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DEvised BY IAN LIVINGSTONE

The storylines for "Eureka!" are by Ian Livingstone, whose "Fighting Fantasy" books have sold over 2,000,000 copies. He's dreamed up some rather nasty tricks and twists for you in this Epic, because he has also devised the cryptic clues and conundrums in the booklet that goes with the program. He's the one who knows the answers.



"Eureka!" was programmed by Andromeda, teamed by Hungarians Donat Kiss and Andras Csaszor. It took the equivalent of 5 YEARS to create, and the skills of 4 graphic artists, 2 musicians and a professor of logic too. We told them to stretch the hardware's capabilities, and make sure you were kept awake for hours!! They've done it...

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Contents

GRAPHICS INSTRUCTIONS

LETTERS

PRO-PRINTOUT COTHELLO

DEFENCE FORCE

LOG JUMP

SOFT FOCUS

PROGRAM TUTOR

Zx81

TEN PIN BOWLING

HONEYMAN

MARTIAN DOME

OILRIG

Beginners

ZX-81

BEGINNERS' TUTOR

GHOST HUNT

HUNT THE THIMBLE

BARRAGE BALLOONS

SPECTRUM

SKATEBOARD

STUNTMAN

CHEESE THIEF

PRIME CALCULATOR

Spectrum

PROGRAM OF THE MONTH

PHOTOFIT

MOW THE LAWN

EGG SAVER

CRAZY PAINTER

LONE ATTACKER

SCIENTIST RESCUE

LASER TURRET

WEB RUNNER

PENGUIN

EMILY'S TANTRUM

BURGER BAR

JAM SANDWICH

CONCENTRATION

COAL COLLECTOR

AIR RAID

HURDLER

MATHS FARM

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*ig3" 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.



PHOTOFIT



MAKE a photofit picture of the villain. You are able to choose the eyes, mouth, nose and hair from a variety of features. If you think the end result looks like the villain you have a chance to put him behind bars.

Photofit was written for the 48K Spectrum by Peter White of Gravesend, Kent who wrote the program to test his knowledge of plotting, drawing and defining graphics. Although he admits that the program is rather long for what it does he also points out that more experienced programmers could have fun tidying it up and experimenting with the graphics. Peter's children Chris, aged 12, and Julia, aged 10, enjoy using the program and the game holds a lot of appeal for younger children.

For clarity the program has been divided into several sections which are explained below.

Line numbers	Section
3-190	SETUP
200-210	EYES
211-214	NOSE
215-228	MOUTH
600-650	OUTLINE
700-705	EYEDRAW
706-708	NOSEDRAW
710-713	MOUTHDRAW
800-830	HAIR

900-914
1600-1720
2000-2011
3000-4065
4500-4545
5000-6040
7000-7500

FACEHAIR
GLASSES
HAIRDRAW
FHDRAW
USERHAIR
GAMEEND
UDGS

Graphics

The four groups of eyes are represented by the graphic pairs AB, CD, EF and GH. The three noses are represented by graphics IJK, LMNO, and PQRS; and the man by graphics T and U.

Variables

a=eye type (1 to 6)
b=nose type (1 to 3)
c=mouth type (1 to 4)
d=hair type (1 to 4)
e=face hair (1 to 5)
f=gllasses (yes/no)
h=identity flag
a\$, w\$=characters
n, a, y=loop counters

SETUP:

Call UDG subroutine
Introduction and call OUTLINE

EYES:

Input type (a). Jump to EYEDRAW

NOSE:

Draw available types of nose.

Input type (b). Jump to

NOSEDRAW MOUTH:

Draw available types of mouth
Input type (c)

Jump to MOUTHDRAW

OUTLINE:

Draw outline of face with ears, brows and photofit border.

Print available types of eyes.

EYEDRAW:

Draw specified eyes

NOSEDRAW:

Draw specified nose

MOUTHDRAW:

Draw specified mouth

HAIR:

Print description of available types of hair. Input type (d)

Jump to HAIRDRAW or
USERHAIR

FACEHAIR:

Print description of available types of facial hair. Input type (e)
Jump to FHDRAW

GLASSES:

Prompt for glasses (yes/no)
If yes THEN draw glasses

HAIRDRAW:

Draw specified hair (three programmed types)

FHDRAW:

Draw specified facial hair

USERHAIR (for user-defined hair):

Print cursor instructions

Erase top of head. Set up start x, y



coordinates. DRAW hair with
PLOTS on adjacent pixels.

GAMEEND:

Input identification flag h
IF not identified THEN restart
ELSE draw bars (for jail)
Clear screen and print "villain
running away" (graphics T, U)
Input "Want another game?" and
restart if yes.

UDGS:

Setup user defined graphics

COMMENTS

As this month's Program Tutor is
about programming efficiency, this
program can be used to demonstrate
how a long program could be
condensed.

1) Lines 205-210 can be replaced by:
GOTO 699+(a=1)+(a=2)*2+(a=3)
*3+(A=4)*4+(a=5)*5+(a=6)*6
Lines 212-214 by:
GOTO 705+(b=1)+(b=2)*2+
(b=3)*3
Lines 225-228 by:
GOTO 709+(c=1)+(c=2)*2+(c=3)
*3+(c=4)*4
Lines 815-825 by:
GOTO 1999+(d=1)+(d=2)*6+
(d=3)*11
Lines 910-914 by:
GOTO (e=1)*1600+(e=2)*3000+

(e=3)

*3050+(e=4)*3060+(e=5)*4050

These substitutions eliminate the need
for many IF ... THEN statements.
Limit checks should be included, as the
program cannot handle invalid entries.
Therefore, if you enter line 205 as the
GOTO, also enter:
204 IF a>6 OR a<0 THEN GOTO
200

2) The sound effect only statements
can be simplified. For example, line 130
could become:

130 DATA 0,4,2,5,4,7,5,9,7,11,9

140 FOR n=1 TO 11:READ p: BEEP
0.1,p: NEXT n

RESTORES would also be required (for
UDGs and 130) to ensure that data was
read in the correct sequence.

3) Lines 4040-4055 (for moustache
and beard) unnecessarily duplicate lines
3050-3055, which deal with the mous-
tache only. The solution here would be
to write a separate subroutine for draw-
ing the moustache.

4) One variable name could be used
for a,b,c,d,e,f as it is unnecessary for the
computer to remember, for instance,
what type of eyes were used when
moving on to nose types.

5) Lines 205-210 could be extended
to include lines 700-705. Similarly,
lines 212-214 could take in lines 706-

708.

6) Most of the draw routines can also
be simplified using DATA (with RE-
STORE) and FOR/NEXT loops, as
they nearly all follow the PLOT,
BEEP, DRAW, BEEP pattern. Line
2000, for example would become:
2000 FOR n=1 TO 5: READ x, y:
PLOT x,y: READ x,y: BEEP x,y:
READ x,y: DRAW x,y, PI: READ x,y:
BEEP x, y: NEXT n

All the numbers in line 2000 can then
be placed in a single data statement.

```
3 PRINT AT 10,10: INVERSE 1:
" PLEASE WAIT "
5 GO SUB 7000
100 FOR n=15 TO 30: BEEP .01,n:
BEEP .05,n-2: NEXT n
120 PRINT AT 5,8: BRIGHT 1:***
* PHOTOFIT ***: AT 10,4: BRIGHT
0:"Can you remember what the":
AT 12,6:"villain looked like ?":
PAUSE 200: CLS
130 BEEP .1,0: BEEP .1,4: BEEP
.1,2: BEEP .1,5: BEEP .1,4: BEEP
.1,7: BEEP .1,5: BEEP .1,9: BEE
P .1,7: BEEP .1,11: BEEP .1,9: B
EEP .5,12
190 PAUSE 30: GO SUB 600
200 INPUT "Which eyes "a
205 IF a=1 THEN GO TO 700
206 IF a=2 THEN GO TO 701
207 IF a=3 THEN GO TO 702
208 IF a=4 THEN GO TO 703
209 IF a=5 THEN GO TO 704
210 IF a=6 THEN GO TO 705
```

```

211 PRINT AT 2,2; INK 2;"1="
: AT 2,6; INK 1;"2=" : AT 2,11
: INK 0;"3=" : AT 3,2; INK 2;"
: AT 3,6; INK 1;" : MND; AT 3
: INK 0;" RS"; AT 4,2; INK 2
: K "1" AT 4,6; INK 1;"
: AT 4,11; INK 0;" : INPUT "Wh
ich nose ? " ; b
212 IF b=1 THEN GO TO 706
213 IF b=2 THEN GO TO 707
214 IF b=3 THEN GO TO 708
215 PRINT AT 0,0;" : " ; A
T 0,9;"2=" : AT 0,17;"3="
: AT 6,0;"4=" : AT 2,0;"
" ; AT 3,6;" : AT 3,10;"
" ; AT 4,2;" : AT 4,6;"
" ; AT 4,10;"
216 PLOT 20,160; DRAW 5,-3; DRA
W 3,-5; DRAW 15,0; DRAW 3,5; DRA
W 5,3; DRAW -10,3; DRAW -5,0, PI
: DRAW -5,0, PI : DRAW -10,-3;
DRAW 31,0
217 PLOT 90,160; DRAW 8,-5; DRA
W 12,0; DRAW 8,5; DRAW -28,0; DR
AW 14,3; DRAW 14,-3
218 PLOT 162,160; DRAW 5,5; DRA
W 5,3; DRAW 3,1; DRAW 3,-1; DRA
W 5,-3; DRAW -5,0; DRAW -25,0, PI
219 PLOT 22,130; DRAW 3,-6; DRA
W 6,-4; DRAW 6,0; DRAW 6,4; DRAW
3,6; DRAW -6,-2; DRAW -4,-3; DR
AW -4,0; DRAW -4,-2; DRAW -6,4
220 INPUT "Which mouth ? " ; c
225 IF c=1 THEN GO TO 710
226 IF c=2 THEN GO TO 711
227 IF c=3 THEN GO TO 712
228 IF c=4 THEN GO TO 713
600 BORDER 3; PLOT 130,12; BEEP
.03,40; DRAW 0,140; BEEP .03,39
: DRAW 120,0; BEEP .03,38; DRAW
0,-140; BEEP .03,37; DRAW -120,0
: BEEP .03,36
601 PAUSE 20; PLOT 128,10; BEEP
.03,40; DRAW 0,144; BEEP .03,39
: DRAW 124,0; BEEP .03,38; DRAW
0,-144; BEEP .03,37; DRAW -124,0
: BEEP .03,36
610 PLOT 230,105; BEEP .01,35;
DRAW -80,0, PI : BEEP .01,34; PL
OT 230,105; BEEP .01,33; DRAW 0,
-22; BEEP .01,32; DRAW -6,-2; B
EEP .01,31; DRAW -7,-10; BEEP 0
1,30; DRAW -10,-15; BEEP .01,29
611 PLOT 150,105; BEEP .01,28;
DRAW 0,-22; BEEP .01,27; DRAW 5,0
-22; BEEP .01,26; DRAW 7,-10; BEE
P .01,25; DRAW 10,-15; BEEP .01
,24; PLOT 173,35; BEEP .01,23; D
RAW 35,0, PI : BEEP .01,22
612 PLOT 150,90; BEEP .01,21; D
RAW -6,0, PI : BEEP .01,20; DRA
W 4,-18; BEEP .01,19; DRAW 5,0, P
I : BEEP .01,18; PLOT 227,72; BE
P .01,17; DRAW 5,0, PI : BEEP .
01,16; DRAW 4,18; BEEP .01,15; D
RAW -6,0, PI : BEEP .01,14
613 PLOT 185,95; BEEP .01,13; D
RAW -16,0, PI : BEEP .01,12; PLO
T 215,95; BEEP .01,11; DRAW -16,
0, PI : BEEP .01,10; PAUSE 10; B
EEP .2,30; BEEP .2,28; BEEP .2,3
0
620 PRINT AT 2,2; INK 1;"1=AB"
: AT 2,6; INK 0;"2=CD" : AT 2,10;
INK 1;"3=EF"
621 PRINT AT 4,2;"4=GH" : AT 4,
6; INK 5;"5=AB" : AT 4,10; INK 2
;"6=CD"
625 PRINT AT 21,0;"MAKE SELECT
ION AND PRESS 'ENTER'"
650 RETURN
700 PRINT AT 10,21; INK 1;"AB"
: AT 10,25; INK 1;"AB" : BEEP .05
-10; PAUSE 10; BEEP .05,0; GO T
0 211
701 PRINT AT 10,21; INK 0;"CD"
: AT 10,25;"CD" : BEEP .05,-20; P
AUSE 10; BEEP .05,10; GO TO 211
702 PRINT AT 10,21; INK 1;"EE"
: AT 10,25;"EE" : BEEP .05,-30; P
AUSE 10; BEEP .05,-20; GO TO 211
703 PRINT AT 10,21;"GH" : AT 10
,25;"GH" : BEEP .05,20; PAUSE 10;
BEEP .05,30; GO TO 211
704 PRINT AT 10,21; INK 5;"AB"
: AT 10,25;"AB" : BEEP .05,15; PA
USE 10; BEEP .05,25; GO TO 211
705 PRINT AT 10,21; INK 2;"CD"
: AT 10,25;"CD" : BEEP .05,50; PA
USE 10; BEEP .05,40; GO TO 211
706 PRINT AT 11,24; INK 2;"I"
: AT 12,24;"J" : AT 13,24;"K" : FOR
1=-10 TO 0; BEEP .05,1; BEEP 0
5,1,3; NEXT 1; GO TO 215
707 PRINT AT 11,24; INK 1;"L"
: AT 12,23;"MND" : FOR b=10 TO 10
STEP -1; BEEP .05,b; BEEP .05,b
+3; NEXT b; GO TO 215
708 PRINT AT 11,23;"PD" : AT 12
,23;"RS" : FOR k=40 TO 0 STEP -1
: BEEP .007,k; NEXT k; GO TO 215
710 PLOT 178,52; BEEP .008,10;
DRAW 5,-3; BEEP .008,11; DRAW 3,
-5; BEEP .008,12; DRAW 15,0; BEE
P .008,13; DRAW 3,5; BEEP .008,1
4; DRAW 5,3; BEEP .008,15; DRA
W -10,-3; BEEP .008,16; DRAW -5,0,
PI : BEEP .008,17; DRAW -5,0, PI
: BEEP .008,19; DRAW -10,-3;
BEEP .008,20; DRAW 31,0; BEEP .08
,21; GO TO 800
711 PLOT 180,52; BEEP .05,6; DR
AW 8,-5; BEEP .008,8; DRAW 12,0;
BEEP .05,6; DRAW 8,5; BEEP .008
,10; DRAW -28,0; BEEP .05,6; DRA
W 14,3; BEEP .008,14; DRAW 14,-3
: BEEP .05,6; GO TO 800
712 PLOT 180,46; BEEP .1,15; DR
AW 5,5; BEEP .1,14; DRAW 5,3; BE
P .1,13; DRAW 3,1; BEEP .1,12;
DRAW 3,-1; BEEP .1,13; DRAW 5,-3
: BEEP .1,14; DRAW 5,-5; BEEP .1
,15; DRAW -25,0, PI : BEEP .5,15
: GO TO 800
713 PLOT 182,54; BEEP .05,30; D
RAW 3,-6; BEEP .05,20; DRAW 6,-4
: BEEP .05,29; DRAW 6,0; BEEP 0
5,21; DRAW 6,4; BEEP .05,28; DRA
W 3,6; BEEP .05,22; DRAW -6,-2;
BEEP .05,27; DRAW -4,-3; BEEP 0
5,23; DRAW -4,0; BEEP .05,26; DR
AW -4,2; BEEP .05,24; DRAW -6,4;
BEEP .1,25; GO TO 800
800 PRINT AT 0,0;"
" : AT 1,0;"
" : AT 2,0;"
" : AT 3,0;"
801 PRINT AT 1,0;"1= some hair
2= a little hair" : AT 3,0;"3=
punk !" : AT 5,0;"4= DRAW IT" : A
T 6,0;" YOURSELF ? "
805 INPUT "What kind of hair ? "
: d
815 IF d=1 THEN GO TO 2000
820 IF d=2 THEN GO TO 2005
825 IF d=3 THEN GO TO 2010
830 IF d=4 THEN GO TO 4500
900 PRINT AT 0,0;"
" : AT 1,0;"
" : AT 2,0;"
" : AT 3,0;"
" : AT 4,0;"
" : AT 5,0;"
" : AT 6,0;"
902 PRINT AT 1,0;"1= none" :
3,0;"2= stubble" : AT 3,0;"3= mo
ustache" : AT 7,0;"4= beard" : AT 10,3;
"4= beard"
905 INPUT "Facial hair ? " ; e
910 IF e=1 THEN GO TO 1600
911 IF e=2 THEN GO TO 3000
912 IF e=3 THEN GO TO 3050
913 IF e=4 THEN GO TO 3060
914 IF e=5 THEN GO TO 4050
1600 PRINT AT 1,0;"
" : AT 3,0;"1= no 2=eyes" : AT 5,0
;"
" : AT 7,0;"
" : AT 9,0;"
" : AT 10,0;"
" : INPUT
"Did he wear glasses ? " ; f
1605 IF f=1 THEN GO TO 1700
1610 IF f=2 THEN GO TO 1710
1700 GO TO 5000
1710 CIRCLE 175,94,12; BEEP .5,1
2; CIRCLE 175,94,14; BEEP .5,9;
CIRCLE 207,94,12; BEEP .5,11; CI
RCLE 207,94,14; BEEP .5,7; PLOT
187,94; BEEP .5,9; DRAW 8,0; BEE
P .5,5; PLOT 163,94; BEEP .5,7;
DRAW -12,-4; BEEP .5,4; PLOT 218
,94; BEEP .5,5; DRAW 12,-4; BEEP
.5,2; BEEP 1,0
1720 GO TO 5000
2000 PLOT 155,120; BEEP .01,-10;
DRAW 40,20, PI : BEEP .01,-9; P
LOT 157,125; BEEP .01,-8; DRAW 3
5,20, PI : BEEP .01,-7; PLOT 159
,130; BEEP .01,-6; DRAW 30,15, P
I : BEEP .01,-5; PLOT 163,133; B
EEP .01,-4; DRAW 25,10, PI : BEE
P .01,-3; PLOT 167,136; BEEP .01
,-2; DRAW 20,8, PI : BEEP .01,-1
: PLOT 171,138; BEEP .01,0; DRAW
15,6, PI : BEEP .01,1
2001 PLOT 210,140; BEEP .01,2; D
RAW 15,-25, PI : BEEP .01,3; PLO
T 212,138; BEEP .01,4; DRAW 13,-
22, PI : BEEP .01,5; PLOT 214,13
6; BEEP .01,6; DRAW 11,-18, PI
: BEEP .01,7; PLOT 215,134; BEEP
.01,8; DRAW 9,-16, PI : BEEP .01
,9; PLOT 216,132; BEEP .01,10;
DRAW 8,-13, PI : BEEP .01,11; PLO
T 218,130; BEEP .01,12; DRAW 6,-
11, PI : BEEP .01,13; PLOT 220,1
28; BEEP .01,14; DRAW 4,-8, PI :
BEEP .01,15; GO TO 900
2005 PRINT AT 3,23;"?" : FOR g=3
5 TO 55; BEEP .007,g; PAUSE 5; N
EXT g; GO TO 900
2010 FOR f=1 TO .02 STEP -.01;
BEEP f,-10; NEXT f; INK 2; CIRCL
E 150,70,3; FOR f=1 TO .02 STEP
-.01; BEEP f,0; NEXT f; PAUSE 2
0; INK 3; PLOT 185,126; DRAW -7,
12; BEEP .04,-20; PLOT 185,130;
DRAW -6,12; BEEP .04,0; PLOT 185
,134; DRAW -5,12; BEEP .04,-20;
PLOT 185,138; DRAW -4,12; BEEP .
04,0; PLOT 185,139; DRAW -2,12;
BEEP .04,-20; PLOT 185,139; DRA
W 0,12; BEEP .04,0
2011 INK 4; PLOT 175,126; DRAW 7
,12; BEEP .04,-20; PLOT 175,130;
DRAW 6,12; BEEP .04,0; PLOT 195
,134; DRAW 5,12; BEEP .04,-20; P
LOT 195,138; DRAW 4,12; BEEP .04
,0; PLOT 195,139; DRAW 2,12; BEE
P .04,-20; PLOT 195,139; DRA
W 0,12; BEEP .04,0; GO TO 900

```



```

3000 PLOT 160,70: BEEP .005,20:
PLOT 162,68: BEEP .005,30: PLOT
165,63: BEEP .005,20: PLOT 166,6
6: BEEP .005,30: PLOT 167,58: BE
EP .005,20: PLOT 170,45: BEEP .0
05,30
3005 PLOT 215,69: BEEP .005,20:
PLOT 221,71: BEEP .005,30: PLOT
213,59: BEEP .005,20: PLOT 211,6
5: BEEP .005,30: PLOT 209,63: BE
EP .005,20: PLOT 211,60: BEEP .0
05,30: PLOT 207,50: BEEP .005,20
: PLOT 200,44: BEEP .005,30: PLO
T 198,38: BEEP .005,20: PLOT 193,
35: BEEP .005,30: PLOT 187,33:
BEEP .005,20: PLOT 188,35: BEEP
.005,30
3010 PLOT 177,28: BEEP .005,20:
PLOT 174,27: BEEP .005,30: PLOT
173,30: BEEP .005,20: PLOT 181,2
5: BEEP .005,30: PLOT 183,26: BE
EP .005,20: PLOT 187,28: BEEP .0
05,30: PLOT 189,20: BEEP .005,30
: PLOT 191,21: BEEP .005,20: PLO
T 193,23: BEEP .005,30: PLOT 194,
21: BEEP .005,20: PLOT 195,22:
BEEP .005,30: PLOT 196,24: BEEP
.005,20: PLOT 199,26: BEEP .005,
30: PLOT 202,24: BEEP .005,20: P
LOT 200,24: BEEP .005,30
3012 GO TO 1600
3050 PLOT 180,57: DRAW 2,5: BEEP
.01,-30: PLOT 182,58: DRAW 2,5:
BEEP .01,-20: PLOT 184,60: DRAW
2,5: BEEP .01,-30: PLOT 186,62:
DRAW 2,5: BEEP .01,-20: PLOT 18
8,64: DRAW 2,3: BEEP .01,-30: PL
OT 190,64: DRAW 2,3: BEEP .01,-2
0
3055 PLOT 198,67: DRAW 2,-3: BEE
P .01,-30: PLOT 200,67: DRAW 2,-
3: BEEP .01,-20: PLOT 202,67: DR
AW 2,-5: BEEP .01,-30: PLOT 204,
65: DRAW 2,-5: BEEP .01,-20: PLO
T 206,63: DRAW 2,5: BEEP .01,-3
0: PLOT 207,62: DRAW 2,5: BEEP
.01,-20: GO TO 1600
3060 PLOT 180,17: BEEP .02,11: D
RAW -8,20: BEEP .02,12: PLOT 182
,16: BEEP .02,11: DRAW -9,21: BE
EP .02,12: PLOT 184,15: BEEP .02
,11: DRAW -9,21: BEEP .02,12: PL
OT 186,14: BEEP .02,11: DRAW -8,
20: BEEP .02,12: PLOT 187,14: BE
EP .02,11: DRAW -7,20: BEEP .02,
12: PLOT 188,14: BEEP .02,11: DR
AW -5,19: BEEP .02,12: PLOT 188,
14: BEEP .02,11: DRAW -3,18: BEE
P .02,12
3061 PLOT 189,13: BEEP .02,11: D
RAW -2,17: BEEP .02,12: PLOT 190
,12: BEEP .02,11: DRAW -1,17: BE
EP .02,12: PLOT 191,12: BEEP .02
,11: DRAW 0,17: BEEP .02,12: PLO
T 191,12: BEEP .02,11: DRAW 1,17
: BEEP .02,12: PLOT 192,12: BEEP
.02,11: DRAW 2,17: BEEP .02,11:
PLOT 193,12: BEEP .02,11: DRAW
3,17: BEEP .02,12: PLOT 194,13:
BEEP .02,11: DRAW 3,17: BEEP .02
,12: PLOT 196,13: BEEP .02,11: D
RAW 3,17: BEEP .02,12
3062 PLOT 197,14: BEEP .02,11: D
RAW 4,17: BEEP .02,12: PLOT 198,
15: BEEP .02,11: DRAW 5,17: BEEP
.02,12: PLOT 199,16: BEEP .02,1
1: DRAW 6,18: BEEP .02,12: PLOT
200,17: BEEP .02,11: DRAW 6,19:
BEEP .02,12: PLOT 201,18: BEEP .0
2,11: DRAW 7,19: BEEP .02,12:
PLOT 203,19: BEEP .02,11: DRAW 7,
19: BEEP .02,12
3070 GO TO 1600
4050 PLOT 180,57: DRAW 2,5: BEEP
.05,-30: PLOT 182,58: DRAW 2,5:
BEEP .05,-20: PLOT 184,60: DRAW
2,5: BEEP .05,-30: PLOT 186,62:
DRAW 2,5: BEEP .05,-20: PLOT 18
8,64: DRAW 2,3: BEEP .05,-30: PL
OT 190,64: DRAW 2,3: BEEP .05,-2
0

```



```

4055 PLOT 198,67: DRAW 2,-3: BEE
P .05,-30: PLOT 200,67: DRAW 2,-
3: BEEP .05,-20: PLOT 202,67: DR
AW 2,-5: BEEP .05,-30: PLOT 204,
65: DRAW 2,-5: BEEP .05,-20: PLO
T 206,63: DRAW 2,-5: BEEP .05,-3
0: PLOT 207,62: DRAW 2,-5: BEEP
.05,-20
4060 PLOT 180,17: BEEP .05,11: D
RAW -8,20: BEEP .05,12: PLOT 182
,16: BEEP .05,11: DRAW -9,21: BE
EP .05,12: PLOT 184,15: BEEP .05
,11: DRAW -9,21: BEEP .05,12: PL
OT 186,14: BEEP .05,11: DRAW -8,
20: BEEP .05,12: PLOT 187,14: BE
EP .05,11: DRAW -7,20: BEEP .05,
12: PLOT 188,14: BEEP .05,11: DR
AW -5,19: BEEP .05,12: PLOT 188,
14: BEEP .05,11: DRAW -3,18: BEE
P .05,12
4061 PLOT 189,13: BEEP .05,11: D
RAW -2,17: BEEP .05,12: PLOT 190
,12: BEEP .05,11: DRAW -1,17: BE
EP .05,12: PLOT 191,12: BEEP .05
,11: DRAW 0,17: BEEP .05,12: PLO
T 191,12: BEEP .05,11: DRAW 1,17
: BEEP .05,12: PLOT 192,12: BEEP
.05,11: DRAW 2,17: BEEP .05,11:
PLOT 193,12: BEEP .05,11: DRAW
3,17: BEEP .05,12: PLOT 194,13:
BEEP .05,11: DRAW 3,17: BEEP .05
,12: PLOT 196,13: BEEP .05,11: D
RAW 3,17: BEEP .05,12
4062 PLOT 197,14: BEEP .05,11: D
RAW 4,17: BEEP .05,12: PLOT 198,
15: BEEP .05,11: DRAW 5,17: BEEP
.05,12: PLOT 199,16: BEEP .05,1
1: DRAW 6,18: BEEP .05,12: PLOT
200,17: BEEP .05,11: DRAW 6,19:
BEEP .05,12: PLOT 201,18: BEEP .0
5,11: DRAW 7,19: BEEP .05,12:
PLOT 203,19: BEEP .05,11: DRAW 7
19: BEEP .05,12
4065 GO TO 1600
4500 PRINT AT 0,0: " USE CURSOR
KEYS TO DRAW. WHEN FINISH
ED " AT 2,0: " PR
ESS THE 1 KEY:" AT 3,0: " " AT 6
" " AT 5,0: " "
-8,0:
4501 OVER 1: PLOT 230,105: DRAW
-10,0, PI 1 OVER 0
4502 LET x=180: LET y=144
4510 LET w$= INKEY$
4515 IF w$="5" THEN LET x=x-1:
BEEP .01,-10
4520 IF w$="8" THEN LET x=x+1:
BEEP .01,0
4525 IF w$="6" THEN LET y=y-1:
BEEP .01,10
4530 IF w$="7" THEN LET y=y+1:
BEEP .01,20
4535 IF w$="1" THEN GO TO 900
4540 PLOT x,y
4545 GO TO 4510
5000 INPUT "IS THIS WHAT HE LOOK
ED LIKE ? " :h

```

```

5010 IF h=1 THEN CLS : GO TO 19
0
5015 IF h=2 THEN GO TO 5020
5020 PRINT AT 1,3: "WE HAD BETTE
R PUT HIM BEHIND BARS THEN ! "
: AT 3,0: " " AT 21,0
:
: PAUSE 100
5030 FOR k=3 TO 20: FOR y=19 TO
28 STEP 3: PRINT AT x,y,"(igB)"
: NEXT y: NEXT x
5050 PAUSE 150
5060 CLS
5070 FOR n=30 TO 2 STEP -1
5080 PRINT AT 10,n:"I " : BEEP
.002,0: PAUSE 4
5090 PRINT AT 10,n-1:"U " : BEEP
.002,6: PAUSE 4: NEXT n
6000 CLS : PRINT AT 10,2: BRIGH
T 1: INK 1: "TOO LATE ! HE'S RUN
AWAY !!! "
6010 PRINT AT 21,0: "DO YOU WANT
TO PLAY AGAIN ? y/n: INPUT a$
6030 IF a$="y" THEN CLS : GO TO
190
6040 IF a$="n" THEN CLS : PRINT
AT 10,8: INK 2: "THANKS FOR PLA
YING!" STOP
7000 FOR a= USR "a" TO USR "u"+
7
7010 READ b: POKE a,b
7020 NEXT a
7030 DATA 1,6,24,33,193,48,12,3
7040 DATA 128,96,24,132,131,12,4
8,192
7050 DATA 1,6,24,17,17,16,12,3
7060 DATA 128,96,24,136,136,8,48
,192
7061 DATA 3,12,12,63,35,18,10,7,
3
7062 DATA 3,14,252,196,72,80,224
,192
7063 DATA 3,15,31,30,61,123,123,
252
7064 DATA 192,240,252,60,222,239
,239,31
7070 DATA 129,66,36,36,36,36,36,
36
7080 DATA 36,36,36,36,36,36,66,6
6
7090 DATA 129,129,129,129,231,66
,60,0
7100 DATA 36,36,36,36,36,36,66,6
6
7110 DATA 1,6,8,8,8,4,3,0
7120 DATA 0,0,0,0,0,231,255,24
7130 DATA 128,96,16,16,16,32,192
,0
7160 DATA 0,1,3,6,4,4,4,4
7170 DATA 128,192,96,48,16,16,16
,16
7180 DATA 28,48,32,48,27,15,7,1
7190 DATA 28,6,2,6,108,120,112,1
28
7210 DATA 24,88,40,24,60,42,104,2
4
7220 DATA 24,26,12,120,10,62,32,
96
7500 RETURN

```


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MOW THE LAWN

HELP gardener Joe to Mow The Lawn. If Joe mows the flower borders he will be sacked, and he will be killed if he runs over a giant spider. There are weeds, short grass and long grass to be mown, all worth varying points.

