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30 PROGRAMS FOR THE SPECTRUM AND ZX-81

Sinclair Programs

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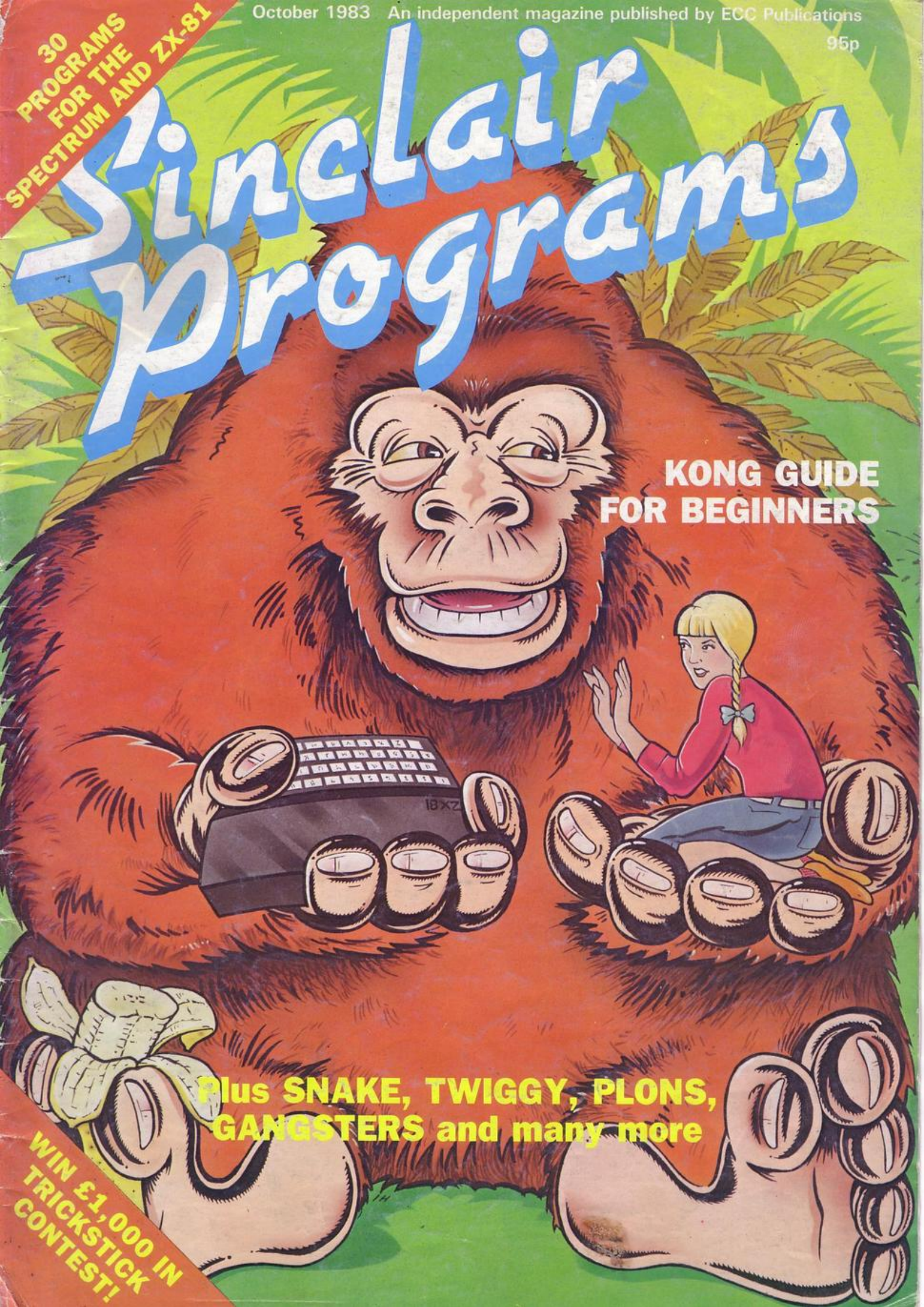

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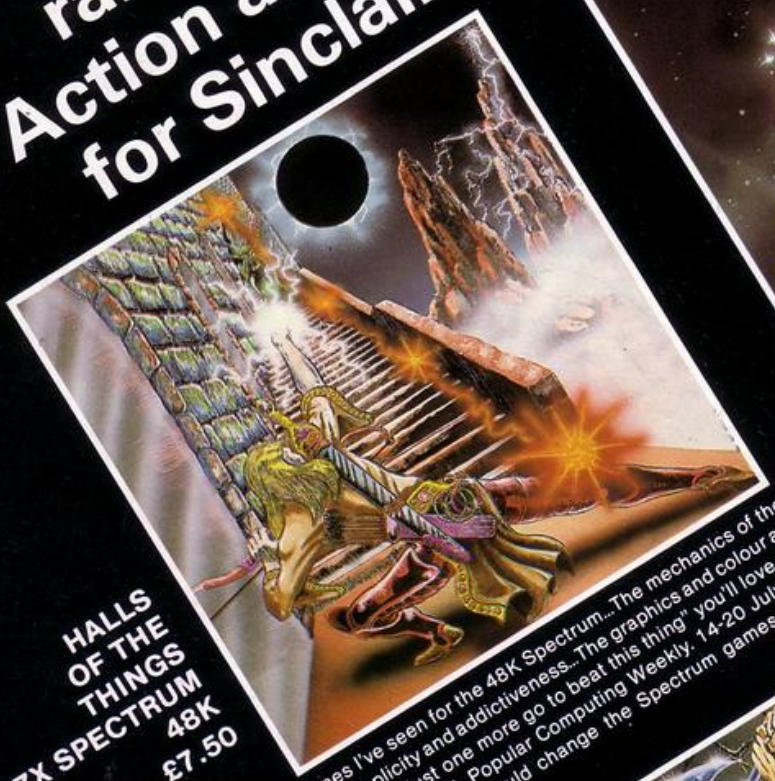

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To help with entering graphics characters we have adapted a system of writing the characters for the ZX-81. We indicate inverse characters by the letter i and graphics by g, so that an inverse letter W is shown as iW and the graphics character on key 6 is denoted by g6.
Spaces are shown by sp and inverse spaces are isp. If some occur together, for instance a row of six spaces, they are shown by 6★sp and where there is a combination of characters each one is divided by a colon, thus sp:isp:6★g6 means a space followed by an inverse space and then six characters on the 6 key.
Where whole words are written in inverse letters they appear in the listings as lower-case letters.
In the Spectrum listings, letters to be entered in graphics mode are underlined, while other graphics instructions are underlined and take the form shown above, with the addition that inverse graphics characters are represented by the letters "ig".

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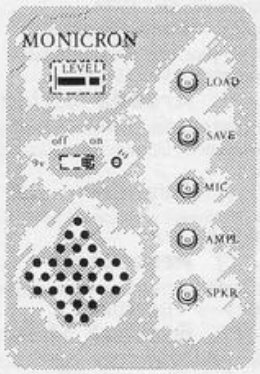

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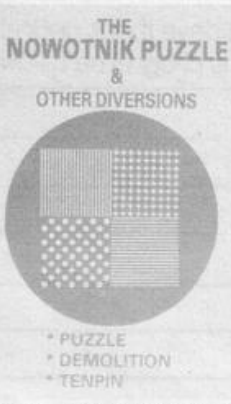

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LETTERS

I HAVE recently bought your August edition and when my mum brought it home I snatched it from her bag and quickly set up my Spectrum and switched on. As my eyes whizzed through the contents they fixed on one particular program, Specvaders. Without wasting a second I pressed RUN and ENTERed it. Would it work? Five minutes later I had my verdict. What a great game; I must write to *Sinclair Programs* and tell them my views. Congratulations to Tim Shaw, author of Specvaders.

Ian Simkins,
Stockport,
Greater Manchester.

Cricket

IN the July issue of *Sinclair Programs* the program Cricket has a serious disadvantage. Key 8 can only be useful on an average of one in five balls whereas key 5 can be useful on average for four in five balls, so it is policy to keep the finger down on 5. What is needed is a signal to tell you when key 8 is needed. Then when you play you have to wait for the last possible moment before missing a key so as not to miss the signal. That brings an element of skill into the game.

To equate the duration of the signal to the choice of skill level it is necessary to change all the 'ds' in lines 12 to 17 because another variable 'd' appears later in the program.

I suggest the following alterations:—

ds in lines 12 to 17 changed to ls

Line 135 IF n=10 and y=16 THEN PRINT AT 13, 17; "*": PAUSE 7*(4-6)+10: PRINT AT 13, 17; " "

A Ferguson,
Middlesbrough.

Worm game

IN *Sinclair Programs* March/April, 1983 edition The Worm Game says that the best score was 150,490. I have scored 151,105, which would be a new record and I completed stage 7 successfully.

Stephen Harris,
Chilwell,
Nottingham.

Labyrinth

I AM WRITING to inform you of a few errors in the program Labyrinth listed in the August edition of *Sinclair Programs*. On running the program it is seen that when looking west or south a mirror image of the correct view of the image is seen — i.e., the left-hand side of the image appears on the right and vice versa. That is corrected by altering the following lines from:

560 IF a(x+d,y-1)= THEN GO SUB (i*10)+2110: GO TO 580
580 IF a(x+d,y+1)=1 THEN GO SUB (i*10)+2110: GO TO 600
830 IF a(x-1,y+d)=1 THEN GO SUB (i*10)+2060: GO TO 850
850 IF a (x+1,y+d)=1 THEN GO SUB (i*10)+2110: GO TO 870

560 IF a(x+d,y+d1)=1 THEN GO SUB (i*10)+2060: GO TO 580
580 IF a(x+d,y-d1)=1 THEN GO SUB (i*10)+2110: GO TO 600
830 IF a(x-d1,y+d)=1 THEN GO SUB (i*10)+2060: GO TO 850
850 IF a(x+d1,y+d)=1 THEN GO SUB (i*10)+2110: GO TO 870

I should also like to know if you pay anything in addition to the £10 paid for the copyright of programs published in the magazine.

D C Hill,
Stourbridge,
W. Midlands.

● *Thank you for your improvements to Labyrinth. On the question of payment the only extra amount we pay is the £20 for Program of the Month.*

ERRORS AND MISHAPS

THE END of line 700 was omitted from **Invaders**—August, page 8. It should have read:

700 PRINT AT 4,0; "32*sp)"

Labyrinth—August, page 30—was labelled wrongly as a 16K Spectrum program. It uses over 12K and is only suitable for the 48K machine. On the 48K machine the "£" signs in lines 1100, 1110 and 4050 should be altered to the hash sign "#".

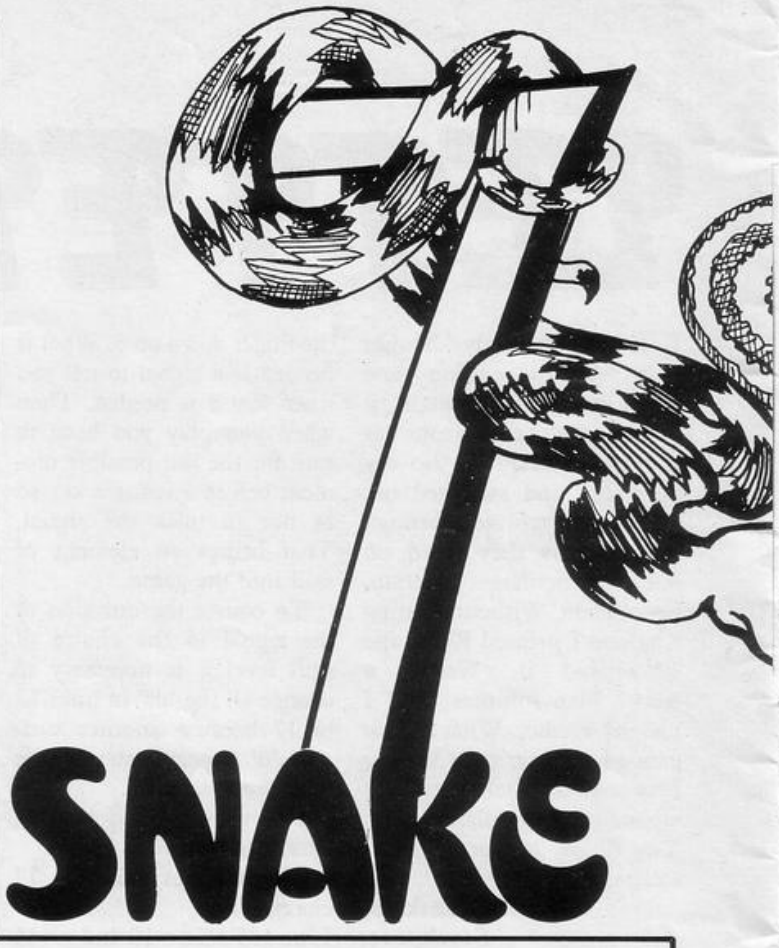
Poker-August, page 35— was difficult to read in places.

