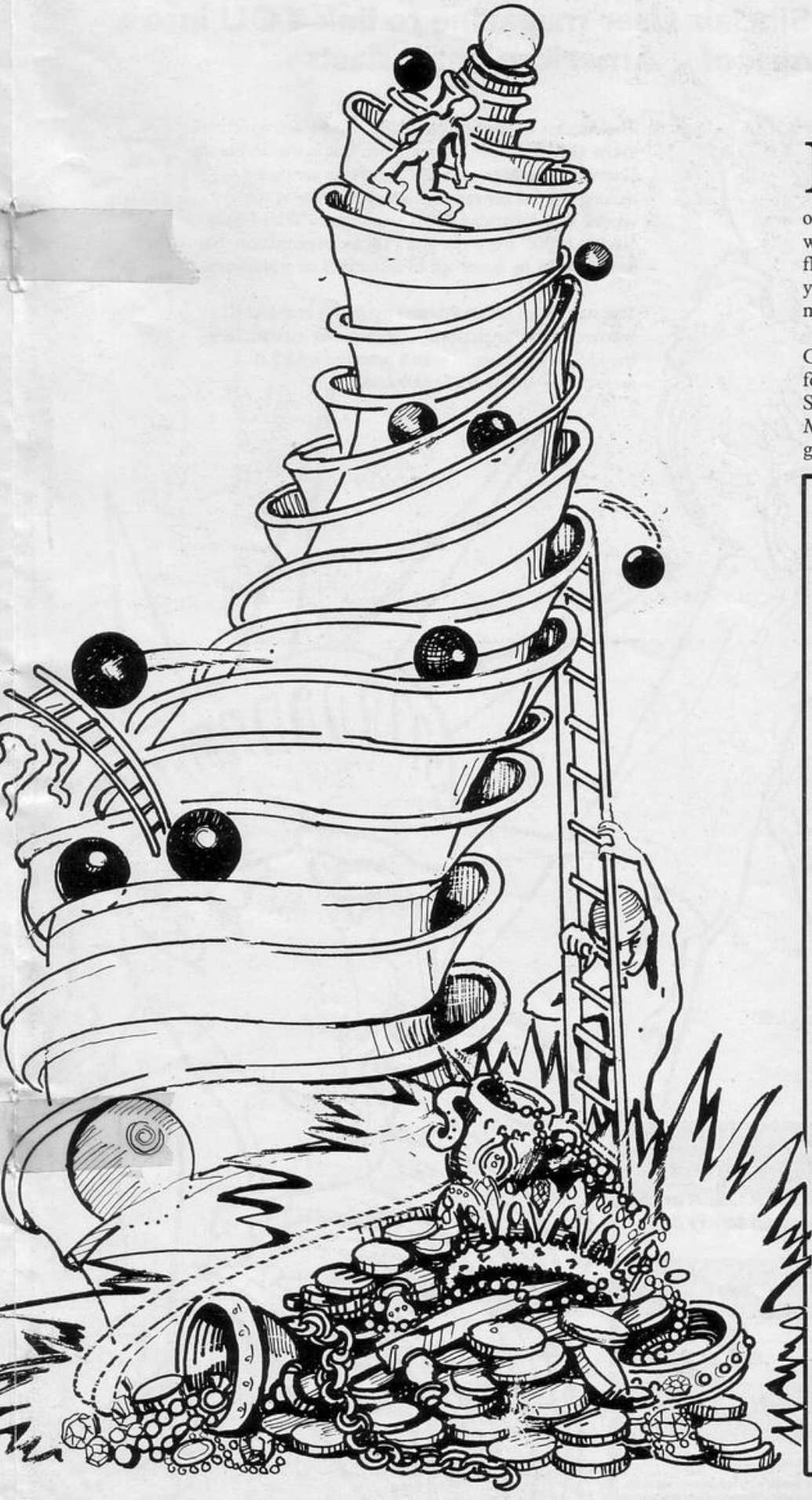
MOSCOW RAID for the 16K Spectrum is a sophisticated version of City Bomber. Your aircraft is running out of fuel and you must make your final effort to land. You have no control over the aircraft but you can still open the bomb doors using the 'b' key. Level the buildings—and land safely.

Moscow Raid was sent by Guy Bates of Nottingham.

```
  1 POKE 23658,0: BORDER 0: PAP
ER 1: INK 7: PRINT AT 8,13;"MOSC
OW";AT 13,13;"MOSCOW": FOR i=2 T
O 7: PRINT AT i,14; INK i;"RAID"
: BEEP .01,i: PRINT AT 21-i,14;
INK i;"RAID": PAUSE 10: NEXT i:
PAUSE 100
  2 INPUT "WHAT LEVEL (1 TO 8)"
;L$: LET sc=0
  3 IF CODE L$>57 OR CODE L$<48
 OR LEN L$<>1 THEN  GO TO 2
  4 FOR i=0 TO 7: READ a: POKE
USR "p"+i,a: NEXT i
  5 FOR i=0 TO 7: READ a: POKE
USR "i"+i,a: NEXT i
  6 FOR i=0 TO 7: READ a: POKE
USR "d"+i,a: NEXT i
  9 LET bomb=0: LET b=0: LET c=
0: LET bl=0: LET bc=0
 10 DIM a(32)
 12 CLS
 14 FOR i=1 TO 90: PLOT INT (RN
D*244)+2,INT (RND*164)+2: NEXT i
 15 PRINT AT 21,0; INK 4;"(29*i
sP)"
 20 FOR i=3 TO 27 STEP 2: LET a
(i)=INT (RND*12)+VAL L$: NEXT i
 30 FOR i=3 TO 27 STEP 2
 40 FOR q=2 TO a(i): PRINT AT 2
0,i; INK 5; PAPER 1;"(qd)": PRIN
T AT 21-q,i; INK 5; PAPER 3;"(qi
)": NEXT q
 50 NEXT i
 60
 70 FOR b=0 TO 20
 80 FOR c=0 TO 31
 90 PRINT AT b,c;"p": IF bomb=0
 THEN  BEEP 0.005,-15
 91 IF c<>0 THEN  IF 21-a(c+1)=
b THEN  BEEP 0.08,0: PRINT  FLAS
H 1;AT 1,12;" THE END ": PRINT A
T 3,8;"YOUR SCORE IS ";sc: FOR r
=1 TO 500: NEXT r: GO TO 2000
 92 IF bomb=1 AND bl=20 THEN  P
RINT AT bl,bc;" ": LET bomb=0
 93 IF bomb=1 THEN  PRINT AT bl
,bc;" ": BEEP 0.005,27-(bl*2): L
ET bl=bl+1: PRINT AT bl,bc;"*":
GO TO 290
 100 IF INKEY$="b" AND c>0 AND b
<21 THEN  LET bomb=1: BEEP .02,0
: LET bl=b: LET bc=c: PRINT AT b
l,bc;"*": LET sc=sc+a(c): LET a(
c)=0
 290 PRINT AT b,c;" "
 300 NEXT c
 309 IF b=0 THEN  GO TO 320
 310 FOR h=1 TO 2: PLOT INT (RND
*244)+2,INT (RND*8)+(168-(b*8)):
 NEXT h
 320 NEXT b
 999 LET sc=sc+30: PRINT AT 11,1
0;"GOOD LANDING!": FOR v=1 TO 50
0: NEXT v: GO TO 10
2000 CLS : PRINT AT 11,3;"DO YOU
 WANT ANOTHER GAME??": PRINT AT
14,13;"Y or N"
2010 IF INKEY$="y" THEN  CLEAR :
 RESTORE : GO TO 2
2020 IF INKEY$="n" THEN  STOP
2030 GO TO 2010
5000 DATA 0,0,16,8,4,254,8,16
6000 DATA 255,255,255,195,195,19
5,255,255
7000 DATA 255,255,255,195,203,20
3,195,195
```

THE SPIRAL TOWER

```
  2 GO SUB 8000
 10 BORDER 0: PAPER 0: INK 6: C
LS
 20 LET sc=0
 25 LET cuP=0: LET nd=1: LET a$
="1": LET d1=0: LET x=18: LET y=
5: LET g=4: LET d=0: LET t=0: LE
T p=0: LET n=17: LET b=7: LET b1
=13: LET b2=19
 35 LET w$="(9a)3*$P)24*9a)3*$P
)9a)"
 36 LET x$="(32*9a)"
 40 FOR f=0 TO 21: PRINT "(9a)"
;TAB 31;"(9a)": NEXT f
 41 PRINT AT 0,0;x$
 42 FOR f=4 TO 19 STEP 5: PRINT
 AT f,0;w$: NEXT f
 43 PRINT AT 20,0;"(9a)3*9e)25*
9a)3*9e)9a)";AT 21,0;x$
 44 PRINT AT 3,27; INK 4;"(9c)"
 45 FOR f=14 TO 18: PRINT AT f,
26; INK 5;"(9b)": NEXT f
 46 FOR f=4 TO 8: PRINT AT f,26
; INK 5;"(9b)": NEXT f
 47 FOR f=9 TO 13: PRINT AT f,5
; INK 5;"(9b)": NEXT f
 48 PRINT AT 18,27; INK 7;"(9d)
";AT 4,3; INK 7;"(9m)"
 50 FOR f=4 TO 18: PRINT AT f,2
; INK 5;"(9b)": NEXT f
 51 FOR f=15 TO 18: PRINT AT f,
8; INK 7;"(99)": NEXT f
 52 PRINT AT n,8; INK 7;"(9h)"
 53 PRINT AT 18,16;"(9a)"
 54 PRINT AT 8,15;"(9a)"; INK
2;"(9k)"; INK 6;" (9k)"
 55 PRINT AT 3,9; INK 3;"(9f)"
 56 PRINT AT 13,b-1; INK 4;" (9
l)";AT 13,b1-1; INK 4;" (9l)";AT
 13,b2-1; INK 4;" (9l)"
 100 PRINT AT x,y;" "
 105 IF INKEY$="8" THEN  LET d1=
1: LET a$="(9i)"
 110 IF INKEY$="5" THEN  LET d1=
-1: LET a$="(9j)"
 112 LET y=y+d1
 115 PRINT AT x,y; INK 5;a$
 117 IF x=3 AND y=4 THEN  LET y=
y-1: GO TO 5000
 120 IF y>27 OR y<4 THEN  GO TO
7000
 130 IF x=18 AND y=26 AND INKEY$
="0" THEN  GO SUB 6000
 140 IF x=8 AND y=26 AND INKEY$=
"0" THEN  GO SUB 6000
 150 IF x=13 AND y=5 AND INKEY$=
"0" THEN  GO SUB 6000
 155 IF INKEY$="0" THEN  PRINT A
T x,y;" ": LET x=x-1: LET y=y+d1
: PRINT AT x,y; INK 7;a$: BEEP .
05,10: PRINT AT x,y;" ": LET y=y
+d1: LET x=x+1
 160 LET n=n+nd: PRINT AT n,8; I
NK 7;"(9h)"
 162 BEEP .003,10
 165 IF n=15 THEN  LET nd=1
 170 IF n=18 THEN  LET nd=-1
 180 IF x=n AND y=8 THEN  GO TO
7010
 190 LET b=b+1: LET b1=b1+1: LET
 b2=b2+1
 200 PRINT AT 13,b-1; INK 4;" (9
l)";AT 13,b1-1; INK 4;" (9l)";AT
 13,b2-1; INK 4;" (9l)"
 202 IF b=24 THEN  PRINT AT 13,2
4;" ": LET b=5
 203 IF b1=24 THEN  PRINT AT 13,
24;" ": LET b1=5
 204 IF b2=24 THEN  PRINT AT 13,
24;" ": LET b2=5
 210 IF (x=13 AND y=b) OR (x=13
AND y=b1) OR (x=13 AND y=b2) THE
N  GO TO 7020
 220 IF x=18 AND y=27 AND d=0 TH
EN  LET d=1: LET sc=sc+10: BEEP
.5,10
 230 IF (x=18 AND y=16) OR (x=8
AND y=15) OR (x=8 AND y=19) THEN
  GO TO 7030
 240 IF x=8 AND y=17 AND cuP=0 T
HEN  LET sc=sc+30: LET cuP=1: BE
EP .5,10
 250 IF x=3 AND y=27 AND t=0 THE
N  LET t=1: LET sc=sc+60: BEEP .
5,10
 260 IF x=3 AND y=g+1 AND d=1 TH
EN  LET d=0: LET sc=sc+50: BEEP
.5,10: LET gy=24: PRINT AT x,y;"
 ": LET y=8
 270 IF x=3 AND y=g+1 AND d=0 TH
EN  GO TO 7040
 290 PRINT AT 3,g;" "
 300 LET g=g+(y>g)-(y<g)
 310 PRINT AT 3,g; INK 3;"(9f)"
 980 PRINT AT 0,13;sc
 990 IF nd=1 THEN  PRINT AT n,8;
 INK 7;"(99)"
 991 IF nd=-1 THEN  PRINT AT n,8
;" "
 998 BEEP .003,10
 999 GO TO 100
5000 PRINT AT x,y-2;" ": LET y=y
-1: LET x=x+1: FOR f=x TO 18: PR
INT AT f,y; INK 5;a$: BEEP .5,10
: PRINT AT f,y; INK 5;"b": NEXT
f: LET sc=sc+40
5010 CLS : GO TO 21
6000 FOR f=1 TO 5: PRINT AT x,y;
a$: BEEP .05,10: PRINT AT x,y; I
NK 5;"b": LET x=x-1: NEXT f: BEE
P .5,10: RETURN
7000 FOR f=x TO 20: PRINT AT f,y
;a$: BEEP .01,10: PRINT AT f,y;"
 ": NEXT f: BEEP .5,10: CLS : PR
INT AT 10,10; FLASH 1;"SPLAT!";A
T 21,10;"SCORE:";sc: PAUSE 0: PA
```



RACE ALONG the corridors of the ancient stronghold, dodge the cannonballs and scale the ladders on your way to the treasure trove. You will encounter new hazards on each floor of **The Spiral Tower** and only your dexterity will save you in this month's program of the month.

The Spiral Tower was written by Graeme Johnston of Ascot, Berkshire for the 16K Spectrum. He was given his Spectrum for his 12th birthday in March and this is one of the first programs he has written.

```
USE 0: RUN
7010 BEEP .5,10: CLS : PRINT AT
10,10; FLASH 1;"HUNG!";AT 21,10;
"SCORE:";sc: PAUSE 0: PAUSE 0: R
UN
7020 BEEP .5,10: CLS : PRINT AT
10,10; FLASH 1;"SQUASHED!";AT 21
,10;"SCORE:";sc: PAUSE 0: PAUSE
0: RUN
7030 BEEP .5,10: CLS : PRINT AT
10,10; FLASH 1;"RAN INTO A WALL!
";AT 21,10;"SCORE:";sc: PAUSE 0:
 PAUSE 0: RUN
7040 BEEP .5,10: CLS : PRINT AT
10,10; FLASH 1;"EATEN BY A GHOUL
!";AT 21,10;"SCORE:";sc: PAUSE 0
: PAUSE 0: RUN
8000 FOR f=USR "a" TO USR "m"+7:
 READ a: POKE f,a: NEXT f
8005 PRINT AT 0,8;;AT 2,6;;AT 5,
0;"DODGE THE NOOSE (9h) , JUMP T
HE  WALL (9a) , GRAB THE DAGGER
(9d) ,SCALE THE LADDER , DODGE T
HE    BOMBS (9l) , UP THE LADDER
 , JUMPTHE WALLS AND GRAB THE CU
P (9k) ,SCALE THE LADDER , GRAB
THE     TREASURE (9c) ,KILL THE
GHOUL (9f), AND ESCAPE DOWN THE
LADDER."'''"CONTROLS:5-LEFT,8-RI
GHT,0-JUMP"''"          PRESS ANY
 KEY"
8006 PAUSE 0
8010 RETURN
9000 DATA 255,129,129,129,129,12
9,129,255
9001 DATA 66,66,126,66,66,66,126
,66
9002 DATA 255,129,189,189,153,15
3,129,255
9003 DATA 16,16,16,16,16,124,16,
16
9004 DATA 0,0,0,0,0,85,85,255
9005 DATA 24,36,60,36,66,126,153
,129
9006 DATA 16,56,16,56,16,56,16,5
6
9007 DATA 16,56,16,56,16,40,68,5
6
9008 DATA 24,24,16,60,48,120,136
,4
9009 DATA 24,24,8,60,12,30,17,32
9010 DATA 126,126,126,126,60,24,
24,126
9011 DATA 60,126,255,255,255,255
,126,60
9012 DATA 255,0,0,0,0,0,0,0
```

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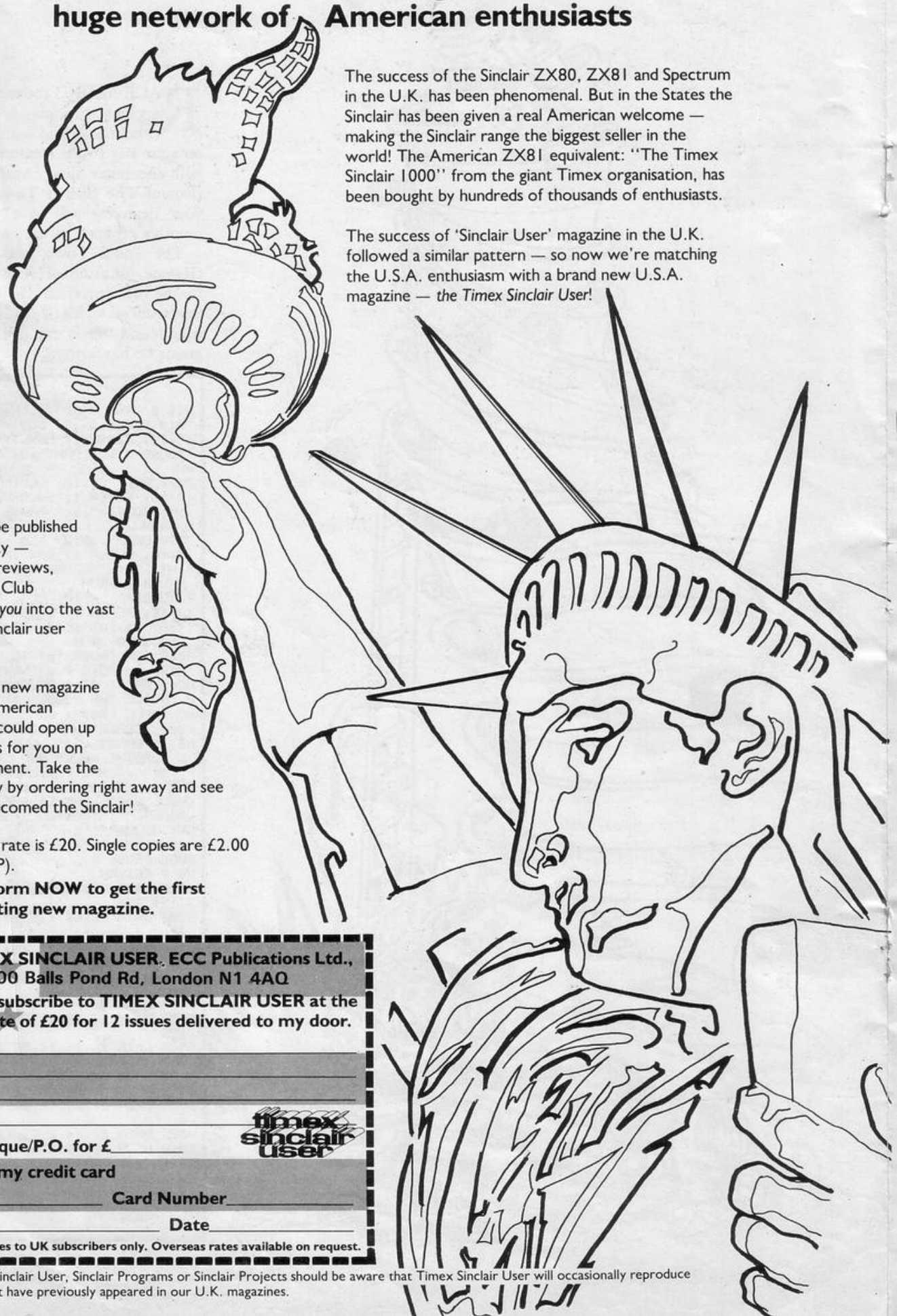

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STOCK MARKET

A LIST of commodities is displayed on the screen, together with the current value of one share. When it is your turn you may buy or sell shares in the commodity available at that time. You have the choice of playing yourself, the computer or a friend.