Written for the 16K Spectrum by David Anderson, Edinburgh.

```
~ 10 RESTORE : INK 7: PAPER 4: B
ORDER 0: BRIGHT 0: FLASH 0: CLS
```

```
20 DIM b(32,22)
30 FOR x=USR "a" TO USR "g"+
7: READ b: POKE x,b: NEXT x: DAT
A 0,2,2,6,6,10,118,101,0,64,64,9
6,96,80,110,166,16,24,60,24,36,3
6,60,60,60,60,36,36,24,60,24,16,
6,9,13,14,8,74,60,16,8,100,24,
18,44,16,8,66,36,165,9,255,36,3
6,66
```

```
31 GO SUB 9000
40 LET l=1: LET lc=1: LET d=0:
LET msc=0: LET sc=0: LET tsc=0:
LET s=7
45 PAPER 0: CLS : PAPER 4
46 INPUT "What speed?(0-3) " : s
p: LET sp=sp/2000
47 INK 7
```

```
50 FOR y=1 TO 21: FOR x=1 TO 3
1: LET r=INT ( RND *20)+1c-14:
IF r<5 THEN LET msc=msc+1: LET
b(x,y)=1: PRINT AT y,x: " : NEX
T x: NEXT y
```

```
51 IF r=5 OR r=6 THEN LET b(x
,y)=2: PRINT AT y,x: INK ( RND
*7)+1: PAPER 0: "E": NEXT x: NEXT
y
```

```
52 IF r=7 THEN LET b(x,y)=3:
LET msc=msc+10: PRINT AT y,x: "E
": NEXT x: NEXT y
```

```
53 IF r=8 THEN LET msc=msc+20
: LET b(x,y)=4: PRINT INK 0: AT
y,x: "g"
54 NEXT x: NEXT y: LET x=1: LE
T y=1
```

```
55 LET b(1,1)=1: INK 7: PRINT
AT 1,1: "a"
60 IF INKEY$="q" THEN GO TO 180
65 BEEP sp,40
```

```
70 IF INKEY$="a" AND y>1 THE
N LET d=1
```

```
80 IF INKEY$="z" AND y<21 TH
EN LET d=2
```

```
90 IF INKEY$="o" AND x>1 THE
N LET d=3
100 IF INKEY$="p" AND x<31 TH
EN LET d=4
```

```
110 IF d=1 AND y>1 THEN PRINT
BRIGHT 1: AT y,x: " : LET b(x,y
)=0: LET y=y-1: PRINT INK s: AT
y,x: "b": GO TO 120
```

```
112 IF d=2 AND y<21 THEN PRINT
BRIGHT 1: AT y,x: " : LET b(x,
y)=0: LET y=y+1: PRINT INK s: A
T y,x: "c": GO TO 120
```

```
115 IF d=3 AND x>1 THEN PRINT
BRIGHT 1: AT y,x: " : LET b(x,y
)=0: LET x=x-1: PRINT INK s: AT
y,x: "a": GO TO 120
```

```
118 IF d=4 AND x<31 THEN PRINT
BRIGHT 1: AT y,x: " : LET b(x,
y)=0: LET x=x+1: PRINT INK s: A
T y,x: "d": GO TO 120
```

```
120 IF b(x,y)=0 THEN LET tsc=t
sc-5: GO TO 150
125 IF b(x,y)=1 AND d<> 0 THEN
LET tsc=tsc+1: LET b(x,y)=5:
GO TO 150
```

```
130 IF b(x,y)=2 THEN GO TO 165
135 IF b(x,y)=3 THEN LET tsc=t
sc+10: LET b(x,y)=0.5: GO TO 150
```

```
140 IF b(x,y)=4 AND d<> 1 THEN
GO TO 160
145 IF b(x,y)=4 AND d=1 THEN L
ET tsc=tsc+20: LET b(x,y)=5
```

```
150 GO TO 60
160 LET sc=sc-(msc/4)+tsc: PRIN
T INK 7: PAPER 0: AT 0,1: "Level
s :!:" Score :!sc: PAPER 4: INK
0: AT 10,2: "You didnt attack th
at spider from BEHIND."
```

```
161 GO TO 170
165 LET sc=sc-(msc/4)+tsc: PRIN
T INK 7: PAPER 0: AT 0,1: "Level
s :!:" Score :!sc: INK 0: PAPER
4: AT 10,2: "DONT step on the bo
rders "
```

```
170 PRINT FLASH 1: INK 0: PAPE
R 7: AT 21,5: "PRESS TO PLAY "
```

```
171 PAUSE 0: PAUSE 0: LET l=1:
LET lc=1
172 LET sc=0: LET msc=0: LET ts
c=0: LET d=0: GO TO 45
```

```
180 LET sc=sc-(msc/4)+tsc: PRIN
T AT 10,2: "You have tried :!l:
levels :You have :!sc: points"
: PRINT INK 0: PAPER 7: FLASH 1
: AT 21,4: "PRESS TO PLAY " : PAU
SE 0: PAUSE 0: LET l=1+1: IF lc<
3 THEN LET lc=lc+1
181 LET d=0: GO TO 45
```

```
9000 INK 0: PRINT AT 0,5: "MOW T
HE LAWN
```

Help gard
en Joe to mow the
lawn for
Her Majesty.
Joe....

Joe will
get sacked if he mows border(E)
or killed if he runs over a gia
nt spider(S)any way but from b
ehind.From Behind it is worth 2
0 points,a weed(F)is worth 10
0 points,uncut grass (dull gree
n)is worth 1 point,btcut grass(
brighter green)is -5 points

p.....right
a.....u
o.....d
o to next level"
9001 PRINT FLASH 1: INK 0: PAPE
R 7: AT 21,4: "PRESS TO CONTINUE
": PAUSE 0

9002 CLS: PRIN AT 10,3: "Will you
ever work out the scoring s
ystem?": FLASH 1: INK 0: PAPER
7: AT 21,6: "PRESS TO PLAY.": PAU
SE 0: RETURN

Pro Printout



```

390 LET B=(CODE Z$-38)+33*(CODE
Z$(2)-29)+115
395 IF PEEK (A+B) < 21 THEN GOTO
450
400 POKE 16446,A+B-256*INT ((A+
B)/256)
405 POKE 16444,PEEK 16446
410 POKE 16447,INT ((A+B)/256)
415 POKE 16445,PEEK 16447
420 POKE 16508,0
430 RAND USR 16532
440 IF PEEK 16449 < 0 THEN GOTO
490
450 PRINT AT 21,0;"ILLEGAL MOVE
"
460 GOTO 370
470 IF USR 16911=1 THEN GOTO 49
0
480 IF USR 16652=0 AND X=0 THEN
GOTO 570
485 IF PEEK 16448=0 THEN GOTO 5
0
490 LET Z=Z-1
500 RAND USR 16754
510 IF Z=0 THEN GOTO 570
520 IF PEEK 16507 < 100 THEN GOTO
550
530 IF PEEK 16507=52 THEN POKE
16507,100
540 GOTO 330
550 POKE 16507,52
560 GOTO 330
570 LET X=USR 16970
580 LET Z=Z+7
600 IF X/2 < 2 THEN PRINT AT 20,0
"I HAVE WON WITH "X;" COUNTERS
"
610 IF X/2 < 2 THEN PRINT AT 20,0
"YOU HAVE WON WITH "Z-X;" COUN
TERS"
620 IF X/2 < 2 THEN PRINT AT 20,0
"WE HAVE DRAWN"
630 PRINT "DO YOU WANT ANOTHER
GAME?"
640 INPUT Z$
650 IF Z$="NO" OR Z$="N" THEN N
EU
660 CLS
670 GOTO 100
9000 IF A$=" THEN RETURN
9010 LET B$=A$ (TO 2)
9020 LET R$=A$ (3 TO 7)
9030 POKE X,16*CODE B$(1)+CODE B
$(2)-476
9040 LET X=X+1
9050 GOTO 9000

```

```

20 LET hi=0
30 FOR a= USR "a" TO USR "f"+
7: READ udg: POKE a,udg: NEXT a
40 DATA 3,15,63,35,65,65,193,2
27,192,240,252,196,130,130,131,1
99
50 DATA 255,255,63,15,14,30,62
,126,255,255,252,240,112,120,124
,126
60 DATA 60,126,255,255,255,255
,126,60,90,255,171,255,170,255,1
09,219
70 BRIGHT 1: BORDER 0: PAPER 0
: INK 9: CLS
90 PRINT AT 18,5: INK 9: PAPE
R 1: FLASH 1:"PRESS ANY KEY TO B
EGIN"
100 PRINT AT 2,10: PAPER 5:"EG
G CATCHER!"
110 PRINT AT 4,7: PAPER 4:"198
4 BY M.R. WALKER."
120 PRINT AT 7,12: PAPER 6:"CO
NTRLS"
130 PRINT AT 10,12: PAPER 3:"P
= RIGHT"
140 PRINT AT 12,12: PAPER 2:"O
= LEFT": AT 14,12: PAPER 1:"H
= HOLD"
150 OUT 254,1: OUT 254,2: OUT 2
54,3: OUT 254,4: OUT 254,5: OUT
254,6:
160 IF INKEY$ <> "" THEN GO
TO 190
170 OUT 254,1: OUT 254,2: OUT 2
54,3: OUT 254,4: OUT 254,5: OUT
254,6:
180 GO TO 150
190 FOR a=0 TO 30: BEEP .010,40
: BEEP .015,50: NEXT a
200 CLS
205 PRINT #1: INK 9: BRIGHT 1:
INK 9:
1984 MARTIN WALKER
210 LET mo=0: LET eg=0

```

```

220 LET po=15
230 LET re= INT ( RND *30)+1: L
ET eg=eg+1: IF eg>50 THEN GO TO
500
240 PRINT AT 0,0: PAPER 4: INK
9:"MONEY #":mo
250 PRINT AT 0,13: PAPER 5: IN
K 0:"EGGS "eg
260 PRINT AT 0,23: INK 0: PAPE
R 6:"HI "hi
270 PRINT AT 1,0: INK 3:"FFFFF
FFFFFFFFFFFFFFFFFFFFFF"
280 PRINT AT 21,0: INK 3:"FFFF
FFFFFFFFFFFFFFFFFFFFFF"
290 FOR c=3 TO 18
300 PRINT AT 19,po: INK 5:" AB
": AT 20,po: " CD "
310 PRINT AT c-1,re: " ": AT c,
re: INK 6:"E"
320 IF c+3=20 AND po+1=re+1 OR
c+3=20 AND po+2=re+1 OR c+3=20 A
ND po+2=re THEN LET mo=mo+ INT
( RND *100)+1
340 LET po=po+ ( INKEY$="p" AND
po<28) - ( INKEY$="q" AND po>0)
350 IF INKEY$="h" THEN PAUSE 0
: PAUSE 0
360 NEXT c
370 PRINT AT c-1,re: " "
375 BEEP .05,5: BEEP .05,10
380 GO TO 230
500 PRINT AT 10,8:"G A M E O
V E R"
510 FOR a=0 TO 30: BEEP .005,5:
BEEP .005,10: BEEP .005,15: BEE
P .005,20: BEEP .005,25: NEXT a
520 IF mo>hi THEN FOR a=0 TO 1
00: PRINT AT 0,23: FLASH 1:"NEW
HIGH": NEXT a: LET hi=mo
550 FOR a=0 TO 60: BEEP .0010,5
0: BEEP .005,30: NEXT a: GO TO 7
0
560 GO TO 540

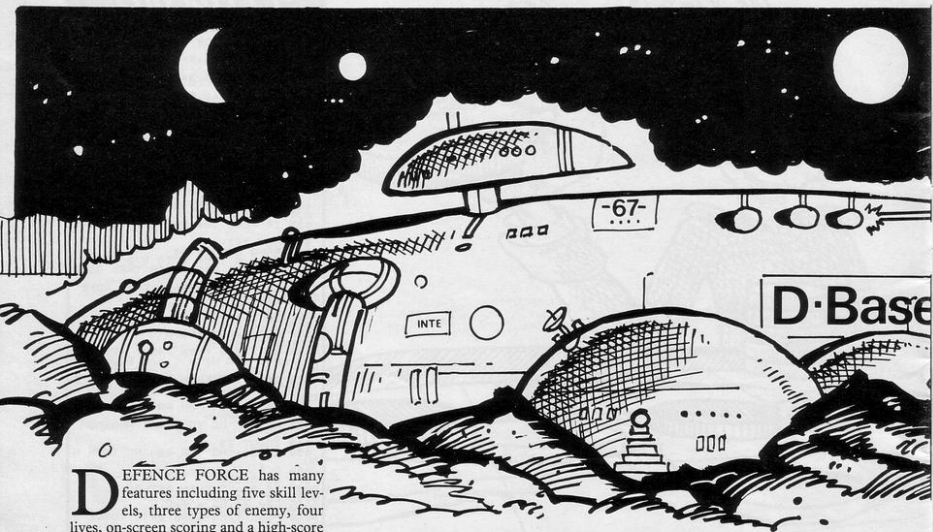
```



EGG SAVER

YOU have been employed by the Bird Protection Society to catch the eggs which fall from the birds' nests during high winds. For the fifty eggs which fall you will be paid between one and a hundred pounds depending on their condition. The keys to use are P and Q for right and left and H to hold.

Egg Saver was written for the 16K Spectrum by Martin Walker of Rugeley, Staffs.



DEFENCE FORCE has many features including five skill levels, three types of enemy, four lives, on-screen scoring and a high-score table. As always, the object is to protect your base from the approaching enemy. You have a forcefield to protect you but once this has gone, defeat is imminent. The game contains some machine code, so the following must be typed in before the rest of the program is entered: 1 REM (10 spaces); POKE 16514,42; POKE 16515,14; POKE 16516,64; POKE 16517,78; POKE 16518,6; POKE 16519,0; POKE 16520,201.

Written for the 16K ZX-81 by Greg Jarvis, aged 14, of Bridgwater, Somerset.

DEFENCE FORCE

```

1 REM DEFENCE FORCE
2 PRINT AT 9,9;"DEFENCE FORCE"
3
4 PRINT AT 10,10;"PLEASE WAIT"
5
6 FOR G=0 TO 50
7 NEXT G
8
9 DIM H$(10,10)
10 LET H$(1,1)="1880 GREG"
11 FOR G=2 TO 10
12 NEXT G
13
14 DIM H$(10,10)
15 LET H$(1,1)="1880 GREG"
16 FOR G=2 TO 10
17 NEXT G
18
19 LET R=12
20 LET INT (RND*15)+5
21
22 LET S=1
23 LET L=200
24 LET FU=0
25 LET L1=4
26 DIM C$(3,3)
27 LET C$(1,1)=" "
28 LET C$(2,1)=" "
29 LET C$(3,1)=" "
30 LET B=0
31 LET U=15
32
33 PRINT#500
34 LET KEYS=550
35 LET FREQ=900
36 LET HTT=800
37 LET H=0
38 LET H=USR16514
39 IF H=145 THEN GOTO 1000
40 LET R=14
41 RETURN
42
43 IF RND<SK THEN RETURN
44 PRINT AT R,E;0;" "
45
46 GOTO 250
47
48 PRINT AT R,E;" "
49 PRINT AT R,E;0;" "
50 LET E=E+1
51 RETURN
52 IF PEEK 16421=251 THEN GOTO 600
53
54 IF PEEK 16421=253 THEN GOTO 600
55
56 IF PEEK 16421=223 THEN GOTO 700
57
58 RETURN
59 IF R=5 THEN GOTO 1000
60 LET A=R-1
61 PRINT AT A,1,2;" "
62 PRINT AT A,2;" "
63 IF A=10 THEN GOTO 1000
64 RETURN
65 IF A=10 THEN GOTO 1000
66 LET A=R+1
67 PRINT AT A,1,2;" "
68 PRINT AT A,2;" "
69 RETURN
70 PRINT AT A,4;" "
71 PRINT AT A,4;" "
72 IF H=145 THEN GOTO 2000
73 LET FU=FU+1
74 PRINT AT 1,FU;" "
75 IF FU<550 THEN GOTO 5000
76 RETURN
77 IF E=43 THEN GOTO 1000
78 RETURN
79 PRINT AT R,8;
80 LET H=USR16514
81 IF H=145 THEN GOTO 1000
82 IF R=14 THEN GOTO 1000
83 RETURN
84 IF RND<SK THEN RETURN
85 PRINT AT R,E;0;" "
86
87 PRINT AT R,E;0;" "
88 GOTO 250
89
90 PRINT AT R,E;0;" "
91 GOTO 250
92
93 PRINT AT R,E;0;" "
94 GOTO 250
95
96 FOR G=0 TO 7
97 NEXT G
98
99 PRINT AT R,E;0;" "
100 PRINT AT R,E;0;" "
101 PRINT AT R,E;0;" "
102 PRINT AT R,E;0;" "
103 PRINT AT R,E;0;" "
104 PRINT AT R,E;0;" "
105 PRINT AT R,E;0;" "
106 PRINT AT R,E;0;" "
107 PRINT AT R,E;0;" "
108 PRINT AT R,E;0;" "
109 PRINT AT R,E;0;" "
110 PRINT AT R,E;0;" "
111 PRINT AT R,E;0;" "
112 PRINT AT R,E;0;" "
113 PRINT AT R,E;0;" "
114 PRINT AT R,E;0;" "
115 LET R=12
116 GOTO 250
117
118 PRINT AT R,3;" "
119 LET U=U-1
120 IF U=0 THEN GOTO 7000
121 RETURN
122 PRINT AT R,E;" "
123 LET SC=SC+10
124 PRINT AT R,E;" "
125
126 PRINT AT 0,6,SC
127 IF SC<11 THEN GOTO 5000
128 LET R=INT (RND*13)+5
129 LET E=27
130 GOTO 250
131 STOP
132
133 FOR H=0 TO 7
134 PRINT AT 10,10;"OUT OF FUEL"
135
136 FOR G=0 TO 3
137 NEXT G

```



```

5040 PRINT AT 10,10:"
5050 NEXT H
5055 LET FU=30
5060 PRINT AT 1,0:"FUEL ";AT 1,FU;"
5070 GOTO 1000
5080 PRINT AT 10,9:"SHEET COMPLE
5090
5100 PRINT AT 12,12:"BONUS"
5110 PRINT TAB 18:"END IT"
5120 PRINT TAB 18:"END IT"
5130 FOR G=0 TO 75
5140 NEXT G
5150 LET SC=50+200
5160 LET SK=SK+102
5170 LET L=L+1
5180 LET L=L+400
5190 LET FU=30
5200 LET U=16
5210 LET A=12
5220 LET INT (RAND*12)+5
5230 LET SH=27
5240 LET SH=SH+1
5250 IF SH=23 THEN LET SH=3
5260 LET U=14
5270 LET SH=SH+1
5280 LET SH=SH+1
5290 GOTO 250
5300 STOP
5310 FOR G=0 TO 7
5320 PRINT AT 10,10:"FORGOTTEN"
5330 PRINT AT 10,10:"FORGOTTEN"
5340 PRINT AT 10,10:"FORGOTTEN"
5350 NEXT G
5360 LET U=15
5370 GOTO 1000
5380 GOSUB 9500
5390 LET QS=STR$ SC
5400 FOR G=1 TO LEN QS
5410 LET QS(G)=CHR$ (CODE QS(G)+
5420 126)
5430 NEXT G
5440 PRINT AT 7,7:"YOU SCORED ";
5450 QS
5460 LET JS=" DEFENSE FORCE BY G
5470 REG JARVIS GAME OVER HIT
5480 CLS
5490 LET JS=JS+JS
5500 LET D=5
5510 PRINT AT 11,0:JS(D TO D+31)
5520 LET D=D+1
5530 IF D=5 THEN LET D=1
5540 IF INKEY="" THEN GOTO 5550
5550 GOTO 8000
5560
5570
5580 IF SC<VAL HS(10) ( TO 5)
5590 THEN GOTO 8500
5600 IF HS(10,1) (<) " THEN GOTO
5610
5620 PRINT AT 16,10:"PLEASE WAIT

```

```

5003 FOR G=0 TO 50
5004 NEXT G
5005 FAST G
5006 FOR G=1 TO 10
5007 FOR H=1 TO 10
5008 LET HS(G,H)=CHR$ (CODE HS(G
5009 H)-128)
5010 NEXT H
5011 NEXT G
5012 NEXT G
5013 POKE 16418,0
5014 FOR G=2 TO 22
5015 PRINT AT G,0:"
5016
5017 NEXT G
5018 PRINT AT 4,6:"DEFENSE FORCE
5019
5020
5021 SLOW
5022 FOR G=1 TO 9
5023 PRINT AT G+9,CHR$ (G+155)
5024
5025 HS(G)
5026
5027 NEXT G
5028 PRINT TAB 8:"NO "HS(10)
5029 PRINT AT 18,11:"HIT A KEY"
5030 PRINT AT 20,6:"PRESS 5"
5031
5032
5033 LET P=1
5034 PRINT AT 23,0:"
5035
5036
5037
5038 PRINT AT 22,0:SS(P TO P+31)
5039
5040 LET P=P+1
5041 IF P=33 THEN LET P=1
5042 IF INKEY="" THEN GOTO 8160
5043 IF INKEY="S" THEN GOTO
5044
5045 CLS
5046 GOTO 60
5047 FOR G=0 TO 20
5048 NEXT G
5049 CLS
5050 LET 1
5051 STOP
5052
5053 CLS
5054 POKE 16418,2
5055 PRINT AT 7,0:"WELL DONE, YO
5056 U HAVE GOT ONE OF TODAY'S HIGHE
5057 ST SCORES, PLEASE TYPE IN YOUR
5058 NAME (4 LETTERS)
5059 INPUT NS
5060 IF LEN NS=4 OR NS=5 OR CDD
5061 NS=38 OR CODE NS=63 THEN GOTO
5062
5063
5064 PRINT AT 13,10:"PLEASE WAIT
5065
5066 LET P=11
5067 FOR I=10 TO 1 STEP -1
5068 IF SC<VAL HS(I) ( TO 5) THEN
5069 LET P=P-1

```

```

8550 NEXT I
8560 FOR I=9 TO P STEP -1
8570 LET HS(I+1)=HS(I)
8580
8590 NEXT
8600 LET HS(P) ( TO 8)=STR$ SC
8610 LET HS(P) (7 TO 1)=NS
8620 GOTO 8000
8630 STOP
8640 GOSUB 9500
8650 PRINT AT 6,4:"DEFENSE
8660
8670 PRINT AT 8,9:"USE KEYS "
8680 PRINT AT 10,9:"O.U.E.R.T =
8690
8700 PRINT TAB 9:"A.S.D.F.G = DR
8710
8720 PRINT TAB 9:"V.U.I.O.P = FR
8730
8740 PRINT AT 14,2:"SELECT STRA
8750 LEVEL 1 TO 5"
8760 PRINT TAB 2:"BY PRESSING TH
8770
8780
8790 PRINT AT 17,10:"P.F.F.F.F"
8800 LET AS=INKEY$
8810 IF AS="" THEN GOTO 9080
8820 IF CODE AS=29 OR CODE AS=33
8830 THEN GOTO 9080
8840 FOR G=1 TO 5
8850 IF VAL AS=1 THEN GOTO 9140
8860 LET SK=SK+102
8870
8880 NEXT G
8890 PRINT AT 17,8+(VAL AS+2):AS
8900 FOR F=0 TO 1
8910 NEXT G
8920 GOTO 9500
8930 STOP
8940 POKE 16418,0
8950
8960 PRINT AT 0,0:"SCORE:";SC;
8970
8980 PRINT TAB 0:"LIVES:";LI
8990 PRINT TAB 0:"FUEL
9000
9010 PRINT
9020
9030
9040 FOR G=5 TO 19
9050 PRINT "
9060
9070
9080 NEXT G
9090
9100
9110
9120
9130 PRINT "
9140
9150 PRINT AT 22,10:HS(1)
9160
9170 RETURN
9180 STOP
9190 REM ** AUTO RUN SAVE **
9200 SAVE "DEE"
9210 RUN

```


GHOST HUNT



WHEN the program is RUN you are shown at the centre of the screen. You will also see your power and a ghost which moves around the screen draining your energy. To prevent all your power being lost you must chase the ghost and put your cross on top of it. The ghost will then close its eyes and die. This must be done three times before you proceed to the next level where the same thing happens but you have less power. Do not chase the ghost to the edge of the screen as it will then be able to vanish and reappear anywhere on the screen.

Ghost Hunt was written for the I.K. ZX-81 by A. Fogarty of Dukinfield, Cheshire.

In order to explain how this program works, it has been divided into several modules. What each of these modules does, and how each of the variables in the program is used are explained below.

Lines Module name

10-40	SETUP 1
50-60	SETUP 2
70-80	SETUP 3
90-100	SETUP 4
110-240	MAIN
250-280	CAUGHT
290-330	LEVEL
340-350	SCORE

Variables

A,B	y,x coordinates of the ghost
C,D	y,x coordinates of player
W	number of ghosts caught
H	Level of difficulty
T	Power (or time left)
Z	Random number (0-3)
F	Score factor
E,K	Constants

What each module does:

SETUP 1

Gives values to the constants E and K. Sets the score to 0 and the game level to 1.

SETUP 2

Sets the number of ghosts caught to 0 and the power to 110-10*H. This means that the power will start at 100 and decrease by 10 on each level.

SETUP 3

Defines where on the screen the player will start.

SETUP 4

Chooses a spot at random where the ghost will start the game.

MAIN

Clears the screen and then prints the positions of the players and the ghost. If there is no power left the computer then goes to the LEVEL module. Power is reduced by one. If the ghost and the player are in the same position the computer will move to the CAUGHT module. Reads the cursor keys and checks whether the player is at the edge of the screen, then moves player. The ghost is then moved, depending on the value of the random number z. If this means that the ghost would move off screen the computer returns to SETUP 4 to choose a random position for the ghost. The computer then begins the MAIN module again.

CAUGHT

The number of ghosts caught (w) is increased by one. The ghost is then

erased, and the value of w printed in its place. If three ghosts have been caught on the present level the computer will then move to the LEVEL module. The computer then moves to SETUP 3 to start the chase for the next ghost.

LEVEL

Prints the level. Score values are increased by H*W so that you score more highly on the difficult levels than on the easy ones. Level is increased by one. The computer moves to SETUP 2 to continue the game with three more ghosts and less power. The SCORE routine is called.

SCORE

Prints the score, which is (F+W)*10. If it is greater than one the computer then returns to LEVEL, otherwise the game ends.

This program could be improved in two ways. Firstly, lines 180-190 only compare the player's coordinates with those of the upper limits of the screen. Attempting to move through the top or left hand side of the screen will result in the movement controls being reversed. It would be better to omit lines 180 and 190, and to enter lines 160 and 170 as:
160 LET D=D+(INKEY\$="8")
AND D<VAL("28")-(INKEY\$="5")
AND D>E
170 LET C=C+(INKEY\$="6")
AND C<VAL("19")-(INKEY\$="7")
AND C>E



Secondly, the score routine at line 340 is slightly clumsy, as it is bad programming practice to exit from a subroutine. Better would be to delete lines 340-350 and to enter:

```

310 (as 340)
315 IF T<1 THEN STOP

```

```

10 LET E=SGN PI
20 LET X=SIN PI
30 LET F=K
40 LET H=E
50 LET U=K
60 LET T=VAL "110"-H*VAL "10"
70 LET C=VAL "11"
80 LET D=VAL "14"
90 LET A=INT (RAND*VAL "22")
100 LET B=INT (RAND*VAL "32")
110 CLS
120 PRINT AT C,D;"#";AT A,B;"#";
130 K,K;"#";T
140 IF T=E THEN GOTO VAL "290"
150 LET T=T-E
160 IF A=C AND B=D THEN GOTO VAL "250"
170 LET D=D+(INKEY$="8")-(INKEY$="6")
180 LET C=C+(INKEY$="6")-(INKEY$="7")
190 IF C>VAL "19" THEN LET C=VAL "19"
200 IF D>VAL "28" THEN LET D=VAL "28"
210 LET Z=INT (RAND*VAL "4")
220 LET A=A-(Z=K)+(Z=E)
230 LET B=B+(Z=E+E)-(Z=INT PI)
240 IF A>VAL "19" OR B>VAL "28" OR A<E OR B<E+E THEN GOTO VAL "30"
250 GOTO VAL "110"
260 LET U=U+E
270 PRINT AT A,B;"#";AT A,B;U
280 IF U>INT PI THEN GOTO VAL "300"
290 GOTO VAL "70"
300 PRINT "LEVEL 1";H
310 LET F=F+H*T
320 GOSUB VAL "340"
330 LET H=H+E
340 GOTO VAL "50"
350 PRINT "SCORE:"; (F+W)*VAL "1"
360 IF T>E THEN RETURN

```

HUNT THE THIMBLE

CLUES to the whereabouts of the thimble are flashed up on the screen in the form of north, south, north east etc. Follow the clues and try to find the thimble in the fastest possible time.