Lines 3000 to 3045 read:

3000 DIM n(13): DIM e(4): DIM r(9): LET r(1)=-1: LET s=0
3002 FOR i=1 TO 5: LET n(v(i))=n(v(i))+1: LET e(t(i))=e(t(i))+1: NEXT i
3005 FOR i=1 TO 13
3010 IF n(i)=2 THEN LET r(1)=r(1)+1
3020 IF n(i)=3 THEN LET r(2)=1
3025 IF n(i)=4 THEN LET r(6)=1
3030 NEXT i
3040 FOR i=1 TO 13
3045 IF n(i)< >1 THEN GOTO 3060

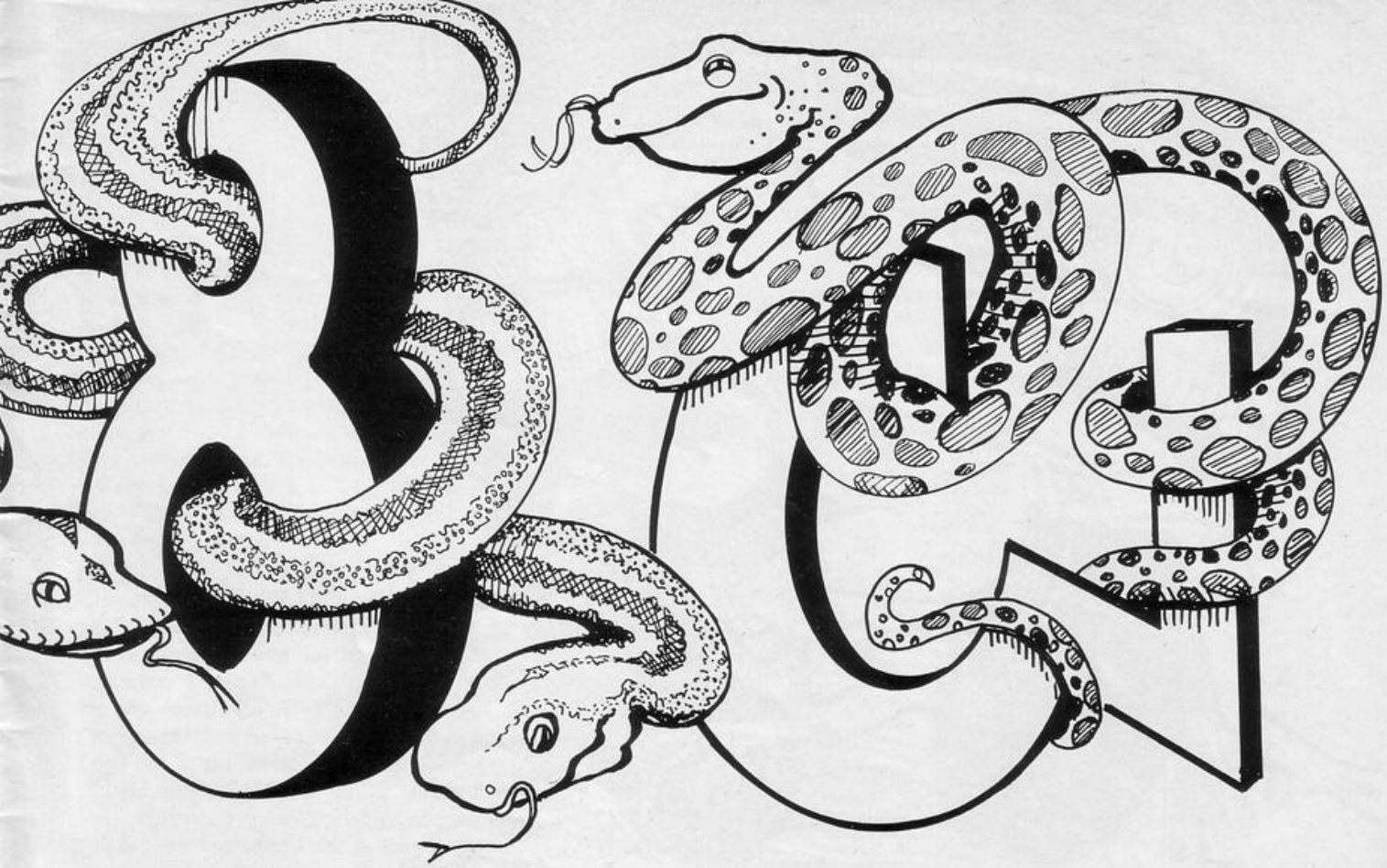
Lines 1704 to 2502 read

1704 NEXT m: GOSUB 1050
1705 NEXT i: RETURN
2000 DIM j(5): LET 1=1
2001 RETURN
2500 FOR i=1 TO 5: IF j(i)=0 THEN GOTO 2502
2501 LET f=7: LET p=3*i-2: LET x=i-1: GOSUB 500: GOSUB 559
2502 NEXT i




```
  10 GO SUB 9000: GO TO 1000
  20 DEF FN g()=INT ((PEEK 23672
+256*PEEK 23673+65536*PEEK 23674
)/50)
  30 LET ss=0: LET c$="Nobody"
  40 PAPER 6: INK 1: BORDER 1: C
LS
  50 LET t=0: LET s=0: LET a=10:
 LET b=10: LET f$="": LET z=1: L
ET m=5: LET a$="8": LET b$=a$: D
IM x(35): DIM y(35): GO TO 170
  60 LET f=INT (RND*9)+1: LET d=
INT (RND*16)+3: LET e=INT (RND*2
7)+2
  70 IF SCREEN$ (d,e)<>" " THEN
GO TO 60
  80 IF SCREEN$ (d,e+2)<>" " THE
N GO TO 60
  90 IF SCREEN$ (d+1,e+1)<>" " T
HEN GO TO 60
 100 IF SCREEN$ (d+2,e)<>" " THE
N GO TO 60

 110 IF SCREEN$ (d+2,e+2)<>" " T
HEN GO TO 60
 120 PRINT AT d,e; INK RND*4;"#
#";AT d+1,e; INK RND*4;"#";f;"#"
;AT d+2,e; INK RND*4;"##": RETU
RN
 160 PRINT AT d,e;"   ";AT d+1,e
;"   ";AT d+2,e;"   ": RETURN
 170 PRINT AT 0,13; FLASH 1;"SNA
KE"; FLASH 0
 180 PRINT AT 2,0;"aaaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaa"
 190 FOR n=3 TO 20: PRINT AT n,0
; INK RND*3;"a";AT n,31;"a": NEX
T n
 200 PRINT AT 21,0;"aaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaa"
 210 PRINT AT 1,1; INK 0;"SCORE:
";AT 1,11; INK 1;"TIME:";AT 1,20
; INK 2;ss;" BY ";c$;
 220 POKE 23674,255: POKE 23673,
255: POKE 23672,255: GO SUB 60:
GO TO 280
 240 LET z=z+1: IF z=m THEN PRIN
T AT x(z),y(z);" ": LET z=1: LET
 m=m+(1 AND m<35)
 250 LET t=FN g(): PRINT AT 1,16
;t: IF t>=180 THEN GO TO 600
 260 BEEP .001,40
 270 PRINT AT a,b; INK RND*4;"f"
: LET b$=a$: PRINT AT x(z),y(z);
" "
 280 IF INKEY$="" THEN LET b$=a$
 290 LET a$=INKEY$: IF a$<>"8" A
ND a$<>"7" AND a$<>"6" AND a$<>"
5" THEN LET a$=b$
 300 IF a$="5" THEN LET b=b-1: L
ET c=2
 310 IF a$="6" THEN LET a=a+1: L
ET c=3
 320 IF a$="7" THEN LET a=a-1: L
ET c=1
 330 IF a$="8" THEN LET b=b+1: L
ET c=0
 340 LET x(z)=a: LET y(z)=b
 350 IF SCREEN$ (a,b)="#" THEN G
O TO 400
 360 IF SCREEN$ (a,b)<>" " THEN
GO TO 700
 370 IF RND>.98 THEN GO SUB 160:
 GO SUB 60
 380 PRINT AT a,b;CHR$ (145+c)
 390 GO TO 240
 410 PRINT AT a,b;CHR$ (145+c)
 420 LET s=s-1: INK 1: FOR n=f T
O 0 STEP -1: LET s=s+1: BEEP .00
8,n+30: PRINT AT 1,7;s: PRINT AT
 d+1,e+1;n: NEXT n
 440 GO SUB 160: PRINT AT a,b;CH
R$ (145+c): FOR n=0 TO 20: NEXT
n: GO SUB 60: GO TO 240
 600 FOR n=60 TO 30 STEP -1: BEE
P .1,n: NEXT n
 605 PRINT AT 2,0; FLASH 1; INK
2;"GAME OVER"
 610 IF s>ss THEN PRINT AT 3,0;
FLASH 1;"NEW HIGH SCORE": LET ss
=s: GO TO 630
 620 GO TO 650
 630 INPUT "Input your name";c$:
 IF LEN c$>7 THEN GO TO 630
 650 INPUT "ANOTHER GO ?";d$: IF
 d$="Y" OR d$="y" THEN GO TO 40
 660 STOP
```



VARIOUS NUMBERS appear on the screen. Running over a number will add it to your score. Your brightly-coloured snake is controlled with the usual cursor keys. Do not run over your tail or hit the edges of the playing area.

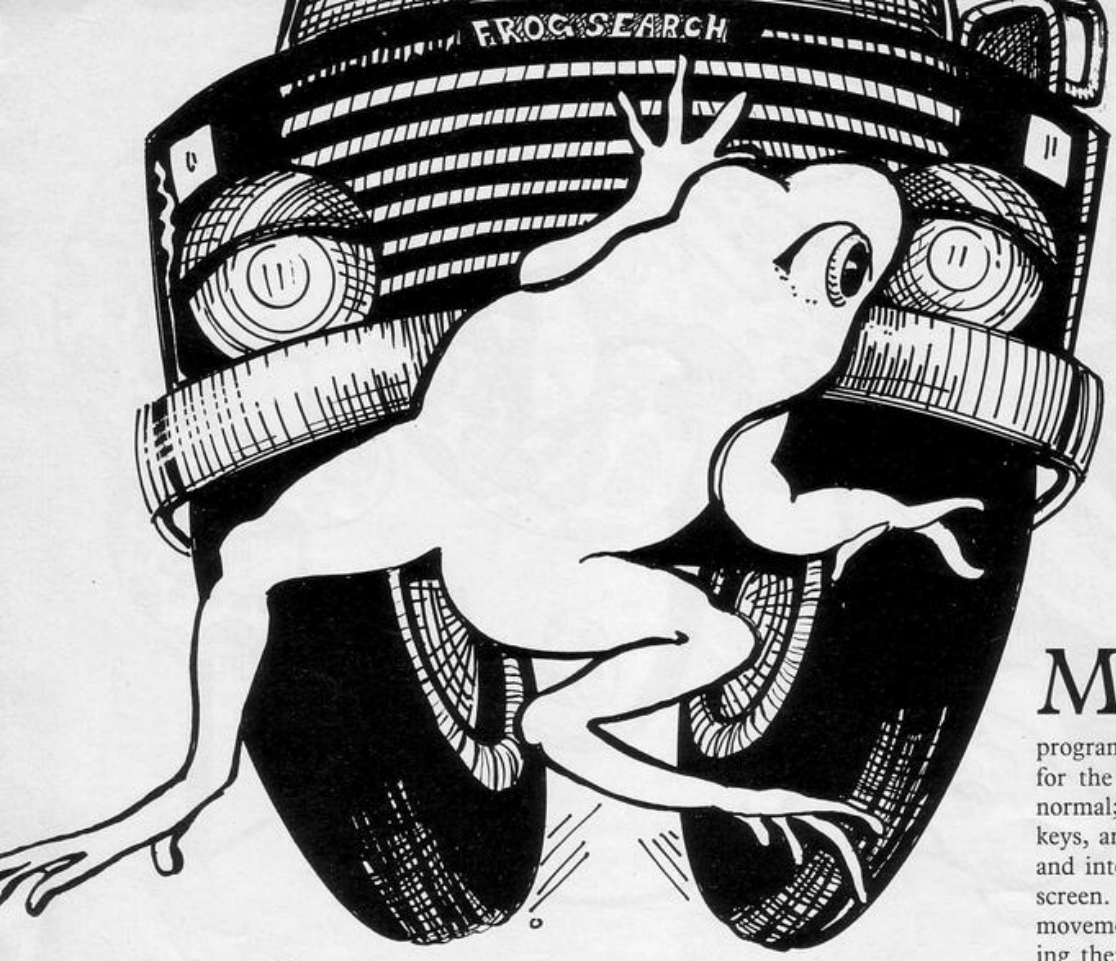
As the game progresses your snake becomes longer, making your path more circuitous.