Stock Market was written for the 16K ZX-81 by Stephen Gibbon of Whickham, Newcastle-upon-Tyne.

```
  80 CLS
  90 GOSUB 6500
 100 SLOW
 110 FOR J=1 TO Q
 120 PRINT AT 1,7;J;"
     ";AT 1,16;M(J)
 130 LET E=INT (RND*12)+1
 140 LET A=0+12*(J=2)
 150 LET C=E+A
 160 PRINT AT E+4,0;CHR$ (CODE A
$(E,1)+128)
 170 IF J=1 AND L=31 THEN GOTO 2
000
 180 PRINT AT 18,0;"BUY OR SELL?
"
 190 LET O=CODE INKEY$
 200 IF O=0 THEN GOTO 190
 210 IF O>53 AND O<57 OR O=39 OR
O=50 THEN GOTO 250
 220 GOSUB S
 230 PRINT "PARDON?"
 240 GOTO 190
 250 GOSUB S
 260 GOTO 3000+1000*(O=39)+1500*
(O=56)+6900*(O=55)-2730*(O=50)
 270 PRINT AT 1,16;"
     ";AT 1,16;M(J)
 280 GOSUB S
 290 GOSUB 700
 300 NEXT J
 310 GOSUB 1000
 320 GOTO 110
 500 PRINT AT 18,0;"
                    ";AT 18,0;
 510 RETURN
 600 FOR I=1 TO 120
 610 NEXT I
 620 RETURN
 700 PRINT AT E+4,0;A$(E);TAB 13
;"     ";TAB 18;"     ";TAB 23;"
       ";AT E+4,13;N(E);TAB 18;N
(E+12);TAB 23;C(E)
 710 RETURN
1000 FOR I=1 TO 12
```

```
1010 IF Z(I)<>0 THEN GOTO 1030
1020 LET Z(I)=-1+2*(VAL X$>3)
1030 LET T=VAL X$
1040 LET U=VAL X$
1050 IF T+U=7 THEN LET Z(I)=-Z(I
)
1060 IF T=U THEN LET Z(I)=0
1070 LET C(I)=C(I)+Z(I)*2*(T+U)
1080 IF C(I)<1 THEN LET C(I)=1
1090 IF C(I)>1E6 THEN LET C(I)=1
E6
1100 PRINT AT I+4,23;"          "
;AT I+4,23;C(I)
1110 NEXT I
1120 RETURN
2000 IF N(C)<1 OR M(J)>((INT (RN
D*7)+5)*C(E)) THEN GOTO 2030
2010 LET F=N(C)
2020 GOTO 4540
2030 LET F=INT (RND*(M(J)/C(E)))
2040 IF F+N(C)>9999 THEN GOTO 20
30
2050 GOTO 5000
3000 PRINT "SURE ABOUT FINISHING
 ( Y OR N )?"
3010 IF INKEY$="Y" THEN GOTO 304
0
3020 IF INKEY$="N" THEN GOTO 270
3030 GOTO 3010
3040 CLS
3050 PRINT "I HOPE YOU ENJOYED T
HE GAME"
3060 FOR I=1 TO 12
3070 LET M(1)=M(1)+(N(I)*C(I))
3080 LET M(2)=M(2)+(N(I+12)*C(I)
)
3090 NEXT I
3100 PRINT AT 10,0;"PLAYER 1",,,
," £";M(1)
3110 IF Q=1 THEN GOTO 3130
3120 PRINT AT 14,0;"PLAYER 2",,,
," £";M(2)
3130 PRINT AT 19,5;"ANOTHER GO (
 Y OR N )?"
3140 IF INKEY$="Y" THEN RUN
3150 IF INKEY$="N" THEN STOP
3160 GOTO 3140
4000 PRINT "HOW MANY SHARES OF "
;A$(E);" DO YOU WISH TO PURCHASE
?"
4010 INPUT F
4020 IF F*C(E)>M(J) OR ABS INT F
<>F THEN GOTO 4010
4030 GOTO 5000
4500 IF N(C)=0 THEN GOTO 4600
4510 PRINT "HOW MANY SHARES OF "
;A$(E);" DO YOU WISH TO SELL?"
4520 INPUT F
4530 IF F>N(C) OR ABS INT F<>F T
HEN GOTO 4520
4540 LET F=-F
4550 GOTO 5000
4600 PRINT "YOU HAVE NONE OF THE
SE SHARES"
4610 GOSUB P
4620 GOSUB S
4630 GOTO 290
5000 LET M(J)=M(J)-(C(E)*F)
5010 LET N(C)=N(C)+F
5020 LET C(E)=C(E)+INT ((RND*(C(
E)/2))*F/4)
5030 IF C(E)<1 THEN LET C(E)=1
5040 IF C(E)>1E6 THEN LET C(E)=1
E6
5050 IF N(C)>9999 THEN GOTO 5500
5060 GOTO 270
5520 LET N(C)=N(C)-F
5530 PRINT "A DEALER HAS STOLEN
";F;" SHARES"
5540 GOSUB P
5550 GOSUB S
5560 GOTO 270
6500 PRINT TAB 9;"INSTRUCTIONS";
TAB 9;"(12*97)",,,"THERE ARE THR
EE DIFFERENT PLAYERARRANGEMENTS:
",,,,"1) TWO PLAYER GAME",,,"2)
ONE PLAYER GAME",,,"3) ONE PLAYE
R V THE ZX81",,,"PRESS KEY 1 , 2
6500 GOSUB S
6510 LET F=INT ((RND*200)+N(C)-9
999)
```

```
 OR 3 TO INDICATECHOICE"
6510 LET L=CODE INKEY$
6520 IF L<29 OR L>31 THEN GOTO 6
510
6530 CLS
6540 LET Q=1+1*(L<>30)
6550 PRINT "THE GAME COMPRISES O
F A TABLE   WHICH GIVES INFORMAT
ION ABOUT   ALL OF THE SHARES",,
,"EACH LINE OF THE TABLE SHOWS:"
,,,"1) NAME OF THE SHARE E.G. GO
LD",,,"2) THE NUMBER OF THIS TYP
E OF      SHARE HELD BY EACH PLA
YER",,,"3) COST PER SHARE E.G. £
350",,,"------------------------
--------",,("PLAYERS TAKE TURNS"
 AND L=29);("YOU ARE PLAYER 1" A
ND L=30);("YOU ARE PLAYER 2" AND
 L=31),,,"PRESS A KEY TO CONTINU
E"
6560 IF INKEY$="" THEN GOTO 6560
6570 CLS
6580 PRINT "THE FIRST LETTER OF
THE SHARE INPLAY IS INVERTED E.G
. GOLD",,,"THE SHARE IS CHOSEN A
T RANDOM",,,"THE PROMPT IS ""BUY
 OR SELL?""",,,"PRESS 1 OF THE F
OLLOWING KEYS:",,," B ALLOWS YOU
 TO BUY SHARES",,," S ALLOWS YOU
 TO SELL SHARES",,," Q ENDS THE
GAME ",,," R SAVES THE GAME ON T
APE",,," M FINISHES YOUR GO",,,"
      Press a key to start"
6590 IF INKEY$="" THEN GOTO 6590
6600 CLS
6610 PRINT "THERE WILL BE A SHOR
T DELAY"
6620 DIM A$(12,12)
6630 DIM M(2)
6640 DIM C(12)
6650 DIM N(24)
6660 LET M(1)=3E3
6670 LET M(2)=M(1)
6680 LET A$(1)="GOLD"
6690 LET A$(2)="R.ELEMENTS"
6700 LET A$(3)="DIAMONDS"
6710 LET A$(4)="PLATINUM"
6720 LET A$(5)="GEMS"
6730 LET A$(6)="COMP.PARTS"
6740 LET A$(7)="MICROFILM"
6750 LET A$(8)="DRUGS"
6760 LET A$(9)="WEAPONS"
6770 LET A$(10)="MISSILES"
6780 LET A$(11)="PLANE SPARES"
6790 LET A$(12)="SILVER"
6800 LET C$="350500300400200100400
0150150200075200"
6810 DIM Z(12)
6820 FAST
6830 FOR I=0 TO 11
6840 LET Z(I+1)=0
6850 LET N(I+1)=0
6860 LET N(I+13)=0
6870 LET C(I+1)=VAL C$(I*3+1 TO
I*3+3)
6880 NEXT I
6890 CLS
6900 PRINT TAB 10;"STOCK MARKET"
,"PLAYER   MONEY=£",,," SHARE
   -PL 1-PL 2-COST","-----------
---------------------"
6910 FOR I=1 TO 12
6920 PRINT A$(I);TAB 12;"-";N(I)
," -";N(I+12);TAB 22;"-";C(I)
6930 NEXT I
6940 LET X$="INT (RND*6)+1"
6950 LET P=600
6960 LET S=500
6970 PRINT "-----------------
-----------"
6980 RETURN
9910 PRINT "CONNECT TAPE THEN PR
ESS ""S"""
9920 IF INKEY$<>"S" THEN GOTO 99
20
9930 PRINT "START TAPE"
9940 GOSUB P
9950 SAVE "STOCK MARKEt"
9960 PRINT "STOP TAPE"
9970 GOSUB P
9980 GOTO 280
9990 SAVE "STOCK MARKEt"
9999 RUN
```

DAM BUILDER

IT IS raining heavily and the dam which could save your village is far from complete. Move your helicopter with the usual cursor keys, collect bricks from the right of the screen and place them on top of the dam. Try to build the dam to the top of the screen before the water on the left of it can escape.

Dam Builder was written for the 16K ZX-81 by David Jackson of Todmorden, Lancashire.

```
  70 RAND
  80 GOTO 9000
  90 LET A$="+"
 100 LET Z=20
 110 LET Y=19
 120 PRINT AT 21,0;"(15*9a:isP)"
;AT 20,15;"(isP)"
 125 LET PO=INT (RND*11)+5
 130 PRINT AT PO,31;"X"
 140 LET P1=20
 150 LET P2=30
 160 FOR X=1 TO R+INT (RND*11)
 170 PRINT AT P1,P2;
 180 LET P=PEEK (PEEK 16398+256*
PEEK 16399)
 185 PRINT A$
 205 GOTO (1000*(P=128))+(1200*(
P=8))+(210*(P=0))
 210 IF P1=PO AND P2=30 THEN GOS
UB 5000
 220 IF P2=15 AND P1=Y AND A$="@
" THEN GOTO 1400
 230 PRINT AT P1,P2;" "
 220~IF P2=15 AND P1=Y AND A$="@
" THEN GOTO 1400
 230 PRINT AT P1,P2;" "
 240 LET P1=P1+(INKEY$="6")-(INK
EY$="7")
 250 LET P2=P2+(INKEY$="8")-(INK
EY$="5")
 257 IF P2=31 THEN LET P2=30
 260 NEXT X
 270 PRINT AT Z,0;"(15*9a)"
 280 IF Z=Y THEN GOTO 1500
 285 LET Z=Z-1
 290 GOTO 160
1000 GOSUB 1300
1010 PRINT AT 0,0;"YOU CRASHED I
NTO THE DAM WALL   AND THE DAM H
AS OVERFLOWED"
1020 GOTO 1215
1200 GOSUB 1300
1210 PRINT AT 0,0;"YOU LANDED IN
 THE WATER AND THE DAM HAS OVERF
LOWED"
1215 PRINT "BUT YOU MANAGED TO B
UILD IT TO A HEIGHT OF ";21-Y;"
BLOCKS"
1220 PRINT "ON LEVEL ";Z$;"."
1230 PRINT AT 10,0;"PRESS A KEY"
1240 IF INKEY$="" THEN GOTO 1240
1250 GOTO 9000
1300 FOR K=21 TO 0 STEP -1
1305 IF K>Y THEN PRINT AT K,0;"(
15*9a:isP:16*9a)"
1307 IF K<=Y THEN PRINT AT K,0;"
(32*9a)"
1310 NEXT K
1320 RETURN
1400 PRINT AT P1,P2;"(isP)"
1405 IF P1=0 THEN GOTO 3000
1410 LET Y=Y-1
1420 LET P1=Y
1425 LET A$="+"
1430 GOTO 260
1500 PRINT AT Z,15;"(2*9a)"
1510 FOR K=Z TO 21
1520 PRINT AT K,16;"(9a)"
1560 NEXT K
1570 FOR K=21 TO Z STEP -1
1573 FOR T=1 TO 5
1575 NEXT T
1580 PRINT AT K,16;"(16*9a)"
1590 NEXT K
1600 PRINT AT 0,0;"YOU HAVE LET
THE DAM OVERFLOW"
1610 GOTO 1215
3000 PRINT AT 0,16;"+"
3005 PRINT "CONGRATULATIONS.YOU
HAVE        COMPLETED THE DAM AN
D SAVED YOURTOWN"
3020 GOTO 1220
5000 LET A$="(i+)"
5010 PRINT AT PO,31;" "
5020 LET PO=INT (RND*11)+5
5030 PRINT AT PO,31;"X"
5040 RETURN
9000 CLS
9010 PRINT "IT IS RAINING HEAVIL
Y AND A DAM"
9015 PRINT "IS FAR FROM COMPLETE
.AS THE DAM"
9020 PRINT "FILLS YOU MUST CONTR
OL YOUR"
9025 PRINT "HELICOPTER ""+"" AND
 USE IT TO"
9030 PRINT "TRANSPORT LARGE CONC
RETE BLOCKS"
9035 PRINT "FROM OTHER HELICOPTE
RS""X"" TO THE"
9040 PRINT "DAM.ALL THE TIME THE
 WATER RISES"
9045 PRINT "THREATENING A SMALL
VILLAGE."
9050 PRINT "WHEN YOU ARE CARRYIN
G A BLOCK"
9055 PRINT "YOU ARE SHOWN AS A "
"(i+)"""
9060 PRINT "USE CURSOR KEYS TO M
OVE"
9100 PRINT AT 21,0;"ENTER SKILL
LEVEL (1 TO 5)"
9105 LET Z$=INKEY$
9110 IF Z$<"1" OR Z$>"5" THEN GO
TO 9105
9120 LET R=80-(VAL Z$)*10
9130 CLS
9140 GOTO 85
```

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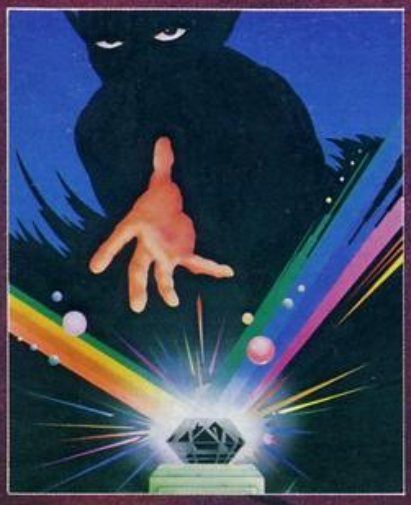

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written by Stephen Renton

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I uttered the last incantations as the clock struck thirteen. All fell silent except for a faint rustling in the corner. From out of the shadows they came, all Hell's fury against me but I was not defenceless until the Angel Of Death, astride a winged horse, joined the battle. Avoiding his bolts of hell fire, I took careful aim. My chances were slim, but if my luck held . . . 48K Spectrum £5.95.

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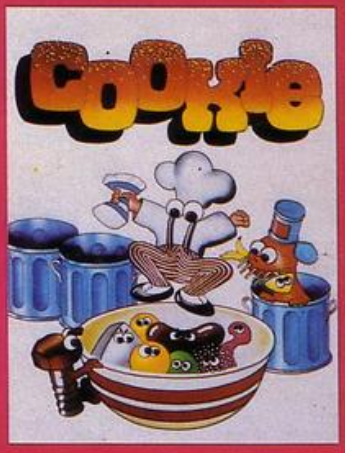

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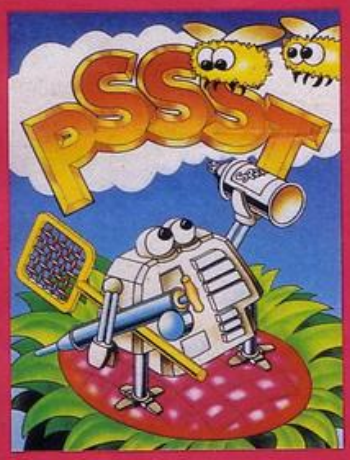

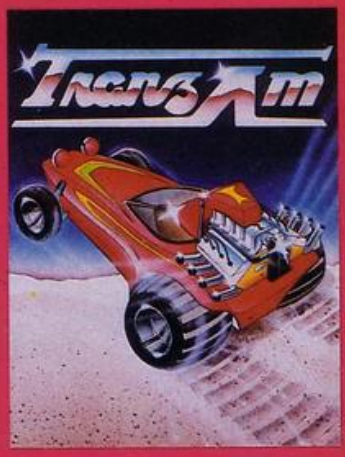

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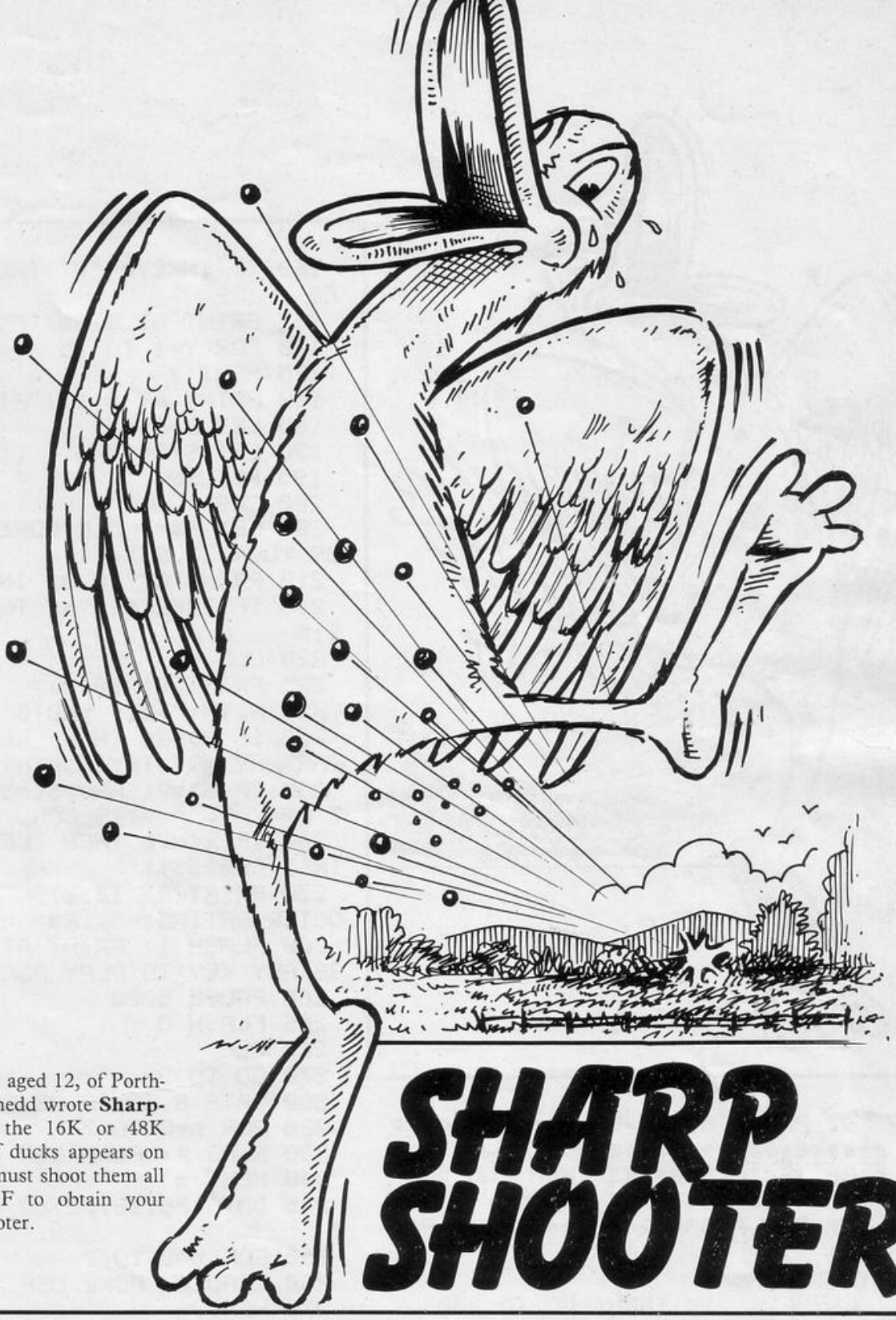

SHARP SHOOTER

DIANE BIRD, aged 12, of Porthmadog, Gwynedd wrote **Sharpshooter** for the 16K or 48K Spectrum. A row of ducks appears on the screen and you must shoot them all down by pressing F to obtain your rating as a sharpshooter.

```
  10 GO SUB 280
  15 BORDER 4: PAPER 7: INK 0
  20 PRINT TAB 10;"RIFLE RANGE"
  25 PRINT AT 5,0;"You must hit
all the targets to"
  26 PRINT AT 6,0;"learn your sh
arp shooter rating"
  27 BEEP .5,7: BEEP .5,7: BEEP
.5,7: BEEP .5,2: BEEP .5,4: BEEP
 .5,4: BEEP 1,2
  28 BEEP .5,11: BEEP .5,11: BEE
P .5,9: BEEP .5,9: BEEP 1.5,7
  30 PRINT AT 10,0;"PRESS F TO F
IRE,PRESS 0 TO START"
  35 IF INKEY$<>"0" THEN  GO TO
35
  40 CLS
  75 LET S=0
  80 LET D=0
  85 PRINT AT 19,15;"P"
  86 PRINT AT 20,15;"f RIFLE"
  90 LET A$="3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 "
  92 PRINT AT 8,15; FLASH 1;"FIR
E"
  95 PRINT AT 10,0; INK 2;A$
```

```
 97 PRINT AT 11,0;"eeee
```

YOU ARE standing on the bridge, looking at an unknown part of the galaxy; suddenly you find yourself under alien fire.