Hunt the Thimble was written for the 16K ZX-81 by Paul Greathead, aged 14, of Bishop Auckland, Co. Durham.

```

20 LET BT=50
30 LET T=0
40 LET A=INT (RAND*20)+2
50 LET B=INT (RAND*31)+1
60 LET X=INT (RAND*20)+2
70 LET Y=INT (RAND*31)+1
80 FOR F=1 TO 21
90 PRINT AT F,0;"*****"
100 NEXT F
110 PRINT AT A,B;"#";
120 IF A=X THEN PRINT "NORTH"
130 IF A=Y THEN PRINT "SOUTH"
140 IF B=X THEN PRINT AT 0.5;"E"
150 IF B=Y THEN PRINT AT 0.5;"U"
160 IF A=X AND B=Y THEN GOTO 20
170 PRINT AT A,B;"#";
180 LET A=X,Y,B;
190 IF T=BT THEN LET BT=T
200 PRINT AT 0,0;"TIME:";T;"
210 TIME=BT
220 PAUSE 454
230 CLS
240 GOTO 20

```



```

1: BORDER 0: PAPER 0: INK 7:
CLS
2 LET s=0
3 LET cheese=5
4 LET shot=0
5 GO SUB 6000
22 PRINT AT 6,28; INK 6;"A"

```

```

25 PRINT AT 5,0; INVERSE 1; I
NK 5;"(g2;lg3;ql)"
30 PRINT AT 6,0; INVERSE 1; I
NK 5;"(g5;lg8;lg5)"
40 LET n=1
41 LET sc=0
49 LET p=14
50 LET a=4
80 IF INKEY#="1" THEN LET p
=p-1
81 IF INKEY#="2" THEN LET p
=p+1
82 IF INKEY#="0" THEN FOR n
=19 TO 4 STEP -1: PRINT AT n,p+
1;"": PRINT AT n+1,p+1;"": LE
T shot=1
83 IF p=4 THEN LET p=p+1
84 IF p=28 THEN LET p=p-1
89 IF a=0 THEN LET a=a+1
90 IF s=1 THEN LET a=a-1
95 PRINT AT 4,0;" "

```

```

96 PRINT AT 0,0; INK 2;"SCORE
=";sc; INK 2;" CHEESE=";cheese

```

```

100 PRINT AT 6,a;" BC "
101 IF n=6 AND p=a OR n=6 AND p
=19 THEN PRINT AT 10,4;"SQUE
EEEEEEK" BEEP .3,35: PAUSE 30:
PRINT AT 10,4;" "
LET sc=sc+10: LET s=0: PRINT AT
6,a;" ": LET a=4: GO TO 89

```

```

102 PRINT AT 20,p-1; INK 4;"
D "
105 IF cheese=0 THEN GO TO 900
0
110 IF a=26 THEN LET s=1
111 IF a<4 THEN LET s=0: PRINT
AT 6,28; INK 6;"A": LET cheese

```

Cheese Thief

SHOOT the mouse as it emerges from its house and runs across the floor to steal the cheese. There are ten pieces of cheese for the mouse to steal and, using keys 1, 2 and 0, you must save as many pieces as possible.

Cheese Thief was written for the 16K Spectrum by Mark Adams and Stephen Smith of Leicester.

```

=cheese-1
199 IF shot=1 THEN NEXT n: LET
shot=0
200 GO TO 80
6000 RESTORE : FOR f=USR "a" TO
USR "d"+7: READ a: POKE f,a: N
EXT f
6010 DATA 16,56,44,60,218,173,21
9,175
6020 DATA 64,33,19,39,47,79,84,3
8

```

```

6030 DATA 16,168,240,221,254,252
,64,96
6040 DATA 24,24,126,255,255,255,
255,255
6050 RETURN
9000 CLS : PRINT "*****"
NO CHEESE LEFT": PRINT "YOU SC
ORED";sc; PAUSE 0: FOR f=0 TO 2: F
0: BEEP .005,f; NEXT f: FOR z=40
TO 0 STEP -1: BEEP .006,z; NEXT
z: GO TO 1

```

```

these blow": AT 12,2;"up after t
he time limit or if": AT 14,2;"t
hey hit the ground.": AT 17,5;"
0" OPERATES THE SHOES": AT 19,5:
"Press any key to play"
30 PAUSE 0
40 REM *****

```

```

90 CLS : BORDER c
92 PRINT AT 0,4;"HIGH";hs; A
T 0,20;"SCORE";sc
93 PRINT AT 6,22;"Time"; AT 1
3,22;"Lives";l
95 FOR b=0 TO 17: PRINT AT b,
15;"(lg6)"; AT b,17;"(lg6)"; NEXT
b
100 LET x=3: LET z=INT (RND *
20)+5
110 REM **Main Program Loop**
120 FOR a=0 TO 0 STEP -1: PRINT
AT 9,23;a;" "
130 PRINT AT 18,z;"_"
135 IF z>28 THEN LET z=3: PRIN
T AT 18,30;" "
145 PRINT AT x-1,16;" "
150 PRINT AT x,16; OVER 1;"Δ"

```

```

155 PRINT AT x+1,16;" "
157 IF INKEY# <> "0" THEN LE
T x=x+1
160 IF INKEY#="0" THEN LET x
=x-1
162 IF x<3 THEN LET x=3
165 IF x=19 THEN GO TO 300
170 LET z=z+1

```

```

185 NEXT m
190 REM *****
200 PRINT AT 5,3;"Time Out": L
ET l=1-1: GO TO 700
300 IF z=15 THEN GO SUB 2000

```

```

305 IF z=15 THEN PRINT AT 5,9
; FLASH 1;"Super Landing!"; LET
sc=sc+((c+1)*m); FOR r=0 TO 2: F
OR w=10 TO 30: BEEP .01,w; NEXT
w: NEXT r: LET t=t-10: LET c=c-1
: IF t=20 THEN GO TO 600
310 IF z <> 15 THEN PRINT AT
5,3;"Tough Luck!"; LET l=1-1: GO
TO 700

```

```

350 GO TO 90
600 CLS : PRINT AT 5,10;"You A
re The": AT 7,11;"CHAMPION"; AT
9,9;"SKATE STUNTER"
610 FOR k=0 TO 50: BEEP .004,k;
NEXT k: GO TO 610
700 FOR r=0 TO 2: FOR w=10 TO -
10 STEP -1: BEEP .01,w; NEXT w:
NEXT r: GO TO 10

```

```

710 IF l <> 0 THEN GO TO 90
715 IF sc>hs THEN LET hs=sc: C
LS : PRINT AT 5,8; FLASH 1;"New
High Score!"; PAUSE 0
720 CLS : PRINT AT 5,11;"GAME
OVER": AT 10,9;"PRESS ANY KEY";
AT 15,10;"FOR NEW GAME": PAUSE 0
730 GO TO 10

```

```

1050 REM **U.D.G.**
1060 FOR a=0 TO 7: READ e: POKE
USR "a"+a,e: NEXT a
1300 DATA 24,36,24,16,124,16,40,
68
1400 RETURN

```

```

1500 REM *****
1900 REM ***U.D.G.***
2000 FOR d=16 TO 30
2010 PRINT AT 18,d;"Δ"; AT 18,
d; OVER 1;"_" : PAUSE 3: NEXT d
2200 RETURN
2300 REM *****

```



SKATEBOARD STUNTMAN

GUIDE Stuntman Stan down onto his skateboard. Stan has jet engine shoes which prevent him from hitting the ground if the skateboard is not at the bottom of the shaft, but if the shoes overheat they blow up. Press 0 to operate the shoes.

Skateboard Stuntman was written for the 16K Spectrum by Patrick O'Brien, London N12.

```

5 LET hs=0: GO SUB 1000
10 LET sc=0: LET t=100: LET c=
0: LET l=3: PAPER 4
15 REM ****Title page****
17 CLS
20 PRINT AT 1,11;"Skateboard"
; AT 3,12;"Stunter": AT 6,2;"Gui
de Stan the stuntman down": AT
8,2;"onto his skateboard.He has
jet": AT 10,2;"engine shoes but

```

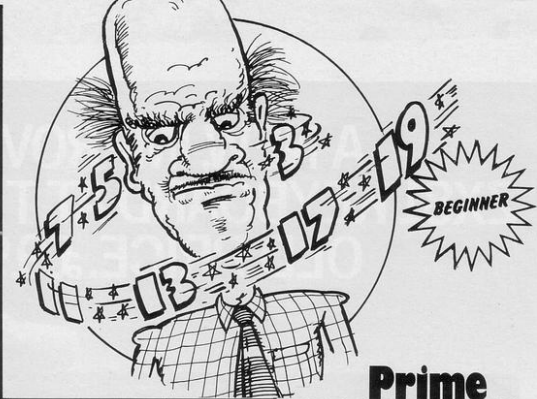


```

1 REM *****
2 REM ** PRIME **
3 REM ** COUNTER **
4 REM *****
5 REM
6 BORDER 6: PAPER 6: INK 0: C
LS
7 PRINT TAB 9;"PRIME COUNTER
"; TAB 9;"(5+q3:sp;7+q3)": PRINT

10 PRINT "I WILL WORK OUT THE
PRIME"
15 PRINT "NUMBERS STARTING FRO
M ONE"
20 PRINT "NUMBER TO ANOTHER NU
MBER."
25 PRINT "WHAT DO YOU WANT THO
SE NUMBERS"
30 PRINT "TO BE? (SMALLEST FIR
ST, PLEASE)."
35 INPUT b: BEEP .2,1: INPUT a
: BEEP .5,0
40 IF b< VAL "2" OR b<> INT
b OR b>= a OR a< INT PI THEN
PRINT " INK 2:"NO GOOD,PLEASE T
RY AGAIN(ENTER)"THE NUMBERS ONE
AT A TIME." : GO TO 35
50 PRINT " INK 1:"Right,here w
e go!!"
55 FOR q=1 TO 500: NEXT q
60 PRINT : PRINT INK 1: BRIGH
T 1:b
65 IF b/2= INT (b/2) THEN LET
b=b/2
70 LET q=b: LET 1 = USR 32500:
IF 1 THEN GO TO 90
80 LET b=q: LET b=b+2: GO TO 7
0
90 POKE 23692,-1: PRINT q: IF
INKEY#<>" " THEN BEEP .1,1:
PAUSE 5: PAUSE 0: BEEP .1,5
95 IF q<a THEN GO TO 80
100 FOR t=1 TO 20: BEEP .1,t: N
EXT t
105 BEEP 1,20: PRINT " INK 1:"N
ot bad,hey?"
110 PRINT " BRIGHT 1:"Do you wa
nt me to work out prime"number
s from one number to""another n
umber?": DIM z$(1)
115 INPUT z$: IF z$="y" OR z$="

```



Prime CALCULATOR

ENTER two numbers, the lowest of which should be three or higher. The program will then calculate all the prime numbers between these two integers. A small machine code routine is included to speed up the program and thus the whole program should be SAVED with SAVE "primec" LINE 200. This means that the machine code will load automatically.

Prime Calculator was written for the 16K Spectrum by Nigel Rosson of Manchester.

```

220 DATA 62,3,205,40,45,42,75,9
2,35,126,35,94,35,86,35,78,35,70
,205,182,42,239,192,1,193,5,49,3
9,3,48,48,0,8,224,225,3,48,48,0,
23,225,49,4,224
230 DATA 3,55,0,10,225,161,161,
15,15,224,56,24,220,56,1,1,0,201
,225,56,42,101,92,43,43,43,43
,237,91,75,92,19,1,5,0,237,176,2
39,2,56,1,0,0
240 DATA 201
Y THEN CLS : GO TO 25
120 IF z$="n" OR z$="N" THEN S
TOP : RUN
125 CLS : PRINT FLASH 1: AT 11
,5:"PLEASE TYPE YES OR NO"
130 GO TO 115
200 CLEAR 32499
210 FOR f=32500 TO 32580: READ
a: POKE f,a: NEXT f: RUN

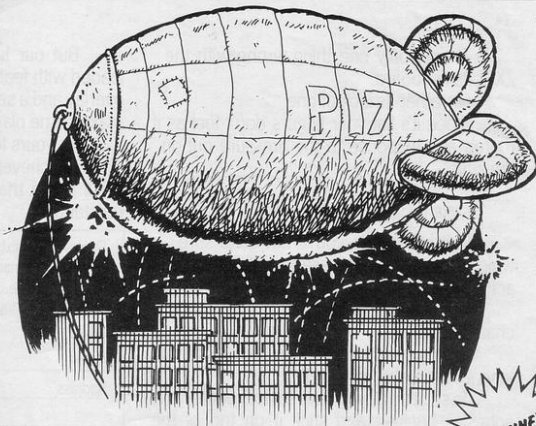
```

BARRAGE

```

1 REM BARRAGE BALLOONS
2 BL=0
3 FOR F=SGN PI TO INT PI
4 CLS
5 FAST
6 PRINT "*****BARRAGE BALLO
ONS*****"AT VAL "19":NOT PI:
7
30 FOR B=INT PI TO CODE " "
35 PRINT AT B,VAL "28":
40 NEXT B
45 PRINT AT INT (RND*16)+2,VAL
"28":CHR$ 38
50 FOR B=CODE "L" TO CODE "I"
55 PRINT AT INT (RND*17)+1,INT
(RND*19)+5,CHR$ 21
60 NEXT B
65 FOR A=SGN PI TO CODE "7"
70 PRINT AT VAL "18":INT (RND*
27):CHR$ 128
75 NEXT A
80 SLOW
85 LET X=INT (VAL "18":RND*SGN
PI)
90 FOR Y=NOT PI TO CODE "1"
95 PRINT AT X,Y:Y
100 IF PEEK (PEEK 16398+PEEK 16
399+255)CODE "E" THEN GOTO 135
105 IF PEEK (PEEK 16398+PEEK 16
399+255)CODE "A" THEN GOTO 160
110 PRINT " "
115 LET Z=X
120 LET X=X+(INKEY$="6" AND X<U
AL "17")-(INKEY$="7" AND X>SGN P
I)
125 PRINT AT Z,Y:" "
130 NEXT Y
135 PRINT " "
140 PRINT AT VAL "18":SGN PI:"Y
OU LANDED IN";BL:" OF THE BASES
"
145 STOP
150 LET BL=BL+1
155 IF BL<3 THEN PRINT AT VAL "
2":SGN PI:"WELL DONE, YOU AND
ED YOUR";AT VAL "14":INT PI:"PLA
NE IN ALL 3 BASES"
160 IF BL<3 THEN STOP
170 NEXT F
180 STOP
190 SAVE "BARRAGE BALLOON"
195 RUN

```



Balloons

GUIDE your ship to your enemy's base whilst avoiding the barrage balloons which defend the city. Use keys six and seven to dodge the barrage balloons. When the

game ends you will be told how many times you landed at the base.

Barrage Balloons was written for the 16K ZX-81 by L Davis of Portsmouth, Hants.

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Crazy Painter

PAIN'T the floor of your employer's mansion. After a certain amount of the floor is painted the door opens enabling you to enter the next room. If you walk over the newly-painted areas you stick to the floor and

are doomed to stay on that spot forever. Do not paint the floor bugs, as they will eat you, and avoid the pillars.

Crazy Painter by Richard Tinner of 16K Spectrum by Richard Tinner of Kingswood, Bristol.

```

6 LET HS=0
10 PAPER 6: BORDER 6: INK 0: C
LS
90 GO SUB 9000
100 GO SUB 6000
105 LET SHEET=1
106 LET SC=0
107 LET SC2=0
108 LET BUG=0
110 GO SUB 2000
115 GO SUB 3000
130 LET X=1: LET Y=31
140 LET X1=0: LET Y1=-1
150 LET X=X1: LET Y=Y1
160 PRINT "AT 0,0: SCORE=";SC;"
HIGH-SCORE=";HS
200 PRINT AT X,Y: INK 0: PAPER
6;"B"
210 IF INKEY#="B" AND ATTR (
X,Y+1) <> 0 THEN LET Y1=1: LET
X1=0
220 IF INKEY#="5" AND ATTR (
X,Y-1) <> 0 THEN LET Y1=-1: LET
X1=0
230 IF INKEY#="7" AND ATTR (
X-1,Y) <> 0 THEN LET X1=-1: LET
Y1=0
240 IF INKEY#="6" AND ATTR (
X+1,Y) <> 0 THEN LET X1=1: LET
Y1=0
242 LET X=X1: LET Y=Y1
246 IF ATTR (X,Y)=54 THEN GO
TO 600
247 IF ATTR (X,Y)=50 THEN GO
TO 500
248 IF ATTR (X,Y) <> 48 THEN
LET X=X1: LET Y=Y1: GO TO 150
249 IF Y=31 THEN GO TO 150
250 PRINT AT X,Y,Y: INK 2: PAP
ER 6;"(1GB)"
255 LET SC=SC+1
256 BEEP 0.004,-10
260 IF SC>=12*100+SC2 THEN PRI
NT AT 10,31: PAPER 6: INK 6: "
270 GO TO 150
500 PRINT AT X,Y,Y: INK 2:"(1G
B)"
501 PRINT AT X,Y1:"C"
505 FOR N=10 TO -5 STEP -5
510 BEEP 0.5,N
515 NEXT N
520 IF SC>HS THEN PRINT AT 1,
4:"YOU HAVE A NEW HIGH-SCORE": L
ET HS=SC
540 PRINT AT 21,2:"PRESS ANY K
EY TO PLAY AGAIN"
550 PAUSE 0: PAUSE 0: CLS : GO
TO 100

```

```

600 CLS
601 IF SHEET=5 THEN GO TO 800
602 LET SHEET=SHEET+1
603 LET SC=SC
604 PRINT AT 10,3:"SHEET ";SHE
ET-1;" COMPLETED BONUS 50": LET
SC=SC+50
607 FOR N=-10 TO 10: BEEP 0.09,
N: NEXT N
608 CLS
610 GO TO 110
650 STOP
800 CLS
801 LET P=1
802 LET SC=600
805 FOR N=1 TO 32
806 PAPER 6: BORDER P: CLS
830 BEEP 0.05,N
835 LET P=P+1: IF P=8 THEN LET
P=1
840 NEXT N
841 LET SC=SC+150
845 PRINT AT 0,0:*****WELL DO
NE YOU FINISHED*****
846 PRINT "TAB 8:"YOU SCORED "
;SC
847 IF SC>HS THEN PRINT AT 1,
2:"YOU HAVE GOT A NEW HIGH-SCORE
": LET HS=SC
850 PRINT AT 21,0: "PRESS ANY
KEY TO PLAY AGAIN"
860 PAUSE 0: PAPER 6: BORDER 6:
CLS : GO TO 100
2000 PRINT AT 1,0: INK 0: PAPER
0;"(32*1GB)"
2010 FOR N=1 TO 20: PRINT AT N,
0: INK 0: PAPER 0;"(1GB)": AT N,
31:"(1GB)": NEXT N
2015 PRINT AT 10,31: INK 0: PAP
ER 6;"*"
2020 PRINT AT 21,0: INK 0: PAPER
0;"(32*1GB)"
2025 IF SHEET=1 THEN RETURN
2030 FOR N=1 TO 20: PRINT AT N,
10: INK 0: PAPER 0;"(1GB)": AT
N,10,20:"(1GB)": NEXT N
2040 IF SHEET=2 THEN RETURN
2050 PRINT AT 5,1: INK 0: PAPER
0;"(15*1GB)": AT 16,16:"(15*1GB
)": AT 15,16:"(15*1GB)"
2060 IF SHEET=3 THEN RETURN
2070 PRINT AT 11,20: INK 0: PAP
ER 0;"(4*1GB)"
2080 PRINT AT 10,7: PAPER 0: IN
K 0;"(4*1GB)"
2090 IF SHEET=4 THEN RETURN
2100 PRINT AT 10,1: INK 0: PAPER
0;"(4*1GB)": AT 12,27: INK 0:

```

```

PAPER 0;"(4*1GB)"
2110 RETURN
3000 LET BUG=BUG+4
3001 IF BUG>16 THEN LET BUG=16
3005 FOR N=1 TO BUG
3010 LET A=INT (RND *20)+1: LE
T B=INT (RND *29)+1
3020 IF ATTR (A,B) <> 48 THEN
GO TO 3010
3025 IF A=11 THEN GO TO 3010
3030 PRINT AT A,B: INK 2: PAPER
6;"B"
3040 NEXT N
3050 RETURN
6000 PAPER 6: BORDER 6: INK 0
6010 PRINT AT 0,9:"CRAZY PAINTER"
6020 PRINT "Using the cursor key
(5,6,7,8) you have to paint the f
loors of the rooms in your emplo
yer's mansion. After you have pain
ted a certain amount of the floor
the door will open and you w
ill be able to enter the next room
"
6030 PRINT "Sounds easy but if y
ou run over any of the newly pain
ted floor you stick to that room, s
o or never leave a clear path to
remember to leave a clear path to
the door. Also there are some
floor bugs which if you pain
ted will eat you! The game en
ds when you die or when you pain
t 8 rooms"
6035 PRINT "The higher the level
the more you'll have to paint
before leaving"
6040 INPUT "SELECT LEVEL (1 EASY
to 4 HARD)";S1
6050 IF S1>4 THEN GO TO 6040
6065 LET S1=S1+1
6066 LET S1=S1+1
6070 BEEP 0.05,15
6075 CLS
6080 RETURN
9000 FOR N=0 TO 23: READ D: POKE
USR "A";N,D: NEXT N
9010 DATA 24,24,60,90,24,36,3
6
9020 DATA 66,60,90,219,126,60,66
,36
9030 DATA 24,24,255,255,24,24,
24
9030 RETURN

```

```
V 11 PAPER 4: INK 7: BORDER 4
12 GO SUB 2000
13 GO SUB 9000
15 DIM b(12)
17 LET t=200: LET s=0: LET r=0

20 FOR a=1 TO 12: LET b(a)=IN
T (RND *7)+10: NEXT a
25 LET y=15: LET z=y
27 CLS
28 PRINT AT 17,15: INK 7;"A"

30 PRINT AT 8,21:"SPECTRUM":
r: AT 10,24:"HUMAN":s
50 PLOT 95,143: DRAW 0,9: DRAW
49,0: DRAW 0,-9: PLOT 79,143: D
RAW 81,0: DRAW 0,-120: DRAW -81,
0: DRAW 0,120: PLOT 95,23: DRAW
0,-8: DRAW 49,0: DRAW 0,8
60 FOR a=1 TO 12: PRINT AT a+
3,b(a): INK 1:"D": AT a+3,b(a)+2
:"D": NEXT a
70 PRINT AT 19,23:"PRESS":
11,22:"ANY KEY": BEEP .1,10: PA
USE 0: PRINT AT 19,23: " "
A 21,22: " "
90 FOR x=17 TO 3 STEP -1
95 PRINT AT 0,0:"TIME":t;"
"
100 PRINT AT x,y: INK 7;"A"
105 PRINT AT x+1,z: " "
107 LET t=t-1: IF t<0 THEN GO
TO 6000
110 IF INKEY$="" THEN LET y
=y-1: LET z=y+1
112 IF INKEY$="w" THEN LET y
=y+1: LET z=y-1
115 IF INKEY$="" THEN LET z=
y
121 IF y<10 OR y>19 THEN GO TO
150
122 IF ATTR (x-1,y)=33 THEN G
O TO 3000
130 NEXT x
140 IF y>11 AND y<18 THEN PRIN
T AT 3,23:"GOAL!!": BEEP .4,20
: LET s=s+1: GO TO 20
150 PRINT AT 3,23:"BALL OUT":
```

```
AT 5,23:"OF PLAY": BEEP .5,5: GO
TO 20
2000 FOR a=0 TO 7: READ c: POKE
USR "A"+a,c: NEXT a
2010 FOR a=0 TO 7: READ c: POKE
USR "D"+a,c: NEXT a
2020 DATA 0,60,126,126,126,126,6
0,0
2030 DATA 56,56,56,16,124,16,40,
68
2040 RETURN
3000 FOR e=x TO 18: PRINT AT e+
1,y: INK 7;"A": AT e,y;" ": PAUS
E 5: NEXT e
3010 IF y<18 AND y>11 THEN PRIN
T AT 3,23:"1 SCORED!": BEEP .3,
.5: LET r=r+1
3020 GO TO 20
4000 BEEP 2,40: CLS: PRINT AT
3,11:"GAME OVER": AT 5,10:"Final
Score": AT 8,10:"ZX UNTIL":r
: AT 10,10:"HUMAN":s: IF s>
r THEN PRINT AT 15,8:"You Win
Earthling!"
6010 IF r>s THEN PRINT AT 15,1
0:"ZX RULES OK!!"
6020 IF r=s THEN PRINT AT 15,4
:"I'll Beat You Next Time"
6030 PRINT AT 18,3:"Press Any K
ey For New Game": PAUSE 0: RUN
9010 CLS: PRINT AT 0,12:"FOOTB
ALL"
9020 FOR o=1 TO 10: READ i: PRIN
T AT o+2,i: NEXT o: PRINT
AT 21,5:"PRESS ANY KEY TO PLAY":
PAUSE 0: RETURN
9030 DATA "Your team have all be
en sent","Off,except you.The oth
er team","have 24 men,but you ha
ve","remote control of the ball!
1":"However,if you lose possess
ion"
9040 DATA "you lose control.Try
to score","the most goals before
the","whistle goes.(Beware the
ball)","cannot stop!!!,Controls
are"," q:right w:left
```



LONE ATTACKER

YOUR FOOTBALL team have all been sent off the field and you are left facing a team of twenty-four players. To give you a slight advantage the game begins with you in control of the football. If, however, you lose control of the ball your opponents have sole possession and you can only wait and see if they manage to score.

Lone Attacker was written for the 16K Spectrum by Patrick O'Brien, London N12.



LOG JUMP

JUMP FROM one log to another using key 7. When you reach the top of the screen you start again

only this time the logs are shorter. Misjudge a jump and you will fall to your death.

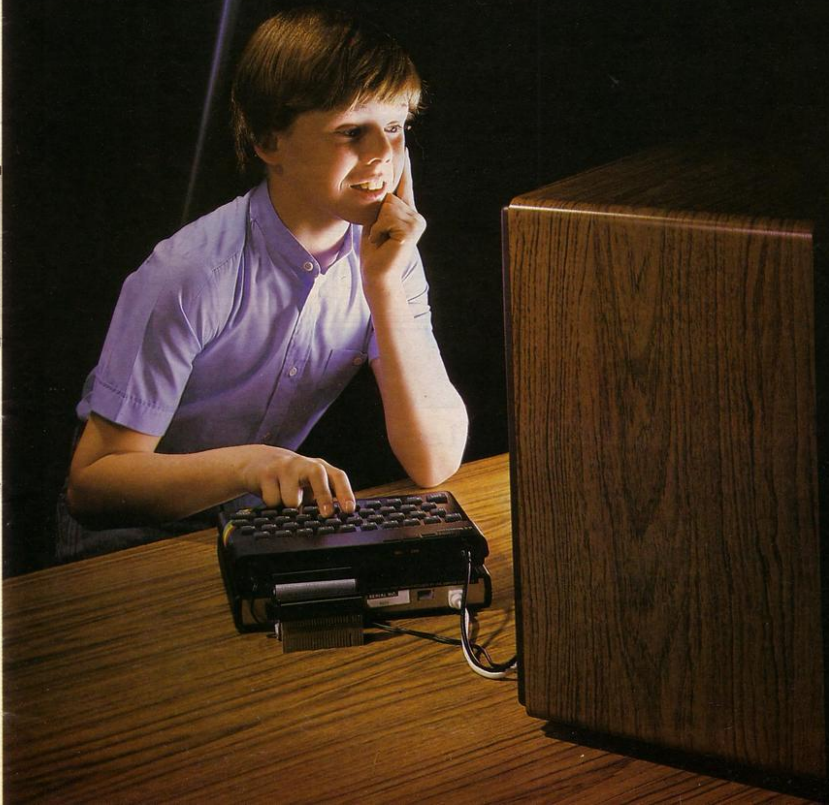
Log Jump was written for the 16K ZX-81 by Hai Ngo of Spencer, Northampton.

```
9 CLS
10 LET A=21
40 LET B=15
120 LET S=0
140 LET S=1
160 PRINT AT 8,0:" "
110 FOR F=0 TO 21
120 PRINT AT F,0:" "
130 NEXT F
140 PRINT AT 21,1:" "
150 PRINT AT 8,23:"SCREEN":;S
160 LET B=S
170 LET D=S
180 LET D=S
190 IF S=1 THEN LET A$=""
200 IF S=1 THEN LET A$=""
210 IF S=2 THEN LET A$=""
220 IF S=3 THEN LET A$=""
230 IF S=4 THEN LET A$=""
240 FOR F=0 TO 15
250 LET D=D+1
260 IF LEN D>20 THEN GOTO 231
270 NEXT F
280 IF LEN D=30 THEN GOTO 240
```

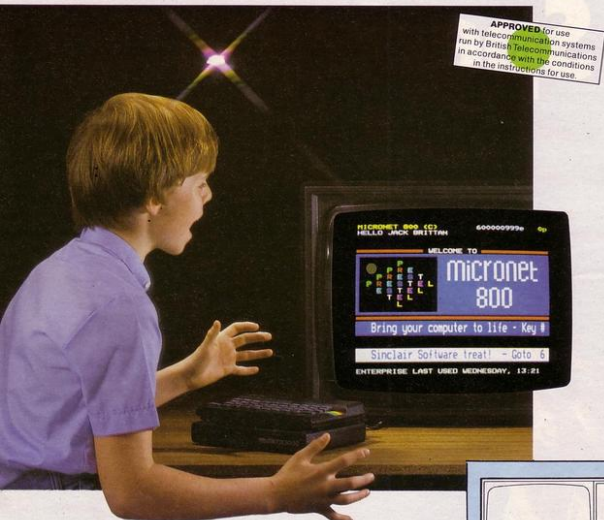
```
232 LET D$=D$+" "
233 GOTO 201
240 LET C=D$
250 LET C$=(30)+C$ (TO 29)
260 PRINT AT 1,1:D$ AT 5,1:D$:A
T 9,1:D$ AT 13,1:D$ AT 17,1:D$
270 PRINT AT 21,1:C$ AT 7,1:C$
280 PRINT AT 15,1:C$ AT 19,1:C$
290 LET D$=D$ (C TO )+D$ (1)
300 PRINT AT A,B:
310 LET P=PEEK (PEEK 16398+PEEK
16399+255)
320 IF P=0 THEN GOTO 600
330 PRINT AT A,B:B$
340 IF INKEY$="7" THEN GOSUB 51
0
350 IF A=1 OR A=5 OR A=9 OR A=1
3 OR A=17 THEN LET B=B-1
360 IF A=3 OR A=7 OR A=11 OR A=
15 OR A=19 THEN LET B=B+1
370 IF B=30 THEN LET B=30
380 IF B=1 THEN LET B=1
390 PRINT AT 1,1:SCORE:;S
400 IF A=1 THEN GOTO 540
410 GOTO 540
420 LET A=B-2
430 LET SC=S+10
```

```
530 RETURN
540 LET S=S+1
550 IF S=6 THEN LET S=5
560 LET S=1
570 LET B=15
580 GOTO 100
590 PRINT AT 10,10
600 FOR F=0 TO 10
610 PRINT AT A,B: " " AT A,B:" "
620 NEXT F
630 CLS
640 PRINT AT 7,4:"BAD LUCK... Y
OU ARE DEAD!"
650 PRINT AT 9,4:"YOUR SCORE IS:
S"
660 IF S<1 THEN PRINT AT 11,4:
"YOU MANAGE TO SCREEN":S
670 PRINT AT 21,0:"DO YOU WANT
ANOTHER GAME (Y/N)?"
680 INPUT R$
690 IF R$="Y" THEN RUN
700 IF R$="N" THEN STOP
710 GOTO 650
720 SAVE "LOG.JMP"
730 RUN
```