Snake was written for the 16K Spectrum by John Williamson of Moreton Morrell, Warwickshire.

```
 700 PRINT AT a,b;CHR$ (145+c)
 710 FOR n=30 TO 1 STEP -1: BEEP
 .1,n: NEXT n: GO TO 650
1000 BRIGHT 1: PAPER 6: INK 2: B
ORDER 6: CLS

1020 PRINT AT 2,12; BRIGHT 1; FL
ASH 1;"SNAKE";AT 3,12;"▬▬▬▬"
1040 PRINT AT 5,8;"INSTRUCTIONS"
;AT 5,8; OVER 1;"____________"
1060 PRINT ''''" In this game ca
lled ~SNAKE~      you have to hit
e the numbered    boxes to increa
se your score     by the amount o
f points          displayed in th
e boxes."
1070 PRINT ''" The Snake which y
ou control        with the cursor k
eys 5,6,7,8       will slowly grow
longer and        longer."
1090 PRINT £0;"Press a key ": PA
USE 0:
1100 LET e=26: LET d=7: LET f=9:
 GO SUB 70

1110 LET x$="                    1
fffffffb": FOR n=24 TO 0 STEP -1
: BEEP .001,40: PRINT AT 8,0;x$(
n+1 TO 27): PAUSE 4: NEXT n
1130 FOR n=f TO 0 STEP -1: BEEP
.008,n+30: PRINT AT d+1,e+1;n: N
EXT n
1140 PAUSE 100
1150 FOR n=7 TO 21: PRINT AT n,0
;"
  ": NEXT n
1160 PRINT AT 7,0;" There is a t
ime limit in this   game, 3 minu
tes displayed on    the screen i
n seconds, within   this time yo
u have to get as    larger score
 as possible, a     high score w
ith be recorded."
1170 PRINT ''" If you bite your
self or the    fence then the ga
me will end."
1230 PAUSE 0: GO TO 30
8999 STOP
9000 RESTORE : FOR n=144 TO 149:
 FOR f=0 TO 7: READ a: POKE USR
CHR$ (n)+f,a: NEXT f: NEXT n: RE
TURN
9150 DATA 8,16,8,186,93,16,8,16,
192,156,130,129,129,130,156,192,
24,36,66,66,66,0,129,255,3,57,65
,129,129,65,57,3,255,129,0,66,66
,66,36,24,24,36,90,189,189,90,36
,24
```



FROGGER

M BROCKLESS of Rushall, Wiltshire responded to our request for more machine code programs with this **Frogger** program for the 16K ZX-81. The rules are as normal; move your frog with the cursor keys, around the lorries, on to the logs and into a frog home at the top of the screen. Machine code controls the movement of the lorries and logs, making them substantially faster than in a Basic program.

Line 1 should contain 79 zeros and line 2 should contain 29. Start the program by entering RUN 2000 to transfer the machine code from lines 2000 onwards into lines one and two.

```
D   1 REM 00000000000000000000000
0000000000000000000000000000000000
00000000000000000000000000
   2 REM 0000000000000000000000000
000000
   3 LET F=3
   4 GOSUB 500
  40 LET S=0
  60 LET FH=0
  70 LET L=1
  80 LET A=18
  85 LET B=15
  90 PRINT AT A,B;
  91 LET X$=CHR$ USR 16599
  95 LET C=A
  97 LET D=B
 100 PRINT AT A,B;"*"
 110 LET B=B-(INKEY$="5")+(INKEY
$="8")+(A=2)+2*((A=6)-(A=4))
 120 LET A=A-2*((INKEY$="7")-(IN
KEY$="6")+(A=20))
 140 IF B<0 OR B>31 THEN GOTO 99
0
 146 PRINT AT C,D;X$;AT A,B;
 147 LET P=USR 16536+USR 16599
 149 IF A=18 OR A=20 THEN GOTO 9
0
 150 GOSUB 20*A+170
 165 GOTO 90
 170 IF P<>CODE "(i*)" THEN GOTO
 999
 180 GOTO 600
 290 IF (P<>CODE "(i<)") AND (P<
>CODE "(i>)") THEN GOTO 999
 300 RETURN
 330 RETURN
 490 IF P=0 THEN RETURN
 499 GOTO 999
 500 LET C$="(32*9h)"
 501 DIM B$(32)
 502 POKE 16418,0
 505 LET L$="(5*isP:i*:4*isP:i*:
4*isP:i*:4*isP:i*:4*isP:i*:6*isP
)"
 510 IF F=3 THEN PRINT AT 0,0;L$
 520 PRINT AT 1,0;C$;"(3*9h:4*i>
:3*9h:5*i>:3*9h:4*i>:2*9h:3*i>:5
*9h)";C$;"(2*9h:3*i<:4*9h:4*i<:6
*9h:4*i<:3*9h:5*i<:9h)";C$;"(9h:
3*i>:5*9h:5*i>:5*9h:7*i>:6*9h)"
 530 PRINT C$;"iiiiiiiiiiiiiiiii
iiiiiiiiiiiiii";B$
 540 PRINT "  (3*isP:96)
 (2*isP:96)     (3*isP:96)     ";
B$;" (9d:2*9a)  (9d:2*9a)     (9
d:2*9a)     (9d:2*9a)      ";B$;
"  (96:2*isP)   (96:2*isP)
 (96:2*isP)              ";B$
 550 PRINT "   (2*9a:9d)      (3
*9a:9d)        (2*9a:9d)      ";B
$;"(32*i+)"
 560 IF F=3 THEN PRINT C$;"(3*9h
)frogs(6*9h)score(3*9h)level(5*9
h)";C$;"(5*9h)3(10*9h)0(7*9h)1(7
*9h)"
 570 PRINT C$
 575 SLOW
 580 RETURN
 600 REM a frog home
 610 LET FH=FH+1
 620 PRINT AT A,B;"*"
 625 LET S=S+10
 630 PRINT AT 22,16;S
 640 IF FH<>5 THEN GOTO 80
 642 FOR T=1 TO 64
 644 IF NOT USR 16536 THEN NEXT
T
 647 PRINT AT 0,0;L$
 650 LET L=L+1
 660 PRINT AT 22,24;L
 670 LET FH=0
 690 GOTO 80
 990 IF B>31 THEN LET B=31
 995 IF A<0 THEN LET A=0
1000 IF INKEY$<>"" THEN GOTO 100
0
1001 PRINT AT A,B;"(ix)";AT A,B;
"(i+)"
1010 IF INKEY$="" THEN GOTO 1001
1015 IF NOT A THEN PRINT AT A,B;
"(isP)"
1020 LET F=F-1
1021 FAST
1025 GOSUB 500
1030 PRINT AT 22,5;F;AT 22,16;S;
AT 22,24;L
1040 IF F THEN GOTO 80
1050 PRINT AT 23,12;"GAME(9h)OVE
R"
1060 IF INKEY$="" THEN GOTO 1060
1070 RUN
2000 FAST
2001 LET A$="2A0C4019237EF5061F2
37E2B772310F9F1770D20EBC91163000
E01CDDE40118400 0E02CD824011E7000
E02CDDE40116B010E02CDDE40118C010
E01CD824011CE010E02CD82401131020
E01CDDE40C9"
2005 FOR A=16514 TO 16592
2010 GOSUB 2100
2015 NEXT A
2016 LET A$="2A0E404E0600C92A0C4
0192B7EF5061F2B7E23772B10F9F1770
D20EBC9"
2017 FOR A=16599 TO 16627
2019 GOSUB 2100
2030 NEXT A
2035 PRINT "MACHINE CODE FINISHE
D."
2037 SLOW
2040 STOP
2100 POKE A,16*CODE A$+CODE A$(2
)-476
2105 LET A$=A$(3 TO )
2110 RETURN
```

OVERLOAD

```
  1 LET sc=0: LET hi=0: GO SUB
1000: CLS
  2 IF sc>hi THEN LET hi=sc
  5 LET d=0: LET pd=0: LET l$="
ccc": LET l=3: LET xx=9: LET yy=
9: LET sc=0
  6 PRINT AT 11,23;" ATOMIC ";A
T 13,23;"OVERLOAD": PLOT 182,89:
 DRAW 67,0: DRAW 0,-26: DRAW -67
,0: DRAW 0,26
  20 RANDOMIZE
  30 PLOT 0,0: DRAW 175,0: DRAW
0,175: DRAW -175,0: DRAW 0,-175
  40 FOR a=1 TO 8: PRINT AT a,1;
 INK 5;"aaaaaaaaaaaaaaaaaaaa": N
EXT a
  50 FOR a=9 TO 12: PRINT AT a,1
; INK 5;"aaaaaaaa    aaaaaaaa":
NEXT a
  60 FOR a=13 TO 20: PRINT AT a,
1; INK 5;"aaaaaaaaaaaaaaaaaaaa":
 NEXT a
  70 LET points=1000: LET x=10:
LET y=10: LET xi=INT (RND*3)-1:
LET yi=INT (RND*3)-1
  80 PRINT AT y,x;" ": LET ox=xx
: LET oy=yy
  85 PRINT AT 1,22;"PTS:";points
;" ";AT 3,22;"SCR:";sc;" ";AT 5,
22;"LIVES:";l$( TO l);" ";AT 7,2
2;"HI:";hi: IF d=1 THEN PRINT AT
 9,23; FLASH 1; INK 2; PAPER 6;"
RED ALERT"
  90 LET x=x+xi: LET y=y+yi
  91 LET xx=xx+(IN 65278=251)-(I
N 65278=253): LET yy=yy+(IN 4915
0=253)-(IN 57342=254)
  93 IF xx<1 THEN LET xx=1
```

A NEW ATOMIC power generator being tested has suddenly gone critical and started to **Overload.** The only way to stop it exploding is to catch the radioactive isotopes in a lead container. If you touch the highly-radioactive lining of the reactor your lead container will melt and one of your three lives will be lost. You gain 1,000 points for each isotope you catch but lose 10 for each square of the lining the isotope melts.