You are equipped with port and starboard guns, M and Z, which can return fire on both flanks but not in the centre area of the screen when the aliens are firing. There are three levels of competence.

Enterprise was written by D Turner of Hull for the 16K ZX-81.

ENTERPRISE

```
   2 GOSUB 6000
   5 GOSUB 1000
   7 LET S=0
   8 LET H=10
  10 LET A=INT (RND*18)
  15 LET B=INT (RND*29)
  20 IF B>12 AND B<18 THEN GOSUB
3000
  80 GOSUB 2000
  90 GOTO 10
1000 FAST
1001 LET S=0
1002 LET Z=0
1020 FOR J=0 TO 21
1040 PRINT AT J,0;"(33;isP)"
1050 NEXT J
1051 PRINT AT 21,2;"score ";S
1052 PRINT AT 21,15;"hits ";Z
1053 FOR J=0 TO 50
1055 LET X=RND*20
1057 LET Y=RND*30
1070 PRINT AT X,Y;"(1,)"


1080 NEXT J
1081 FOR J=0 TO 10
1082 LET G=RND*20
1083 LET F=RND*30
1084 PRINT AT G,F;"(9e)"
1085 NEXT J
1090 SLOW
1095 RETURN
2000 PRINT AT A,B;"(9t:10:9y)"
2010 FOR K=0 TO 2*L
2015 IF INKEY$="Z" AND B<11 THEN
 GOSUB 4000
2016 IF INKEY$="M" AND B>18 THEN
 GOSUB 4000
2017 NEXT K
2020 PRINT AT A,B;"(1,:2*isP)"
2030 RETURN
3005 IF RND<.3 THEN RETURN
3010 PRINT AT A,B;"(9t:10:9y)"
3020 FOR J=0 TO 2
3030 PRINT AT (A+1),B;"(9w)";TAB
 (B+2);"(99)"
3031~PRINT AT (A+1),B;"(isP)";TA
B (B+2);"(isP)"
3032 PRINT AT (A+2),(B-1);" ";TA
B (B+3);" "
3033 PRINT AT (A+2),(B-1);"(isP)
";TAB (B+3);"(isP)"
3034 PRINT AT (A+3),(B-3);"  ";T
AB (B+4);"  ";AT (A+4),(B-3);"
";TAB (B+4);"  "
3035 PRINT AT (A+3),(B-3);"(2*is
P)";TAB (B+4);"(2*isP)";AT (A+4)
,(B-3);"(2*isP)";TAB (B+4);"(2*i
sP)"
3040 FOR K=0 TO 10
3045 FAST
3050 SLOW
3051 NEXT K
3054 NEXT J
3055 LET H=H-1
3056 LET Z=Z+3
3058 PRINT AT 21,15;"hits ";Z
3059 IF H=0 THEN GOTO 5000
3060 RETURN
4000 FOR J=20 TO A STEP -5
4001 PRINT AT J,B;"(9e:1+:9r:)"
4002 PRINT AT J,B;"(3*isP)"
4003 NEXT J
4009 FOR J=0 TO 10
4010 PRINT AT A,B;">0<"
4015 PRINT AT A,(B-1);"(isP:1,:4
*isP:1,:isP)"
4020 NEXT J
4021 LET S=S+1
4022 PRINT AT 21,2;"score.";S
4025 IF S=30 THEN GOTO 4500
4030 RETURN
4500 CLS
4501 PRINT AT 10,3;"YOU HAVE SUR
VIVED  THE ALIEN ATTACK. PRESS
 ""S""  FOR ANOTHER TRIP THROUGH
SPACE."
4505 INPUT A$
4510 IF A$="S" THEN GOTO 6000
4520 IF A$<>"S" THEN GOTO 4505
5000 FOR K=0 TO 100
5001 LET X=RND*63
5002 LET Y=RND*41
5003 UNPLOT X,Y
5004 PRINT AT Y/2,X/2;"(94:92)"
5005 NEXT K
5006 CLS
5010 PRINT AT 10,0;"THE ALIENS H
AVE DESTROYED YOUR  SPACE SHIP.P
RESS ""P"" FOR ANOTHER GAME."
5020 INPUT A$
5030 IF A$="P" THEN GOTO 2
5040 IF A$<>"P" THEN STOP
6000 PRINT AT 0,10;"""ENTERPRISE
"""
6002 PRINT AT 1,11;"(10*97)"
6005 PRINT AT 2,0;"YOU ARE TRAVE
LLING THROUGH SPACE WHEN YOU ARE
 SUDDENLY ATTACKED  BY A FLEET O
F 30 ALIEN SHIPS.  YOU  HAVE TO
DESTROY THE ALIEN  SHIPS USING Y
OUR TWO LASER GUNS, ""Z"" AND  "
"M""  KEYS.IF YOU DESTROY 30 ALI
ENS YOU WILL SURVIVE,  BUT IF YO
U SUFFER 30 HITS BY THE ALIEN CR
AFTS ,YOU WILL BE DESTROYED."
6011 PRINT AT 21,8;"(17*97)"
6012 PRINT AT 15,0;"INPUT LEVEL
OF DIFFICULTY(1,2,3)"
6020 INPUT L
6030 IF L<1 OR L>3 THEN GOTO 602
0
6040 CLS
6050 PRINT AT 10,5;"PRESS ""P""
TO PLAY"
6055 PRINT AT 11,5;"(17*97)"
6060 INPUT A$
6070 IF A$<>"P" THEN GOTO 6060
6080 CLS
6090 RETURN
```

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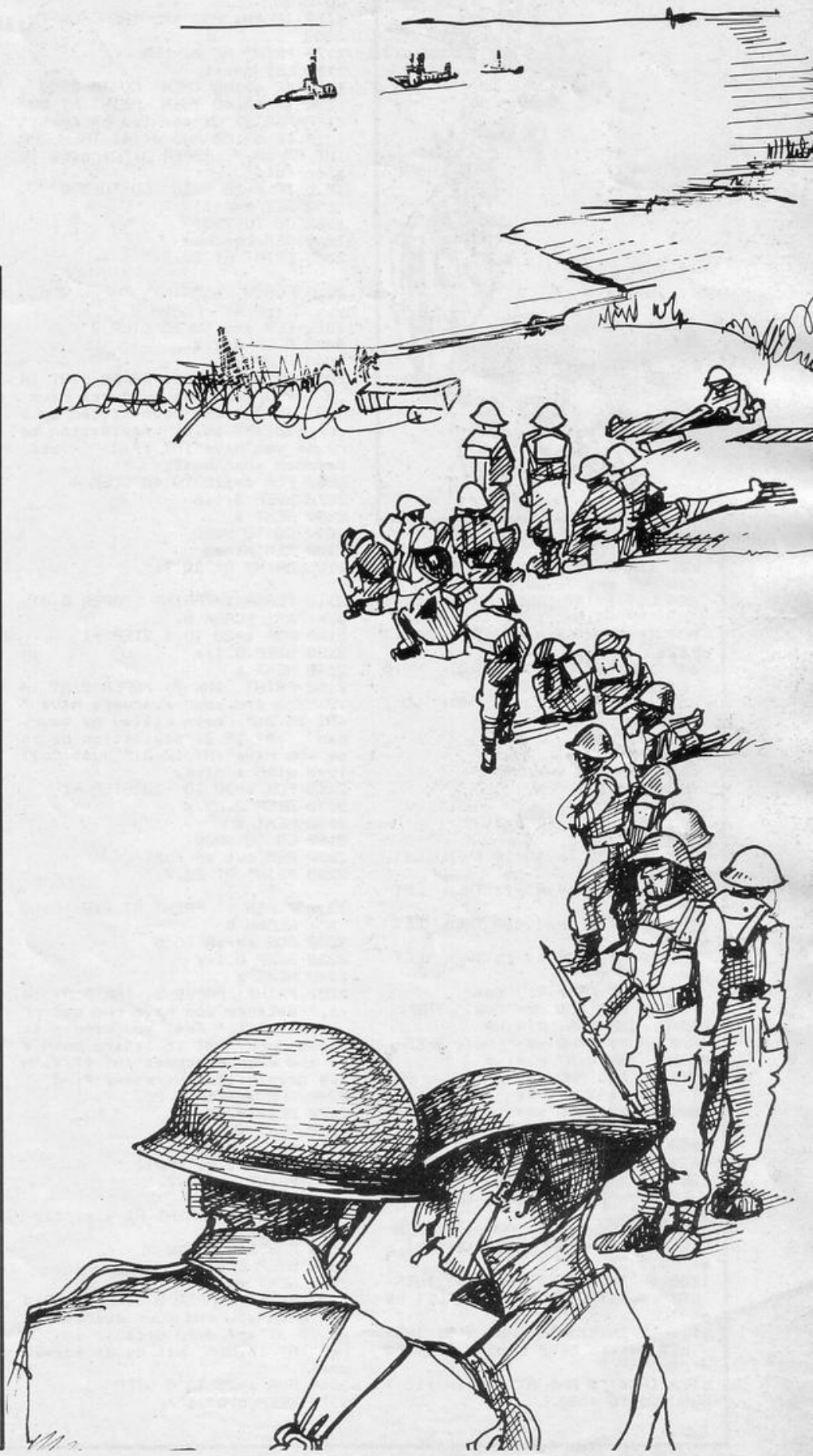
DUNKIRK

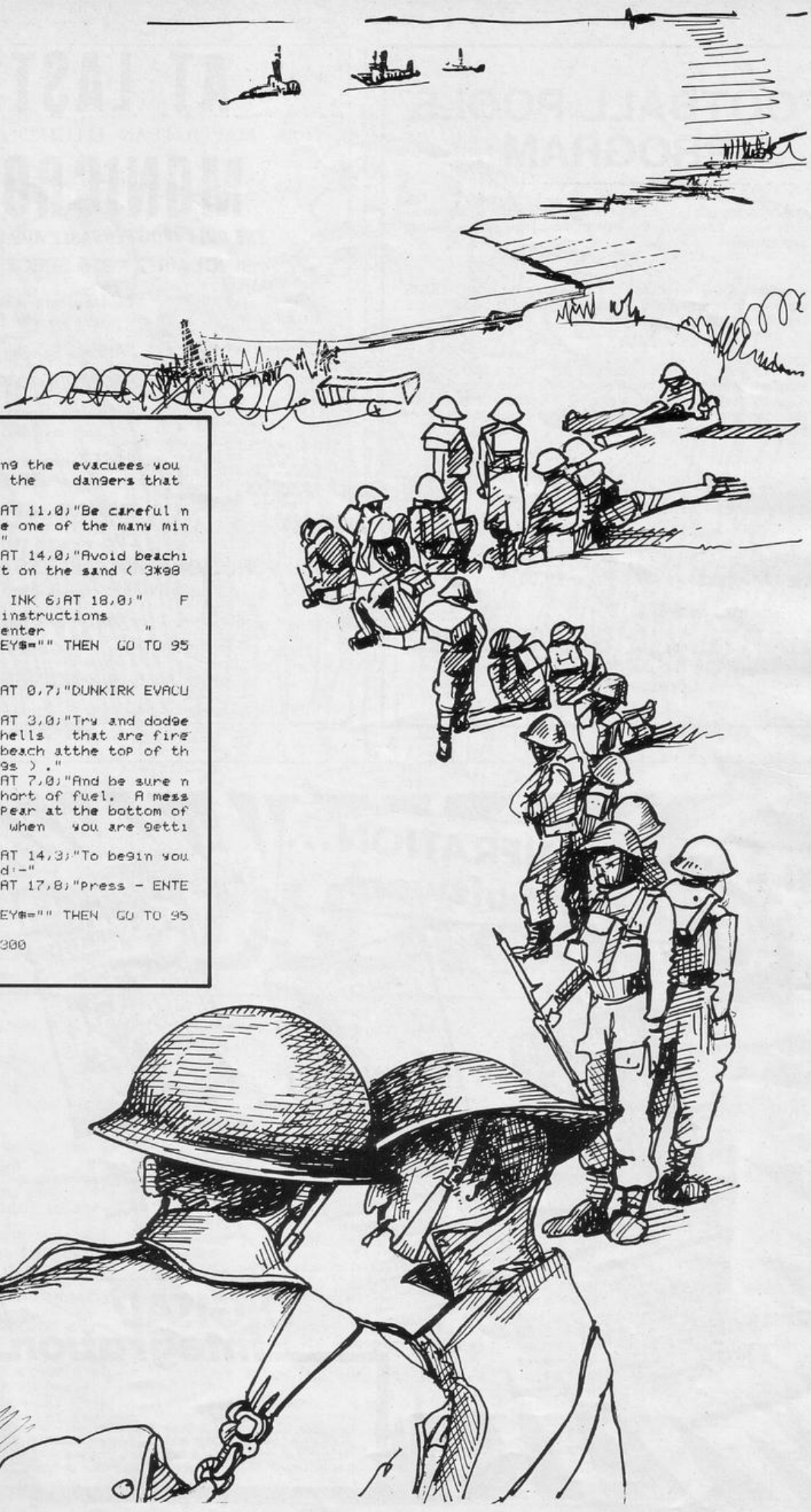
THE SPIRIT of Dunkirk lingers in this game for the 48K Spectrum. You must sail your barge through the canals off the beaches of **Dunkirk** and pick up the refugees waiting to be evacuated.