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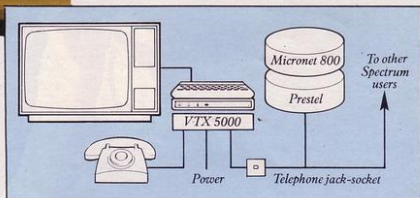
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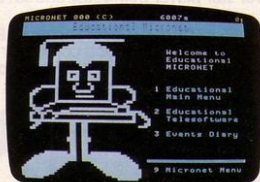
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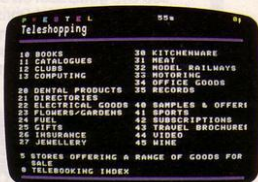
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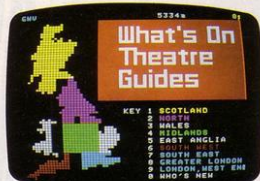
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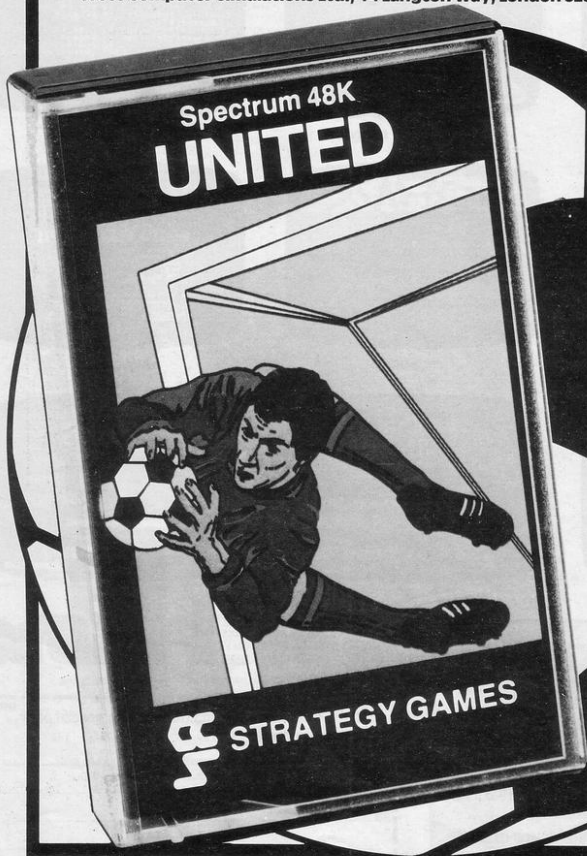
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```

5 GO SUB 9000
6 GO SUB 6000
10 LET sc=0: LET l1=3: LET hi=
O: LET ml=4: LET b=0: LET c=1: L
ET m=0: LET z=1
15 DIM f(4): FOR f=1 TO 4: LET
f(f)=1: NEXT f
16 LET r=1
17 GO SUB 9500
25 FOR d=31 TO 0 STEP -1
30 IF m=0 THEN LET b=d
35 IF INKEY$="o" THEN PAUSE
10: PAUSE 0
40 IF INKEY$="p" THEN IF m=
O THEN LET m=1: BEEP .001,15: B
EEP .001,50
50 IF m=1 THEN PRINT AT c,b;
" ": LET c=c+2: LET b=b+1 INKEY$
="n" AND b<31)-(" INKEY$="q" AN
D b=0): IF SCREEN$(c,b) <> " "
THEN GO TO 5000
60 PRINT AT c,b;"H"
61 IF m=1 THEN IF b=d THEN
IF c=1 THEN GO TO 1000
65 IF c>20 THEN GO TO 5000
66 IF c=0 THEN GO TO 5010
70 GO SUB 9530: NEXT d: GO TO
25
1000 BEEP .001,10: BEEP .001,13:
BEEP .001,16: PRINT AT c,b;" "
: PRINT AT 1,b;"H": IF sc/300=
INT (sc/300) THEN FOR f=1 TO 4:
LET f(f)=1: NEXT f: RESTORE 970
O: FOR g=1 TO 20: READ a,b: BEEP
a,b: NEXT g: LET r=r+1: PRINT
AT 17,0: PAPER 7: INK 0;"SHEET";
AT 19,0: INK 1: PAPER 7:r
1010 LET z=1: LET m=0: LET d=d+2
: LET c=1: NEXT d
4000 PRINT AT 15,0: PAPER 7: IN
K 1;"SHEET": LET c=c+1: BEEP .01,10:
BEEP .01,20: BEEP .01,30
4010 LET z=1: NEXT d: GO TO 25

```

```

5000 IF f(1)=1 THEN IF c=14 THE
N IF b>10 THEN IF b<19 THEN L
ET f(1)=0: PRINT AT 13,17;" "
LET sc=sc+50: GO TO 4000
5001 IF f(2)=1 THEN IF c=16 THE
N IF b>20 THEN LET f(2)=0: LET
sc=sc+80: PRINT AT 15,24;" "
GO TO 4000
5002 IF f(4)=1 THEN IF c=20 THE
N IF b>14 THEN IF b<23 THEN L
ET f(4)=0: PRINT AT 19,21;" "
LET sc=sc+50: GO TO 4000
5003 IF f(3)=1 THEN IF c=17 THE
N LET f(3)=0: LET sc=sc+80: IF
b<13 THEN PRINT AT 16,8;" ": G
O TO 4000
5010 FOR g=32 TO 100: PRINT AT
c,b: INK 2: PAPER 6: OVER 1: BRI
GHT 1: FLASH 1: CHR$(g): BEEP .
001,20: NEXT g
5015 PAUSE 100: CLS
5020 PRINT AT 10,11: INK 2: PAP
ER 6: BRIGHT 1:"GAME OVER": AT
12,11: PAPER 2: INK 6:"SCORE=":s
c
5030 PRINT AT 21,0: INK 2: PAPE
R 6: FLASH 1: BRIGHT 1;" PRESS
ANY KEY FOR ANOTHER GO ": FOR f
=1 TO 4000: BORDER 7: BORDER 6:
BORDER 5: BORDER 4: BORDER 3: BO
RDER 2: BORDER 1: BORDER 0: PAUS
E 1: IF INKEY$="" THEN NEXT f
5031 GO TO 10
6000 PAPER 0: BORDER 0: INK 7: C
LS: PRINT AT 0,0: INK 5: FLASH
1: PAPER 2: BRIGHT 1;" LUN
AR RESCUE "
6010 PRINT " Your mission is to
rescue as many stranded scient
ists (D) as possible from the moo
n surface."

```

```

6020 PRINT " You control the sm
all spaceship(H).When you have r
escued one of the scientists,you
then have to dock with the mothe
rship
EGL
E J
6025 PLOT 206,97: DRAW 0,12,-1.3
: PLOT 232,97: DRAW 0,12,1.3
6030 PRINT " If you crash into
one of the asteroids or the mo
n then ship or the moons surf
ace or you miss the mothership
on the way back,then the game
will end."
6040 PRINT "CONTROLS:
'q' Left
'w' Right
'p' Take off from mo
'c' Hold"
6050 PRINT PAPER 6; INK 2: FLAS
H 1: BRIGHT 1;" PRESS ANY KE
Y TO BEGIN
6060 PAUSE 1: PAUSE 0: RETURN
9000 FOR f=1 TO 10: USR "r"
7: READ POKE f,a: NEXT f
9005 RETURN
9010 DATA 0,85,170,85,170,255,25
5,255
9020 DATA 56,184,144,124,58,58,4
0,40,56,58,18,124,184,184,40,40
,56,56,16,254,56,56,40,40
9030 DATA 0,0,0,0,0,0,15,19,35,6
7,127,127,63,31,7,0,0,0,0,1,7,
255,195,24,52,52,122,122,122,12
2,36,0,56,120,248,248,248,249,255
,255,255,255,249,248,248,240,0
9040 DATA 0,0,1,3,7,15,15,31,31,
31,31,15,15,7,1,0,0,112,248,248
,252,252,252,252,252,248,248,249
,241,240,224,0,0,0,0,48,48,0,130
,192,192,0,8,0,98,96,0,0,24,124,2
54,255,127,127,63,6,0,96,178,240
,97,4,48,50
9500 BORDER 7: PAPER 0: INK 7: C
LS
9510 PRINT AT 12,0;"@ig3:ig7:
13*spi10wig3:7ig8:c2:15*spi10ig
3:13*ig8:ig2:4*spiAAAAAA:16*spi10
1:11*ig8:ig5:5*spi12:ig8:15:10
12*ig8:ig2:7*spi5:10*ig8:ig2:6*spi
5:4*ig8:ig5:3*spiAAAAA:q5:10*1
q8:AAAAA:3*spi4:ig8:4*spi1:ig8:
18:10:14*ig8:18:10:ig8:ig2:3*spi10
5:2*ig8:ig5:6*spi3:q7:15*ig8:ig2
:5*spi2:ig8:10*spi7:12*ig8:ig2:6
*spi2:ig8:spiAAAAA:4*spi12:ig8:
ig1:ig7:14*spi10:ig8:ig1:ig1:ig
8:19:10:ig8:ig2:3*spi4:5*ig8:"
9515 PRINT AT 13,0: PAPER 7: IN
K 0;"SCORE": AT 15,0: PAPER 7: I
NK 1;"O"
9516 PRINT AT 17,0: PAPER 7: IN
K 0;"SHEET": AT 19,0: PAPER 7: I
NK 1;"1"
9520 LET a$="BDCD": LET c$=" KM
D O R O OP CN
P R P Q R Q: L
ET b$="B
E J
E": LET d$="RO OKM R
O OO P FLN P
P RP Q"
9530 LET c$=c$(2 TO 32)+c$(1)+c$
(34 TO 64)+c$(33): LET a$=a$(4)+
a$( TO 3): LET b$=b$(2 TO 32)+b$
(1)+b$(34 TO 64)+b$(33): LET d$=
d$(32)+d$(1 TO 31)+d$(64)+d$(33
TO 63)
9540 PRINT AT 13,17:(a$(1) AND
f(1)): AT 15,24:(a$(1) AND f(2)):
AT 16,8:(a$(1) AND f(3)): AT 1
9,21:(a$(1) AND f(4))
9550 PRINT AT 0,0;b$: AT 5,0: I
NK 6;c$
9560 PRINT AT 8,0: INK 2;d$
9570 RETURN
9700 DATA 1,9,1,4,1,9,1,4,1,1
,9,0,5,2,0,8,-2,1,1,1,5,1,1,9

```



SCIENTIST RESCUE

YOUR mission is to rescue stranded scientists from the moon's surface. You control the

small space vehicle, using q and w for left and right. When you have collected a scientist you must dock with the moving space laboratory so that she can return to safety.

Scientist Rescue was written for the 16K Spectrum by Neil Bates of Coventry.

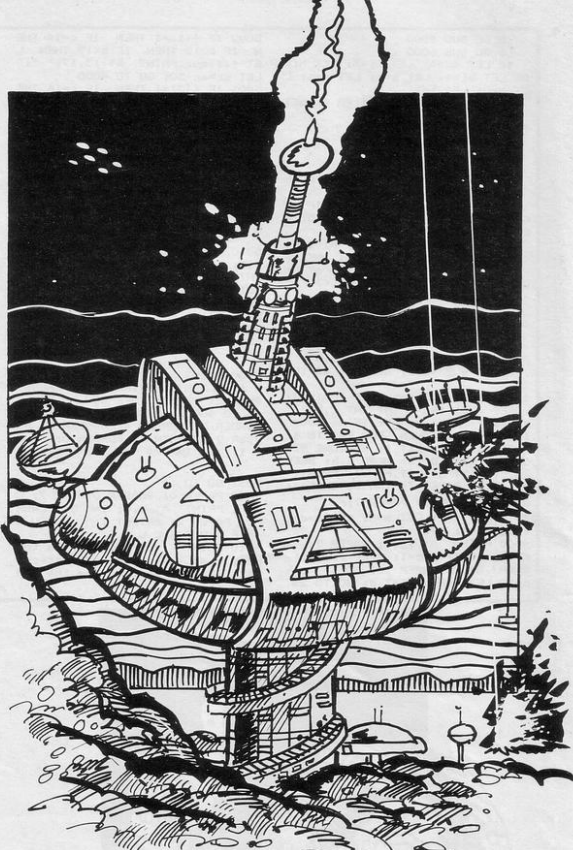
THIS IS a space invader type game in which you control a laser turret at the bottom of a mountain. Use keys 5 and 8 to rotate the turret and 0 to fire at the intruders. Ten points are awarded for each intruder shot and a bonus can be gained by hitting the spaceship which occasionally strays across the screen.

Laser Turret was written for the 16K Spectrum by Neil Bates, aged 15, of Coventry, W Midlands.

```

10 DATA 80,80,81,79,75,73,73,7
2,70,70,70,71,72,72,71,69,68,67,
66,66,65,64,65,64,62,59,53,53,46
43,42,41,36,31,29,28,20,19,18,1
6,22,24,26,26,27,28,28,29,29,29,
29,29,29,28,28,27,27,25,24,22
8,9,10,12,16,18,19,23,27,28,29,
32,34,35,37,39,39,37,36,37,38,39
44,46,57,59,62,65,67,68,70,72
15 DATA 0,36,66,153,255,153,66
36,0,0,0,0,3,0,0,0,0,0,14,255,2
55,14,14,126,0,7,255,255,7,0,0,0
31,255,255,255,255,31,0,0,255,2
55,254,255,255,254,126,0,0,0,0,0
31,255,63,0,126,6,14,31,254,255
254,0,0,0,0,32,0,0,8,0,0,0,8,0
0,32,0,0,64,0,0,0,64,0,0,128,0
0,16,0,0,0,0,0,0,8,0,0,1,0,32,0
0,4,0,0,0,16,0,8,128,1,16,0,68,
0,33,0,0,0,0,56,60
20 PAPER 5: BORDER 0: INK 0: C
LS : DIM a(93): FOR f=1 TO 93: R
EAD b: LET a(f)=b: NEXT f
21 FOR f=USR "a" TO USR "c"+
7: READ a: POKE f,a: NEXT f
25 GO SUB 200
26 DIM a$(2,100): LET a$(1)="(
95*sp)BC"
27 LET a$(2)="(94*sp)DEF"
30 LET l=0
36 LET b=0: LET c=0
37 LET h=0: LET u=0
38 LET sc=0: LET d=0: LET e=0
40 FOR x=100 TO 1 STEP -1
45 LET l=1+6*(INKEY$="B" AND
1(0))-6*(INKEY$="5" AND 1(32))
50 LET f= COS l*12: LET g= SIN
l*12
55 IF d=21 OR b=21 THEN GO SU
B 9000
60 PLOT 50+f,20+g: DRAW f,g
61 IF INKEY$="0" THEN GO SU
B 100
62 LET a$(1)=a$(1,2 TO 1)+a$(1,
1): LET a$(2)=a$(2,2 TO 1)+a$(2,1
): PRINT AT 0,0;a$(1,2 TO 32);a$(
2,2 TO 32)
70 OVER 1: PLOT 50+f,20+g: DRA
W f,g: OVER 0
75 GO SUB 300
80 NEXT x
90 GO TO 40
104 INK 2: PLOT 50+f,f,20+g+g:
DRAW ((1+f)/2,(11+g)): INK 0
105 BEEP .1,.20
106 GO SUB 1000
110 OVER 1: PLOT 50+f,f,20+g+g:
DRAW ((1+f)/2,(11+g)): OVER 0
115 IF l=1 THEN PRINT AT b,c;
" ": LET b=0: LET u=0
116 IF d=1 THEN PRINT AT d,e;
" ": LET d=0: LET h=0
120 RETURN
200 FOR f=1 TO 61: PLOT f-1,0:
DRAW 0,a(f): BEEP .001,a(f)/1.2:
NEXT f: PRINT AT 21,7:(3*IG)B:
2*sp)GH(2*sp)GH(2*sp)GH(2*sp)GH(
sp)5*IG)B: FOR f=62 TO 93: PLOT
f*162,0: DRAW 0,a(f): BEEP .001
,a(f)/1.2: NEXT f: PRINT AT 21,
0: PAPER 0: INK 7:"Score=": RETURN
300 IF b=0 THEN LET c=INT (R
ND *20)+6: LET b=2

```



LASER TURRET

```

305 IF d=0 THEN LET e=INT (R
ND *20)+6: LET d=2
310 INK 1: PRINT AT b,c; " ": L
ET b=b+1: PRINT AT b,c;"A"
315 PRINT AT d,e; " ": LET d=d+
1: PRINT AT d,e;"A": INK 0: RET
URN
500 LET sc=sc+10: PRINT AT 21,
0: INK 7: PAPER 0:"Score=":sc: L
ET u=1: FOR y=1 TO 7: PRINT INK
y: AT b,c: OVER 1: CHR$(152+y)
: BEEP .001,30: NEXT y: RETURN
600 LET sc=sc+100: PRINT AT 21
,0: INK 7: PAPER 0:"Score=":sc
610 LET x$="IJKLMNO": FOR v=1 T
O 6: BEEP .001,50: PRINT AT 0,x
-v: OVER 1:x$( TO 4): AT 1,x-v:6
OVER 1:x$( TO 4): LET x=x$(2 TO
)+x$(1): NEXT v
620 LET a$(1)="(95*sp)BC"

```

```

630 LET a$(2)="(94*sp)DEF"
640 LET x=100: RETURN
1000 IF ATTR (b,c)>41 THEN GO
SUB 500
1005 IF x<35 THEN FOR v=3 TO 6:
IF ATTR (1,x-v)=42 THEN GO SU
B 600
1007 IF x<35 THEN NEXT v
1010 IF ATTR (d,e)>41 THEN GO
SUB 1100
1020 RETURN
1100 LET sc=sc+10: PRINT AT 21,
0: INK 7: PAPER 0:"Score=":sc: L
ET h=1: FOR y=1 TO 7: PRINT INK
y: AT d,e: OVER 1: CHR$(152+y)
: BEEP .001,30: NEXT y: RETURN
9000 PRINT AT 10,10:"GAME OVE
R ": AT 12,11:"Score=":sc
9010 PRINT AT 15,0:" PRESS AN
Y KEY TO PLAY AGAIN ": PAUSE 1:
PAUSE 0: RUN

```

Second in which race?

I AM writing to tell you about a bug in Micromega's new game, **Full Throttle**, which allows you to come second on any track.

First you choose your track and set the number of laps to one. Next you start the game and travel around the track at a slow speed so that all the other bikes overtake you. You then continue at a slow speed until you are just in front of the finish line, and then wait until the other bikes approach to overtake you for the second time. As soon as the first bike passes you, speed up and, if you are travelling sufficiently fast, when the end of game message appears you will be told you came second.

Neil Gorst
Dorridge, Solihull.

High-res ZX-81 success

I WOULD like to say that I think Software Farm have done it again. Not only did they come up with a ZX-81 hit called **Forty Niner**, which had high-resolution graphics and is a great success, but they have now produced their second high-resolution game, **Rocket Man**, which is great. I was addicted to it, and spent the entire day in front of the television playing it without being able to reach a very high score.

The game has six different great screens.

My highest score so far is 48,398, and I reached screen six.

I would like to thank Software Farm for their marvelous games.

Simon Kelly,
Muswell Hill, London.

What is the secret

I RECENTLY bought **Rocket Man** for the 16K ZX-81, and was astounded by the graphics. It was only when I saw an advert for the high-resolution utility that I realised the 192x256 pixel grid was set by a POKE. Does anyone know the program or POKE which can be used to achieve this effect? If they do, please let *Sinclair Programs* know so that we can all use this effect in our programs.

A. Horrocks,
Rochdale, Lancashire

Failed geographers

I WANT you to correct a mistake. In the June 1984 issue of *Sinclair Programs* I read in line 9000 of **Geography Test** that the capital city of Turkey is Istanbul, which is completely wrong. Istanbul is the most famous and crowded city of Turkey but, since 1923, the capital city of

ERRORS AND MISHAPS



Part of line 9040 was omitted from the program **For Love**, which was printed in the September edition of *Sinclair Programs*. After "MAGNIFYING GLASS" the line should continue: "AXE", "SOAP", "SOAP".

the Turkish Republic is Ankara.

I would be thankful if you would correct this big geographical mistake as soon as possible.

Selcuk Aksoy
Istanbul, Turkey

Millions have been won

I AM writing to tell you about my high score on **Cash Accumulator** which was published in the July issue of *Sinclair Programs*. On my first turn I got £1,679,968, and on my fourth go I got £16,717,696. I would like to hear if anyone has beaten my score, or if anyone can do any worse than my mother, who scored £3.

James Williamson,
Macclesfield, Cheshire.

ZX-81: the first sounds

I AM writing with a letter published earlier this year written by Gerald Shield. He wrote that, in FAST mode, RAND USR 823 would make the ZX-81 BEEP.

I have discovered that RAND USR 821-829 all produce different notes.

David Lane, aged 13
Bridgwater, Somerset.

Reader held by police

I RECENTLY bought a game called **Urban Upstart**, produced by Richard Shepherd Software Ltd. I have nearly completed the game but in some places, if you wait too long, you are arrested and placed in a cell.

If you move north from the cell you go to the police sergeant's desk. I have spent hours trying to escape from the police station, but cannot do so.

I am writing to ask whether anybody can help me. I would be grateful for any advice, no matter how small.

C P Ball
Kidderminster,
Worcestershire

● If anybody has any advice to offer Chris please let us know and we will publish it or pass it on.

Please complete this form and enclose it with any program which you send to us for possible publication.

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SMT

Police intervene as computer creates life

IN LATE 1982 the situation was clear. **Space Invaders** may have been almost the only Spectrum game on the market, but that did not mean it merited ten out of ten on a sliding scale, merely an honourable mention in Spectrum history. Two years later the situation is slightly different; how should a game be rated which is so radical a departure from other games on the market that it requires new methods of criticism?

Such a game is **Deus ex machina**, from Automata. This program can best be described as the world's first example of concept software. It synchronises a series of thematically linked computer games with a stereo soundtrack run on a cassette recorder. As such, it is the first computer program to seriously present the possibility of computer games of the future integrating sound and film to create a more completely interactive form of video and aural entertainment than is now possible.

For the first time, too, it is possible to view the Spectrum game as art and, as art, it is not only the game itself, but its presentation, methods and ideas which require criticism.

For example, in one of the games, you play the part of a soldier running along a smooth surface jumping holes.



The voice of the Defect Police comes from your cassette recorder. "When I say 'jump', jump". While you are smarting over the suggestion that you should follow the commands of a computer game the cassette proceeds "Wait for it, wait for it..." Of course, you decide not to jump. Then, simultaneously, the cassette recorder shouts jump, and a hole appears. Of course,

As the Christmas software goes on sale Spectrum owners are spoiled for choice.

you jump and, although this is the umpteenth game in which you have jumped when a hole appears, for the first time you wonder what you are doing following a machine's commands.

The cassette and games take you through an entire life cycle, from DNA and simple cells, through conception, birth and childhood, to senility. The games are supported by a synchronised sound track and commentary, as well as by a complete lyric sheet which is provided. Familiar voices, from Ian Dury to Frankie Howerd can be heard, backing each section of the game.

The game must be played in sequence, from cells to senility, taking around an hour. At the end of the game you are presented with your score percentages for each section, giving you a score which can be improved, but there is no failure, for your character must die at the end, and everyone, no matter how bad at computer games, sees the entire cycle.

Ten out of ten for a program which surpasses everything on the market at the moment, or one out of ten for the first piece of artistic software? It is difficult to tell but, whatever the score, **Deus ex machina** deserves to be an enormous success.

Deus ex machina is produced for the 48K Spectrum by Automata, 27 Highland Road, Portsmouth, and costs £15.

Frank N Stein

THE STORY of Frankenstein was ideally suited for adaptation to computer game, and PSS have carried this adaptation out admirably.

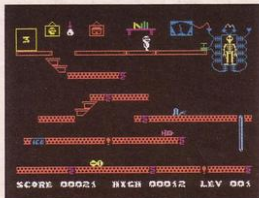
On the first level the player's aim is to assemble **Frank N Stein** from the pieces of body scattered around the lab. Pieces must be collected in the correct order and assembled before the switch can be thrown to bring him to life.

As usual, of course, things are not that simple. The opposition is enor-

mous. On each level you face a different range of problems, involving swamps, ice, electric shocks, spiders, unidentifiable objects... you name it, it is hidden in one of the labs.

Having avoided all these problems and completed your monster your problems do not end. On screen two the monster starts to attack you, and can be added to your list of opponents. On screen three you must assemble another monster, but this time the screen layout is different, and your timing must be much more precise.

There are elements here of **Chuckie Egg**, and elements of **Manic Miner**.



The game becomes progressively more difficult and is therefore one on which high scores will be amassed by dedicated players.

Too challenging to be ignored for long, **Frank N Stein** will set Spectrum owners compulsively building monsters this Christmas. Produced for the 48K Spectrum by PSS, 452 Stoney Stanton Road, Coventry it costs £5.95.

Handles

THE AUTHOR of **Handles**, produced for the ZX-81 by Pooter Software, obviously has considerable programming and artistic capability. It is a pity that he has chosen to demonstrate this in **Handles** which is a particularly uninspiring guessing game.

Six characters are shown on screen. They each have a real name but, for the purposes of Citizen's Band Radio, have given themselves new names or "handles". They have achieved this by swapping their names around. It is up to the player to guess what these new handles are.

As the names appear to be redistributed on an entirely random basis, there

is little skill to be employed in this game. After four rounds the program will tell you which of the characters you particularly like and dislike, and give a brief character analysis.

The author's reasons for writing this game remain a mystery. It is machine-coded and well laid out, but a game along the same lines could be produced quickly in simple Basic by the majority of readers of *Sinclair Programs*.

Handles is produced for the 16K ZX-81 by Pooter Games, 24 Parsloes Avenue, Daggenham and costs £1.85.

Sherlock

MELBOURNE HOUSE have done it again. Their new adventure game, **Sherlock**, is as exciting, as intriguing, and as puzzling as **The Hobbit**.

The game begins at Baker Street, with Sherlock Holmes and Watson sitting in armchairs. Somewhere there is a mystery to be solved, but what that mystery is, and where the clues can be found must be discovered by the player.

Like Thorin in *The Hobbit*, Watson can prove to be a help, a hindrance or just plain annoying. You can discuss matters with him, but his response of "Brilliant" to simple statements of Holmes is an uncritical response and of little help. It is also possible to talk to many other characters in the game. Without talking to a cab driver you will never be able to leave Baker Street, and without questioning the witnesses in detail you have little hope of solving the crime.

Timing is of vital importance in this game. It is not possible to just sit down and wait for things to happen. The clock on the screen shows the passing of time, which passes at the same speed whether you are travelling, sleeping or working. While you remain still the other characters are moving quickly. Watson has patients to visit, Lestrade of Scotland Yard has work to do. Even more importantly, the police cannot be expected to leave murdered bodies lying in the garden indefinitely, and may tidy them away before you arrive on the scene of the crime. Also, it must be remembered that Sherlock Holmes is not part of the establishment, and nobody is prepared to wait for him to solve the crimes. As soon as Lestrade feels he has solved the crimes satisfactorily the game will end, no matter how much of the game you have completed.

An infuriating aspect of many adventures is that you occasionally know exactly what you want to do, but cannot

find the correct words with which to convince the computer of your intentions. Melbourne House have overcome this problem. After all, detectives often know what they want to discover, but have to find exactly the right questions



to ask suspects or witnesses. It is possible to feel that your problems are due not to your computer's stupidity but to your inept questioning and the criminal's skill.

Sherlock is produced for the 48K Spectrum by Melbourne House, Church Yard, Tring, Hertfordshire and costs £14.95.

Decathlon

THE SUMMER of the Olympics, and **Daley Thompson's Decathlon** from Ocean zooms up the software charts. A topical arcade game, it has been selling well since its launch.

The game is divided into two parts, each containing a day's decathlon events. On the first day you struggle to meet the qualifying times and distances for the 100 metres, long jump, shot putt, high jump and 400 metres. On the second day you continue with the 110

metres hurdles, the discus, pole vault, javelin and 1500 metres.

Success in the throwing and jumping events depends partly on speed at take off or launch and partly on the angle attained. The races, of course, depend on overall speed.

While the animation involved in your representation on screen is good, the games themselves seem more suited to frantic manipulation in an amusement arcade than to key-pressing in the front room. Speed is attained by alternately pressing two keys as quickly as possible. It exhausts your fingers, and it probably does little for your keyboard. In the first few races this seems acceptable but, while jogging your fingers in the 1500 metres, questions such as "Why am I doing this?" tend to drift through the mind.

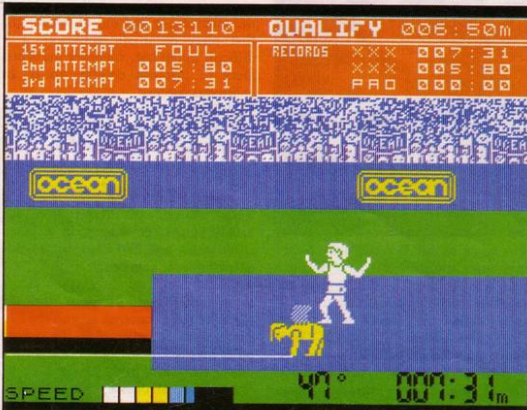
With lots of practice or a lucky fluke you will bring the Olympic crowd cheering to its feet, unless the tips of your fingers wear away first or you think of something better to do.

Decathlon is produced for the 48K Spectrum by Ocean Software Ltd, Ralli Building, Stanley Street, Manchester and costs £6.90.

Strange loop

STRANGE LOOP is a massive arcade game, including over 200 locations, enemies to kill, mazes to solve, things to collect, transport and supplies to find; in fact, everything which we have come to expect from Spectrum arcade games presented in an extremely well thought out game.

The game is set in a robot factory where robots have been programmed to





carry out all the humdrum tasks which once were humans' lot. Now, though, the factory has been invaded by aliens who have reprogrammed the robots to destroy Earth. Your task is, of course, to save the human race. All you have to do is overcome the high temperatures, the lack of oxygen, the sharp industrial waste, the robots, etc. . .

The object is not merely to find the control room, which is a relatively easy task, but to enter it and save the earth. To do this you will probably need a detailed map, good shooting ability and some idea of your route and things to be collected on the way.

It is difficult to find fault with the game, save in its safety. Aliens, mazes robots; surely we have all been here somewhere before? Yes, it is very well written. Yes, it is difficult and challenging. Yes, the graphics are very good. On the other hand: no, it is not an original idea. No, there are no new elements to this game. Yes, Virgin are, very much, playing it safe.

Good it is, innovative it is not. **Strange Loop** is produced by Virgin Games, 2-4 Vernon Yard, 119 Portobello Road, London W11 and costs £5.95.

Avalon

AVALON from Hewson Consultants is billed as "the 3D adventure movie," and it makes a very creditable attempt at achieving this goal. Three dimensional pictures of locations around which your character can move are drawn on screen. As in television programs such as **Coronation Street**, this means that each room has a wall which you never see, a wall through which you can watch the action.

The game is mammoth, including 223 rooms on eight levels, and over 100 characters. In many ways it seems similar to **Atic Atac**, rooms to move through seen from the side rather than from above; passages to travel down, rather than trapdoors and, of course, there is the player's ultimate goal to be located and villains to be defeated.

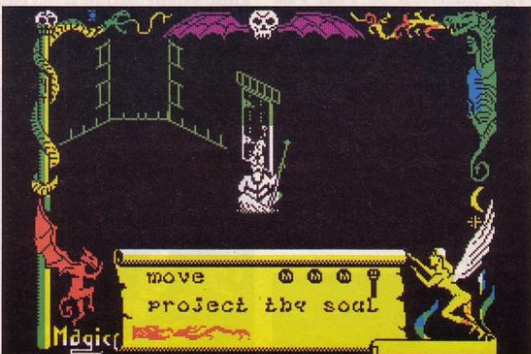
Other aspects of the game, are entirely new. Around the building are

placed various spells which can be used at different times. The Move spells with which you start are important, as they are the ones which allow you to move your astral projection around. Others which appear are essential to your progress. Spells to freeze your enemies, to make yourself invisible, or to control a servant can all be found and your skill in finding these and your judgement in knowing when to use them are essential for success in **Avalon**.

attained Hampstead.

A brilliant start. However, when the game is loaded the screen clears and a limited, text-only adventure appears on the screen. The screen display is unexciting, the game was obviously developed using **The Quill** without using it to its full advantage.

Granted, the problems you encounter are unusual. How many other games require you to cash a giro, cope with unemployment and watch "3,2,1" on



Using a complete three-dimensional technique in an adventure is new. However, it does produce graphics which flicker incessantly. Those people who were expecting graphics of the quality used in **Ant Attack** from Quicksilver will be disappointed. The three-dimensional view also makes movements more complicated, as you try to move a character on a two-dimensional screen through three dimensional space.

For short periods of time the game is excellent, but when played for a long time as it must be, it becomes a strain on the eyes. It will, without doubt, be an extremely successful game, but its success with flicker-free graphics would be even greater.

Avalon is produced by Hewson Consultants, Hewson House, 56B Milton Trading Estate, Milton, Abingdon and costs £7.95.

Hampstead

HAMPSTEAD from Melbourne House. What a disappointment. The game arrives in stylish packaging, complete with a pair of languorous Afghan hounds on the cover. The accompanying booklet is excellent, well-illustrated, and full of hints, tips and jokes. The aim of the game is novel, to social climb until you have reached the pinnacle and

television? However, once you have encountered an amusing scenario once, you know the joke. It is unamusing the first time you return, and stale subsequently.

The aim of the game is also a little dubious. The morality of many fantasy adventures may be appalling, but it is obscured by distance. You can kill your seventeenth peasant and twentieth dragon without any pangs of conscience, without feeling that this is what you would do if that peasant were set down before you in the middle of the High Street. Action in the inner city is closer to home, and inspires you to act in a normal fashion. If you do not usually use lies and deceit to survive, it is irritating to be forced to do so. If you usually enjoy "3,2,1" it is annoying to be placed at the bottom of the social ladder for doing so.

Using "real" situations in an adventure is dangerous, for it encourages the player to act normally and to employ realistic rather than fantastic values. There is a possibility that women will not question playing the hero or a knight, but they will certainly wonder what is happening if they are presented with a real-life situation, shown a woman and expected to treat her as merely a stepping stone to success.

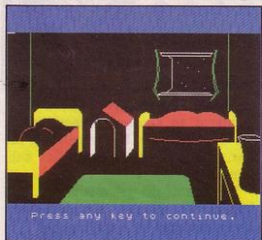
It would be easier to be pleasant about this program if Melbourne House had treated it as a mediocre game. Instead, they have built it up to be something it is not, and priced it at £9.95.

Original in concept, but way over-priced, Hampstead is produced by Melbourne House, Church Yard, Tring, Herts.

Peter Pan

THE CREATION OF Peter Pan: The Adventure Game was an excellent idea. The transfer of the magical world of Peter Pan, of flying, crocodiles and pirates to the computer where flying seems possible and the player can take the part of Peter Pan. What a pity it all went wrong.

The package comes complete with the Puffin book, **Peter Pan**, which is enjoyable and fun to read. Then you load the computer game. You are immediately transported from the flowing prose of Barrie to a one-dimensional world of short descriptions and limited conversation.



Having read the book you know exactly what to do. Open the drawer, find your shadow, try to stick it on with soap. Look in the jug and find Tinkerbell. Now wake Wendy, so that she can sew your shadow to your feet. A little fairy dust, a little flying practice, and then off to Never Never Land for wonderful adventures.

Of course, life in adventures is not that simple. The computer does not understand half the things that you want to do, Tinkerbell is more irritating than you could have imagined, Wendy stubbornly refuses to have anything to do with you, and you are trapped in one room wondering why you ever enjoyed the book.

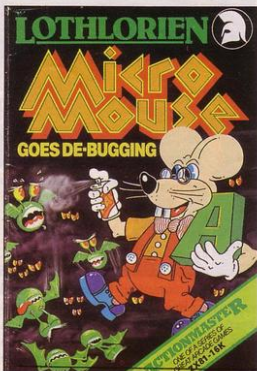
Some conversions from book to computer work brilliantly, while some lose all their sparkle. Peter Pan unfortunately falls into the latter category. If you want to become involved in the story of Peter Pan, go and see the

pantomime, for that will bring it to life far more than your Spectrum.

Peter Pan is produced for the 48K Spectrum by Hodder and Stoughton, 47 Bedford Square, London and costs £9.95.

Micro Mouse

A FAST-PACED new ZX-81 game produced by Lothlorien is **Micro Mouse goes Debugging**. The game begins with a short program displayed on screen. Software bugs have already been at work at this program, and some of the characters have been stolen and placed in cages at the corners of the screen. Micro mouse must return these, and



any other stolen characters to their rightful places, killing the software bugs with Datakill if necessary.

The game moves very fast, for the bugs are always on the move and, at first, it is difficult to spot where in the program a character should go. Micro mouse rushes around, and there is scarcely time to grab the Datakill and kill the bugs.

This is an excellent game, with clear graphics, calling for skill and tactics as well as speed and quick reactions. It is produced by Lothlorien, 56a Park Lane, Poynton, Cheshire and costs £5.95.

Hyperaction

THERE WAS a time when the Spectrum software market was full of games involving ice blocks and penguins, the idea of which was to protect the player by sliding ice cubes around the screen. **Hyperaction** from Silversoft takes this theme one step further.

Each level of the game involves a maze in which blocks must be shuffled

around for protection. The aim of the game is sometimes to cover four points, sometimes to reach five, and sometimes to eliminate one colour from the board. The common denominator is the maze.

On each level you begin with several lives and, if you fail at a maze, it will be redrawn in a different pattern. The chances are that you will see a very large amount of versions of the first few mazes, without seeing the later ones more than once or twice.

If your ambition has always been to be reincarnated as a penguin, then this game is for you. If mazes and monsters drive you screaming up the wall, as is more probably the case these days, then avoid it like the plague.

Hyperaction was written and produced for the 48K Spectrum by Silversoft, 271-273 King Street, London W6 and costs £5.95.

Master mariner

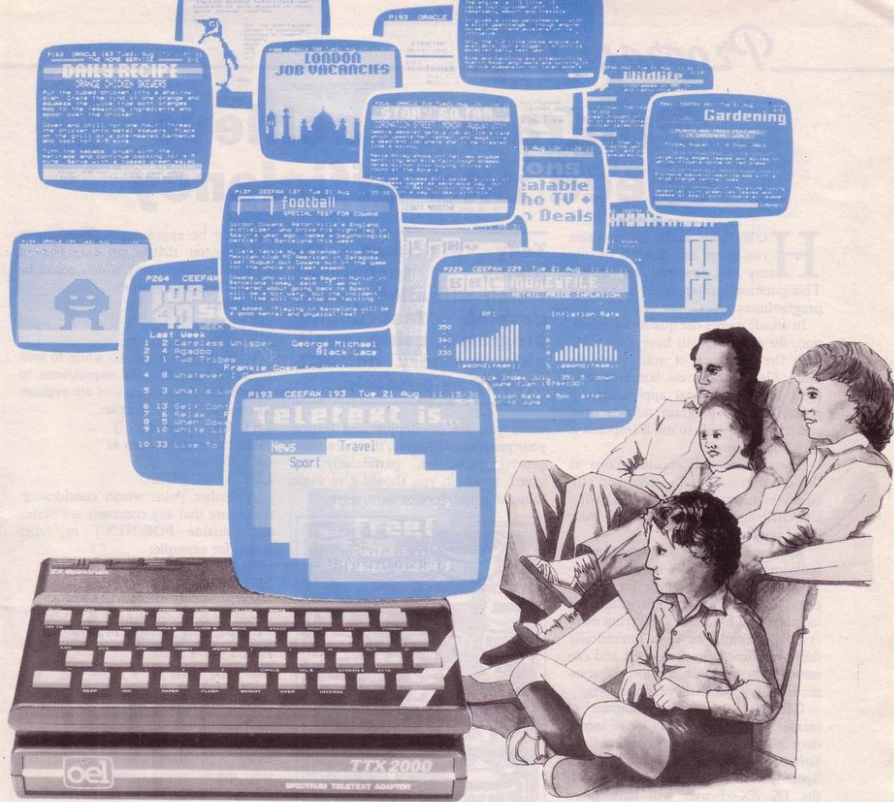
TWO YEARS ago it was possible to produce a simple game for the Spectrum, market it, and expect it to sell in large numbers. Since then the market has changed considerably. A game costing around six pounds is expected to be original and of high quality, and the more straightforward games will not sell.

However, there is still a market for these games, although it is located in a much lower price bracket. Atlantis are supplying games for this market, and are selling games for the 48K Spectrum, priced at £1.99 each.

Master Mariner is a revival of that hardy perennial **Ocean Trader**. The player owns a boat which must be taken from harbour to harbour, buying and selling goods. Hazards are many: storms, sea mists, pirates, high taxes or simply a run of bad luck. A slow-moving game, delayed frequently by animated representations of the boat setting off to sea, or goods being unloaded.

Vagan Attack sets the player moving around the galaxy, trying to find and destroy enemy ships and bases. Although the title and cover suggest that this is a fast-moving, shoot-'em-up game it more closely resembles a simulation, for moves are made slowly and with thought. The instructions are confusing and the screen display and diagrams not entirely clear, so the first few games played are more a stab in the dark than complex space war simulation.

Master Mariner, Eights and Vagan Attack are all produced for the 48K Spectrum by Atlantis Software, 19 Prebend Street, London N1.



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pare the following:

```
ZX-81
IF X=20 THEN LET Y=11
IF X<>20 THEN LET Y=0
```

SPECTRUM

```
IF X=20 THEN LET Y=11: GOTO
30: LET Y=0
30: .....
```

It will be clear that the ZX-81 version requires both TRUE and FALSE conditions to be tested, while the Spectrum version requires only one test (although two statements are still required. We will see later how this can be further reduced for certain applications).

The multiple statement facility available on the Spectrum is also useful for efficiency on a long list of expressions which would otherwise require separate statements. This is especially useful in IF... THEN statements where the value of one variable dictates the value of a host of other variables. A note of caution though: beware of making your program unreadable with excessively long multiple statements.

Array selection

ZX-81 users may also argue that the IF... THEN... ELSE statement can be mimicked in a specialised context of printing array elements. As the same is true of the Spectrum, this particular trick is worth studying. Suppose, for example, that you want to print the first six characters of a 12 character string, given a TRUE condition, and the last six characters given a FALSE condition. As one cannot have, for example:

```
IF P=0 THEN PRINT X$(1 TO 6)
ELSE PRINT X$(7 TO 12)
```

the equivalent two statements for the ZX-81 would be:

```
IF P=0 THEN PRINT X$(1 TO 6)
IF P<>0 THEN PRINT X$(7 TO 12)
```

This double test could be turned into one by:

```
LET A=(P<>0)*6 (i.e. 6 or 0)
PRINT X$(1+A TO 6+A)
```

The last example of condition testing might also have come under the heading of Boolean Logic. This is one of the most powerful features for efficient programming on both the Spectrum and ZX-81.

For example, other Basics might contain the following:

```
IF A>B THEN LET A=A-1
IF A<B THEN LET A=A+1
```

You can condense this into a single statement:

```
LET A=A+(A<B)-(A>B)
```

Many games applications require this kind of programming, chase routines

for example. In the above example, we can imagine this algorithm as representing A chasing B across the screen, with A and B as their X coordinates.

The underlying principle of Boolean Logic is that anything which can be treated as the condition in the IF condition THEN... statement, can also be a logical expression. It can also be any numerical expression, as the computer is really only interested in whether the value of the expression is zero (FALSE) or non-zero (TRUE). For logical expressions which use the comparison operands <=, <>, >=, <, > and =, we are only concerned with values of 0 and 1. Thus, in the example:

```
IF A<B then A=A+1-0=A+1
IF A>B then A=A+0-1=A-1
```

Value comparison

Where ANDs and ORs are used, it helps to extend the 1,0 (for TRUE, FALSE) idea to represent AND by "*" and OR by "+". This notation helps when grappling with such expressions as:

```
IF ((A>B OR C<D) AND E=F) THEN...
```

Though the inner brackets are unnecessary when entering on your machine, they help in working out a truth table. There are possibilities:

```
((0+0)*0)=0      ((0+0)*1)=0
((0+1)*0)=0      ((0+1)*1)=1
((1+0)*0)=0      ((1+0)*1)=1
((1+1)*0)=0      ((1+1)*1)=1
```

Such a table clearly indicates only three possible true results.

Probably the best example for games programming would be found in the player or computer control routines. Consider, for example, up/down movement using keys "6" and "7". The novice might use two statements, such as:

```
IF INKEY$="6" AND Y<20 THEN
LET Y=Y+1
IF INKEY$="7" AND Y>0 THEN
LET Y=Y-1
```

A much faster way would be:

```
LET Y=Y+(INKEY$="6" AND
Y<20)-(INKEY$="7" AND Y>0)
```

One other point about logic and condition testing. As previously stated, your machine is only interested in whether a condition is zero or non-zero. It follows then, that a statement such as:

```
IF Z<>0 THEN...
```

can be replaced by IF Z THEN...

Similarly:

```
IF Z=0 THEN...
```

can become IF NOT Z THEN...

These substitutes are not only faster: they also save a few bytes of memory.

Literals are numbers which appear "literally" in your program. Literals were fully explained in my last article which showed how extravagant they are of memory (at six bytes each). They can be reduced in several ways.

Save memory

The most popular method for cutting down on memory assigned to literals is to use the VAL function. To illustrate the saving, compare the following:

NO. OF	LET	LET A=
BYTES FOR:	A=10	VAL "10"
LINE NO.	2	2
LINE LENGTH	2	2
KEY STROKES	5	8
NUMBER	6	-
ENTER	1	1
TOTAL	16	13

This saving of three bytes each time VAL is used applies to both machines.

Another popular method is to use a number which is already stored, such as PI. Thus:

```
LET Z=PI-PI and LET Z=SIN PI
use even fewer bytes than
LET Z=VAL "0".
```

Similarly:

```
LET Z=PI/PI and LET Z=SGN PI
might be preferred to LET
Z=VAL "1".
```

Numbers which are used repetitively should be assigned as a variable at the program start if memory is a problem. For example, LET U=PI/PI at the outset will save five bytes every time a "1" is required.

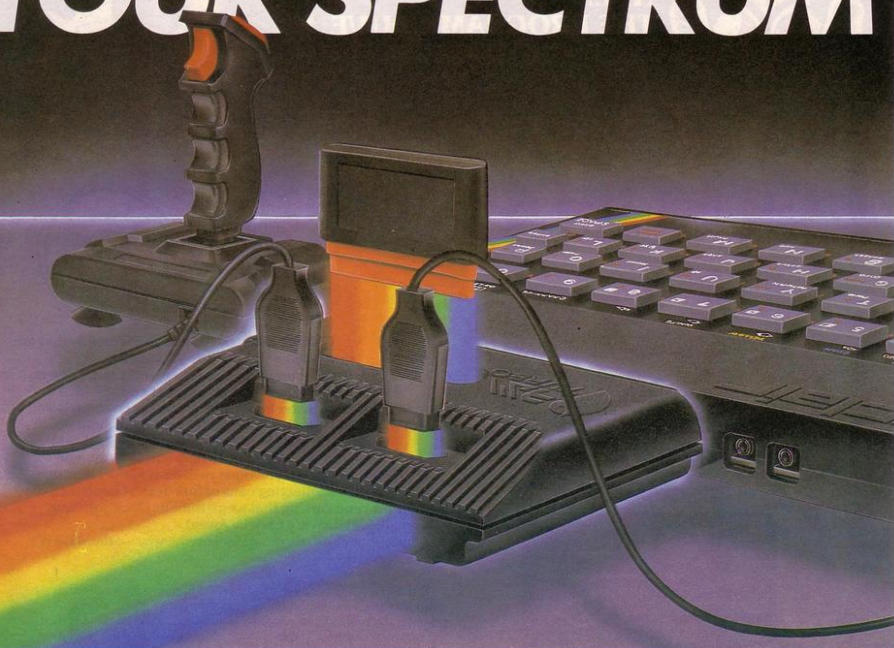
Many numbers used to initialise variables can be removed from the program altogether, as, when a program is saved, the variables are saved with it. The procedure here would be:

- RUN the program and interrupt (with a STOP) after initialisation (i.e. after SETUP)
- Delete all the LET, READ and DATA statements in SETUP
- SAVE the program AND variables with a line start (or use GOTO to execute, as RUN clears the variables).

You will still need sufficient memory in the first place, so this technique is really for cutting down programs to run on a smaller machine or to reduce loading time. When space is a problem at the development stage, you might still be able to fit all your variables in by using direct LET or INPUT commands, outside the program.

It is always best to try to incorporate instructions into a program although they can sometimes cause size problems. The answer here is to make a separate program for instructions and other information, with the last line used to call the main program.

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ZX-81 OWNERS

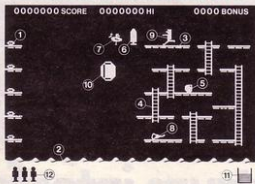
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|--------------|----------------|-------------------|
| 1. Diamonds | 5. Fuel Cans | 9. Player |
| 2. Sea | 6. Rocket | 10. Bubloid |
| 3. Platforms | 7. Vulture | 11. Fuel Gauge |
| 4. Ladders | 8. Leg of Lamb | 12. Men Remaining |

The aim is to collect all the diamonds from the far left hand side of the screen, whilst avoiding the rampant Bubloid. These emerge from the sea and are hell-bent on returning to their watery habitat with you in tow. Sooner or later you are going to end up in the drink – The idea is to make it later!

By belting round the system of platforms and ladders, cleverly avoiding the Bubloid, you collect the fuel cans which appear in random positions, until you consider that your fuel gauge indicates sufficient in the tank. Now you can go and collect your rocket. With the rocket-pack strapped to your back you can fly across the expanse of sea to collect the diamonds... but don't run out of fuel or your rocket-pack will simply disappear and you will wind up in the drink!

There are six stages with six different platform layouts. On stages 1-3 the Bubloid, which floats in front of the platforms with uncanny ease, gets an ever increasing ability to home in on your position, making the task of staying alive more demanding with each stage. On stages 4-6 you once again start with the easiest Bubloid (which is a blessed relief) but the fuel cans are replaced by legs of lamb which you must collect to feed your vulture, and once it has enough energy (or you think it has!) you must flap across the water on its back to collect the diamonds.

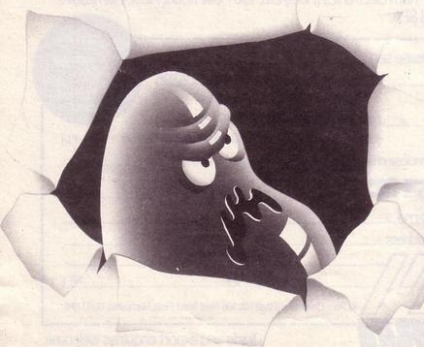
Extra men are awarded for every 10,000 points – but ONLY once you have collected all the diamonds and so completed each particular stage.

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YOU ARE the penguin who must climb the ladders to reach the fish on the top ice level. As there is only one fish you have to reach the top level before the polar bear who is also in pursuit of a meal.

Penguins and Polars was written for the 16K Spectrum by David Reid, of Angus, Scotland.



PENGUINS AND POLARS

```

1 GO SUB 3000
5 LET hi=0
10 GO SUB 9000
20 LET f:=.2: LET lev=1
832 LET r=18: LET c=14
1001 LET e=2: LET d=0
1002 LET f+=.05
1005 BORDER 1: PAPER 1: CLS : PA
PER 1: INK 7
1010 FOR n=4 TO 20 STEP 4
1020 PRINT AT n,0: INK 4: BRIG
T 1: "CCCCCCCCCCCCCCCCCCCCCCCC
CCCCC"
1025 NEXT n
1027 PRINT AT 0,0: INK 6: PAPER
0: BRIGHT 1: " LEVEL:
HI:
1028 PRINT AT 0,14: PAPER 0: IN
K 6: BRIGHT 1:lev: PRINT AT 0,2
1: PAPER 0: INK 6: BRIGHT 1:hi
1029 GO SUB 6000
1035 PRINT AT r+2,0: INK 4: BRI
GHT 1: "CCCCCCCCCCCCCCCCCCCCCCCC
CCCCC"
1040 PRINT AT r,c: INK 6: " A "
AT r+1,c: INK 6: " B "
1050 IF r <= 5 THEN GO TO 7000
1055 PRINT AT e,d: INK 7: BRIG
T 1: " DE": AT e+1,d: INK 7: BRIG
HT 1: " FG"
1057 LET d=d+f
1060 PRINT AT 3,29: INK 5: BRIG
HT 1: "HI"
2000 IF d >= 27 THEN GO TO 5000
2100 IF INKEY#="q" THEN LET c
=c-1: BEEP .0005,30
2110 IF INKEY#="w" THEN LET c
=c+1: BEEP .0005,30
2120 IF INKEY#="i" AND c+1=p T
HEN LET r=r-d: GO SUB 6000
2140 IF c <= 0 THEN LET c=0
2150 IF c >= 29 THEN LET c=29
2160 GO TO 1031
2199 REM title screen
3000 CLS : BORDER 6: PAPER 6: CL
S : PAPER 6: INK 0
3010 INK 4: BRIGHT 1: FOR f=1 TO
40: LET a= INT ( RND *120)+1: L
ET b= INT ( RND *40)+1
3020 PLOT 127,105: DRAW a,b
3030 PLOT 127,105: DRAW -a,b
3040 PLOT 127,105: DRAW a,-b
3050 PLOT 127,105: DRAW -a,-b
3060 NEXT f
3065 BRIGHT 0
3070 PRINT AT 1,0: INK 2: "
P E N G U I N "
3080 PRINT AT 16,0: INK 2: BRIG
HT 1: " Backwards=0 Forward=W
Up=1 : BRIGHT 0
3090 PRINT AT 19,0: INK 1: "....
...press any to start....."
3499 PAUSE 0
3500 RETURN
4999 REM end of game routine
5000 BEEP .6,-10: BEEP .7,-20
5005 PRINT AT 12,0: "
"
5010 PRINT AT 11,0: INK 7: " TH
E POLAR BEAR GOT THE FISH "
5015 FOR v=0 TO 150: NEXT v
5020 PRINT AT 13,0: INK 7: "pre
ss any key for another game": PA
USE 0: PAUSE 0
5100 IF lev>hi THEN LET hi=le
v-1
5110 GO TO 20

```

```

5999 REM ladder routine
6000 LET p= INT ( RND *29+1)
6001 IF r=p THEN LET p=29
6003 PRINT AT 6,0: "
"
6005 PRINT AT 10,0: "
"
6006 PRINT AT 14,0: "
"
6007 PRINT AT 18,0: "
"
6008 IF r <= 2 THEN RETURN
6010 BEEP .005,10: BEEP .005,15:
BEEP .005,20: PRINT AT r+1,p: "
J: AT r,p: "J": AT r-1,p: "J": AT
r-2,p: "J"
6030 RETURN
6999 REM next level routine
7000 BEEP .1,10: BEEP .1,7: BEEP
.5,20: PRINT AT 12,0: "
YOU GOT THE FISH " : FOR 1
=0 TO 200: NEXT 1: LET lev=lev+1
GO TO 100
8999 REM user-defined-graphics
9000 FOR n=0 TO 7: READ a: POKE
USR "a"+n,a: NEXT n
9010 FOR n=0 TO 7: READ a: POKE
USR "b"+n,a: NEXT n
9020 FOR n=0 TO 7: READ a: POKE
USR "c"+n,a: NEXT n

```

```

9030 FOR n=0 TO 7: READ a: POKE
USR "d"+n,a: NEXT n
9040 FOR n=0 TO 7: READ a: POKE
USR "e"+n,a: NEXT n
9050 FOR n=0 TO 7: READ a: POKE
USR "f"+n,a: NEXT n
9060 FOR n=0 TO 7: READ a: POKE
USR "g"+n,a: NEXT n
9070 FOR n=0 TO 7: READ a: POKE
USR "h"+n,a: NEXT n
9080 FOR n=0 TO 7: READ a: POKE
USR "i"+n,a: NEXT n
9090 FOR n=0 TO 7: READ a: POKE
USR "j"+n,a: NEXT n
9200 DATA 0,56,68,130,154,154,13
1,210
9210 DATA 166,206,158,188,248,32
,124,0
9220 DATA 0,255,251,123,114,50,4
8,16
9230 DATA 3,7,7,7,3,15,31,63
9240 DATA 192,224,224,224,192,24
0,248,252
9250 DATA 55,55,23,7,14,14,14,14
9260 DATA 236,236,232,224,112,11
2,112,112
9270 DATA 31,63,127,13,127,63,31
,0
9280 DATA 131,199,239,255,239,19
9,131,0
9290 DATA 129,255,129,129,129,25
5,129,129
9999 RETURN

```

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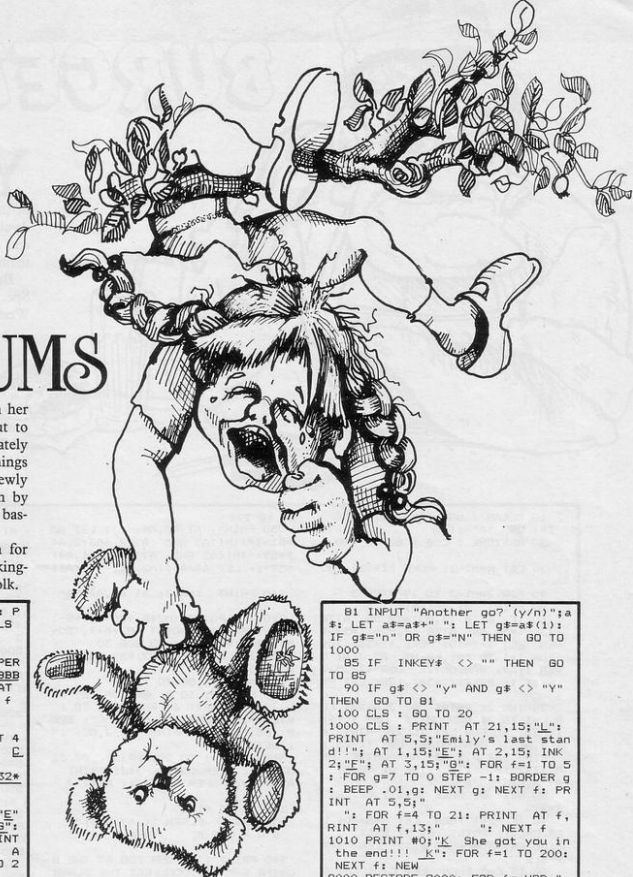
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EMILY'S TANTRUMS

EMILY is playing happily in her tree house when you go out to call her for tea. Unfortunately she objects and begins to throw things from the tree house onto your newly mown lawn. Try to save the lawn by catching the toys in your laundry basket.

Emily's Tantrum was written for the 16K Spectrum by William Buckingham, aged 12, of Fakenham, Norfolk.

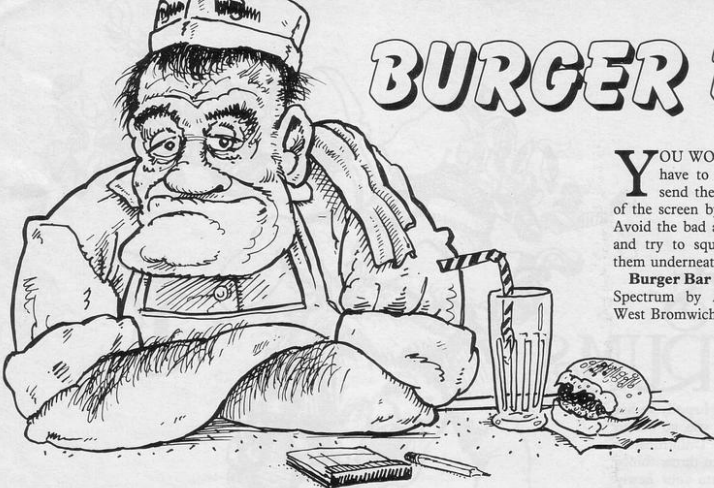