The game was written for the 16K and 48K Spectrum by Daniel Negus of Rednal, Birmingham.

```
  94 IF xx>20 THEN LET xx=20
  95 IF yy<1 THEN LET yy=1
  96 IF yy>20 THEN LET yy=20
  97 IF ox=xx AND oy=yy THEN GO
TO 100
  98 IF SCREEN$ (yy,xx)<>" " OR
Pd=1 THEN LET Pd=0: PRINT AT oy,
ox;" ": PRINT AT yy,xx; FLASH 1;
"c": LET l=l-1: FOR a=20 TO -20
STEP -2: BEEP .05,a: NEXT a: IF
l=0 THEN FOR a=-19 TO 20: BEEP .
05,a: NEXT a: PRINT £1;"PRESS AN
Y KEY TO PLAY AGAIN...": PAUSE 0
: CLS : GO TO 2
  99 PRINT AT oy,ox;" "
 100 IF SCREEN$ (y,x)<>" " THEN
LET Points=Points-10: BEEP .05,1
0: GO TO 500
 105 IF xi=0 AND yi=0 THEN LET x
i=INT (RND*3)-1: LET yi=INT (RND
*3)-1
 106 IF d<>0 THEN LET Points=Poi
nts-10
 107 IF Points<-0 THEN LET Pd=1:
 LET Points=1000: LET x=10: LET
y=10: PRINT AT 1,22;"PTS:0   ":
GO TO 98
 110 IF x<=1 THEN LET x=1: LET d
=1
 111 IF x>=20 THEN LET x=20: LET
 d=1
 112 IF y<=1 THEN LET y=1: LET d
=1
 113 IF y>=20 THEN LET y=20: LET
 d=1
 118 PRINT AT yy,xx;"c";AT y,x;
OVER 1; INK 2;"b"
 119 IF y=yy AND x=xx THEN BEEP
.5,10: LET sc=sc+Points: PRINT A
T y,x; OVER 1;"b": GO TO 70
 120 FOR a=1 TO 5: NEXT a
 130 GO TO 80
 500 IF xi=-1 AND RND>.5 THEN LE
T xi=xi+(INT (RND*2)+1): GO TO 5
20
 510 IF xi=1 AND RND>.5 THEN LET
 xi=xi-(INT (RND*2)+1): GO TO 52
0
 515 LET xi=1
 520 IF yi=-1 AND RND>.5 THEN LE
T yi=yi+(INT (RND*2)+1): GO TO 5
40
 530 IF yi=1 AND RND>.5 THEN LET
 yi=yi-(INT (RND*2)+1): GO TO 54
0
 535 LET yi=1
 540 GO TO 105
1000 REM Instructions & UDG's
1005 FOR a=USR "A" TO USR "C"+7:
 READ d: POKE a,d: NEXT a
1010 PLOT 0,0: DRAW 255,0: DRAW
0,175: DRAW -255,0: DRAW 0,-175
1020 PRINT AT 0,0; INVERSE 1;" A
TOMIC OVERLOAD          @ 1983 "
1030 PRINT AT 2,0; OVER 1;"   A
new atomic Power Generator  bein
g tested has suddenly Gone  crit
ical and is starting to     over
load."
1040 PRINT AT 7,0; OVER 1;"   Th
e only way to Prevent the   Gene
rator from exploding is     to c
atch the radioactive        isot
opes moving randomly about  the
Generator.The lining of     the
reactor was designed to     prev
ent the isotope from        brea
king out of the reactor     but
the isotope is only slowed  by t
he lining and can eat       thro
ugh it!"
1050 INPUT "": PRINT £1;"PRESS A
NY KEY TO CONTINUE"
1060 IF INKEY$="" THEN GO TO 106
0
1070 BEEP .5,10: BEEP .5,20
1080 FOR a=2 TO 20: PRINT AT a,1
;"
": NEXT a
1090 PRINT AT 2,0; OVER 1;"   To
 catch the isotope a lead   cont
ainer must be maneuvered    abov
e it"
1100 PRINT AT 6,0; OVER 1;"   Yo
u must avoid the lining of  the
reactor as it is highly     radi
oactive and if you move     the
lead container onto the     lini
ng the container will melt  and
you will lose one of your   thre
e lives."
1110 PRINT AT 12,0; OVER 1;"  10
00 pts are awarded for each iso
tope you catch but this is  red
uced by 10 for each square  of
lining the isotope melts."
1120 PRINT AT 17,0; OVER 1;" If
the 1000 pts are reduced to zer
o you lose a life.If the    rea
ctor is punctured the 1000  pts
 will drop rapidly."
1130 IF INKEY$="" THEN GO TO 112
0
1140 BEEP .5,10: BEEP .5,20
1150 FOR a=2 TO 20: PRINT AT a,1
;"
": NEXT a
1170 PRINT AT 2,1; INVERSE 1;"CO
NTROLS"
1180 PRINT AT 4,0; OVER 1;"  X -
 move RIGHT.                Z -
 move LEFT.                 P -
 move UP.                   L -
 move DOWN."
1185 PRINT AT 9,0; OVER 1;"   To
 move diagonaly Press the   corr
esponding keys at the same  time
 (eg To Go towards the TOP  RIGH
T corner Press 'X' and 'P'  simu
ltaneously)"
1190 PRINT AT 15,0; OVER 1;" Le
ad container        - c        Ra
dioactive isotope   - "; INK 2;"b
"; INK 0;"          Reactor lining
        - "; INK 5;"a"
1200 IF INKEY$-"" THEN GO TO 120
0
1210 FOR a=-20 TO 30 STEP 2: BEE
P .05,a: BEEP .02,a-10: NEXT a:
RETURN
1220 DATA 0,127,127,127,127,127,
127,127,0,0,0,28,62,28,0,0,60,66
,129,129,129,129,66,60
```

PHOENIX ATTACK

THREE TYPES of alien appear on your screen—a large ship, an orbiting alien and a descending alien. Move your laser base left with 5 and right with 8. Fire with 1. You gain 50 points for every orbiting alien destroyed, 100 points for every descending alien destroyed, and you lose 50 points for every descending alien which reaches the ground. Each time the orbiting alien succeeds in crossing the screen it will begin again, slightly lower.

Once it is three-quarters of the way down the screen you will run out of time. The game will also end if a descending alien lands on your base.

The ship can be hit only when an asterisk appears in the top left-hand corner of the screen. That means that your super laser is ready for its one shot of the game. The ship can be destroyed only by hitting the graphic A beneath it by pressing 0.

Phoenix Attack was written for the 16K ZX-81 by S McQuillan of Belfast, whose highest score so far is 12,200.

```
   1 GOTO 5
   2 SAVE "PHOENIX ATTACK"
   5 GOSUB 2500
   7 LET HI=0
  10 LET SC=0
  15 LET L=5
  20 LET S=0
  30 LET T=1
  40 LET B=15
  50 FOR F=0 TO 19
  55 PRINT AT F,0;"(32*isP)"
  60 NEXT F
  70 PRINT "(4*isP:24*99:4*isP)"
  80 PRINT "(isP:2*99:25*9h:2*99
:isP)"
  90 PRINT AT 0,10;"(11*97)"
  91 PRINT AT 1,8;"(91) 0 0 0 0
0 0 (92)"
  93 PRINT AT 2,8;"(isP:5*99:9t:
97:9y:5*9w)"
 100 LET Y=INT (RND*27)+2
 110 LET X=5
 150 PRINT AT 19,B;"(isP:91:9r:i
sP)"
 170 PRINT AT X,Y;"(9y:9t)"
 180 PRINT AT X,Y;"(2*isP)"
 200 LET B=B+(INKEY$="8" AND B<2
7)-(INKEY$="5" AND B>0)
 210 IF INKEY$="1" THEN GOSUB 15
00
 220 LET X=X+1
 250 IF X=19 THEN GOTO 2000
 270 PRINT AT L,T;"(isP:91:92)"
 280 LET T=T+1
 290 IF T=27 THEN GOSUB 900
 300 IF Y<17 THEN PRINT AT 3,15;
"(9h)"
 310 IF INKEY$="0" THEN GOSUB 10
00
 320 IF Y>=17 THEN PRINT AT 3,15
;"(isP)"
 350 IF SC=1000 OR SC=1050 THEN
LET S=S+1
 355 IF S=1 THEN PRINT AT 0,0;"
"
 400 IF X=18 AND (B+1=Y OR B+1=Y
+1 OR B+2=Y) THEN GOTO 3000
 500 GOTO 150
 900 PRINT AT L,T;"(3*isP)"
 910 LET T=1
 920 LET L=L+2
 930 IF L=15 THEN GOTO 3000
 950 RETURN
1000 REM shoot at mother ship
1003 IF S<1 THEN RETURN
1005 LET M=18
1010 LET N=B+1
1020 PRINT AT 0,0;"(isP)"
1030 LET S=-300
1050 PRINT AT M,N;"(95)"
1055 PRINT AT M,N;"(isP)"
1070 LET M=M-3
1090 IF M=3 AND Y>=17 THEN RETUR
N
1095 IF M=3 AND Y<17 AND N<>15 T
HEN RETURN
1100 IF M=3 AND N=15 AND Y<17 TH
EN GOTO 4000
1200 GOTO 1050
1500 REM fire
1510 LET M=18
1520 LET N=B+1
1550 PRINT AT M,N;"(9e)"
1555 PRINT AT M,N;"(isP)"
1570 LET M=M-1
1585 PRINT AT X,Y;"(9y:9t)"
1590 PRINT AT X,Y;"(2*isP)"
1600 IF N=Y+1 OR N=Y THEN GOTO 1
900
1610 IF N=T OR N=T+1 THEN GOTO 1
800
1620 LET X=X+1
1630 IF X=18 AND (B+1=Y OR B+1=Y
+1 OR B+2=Y) THEN GOTO 3000
1650 IF X=19 THEN GOTO 2000
1660 IF M=5 THEN RETURN
1750 GOTO 1550
1800 PRINT AT L,T;"50";AT L,T;"(
3*isP)"
1810 LET T=1
1820 LET SC=SC+50
1890 GOTO 150
1900 PRINT AT X,Y;"100";AT X,Y;"
(3*isP)"
1910 LET SC=SC+100
1990 GOTO 100
2000 REM missed one
2020 LET SC=SC-50
2030 IF SC<0 THEN LET SC=0
2050 GOTO 100
2500 REM start
2505 FOR F=0 TO 21
2510 PRINT "(32*isP)"
2520 NEXT F
2525 PRINT AT 1,5;"   Phoenix  a
ttack   "
2530 PRINT AT 3,5;"out of deep s
pace falls"
2540 PRINT AT 5,4;"the aliens wh
ich you must"
2550 PRINT AT 7,4;"destroyry t
o destroy the"
2560 PRINT AT 9,4;"orbiting alie
nsver head"
2570 PRINT AT 11,4;"hovers the a
lien mother"
2580 PRINT AT 13,4;"shipestroy
 it to end the"
2590 PRINT AT 15,4;"alien plot
ove with keys"
2600 PRINT AT 17,4;"5 and 8 and
shoot with 1
2610 PRINT AT 20,8;"good  luck"
2620 PRINT AT 20,8;"(10*isP)"
2630 PRINT AT 19,8;"good  luck"
2640 PRINT AT 19,8;"(10*isP)"
2650 IF INKEY$="" THEN GOTO 2610
2660 RETURN
3000 REM game over
3010 CLS
3020 PRINT AT 5,0;"* S C O R E *
 H I  S C O R E *"
3022 PRINT "*******************
************"
3025 PRINT AT 7,5;SC
3030 IF SC>=HI THEN PRINT AT 17,
5;"NEW HIGH SCORE"
3035 IF SC>=HI THEN INPUT B$
3050 IF SC>=HI THEN LET HI=SC
3060 PRINT AT 7,12;"* ";B$;"..."
;HI
3080 PAUSE 200
3090 CLS
3100 PRINT AT 1,3;"WE, THE ALIEN
S, CHALLENGE       YOU TO ANOTHE
R  GAME."
3110 PRINT AT 5,4;" PRESS ANY KE
Y TO RESET"
3120 PRINT AT 7,5;"...IF YOU DAR
E."
3130 IF INKEY$<>"" THEN GOTO 10
3200 GOTO 3130
3900 STOP
4000 REM mother ship destroyed
4010 LET SC=SC+1000
4020 PRINT AT 9,9;"bonus'1000"
4030 PRINT AT 11,4;"alien plot d
estroyed"
4035 PRINT AT 13,7;"in this sect
or
4040 FOR F=1 TO 30
4050 LET X=INT (RND*23)+6
4055 LET A=INT (RND*24)+8
4057 IF X>23 THEN LET X=15
4058 IF A>24 THEN LET A=15
4060 LET Y=INT (RND*4)
4065 LET B=INT (RND*4)
4070 PRINT AT Y,X;"(9t:9w)"
4077 PRINT AT B,A;"(isP)"
4080 PRINT AT Y,A;"(98)"
4090 PRINT AT B,X;"(9r)"
4100 NEXT F
4110 FOR F=0 TO 14
4115 PRINT AT F,2;"(23*isP)"
4117 NEXT F
4120 PRINT AT 8,5;"do you wish t
o go to";AT 10,4;"another sector
! (y\n)"
4130 INPUT Z$
4135 IF Z$="Y" THEN GOTO 4200
4150 CLS
4160 GOTO 3000
4200 PRINT AT 8,5;"(24*isP)"
4205 PRINT AT 10,4;"(27*isP)"
4210 LET A=19
4215 LET B=15
4220 PRINT AT 7,10;"warp drive"
4230 PRINT AT A,B;"(3*isP)"
4240 LET A=A-1
4245 IF A=7 THEN GOTO 4300
4250 PRINT AT A,B;"(91:9r)"
4260 GOTO 4230
4300 REM new sector
4310 PRINT AT A,10;"(2*isP:9<:9<
:9w:9y:9e:9>:9>:2*isP)"
4320 LET S=0
4330 IF RND<=0.5 THEN LET S=1
4350 GOTO 30
```