Whatever you do, do not cross the enemy lines or hit a sandbank as the result can be fatal. **Dunkirk** was sent by Robin Larham of Chatteris, Cambridgeshire.

```
  100 REM characters
  110 FOR n=0 TO 7: READ a
  120 POKE USR "r"+n,a: NEXT n
  130 DATA 0,0,8,4,126,4,0,0
  140 FOR n=0 TO 7: READ a
  150 POKE USR "l"+n,a: NEXT n
  160 DATA 0,16,32,126,32,16,0,0
  170 FOR n=0 TO 7: READ a
  180 POKE USR "m"+n,a: NEXT n
  190 DATA 24,90,36,24,24,24,36,1
95
  200 FOR n=0 TO 7: READ a
  210 POKE USR "d"+n,a: NEXT n
  220 DATA 0,16,16,16,84,56,16,0
  230 FOR n=0 TO 7: READ a
  240 POKE USR "s"+n,a: NEXT n
  250 DATA 146,214,124,56,16,16,1
6,16
  260 GO TO 9500
  300 REM Print layout
  310 BORDER 0: INK 7: PAPER 1: C
LS
  320 PRINT  PAPER 2; INK 7;"
    DUNKIRK EVACUTAION          "
  330 INK 6: PRINT AT 1,0;"(98)";
AT 1,13;"(6*98)";AT 1,30;"(98)"
  340 PRINT AT 2,0;"(5*98)";AT 2,
8;"(4*98)";AT 2,13;"(4*98)";AT 2
,24;"(5*98)"
  350 PRINT AT 3,0;"(4*98)";AT 3,
6;"(6*98)";AT 3,19;"(8*98)";AT 3
,30;"(2*98)"
  360 PRINT AT 4,0;"(4*98)";AT 4,
5;"(6*98)";AT 4,13;"(5*98)";AT 4
,20;"(5*98)";AT 4,28;"(98)"
  370 PRINT AT 5,0;"(3*98)";AT 5,
19;"(8*98)"
  380 PRINT AT 6,0;"(2*98)";AT 6,
5;"(98)";AT 6,7;"(98)";AT 6,9;"(
6*98)";AT 6,29;"(3*98)"
  390 PRINT AT 7,0;"(3*98)";AT 7,
4;"(2*98)";AT 7,16;"(2*98)";AT 7
,19;"(4*98)";AT 7,24;"(4*98)"
  400 PRINT AT 8,0;"(98)";AT 8,7;
"(4*98)";AT 8,12;"(3*98)";AT 8,2
7;"(98)";AT 8,30;"(2*98)"
  410 PRINT AT 9,0;"(98)";AT 9,2;
"(4*98)";AT 9,7;"(4*98)";AT 9,12
;"(4*98)";AT 9,17;"(7*98)";AT 9,
24;"(2*98)";AT 9,27;"(2*98)";AT
9,31;"(98)"
  420 INK 4
  480 LET b$="^"
  500 REM Print evacuees
  520 FOR x=1 TO 10
  530 LET a=INT (RND*8)+1: LET b=
INT (RND*31)
  540 IF ATTR (a,b)=12 THEN  GO T
O 530
  550 IF ATTR (a,b)=15 THEN  PRIN
T AT a,b;"(9m)"
  560 IF ATTR (a,b)=14 THEN  GO T
O 530
  570 NEXT x
  580 LET x=INT (RND*31): LET y=2
1
  590 LET t=0: LET n=0
```



```
 600 INK 2: REM Print mines
 610 FOR z=1 TO 30
 620 LET a=INT (RND*12)+9: LET b
=INT (RND*31)
 630 IF ATTR (a,b)=14 THEN  GO T
O 620
 640 IF ATTR (a,b)=15 THEN  PRIN
T AT a,b;"*"
 650 IF ATTR (a,b)=12 THEN  GO T
O 620
 660 NEXT z
 670 INK 7
 680 PRINT AT y,x;b$
 690 BEEP 1,0
 700 REM shell
 710 LET q=INT (RND*31)
 720 LET p=2
 730 IF ATTR (p,q)=14 THEN  LET
x$="(9B)"
 740 IF ATTR (p,q)=12 THEN  LET
x$="(9m)"
 750 IF ATTR (p,q)=10 THEN  LET
x$="*"
 760 IF ATTR (p,q)=15 THEN  LET
x$=" "
 770 PRINT AT p,q;"(9s)"
 790 IF p>0 AND x$="(9B)" THEN
PRINT  INK 6;AT p,q;x$
 800 IF p>0 AND x$="(9m)" THEN
PRINT  INK 4;AT p,q;x$
 810 IF p>0 AND x$="*" THEN  PRI
NT  INK 2;AT p,q;x$
 820 IF p>0 AND x$=" " THEN  PRI
NT  PAPER 1;AT p,q;x$
1000 REM moving boat
1070 PRINT AT y,x;" "
1080 IF INKEY$="8" AND x<31 THEN
  LET x=x+1: BEEP 0.05,10: LET b
$="(9r)"
1090 IF INKEY$="5" AND x>0 THEN
 LET x=x-1: BEEP 0.05,-10: LET b
$="(9l)"
1100 IF INKEY$="7" AND y>1 THEN
 LET y=y-1: BEEP 0.05,-5: LET b$
="^"
1110 IF INKEY$="6" AND y<21 THEN
  LET y=y+1: BEEP 0.05,5: LET b$
="(9d)"
1120 IF t>10 AND ATTR (y,x)=12 T
HEN  GO TO 4500
1130 IF ATTR (y,x)=14 THEN  GO T
O 2000
1140 IF ATTR (y,x)=12 THEN  GO S
UB 3000
1150 IF ATTR (y,x)=10 THEN  GO S
UB 2100
1160 IF p=y AND q=x THEN  GO TO
2300
1170 PRINT AT y,x;b$
1180 LET n=n+1
1190 IF n>180 THEN  GO TO 2200
1200 IF n>140 THEN  PRINT AT 20,
7; PAPER 2;"danger low on fuel!"
1210 IF n>100 AND n<141 THEN  PR
INT AT 20,7; PAPER 3;"warning lo
w on fuel"
1220 IF p=20 THEN  GO TO 700
1230 LET p=p+1
1250 GO TO 730
2000 REM beached
2005 PRINT AT 20,7;"
     "
2010 FLASH 1: PRINT  PAPER 0;AT
y,x;"(inv *": FLASH 0
2020 FOR a=1 TO 20 STEP 2
2030 BEEP 0.1,a
2040 NEXT a
2050 PRINT  INK 0; PAPER 6;AT 14
,2;" You and your evacuees have
";AT 15,2;"just been killed by y
our bad";AT 16,2;" navigation be
cause you have";AT 17,2;"  just
beached your boat.    "
2060 FOR a=-10 TO 40 STEP 4
2070 BEEP 0.1,a
2080 NEXT a
2090 GO TO 9000
2100 REM mined
2105 PRINT AT 20,7;"
     "
2110 FLASH 1: PRINT  PAPER 0;AT
y,x;"*": FLASH 0
2120 FOR a=20 TO 1 STEP -1
2130 BEEP 0.1,a
2140 NEXT a
2150 PRINT  INK 7; PAPER 2;AT 14
,2;"You and your evacuees have "
;AT 15,2;"  been killed by your
bad  ";AT 16,2;"navigation becau
se you have";AT 17,2;" just coll
ided with a mine."
2160 FOR a=30 TO -20 STEP -1
2170 BEEP 0.05,a
2180 NEXT a
2190 GO TO 9000
2200 REM out of fuel
2205 PRINT AT 20,7;"
     "
2210 FLASH 1: PRINT AT y,x;"(inv
 *": FLASH 0
2220 FOR a=-10 TO 5
2230 BEEP 0.1,a
2240 NEXT a
2250 PRINT  PAPER 5; INK 0;AT 14
,1;" Because you have run out of
  ";AT 15,1;" fuel you were a si
tting duck ";AT 16,1;"and both y
ou and your evacuees";AT 17,1;"h
ave been killed by enemy fire"
2260 FOR a=-15 TO 25
2270 BEEP 0.05,a
2280 NEXT a
2290 GO TO 9000
2300 REM hit by shell
2305 PRINT AT 20,7;"
     "
2310 FLASH 1: PRINT AT y,x;"(19
*)": FLASH 0
2320 FOR a=0 TO 40
2330 BEEP 0.1,a
2340 NEXT a
2350 PRINT  PAPER 0; INK 7;AT 14
,3;"Both you and your evacuees";
AT 15,3;"are dead because you we
re ";AT 16,3;"  hit by an enemy
shell.  "
2360 FOR a=25 TO 0 STEP -1
2370 BEEP 0.07,a
2380 NEXT a
2390 GO TO 9000
3000 PRINT AT y,x;"(19m)"
3010 LET t=t+1
3020 IF t=10 THEN  GO TO 4000
3030 IF t>10 THEN  GO TO 4500
3040 GO TO 1000
4000 PRINT  INK 4;AT 21,INT (RND
*31);"(ih)"
4010 GO TO 1000
4500 LET t=10
5000 REM successful rescue
5010 PRINT AT 20,7;"
     "
5110 PRINT AT 12,4;"total evacue
es saved ";t;AT 14,10;"in ";n/20
;" hours"
5120 FOR a=0 TO 10
5130 BEEP 0.15,a
5140 NEXT a
5150 FOR a=-5 TO 5
5160 BEEP 0.05,a
5170 NEXT a
5180 FOR a=10 TO -10 STEP -2
5190 BEEP 0.1,a
5200 NEXT a
9000 FOR z=10 TO 1 STEP -2: BEEP
 z/10,z*3: NEXT z
9010 FLASH 1: PRINT AT 21,0;"To
play another game Press enter":
FLASH 0
9050 FOR z=-30 TO 40 STEP 2
9060 BEEP 0.02,z
9065 NEXT z
9070 PAUSE 100
9080 IF INKEY$="" THEN  GO TO 90
80
9090 IF INKEY$="n" THEN  STOP
9100 RUN
9500 REM instructions
9505 BORDER 0: INK 7: PAPER 0: C
LS
9510 PRINT  INK 6;AT 5,7;"DUNKIR
K EVACUATION"
9514 PRINT  INK 7;AT 11,10;"do y
ou want";AT 12,9;"instructions?"
9516 PRINT  INK 7;AT 15,7;"Press
 ""Y"" for yes";AT 16,10;""""N""
for no"
9520 IF INKEY$="" THEN  GO TO 95
20
9522 IF INKEY$="y" THEN  GO TO 9
530
9524 IF INKEY$="n" THEN  GO TO 3
00
9526 STOP
9530 BORDER 1: PAPER 1: INK 7: C
LS
9532 PRINT AT 0,7;"DUNKIRK EVACU
ATION"
9534 PRINT AT 3,0;"     The aim o
f this game is          to save 1
0 evacuees who          are stran
ded in the sea          on the be
ach at Dunkirk. "
9536 PRINT AT 9,0;"To save the e
vacuees you have tosteer your bo
at ( ^ ) into the  same square a
s the evacuee ( 9m )"
9538 PRINT AT 13,3;"To steer the
 boat Press:-"
9540 PRINT AT 15,0;""" 5 "" for
left   "" 8 "" for right"
9542 PRINT AT 17,0;" "" 7 "" for
 up  "" 6 "" for down "
9544 PRINT  INK 6;AT 20,0;"    F
or further instructions
    Press enter             "
9546 IF INKEY$="" THEN  GO TO 95
46
9548 CLS
9550 PRINT AT 0,7;"DUNKIRK EVACU
ATION"
9552 PRINT AT 3,0;"After you hav
e rescued all ten  of the evacue
es you must then   return to the
 safe harbour ( H )"
9554 PRINT AT 7,0;"But while you
```



```
 are rescuing the  evacuees you
must beware the    dangers that
face you."
9556 PRINT AT 11,0;"Be careful n
ot to strike one of the many min
es ( * ) . "
9558 PRINT AT 14,0;"Avoid beachi
ng the craft on the sand ( 3*98
) ."
9560 PRINT  INK 6;AT 18,0;"    F
or further instructions
     Press enter              "
9562 IF INKEY$="" THEN  GO TO 95
62
9564 CLS
9566 PRINT AT 0,7;"DUNKIRK EVACU
ATION"
9568 PRINT AT 3,0;"Try and dodge
 the 88mm shells   that are fire
d from the beach atthe top of th
e screen ( 9s ) ."
9570 PRINT AT 7,0;"And be sure n
ot to run short of fuel.  A mess
age will appear at the bottom of
 the screen when   you are getti
ng low."
9574 PRINT AT 14,3;"To begin you
r rescue bid:-"
9576 PRINT AT 17,8;"Press - ENTE
R -"
9580 IF INKEY$="" THEN  GO TO 95
80
9590 GO TO 300
```

FOOTBALL POOLS PROGRAM

- The program lists out, in order of preference, the sixteen most likely score-draws: also the sixteen most likely homes, draws and aways.
- It picks out the results on the bookmakers' FIXED ODDS coupons that have been given over-generous odds. Calculates your expected profit!
- The program will be initialised to the English and Scottish league tables. You will be able to update these league tables week by week as results come in — or enter a complete new set of league tables in other words, the program will never become "out of date"!
- All programs are recorded on a top quality cassette (usually Sony) and are accompanied with an instruction leaflet giving a brief explanation of the theory.

Available for the ZX-81 16K (Price **£8.95**) and the ZX Spectrum 48K (Price **£9.95**) from:

HARTLAND SOFTWARE
(Dept. R), 8 Penzance Place,
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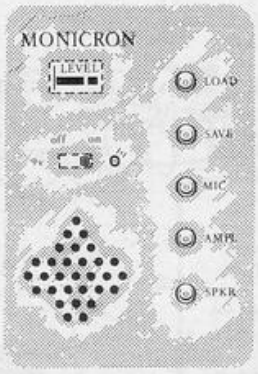

LOAD programs first time every-time via ***VU LEVEL METER.***

SAVE via isolating push-button.

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RESET crashed programs with power ***ON-OFF*** switch.

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72 MERE ROAD, WIGSTON, LEICESTER.

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The NEXT GENERATION... of Spectrum software

NEW

Aircraft in the distance signal imminent attack. BATTLESTATIONS!! They fly nearer . . . nearer . . . line up your twin machine guns and open fire with streams of tracer bullets but you've got to be quick or you'll never make it through to the ground attack run or the flight home. **NIGHT GUNNER** is a challenging, super-smooth game with excellent 3-D graphics. **48K only**. Joystick compatible (Kempston, AGF, Sinclair) **£6.95p**

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Only the best become a **FIGHTER PILOT** . . . climb into the seat of the world's most exciting aircraft and prepare for take-off. Stunning 3-D graphics, air-to-air combat, and fully aerobatic performance put the challenge of real-time flight simulation at your fingertips. Based upon the F15 USAF air superiority jet fighter. The supreme simulation . . . for those who simply want the best! **48K only**. Joystick compatible (Kempston, AGF, Sinclair) **£7.95p**

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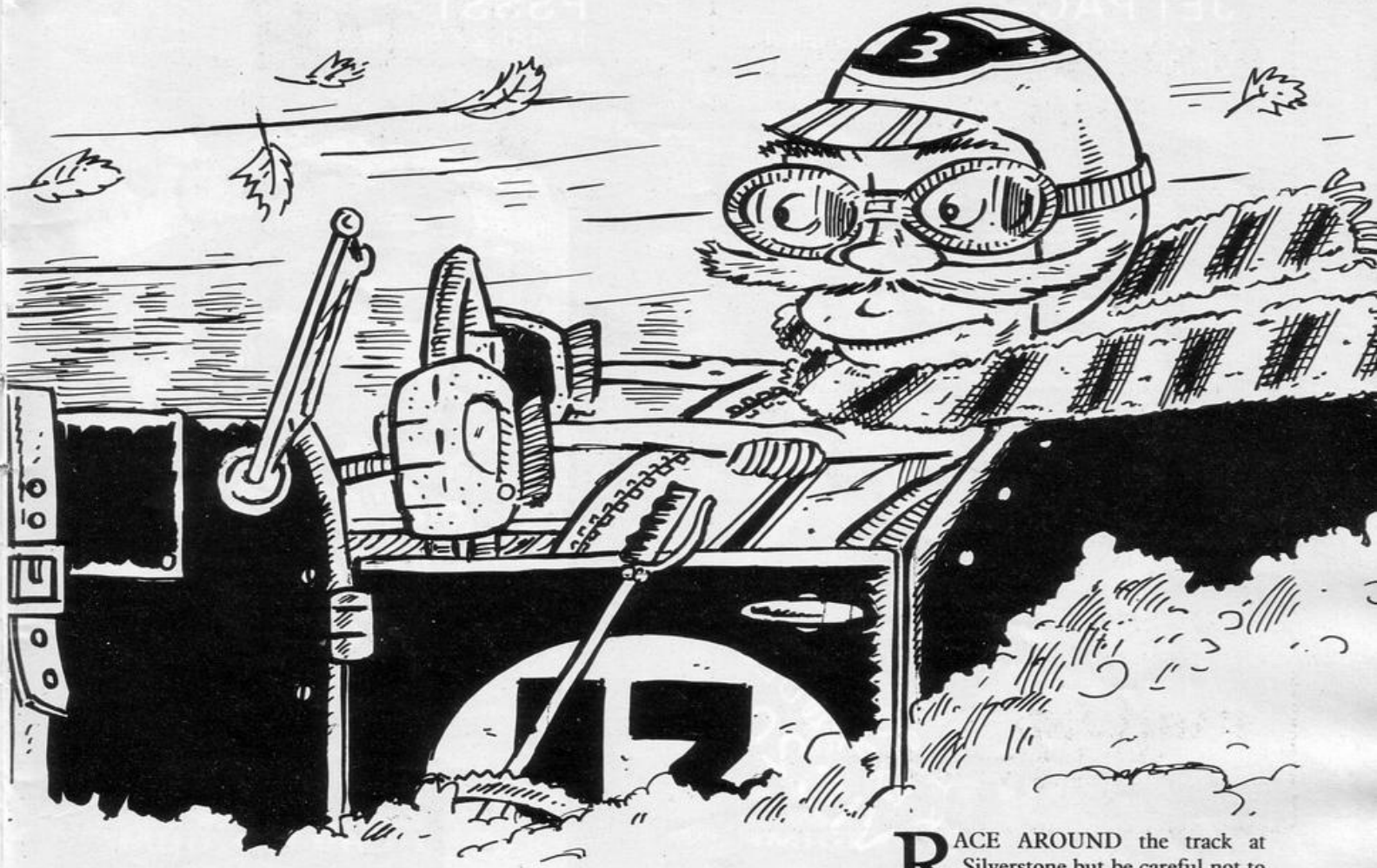
DIGITAL Integration

Dept. SU, 22 Ash Church Road, Ash, Aldershot, Hants GU14 9LP. All prices include VAT and p&p (overseas add 55p per cassette). All cassettes carry a lifetime guarantee. Trade & export enquiries welcome — ring Dave Marshall 0252 518269. Mail order or check your local computer store.



SILVERSTONE

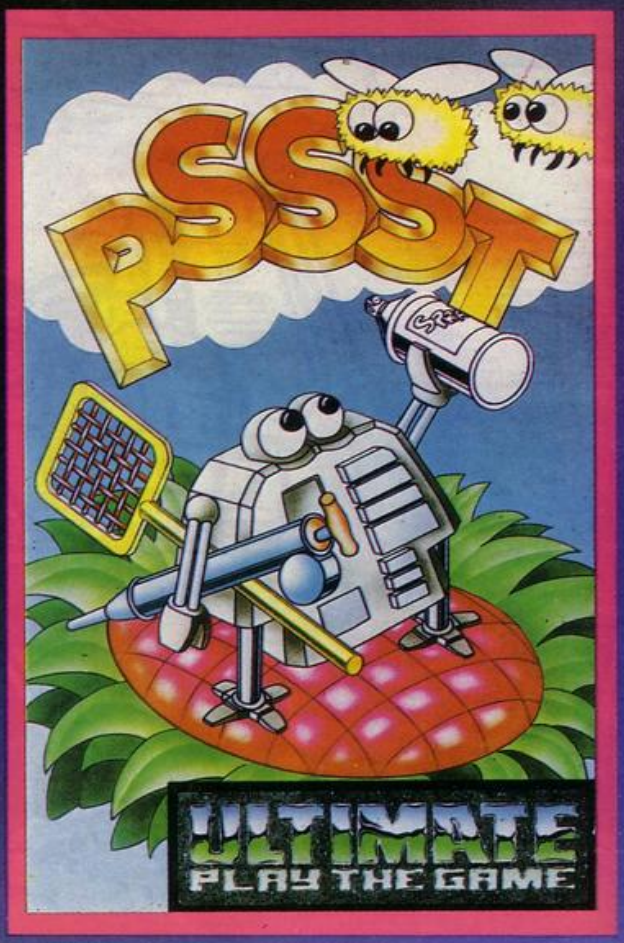
RACE AROUND the track at Silverstone but be careful not to crash into the edges. Your super-racer will be alone on the track but there is still room for error. The car will move left with Q and right with R but do not hold down the key too long or you could crash into the next corner.

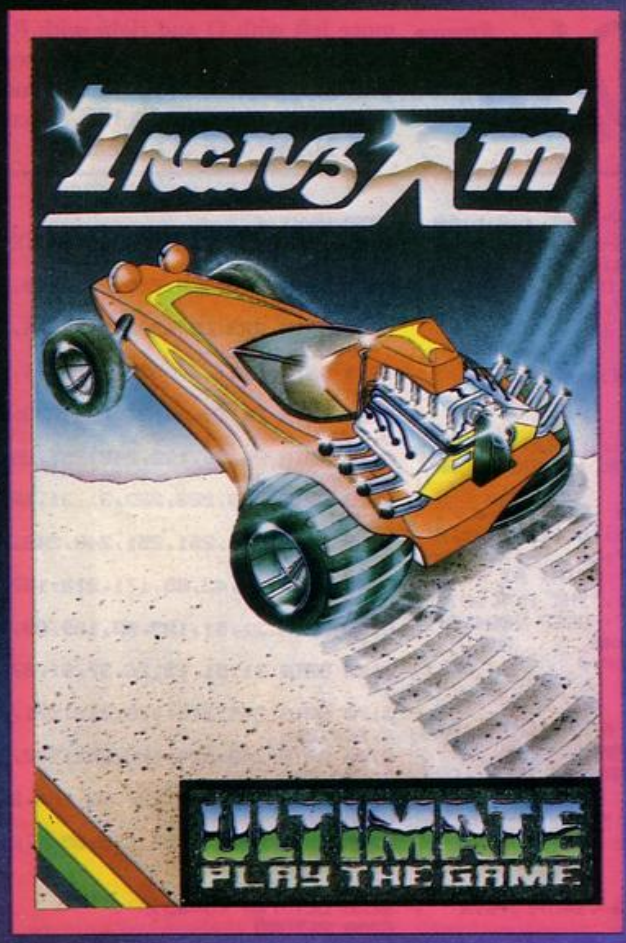
Silverstone is for the 16K Spectrum from Nasser Gazi of Coventry.

```
  5 RANDOMIZE
 10 GO SUB 8000
 15 LET a=10: LET b=12: LET c=1
3
 16 LET x=10
 17 LET sc=0
 18 LET r=5
 20 BRIGHT 0: OVER 0: PAPER 4:
INK 0: BORDER 6: CLS
 25 PRINT AT 0,0: POKE 23692,25
5
 30 FOR f=0 TO 21: PRINT TAB x;
 INK 0;"(9i;9o)"; PAPER 2;"(5*9o
)"; PAPER 4;"(9o;9l)": REM Graph
ics I,O; O,O,O,O,O; O,L
 32 NEXT f
 40 PRINT AT 21,0
 50 POKE 23692,255
 60 PRINT TAB x;CHR$ (INT (RND*
3)+152); INK 0;"(9o;9o)"; PAPER
2;r$( TO r); PAPER 4;"(9o)";CHR$
 (INT (RND*3)+155): REM GRAPHICS
 O
 70 LET x=x+(INT (RND*3)-1)+(x<
1)-(x>20)
 100 LET c=c-(INKEY$="q")+(INKEY
$="p")
 105 LET b=c-1
 120 IF ATTR (a,c)=32 THEN  LET
k=a: LET l=c: GO TO 1000
 125 IF ATTR (a,c+1)=32 THEN  LE
T k=a: LET l=c+1: GO TO 1000
 130 INK 2: PAPER 0
 140 PRINT AT a-4,b;"(9o)";AT a-
3,b;"(9o;9a;9b;9o)";AT a-2,b;"9
o;(9c;9d;9o)";AT a-1,b;"(9o;9e;9
f;9o)";AT a,c;"(99;98;9h)"
 145 REM Graphics O,O,O,O; O,A,B
,O; O,C,D,O; O,E,F,O; G,H
 150 INK 0: PAPER 4
 160 LET sc=sc+1
 170 IF INT (sc/70)=sc/70 AND r>
1 THEN  LET r=r-1
 180 GO TO 40
1000 PRINT AT 3,15; FLASH 1; BRI
GHT 1; PAPER 7; INK 1;"YOU CRASH
ED"
1010 IF sc>hi THEN  LET hi=sc
1020 PRINT AT 5,18;"SCORE=";sc;A
T 6,16;"HI-SCORE=";hi
1030 FOR f=0 TO 7: PRINT AT k,l;
 FLASH 0; BRIGHT 1; INK f;"(98)"
1040 BEEP .005,f+f: BEEP .004,f-
f-f: BEEP .01,RND*40
1042 BEEP .01,RND*f+f
1043 BEEP .005,f*f
1045 NEXT f
1050 PRINT  PAPER 6; BRIGHT 1;AT
 21,7;" Press ENTER "
1060 IF INKEY$<>CHR$ 13 THEN  GO
 TO 1060
1070 CLS : GO TO 15
8000 FOR f=1 TO 15
8010 FOR g=0 TO 7
8020 READ a
8030 POKE USR CHR$ (143+f)+g,a
8040 NEXT g
8050 NEXT f
8060 DATA 255,255,255,255,31,31,
223,223
8070 DATA 255,255,255,255,248,24
8,251,251
8080 DATA 223,254,220,216,216,24
,24,24
8090 DATA 251,127,59,27,27,24,24
,24
8100 DATA 24,28,30,31,223,223,22
3,255
8110 DATA 24,56,120,248,251,251,
251,255
8120 DATA 223,223,223,31,31,127,
127,0
8130 DATA 251,251,251,248,248,25
4,254,0
8140 DATA 31,43,85,171,213,107,3
7,31
8150 DATA 31,51,109,83,109,83,45
,31
8160 DATA 31,51,13,26,37,91,37,3
1
8170 DATA 248,212,170,213,171,21
4,164,248
8180 DATA 248,204,182,202,182,20
2,180,248
8190 DATA 248,204,176,88,164,218
,164,248
8195 DATA 85,170,85,170,85,170,8
5,170
8210 LET hi=0
8220 LET r$="(5*9o)"
8300 RETURN
```