```
10 LET x=2: LET f1=1: INK 7: P
APER 0: BORDER 0: BRIGHT 1: CLS
: GO SUB 9000
15 RESTORE 35
20 PRINT AT 5,0: INK 4: PAPER
2: "BBBBBBBBBBBBBBBBBBBBBBBBBBBB
BBBB": FOR f=0 TO 21: PRINT AT
f,0: INK 4: PAPER 2: "B": NEXT f
```

```
25 PRINT AT 6,1: INK 4: "Q
C CC C C C C C C C C C C C C C C
1: INK 4: "C CC C C C C C C C C
C CC C"
26 PRINT AT 21,0: INK 4: "(32*
igB)"
27 IF f1=0 THEN GO TO 45
30 LET f1=0: PRINT AT 1,5: "E"
: AT 2,5: INK 3: "E": AT 3,5: "G"
FOR f=1 TO 5: READ a,b: PRINT
AT 20,6:a: PAUSE 25: PRINT A
T 2,7:b: PAUSE 25: FOR f1 TO 2
00: NEXT g: PRINT AT 20,6:"
": AT 2,6:
":
35 DATA "Come down,Emily!": "No
,I'm not going to!": "You won't g
et any supper!": "I don't care!":
"COME DOWN!": "NO!": "Come onEmi
ly!": "I will not!": "I'll get cros
s!": "I shall scream!":
40 FOR p=1 TO 2: RESTORE 40: F
OR f=1 TO 10: READ a,b: BEEP a,b
: NEXT f: NEXT p: DATA .2,0,.2,0
,.2,0,.2,0,.2,1,.2,0,.2,0,.2,1.
2,1,.4,0
45 BEEP .8,12: PRINT AT 20,1:
"Press any key to play TANTRUM"
50 IF INKEY#="" THEN GO TO
50
55 PRINT AT 20,1:"
56 PRINT AT 1,5: "": AT 2,5:"
": AT 3,5: "": LET s=0
59 LET x=2: PRINT #0: "K Willi
am Buckingham 1984 K"
60 PRINT AT 19,x: "": LET p
= INT ( RND *25)+3: PRINT AT 1,
p: "E": AT 2,p: INK 2: "E": AT 3,p
: "E": LET gp= INT ( RND *5)+1: L
ET a="ADHIJ"(gp): LET i= INT (
```

```
RND *6)+2: LET x=15: FOR f=7 TO
19: PRINT AT f,p: INK 1:a: FOR
")-( INKEY#="" )+(x=2)-(x=28):
g=1 TO gp: LET x=x+( INKEY#="" )
PRINT AT 19,x-1: INK 7: "L": N
EXT g
64 IF INKEY#="" THEN PAUSE
0
65 BEEP .01,30-f: PRINT AT f,
13: INK
p: "": NEXT f
70 PRINT AT 19,x: "L": IF x=p
THEN FOR b=1 TO 2: BEEP .1,10:
BEEP .1,5: BEEP .1,15: NEXT b: P
RINT AT 1,p: "": AT 2,p: "": AT
3,p: "": LET s=s+100*(6-gp): GO
TO 60
80 FOR f=1 TO 10: BEEP .1,0: B
EEP .1,-10: NEXT f: BEEP .1,-30:
PRINT AT 8,1: "Little Emily is c
rossed": AT 10,1: "with you dro
pped one of her: AT 12,1: "toys
And you ruined your lawn": AT 14
,1: "as well!": AT 18,1: "Score:
":s
```

```
81 INPUT "Another go? (y/n)": a
#: LET a=a#+" ": LET g=a#(1):
IF g#="" OR g#="" THEN GO TO
1000
85 IF INKEY# <> "Y" THEN GO
TO 85
90 IF g# <> "Y" AND g# <> "Y"
THEN GO TO 81
100 CLS: GO TO 20
1000 CLS: PRINT AT 21,15: "L":
PRINT AT 5,5: "Emily's last stan
d!!": AT 1,15: "E": AT 2,15: INK
2: "E": AT 3,15: "E": FOR f=1 TO 5
: FOR g=7 TO 0 STEP -1: BORDER g
: BEEP .01,g: NEXT g: NEXT f: PR
INT AT 5,5:
": FOR f=4 TO 21: PRINT AT f,
PRINT AT f,13: "": NEXT f
1010 PRINT #0: "K She got you in
the end!!": "K: FOR f=1 TO 200:
NEXT f: NEW
9000 RESTORE 9000: FOR f= USR "a
TO USR "1": READ a: POKE f,
a: NEXT f
9010 DATA 0,8,20,34,65,34,20,8,8
5,170,85,170,85,170,85,170,16,40
,36,72,36,72,40,16
9020 DATA 32,16,124,222,190,254,
124,0,60,66,165,129,189,163,66,6
0,24,231,36,36,66,66,129,253,36,
36,36,102,0,0,0,0
9025 DATA 124,16,16,16,16,124,56
,16,0,12,15,140,252,252,120,0,60
,126,255,255,24,24,24,24,136,136
,168,94,10,15,9,15,129,129,12
55,255,255,0,0,0
9030 PRINT "TAB 10: TANTRUM!"
... Darling Emily is playing in
her "tree-house! It is tea time
and... you have come to get her
in. But... Emily objects and sh
e gets... angry! She throws her
toys down... from the tree, onto
your garden!... can you save your
lovely
9031 PRINT AT 21,0: "1~ LEFT, 0
~ RIGHT & 2~ PAUSE"
9032 IF INKEY#="" THEN GO TO
9031
9035 CLS: RETURN
```



BURGER BAR

YOU WORK in a burger bar and have to collect the glasses and send the burgers to the bottom of the screen by running across them. Avoid the bad apples which chase you and try to squash them by trapping them underneath the burgers.

Burger Bar was written for the 48K Spectrum by Anthony Sherwood of West Bromwich, West Midlands.

```
10 CLEAR (USR "A"-110): LET
Z=1 USR "A"-110
20 RESTORE : CLS : GO TO 330
```

```
30 LET N=M2-1: POKE (Z+11),180
```

```
40 FOR J=M1+3 TO 19 STEP 3
50 PRINT AT J-1,N1: " "
60 IF ATTR (J,M2)=59 OR ATTR
(J,N)=59 OR ATTR (J,M2+1)=59 T
HEN LET S=S+10: POKE (Z+36),70:
FOR I=1 TO 12: PRINT AT J,N: 0
VER I+1: RANDMIZE USR (Z+25):
NEXT I: POKE (Z+36),128: LET F=
1
```

```
70 INK 2: PRINT AT J,N:B$: FO
R L=1 TO 2: RANDMIZE USR (Z+4)
: NEXT L: FOR L=1 TO 2: PRINT A
T J,N:A$: RANDMIZE USR (Z+25):
PRINT AT J,N:B$: RANDMIZE USR
R (Z+25): NEXT L: INK 0: PRINT
AT J,N1: " "
80 NEXT J: POKE (Z+11),0: LET
S=S+5
```

```
90 IF M1=1 THEN LET S=S+50: L
ET C=C+1: PRINT AT 21,N:A$
100 PRINT #0: AT 1,12- LEN STR
$ S: S
```

```
110 IF C=3 THEN LET C=0: LET F
=0: RANDMIZE USR (Z+73): POKE
(Z+11),100: FOR L=1 TO 30: RAND
MIZE USR (Z+4): NEXT L: POKE (Z
+11),0: GO TO 430
```

```
120 IF F=1 THEN LET F=0: PRINT
AT A1,A2: " " : AT A3,A4: " " : GO
TO 600
```

```
130 RETURN
140 FOR I=1 TO 2
150 PRINT AT M1,M2: " "
160 LET M2=M2+1: INKEY$="0" AND
M2<31: ( INKEY$="9" AND M2>0)
```

```
170 LET M1=M1+3: ( INKEY$="w"
AND ATTR (M1+2,M2)=59) : ( INKEY$
="2" AND ATTR (M1-1,M2)=59)
```

```
180 IF ATTR (M1,M2)=58 THEN L
ET S=S+5: PRINT AT M1,M2:"*": R
ANDMIZE USR (Z+4): PRINT #0: A
T 1,12- LEN STR$ S: S
```

```
190 PRINT AT M1,M2:M$(I)
200 IF I=2 THEN GO TO 250
210 PRINT AT A1,A2: " "
220 LET A1=A1+3: (A1>A1 AND A
T R (A1+2,A2)=59) - (M1<A1 AND A
T R (A1-1,A2)=59)
```

```
230 LET A2=A2+M2>A2 - (M2<A2)
240 PRINT INK 3: AT A1,A2:"A":
```

```
GO TO 270
250 PRINT AT A3,A4: " " : LET A3
=A3+3: (M1>A3 AND ATTR (A3+2,A4
)=59) - (M1<A3 AND ATTR (A3-1,A4
)=59): LET A4=A4+M2>A4 - (M2<A4
)=59)
```

```
260 PRINT INK 3: AT A3,A4:"A"
```

```
270 IF POINT (M2*8,(20-M1)*8-1
)=1 THEN IF POINT (M2*8+7,(20-
M1)*8-7)=1 THEN GO SUB 30
280 IF ATTR (M1,M2)=59 THEN G
O TO 300
```

```
290 NEXT I: GO TO 140
300 FOR J=1 TO 2: RANDMIZE USR
(Z+73): NEXT J: FOR J=M1 TO 1
STEP -1: PRINT AT J,M2: "C": BEE
P .05,30-3*J: PRINT AT J,M2:" "
: NEXT J
310 FOR J=1 TO 20: PRINT AT J,
M2: "C": BEEP .07,30-3*J: PRINT
AT J,M2: PAPER 5: C$(J): NEXT J
```

```
320 GO TO 410
330 PRINT FLASH 1: AT 0,0: "
BURGER BAR "
```

```
340 PRINT "YOUR JOB AT THE B
URGER BAR IS TO COLLECT THE GLASS
ES AND SEND THE BURGERS TO THE BO
TTOM BY RUNNING ACROSS THEM."
```

```
350 PRINT "AVOID THE BAD APP
LES - THEY CAN BE DESTROYED BY D
ROPPING BURGERS ON THEM."
```

```
360 PRINT "LEFT 9
RIGHT 0 UP 2
DOWN W: GO TO 610
370 FOR I=1 USR "A" TO USR "M"+
7
```

```
380 READ J: POKE I,J: NEXT I
390 PRINT AT 21,10:"PRESS A KE
Y": RANDMIZE USR (Z+4): PAUSE
0
```

```
400 LET A$="EFG": LET B$="JKL"
: LET G$="IM": LET F=0: LET M$="C
D": LET S=0: LET H=0: LET C$=" "
: GAME OVER.....
410 IF S=H THEN LET H=S
```

```
420 LET C=0: LET S=0
430 FOR K=0 TO 255 STEP 5: POKE
(Z+11),K: RANDMIZE USR (Z+4):
NEXT K
```

```
440 POKE 23692,255: FOR I=1 TO
24: PRINT AT 21,31: PRINT: NEX
T I: RANDMIZE : CLS
```

```
450 PRINT AT 0,0: (32*16)
460 PRINT FLASH 1: OVER 1: INK
3: AT 0,0: "BURGER
BAR "
```

```
470 FOR I=2 TO 20 STEP 3: PRINT
AT I,0: INK 1: PAPER 6: "BBBBBB
```

```
BBBBBBBBBBBBBBBBBBBB" FOR
J=1 TO 4: PRINT INK 2: AT I-1,
INT (RND *32): G$(I+1) (INT (RND
*2)): NEXT J
480 PRINT INK 5: PAPER 6: AT I
+1,0: (32*16) : NEXT I
490 LET I=0: FOR I=3 TO 18 STEP
3
```

```
500 FOR K=6 TO 24 STEP 9: PRINT
INK 2: AT I,K:B$: NEXT K
510 LET J=INT (RND *32): IF
ATTR (I,J) < 53 THEN GO TO 510
```

```
520 PRINT INK 3: AT 1,J:"H": A
T 1-1,J:"H": LET E=E+1: IF E <
4 THEN GO TO 510
```

```
530 LET E=0: NEXT I
540 PRINT #0: AT 0,0: INK 3: (3
2*16)
550 PRINT AT 21,0: INK 5: PAPE
R 4: (32*16)
```

```
560 LET M1=19: LET M2=0
570 PRINT #0: AT 1,1:"SCORE 000
00": AT 1,17:"HI SCORE 00000"
```

```
580 PRINT #0: AT 1,12- LEN STR
$ S: S:
590 FOR K=240 TO 0 STEP -15: PO
KE (Z+11),K: RANDMIZE USR (Z+4
): NEXT K
```

```
600 LET A1=3: (INT (RND *7))+1
: LET A2=31: LET A3=3: (INT (RND
*5))+1: LET A4=20: 250 TO 140
610 FOR J=2 TO Z+102: READ K: P
OKE J,K: NEXT J: GO TO 370
```

```
620 DATA 16,61,10,25,58,72,92,1
5,15,15,30,247,243,211,254,238,1
6,67,16,254,29,32,246,251,201,24
3,58,72,92,15,15,15,8,38,0,1,128
,0,8,211,254,238,16,8,46,0,85,92
,167,237,82,237,82,17,254,0,25,1
```

```
25,148,56,1,61,103,61,32,253,11
250,177,32,225,251,201,263,17,16
,208,38,16,58,72,92,31,31,31,14
,254,238,16,237,12,67,16,254,37,
32,244,28,21,32,232,251
```

```
630 DATA 60,126,255,153,255,255
,126,60,255,126,231,24,231,0,0,0
,56,56,16,56,124,186,40,68,56,56
,16,56,40,40,16,16,0,127,255,0,2
55,0,255,127,0,255,255,0,255,0,2
55,255,0,254,255,0,255,0,255,254
,126,66,126,66,126,66,126,66,0,6
2,28,8,8,28,0,127,66,126,66,0,6
255,127,0,255,255,0,255,0,255,25
5,254,255,0,255,0,255,254,0
```

```
640 DATA 0,34,34,20,20,20,28,0
```

CATCH the falling jam on your teaspoon and carry it to the slice of bread at the right of the screen. When you have covered the bread with jam the top slice comes down to make a sandwich and you move on to a higher skill level.

Jam Sandwich was written for the 16K Spectrum by Alan Thomson, London SE4.



```

1 PAPER 5: CLS : INK 7: GO SU
B 3003: REM instructions
2 GO SUB 4000: REM UDG
5 INPUT "SKILL LEVEL 1-5 (5-H
ARDEST)";sk1: BORDER 3: CLS
6 IF sk1<1 OR sk1>5 THEN BEE
P 1,1: GO TO 5
10 GO SUB 1000: REM initialise

20 GO SUB 2000: REM screen
40 REM mainloop
50 LET x=INT (RND *8)+7
60 FOR n=6 TO x
70 PRINT AT sc,sl;"ABB "
80 GO SUB 900
90 PRINT AT 5,5: INK 2:"E": P
RINT AT 5,5:" "
100 PRINT AT 4,n: INK 2:"E": P
RINT AT 4,n-1:" "
110 NEXT n
120 FOR n=4 TO 18
125 PRINT AT sc,sl+5;" "
130 PRINT AT n,x: INK 2:"E": P
RINT AT n-1,x;" "
150 GO SUB 900
155 PRINT AT sc,sl;"ABB "
160 IF x=sl+1 AND n=nc-1 THEN

```

```

460 PRINT AT 13,21: INK 2:"E":
PRINT AT 13,21:" "
470 FOR x=22 TO sa
480 PRINT AT 12,x: INK 2:"E":
PRINT AT 12,x-1:" "
490 NEXT x
491 LET sa=sa-1
495 LET jam=jam+1
500 PRINT AT 12,x-1:" ": PRINT
AT 13,x: INK 2:"E"
505 FOR b=15 TO 17
506 PRINT AT b,20:" "
507 NEXT b
510 IF jam=10 THEN GO TO 700

520 GO TO 40
600 PRINT AT 4,6:"HARD LUCK TR
Y AGAIN!": FOR y=1 TO 200: NEXT
y: GO TO 7
700 PRINT AT 8,22: INK 5:" "
710 PRINT AT 9,22: INK 5:" "
720 PRINT AT 11,22: PAPER 7:" "
730 PRINT AT 12,22: PAPER 7:" "

```

```

8) "
2040 NEXT n
2045 PRINT AT 18,25: INK 2: PAP
ER 4:"Skill-";sk1: AT 18,0:"H-Ho
1"
2046 LET f=(10*ig8)
2050 PRINT AT 8,22: INK 7:f#
2060 PRINT AT 9,22: INK 7:f#
2070 PRINT AT 14,22: INK 7:f#

2080 PRINT AT 15,22: INK 7:f#

2090 PRINT AT 10,1: INK 7: PAPER
0:"JAM"
3000 PRINT AT 0,0: INK 7;1# PR
INT AT 1,0: INK 2: INVERSE 1:"
JAM SANDWICH "
: PRINT AT 2,0: INK 7;1#
3001 PRINT AT 19,0: INK 7;1# P
RINT AT 20,0: INK 2: INVERSE 1:"
JAM SANDWICH "
: PRINT AT 21,0: INK 7;1#
3002 RETURN
3003 LET j#=(32*ig8)
3004 PRINT INK 2;j#; PRINT INV
ERSE 1: INK 7:" JAM SAN

```

JAM SANDWICH

```

GO TO 300
180 NEXT n
190 GO TO 600
300 LET a=INT (RND *10)+8
305 FOR x=sk1+8 TO 18
310 GO SUB 900
320 PRINT AT sc,sl;"ABB "
325 PRINT AT sc-1,sl: INK 2:"
E "
330 PRINT AT x,a: INK 1:"F": P
RINT AT x-1,a:" "
335 PRINT AT 18,a;" "
340 IF sl=17 THEN PRINT AT x,
a;" ": GO TO 400
345 IF sl+1=a AND sc=x OR sl+2=
a AND sc=x OR sl+3=a AND sc=x TH
EN GO TO 600
350 NEXT x
360 GO TO 300
400 PRINT AT 17,17:" " AT
16,18:" "
410 PRINT AT 15,20: INK 2:"E"

420 PRINT AT 15,20:"C"
430 PRINT AT 16,20:"D"
440 PRINT AT 17,20:"D"
445 BEEP ".01,20
450 PRINT AT 14,20: INK 2:"E":
PRINT AT 14,20:" "

```

```

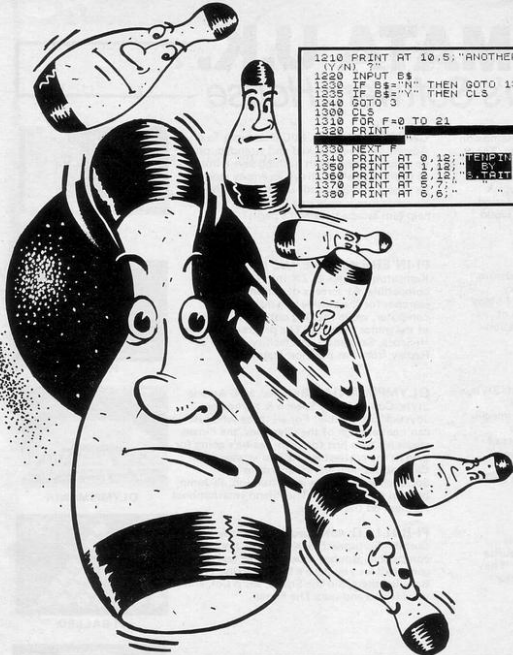
740 PRINT AT 13,22: PAPER 2:"
"
750 LET sk1=sk1+1: IF sk1=6 THE
N PRINT AT 11,6:"YOU'RE TOO GO
OD" AT 12,6: AT THIS GAME": GO
TO 760
751 PRINT AT 4,6:"HAPPY EATING
""THE SKILL LEVEL NOW GETS HIGH
ER": FOR z=-15 TO 39: BEEP .02,z
: NEXT z: PAUSE 0
755 PRINT "PRESS ANY KEY": PAUS
E 0: GO TO 7
760 STOP
900 LET sl=sl+(INKEY#="B")-(
INKEY#="5")+(sl<7)-(sl>17): PRI
NT AT 17,7:" ": AT 17,21:" ": A
T 16,7:" ":
910 IF INKEY#="h" THEN PAUSE 0
950 RETURN
1010 LET jam=0
1020 LET sl=17: LET sc=17
1030 LET sa=30
1040 CLS : PAPER 5: CLS : BORDER
3
1050 RETURN
2000 REM screen set up
2020 FOR n=6 TO 16
2030 PRINT INK 2: AT n,0:"f6*ig

```

```

DWICH " : PRINT INK 2;j
#: PRINT AT 19,0: INK 2;j#; PRI
NT INVERSE 1: INK 7:" "
JAM SANDWICH " : PRINT
INK 2;j#
3005 PRINT AT 6,0: INK 7;1#;
3010 PRINT AT 8,0: INK 2:" U
SING THE KEY'S (5)&(8) YOU M
UST CATCH THE JAM SO AS TO
FILL YOUR SANDWICH.
BUT BEWARE"" THE JAM SNATCH
HERS ARE ABOUT."
3015 PRINT AT 15,0: INK 7;j#
3016 PAUSE 600: CLS
3020 RETURN
3030 GO TO 5080
4000 FOR f=USR "a" TO USR "f"+
7: READ a: POKE f,a: NEXT f
5000 DATA 255,127,63,30,0,0,0,0,0
5010 DATA 255,255,0,0,0,0,0,0
5030 DATA 1,3,7,15,15,15,15,7
5040 DATA 3,3,3,3,3,3,3,3
5050 REM jam
5060 DATA 24,24,60,60,126,126,25
5,255
5070 DATA 24,60,252,60,82,82,129
,129
5080 RETURN

```

```

1210 PRINT AT 10.5;"ANOTHER GAME
(Y/N) ?"
1220 INPUT B$
1230 IF B$="Y" THEN GOTO 1300
1240 IF B$="N" THEN CLS
1250 GOTO 3
1260 CLS
1270 FOR F=0 TO 21
1280 PRINT
1290 NEXT F
1300 PRINT AT 0.12;"TENPIN
BY S.TAIT"
1310 PRINT AT 0.6;"
1320 PRINT

```

```

1330 PRINT AT 7.5;"
1341 PRINT AT 9.5;"
1351 PRINT AT 8.5;"
1361 PRINT AT 7.5;"
1371 PRINT AT 6.5;"
1381 PRINT AT 5.5;"
1391 PRINT AT 4.5;"
1400 PRINT AT 3.5;"
1410 PRINT AT 2.5;"
1420 PRINT AT 1.5;"
1430 PRINT AT 0.5;"
1440 PRINT AT 0.5;"
1450 PRINT AT 0.5;"
1460 PRINT AT 0.5;"
1470 PRINT AT 0.5;"
1480 PRINT AT 0.5;"
1490 GOTO 1430
1500 SUEF "BOL"
1501 FOR F=0 TO 21
1502 PRINT
1503 NEXT F
1510 PRINT AT 0.12;"TENPIN
BY S.TAIT"
1520 PRINT AT 0.6;"
1530 PRINT AT 0.6;"
1540 PRINT AT 0.6;"
1550 PRINT AT 0.6;"
1560 PRINT AT 0.6;"
1570 PRINT AT 0.6;"
1580 PRINT AT 0.6;"
1590 PRINT AT 0.6;"
1600 PRINT AT 0.6;"
1610 PRINT AT 0.6;"
1620 PRINT AT 0.6;"
1630 PRINT AT 0.6;"
1640 PRINT AT 0.6;"
1650 PRINT AT 0.6;"
1660 PRINT AT 0.6;"
1670 PRINT AT 0.6;"
1680 PRINT AT 0.6;"
1690 PRINT AT 0.6;"
1700 PRINT AT 0.6;"

```

```

1710 PRINT AT 0.6;"
1720 CLS
1730 PRINT AT 0.12;"TENPIN"
1740 PRINT AT 0.6;"
1750 PRINT AT 0.6;"
1760 PRINT AT 0.6;"
1770 PRINT AT 0.6;"
1780 PRINT AT 0.6;"
1790 PRINT AT 0.6;"
1800 PRINT AT 0.6;"
1810 PRINT AT 0.6;"
1820 PRINT AT 0.6;"
1830 PRINT AT 0.6;"
1840 PRINT AT 0.6;"
1850 PRINT AT 0.6;"
1860 PRINT AT 0.6;"
1870 PRINT AT 0.6;"
1880 PRINT AT 0.6;"
1890 PRINT AT 0.6;"
1900 PRINT AT 0.6;"
1910 PRINT AT 0.6;"
1920 PRINT AT 0.6;"
1930 PRINT AT 0.6;"
1940 PRINT AT 0.6;"
1950 PRINT AT 0.6;"
1960 PRINT AT 0.6;"
1970 PRINT AT 0.6;"
1980 PRINT AT 0.6;"
1990 PRINT AT 0.6;"

```

```

1750 PRINT "THE NUMBERS ON THE
PINS INDICATE HOW MANY POINTS YOU
GET IF YOU KNOCK DOWN THAT PIN.
YOU HAVE 3 BALLS TO DO THIS."
1770 PRINT AT 21.0;"PRESS A
NY KEY TO PLAY"
1775 IF INKEY$="" THEN GOTO 1775
1780 CLS
1790 RUN

```

```

1 GOTO 10
2 SAVE "HAME"
3 LET HI=0
4 CLS
5 PRINT AT 0.11;"HONEY MAN"
6 LEADING TO THE MODDER REEF
7 RAN TRY TO CATCH THE COE
8 Y DRONE "FOR EXTRA POINTS
9 COLLECT THE HONEY AS YOU GO AND
10 NO.
11 PRINT AT 10.0;"CONTROLS--
12 SEE SCORE
13 PRINT AT 15.0;"S=8" AT 14
14 "AT 15.11" AT 21.0;"BEE
15 A KEY TO PLAY THE GAME."
16 PRINT AT 5.22;"AT 6.22;"
17
18 IF INKEY$="" THEN GOTO 70
19 FIRST
20 POKE 16410,0
21 LET A$=""
22
23 FOR A$1 TO 20
24 LET A$=A$+1
25
26 NEXT A$
27
28 LET A$=""
29
30 LET A$=""
31
32 LET A$=""
33
34 LET A$=""
35
36 LET A$=""
37
38 LET A$=""
39
40 LET A$=""
41
42 LET A$=""
43
44 LET A$=""
45
46 LET A$=""
47
48 LET A$=""
49
50 LET A$=""
51
52 LET A$=""
53
54 LET A$=""
55
56 LET A$=""
57
58 LET A$=""
59
60 LET A$=""
61
62 LET A$=""
63
64 LET A$=""
65
66 LET A$=""
67
68 LET A$=""
69
70

```

HONEY MAN

DODGE the holes leading to the worker bees and try to catch the dopey drone. Collect honey as you pursue the drone as this will give you extra points.

Honey Man was written for the 16K ZX-81 by Simon Huggins, aged 12, of Southfields, Northants.

```

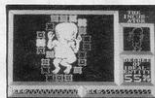
420 PRINT AT 0.0;"BONUS" INT (
5/2)
430 IF INKEY$="" THEN GOTO 430
440 LET S$=INT (3/2)
450 GOTO 300
460 PRINT AT 12.6;"ANOTHER GAME
(Y/N) ?"
470 IF HI=5 THEN LET HI=1
480 IF INKEY$="" THEN GOTO 500
490 IF INKEY$="" THEN GOTO 150
500 GOTO 420
510 LET B$1 TO 11
520 PRINT AT A.0;"
530 LET A$=""
540 NEXT A$
550 FOR A$0 TO 23
560 PRINT AT A.0;"
570 NEXT A$
580 LET A$=""
590 FOR P$1 TO 10
600 PRINT AT X,Y;"
610 STOP
620 PRINT AT X,Y;"
630 PRINT AT X,Y;"
640 PRINT AT X,Y;"
650 PRINT AT X,Y;"
660 PRINT AT X,Y;"
670 PRINT AT X,Y;"
680 PRINT AT X,Y;"
690 PRINT AT X,Y;"
700 PRINT AT X,Y;"
710 PRINT AT X,Y;"
720 PRINT AT X,Y;"
730 PRINT AT X,Y;"
740 GOTO 310

```



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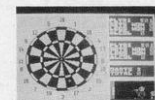
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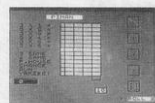
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DARTZ 48K Spec. Family fun. This 'arrowing' version of your local's favourite game! Includes use of life scoring with 'The more you play the more you drink, the worse your game becomes' rule!



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YAKZEE 48K Spec. and Dragon. Family fun. An oriental game of luck and skill for 1 to 4 players, playing between 1 to 4 rounds. Each tape comes with both the Dragon and the 48K Spectrum versions along with a simple to follow guide on how to play YAKZEE.

NEW WHEELS JOHN? 48K Spec. Family fun. Would you buy a used motor from this man? Dare you clock an old banger? Have you ever wondered what it's like to run your own second-hand car lot? Wheel leave the rust to you!

CRUSOE 48K Spec. M/C Graphic & Text Adventure. Shipwrecked and stranded, on ye remote island, with nothing save a bottle of Granny's patent elixyr, an empty stomach, ye shorts that he stands up in... and thou. Ye adventure is only just beginning. Can you help him escape ye island's perils?



CRUSOE

PI-IN'ERE 48K Spec. M/C Arcade Style. Kempston Joystick & ZX Interface 2 compatible. 61 screens of action as Burt searches for the elusive bug inside a computer, while keeping out of the reaches of the minor menaces. The program includes Hi-Score, Save and Load facility as well as Replay from last position feature.



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OLYMPIMANIA 48K Spec. M/C Arcade Style. Currah Micro Speech & Kempston Joystick compatible. For all those who just can't get enough of the Olympics, the Piman stages his own just for you! Yes he's going for gold in the craziest events you've ever seen! Can you set new world records in the Speeephase, Alpi Ski-ing, Pitathlon, Pi-Jump, or even the Butterpi? The Piland International Anthem on the flip side.



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CONCENTRATION

MATCH the symbols, taking as few turns as possible. There are fifteen pairs of graphics hidden in the grid. The squares in the grid are numbered one to thirty so, to choose two squares, simply enter their numbers. When you have matched all the pairs you are told how many turns you took.

Concentration was written for the 16K Spectrum by Stephen McLeod, aged 13, of Morpeth, Northumberland.