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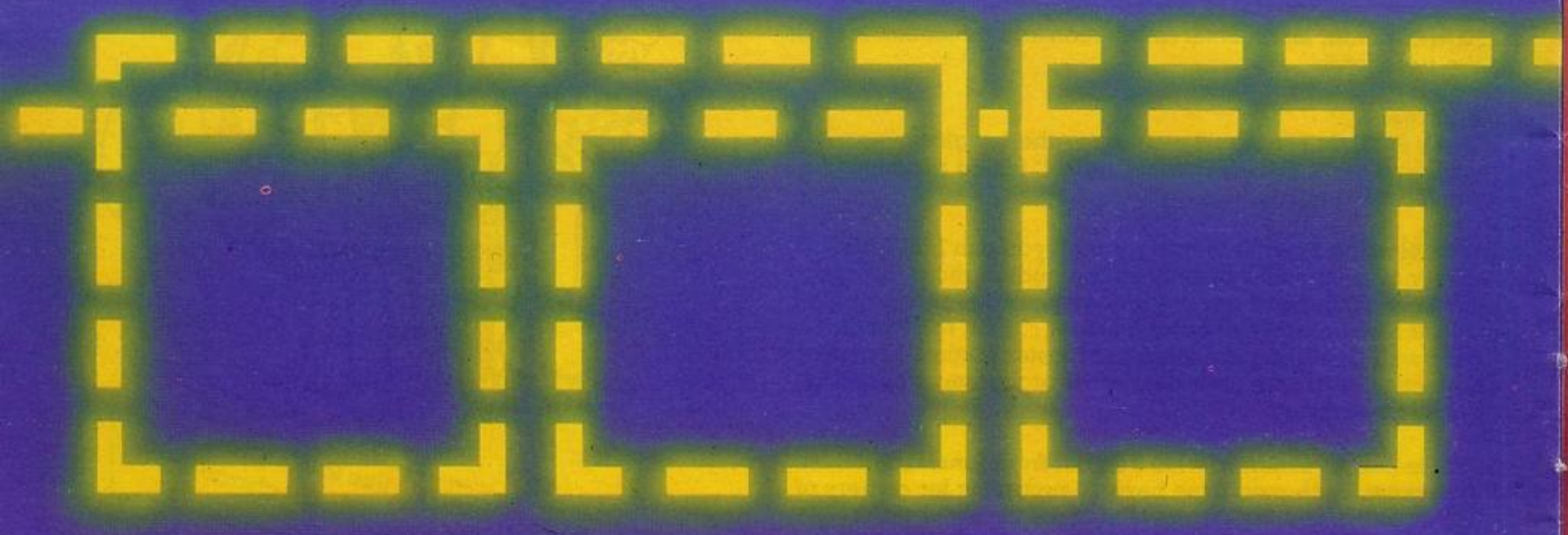

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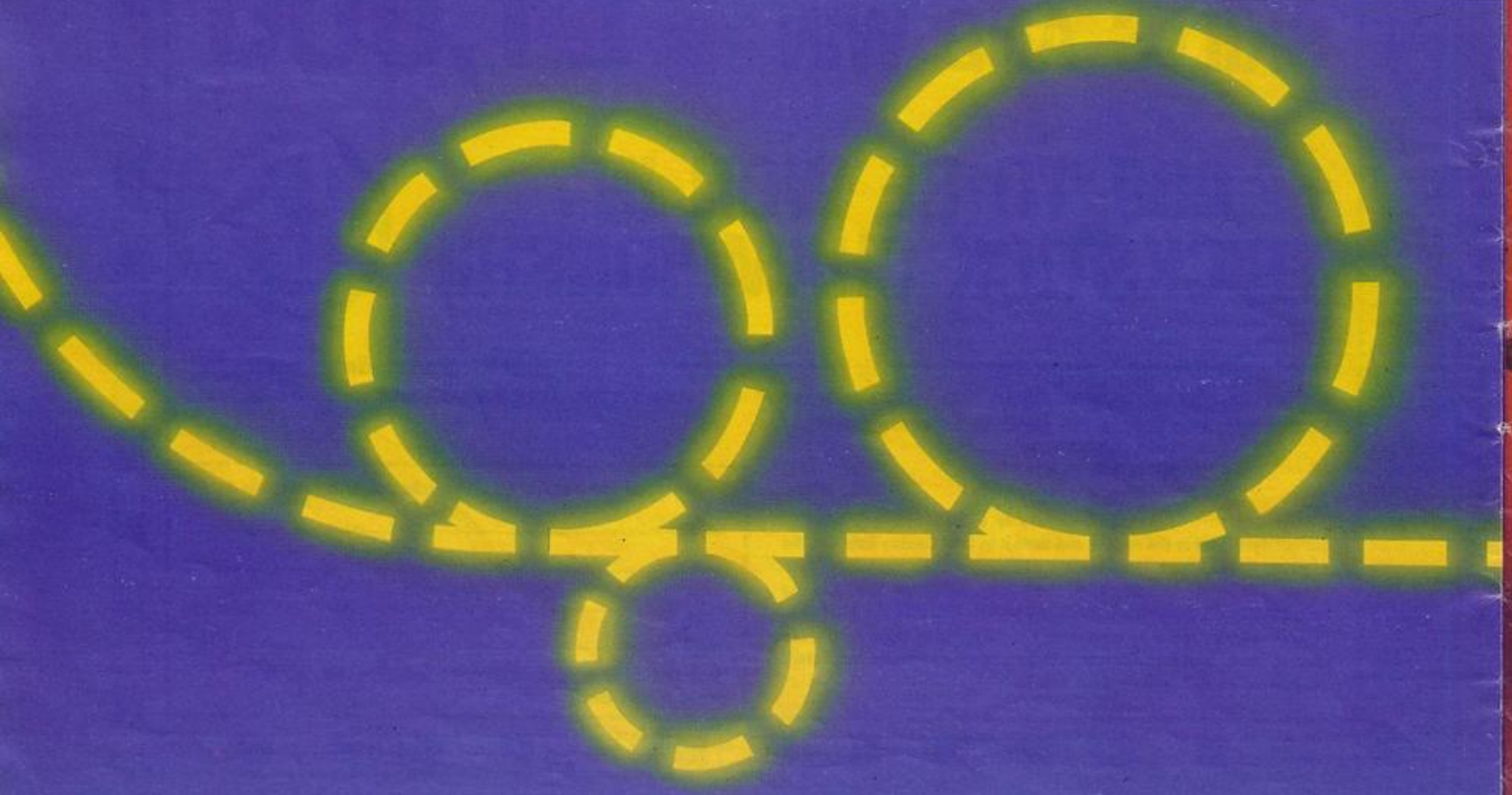

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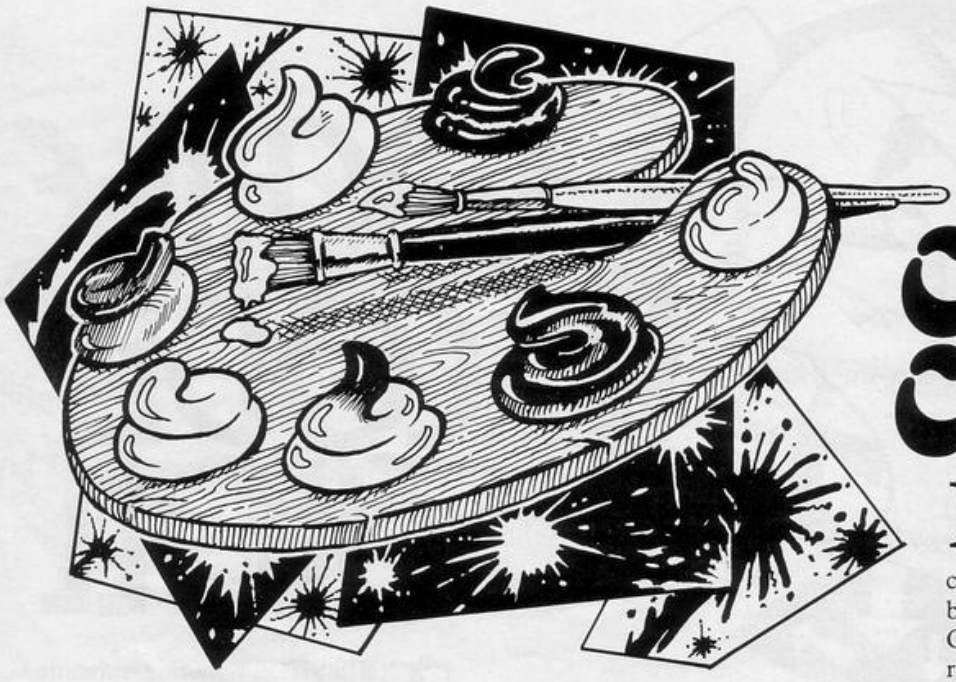
BEGINNER

KONG LEAP

```
D@  10 LET S=NOT PI
  20 PRINT "SCORE";AT VAL "2",VA
L "2";"(1 )";TAB NOT PI;"(93:3*1
sP:94)";TAB NOT PI;"(2*92:1sP:2*
91)";TAB VAL "1";"(99:97:9W:sP:1
*)";TAB NOT PI;"(32*9h)"
  30 LET B=VAL "31"
  40 LET X=VAL "6"
  60 PRINT AT NOT PI,VAL "6";S
  70 LET T=NOT PI
 100 PRINT AT 5,B;" "
 110 IF B=7 THEN GOTO 300
 120 LET X=X+1
 130 IF INKEY$="7" THEN GOSUB 20
0
 140 PRINT AT 5,B;"A";AT 5,X;" O
"
 150 LET T=T+1
 160 IF X=30 THEN PRINT AT 5,31;
" "
 170 IF X=30 THEN LET X=5
 180 IF B=X+1 THEN STOP
 190 GOTO 100
 220 PRINT AT 4,B;"A"
 230 LET B=B-1
 240 PRINT AT 4,B+1;" "
 270 RETURN
 300 LET S=S+VAL "40"-T
 310 PRINT AT 5,X+1;" "
 320 GOTO VAL "30"
```

YOUR AIM is to reach the box beside Kong the gorilla as many times as possible, as fast as possible, to gain points. You do so by skipping along with the help of key 7. Kong resents that, though, and tries to kill you by rolling barrels at you which you must leap or die.

Kong Leap was written for the 1K ZX-81 by S Lancaster of Newcastle, Staffs.



BEGINNER

COLOUR CHANGE

```
10 CLEAR 32500
20 DATA 33,0,88,6,32,197,6,24,
54,101,35,16,251,193,16,245,201
30 FOR f=32500 TO 32516
40 READ n: POKE f,n
50 NEXT f
```

PLACING this routine at the beginning of your 48K Spectrum programs will allow you to change the ink and paper colour and the bright and flash mode without the usual CLS command. Select the colours you require by POKEing 32509 the ATTR number you require. Thus to call-up yellow letters on a red background enter POKE 32509, 85: RANDOMISE USR 32500.

For readers not familiar with ATTR an explanation can be found on page 219 of the Spectrum manual.

Written by C J Barnatt of Fernhill Heath, Worcester.

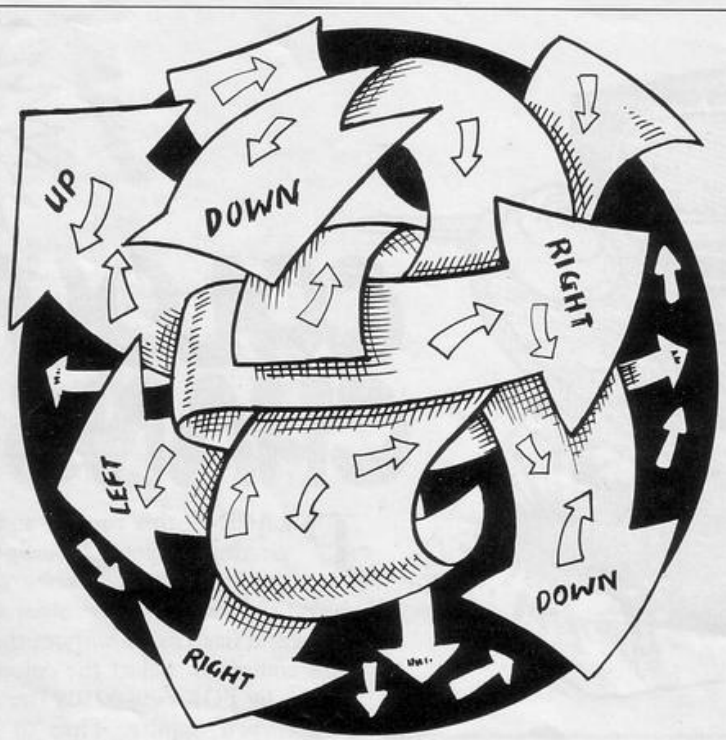
BEGINNER

SOW SOW

A PATCH OF fertile ground appears at the bottom of the screen. Your seeds go flying across the top of the screen. Press S to sow one. Your aim is to sow as many seeds as possible. If a seed falls where a flower has already grown it will kill the flower which will wither away to become soil again.