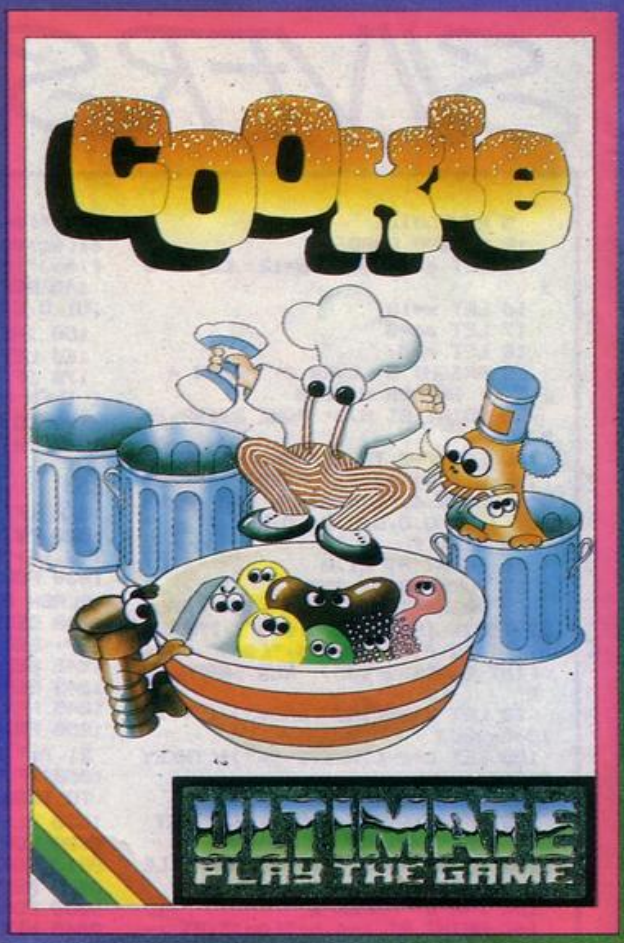
JET PAC –
16/48K ZX Spectrum or 8K Expanded VIC 20

PSSST –
19/48K ZX Spectrum





TRANZ AM –
16/48L ZX Spectrum



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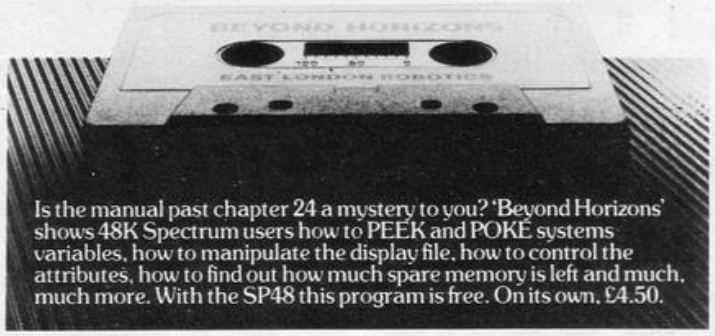
Extend your 16k Spectrum to 48k for just £23·00. And get a Free program worth £4·50 into the bargain.



Is the manual past chapter 24 a mystery to you? 'Beyond Horizons' shows 48K Spectrum users how to PEEK and POKE systems variables, how to manipulate the display file, how to control the attributes, how to find out how much spare memory is left and much, much more. With the SP48 this program is free. On its own, £4.50.

SP48, 32K Memory Extension with Program — £23.00

Now, our SP48 offers even better value.

Because now, we're not only offering you the facility to up-grade your 16K Spectrum to 48K, we're also offering you the opportunity to be able to utilise this vastly extended memory quickly and easily.

For £23 all you need to do is plug the chip-set into the sockets provided by Sinclair on your issue 2 (or £35 for issue 1) and you have a standard 48K Spectrum fully compatible with all Sinclair add-ons and very low in power consumption.

There is no soldering required.

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And the SP48 carries our full warranty and is upgradable, on a part exchange basis, to SP80.

Then all you need to do is LOAD our specially written 48K guide program, 'Beyond Horizons', and your 48K computer will guide you through its memory.

With no need to labour through manuals.

This will save you time, because we all know how easy it is to get lost with memory maps.

SP80 Paged Memory Extension — £46

This ingenious device gives a 16K Spectrum two memory banks of 32K each and a massive total of 80K of RAM.

It can be used as a standard 48K machine, but pages can be switched by software instructions within your program. The SP80 is not recommended for absolute beginners unless used with 48/80 FORTH.

Fitting, power consumption and Sinclair add-on compatibility are identical to the SP48.

Fit and Test service at our premises £3, by registered post £7.

48/80 FORTH — £14.95

This new FORTH compiler/editor is the latest, best and most complete version of FIG-FORTH for the Spectrum. Each tape includes both a 48K version and an 80K version. (Don't forget that an SP48 can be part exchanged for an SP80).

48/80 FORTH gives you the speed of machine code with the programming simplicity of BASIC, and is ideal for games-writing. Unlike other FORTH versions, all the Spectrum's excellent graphics commands are retained, and sound is still available using BEEP. Cassette handling routines are also included.

48/80 FORTH includes a separate FORTH editor which uses part of RAM as if it were disc. The 48K version allows a 16K "RAM disc". and the 80K version a massive 32K "RAM disc".

48/80 FORTH comes with a comprehensive user manual covering both compiler and editor.

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This classic piece of software loads ZX81 BASIC programs and arrays straight onto your Spectrum, ready for SAVEing and EDITing. It can do in a few minutes what would normally take weeks of keyboard time.

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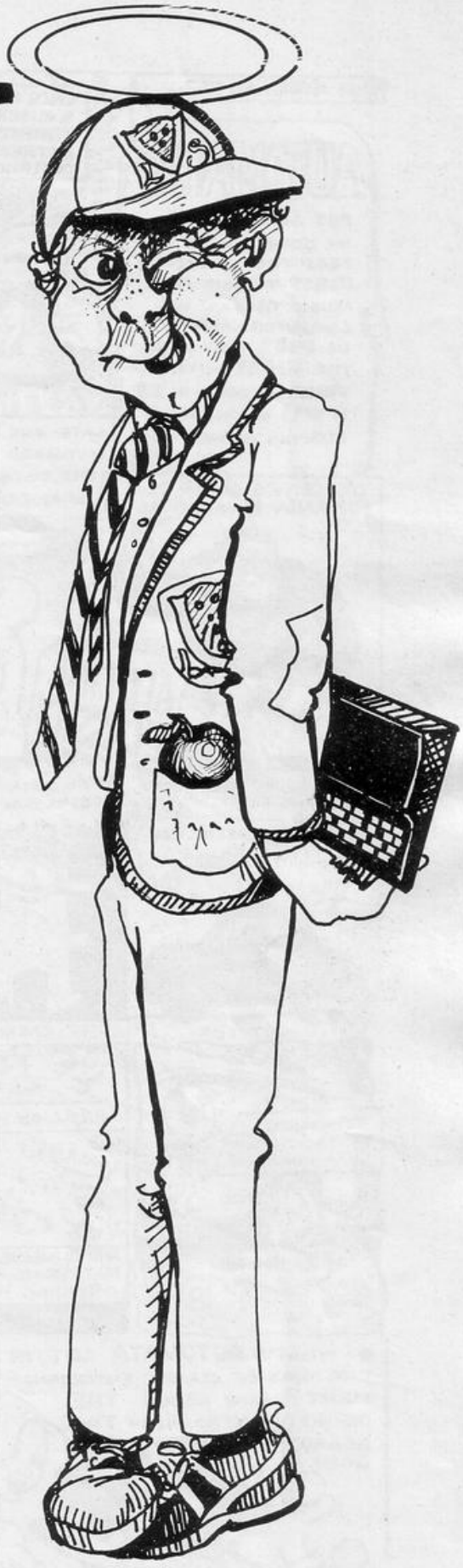
TEACHER'S PET

```
  60 CLS
  70 PRINT AT 3,2;"THIS PROGRAM
WILL "
  80 PRINT AT 7,0;"1-CHANGE MARK
S INTO PERCENTAGES"
  90 PRINT
 100 PRINT "2-PLACE MARKS IN ORD
ER"
 110 PRINT
 120 PRINT "3-GIVE A GRAPH ON SC
REEN"
 130 PRINT
 140 PRINT "4-EXIT FROM PROGRAM"
 150 PRINT AT 19,0;"TYPE IN YOUR
 OPTION"
 160 INPUT A
 170 IF A<1 OR A>4 THEN GOTO 160
 180 IF A=1 THEN GOTO 200
 185 IF A=2 THEN GOTO 400
 190 IF A=3 THEN GOTO 600
 195 IF A=4 THEN GOTO 800
 197 STOP

 200 REM ***PERCENTAGE TO MARK**
 210 CLS
 215 PRINT "TYPE IN TOTAL MARK"
 217 INPUT TOTAL
 218 PRINT
 220 PRINT "TYPE IN NUMBER OF MA
RKS YOU WISH
                              TO CONV
ERT"
 230 INPUT A
 240 IF A<1 OR A>40 THEN GOTO 23
0
 250 DIM N$(A,15)
 255 DIM M(A)
 257 DIM P(A)
 260 FOR B=1 TO A
 270 PRINT AT 6,0;"TYPE IN PUPIL
S NAME"
 280 INPUT N$(B)
 290 PRINT AT 11,0;N$(B)
 300 PRINT AT 6,0;"TYPE IN MARK
     "
 310 INPUT M(B)
 320 PRINT AT 11,17;M(B)
 340 LET P(B)=(M(B)/TOTAL)*100
 350 PRINT AT 11,23;P(B)
 360 NEXT B
 370 PAUSE 100
 380 PRINT "DO YOU WANT A COPY O
F THIS INFO"
 385 INPUT A$
 390 IF A$="Y" THEN GOTO 392
 391 RUN
 392 LPRINT AT 0,4;"TOTAL MARK="
;TOTAL;AT 3,0;"       NAME
MARK  PERCENT"
 393 FOR B=1 TO A
 394 LPRINT
 395 LPRINT AT 0,0;N$(B);AT 0,18
;M(B);AT 0,25;P(B)
 396 NEXT B
 397 RUN
 400 REM ****SORT INTO ORDER****
 405 CLS
 410 PRINT "TYPE IN NUMBER OF CA
NDIDATES"
 415 INPUT Z
 420 IF Z<1 OR Z>40 THEN GOTO 41
5
 425 DIM N$(Z,15)
 430 DIM P(Z)
 435 FOR A=1 TO Z
 437 PRINT AT 5,0;"  TYPE IN NAM
E"
 440 INPUT N$(A)
 443 PRINT AT 5,0;"  TYPE IN MAR
K"
 445 INPUT P(A)
 446 NEXT A
 448 LET N=Z
 449 LET A=0
 450 LET B=0
 455 LET C=0
 460 LET S=0
 461 LET T$=""
 463 LET A=A+1
 464 IF A=N THEN GOTO 520
 465 LET B=A+1
 470 LET C=C+1
 475 IF P(A)>P(B) THEN GOTO 495
 480 LET B=B+1
 485 IF B>N THEN GOTO 463
 490 GOTO 470
 500 LET S=P(A)
 501 LET T$=N$(A)
 505 LET P(A)=P(B)
 506 LET N$(A)=N$(B)
 510 LET P(B)=S
 511 LET N$(B)=T$
 515 GOTO 475
 520 REM ****PRINT IN ORDER****
 521 CLS
 522 PRINT "NAME","MARK"
 523 PRINT "----","----"
 525 FOR I=1 TO Z
 530 PRINT
 535 PRINT N$(I),P(I)
 540 NEXT I
 545 PRINT
 550 PRINT "DO YOU WANT A COPY O
F THIS INFO"
 555 INPUT A$
 560 IF A$="N" THEN RUN
 565 IF A$<>"Y" THEN RUN
 570 LPRINT "NAME","MARK"
 575 LPRINT "----","----"
 580 FOR I=1 TO Z
 585 LPRINT
 590 LPRINT N$(I),P(I)
 595 NEXT I
 597 RUN
 600 REM ****PRODUCE GRAPH******
 603 DIM N(10)
 605 CLS
 607 LET B=1
 608 LET MAX=0
 609 DIM M(10)
 610 FOR A=1 TO 10
 620 PRINT AT 1,1;"HOW MANY PUPI
LS SCORED BETWEEN ";AT 2,13;B;"
TO ";A*10
 625 INPUT M(A)
 627 LET B=B+10
 628 IF M(A)>MAX THEN LET MAX=M(
A)
 630 NEXT A
 635 PAUSE 100
 640 CLS
 645 FOR A=1 TO 10
 650 PRINT M(A);TAB 4;"(98)";
 655 FOR J=0.01 TO M(A) STEP MAX
/25
 660 PRINT "(9d)";
 665 NEXT J
 670 PRINT
 675 NEXT A
 680 PAUSE 100
 685 PRINT AT 15,0;"DO YOU WANT
A COPY"
 690 INPUT A$
 695 IF A$<>"Y" THEN GOTO 60
 700 COPY
 705 GOTO 60
 800 CLS
 805 STOP
9998 SAVE "MARKs"
9999 RUN
```



CHANGE examination marks into percentages, place the marks in order, and have a graphical representation of them. **Teacher's Pet** for the 16K ZX-81 will do it all for you. It was written by Alan Richmond of Golborne, Cheshire.

THE STORY SO FAR...
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LATE ONE NIGHT THE PIMAN IS DISTURBED BY A VISITOR FROM THE DISTANT GALAXY OF MORRIS MINOR.
CORKS!
I'VE GOT A SHIP OUTSIDE YOU JUST WON'T BE ABLE TO RESIST!
HOW MUCH?
WELL, 'OW MUCH 'AVE YOU GOT?
A POGO-STICK, A SAXOPHONE AND A CAN OF WORMS
WELL THAT'S 'OW MUCH IT IS! SIGN HERE, HERE AN' HERE!
TATTAH, MUGGINS!
OY! I THOUGHT I'D JUST BOUGHT THAT!
LOOK AT THE LOG-BOOK! IT IS I YOU'VE PAID YOUR HARD-EARNED WORMS FOR! BEEP!
EH, WOT?
WHAT DO YOU KEEP STOPPING FOR?
BEEP! CAR-SICKNESS!
CAR PARK
SKEEEE
LEMME OUTTA HERE, YA BUM!
TELEPORT BEAM
NOW TO RETRIEVE MORRIS SO THAT I CAN SELL HIM TO SOME OTHER MUG! GO, MY PHANTOM PHREAKY BIKERS!
I'M FREE! TAKEEEE!!
TOO LATE! THE MAD BIKERS BLAZE IN, LIKE GHOSTS THROUGH THE BRICK WALL...
THIS IS IT!
MORRIS meets the Bikers
WATCH OUT FOR.....
..TREACHEROUS TIN-TACKS THAT SLOW HIM DOWN...
HSSSS
YOW!
CREEPY CARBON MONOXIDE...
LOONY LIFTS
ELEVATOR
PRECIOUS PETROL
GRRR!
AND CLINGING WHEEL CLAMPS THAT BRING HIM TO A GRINDING HALT...
AND HAS TO COLLECT TEN GOLDEN COINS BEFORE HE CAN ESCAPE THROUGH THE EXIT TO THE NEXT SCREEN. THERE ARE 9 SCREENS ALTOGETHER, BEFORE HE IS FREE!
MAYBE WE DON'T LIKE THE NOISE HIS HORN MAKES, AN' MAYBE WE CAN'T GET HIM IN THE LIFTS - BUT WE CAN FLY THROUGH WALLS, AN WE DON'T CARE ABOUT NO HAND-SIGGERNALS OR DOUBLE-HELLER LINES! HAR HAR!!
SO WHAT'S AUTOMATA GOT IN THE WAY OF CLASSIC ENTERTAIN-MENT? HOW ABOUT THE DIFINITIVE VERSION OF THAT BOARD GAME!
HEH HEH...
GO TO JAIL
AND IF YOU CAN'T FIND ANY HUMANS TO PLAY AGAINST, WE DARE YOU TO PLAY YOUR..
..COMPUTER!
BUT BEWARE..
IT MAY WELL WIN!!
*2 TO 5 PLAYERS *LARGE SIZE MOVING BOARD DISPLAY *SAVE-GAME FACILITY. *STATE OF PLAY AT THE TOUCH OF A BUTTON *YOUR COMPUTER AS 'HONEST BANKER' GO TO JAIL!