```

1 BORDER 6: PAPER 7: INK 0: B
RIGHT 1: OVER 0: INVERSE 0: FLAS
H 0: CLS : LET TRIES=0: LET SC=0
2 DIM B(2)
5 GO SUB 9000
10 LET A$="AABCCDDEEFFGGHHIIJ
JKLLMMNNDD"
20 GO SUB 1000
30 GO SUB 2000
40 GO SUB 3000
1000 LET B$=""
1010 FOR C= LEN A$ TO 1 STEP -1
1020 LET N= INT ( RND *C)+1
1030 LET B$=B$+A$(N)
1040 LET A$=A$( TO N-1)+A$(N+1 T
0 )
1050 NEXT C
1060 RETURN
2000 FOR N=60 TO 180 STEP 24
2010 FOR M=20 TO 148 STEP 32
2020 PLOT N,M
2030 DRAW 0,16: DRAW 16,0: DRAW
0,-16: DRAW -16,0
2040 NEXT M: NEXT N
2050 FOR N=2 TO 18 STEP 4: FOR M
=B TO 23 STEP 3
2060 PRINT AT N,M;"?"
2070 NEXT M: NEXT N
2080 RETURN
3000 FOR N=1 TO 2
3002 INPUT "ENTER GUESS ";B(N)
3005 IF B(N)<1 OR B(N)>30 OR B(N)
)<> INT B(N) THEN GO TO 3002
3010 IF A$(B(N),3) <> 0 THEN BEE
P 1,0: GO TO 3002

```

```

3020 PRINT AT A$(B(N),1),A$(B(N),
2): CHR$( 79+ CODE B$(B(N))) : LE
T A$(B(N),3)=1
3030 NEXT N
3040 IF B$(B(1))=B$(B(2)) THEN
GO TO 3100
3050 BEEP .5,0: BEEP .5,-20
3060 FOR N=1 TO 2: PRINT AT A$(
(N),1),A$(B(N),2);"?": LET A$(B(N)
,3)=0: NEXT N
3065 LET TRIES=TRIES+1: PRINT A
T 0,12;"TRIES ";TRIES
3070 GO TO 3000
3100 FOR N=1 TO 4: BEEP .01,0: B
EEP .01,20: BEEP .2,30: BEEP .01
,5: BEEP .01,0: NEXT N
3110 LET SC=SC+1: IF SC=15 THEN
GO TO 4000
3120 GO TO 3000
4000 FOR N=40 TO 0 STEP -1: BEEP
.01,N: NEXT N: BEEP .5,-1
4010 PRINT AT 0,3;"IT TOOK YOU
";TRIES;" TRIES....!"
4020 PRINT #1:"PRESS 'ENTER' FOR
ANOTHER GAME.."
4030 IF INKEY$ <> CHR$ 13 THE
N GO TO 4030
4040 RUN
9000 FOR N= USR "A" TO USR "0"+
7: READ A: POKE N,A: NEXT N
9010 DATA 0,8,28,62,127,62,28,8
9020 DATA 8,28,62,127,62,28,6,2
9030 DATA 0,54,127,127,127,62,28
,8

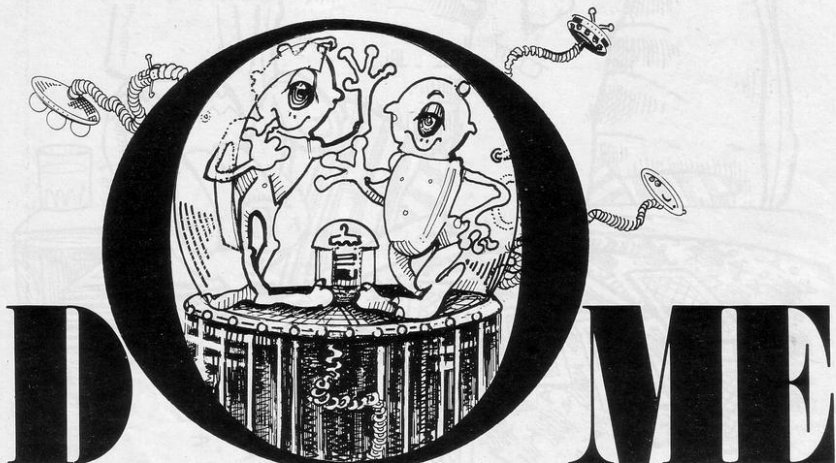
```

```

9040 DATA 8,28,8,54,127,107,8,28
9050 DATA 8,24,56,120,8,255,126,
60
9060 DATA 24,24,126,126,24,24,24
,24
9070 DATA 0,0,65,165,191,160,64,0
9080 DATA 0,56,16,215,148,214,84
,199
9090 DATA 129,90,36,90,90,36,90,
129
9100 DATA 0,14,72,72,127,9,9,56
9110 DATA 8,28,62,28,62,127,8,28
9120 DATA 28,28,10,62,40,28,20,5
4
9130 DATA 62,8,8,62,62,28,8
9140 DATA 16,58,126,254,254,254,
238,238
9150 DATA 28,62,119,31,127,62,28
,0
9160 DIM A(30,3)
9165 LET Z=-2
9170 FOR N=1 TO 30: LET Z=Z+(4 A
ND (N=1 OR N=7 OR N=13 OR N=19 O
R N=25)): READ A(N,1),A(N,2)
9175 IF N=6 OR N=12 OR N=18 OR N=
24 THEN RESTORE 9190
9180 LET A(N,3)=0: NEXT N
9190 DATA 2,8,2,11,2,14,2,17,2,2
0,2,23
9200 RETURN
9999 RUN

```


MARTIAN



MARTIAN Dome is a simulation program in which you play the part of the prime minister of a colony on Mars. Your tasks include paying for food and oxy-

gen and undertaking repairs to the dome. The only way to make money for food and oxygen is to sell your sculptures to other domes. Each sculptor

needs two more oxygen points for each sculpture produced.

Martian Dome was written for the 16K ZX-81 by Colin Walsham of Leigh on Sea, Essex.

```

1 60305 5000
2 CLS
10 LET POP=100
20 LET YEAR=0
30 LET MON=0
40 LET REP=255
50 LET OX=1500
60 LET OXCOST=0
70 LET POPDX=5
80 LET FOODC=0
90 LET FOODCOST=0
100 LET POPFOOD=3
110 LET ARTOX=2
120 LET ARTPAY=30
130 PRINT AT 0,0;"YEAR:";YEAR;"A
T 0.15;"POPULATION:";POP
210 PRINT AT 2,0;"OXYGEN LEFT:";
OX;"UNITS"
220 PRINT AT 4,0;"COST OF OXYGE
N PER UNIT:";OXCOST
230 PRINT AT 6,0;"CASH IN TREAS
URY:";MON
240 PRINT AT 8,0;"REPAIR BILL T
HIS YEAR:";REP
250 PRINT AT 10,0;"FOOD LEFT:";
FOODC;"UNITS"
260 PRINT AT 12,0;"FOOD COST PE
R UNIT:";FOODCOST
270 PRINT AT 14,0;"EACH PERSON
NEEDS:";POPDX;"UNITS OF OXYG
EN AND:";POPFOOD;"FOOD UNITS PE
R YEAR"
280 PRINT AT 16,0;"EACH SCULPTU
RE PAYS:";ARTPAY;" BUT THE MAKE
R USES:";ARTOX;" UNITS MORE OXYG
EN"
400 PRINT AT 21,0;"HOW MUCH OXY
GEN DO YOU WANT?"
410 INPUT AMOX
420 IF AMOX<0 THEN GOTO 430
430 LET OX=OX+AMOX
435 PRINT AT 2,0;"OXYGEN LEFT:";
OX;"UNITS"
436 PRINT AT 6,0;"CASH IN TREAS
URY:";MON
440 PRINT AT 21,0;"
450 PRINT AT 21,0;"HOW MUCH FOOD
DO YOU WANT?"
450 INPUT AMFOOD
470 IF FOODCOST<AMFOOD THEN
GOTO 450
475 LET FOOD=FOOD+AMFOOD
480 LET MON=MON-(FOODCOST*AMFOO
D)
481 PRINT AT 6,0;"CASH IN TREAS
URY:";MON
482 PRINT AT 10,0;"FOOD LEFT:";
FOODC;"UNITS"
490 PRINT AT 21,0;"
500 PRINT AT 21,0;"HOW MANY SCU
LPTURES TO BE MADE?"
510 INPUT AMART
520 LET OX=OX-(AMART*ARTOX)
530 LET MON=MON+(AMART*ARTPAY)
540 LET NON=NON-REP
550 LET FOOD=FOOD-(POP*POPFOOD)
555 LET OX=OX-(POP*POPDX)
560 IF OX<0 THEN GOTO 700
600 GOTO 1000
610 GOTO 2000 THEN GOTO 800
700 GOTO 2000
800 IF MON<0 THEN GOTO 900
900 LET YEAR=YEAR+1
910 LET REP=REP+INT (RAND*499)+1
920 LET POP=POP+INT (RAND*50)+1
930 LET ARTPAY=ARTPAY+INT (RAND
*499)+1
940 LET OXCOST=OXCOST+1
950 LET FOODCOST=FOODCOST+INT (
RAND*9)+1
975 CLS
976 FOR A=0 TO 100
977 NEXT A
980 GOTO 200
1000 CLS
1001 FOR A=0 TO 20
1010 PRINT AT 11,5;"YOU RAN OUT
OF OXYGEN"
1020 PRINT AT 11,5;"YOU RAN OUT
OF FOOD"
1030 NEXT A
1040 PRINT AT 0,0;"YOU SURVIVED
THIS YEAR.";YEAR;" YEARS"
1050 STOP
1060 CLS
2005 FOR A=0 TO 20
2010 PRINT AT 11,6;"YOU RAN OUT
OF FOOD"
2020 PRINT AT 11,6;"YOU RAN OUT
OF OXYGEN"
2030 NEXT A
2040 PRINT AT 0,0;"YOU LASTED "
YEAR;" YEARS"
2050 STOP
2060 CLS
3005 FOR A=0 TO 20
3010 PRINT AT 11,5;"YOU RAN OUT
OF MONEY"
3020 PRINT AT 11,5;"YOU RAN OUT
OF ART"
3030 NEXT A
3040 PRINT AT 0,0;"YOU HELD OUT
FOR "YEAR;" YEARS"
3050 STOP
5000 PRINT AT 0,10;"MARTIAN DOME"
5010 PRINT
5020 PRINT "YOU ARE THE PRIME MI
NISTER OF THE INDEPENDANT FEDER
ATION DOME NINE ON MARS.IT IS Y
OU JOB TO MAKE SURE THE TREASU
RY CAN PAY"
5030 PRINT "FOR FOOD AND OXYGEN
FOR ALL THE POPULATION,IF NOT TH
E POPULATION WILL DIE,ALSO YOU M
NE SURE YOU CAN PAY FOR THE EVER
INCREASING"
5040 PRINT "COST OF REPAIRING DA
MAGE TO THE DOME BY METEOR STORM
S, YOU ONLY WANT TO MAKE MONEY, I
S TO SELL THE REST OF MARS BUT REM
EMBER MORE OXYGEN IS USED WHEN
SCULPTURES ARE MADE"
5050 PRINT AT 21,9;"PRESS ANY KE
Y"
6000 PAUSE 4E4
6009 RETURN
9997 REM MARTIAN DOME BY COLIN U
ALSHAM
9998 SAVE "MARTIAN DOME"
9999 RUN

```

OIL RIG

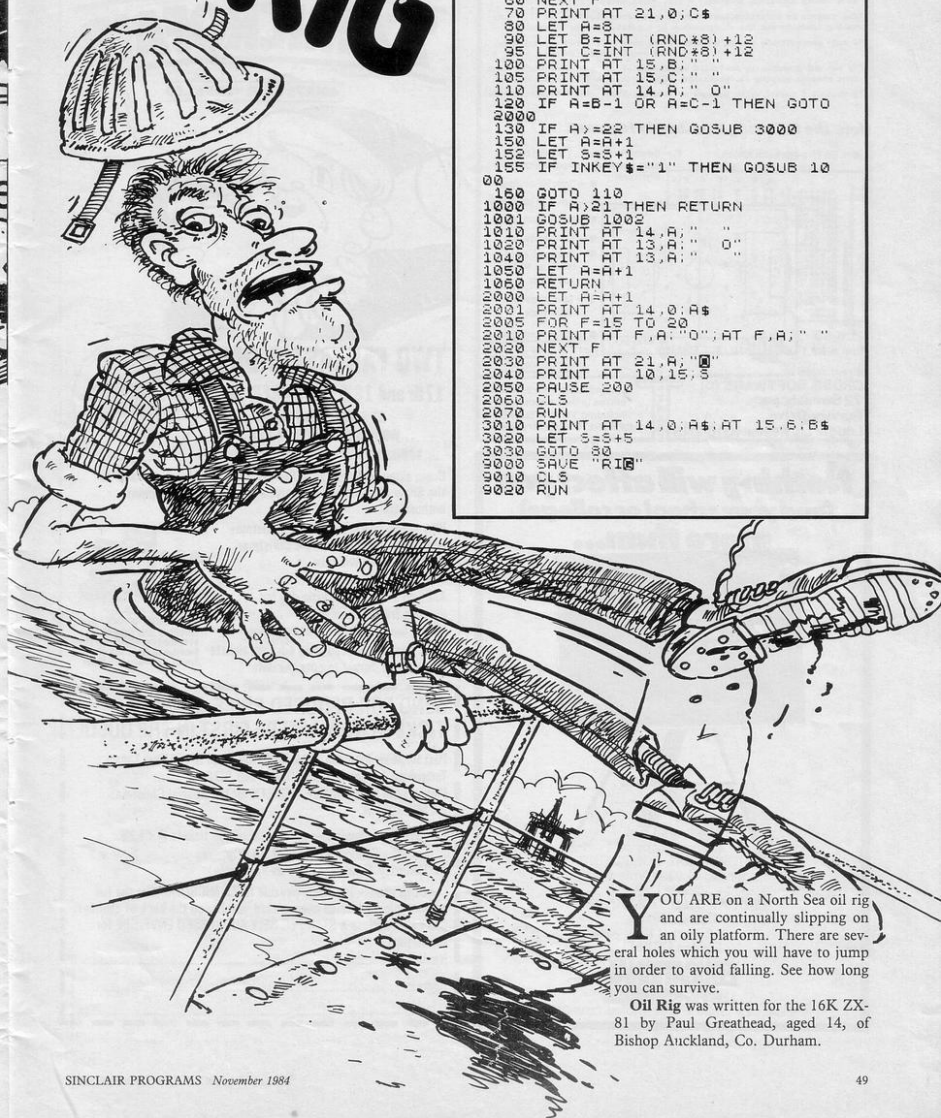
```

1 REM  RIG
2 LET S=0
10 LET A$=""

15 LET C$=""
20 LET B$=""

30 PRINT AT 15.6:B$
40 FOR F=16 TO 20
50 PRINT AT F,8;"|||";AT F,22;"
||"
60 NEXT F
70 PRINT AT 21,0:C$
80 LET A=8
90 LET B=INT (RND*S)+12
95 LET C=INT (RND*S)+12
100 PRINT AT 15,B;" "
105 PRINT AT 15,C;" "
110 PRINT AT 14,A;" 0"
120 IF A=B-1 OR A=C-1 THEN GOTO 2000
2000
130 IF A>=22 THEN GOSUB 3000
140 LET A=A+1
150 LET S=S+1
155 IF INKEY$="1" THEN GOSUB 10
00
160 GOTO 110
1000 IF A>21 THEN RETURN
1001 GOSUB 1002
1010 PRINT AT 14,A;" "
1020 PRINT AT 13,A;" 0"
1040 PRINT AT 13,A;" 0"
1050 LET A=A+1
1055 RETURN
2000 LET A=A+1
2001 PRINT AT 14,0:A$
2005 FOR F=15 TO 20
2010 PRINT AT F,A;"0";AT F,A;" "
2020 NEXT F
2030 PRINT AT 21,A;"0"
2040 PRINT AT 10,15:S
2050 PAUSE 200
2060 CLS
2070 RUN
3010 PRINT AT 14,0:A$;AT 15.6:B$
3020 LET S=S+5
3030 GOTO 30
3000 SAVE "RIG"
3010 CLS
3020 RUN

```



YOU ARE on a North Sea oil rig and are continually slipping on an oily platform. There are several holes which you will have to jump in order to avoid falling. See how long you can survive.

Oil Rig was written for the 16K ZX-81 by Paul Greathead, aged 14, of Bishop Auckland, Co. Durham.

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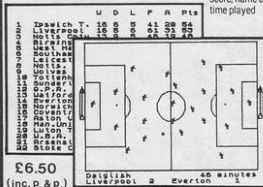
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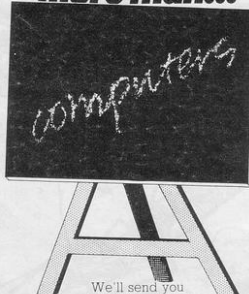
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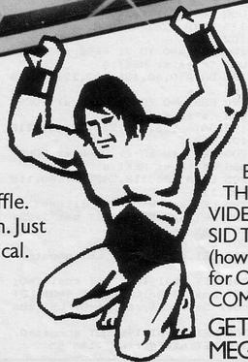
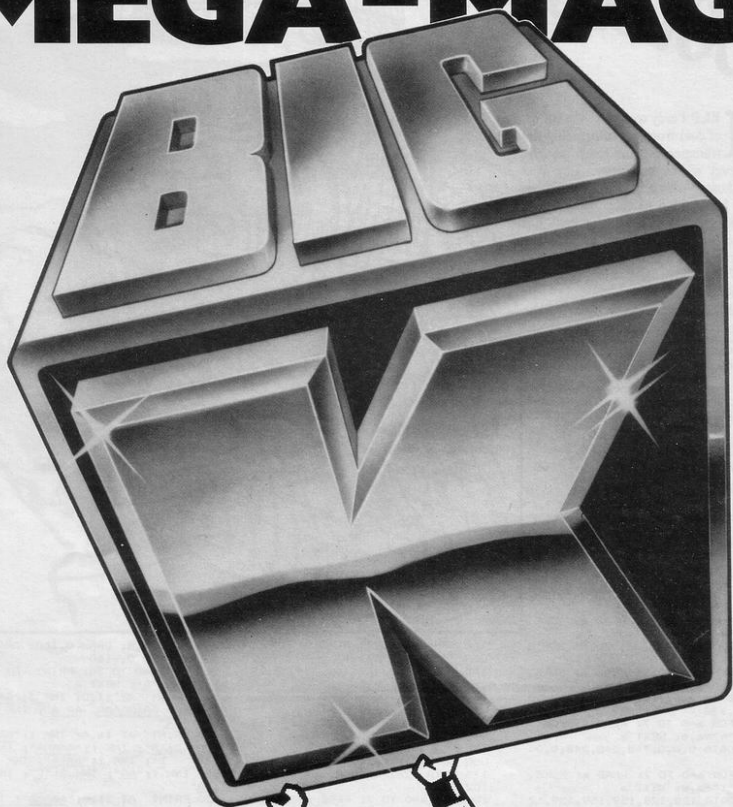
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COAL COLLECTOR

HELP Percy to collect the lumps of coal from the mine using the transporters to jump to the next level where necessary. The bats and ghosts which haunt the mine should be avoided as they will impede your progress. Once all the coal has been collected, make your way to the top of the mine and begin again. Use Q and W to move left and right and SPACE to jump.

Coal Collector was written for the 48K Spectrum by Craig Cole of Hull.



```

2 CLS
10 FOR a=0 TO 7: READ s: POKE
USR "a"+a,s: NEXT a
15 DATA 255,170,255,60,66,129,
129,129
20 FOR a=0 TO 7: READ s: POKE
USR "b"+a,s: NEXT a
25 DATA 255,129,129,231,231,10
2,36,60
30 FOR a=0 TO 7: READ s: POKE
USR "c"+a,s: NEXT a
35 DATA 86,170,86,170,86,170,8
6,170
40 FOR a=0 TO 7: READ s: POKE
USR "d"+a,s: NEXT a
45 DATA 0,16,16,144,144,146,14
6,146
50 FOR a=0 TO 7: READ s: POKE
USR "e"+a,s: NEXT a
55 DATA 24,62,127,255,255,126,
62,12
60 FOR a=0 TO 7: READ s: POKE
USR "f"+a,s: NEXT a
65 DATA 85,255,85,255,85,255,8
5,255
70 FOR a=0 TO 7: READ s: POKE
USR "g"+a,s: NEXT a
75 DATA 128,132,140,159,191,15
9,140,132
80 FOR a=0 TO 7: READ s: POKE
USR "h"+a,s: NEXT a
85 DATA 0,0,0,248,248,248,0,0
90 FOR a=0 TO 7: READ s: POKE
USR "i"+a,s: NEXT a
95 DATA 128,128,159,159,159,12
8,128,128
100 FOR a=0 TO 7: READ s: POKE
USR "j"+a,s: NEXT a
105 DATA 32,48,248,252,248,48,3
2,0
110 FOR a=0 TO 7: READ s: POKE
USR "k"+a,s: NEXT a
115 DATA 2,2,3,125,31,15,6,5
120 FOR a=0 TO 7: READ s: POKE
USR "l"+a,s: NEXT a
125 DATA 64,64,192,190,248,240,
96,160
130 FOR a=0 TO 7: READ s: POKE
USR "m"+a,s: NEXT a
135 DATA 192,224,176,184,248,24
8,216,236
140 FOR a=0 TO 7: READ s: POKE
USR "n"+a,s: NEXT a
145 DATA 3,7,13,29,31,31,27,25
146 FOR a=0 TO 7: READ s: POKE
USR "o"+a,s: NEXT a
147 DATA 126,118,247,251,60,56,
56,56

```

```

150 FOR a=0 TO 7: READ s: POKE
USR "p"+a,s: NEXT a
155 DATA 0,60,126,102,254,14,12
4,60
160 FOR a=0 TO 7: READ s: POKE
USR "q"+a,s: NEXT a
165 DATA 126,118,247,251,60,119
99,231
170 FOR a=0 TO 7: READ s: POKE
USR "r"+a,s: NEXT a
175 DATA 126,110,239,223,60,110
102,238
180 FOR a=0 TO 7: READ s: POKE
USR "s"+a,s: NEXT a
185 DATA 0,60,126,102,127,112,6
2,60
190 FOR a=0 TO 7: READ s: POKE
USR "t"+a,s: NEXT a
195 DATA 126,118,239,223,60,118
102,119
200 FOR a=0 TO 7: READ s: POKE
USR "u"+a,s: NEXT a
205 DATA 126,118,247,251,60,118
102,119
295 LET score=0: LET lives=3
300 LET bat 1=28: LET bat 2=25:
LET bat 3=28
301 LET number=0
303 LET ghost 1=6: LET ghost 2=
5
306 LET coal 1=0: LET coal 2=0:
LET coal 3=0: LET coal 4=0: LET
coal 5=0: LET coal 6=0: LET coa
1 7=0
308 LET level=19: LET across=0
310 LET h="R": LET l="S"

```

```

499 PLOT 0,8: DRAW 0,160: DRAW
248,0: DRAW 0,-160
500 FOR a=0 TO 30: PRINT AT 6,
a: INK 2;"A": NEXT a
510 PRINT AT 11,0: INK 3;"AAAA
AAAA"
520 PRINT AT 16,4: INK 1;"AAA"
: INK 2;"B": INK 1;"AAAAA": INK
2;"B" : INK 1;"AAAA": INK 2;"
B": INK 1;"AA": INK 2;"B": INK
1;"A"
530 PRINT AT 21,0:"AAAAA": INK
2;"B": INK 0;"A"
540 PRINT AT 18,15: INK 1;"CC"
: PRINT AT 19,15: INK 1;"CC": P
RINT AT 20,15: INK 1;"CC"
542 PRINT AT 1,0: INK 3;"EEEE
EEEE": PRINT AT 2,0: INK 3;"FF
EEEEEE": PRINT AT 3,0: INK 2;"
GH": INK 3;"EEEEEE"
545 PRINT AT 1,10: INVERSE 1;"
PERCY AND"
546 PRINT AT 2,10: INVERSE 1;"
THE"
547 PRINT AT 3,10: INVERSE 1;"
PICKETS"
560 PRINT AT 3,0: INK 2;"GH"
565 PRINT AT 18,0: INK 2;"I"

```



```
620 PRINT AT 20,bat 3; INK 1;"
"
623 LET bat 1=bat 1-1: LET bat
2=bat 2-1: LET bat 3=bat 3-1
625 LET ghost 1=ghost 1+1: LET
ghost 2=ghost 2+1
630 IF bat 1=20 THEN LET bat 1
=28
632 IF bat 2=16 THEN LET bat 2
=25
634 IF bat 3=18 THEN LET bat 3
=28
636 IF ghost 1=16 THEN LET gho
st 1=6
638 IF ghost 2=13 THEN LET gho
st 2=5
639 GO SUB 650
640 GO TO 600
650 PRINT AT level,across;h$:
PRINT AT level+1,across;1$
660 IF INKEY$="w" THEN GO TO
680
670 IF INKEY$="q" THEN GO TO
700
675 IF INKEY$="" THEN GO SU
B 940
678 IF INKEY$="" THEN GO TO
679
679 RETURN
680 IF across=30 AND level=19 T
HEN GO TO 685
681 IF across=30 AND level=9 TH
EN GO TO 685
682 IF across=30 AND level=4 TH
EN GO TO 685
683 PRINT AT level,across;" ":
PRINT AT level+1,across;" "
684 LET across=across+1: PRINT
AT level,across;"R": PRINT AT
level+1,across;"I": LET h$="R":
LET 1$="S": FOR a=0 TO 8: NEXT a
685 GO TO 706
700 IF across=17 AND level=19 T
HEN GO TO 706
701 IF across=0 AND level=9 THE
N GO TO 706
702 IF across=0 AND level=19 TH
EN GO TO 706
703 PRINT AT level,across;" ":
PRINT AT level+1,across;" "
705 LET across=across-1: PRINT
AT level,across;"O": PRINT AT
level+1,across;"P": LET h$="O":
LET 1$="Q": FOR a=0 TO 8: NEXT a
706 IF level=19 THEN GO TO 710
707 IF level=14 THEN GO TO 730
708 IF level=9 THEN GO TO 720
709 IF level=4 THEN GO TO 740
710 IF across=7 OR across=23 TH
EN GO TO 900
711 IF across=bat 3 THEN GO TO
900
712 IF across=26 THEN GO TO 90
0
714 IF across=17 AND coal 1=0 T
HEN LET coal 1=: GO TO 960
716 IF across=30 AND coal 2=0 T
HEN LET coal 2=: GO TO 960
719 GO TO 600
720 IF across=8 OR across=12 TH
EN GO TO 920
721 IF across=bat 1 OR across=g
host 1 THEN GO TO 900
722 IF across=21 OR across=22 T
HEN GO TO 920
723 IF across=25 THEN GO TO 92
0
724 IF across=0 AND coal 5=0 TH
EN LET coal 5=: GO TO 960
726 IF across=18 AND coal 6=0 T
HEN LET coal 6=: GO TO 960
728 IF across=30 AND coal 7=0 T
HEN LET coal 7=: GO TO 960
729 GO TO 600
730 IF across=14 THEN GO TO 90
0
731 IF across=bat 2 OR across=g
host 2 THEN GO TO 900
732 IF across=3 OR across=17 TH
EN GO TO 920
734 IF across=28 THEN GO TO 92
0
736 IF across=4 AND coal 3=0 TH
EN LET coal 3=: GO TO 960
738 IF across=27 AND coal 4=0 T
HEN LET coal 4=: GO TO 960
739 GO TO 600
740 IF across=0 THEN GO TO 745
742 GO TO 600
745 CLS : PRINT AT 4,10;"****
*****": PRINT AT 5,10;"WELL D
ONE*": PRINT AT 6,10;"**PERCY*
**": PRINT AT 7,10;"*****"
"
746 PRINT AT 10,0;"BUT YOU NEE
D MORE COAL BECAUSE SOME OF YO
UR FAMILY ARE COMING FOR
THE WEEK"
747 PRINT AT 18,9; INVERSE 1;"
SO GET COLLECTING"
748 FOR a=0 TO 10: BEEP .1,a: B
EEP .1,a: NEXT a
750 PAUSE 0
751 CLS : GO TO 300
900 LET lives=lives-1
901 BEEP .5,-10: BEEP .3,-15
902 PRINT AT 1,21;"LIVES "livi
es
904 PRINT AT level,across;" ":
PRINT AT level+1,across;" "
906 IF lives=0 THEN GO TO 980
908 LET level=19: across=1
910 GO TO 600
920 PRINT AT level,across;" ":
PRINT AT level+1,across;" "
922 LET level=level+3
924 BEEP .1,-1: PRINT AT level
,across;h$: PRINT AT level+1,ac
ross;"U": FOR a=0 TO 15: NEXT a
926 PRINT AT level,across;" ":
PRINT AT level+1,across;" "
927 LET level=level+2
928 BEEP .1,-2: PRINT AT level
,across;h$: PRINT AT level+1,ac
ross;"U"
929 BEEP .1,-3: GO TO 600
940 IF across=5 AND level=19 TH
EN GO TO 951
942 IF across=22 AND level=19 T
HEN GO TO 951
943 IF across=27 AND level=9 AN
D number=7 THEN GO TO 951
944 IF across=27 AND level=19 T
HEN GO TO 951
945 IF across=23 AND level=14 T
HEN GO TO 951
946 IF across=7 AND level=14 TH
EN GO TO 951
947 IF across=18 AND level=14 T
HEN GO TO 951
948 IF across=13 AND level=14 T
HEN GO TO 951
949 IF across=26 AND level=14 T
HEN GO TO 951
950 RETURN
951 PRINT AT level,across;" ":
FOR a=0 TO 8: NEXT a: PRINT AT
level+1,across;" "
952 LET level=level-5
956 FOR a=1 TO 2: BEEP .1,a: NE
XT a: PRINT AT level,across;h$:
NEXT a: PRINT AT level+1,acros
s;1$
958 RETURN
960 LET score=score+27: PRINT
AT 3,21;"SCORE ";score
961 LET number=number+1
962 GO TO 600
980 CLS : PRINT AT 10,9; INVER
SE 1;" GAME OVER "
982 PRINT AT 19,1; INVERSE 1;"
DO YOU WANT ANOTHER GAME (Y/N)"
984 IF INKEY$="y" THEN GO TO
988
986 IF INKEY$="n" THEN CLS :
PRINT AT 10,8; FLASH 1;"G.O.D.
D B.Y.E": FOR a=0 TO 8: BEEP .1,
a: NEXT a: STOP
987 GO TO 984
988 CLS : GO TO 295
```

```
570 PRINT AT 10,0; INK 0;"E":
PRINT AT 10,18; INK 0;"E": PRINT
T AT 10,30; INK 0;"E"
575 PRINT AT 15,4; INK 0;"E":
PRINT AT 15,27; INK 0;"E"
580 PRINT AT 20,17; INK 0;"E":
PRINT AT 20,30; INK 0;"E"
600 PRINT AT 10,bat 1; INK 2;"
KL": PRINT AT 10,ghost 1; INK 1
;"NM"
601 IF level=19 AND across=bat
3 THEN GO TO 900
602 PRINT AT 15,bat 2; INK 0;"
KL": PRINT AT 15,ghost 2; INK 2
;"NM"
603 IF level=14 AND across=bat
2 THEN GO TO 900
604 PRINT AT 20,bat 3; INK 1;"
KL"
605 IF level=14 AND across=ghos
t 2 THEN GO TO 900
606 PRINT AT 1,21;"LIVES ";livi
es
607 IF level=9 AND across=ghost
1 THEN GO TO 900
608 PRINT AT 3,21;"SCORE ";sco
re
609 IF level=9 AND across=bat 1
THEN GO TO 900
610 FOR a=0 TO 20: NEXT a
612 PRINT AT 10,bat 1; INK 2;"
": PRINT AT 10,ghost 1; INK 1
;" "
613 IF level=19 AND across=bat
3+1 THEN GO TO 900
614 IF level=14 AND across=bat
2+1 THEN GO TO 900
615 PRINT AT 15,bat 2; INK 0;"
": PRINT AT 15,ghost 2; INK 2
;" "
616 IF level=14 AND across=ghos
t 2+1 THEN GO TO 900
617 IF level=9 AND across=ghost
1+1 THEN GO TO 900
618 IF level=9 AND across=bat 1
+1 THEN GO TO 900
```




GUIDE your aeroplane over enemy territory and shoot the fuel dumps and tanks. Keep an eye on your fuel gauge because if the supply runs out or you are shot the game will end. The game incorporates some good sound effects and explosion routines.

Air Raid was written for the 48K Spectrum by Neil Bates, of Coventry, West Midlands.