Sow Sow was written for the 1K ZX-81 by David Knight of Newcastle-under-Lyme Staffordshire.

```
  5 PRINT "PRESS N/L TO START"
  6 PAUSE VAL "4E4"
  7 CLS
 10 DIM A(VAL "20")
 20 PRINT AT VAL "21",VAL "0";"
(20*9a)"
 30 FOR F=VAL "20" TO VAL "1" S
TEP VAL "-1"
 40 LET Q=VAL "7"
 45 PRINT AT F-F,F-F;"SEEDS LEF
T";F;CHR$ 0
 50 FOR R=1 TO 20
 60 PRINT AT Q,R;CHR$ 190
 70 IF INKEY$="S" THEN GOTO 150
 80 PRINT AT Q,R;CHR$ 0
 90 NEXT R
100 NEXT F
110 PRINT AT VAL "10",VAL "5";"
YOURE ALL SOWN UP"
120 STOP
150 IF A(R)=VAL "1" THEN GOTO V
AL "200"
160 PRINT AT VAL "21",R;CHR$ 23
170 LET A(R)=F/F
180 PRINT AT Q,R;CHR$ 0
190 GOTO VAL "100"
200 PRINT AT VAL "21",R;CHR$ 31
210 LET A(R)=F-F
220 GOTO VAL "100"
```



MACHINE CODE SCROLL

BEGINNER

THIS SHORT routine, submitted by D Jones of Liverpool for the 16K ZX-81, scrolls the letters or symbols contained in the PRINT statement in line 2 from the bottom to the top of the screen. Enter line one of the first section of program and the following POKE statements. That will then become line one of the second section of program.

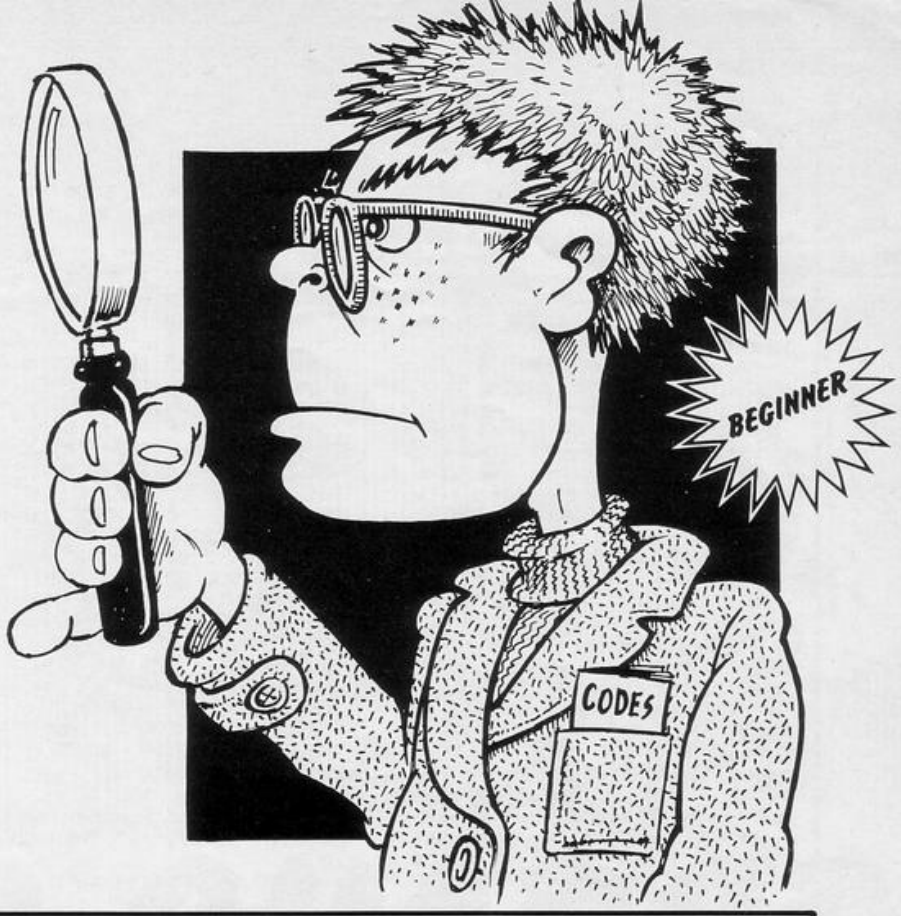
```
1 REM 0000
  POKE 16514,205
  POKE 16515,14
  POKE 16516,12
  POKE 16517,201
```

```
1 REM LN :£TAN
2 PRINT "SINCLAIR USER"

3 RAND USR 16514
4 GOTO 2
```

THIS SHORT Spectrum program was written for very young children to use by A Tyson of Christian Malford, Wiltshire. It should be accompanied by this story.

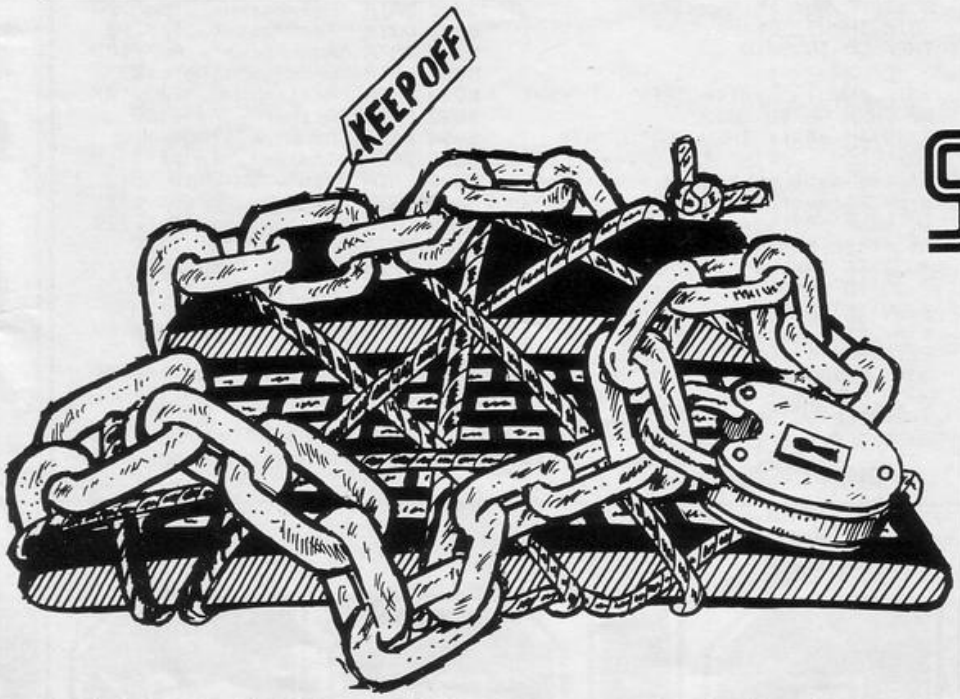
When Katie's little brother, David, was given a magnifying glass and a torch for his birthday he became, potentially, the greatest sleuth since Sherlock Holmes. He developed a passion for invisible writing and codes and, when he borrowed a Morse code buzzer, he practised his dots and dashes as if he had not a moment to lose. After all, one of these days or nights, he would probably need his Morse code in a life-or-death situation.

Of course, not everyone can appreciate the dedication of our young secret agent. On the contrary, his family were nearly driven mad as Dai bach buzzed away in the corner, like a little dentist with a drill. Katie was not one to discourage her brother but she was wise enough to step in before her father gave a poetic rendering of the Welsh language. She devised this program to satisfy everyone in the family.



SIGNALS

```
  10 BORDER 0: PAPER 1: INK 7: C
LS
  20 PRINT AT 1,10;"SIGNALS","Pr
ess s for ship, l for land"
  30 INK 0: PRINT AT 15,25;"(193
)";TAB 25;"(isP)";TAB 25;"(isP)"
;TAB 25;"(isP)"
  40 PRINT AT 19,0;"____(193:191
:193)_________________(192:isP:1
91)_____"
  50 IF INKEY$="" THEN GO TO 50
  60 IF INKEY$="s" THEN INK 6: P
RINT AT 18,5;"*": GO TO 60
  70 IF INKEY$="l" THEN INK 7: P
RINT AT 16,25;"(isP)": GO TO 70
  80 GO TO 30
```



SECURITY DEVICE

SJUDGE of Mold, Clwyd has devised **Security Devices,** a machine code routine to protect software from unwanted users. Enter the first section of program, RUN it, and then enter the list of numbers one by one, working horizontally across the list.

Delete lines 2 to 7 and use the REM statement as the first line of your main program.

Adding lines 9997 to 9999 at the end of the program will mean that, once LOADed from cassette, your program will not RUN until your ZX-81 receives a signal at the EAR socket. Meanwhile the BREAK key will be disabled and the screen display will be random.

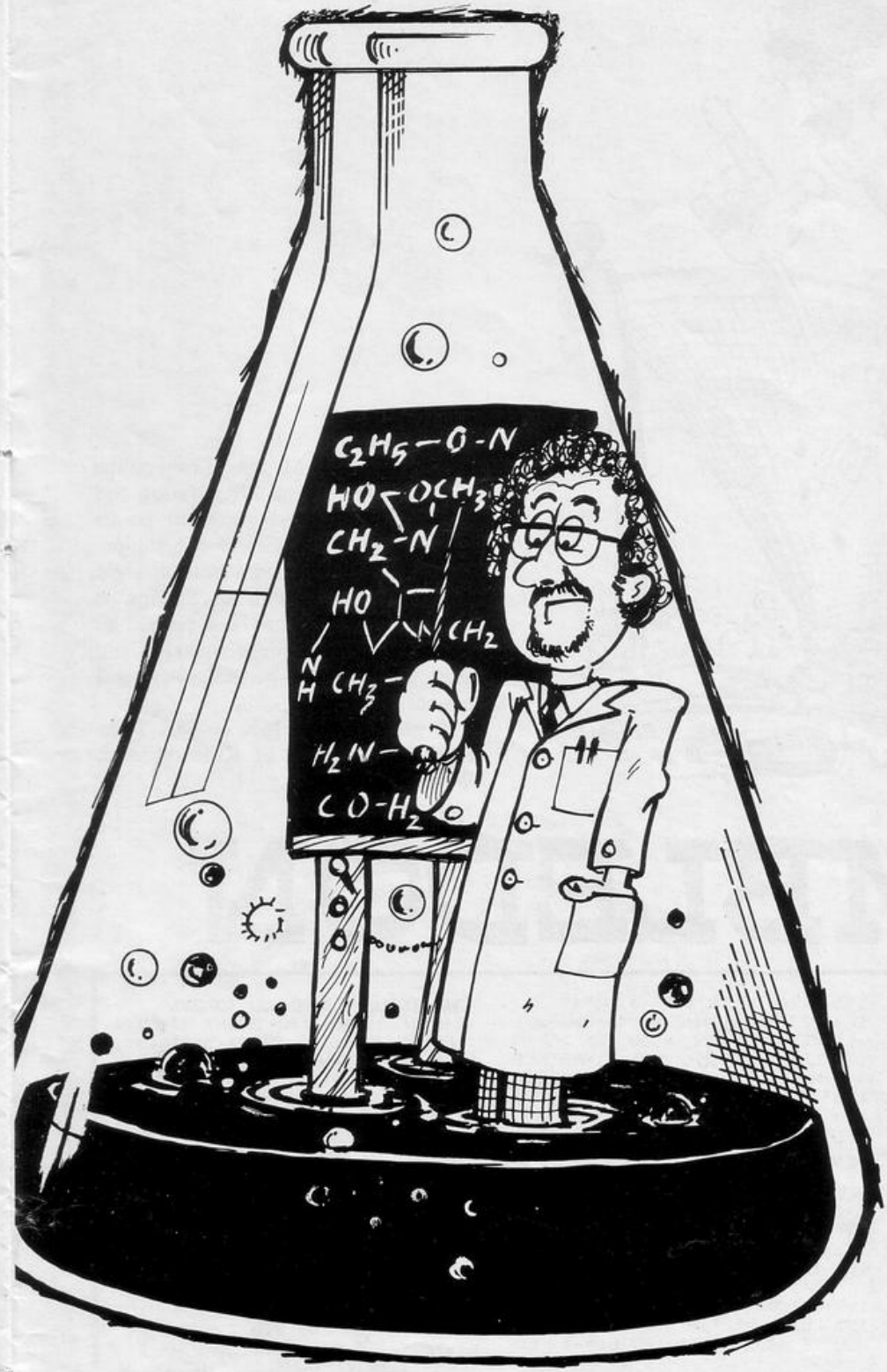
```
1 REM 0000000000000000
2 LET X=16514
3 INPUT A
4 POKE X,A
5 IF A=201 THEN STOP
6 LET X=X+1
7 GOTO 3
```

```
9997 SAVE "PROGRAM NAME"
9998 RAND USR 16514
9999 RUN
```