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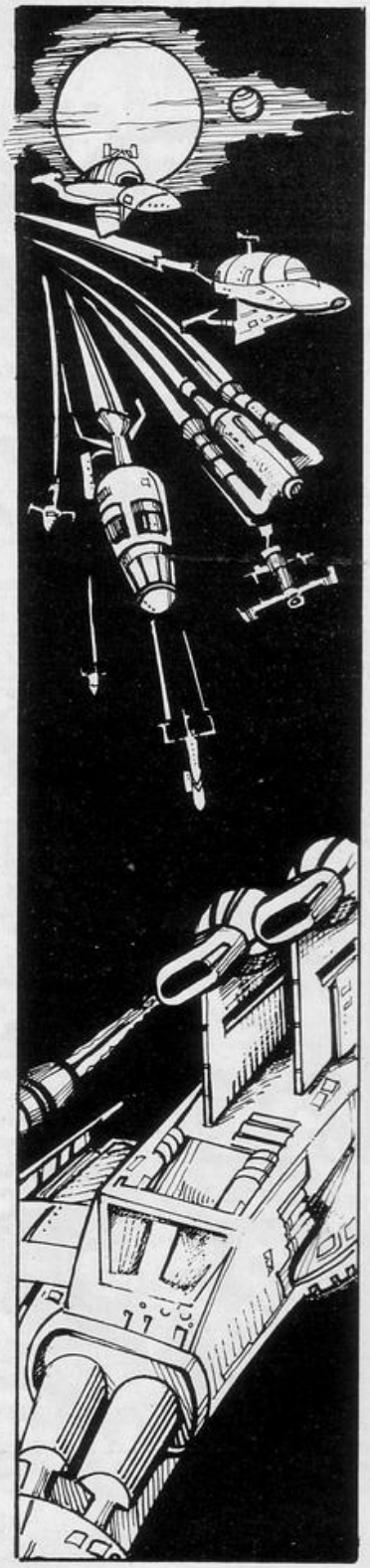
SP

```
  10 POKE 23658,8
  20 GO SUB 4000: REM GRAPHICS
  30 LET A$=CHR$ 144
  35 LET B$=CHR$ 145
  40 LET C$=CHR$ 146
  45 BORDER 0: PAPER 0: CLS
  50 PRINT AT 1,8; PAPER 6; FLAS
H 1;"SCROLLVADERS"
  60 PRINT AT 10,10; PAPER 6;E$
  70 PRINT AT 15,1; PAPER 6;" DO
 YOU WANT INSTRUCTIONS? Y/N "
  80 PAUSE 0
  90 IF INKEY$="Y" THEN  GO SUB
3500
 100 BORDER 5: PAPER 6: CLS
 115 DIM V(2): DIM H(2)
 120 LET V(1)=21: LET H(1)=6
 130 DEF FN T()=INT ((65536*PEEK
 23674+256*PEEK 23673+PEEK 23672
)/50)
 140 LET SC=0: LET Z=1
 150 DIM M$(1)
 200 GO SUB 3000: REM TIMING
 210 GO SUB 2500: REM 1ST GAME
 220 GO SUB 2000: REM 2ND GAME
 300 REM **MAIN LOOP**
 310 IF SCREEN$ (V(1),H(1))<>M$
AND INKEY$="0" THEN  PRINT AT V(
1),H(1);A$: GO SUB 400
 320 PRINT AT V(1),H(1); FLASH 1
;A$
 330 PAUSE 4: PRINT AT V(1),H(1)
; INVERSE 1 AND Z=0;M$
 340 LET H(1)=H(1)+(INKEY$="8" A
ND H(1)<31)-(INKEY$="5" AND H(1)
>0)
 350 LET V(1)=V(1)-1: IF V(1)<-2
1 THEN  LET V(1)=21
 360 IF Z=0 AND FN T()>60 THEN
GO TO 1000
 370 IF FN T()>60 AND Z=1 THEN
GO TO 1500
 380 GO TO 310
 400 REM **ERASE/SCORE**
 410 IF Z=1 THEN  LET SC=SC+500
 420 IF Z=0 THEN  LET SC=SC+1000
 430 FOR N=45 TO 15 STEP -5
 440 BEEP .15,N
 450 NEXT N
 460 PRINT AT V(1),H(1); INVERSE
 1 AND Z=0;M$
 470 LET V(1)=INT (RND*18)
 480 LET H(1)=INT (RND*31)
 490 RETURN
1000 REM **END GAME**
1010 CLS
1020 IF SC>10000 THEN  PRINT AT
8,10; INVERSE 1;"WELL DONE!"
1030 IF SC<10000 THEN  PRINT AT
8,3; INVERSE 1;"NOT GOOD ENOUGH!
"
1040 PRINT AT 10,5; INVERSE 1;"Y
OUR SCORE WAS....";  FLASH 1;SC
1050 PAUSE 100
1060 PRINT AT 15,6; PAPER 6;"  A
NOTHER GO?  Y/N  "
1070 PAUSE 0
1080 IF INKEY$="Y" THEN  GO TO 1
00
1090 STOP
1500 REM **3RD GAME**
1510 BORDER 0: PAPER 6: CLS
1520 GO SUB 3000
1530 POKE 23692,255
1540 LET Z=0
1550 DIM D$(704)
1560 PRINT AT 21,0;D$
1570 PRINT AT 10,10; FLASH 1;"GE
TTING DARK!"
1575 FOR N=1 TO 704 STEP 25
1580 BEEP .005,15: BEEP .01,30
1590 LET D$(N)=B$
1600 NEXT N
1610 PRINT  INVERSE 1; BRIGHT 1;
D$
1620 GO TO 310
2000 REM **2ND GAME**
2010 GO SUB 3000
2020 POKE 23692,255
2030 DIM D$(704)
2040 PRINT AT 21,0;D$
2050 PRINT AT 10,10; FLASH 1;"RA
IDERS COMING!"
2060 FOR N=1 TO 704 STEP 20
2070 BEEP .001,25: BEEP .005,35
2080 LET D$(N)=B$
2090 NEXT N
2100 PRINT D$
2110 RETURN
2500 REM **1ST GAME**
2510 LET V(2)=INT (RND*18)
2520 LET H(2)=INT (RND*31)
2530 PAUSE 10
2540 FOR N=1 TO 4
2550 PRINT AT V(2),H(2);B$
2560 BEEP .05,N*6
2570 NEXT N
2580 PRINT AT V(2),H(2);M$
2590 FOR N=1 TO 35
2600 PRINT AT V(1),H(1); FLASH 1
;A$
2610 PAUSE 2.5: PRINT AT V(1),H(
1);M$
2620 LET H(1)=H(1)+(INKEY$="8" A
ND H(1)<31)-(INKEY$="5" AND H(1)
>0)
2630 LET V(1)=V(1)-(INKEY$="7" A
ND V(1)>0)+(INKEY$="6" AND V(1)<
21)
2640 IF V(1)=V(2) AND H(1)=H(2)
THEN  GO SUB 2700
2650 NEXT N
2660 IF FN T()>60 THEN  RETURN
2670 GO TO 2510
2700 LET SC=SC+100
2710 FOR N=30 TO 5 STEP -5
2720 PRINT AT V(1),H(1); BRIGHT
1; FLASH 1; INK 2;C$
2730 BEEP .05,N
2740 NEXT N
2750 PAUSE 25
2760 PRINT AT V(1),H(1);M$
2770 RETURN
3000 REM **TIMING**
3010 FOR N=23672 TO 23674
3020 POKE N,0
3030 NEXT N
3040 RETURN
3500 REM **INSTRUCTIONS**
3510 CLS
3520 PRINT AT 1,0; INK 7;"AT FIR
ST YOU MUST MOVE TO"'"COVER THE
SPOT WHERE THE"'"RAIDERS DISAPPE
AR"'"USE KEYS"; PAPER 1;" (5) (
6) (7) (8)"
3525 PRINT AT 8,10; PAPER 6;"***
*"
3530 PRINT AT 10,0; INK 7;"WHEN
THE RAIDERS GROUP YOU MUST"'"ATT
ACK BUT THIS TIME FIRE"'"OTHERWI
SE THEY JUST DISAPPEAR"'"USE KE
YS"; PAPER 1;"(5) (8) & (0)"; PA
PER 0;'"TO MOVE & FIRE"
3540 PRINT AT 19,10; PAPER 6; FL
ASH 1;"GOOD LUCK!"
3550 PRINT AT 21,1; INK 7;"PRESS
 ANY KEY TO CONTINUE"
3560 PAUSE 0
3570 RETURN
4000 REM **GRAPHICS**
4010 FOR A=1 TO 3
4020 READ G$
4030 FOR B=0 TO 7
4040 READ F
4050 POKE USR G$+B,F
4060 NEXT B
4070 NEXT A
4080 DATA "A",255,60,126,231,231
,126,60,255
4090 DATA "B",255,102,255,24,36,
66,129,129
4100 DATA "C",145,0,36,0,145,0,3
6,145
4110 DIM E$(9)
4120 DATA 127,32,68,46,82,65,78,
68,83
4130 FOR N=1 TO 9
4140 READ C
4150 LET E$(N)=CHR$ (C)
4160 NEXT N
4170 RETURN
```

SCROLLVADERS

DAVID RANDS of Harlington, Beds. has written **Scrollvaders,** a three-part game. At first, the raiders appear on reconnaissance missions and you have to cover the position quickly where they disappeared: Next they advance *en masse* and you have to fire accurately before they take cover. Finally, on a night mission, you have to eliminate as many raiders as you can. 48K Spectrum.



fantasy
SOFTWARE

THE PYRAMID is an arcade style game which has a very adventurous feel to it.

The Pyramid contains 120 chambers on 15 levels. In order to get from one chamber to another you must fight off the indigenous aliens to collect an energised crystal which will neutralize the force field guarding the two exits.

The Pyramid is inhabited by a total of 60 wierd and exotic alien types, all of which are beautifully animated. You will meet a whole variety of demons, droids, insects and monsters, with a sprinkling of the more unusual, the extra-terrestrial tweezers, galactic strawberry, cosmic claw, mutant eye, plus a whole host of entities that defy rational description. You will no doubt invent your own nicknames.

You proceed to explore the Pyramid from top to bottom with the difficulty generally increasing with the depth of level. Depending on the choice of exit from each chamber you are likely to have a different game every time you play.

Apart from the challenge of trying to achieve the highest score possible the pyramid contains a number puzzle to solve. The more chambers you successfully visit the more information is gathered to enable you to discover the secret numbers of the pyramid. The puzzle won't take you a few days to solve, it will probably take you a few months.

This is "ZIGGY". He is shown above in his exploratory capsule and is a true representation of the on screen graphics. You have total control over his movements as you explore the many chambers of "THE PYRAMID".

FANTASY SOFTWARE is available from W.H.Smiths, John Menzies and Computers For All

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Compatible with all leading joysticks.

For 48K Spectrum

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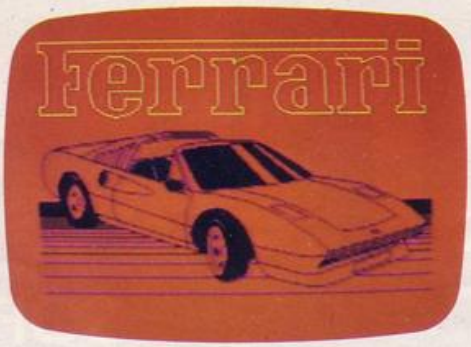
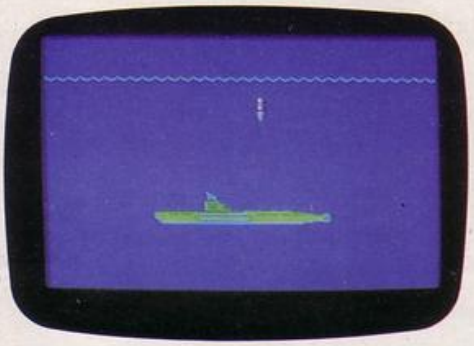
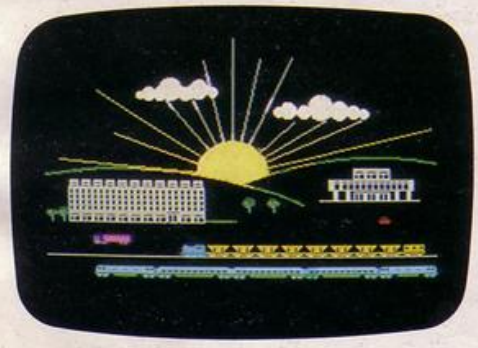
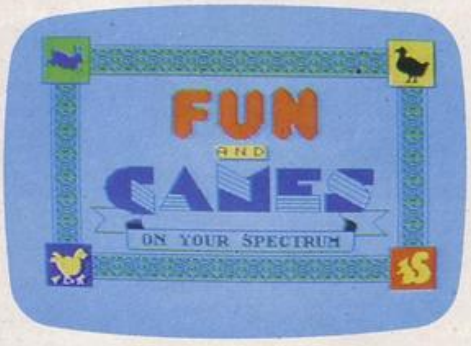
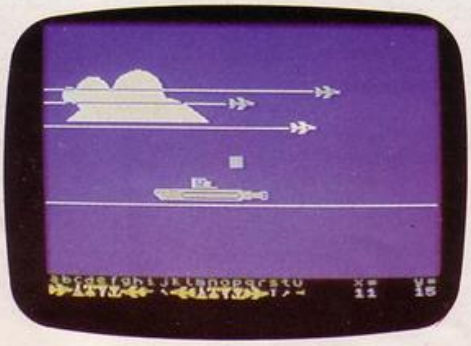


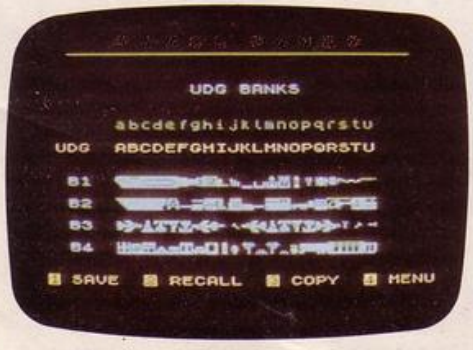


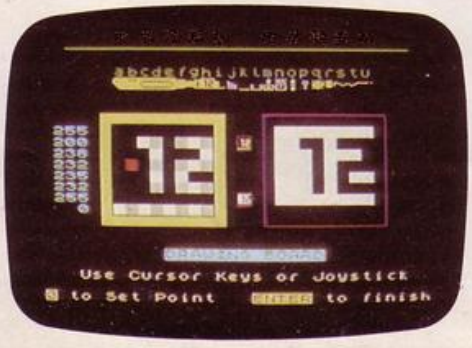


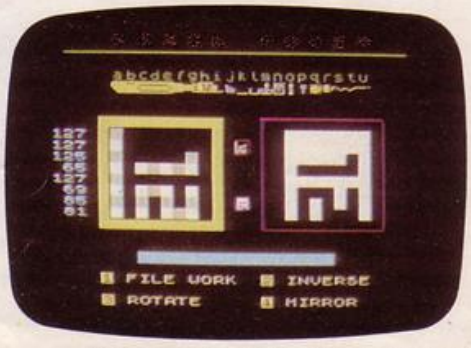


THE MOST IMAGINATIVE GRAPHICS PROGRAMMING SOFTWARE FOR YOUR SPECTRUM.









There's now one piece of software that's a *must* for every 48K SPECTRUM owner.

It's called "PAINTBOX".

If you wish to exploit the full graphics capability of your machine, you can do so . . . simply and easily with "PAINTBOX".

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Just look at some of the facilities available from "PAINTBOX":

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Giving you the facility to define (and re-define) up to 84 graphics characters which can be held in memory, stored in your BASIC programs for instant recall from its own built-in machine code!

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GRID RUN is a high resolution, fast machine code game using the spectrums sound and colour to the full. Set in a maze you must avoid oncoming android cars bent on your destruction. Bonus car every 10,000 points "Famous Five" hall of fame, increasing speed and difficulty. There is even a hold button to get your breath back.
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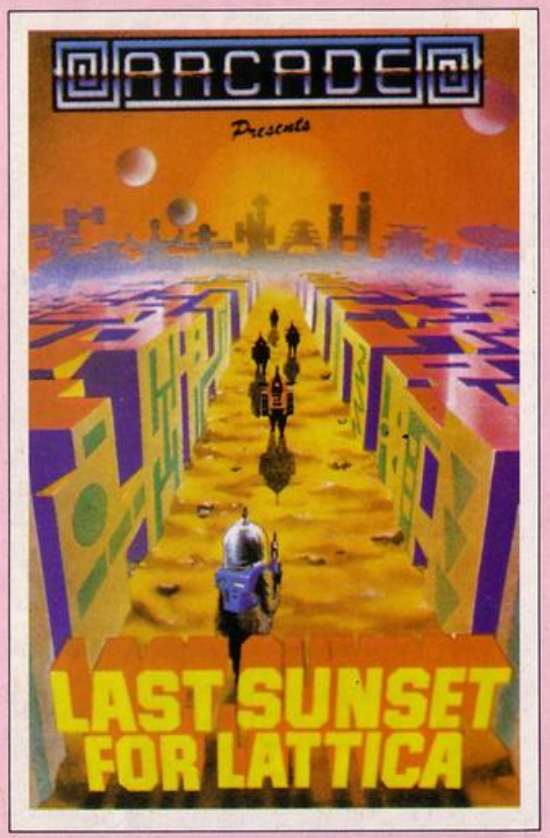
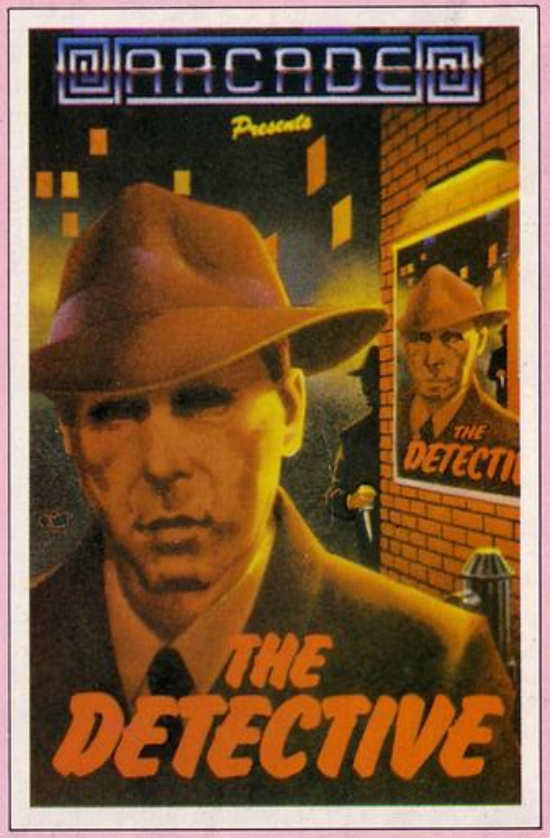
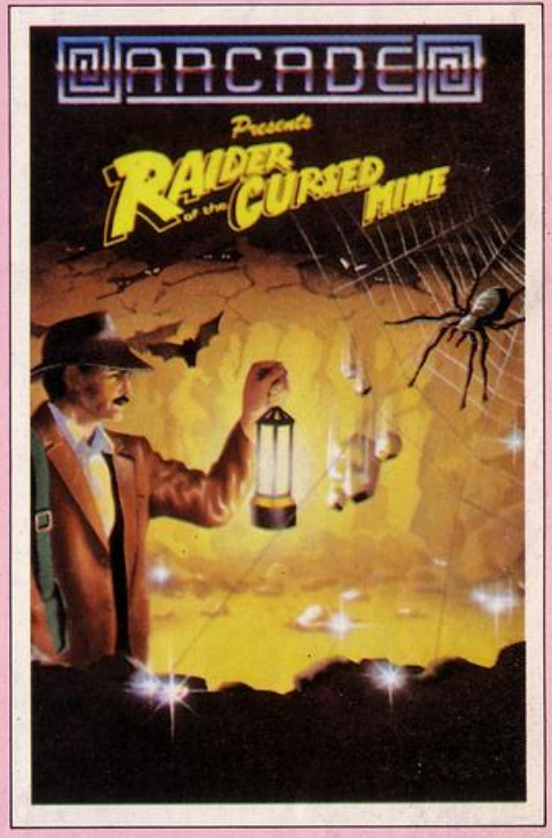


LAST SUNSET FOR LATTICA (Original) is a true graphical adventure game in real time. Your aim is to defuse a bomb hidden somewhere in a highly complicated maze avoiding many well armed androids along the way. Extra lives are there for the taking, so are the keys to take you to the next level and all the while time is running out for the little Planet of Lattica. REF. SUN.



THE DETECTIVE (Original) You thought it was just another "Take the secrets from a Safe and Run" job but the mob thought differently. They will try everything to stop you this time, if madmen, lasers, bombs, dynamite, daggers, barrels, blister bombs, crates, helicopters, jets and fourteen other levels do not get you, you might just make it. Opening the safe has its pitfalls too. Fast moving, m/c game with excellent graphics and sound. A very addictive game. REF. DET.



RAIDER OF THE CURSED MINE (Original) Greed drove you down into the old diamond mine, sheer determination and luck is the only way out again. Lifts help you, so do lamps, and diamonds can be worth a fortune but beware of the evils that lurk deep in the mine. Trolls who throw boulders at you, spiders who eat you, ghosts who show no mercy and bats who steal things, add to this a time bonus and you have an exciting Arcade quality game. Reach level 32 and escape to the big outside world. REF. RAID.