```

6 GO TO 1000
7 LET h1=0: GO SUB 1990
8 GO SUB 9000
20 GO SUB 7000
30 GO SUB 2070
35 FOR j=1 TO 224: GO SUB 3000

40 IF INKEY$="0" THEN GO SUB
B 7500
45 LET u=u-1: PRINT AT 19,11:
PAPER 4:u;" "
46 IF u=0 THEN PRINT AT 10,1
0: FLASH 1: INK 6: PAPER 2:"OUT
OF FUEL": GO SUB 8000
47 POKE 65107,1
50 IF b$(238)="L" THEN LET g=
88: LET h=103: GO SUB 7600
55 IF b$(466)="I" THEN LET g=
80: GO SUB 7700
60 IF b$(463)="L" THEN LET g=
80: LET h=111: GO SUB 7600
65 IF b$(242)="I" THEN LET g=
88: GO SUB 7700
70 IF b$(688)="L" THEN LET g=
72: LET h=119: GO SUB 7600
75 IF b$(692)="I" THEN LET g=
71: GO SUB 7700
80 IF b$(913)="L" THEN LET g=
64: LET h=127: GO SUB 7600
85 POKE 65107,5
90 NEXT J
100 GO SUB 1990
110 GO TO 35
1000 DATA 0,0,0,0,0,1,7,15,7,7,
3,3,0,0,0,0,0,193,243,251,253
,253,255,255,255,255,254,254,124
,56,0,56,254,255,255,255,255,255

```

```

,255,251,251,253,254,124,0,0,0,0
,0,112,248,252,252,252,252,252,2
40,224,0,0,0,0
1010 DATA 0,144,216,254,255,24,1
6,0,0,128,64,160,80,168,84,170,1
,2,5,10,21,42,85,170,128,64,44,2
8,126,255,255,102,8,34,128,4,32,
2,64,8,126,195,219,195,255,85,17
0,85
1020 DATA 34,28,8,127,73,73,127,
127,15,63,15,15,31,127,255,255,8
,16,32,242,146,154,254,248,192,2
24,193,194,228,248,252,252,85,42
,21,10,5,2,1,0,0,14,254,14,127,2
55,255,102,85,170,85,170,85,170,
85,170
1030 DATA 33,0,64,30,64,126,1,31
,0,9,6,32,203,23,203,22,43,16,25
1,9,35,35,29,32,236,201
1040 DATA 6,3,197,33,15,0,17,0,0
,229,205,181,3,225,17,16,0,167,2
37,90,125,254,255,32,237,193,16,
230,201,0
1050 FOR f=USR "a" TO USR "u"+
7: READ a: POKE f,a: NEXT f
1060 CLEAR 64999: FOR f=65000 TO
65025: READ a: POKE f,a: NEXT f

1070 FOR f=65100 TO 65129: READ
a: POKE f,a: NEXT f
1080 GO TO 7
1090 DIM a$(5,224)
2000 LET a$(1)="

```

```

2010 LET a$(2)="
UJ T L KUUUUUUJ T L
L KUUUUUJ KUUUUUJ
LL KUUUUUJ KUUUUUJ
2020 LET a$(3)="
UJ T NNNN KUUUUUUUJ
UJ T KUUUUUJ KUUUUUJ
KUUUUUUUUUUUUUUUUUUU KUUUUUUUUU
UUUUUJ KUUUUUJ
T L N
T NNN LPR N
2040 LET a$(4)="
UJ LKUUUJ KUUUUUUUUUUUUUUUUUUU
TKUUUUUUUUUUUUUUUUUUUUUUUUUUUU
L KUUUUUUUUUUUUUUUUUUU L KUUUUUUUUU
UUUUUUJ LPR
KUUUUUUUJ
SUUUUUUUUUUUUUUUUUUU
2050 LET a$(5)="
UUUUUUUUUUUUUUUUUUUU N L KUUUUUUUUUUUUUUUUU
N KUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
2060 LET b$=a$(1)+a$(2)+a$(3)+a$(
4)+a$(5): DIM a$(160): RETURN
2070 LET a=7: LET sc=0

```

```

0071 LET u=200
0080 RETURN
3000 LET b#b*(2 TO 224)+b*(1)+b
#(226 TO 448)+b*(225)+b*(450 TO
672)+b*(449)+b*(174 TO 896)+b*(
73)+b*(898 TO 1120)+b*(897)
3005 IF b#(1 TO 32)+b*(226 TO
0 256)+b*(449 TO 480)+b*(673 TO
704)+b*(897 TO 928)
3006 PRINT AT a,10;" "
3007 RANDMIZE USR 65000
3010 PRINT AT 10,a;" "
3012 IF SCREEN#(a,10)="" THEN
60 SUB 8000
3013 IF INKEY#="" THEN LET a
=a-1: IF SCREEN#(a,10) < " "
THEN LET a=a-2
3016 IF INKEY#="" THEN LET a
=a+1: IF SCREEN#(a,10) < " "
THEN IF a<8 THEN LET a=a+2
3020 PRINT AT a,10;"1"
3022 IF a<14 THEN GO TO 8000
3030 RETURN
6000 BEEP .5,7: BEEP .5,16: BEE
P .25,17: BEEP .25,16: BEEP .5,14
: BEEP 1,16: BEEP .5,12: BEEP .5,
16: BEEP .25,17: BEEP .25,16: B
EEP .5,14: BEEP 1,19
6005 RETURN
6010 BEEP .5,16: BEEP .5,16: BEE
P .112,14: BEEP .112,12: BEEP 1
12,14: BEEP .112,11: BEEP .5,12:
BEEP .25,14: BEEP .25,16: BEEP
1,7
6015 RETURN
6020 BEEP .5,9: BEEP .25,11: BEE
P .25,14: BEEP .25,12: BEEP .112
,11: BEEP .112,9: BEEP .25,7: BE
EP .25,0: BEEP .25,5: BEEP .25,7
: BEEP .25,9: BEEP .112,11: BEEP
.112,9: BEEP 1,7
6025 RETURN
7000 PAPER 1: INK 7: BORDER 1: C
7010 FOR f#15 TO 21: PRINT INK
f#15: AT f,0:(32+16g#): NEXT f

```

[illegible]

```

7700 PLOT INK 6;134,q-3: DRAW
INK 6;-48,0: RANDOMIZE USR 6510:
0
7710 IF ATTR (a,10) <> 15 THEN
GO TO 8000
7720 PLOT INK 1;132,q-3: DRAW
INK 1;-48,0: RANDOMIZE USR 6510:
0
0 RETURN
8000 FOR f:=144 TO 151: POKE 6510
7,f;-143: PRINT INK 6; AT a,10
7, OVER 1: CHR$( f): RANDOMIZE US
SR 65100: NEXT f: PRINT AT a,10
1:"M": RANDOMIZE USR 65100: PRINT
AT a,10:"
8010 GO SUB 6000
8020 GO SUB 1990
8030 IF sc=h THEN GO SUB 6010:
LET h:=sc: PRINT AT 17,27;h:
0
8035 PRINT AT 10,0: FLASH 1: IN
K 6: PAPER 2: BRIGHT 1: PRESS
ANY KEY TO PAUSE 0 "": PAUSE
2: PAUSE 0
8040 GO TO 10
9000 PAPER 0: BORDER 0: CLS: PR
INT AT 2,8: INK 7;" A I R R
A I D "
9010 LET h:=" Guide your plane o
ver the enemy tanks and shoot
as many fueltanks(H) and tanks
as possible. You must keep an ey
e on your fuel gauge,for when
your fuel expires or you get
shot then thegame will end.
Controls:
'6' - UP
'7' - DOWN
'0' - SHOOT"
9020 PRINT AT 5,0: INK 7: FOR
f:=1 TO LEN h: PRINT h:(f): BE
E=0,0:40: NEXT f
9030 PRINT AT 19,6:"PRESS ANY K
EY TO PLAY"
9035 PAPER 0: CLS
9040 RETURN

```



```

10 GO SUB 90001: GO SUB 8000
15 BORDER 7: PAPER 7: INK 0: C
LS : FOR f=12 TO 21: PRINT PAPE
R 4: AT f,0:
      " : NEXT f
16 PRINT AT 12,0: INK 4: "UUUU
UUUUUUUUUUUUUUUUUUUUUUUUUUUUUU"
18 FOR t=1 TO 10000
19 FOR r=0 TO LEN b$
20 LET a$=(2 TO 6)+a$(1)+a$(
8 TO 12)+a$(7): LET b$=b$(2 TO 1)
+b$(1)
25 PRINT AT 11,0;b$(1 TO 32)
      " :
26 IF SCREEN$ (11,10) <> " "
THEN GO TO 50
27 BEEP : .001 200
30 PRINT AT 10,10;a$(1): AT 1
1,10:a$(7)
40 FOR f=1 TO a=1.5: NEXT f
50 IF INKEY$ ="B" THEN LET a
=a-5
55 PRINT AT 15,10: PAPER 4: "L
AF : AT 17,10:"SCORE : sc
60 IF INKEY$ ="7" THEN GO SUB
B 100
65 LET sc=sc+1

```

```

69 NEXT r
70 NEXT t
100 FOR f=1 TO (15-(a/5))/5
110 FOR g=1 TO 10: NEXT g
115 BEEP .005,.045
120 PRINT AT 9,10;"IK": AT 10,
10;"JL": LET b=b*(2 TO 10)+b*(1 TO
11: PRINT AT 11,0;b*(1 TO 32): NEXT
T f
130 LET a=10: PRINT AT 9,10;"M
10": AT 10,10;"NP": FOR f=0 TO 15
: NEXT f: GO TO SCREEN#(11,10) <>
140 THEN GO TO 120
145 PRINT AT 9,10;" "; AT 10,
10;" ": RETURN
500 GO SUB 600
505 PRINT AT 5,4;"You hit a ba
rrier.... You Scored f
";
510 PRINT AT 8,2;"PRESS ANY KE
Y TO END THIS GAME"
515 IF INKEY$ <> "" THEN GO
SUB 8000: CLS: GO TO 15
515 GO TO 510
520 PRINT AT 9,10;" "; AT 10,
10;"A "; AT 11,10: OVER 1;"B": O
VER 0: GO TO 500
525 PRINT AT 9,10: BEEP .001,f;
NEXT f: RETURN

```

```

8000 LET a$="ACEGCEBDFHFD"
8005 LET a=10
8006 LET c=0
8010 LET b$=""
                                Q
RST      RS      RST      RS      Q"
8020 RETURN
8030 DATA 56,124,124,56,18,18,12
8040 DATA 144,144,16,24,10,28,126,13,3
8050 DATA 124,124,56,16,19,252,144,80,1
8060 DATA 6,24,20,34,196,136,4,56,124,124
8070 DATA 56,16,252,211,16,16,40,40,36
8080 DATA 40,72,108,56,124,124,56,16,16,56
8090 DATA 50,16,40,24,248,132,2,3
8100 DATA 0,0,0,0,0,0,15,16,1,2,7
8110 DATA 36,32,64,32,0,112,348,148,112
8120 DATA 54,124,124,200,8,8,9,12,0,0,0
8130 DATA 0,0,12,131,64,53,30,1,0,0,0
8140 DATA 0,0,112,248,148,112,32,192,22
8150 DATA 4,24,0,128,64,32,16,12,0
9020 DATA 3,3,3,1,1,1,1,1,27,24,4
9030 DATA 4,24,8,24,40,75,123,0,0,0,0,0
9040 DATA 38,255,0,0,0,0,0,0,76,252,0,255
9050 DATA 255,255,255,255,255
9060 DATA 100,100,100,100,100 TO USR "a+"
9070 READ a: POKE f,a: NEXT f
1040 RETURN

```

HURDLER

RACE along the track and jump as many hurdles as possible. The game ends if you hit a hurdle or land in the water. Use keys 7 and 8 to play.

Hurdler was written for the 16K Spectrum by Neil Bates, aged 15, of Coventry, W Midlands.

MATHS FARM

MATHS FARM is an educational game for children aged between five and nine years. Several questions are asked and for each correct answer part of a farm scene is drawn. If the farm is completed before the questions finish a short burst of "Old MacDonald" is played.

Written for the 48K Spectrum by Stuart Wilson, aged 15, of Bridgnorth, Shropshire.

```

O> REM BASIC MATHS By
    Stuart Wilson
1 BORDER 1: PAPER 1: INK 7: C
LS
5 POKE 23561,0: POKE 23658,8

10 LET a=9600: LET x=170: LET
y=30: LET count=0: LET z=120: LET
F=INT ( RND *12): LET S=INT
( RND *12)
100 PRINT AT 0,4:"PRESS ONE OF
THE FOLLOWING "; AT 3,4;"S...SI
GNS": AT 5,4;"G...GAME"
110 LET K$=INKEY$
115 IF K$="S" THEN GO TO 1000
120 IF K$="G" THEN GO TO 2000

125 GO TO 110
1000 CLS : FOR n=170 TO 185: INK
5: PLOT n,50: DRAW 0,95: NEXT n
: FOR n=90 TO 105: PLOT 130,n: D
RAW 95,0: NEXT n
1005 PLOT 185,105: DRAW 25,25: D
RAW 0,40: DRAW -15,0: DRAW -25,-
25: DRAW 15,0: DRAW 25,25: PLOT
225,105: DRAW 25,25: DRAW -40,0:
PLOT 225,90: DRAW 25,25: DRAW 0
,15
1010 PLOT 130,105: DRAW 25,25: D
RAW 20,0: PLOT 185,50: DRAW 25,
25: DRAW 0,15
1015 INK 7
1020 LET a$="THIS SIGN IS USED W
HEN YOU ADD NUMBERS TOGETHER HE
RE IS AN EXAMPLE": FOR N=1 TO LE
N a$+33: PRINT AT 18,0:("
"+a$+"
") (N TO N+31): PAUSE 4: NEXT N

1025 PRINT AT 4,1:F;" + ";S;" =
";F+S
1030 LET count=0: LET z=120: FOR
m=6 TO 16 STEP 2:
1033 LET F=INT ( RND *12): LET
S=INT ( RND *12)
1035 INPUT "WHAT IS ";(F);" + ";
(S);" ";c
1040 PRINT AT m,1:(F);" + ";(S)
;" = ";c
1045 IF c=f+s THEN INK 2: PLOT
110,z: DRAW 0,-3: DRAW 5,10: INK
7: LET count=count+1
1050 IF c <> f+s THEN INK 2: BE
EP .5,-2: BEEP .5,-10: PLOT 110,
z: DRAW 5,8: PLOT 115,z: DRAW -5
,8: INK 7
1055 IF count=6 THEN GO SUB 900
0
1060 LET z=z-16: NEXT m
1065 PRINT AT 21,0:"ANOTHER GO
(Y/N)": LET K$=INKEY$
1070 IF K$="Y" THEN GO SUB 9100
: GO TO 1030
1075 IF K$="N" THEN GO TO 1100
1080 GO TO 1065
1100 INK 5: CLS : FOR n=90 TO 10

```




```
5: PLOT 130,n: DRAW 95,0: NEXT n
: PLOT 225,105: DRAW 25,25: DRAW
-95,0: DRAW -25,-25: PLOT 225,9
0: DRAW 25,25: DRAW 0,15: INK 7
```

```
1110 LET a$="THIS SIGN IS USED W
HEN YOU TAKE AWAY NUMBERS HERE I
S AN EXAMPLE: FOR N=1 TO LEN A
$+33: PRINT AT 18,0;"
```

```
"A$"
```

```
N TO N+31): PAUSE 4: NEXT N
1115 PRINT AT 4,1;"5 - 3 = 2"
```

```
1120 LET count=0: LET z=120: FOR
m=6 TO 16 STEP 2:
```

```
1125 LET F=INT (RND *12): LET S
=INT (RND *12)
```

```
1127 IF S=F THEN LET S=S*F
1130 INPUT "WHAT IS ";(F); " - ";
```

```
1135 IF "c" THEN LET S="";(S);
" = ";
```

```
1145 IF c=f-s THEN INK 2: PLOT
110,z: DRAW 0,-3: DRAW 5,10: INK
7: LET count=count+1
```

```
1150 IF c < f-s THEN INK 2: BE
EP .5,-2: BEEP .5,-10: PLOT 110,
z: DRAW 5,8: PLOT 115,z: DRAW -5
```

```
,8: INK 7
1155 IF count=6 THEN GO SUB 900
0
```

```
1160 LET z=z-16: NEXT m
1165 PRINT AT 21,0;"ANOTHER GO
(Y/N) ": LET K$=INKEY$
```

```
1170 IF K$="Y" THEN GO SUB 9100
: GO TO 1120
```

```
1175 IF K$="N" THEN CLS : GO SU
B 1200
```

```
1180 GO TO 1165
1200 FOR n=130 TO 145: PLOT n,50
: DRAW 95,95: NEXT n: FOR n=240
```

```
TO 225 STEP -1: PLOT n,50: DRAW
-95,95: NEXT n
```

```
1220 LET a$="THIS SIGN IS USED W
HEN YOU MULTIPLY NUMBERS TOGETHE
R HERE IS AN EXAMPLE: FOR N=1 T
O LEN A$+33: PRINT AT 18,0;"
```

```
"A$"
```

```
"(N TO N+31): PAUSE 4: NEXT
N
1235 PRINT AT 4,1;"5 * 2 = 10"
```

```
1240 LET count=0: LET z=120: FOR
m=6 TO 16 STEP 2:
```

```
1245 LET F=INT (RND *5)+1: LET
S=INT (RND *5)+1
```

```
1255 INPUT "WHAT IS ";(F); " x ";
(S); " = ";
```

```
1260 IF c=f*s THEN INK 2: PLOT
110,z: DRAW 0,-3: DRAW 5,10: INK
7: LET count=count+1
```

```
1265 IF c < f*s THEN INK 2: BE
EP .5,-2: BEEP .5,-10: PLOT 110,
z: DRAW 5,8: PLOT 115,z: DRAW -5
```

```
,8: INK 7
1275 IF count=6 THEN GO SUB 900
0
```

```
1280 LET z=z-16: NEXT m
1285 PRINT AT 21,0;"ANOTHER GO
(Y/N) ": LET K$=INKEY$
```

```
1290 IF K$="Y" THEN GO SUB 9100
: GO TO 1240
```

```
1295 IF K$="N" THEN CLS : GO TO
10
```

```
1300 GO TO 1265
1999 STOP
```

```
2000 CLS : INK 7: PRINT AT 10,2
:"SEE HOW MANY QUESTIONS YOU CAN
GET RIGHT?"; ANSWER IF YOU GET 0
NE RIGHT!"; AT 14,6: WATCH THE F
ARM BUILD UP"
```

```
2010 LET count=0: LET z=120: FOR
m=1 TO 6
```

```
2015 LET F=INT (RND *12): LET S
=INT (RND *12)
```

```
2020 INPUT "WHAT IS ";(F); " + ";
(S); " = ";
```

```
2030 IF C=F+S THEN GO SUB A: LE
T A=A+20
2035 IF C < F+S THEN BEEP .5,-
```

```
2: BEEP .5,-10
2040 NEXT m
2050 GO SUB 9400: PAUSE 0: GO TO
1
```

```
9000 RESTORE 9010: FOR N=1 TO 8:
```

```
READ A,B: BEEP A,B: NEXT N
9010 DATA .125,3,.125,5,.125,7,-
```

```
75,7,.125,8,.125,8,.125,7,-.25,5
9020 PLOT 150,45: DRAW 0,-8: DRA
W 3,-3: DRAW 5,-3: DRAW 0,8: PLOT
```

```
160,41
9025 DRAW 4,0: PLOT 160,37: DRAW
7,0: PLOT 160,45: DRAW 7,0: PLO
T 160,45: DRAW 0,-8: PLOT 170,45
```

```
: DRAW 0,-8: DRAW 7,0: PLOT 180,
45: DRAW 0,-8: DRAW 7,0
9030 PLOT 195,45: DRAW 0,-8: DRA
W 6,0: DRAW 1,2: DRAW 0,4: DRAW
```

```
-1,2: DRAW -6,0: PLOT 205,45: DR
AW 0,-4: DRAW 2,-2: DRAW 4,0: DR
AW 2,2: DRAW 0,4: DRAW -2,2: DRA
```

```
W -4,0: DRAW -2,-2: PLOT 215,37:
DRAW 0,8: DRAW 8,-8: DRAW 0,8
9040 PLOT 226,45: DRAW 7,0: PLOT
226,41: DRAW 4,0: PLOT 226,37:
```

```
DRAW 7,0: PLOT 226,45: DRAW 0,-8
```

```
9050 RETURN
9100 FOR n=16 TO 18: PRINT AT n
,17;"
```

```
"NEXT n:
FOR n=0 TO 21: PRINT AT n,0;"
```

```
"NEXT n: RETURN
9400 FOR M=1 TO 12: RESTORE 9405:
```

```
FOR n=1 TO 12: READ A,B: BEEP A
,B: NEXT n: NEXT M
9405 DATA .5,7,.5,7,.5,7,.5,2,.5,
```

```
4,.5,4,.5,2,.5,11,.5,11,.5,9,.5
,9,1,7
```

```
9410 RESTORE 9415: FOR N=1 TO 10
: READ A,B: BEEP A,B: NEXT N
9415 DATA .5,7,.5,7,.7,7,.25,2,
```

```
.5,7,.5,7,1,7,.25,7,.25,7,4,5,7
9420 RESTORE 9425: FOR N=1 TO 21
```

```
: READ A,B: BEEP A,B: NEXT N
9425 DATA .25,7,.25,7,.5,7,.25,7,
```

```
.25,7,.25,7,.25,7,.5,7,.5,7,5,
7,.5,7,.5,7,.5,2,.5,4,.5,4,.5,2,
```

```
.5,11,.5,11,.5,9,.5,9,1,7
9430 RETURN
```

```
9600 CLS : PLOT 100,30: DRAW 100
,0: DRAW 0,90: PLOT 100,30: DRAW
-55,15: DRAW 0,90: DRAW 35,35:
```

```
PLOT 100,30: DRAW 0,90
9610 FOR n=80 TO 180: INK 6: PLO
T n,170: DRAW 20,-30: RND *25: N
```

```
EXT n: INK 7
9615 RETURN
```

```
9620 BRIGHT 1: INK 3: PLOT 60,30
: DRAW 10,30: DRAW 5,10,1: PLOT
70,60: DRAW -2,10,-1: PLOT 70,60
```

```
: DRAW 1,10: FOR n=71 TO 73: PLO
T n,35: DRAW 14,25: NEXT n: DRA
W n=60 TO 62: PLOT 79,n: DRAW 12,-
```

```
3: NEXT n: PLOT 63,25: DRAW 10,-
2: DRAW 4,10: DRAW -10,2: DRAW -
```

```
4,-10: RETURN
9640 INK 7: PLOT 190,30: DRAW 1
NVERSE 1:10,0: DRAW INVERSE 1:0
```

```
:10: INK 7: PLOT 200,25: DRAW -7
,2,1: DRAW -5,5,-1: DRAW 7,7,-1:
```

```
DRAW 3,4: DRAW 3,-4: DRAW 14,-1
0,1: DRAW 12,0: DRAW 9,-5,-2: DR
AW -2,-5,1: DRAW 2,-5,-1
```

```
9645 DRAW 2,-10,-1: DRAW -2,-2:
DRAW -2,-1: DRAW 0,3: DRAW 0,-1:
DRAW -3,-2: DRAW 0,3: DRAW 1,2:
```

```
,1: DRAW -3,-7,-1: DRAW -2,-1: D
RAW 0,3: DRAW 0,-2: DRAW -3,-2:
```

```
DRAW 3,3: DRAW 2,4,1
9650 DRAW -3,3,-1: DRAW -13,0,-1
```

```
:1: DRAW 2,-10,1: DRAW -2,-2: DRA
W -2,-1: DRAW 0,2: DRAW 0,-2: DRA
W -3,-2: DRAW 0,3: DRAW 1,5,1: D
```

```
RAW 0,-3: DRAW -2,-2: DRAW -2,-1:
DRAW 0,2: DRAW 0,-2: DRAW -3,-3:
2: DRAW 0,3: DRAW 1,5,1
```

```
9655 DRAW 2,17,1: PLOT 190,33: D
RAW 1,0: PLOT 195,36: DRAW 1,1,1
```

```
9658 RETURN
9660 PLOT 25,30: DRAW 1,7,1: DRA
W -2,5,-2: DRAW -3,3: DRAW 1,2,-
```



```
1: DRAW 3,-3: DRAW 3,-5,-2: DRAW
1,-15,-1: DRAW -5,-7,-1: DRAW -20,-1,-2: DRAW 15,1,1: DRAW -15,2,-1
```

```
9665 DRAW 10,4,1: DRAW 10,4,-1:
PLOT 23,14: DRAW 0,-7: DRAW 4,1:
```

```
DRAW -4,1: PLOT 20,12: DRAW 0,-5: DRAW -4,1: DRAW 4,1
```

```
9670 RETURN
9680 PLOT 120,30: DRAW 0,50: DRA
W 45,7,-3: DRAW 0,4,-55: PLOT 143,
```

```
30: DRAW 0,75: CIRCLE 135,60,2:
CIRCLE 150,60,2: RETURN
```

```
9700 PLOT INVERSE 1:100,30: DRA
W INVERSE 1:30,0: PLOT INVERSE
1:120,30: DRAW INVERSE 1:10,60:
```

```
INX 7: PLOT 110,70: DRAW 8,-3,1:
```

```
: DRAW 8,3,1: DRAW 0,9: DRAW 5,2:
```

```
: DRAW -7,2: DRAW -1,3: DRAW 10,-1,1: DRAW -1,-5: DRAW -7,-2: D
0,-1: DRAW 0,-9
```

```
RAW 5,-2: DRAW 15,0,1: DRAW -15,
9705 FOR n=69 TO 71: INK 2: PLOT
110,n: DRAW 8,-3,1: DRAW 8,3,1:
```

```
NEXT n: INK 7
9710 PLOT 117,63: DRAW -12,-3,1:
```

```
DRAW -2,-30,1: DRAW 7,2,1: DRA
W -2,20,-1: DRAW 1,-20: DRAW -2,-
```

```
20: DRAW 10,0: DRAW 0,-12: DRA
W -7,0: DRAW -2,5,-3: DRAW 3,0: DR
AW 0,7: DRAW 12,0
```

```
9712 DRAW 4,-12: DRAW 7,0: DRA
W 2,5,3: DRAW -3,0: DRAW 0,7: DRA
W -5,0: DRAW 10,0: DRAW -2,20: DRA
W -1,20
```

```
9715 DRAW -5,-3: DRAW 5,3: DRA
W -7,-8: DRAW 7,8: DRAW 10,-5: DRA
W 5,5,1: DRAW 2,3,2: DRAW -5,5,2
```

```
: DRAW -2,-60: DRAW 2,60: DRA
W -2,-5: DRAW -5,2: DRAW -15,5,1
```

```
9716 INK 4: CIRCLE 115,74,1: CIR
CLE 121,74,1: INK 7
```

```
9718 RETURN
```

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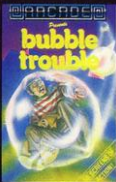
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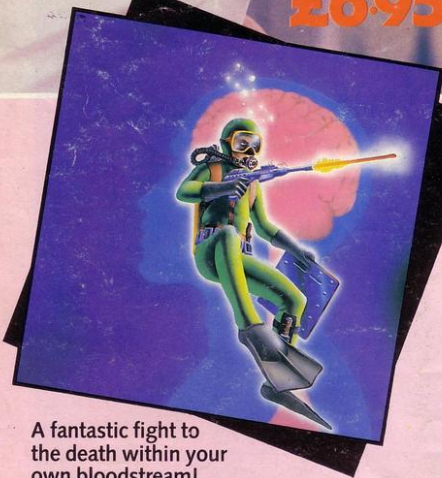
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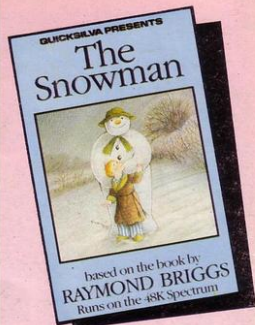
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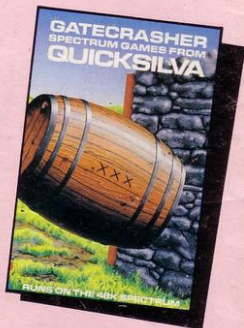
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