205	35	15	30
255	219	254	211
255	187	40	2
24	247	201	

```
  10 BORDER 1: PAPER 7: INK 1: C
LS : POKE 23609,50
 100 PRINT AT 2,9;"PERIODIC TABL
E";AT 5,15;"BY";AT 7,13;"C.EDE."
 110 PRINT AT 10,4;"This program
 is designed";AT 11,4;"to help
you  learn about";AT 12,4;"the P
eriodic Table.There";AT 13,4;"ar
e instructions through";AT 14,4;
"the program  to tell you";AT 15
,7;"how to operate it.";AT 17,5;
"PRESS ANY KEY TO START": PAUSE
0
 120 CLS : PRINT ''"  Now you mu
st choose which partof the progr
am you wish to use.   When you h
ave decided from thelist below,
press the number by the one you
want and you will   get the part
 you require."

 130 PRINT '';" 1 Choose an elem
ent."'" 2 Element test."'" 3 R
un through the whole table."'"
4 End the program."
 140 LET a$=INKEY$: IF a$="1" OR
 a$="2" OR a$="3" OR a$="4" THEN
 GO TO VAL a$*1000
 150 GO TO 140
1000 CLS : PRINT '"" Enter the N
AME or SYMBOL of theelement you
wish to know about  and press th
e 'ENTER' key."'" Don't forget t
o use a capital  letter at the b
egining of each  NAME or SYMBOL.
"
1010 INPUT n$: FOR b=1 TO 103: R
ESTORE 4998+b*2: READ j$,s$: IF
n$=j$ OR n$=s$ THEN GO TO 1100
1020 NEXT b: CLS : PRINT '"" The
re is no such element.": GO TO 1
110

1100 READ a: CLS : PRINT '"" Ele
ment:- ";j$'"" Symbol:- ";s$'""
Atomic number:- ";b'"" Mass numb
er:- ";a'"" Number of protons:-
";b'"" Number of newtons:- ";a-b
'"" Number or electons:- ";b
1110 PRINT '" Another element Y/
N?"
1120 IF INKEY$="y" THEN GO TO 10
00
1130 IF INKEY$="n" THEN GO TO 12
0
1140 GO TO 1120
2000 CLS : PRINT '"" You will n
ow be tested on the elements.  Y
ou will be asked a  number of qu
estions on each ele-ment."'" Do
n't forget to use a capital lett
er for names and symbols.  Now
enter how far down the tableyou
want to be tested on and   Pres
s 'ENTER'."

2010 INPUT nd: IF nd<1 OR nd>103
 THEN GO TO 2010
2020 CLS : PRINT "The questions
on each element  will be printe
d up one by one.  After answerin
g a question press'ENTER'."
2030 LET rn=INT (RND*nd)+1: REST
ORE 4998+rn*2: READ j$,s$,a: PRI
NT '" Element:- ";j$'"" Symbol:-
";: GO SUB 2200
2040 IF q$=s$ THEN GO SUB 2300:
GO TO 2050
2045 GO SUB 2310

2050 PRINT '"" Atomic number:-";
: GO SUB 2200: IF q$=STR$ rn THE
N GO SUB 2300: GO TO 2060
2055 GO SUB 2310
2060 PRINT '"" Mass number:-";:
GO SUB 2200: IF q$=STR$ a THEN G
O SUB 2300: GO TO 2070
2065 GO SUB 2310
2070 PRINT '"" Number Protons:-"
;: GO SUB 2200: IF q$=STR$ rn TH
EN GO SUB 2300: GO TO 2080
2075 GO SUB 2310
2080 PRINT '"" Number Newtrons:-
";: GO SUB 2200: LET op=a-rn: IF
 q$=STR$ op THEN GO SUB 2300: GO
 TO 2087
2085 GO SUB 2310
2087 PRINT '"" Number Electrons:
-";: GO SUB 2200: IF q$=STR$ rn
THEN GO SUB 2300: GO TO 2100
2090 GO SUB 2310

2100 PRINT '"" Another test Y/N"
2110 IF INKEY$="y" THEN GO TO 20
20
2120 IF INKEY$="n" THEN GO TO 12
0
2130 GO TO 2110
2200 INPUT q$: PRINT " ";q$;: RE
TURN
2300 PRINT " RIGHT";: FOR l=1 TO
 50 STEP 5: BEEP .05,l: NEXT l:
RETURN
2310 PRINT " WRONG";: BEEP 1,-1:
 RETURN
3000 CLS : PRINT '"" You now ge
t each element put  on the scree
n one by one."'" Now enter the
atomic number  you wish to star
t and finsh at."
3010 INPUT "Start ";st: IF st<1
THEN GO TO 3010

3012 INPUT "Finish ";fi: IF fi>1
03 THEN GO TO 3012
3014 IF st>fi THEN GO TO 3010
3015 CLS : PRINT '"" Press '1'
if you want to pressa key after
each element."'" Press '2' if y
ou want it to  change the eleme
nt after a time."
3020 IF INKEY$="1" THEN LET de=0
: GO TO 3050
3030 IF INKEY$="2" THEN INPUT "D
elay time (lower=faster) ";de: L
ET de=de+1: GO TO 3050
3040 GO TO 3020
3050 FOR b=st TO fi: RESTORE 499
8+b*2: READ j$,s$,a
3070 CLS : BEEP .05,2: PRINT '""
 Element:- ";j$'"" Symbol:- ";s$
'"" Atomic number:- ";b'"" Mass
number:- ";a'"" Number of proton
s:- ";b'"" Number of neutons:- "
;a-b'"" Number of electons:- ";b

3080 PAUSE de: NEXT b: GO TO 120
5000 DATA "Hydrogen","H",1
5002 DATA "Helium","He",4
5004 DATA "Lithium","Li",7
5006 DATA "Beryllium","Be",9
5008 DATA "Boron","B",11
5010 DATA "Carbon","C",12
5012 DATA "Nitrogen","N",14
5014 DATA "Oxygen","O",16
5016 DATA "Fluorine","F",19
5018 DATA "Neon","Ne",20
5020 DATA "Sodium","Na",23
5022 DATA "Magnesium","Mg",24
5024 DATA "Aluminium","Al",27
5026 DATA "Silicon","Si",28
5028 DATA "Phosphorus","P",31

5030 DATA "Sulphur","S",32
5032 DATA "Chlorine","Cl",35
5034 DATA "Argon","A",40
5036 DATA "Potassium","K",39
5038 DATA "Calcium","Ca",40
5040 DATA "Scandium","Sc",45
5042 DATA "Titanium","Ti",48
5044 DATA "Vandium","V",51
5046 DATA "Chromium","Cr",52
5048 DATA "Manganese","Mn",55
5050 DATA "Iron","Fe",56
5052 DATA "Cobalt","Co",59
5054 DATA "Nickel","Ni",59
5056 DATA "Copper","Cu",64
5058 DATA "Zinc","Zn",65
5060 DATA "Gallium","Ga",70
5062 DATA "Germanium","Ge",73
5064 DATA "Arenic","As",75
5066 DATA "Selenium","Se",79
5068 DATA "Bromine","Br",80
5070 DATA "Krypton","Kr",84

5072 DATA "Rubidium","Rb",85
5074 DATA "Strontium","Sr",88
5076 DATA "Yttrium","Y",89
5078 DATA "Zirconium","Zr",91
5080 DATA "Niobium","Nb",93
5082 DATA "Molybdenum","Mo",96
5084 DATA "Techrtium","Tc",98
5086 DATA "Ruthrnium","Ru",102
5088 DATA "Rhodium","Rh",103
5090 DATA "Palladium","Pd",107
5092 DATA "Silver","Ag",108
5094 DATA "Cadmium","Cd",112
5096 DATA "Indium","In",115
5098 DATA "Tin","Sn",119
5100 DATA "Antimony","Sb",122
5102 DATA "Tellurium","Te",128
5104 DATA "Iodine","I",127
5106 DATA "Xenon","Xe",132
5108 DATA "Caesium","Cs",133
5110 DATA "Barium","Ba",138
5112 DATA "Lanthanum","La",139

5114 DATA "Cerium","Ce",140
5116 DATA "Praseodymium","Pr",14
1
5118 DATA "Neodymium","Nd",144
5120 DATA "Promethium","Pm",146
5122 DATA "Samarium","Sm",150
```

PERIODI



CHRISTOPHER EDE of Grimsby, South Humberside wrote **Periodic Table** for Spectrum owners who are studying chemistry. The program will print on-screen the entire periodic table, or a selected part of it. Each element is shown, together with its symbol, its mass numbers and the appropriate number of protons, neutrons and electrons.

The advantage the program has over a table in a book is that it will also test you on the entire periodic table or on any part of it.

```
5124 DATA "Europium","Eu",152
5126 DATA "Gadolinium","Gd",157
5128 DATA "Terbium","Tb",159
5130 DATA "DysProsium","Dy",162
5132 DATA "Holmium","Ho",165
5134 DATA "Erbium","Er",167
5136 DATA "Thulium","Tm",168
5138 DATA "Ytterbium","Yb",173
5140 DATA "Lutetium","Lu",175
5142 DATA "Radium","Ra",226
5144 DATA "Tantalum","Ta",181
5146 DATA "Tungsten","W",184
5148 DATA "Rhenium","Re",186
5150 DATA "Osmium","Os",190
5152 DATA "Iridium","Ir",193

5154 DATA "Platinum","Pt",195
5156 DATA "Gold","Au",197,80
5158 DATA "Mercury","Hg",201
5160 DATA "Thallium","Tl",205
5162 DATA "Lead","Pb",207
5164 DATA "Bismuth","Bi",209
5166 DATA "Polonium","Po",210
5168 DATA "AStatine","At",210
5170 DATA "Radon","Rn",222
5172 DATA "Francium","Fr",223
5174 DATA "Radium","Ra",226
5176 DATA "Actinium","Ac",227
5178 DATA "Thorium","Th",232
5180 DATA "Protoactinium","Pa",2
31
5182 DATA "Uranium","U",238
5184 DATA "NePtunium","NP",237
5186 DATA "Plutonium","Pl",238
5188 DATA "Americium","Am",243
5190 DATA "Curium","Cm",245
5192 DATA "Berkelium","Bk",249

5194 DATA "Californium","Cf",249
5196 DATA "Einstinium","E",255
5198 DATA "Fermium","Fm",255
5200 DATA "Mendelevium","Mv",256
5202 DATA "Nobelium","No",255
5204 DATA "Lawrencium","Lw",256
```

C TABLE

YOU FACE Mr Spec Trum on the centre court at **Wimbledon** and the first player with 10 points will be declared Grand Champion. Move up with q, down with a, right with p and left with o. Serving is automatic. After w has been pressed all future hits will bounce upwards and after s has been pressed they will bounce downward.

A game for the 16K or 48K Spectrum by M Birch of Kidderminster, Worcestershire.