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CARD G

```
   1 CLS : PRINT AT 10,7; FLASH
1; BRIGHT 1;"PRESS BREAK TO BEGI
N": LET a$=INKEY$
   2 POKE USR 1306,1
   3 LET a$=INKEY$
   4 IF a$=" " THEN  GO TO 7
   6 GO TO 3
   7 LET x=0: LET y=0
   8 GO SUB 9700
   9 BORDER 4: PAPER 7: CLS
  10 REM @ 1983 PAUL JONES
  11 LET p=0
  12 LET x=0: LET y=0: LET f=0:
GO TO 14
  13 CLS : LET p=5
  14 CLS : PRINT AT 0,2;"WINS";A
T 0,19;"LOSSES"
  15 BRIGHT 0
  16 PRINT AT 0,7;y;AT 0,26;x
  17 LET v=0
  18 PRINT AT 10,3;"DEALING"
  20 LET a=39
  30 FOR i=7 TO 48
  40 PLOT i,a
  50 NEXT i
  60 FOR i=55 TO 96
  70 PLOT i,a
  80 NEXT i
  90 FOR i=103 TO 144
 100 PLOT i,a
 110 NEXT i
 120 FOR i=151 TO 192
 130 PLOT i,a
 140 NEXT i
 150 FOR i=199 TO 240
 160 PLOT i,a
 170 NEXT i
 175 IF a=104 THEN  GO TO 190
 180 LET a=a+65: GO TO 30
 190 FOR n=7 TO 201 STEP 48
 200 PLOT n,39: DRAW 0,64
 205 PAUSE 20
 210 NEXT n
 220 FOR n=48 TO 240 STEP 48
 230 PLOT n,39: DRAW 0,64
 240 NEXT n
 245 IF p>2 THEN  GO TO 325
 250 FOR n=0 TO 7: READ k: POKE
USR "a"+n,k: NEXT n
 260 DATA BIN 00011000,BIN 00111
100,BIN 01111110,BIN 11111111,BI
N 11111111,BIN 01111110,BIN 0011
1100,BIN 00011000
 270 FOR n=0 TO 7: READ k: POKE
USR "b"+n,k: NEXT n
 280 DATA BIN 00011000,BIN 00111
100,BIN 00111100,BIN 11011011,BI
N 11111111,BIN 11011011,BIN 0001
1000,BIN 00111100
 290 FOR n=0 TO 7: READ k: POKE
USR "c"+n,k: NEXT n
 300 DATA BIN 00011000,BIN 00111
100,BIN 01111110,BIN 11111111,BI
N 11111111,BIN 01011010,BIN 0001
1000,BIN 00011000
 310 FOR n=0 TO 7: READ k: POKE
USR "d"+n,k: NEXT n
 320 DATA BIN 01000100,BIN 11101
110,BIN 11111110,BIN 01111100,BI
N 01111100,BIN 00111000,BIN 0011
1000,BIN 00010000
 321 FOR n=0 TO 7: READ k: POKE
USR "t"+n,k: NEXT n
 322 DATA BIN 01011110,BIN 01010
010,BIN 01010010,BIN 01010010,BI
N 01010010,BIN 01010010,BIN 0101
0010,BIN 01011110
 323 LET p=p+2
 325 INK 1
 330 FOR i=12 TO 43 STEP 2
 340 PLOT i,44: DRAW 0,56
 350 NEXT i
 360 FOR i=60 TO 91 STEP 2
 370 PLOT i,44: DRAW 0,56
 380 NEXT i
 390 FOR i=108 TO 139 STEP 2
 400 PLOT i,44: DRAW 0,56
 410 NEXT i
 420 FOR i=156 TO 187 STEP 2
 430 PLOT i,44: DRAW 0,56
 440 NEXT i
 450 FOR i=204 TO 235 STEP 2
 460 PLOT i,44: DRAW 0,56
 470 NEXT i
 475 PRINT AT 10,3;"        "
 480 LET c=0
 490 LET m=1
 495 LET w=RND*12
 500 RANDOMIZE : GO TO INT (RND*
3)+510
 510 LET s$="a": GO TO 1001+w
 511 LET s$="b": GO TO 1001+w
 512 LET s$="c": GO TO 1001+w
 513 LET s$="d": GO TO 1001+w
1001 PRINT AT 9,m; BRIGHT 1;"2
  ";AT 10,m;"  ";s$;"  ";AT 11,m
```

CARD GAMBIT, for the 48K Spectrum, will give you some idea of how good you are at playing games of chance and guessing the outcome before an event occurs.

At the end of the game, in which you have to guess whether the value of a card is higher or lower than the previous one, you will be told how well you fared. That depends on your win/lose ratio.

The program was sent by Paul Jones of Tuffley, Gloucestershire.

GAMBIT

```
;",     ";AT 12,m;"      ";AT 13,m
;"      ";AT 14,m;"      ";AT 15,m
;"  ";$$;"  ";AT 16,m;"    2": G
O TO 5000
1002 PRINT AT 9,m; BRIGHT 1;"3
  ";AT 10,m;"  ";$$;"  ";AT 11,m
;"      ";AT 12,m;"  ";$$;"  ";AT
 13,m;"      ";AT 14,m;"      ";AT
 15,m;"  ";$$;"  ";AT 16,m;"
3": GO TO 5000
1003 PRINT AT 9,m; BRIGHT 1;"4
  ";AT 10,m;" ";$$;" ";AT
 11,m;"      ";AT 12,m;"      ";AT
 13,m;"      ";AT 14,m;"      ";AT
 15,m;" ";$$;" ";$$;" ";AT 16,m;
"    4": GO TO 5000
1004 PRINT AT 9,m; BRIGHT 1;"5
  ";AT 10,m;" ";$$;" ";$$;" ";AT
 11,m;"      ";AT 12,m;"      ";AT
 13,m;"  ";$$;"  ";AT 14,m;"
 ";AT 15,m;" ";$$;" ";$$;" ";AT
16,m;"    5": GO TO 5000
1005 PRINT AT 9,m; BRIGHT 1;"6
  ";AT 10,m;" ";$$;" ";$$;" ";AT
 11,m;"      ";AT 12,m;"      ";AT
 13,m;" ";$$;" ";$$;" ";AT 14,m;
"      ";AT 15,m;" ";$$;" ";$$;"
";AT 16,m;"    6": GO TO 5000
1006 PRINT AT 9,m; BRIGHT 1;"7
  ";AT 10,m;" ";$$;" ";$$;" ";AT
 11,m;"      ";AT 12,m;"      ";AT
 13,m;" ";$$;" ";$$;" ";AT 14,m;
"  ";$$;"  ";AT 15,m;" ";$$;" ";
$$;" ";AT 16,m;"    7": GO TO 50
00
1007 PRINT AT 9,m; BRIGHT 1;"8
  ";AT 10,m;" ";$$;" ";$$;" ";AT
 11,m;"      ";AT 12,m;"  ";$$;"
 ";AT 13,m;" ";$$;" ";$$;" ";AT
14,m;"  ";$$;"  ";AT 15,m;" ";$$
;" ";$$;" ";AT 16,m;"    8": GO
TO 5000
1008 PRINT AT 9,m; BRIGHT 1;"9";
$$;" ";$$;" ";AT 10,m;"      ";AT
 11,m;" ";$$;" ";$$;" ";AT 12,m;
"  ";$$;"  ";AT 13,m;" ";$$;" ";
$$;" ";AT 14,m;"      ";AT 15,m;"
 ";$$;" ";$$;" ";AT 16,m;"    9"
: GO TO 5000
1009 PRINT AT 9,m; BRIGHT 1;"t";
$$;" ";$$;" ";AT 10,m;"  ";$$;"
 ";AT 11,m;" ";$$;" ";$$;" ";AT
12,m;"      ";AT 13,m;" ";$$;" ";
$$;" ";AT 14,m;"  ";$$;"  ";AT 1
5,m;" ";$$;" ";$$;" ";AT 16,m;"
   t": GO TO 5000
1010 PRINT AT 9,m; BRIGHT 1;"J
  ";AT 10,m;"  ";$$;"  ";AT 11,m
;" (95)J(95) ";AT 12,m;" (95)A(9
5) ";AT 13,m;"  C  ";AT 14,m;" (
95)k(95) ";AT 15,m;"  ";$$;"  ";
AT 16,m;"    J": GO TO 5000
1011 PRINT AT 9,m; BRIGHT 1;"Q "
;$$;"  ";AT 10,m;"  q  ";AT 11,m
;" (95)u(95) ";AT 12,m;" (95)E(9
5) ";AT 13,m;" (95)E(95) ";AT 14
,m;" (95)n(95) ";AT 15,m;" (95)
(95) ";AT 16,m;"  ";$$;" Q": GO
TO 5000
1012 PRINT AT 9,m; BRIGHT 1;"K
  ";AT 10,m;"  ";$$;"  ";AT 11,m
;" (95)K(95) ";AT 12,m;" (95)i(9
5) ";AT 13,m;"  n  ";AT 14,m;" (
95)9(95) ";AT 15,m;"  ";$$;"  ";
AT 16,m;"    K": GO TO 5000
1013 PRINT AT 9,m; BRIGHT 1;"A
  ";AT 10,m;"      ";AT 11,m;"
  ";AT 12,m;"      ";AT 13,m;"  "
;$$;"  ";AT 14,m;"      ";AT 15,m
;"      ";AT 16,m;"    A": GO TO
5000
5000 IF c<>0 THEN  GO TO 5006
5001 PRINT AT 6,2;"DO YOU WISH T
O CHANGE";AT 7,2;" YOUR BASE CAR
D Y/N"
5002 LET z$=INKEY$: IF z$="y" TH
EN  GO TO 495
5003 IF z$="n" THEN  PRINT AT 6,
2;"
  ";AT 7,2;"
  ": GO TO 5006
5004 LET c=c+1
5005 GO TO 5002
5006 PRINT AT 6,2;"
                  ";AT 7,2;"
                 "
5007 IF v=5 THEN  GO TO 5525
5008 IF m=25 THEN  GO TO 7000
5009 LET z$=INKEY$
5010 PRINT AT 19,2;"H/L"
5013 IF f=5 THEN  GO TO 9500
5015 IF z$="h" THEN  PRINT AT 18
,15;"HIGHER": GO TO 5500
5020 IF z$="l" THEN  PRINT AT 18
,15;"LOWER ": GO TO 6000
5400 GO TO 5000
```

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SP12

```
5500 LET s=RND*12
5503 IF w+s=w*2 THEN  GO TO 9000
5505 IF w>s THEN  GO TO 5520
5510 IF w<s THEN  LET w=s: LET m
=m+6: GO TO 500
5520 PRINT AT 2,12; BRIGHT 1;"BA
D LUCK";AT 4,1;"THE NEXT CARD IS
 NOT HIGHER": PAUSE 50
5521 IF f=5 THEN  GO TO 9500: PR
INT AT 19,2; FLASH 1; BRIGHT 1;"
PRESS R TO REPLAY"
5522 LET x=x+1
5523 IF x+y=5 THEN  LET f=5
5524 LET v=5: LET m=m+6: LET w=s
: GO TO 500
5525 BEEP 0.3,-20: BEEP 0.3,-21:
 BEEP 0.3,-22: BEEP 0.3,-23
5526 IF f=5 THEN  BEEP 0.6,-20:
PAUSE 100: GO TO 9500
5527 LET z$=INKEY$
5530 IF z$="r" THEN  GO TO 13
5535 PRINT AT 19,2; FLASH 1; BRI
GHT 1;"PRESS R TO REPLAY"
5540 GO TO 5527
6000 LET s=RND*12
6003 IF w+s=w*2 THEN  GO TO 9000
6005 IF w<s THEN  GO TO 6020
6010 IF w>s THEN  LET w=s: LET m
=m+6: GO TO 500
6020 PRINT AT 2,12; BRIGHT 1;"BA
D LUCK";AT 4,1;"THE NEXT CARD IS
 NOT LOWER": PAUSE 50
6021 PRINT AT 19,2; FLASH 1; BRI
GHT 1;"PRESS R TO REPLAY"
6022 LET x=x+1
6023 IF x+y=5 THEN  LET f=5: GO
TO 500
6024 LET v=5: LET m=m+6: LET w=s
: GO TO 500
6025 IF f=5 THEN  BEEP 0.6,-20:
GO TO 9500
6027 LET z$=INKEY$
6030 IF z$="r" THEN  GO TO 13
6040 GO TO 6025
7000 PRINT AT 2,6; BRIGHT 1; FLA
SH 1;"CONGRATULATIONS"
7005 LET y=y+1
7010 GO TO 9000
9000 BEEP 0.3,0
9001 BEEP 0.2,2
9002 BEEP 0.2,4
9003 BEEP 0.4,5
9004 BEEP 0.3,0
9005 BEEP 0.2,5
9006 BEEP 0.2,4
9007 BEEP 0.2,5
9008 BEEP 0.2,7
9009 BEEP 0.2,2
9010 PAUSE 1: BEEP 0.2,2
9011 BEEP 0.3,4
9012 BEEP 0.3,5
9013 BEEP 0.4,9
9014 BEEP 0.2,7
9015 BEEP 0.2,7
9016 BEEP 0.2,5
9017 BEEP 0.2,5
9018 BEEP 0.2,4
9019 BEEP 0.2,2
9020 BEEP 0.2,4
9021 BEEP 0.5,5
9030 IF x+y=5 THEN  GO TO 9500
9050 GO TO 13
9500 CLS
9510 IF y=0 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"PATHETIC"
9515 IF y=1 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"POOR"
9520 IF y=2 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"AVERAGE"
9530 IF y=3 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"GOOD"
9540 IF y=4 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"EXCELLENT"
9550 IF y=5 THEN  PRINT AT 10,10
; FLASH 1; BRIGHT 1;"VERY LUCKY"
9600 PAUSE 300: GO TO 12
9700 BORDER 1: INK 7: PAPER 1: C
LS
9710 PRINT AT 2,5;"PLAY YOU CARD
S RIGHT"
9715 PRINT AT 1,3;"**************
************"
9720 PRINT AT 3,3;"**************
************"
9730 PRINT AT 5,0;" YOU MUST DEC
IDE WHETHER THE     NEXT CARD IN
THE LINE IS HIGHER OR LOWER THAN
 THE PRECEDING ONE  IF YOU MANAG
E TO REVEAL ALL 5  CARDS A WIN W
ILL BE DISPLAYED ATTHE TOP OF TH
E SCREEN.HOWEVER IFYOU FAIL WHIC
H IS MORE THAN      LIKELY A LOSS
 IS DISPLAYED.      ONCE YOU HAVE
 COMPLETED YOUR 5   GAMES YOUR EF
FORTS WILL BE       GRADED FROM P
ATHETIC TO          EXCELLENT.  Y
OU ALSO ARE GIVEN   THE CHOICE OF
 ALTERING YOUR BASECARD"
9740 PRINT AT 19,4;"GOOD LUCK! (
YOU'LL NEED IT)"
9750 PRINT AT 20,2; FLASH 1;"PRE
SS ANY KEY TO CONTINUE"
9760 PAUSE 0
9763 CLS
9765 PRINT AT 10,1;"P.S. IF A PA
IR IS TURNED UP";AT 11,6;"THE CO
MPUTOR WILL     ";AT 12,6;"DECIDE
 WHETHER OR NOT";AT 13,6;"TO LET
 YOU CONTINUE"
9767 PRINT AT 20,2; FLASH 1;"PRE
SS ANY KEY TO CONTINUE"
9769 PAUSE 0
9770 INK 0
9775 CLS
9780 RETURN
```

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SP12

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YOUR GO-CART is speeding recklessly towards the village pond, without brakes. Your only hope is to guess the correct letter—the computer will tell you whether your choice is too low or too high. You have 10 attempts before your ducking in **Duck Pond,** written for the 1K ZX-81 by 13-year-old Robin Timpson of Wellingborough, Northamptonshire.

DUCK POND

```
   1 REM "DUCK POND"
   3 LET Y=11
   5 CLS
  10 LET X=INT (RND*26)+38
  20 FOR I=1 TO 10
  30 PRINT AT 3,0;"ROUND ";I
  40 PRINT "ENTER THE LETTER"
  50 INPUT Z$
  55 LET V=CODE Z$
  60 IF V<X THEN PRINT "TOO LOW"
  70 IF V>X THEN PRINT "TOO HIGH
"
  90 IF V=X THEN GOTO 160
 110 FOR F=1 TO 50
 120 NEXT F
 130 CLS
 132 PRINT AT 0,Y;" ";TAB 0;"(3*
9d,9*isp)";AT 0,Y;"(io)"
 134 LET Y=Y-1
 136 IF I=10 THEN GOTO 145
 140 NEXT I
 145 PRINT AT 1,Y;"(io)";AT 0,
Y-1;"(9y)";TAB 2;"(9t)"
 147 PRINT ,,,,
 150 PRINT "splash  YOU HAVE LAN
DED IN THE  DUCK-POND"
 155 GOTO 170
 160 PRINT "YOU HAVE SURVIVED GE
TTING WET"
 170 PRINT "ANOTHER GO (Y/N)?"
 180 INPUT A$
 190 IF A$="Y" THEN RUN
 200 PRINT "THANK YOU FOR PLAYIN
G"
```

PING

PING PONG allows two players to play on the 16K or 48K Spectrum. As the body of the program is written in machine code, super fast shoots the ball across the screen and

```
  10 CLEAR 31743: GO SUB 1000
  20 BORDER 4: PAPER 0: INK 7: C
LS
  30 LET yy=40: LET xs=3: LET ys
=4: LET p$="PING-PONG": GO SUB 2
000
  40 PRINT AT 15,7;"Claus Jensen
 1983"
  50 LET yy=160: LET xs=1: LET y
s=2: LET p$="Press any key to co
ntinue": GO SUB 2000
  60 PAUSE 0: CLS
  70 PRINT AT 2,0;" This is a ga
me for 2 players.      Each player
 controls a bat,       which can b
e moved up and down   in an attem
pt to hit the ball."
  80 PRINT AT 7,0;" The player a
t the left side       controls hi
s bat with the keys   Q and A. Th
e player at the       right side
controls his bat      with the ke
ys P and ENTER."
  90 PRINT AT 13,0;" When a ball
 is lost, a new one    is automat
ically supplied. The  game is ov
er, when one of the   players ha
s won 10 balls."
 100 PRINT AT 20,9;"PRESS ANY KE
Y"
 110 PAUSE 0
 120 CLS : PRINT AT 4,2;"Select
 speed of the game:": PLOT 16,134
: DRAW 196,0
 130 PRINT AT 8,7;"1 - Slow"
 140 PRINT AT 9,7;"2 - Medium sP
eed"
 150 PRINT AT 10,7;"3 - Fast"
 160 PRINT AT 11,7;"4 - Very fas
t"
 170 PRINT AT 12,7;"5 - Super fa
st"
 180 PRINT AT 17,2;"Press one di
git (1-5)"
 190 PAUSE 0: LET s$=INKEY$: IF
 s$<"1" OR s$>"5" THEN GO TO 190
 200 LET ls=0: LET rs=0
 210 PAPER 2: INK 2: CLS
 220 PRINT AT 0,0;"ahfffffffffff
fffffffffffffffffib": FOR n=1 TO
 20: PRINT AT n,0;"adccccccccccc
ccccccccccccccccceb": NEXT n: PR
INT AT 21,0;"aJ999999999999999999
9999999999kb"
 230 INK 6: POKE 23296,10: POKE
 23297,1: POKE 23298,10: POKE 232
99,1: POKE 23300,10: POKE 23301,
1: POKE 23302,10: POKE 23303,1:
POKE 23304,0: POKE 23305,1
 240 GO TO 230+20*VAL s$
 250 LET n=USR 31744: FOR a=1 TO
 10: NEXT a: IF n=0 THEN GO TO 2
50
 260 GO TO 340
 270 LET n=USR 31744: FOR a=1 TO
 7: NEXT a: IF n=0 THEN GO TO 27
0
 280 GO TO 340
 290 LET n=USR 31744: FOR a=1 TO
 3: NEXT a: IF n=0 THEN GO TO 29
0
 300 GO TO 340
 310 LET n=USR 31744: FOR a=1 TO
 1: NEXT a: IF n=0 THEN GO TO 31
0
 320 GO TO 340
 330 LET n=USR 31744: IF n=0 THE
N GO TO 330
 340 LET ls=ls+(CHR$ n="L"): LET
 rs=rs+(CHR$ n="R")
 350 PAPER 0: INK 7: CLS
 360 FOR n=20 TO 0 STEP -2: BEEP
 .05,n: NEXT n
 370 LET yy=48: LET xs=4: LET ys
=4: LET p$=STR$ ls+":"+STR$ rs:
GO SUB 2000
 380 IF ls<10 AND rs<10 THEN PAU
SE 50: GO TO 210
 390 LET yy=100: LET xs=1: LET y
s=2: LET p$=" WE'VE GOT A WINNER
 ": FLASH 1: GO SUB 2000: FLASH
0
 400 LET yy=152: LET xs=1: LET y
s=2: LET p$="Do you want a new g
ame? (y/n)": GO SUB 2000
 410 PAUSE 0
 420 IF INKEY$="y" OR INKEY$="Y"
 THEN GO TO 120
 430 IF INKEY$="n" OR INKEY$="N"
```

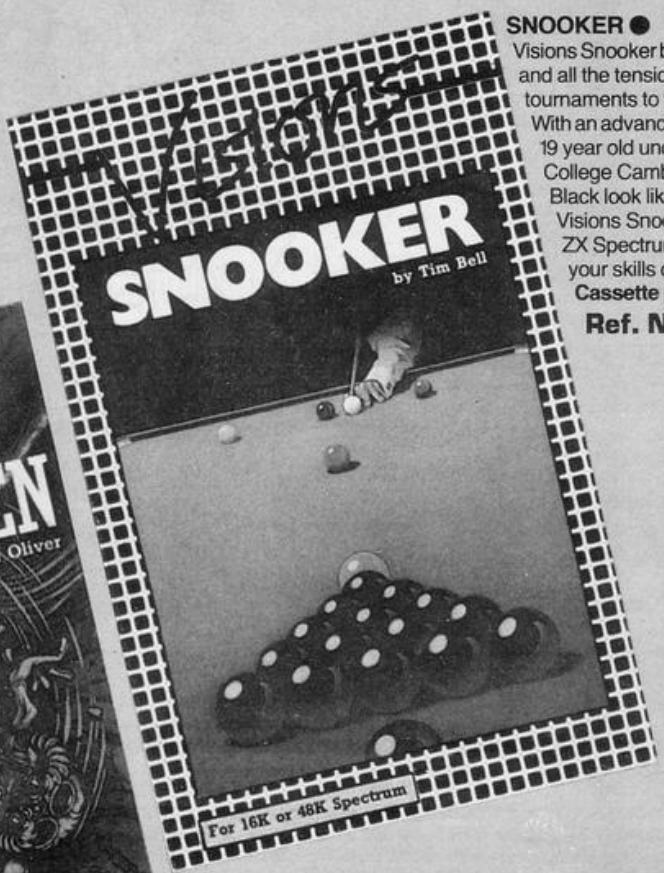
PONG

should be played by expert players only. When the game is RUN, wait until the title page is displayed before pressing any key. Written by Claus Jensen of Vaerlose, Denmark.

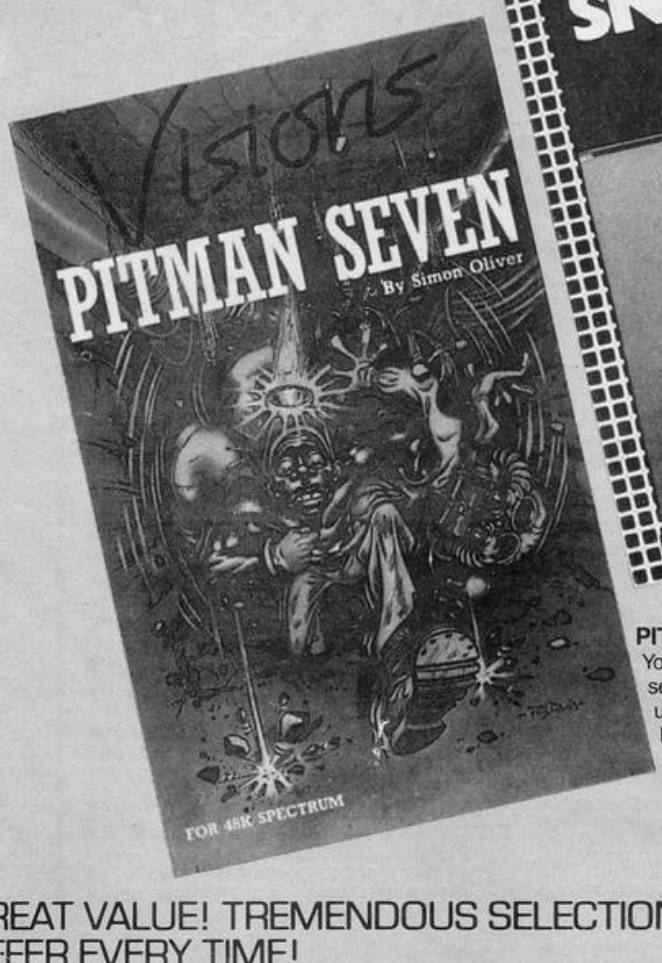
```
 THEN STOP
 440 GO TO 410
1000 PRINT "Initializing....."
1010 RESTORE : LET a=31744: LET
c=0
1020 READ h$: LET n=1
1030 LET h1=CODE h$(n)-48: IF h1
>9 THEN LET h1=h1-7
1040 LET h2=CODE h$(n+1)-48: IF
h2>9 THEN LET h2=h2-7
1050 POKE a,16*h1+h2: LET c=c+PE
EK a: LET a=a+1: LET n=n+2
1060 IF a=31744+469 THEN PRINT "
Section #1 loaded": LET a=32256
1070 IF a=32256+277 THEN PRINT "
Section #2 loaded": LET a=USR "a
"
1080 IF a=USR "a"+88 THEN PRINT
"Section #3 loaded": GO TO 1110
1090 IF n>LEN h$ THEN GO TO 1020
1100 GO TO 1030
1110 IF c=79688 THEN PRINT "Init
ialization ok": PAUSE 100: RETUR
N
1120 PRINT FLASH 1;"WARNING!"; F
LASH 0;" There is an error in
one or more of the DATA state-
ments. Do not try to execute the
Program, since this may cause a
System Crash.": STOP
1130 DATA "3A005BFE14280A01FEFDE
D40CB4020013CFE01280A01FEFBED40C
B4020013D32005B3A025BFE14280A01F
EBFED40CB4020013CFE01280A01FEDFE
D40CB4020013D32025B3A045B2108586
3220458A055B21095B8632055BDD210
0583A015B21005B8E28"
1140 DATA "47474FCB38CB38CB38CB2
1CB21CB21CB21CB21DD09DDCBE096DDC
B0096DDCB2096DD2100583A005B474FC
B38CB38CB38CB21CB21CB21CB21CB21D
D09DDCBE0D6DDCB00D6DDCB20D632015
BDD211F583A035B21025BBE2847474FC
B38CB38CB38CB21CB21"
1150 DATA "CB21CB21CB21DD09DDCBE
096DDCB0096DDCB2096DD211F583A025
B474FCB38CB38CB38CB21CB21CB21CB2
1CB21DD09DDCBE0D6DDCB00D6DDCB20D
632035B2100583A065B474FCB38CB38C
B38CB21CB21CB21CB21CB21093E00473
A075B4F09CB96210058"
1160 DATA "3A045B474FCB38CB38CB3
8CB21CB21CB21CB21CB21093E00473A0
55B4F09CBD63A045B32065B3A055B320
75B3A055BFE00200401520C9FE1F200
4014C00C9FE01200521005B1807FE1E2
04621025B3A045B965FCB7F2802ED44F
E002817FE012813FE02"
1170 DATA "202C7B21085886FE01280
6FEFF2802181D3A085B8BFE00280ACB7
F28043EFF18023E013200583A095BED4
432095B3A045BFE002804FE1520083A0
85BED443208SB010000C9"
1180 DATA "210F5B7E2322005B6F3CC
82600292929ED4B365C093E083204583
A0B5B3209583A0A5B3208583E0932055
B7E2322025B0732065B3A055B3D20323
A045B3D20183A0E5B473A0C5B4F3A0A5
B810520FC320A5B2A005BC3037E32045
B3A0D5B473A09588032"
1190 DATA "095B2A025BC3207E32055
B3A0C5B473A095B32075B3A0D5B4FC5C
DA47EC13A075B3C32075B0D20F13A085
B3C32085B0520DD3A065BC3307E80402
010080402013A8E5CEEFF473A8D5CA04
73A085BE6F86F3A075BFEC0D01F1F1FE
61F67CB1CCB1DCB1CCB"
1200 DATA "1DCB1CCB1D3E58B4673A8
E5CA6B0773A075B47E607F640677B1F1
F1FE618B467781717E6E06F3A085B471
F1F1FE61FB56FEB219C7E78E6074F060
009461A21065BCB462803B012C92FB02
F12C9"
1210 DATA "3F3F3F3F3F3F3F3FFCFCF
CFCFCFCFCFC3C7EFFFFFFFF7E3C3C7E7
F7F7F7F7E3C3C7EFEFEFEFE7E3C007EF
FFFFFFF7E3C3C7EFFFFFFFF7E00007E7
F7F7F7F7E3C007EFEFEFEFE7E3C3C7E7
F7F7F7F7E003C7EFEFEFEFE7E00"
2000 LET xx=(256-8*xs*LEN p$)/2
2010 POKE 23306,xx: POKE 23307,y
y: POKE 23308,xs: POKE 23309,ys:
 POKE 23310,8
2020 LET w=LEN p$: FOR n=1 TO w:
 POKE 23310+n,CODE p$(n): NEXT n
: POKE 23311+w,255
2030 LET w=USR 32256: RETURN
```

ALL THE BEST FO

Here's a sure-fire way of making certain this Christmas is packed full of fun for you and your friends. We've searched for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source! These are our latest exclusive offerings. Make sure you place your order now to receive them in time for Christmas.



SNOOKER ●
Visions Snooker brings all the excitement and all the tension of big time tournaments to your TV set. With an advanced program written by a 19 year old undergraduate at Queens College Cambridge, it makes Pot Black look like a load of old . . . . Visions Snooker for the 16K ZX Spectrum. It's an exciting test of your skills on the cue.
Cassette price: £8.95.
Ref. No: 2-53



PITMAN SEVEN ●
Your mission is to rescue two teams of seven desperate men, trapped underground on level five. You must bring each man to the surface, surviving the dangers you meet en route.
ZX Spectrum 48K.
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See 1-31 under ZX81. 48K RAM **£9.95**

SHEER PANIC ●
Mining for Magnetic Quartz is a hazardous business. You have to ensure that there is plenty of oxygen to breathe, fight off the local monsters with only a shovel and counter interference with your consciousness.
ZX Spectrum 16K or 48K.
Cassette price: £5.95.
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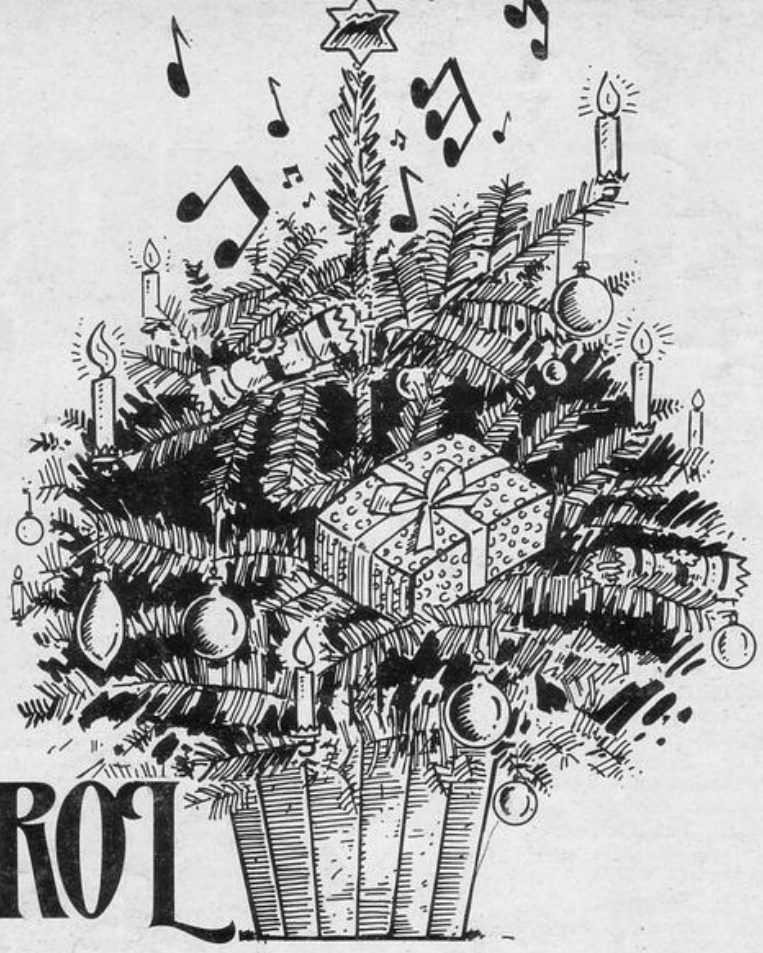

CAROL

CAROL produces a picture of a Christmas tree, complete with candles and presents, on the screen of a 16K or 48K Spectrum. It will then play as many verses as you choose of either Jingle Bells or Good King Wenceslas.

Carol was written by R C Muskett of Perranporth, Cornwall.

The large X in line 3000 is a graphic A, the rectangles in line 3030 and the following lines are graphic Bs. The parcels in lines 3010 and 3020 are graphic Cs.

```
 10 GO SUB 1000:
 20 INK 7: BORDER 0: PAPER 0
 30 CLS
 35 INK 4
 40 PRINT
 50 PRINT "(12*sP:95:1sP:195)"
 55 PRINT "(12*sP:3*1sP)"
 60 PRINT "(11*sP:95:3*1sP:195)
"
 65 PRINT "(11*sP:5*1sP)"
 70 PRINT "(10*sP:95:5*1sP:195)
"
 75 PRINT "(10*sP:7*1sP)"
 80 PRINT "(9*sP:95:7*1sP:195)"
 85 PRINT "(9*sP:9*1sP)"
 90 PRINT "(8*sP:95:9*1sP:195)"
 95 PRINT "(8*sP:11*1sP)"
100 PRINT "(7*sP:95:11*1sP:195)
"
105 PRINT "(7*sP:13*1sP)"
106 INK 6
107 GO SUB 3000
108 PAPER 0
110 FOR f=13 TO 20
120 INK 6: PRINT AT f,13;"(2*is
P)"
125 INK 3: PRINT AT f,0;"(1sP)"
;AT f,31;"(1sP)"
130 NEXT f
140 INK 7: PRINT AT 4,0;"MERRY"
;AT 4,22;"CHRISTMAS"
150 INPUT ;"Carrol 1 OR 2?";a
160 IF a=1 THEN  GO SUB 500
170 IF a=2 THEN  GO SUB 200
180 GO TO 150
200 REM king
210 INPUT ;"Number of verses";a
220 IF a=0 THEN  RETURN
230 IF a<0 THEN  GO TO 210
235 FOR f=1 TO a
240 BEEP .5,9: BEEP .5,9: BEEP
.5,9: BEEP .5,11
250 BEEP .5,9: BEEP .5,9: BEEP
1,4
260 BEEP .5,6: BEEP .5,4: BEEP
.5,6: BEEP .5,8
270 BEEP 1,9: BEEP 1,9:
280 BEEP .5,9: BEEP .5,9: BEEP
.5,9: BEEP .5,11
290 BEEP .5,9: BEEP .5,9: BEEP
1,4:
300 BEEP .5,6: BEEP .5,4: BEEP
.5,6: BEEP .5,8
310 BEEP 1,9: BEEP 1,9:
320 BEEP .5,16: BEEP .5,15: BEE
P .5,13: BEEP .5,11
330 BEEP .5,13: BEEP .5,11: BEE
P 1,9
340 BEEP .5,6: BEEP .5,4: BEEP
.5,6: BEEP .5,8
350 BEEP 1,9: BEEP 1,9:
360 BEEP .5,4: BEEP .5,4: BEEP
.5,6: BEEP .5,8
370 BEEP .5,9: BEEP .5,9: BEEP
1,11
380 BEEP .5,16: BEEP .5,15: BEE
P .5,13: BEEP .5,11
390 BEEP 1,9: BEEP 1,16
400 BEEP 2,9
410 NEXT f
420 RETURN
500 REM BELLs
510 INPUT ;"Number of verses";a
520 IF a=0 THEN  RETURN
530 IF a<0 THEN  GO TO 510
540 FOR f=1 TO a
550 BEEP .5,4: BEEP .5,4: BEEP
1,4
560 BEEP .5,4: BEEP .5,4: BEEP
1,4
570 BEEP .5,4: BEEP .5,7: BEEP
.5,0: BEEP .5,2
580 BEEP 2,4
590 BEEP .5,5: BEEP .5,5: BEEP
.5,5: BEEP .5,5
600 BEEP .5,5: BEEP .5,4: BEEP
.5,4: BEEP .5,4
610 BEEP .5,4: BEEP .5,2: BEEP
.5,2: BEEP .5,4
620 BEEP 1,2: BEEP 1,7
630 BEEP .5,4: BEEP .5,4: BEEP
1,4
640 BEEP .5,4: BEEP .5,4: BEEP
1,4
650 BEEP .5,4: BEEP .5,7: BEEP
.5,0: BEEP .5,2
660 BEEP 2,4
670 BEEP .5,5: BEEP .5,5: BEEP
.5,5: BEEP .5,5
680 BEEP .5,5: BEEP .5,4: BEEP
.5,4: BEEP .5,4
690 BEEP .5,7: BEEP .5,7: BEEP
.5,5: BEEP .5,2
700 BEEP 2,0
710 NEXT f
720 RETURN
999 STOP
1000 DATA BIN 11000001,BIN 01100
011,BIN 00110110,BIN 00011100,BI
N 00011100,BIN 00110110,BIN 0110
0011,BIN 11000001
1100 DATA BIN 00001000,BIN 00011
100,BIN 00011100,BIN 00011100,BI
N 00011100,BIN 00011100,BIN 0001
1100,BIN 00011100
1200 DATA BIN 11110111,BIN 11110
111,BIN 11110111,BIN 0,BIN 11110
111,BIN 11110111,BIN 11110111,BI
N 11110111
2000 FOR F=0 TO 7: READ A: POKE
USR "a"+F,A: NEXT F
2100 FOR F=0 TO 7: READ A: POKE
USR "b"+F,A: NEXT F
2200 FOR F=0 TO 7: READ A: POKE
USR "c"+F,A: NEXT F
2210 RETURN
3000 FLASH 1: INK 2: PAPER 4: PR
INT AT 0,13;"X": PAPER 6: PRINT
AT 12,0;"↑";AT 12,31;"↑": FLASH
0
3010 PAPER 0: PRINT AT 20,5;"c c
 c c  c c c c c"
3020 PAPER 0: PRINT AT 19,5;" c
c c     c c c "
3030 PRINT AT 10,7; INK 1;"b"
3040 PRINT AT 10,19; INK 1;"b"
3050 PRINT AT 8,8; INK 2;"*"
3060 PRINT AT 8,18; INK 2;"*"
3070 PRINT AT 6,9; INK 7;"b"
3080 PRINT AT 6,17; INK 7;"b"
3090 PRINT AT 2,11; INK 6;"+"
3100 PRINT AT 2,15; INK 6;"+"
3110 PRINT AT 4,16; INK 3;"b"
3120 PRINT AT 4,10; INK 3;"b"
3130 PAPER 4: PRINT AT 5,13; INK
 1;"*"
3140 PAPER 4: PRINT AT 4,12; INK
 1;"*"
3150 PAPER 4: PRINT AT 4,14; INK
 7;"*"
3160 PAPER 4: PRINT AT 9,15; INK
 1;"*";AT 9,11;"*"
3170 PAPER 4: PRINT AT 11,13; IN
K 7;"*"
3180 PAPER 4: PRINT AT 7,16; INK
 6;"*";AT 7,10;"*"
3190 PAPER 4: PRINT AT 11,17; IN
K 2;"*";AT 11,9;"*"
3999 RETURN
```

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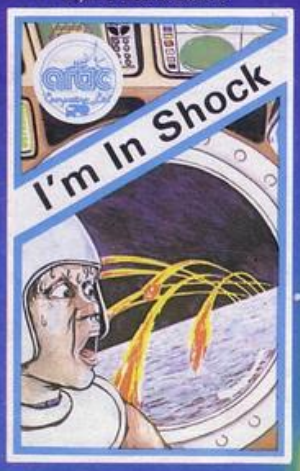

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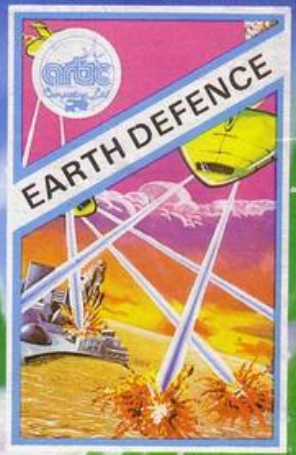

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