WIMBLEDON

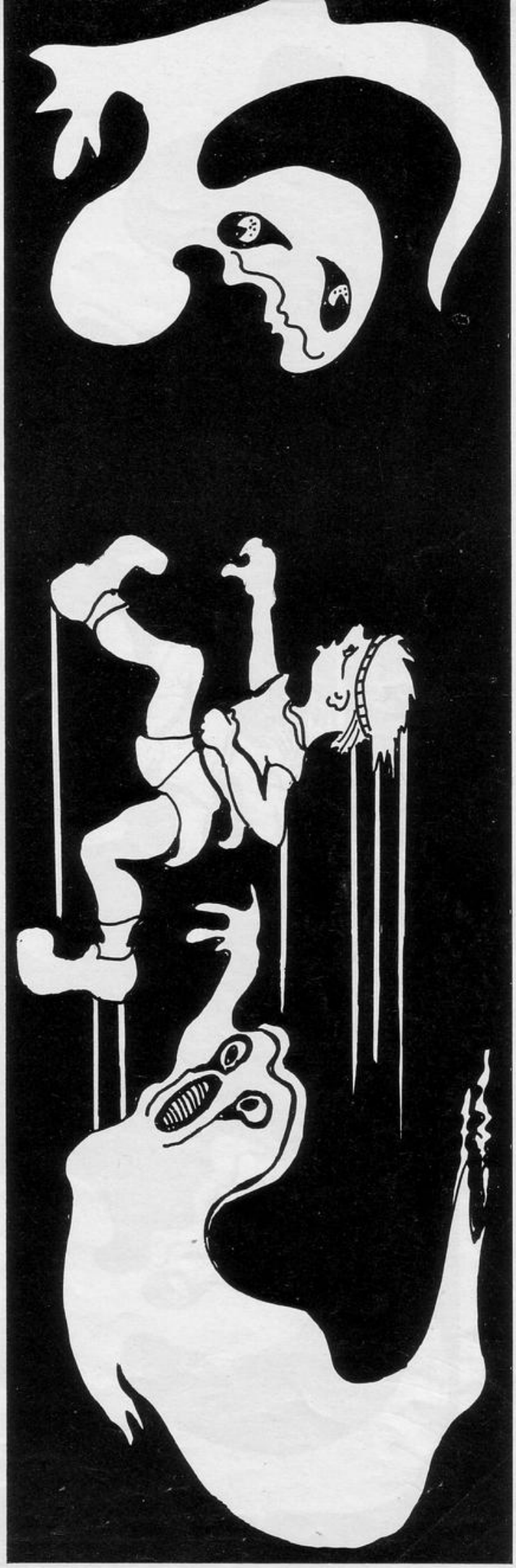
```
   1 BORDER 0: PAPER 0: CLS : IN
K 4: INPUT "what is your name ?"
'z$
   3 INPUT "background color : "
;bc: INPUT "ink color : ";ic: CL
S
   4 PAPER bc: BORDER bc: CLS :
INK ic
   5 PRINT AT 10,5;"is this ok ?
(y/n)": INPUT y$: IF CODE y$=COD
E "n" THEN GO TO 2
   6 CLS
   8 DATA "a",24,24,18,61,82,16,
104,4,"b",24,24,72,180,74,8,22,3
2,"c",0,24,66,66,66,66,24,0
   9 FOR f=1 TO 3: READ a$: FOR
g=0 TO 7: READ a: POKE USR a$+g,
a: NEXT g: NEXT f
  10 LET sP=0: LET hu=0
 100 LET a=10: LET b=1: LET c=10
: LET d=30: LET lr=1: LET ud=SGN
(INT (RND*3)-1): LET b1=INT (RN
D*18)+1: LET b2=1
 101 IF ud=0 THEN LET ud=1
 102 LET hit=ud
 105 FOR f=0 TO 31: PRINT AT 0,f
;"(193)";AT 21,f;"(93)": NEXT f:
FOR f=1 TO 20: PRINT AT f,15;":
": NEXT f
 110 FOR f=1 TO 20: PRINT AT f,0
;"(195)";AT f,5;"(95)";AT f,25;"
(195)";AT f,31;"(95)": NEXT f: F
OR f=6 TO 14: PRINT AT 11,f;"(93
)";AT 11,f+10;"(93)": NEXT f
 121 PRINT AT 1,13;hu;AT 1,17;sP
 130 PRINT AT a,b; OVER 1;"a";AT
c,d;"b";AT b1,b2; OVER 1;"c"
 140 BEEP .1,-60
 150 PRINT OVER 1;AT b1,b2;"c"
 151 PRINT AT c,d;" "
 155 PRINT OVER 1;AT a,b;"a"
 160 LET a=a-(INKEY$="q" AND a>1
)+(INKEY$="a" AND a<20)
 170 LET b=b+(INKEY$="p" AND b<1
4)-(INKEY$="o" AND b>1)
 175 IF b2<18 THEN GO TO 186
 180 IF ud=1 THEN GO TO 183
 182 LET c=c-((b1-(30-b2)<c) AND
c>1)+((b1-(30-b2))>c) AND c<20)
 183 IF ud=-1 THEN GO TO 186
 185 LET c=c-((b1+(30-b2)<c) AND
c>1)+((b1+(30-b2))>c) AND c<20)
 187 IF INKEY$="w" THEN LET hit=
-1
 188 IF INKEY$="s" THEN LET hit=
1
 190 LET b1=b1+ud
 195 LET b2=b2+lr
 200 IF b1>20 THEN LET ud=-1: LE
T b1=19
 205 IF b1<1 THEN LET ud=1: LET
b1=2
 210 IF b2=30 THEN GO TO 220
 219 GO TO 230
 220 IF c=b1 THEN LET lr=-1: LET
ud=INT (RND*3)-1: BEEP .1,20: G
O TO 211
 221 PRINT AT b1,27; FLASH 1;"OU
T!";AT 11,10;"Point to ";z$: LET
hu=hu+1: FOR f=1 TO 3: BEEP .5,
30: BEEP .2,10: NEXT f: PAUSE 10
0
 222 IF hu<10 THEN CLS : GO TO 1
00
 225 GO TO 1000: REM human win
 230 IF b2=b THEN GO TO 240
 231 IF b2<1 THEN GO TO 242
 235 GO TO 250
 240 IF b1=a THEN LET lr=1: LET
ud=hit: BEEP .1,20: GO TO 231
 241 IF b2>1 THEN GO TO 231
 242 IF b2<=1 THEN PRINT AT b1,1
; FLASH 1;"OUT!";AT 11,5;"Point
to Mr.Spec Trum": LET sP=sP+1: F
OR f=1 TO 3: BEEP .2,0: BEEP .5,
10: NEXT f: PAUSE 100
 243 IF sP<10 THEN CLS : GO TO 1
00
 245 GO TO 2000: REM speccy win
 300 GO TO 130
1000 REM human win
1001 PRINT AT 0,0;
1010 FOR f=1 TO 8: FOR g=0 TO 21
: PRINT OVER 1;"(32*isp)": NEXT
g: PRINT AT 0,0;: NEXT f
1015 CLS
1020 PRINT AT 0,0;"Wimbledon";AT
1,8;"(9*99)";AT 5,0;" You have
beaten me.";AT 10,10; BRIGHT 1;
FLASH 1;"WELL DONE !!!";AT 20,0;
FLASH 0; BRIGHT 0;"Press any ke
y to play again....."
1030 IF INKEY$="" THEN GO TO 103
0
1040 IF INKEY$<>"" THEN GO TO 10
40
1050 RUN
2000 REM speccy win
2001 PRINT AT 0,0;
2010 FOR f=1 TO 22: PRINT "(32*i
sP)": NEXT f
2020 PRINT AT 10,10; FLASH 1;"i
win"
2030 PRINT AT 21,0;"Press any ke
y for another go"
2040 IF INKEY$="" THEN GO TO 204
0
2050 IF INKEY$<>"" THEN GO TO 20
50
```

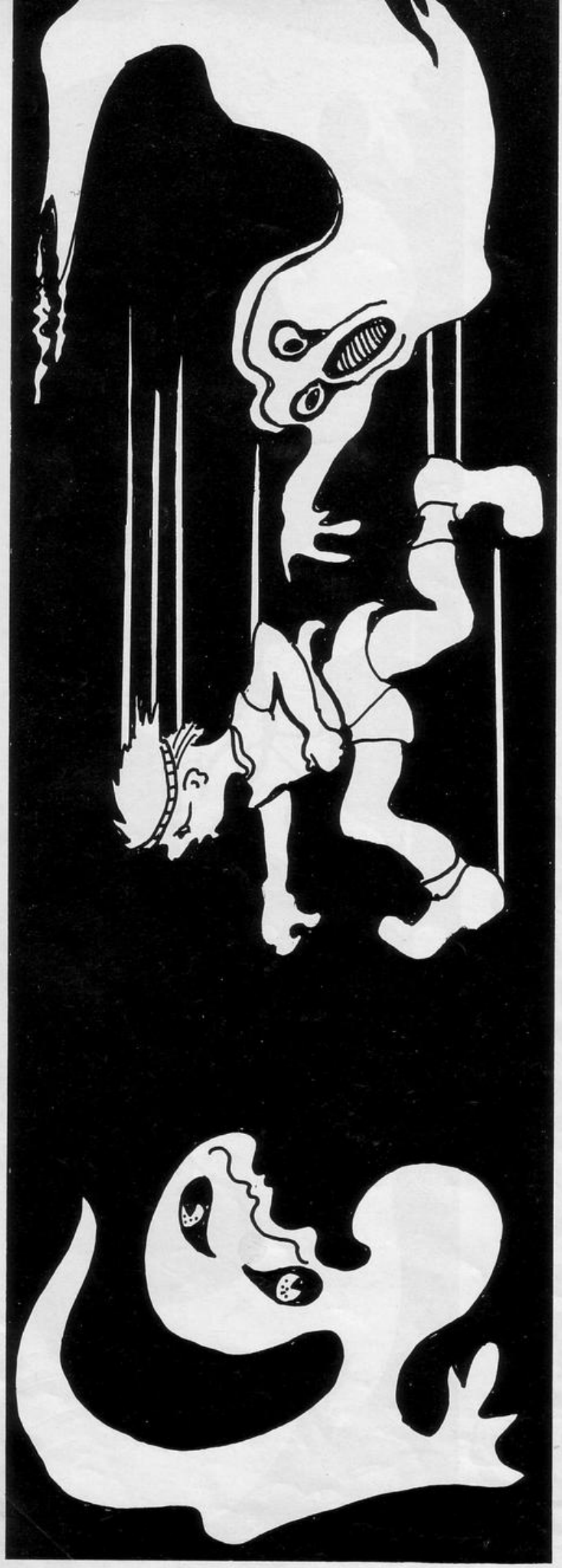
YOU ARE pursued by three determined ghosts whose single aim in death is to catch and kill you. Move around the screen with the usual cursor keys, avoiding your trail, the walls, and splurge patches. If necessary, use key "0" to go into hyperspace.

Chaser was written by Andrew Dollochan for the 16K ZX-81.

```
   1 LET HS=0
   3 LET T=0
   4 GOSUB 2000
   5 LET L=3
   6 CLS
   7 GOSUB 400
   8 GOSUB 500
   9 LET S=0
  10 LET X=10
  20 LET A=13
  30 PRINT AT X,A;
  41 IF PEEK (PEEK 16398+256*PEE
K 16399)=136 THEN GOTO 140
  42 IF PEEK (PEEK 16398+256*PEE
K 16399)=128 THEN GOTO 140
  43 IF PEEK (PEEK 16398+256*PEE
K 16399)=13 THEN GOSUB 971
  44 IF PEEK (PEEK 16398+256*PEE
K 16399)=178 THEN GOSUB 140
  45 PRINT "*"
  47 LET T=T+1
  48 IF INKEY$="0" OR INKEY$="1"
 THEN GOSUB 921
  49 IF INKEY$="6" THEN GOSUB 60
0
  50 IF INKEY$="7" THEN GOSUB 70
0
  60 IF INKEY$="8" THEN GOSUB 80
0
  70 IF INKEY$="5" THEN GOSUB 90
0
  75 PRINT AT Y,Z;"m"
  76 PRINT AT Y1,Z1;"m"
  77 PRINT AT Y2,Z2;"m"
  81 PRINT AT INT (RND*19+1),INT
 (RND*29+1);"(9h)"
 121 LET Y=Y-(X<Y)+(X>Y)
 122 LET Z=Z-(A<Z)+(A>Z)
 123 LET Y1=Y1-(X<Y1)+(X>Y1)
 124 LET Z1=Z1-(A<Z1)+(A>Z1)
 125 LET Y2=Y2-(X<Y2)+(X>Y2)
 126 LET Z2=Z2-(A<Z2)+(A>Z2)
 130 GOTO 30
 140 LET L=L-1
 155 FOR B=0 TO 15
 160 PRINT AT X,A;"(9t)"
 180 PRINT AT X,A;"(9w)"
 200 PRINT AT X,A;"(9t)"
 220 PRINT AT X,A;"(9w)"
 230 NEXT B
 231 IF L<1 THEN GOSUB 1000
 240 GOTO 6
 400 REM SET UP BOARD
 410 CLS
 420 PRINT "(32*isP)"
 430 PRINT AT 21,0;"(32*isP)"
 440 FOR Z=0 TO 21
 450 PRINT AT Z,0;"(isP)";AT Z,3
1;"(isP)"
 460 NEXT Z
 461 PRINT AT RND*20,RND*30;"$"
 462 PRINT AT RND*20,RND*30;"$"
 463 PRINT AT RND*20,RND*30;"$"
 464 PRINT AT RND*20,RND*30;"$"
 465 PRINT AT RND*20,RND*30;"$"
 470 RETURN
 500 LET Y=20
 510 LET Z=1
 520 LET Y1=20
 530 LET Z1=30
 540 LET Y2=1
 550 LET Z2=30
 560 RETURN
 600 LET X=X+1
 610 PRINT AT X-1,A;"(isP)"
 615 LET S=S+10
 620 RETURN
 700 LET X=X-1
 710 PRINT AT X+1,A;"(isP)"
```

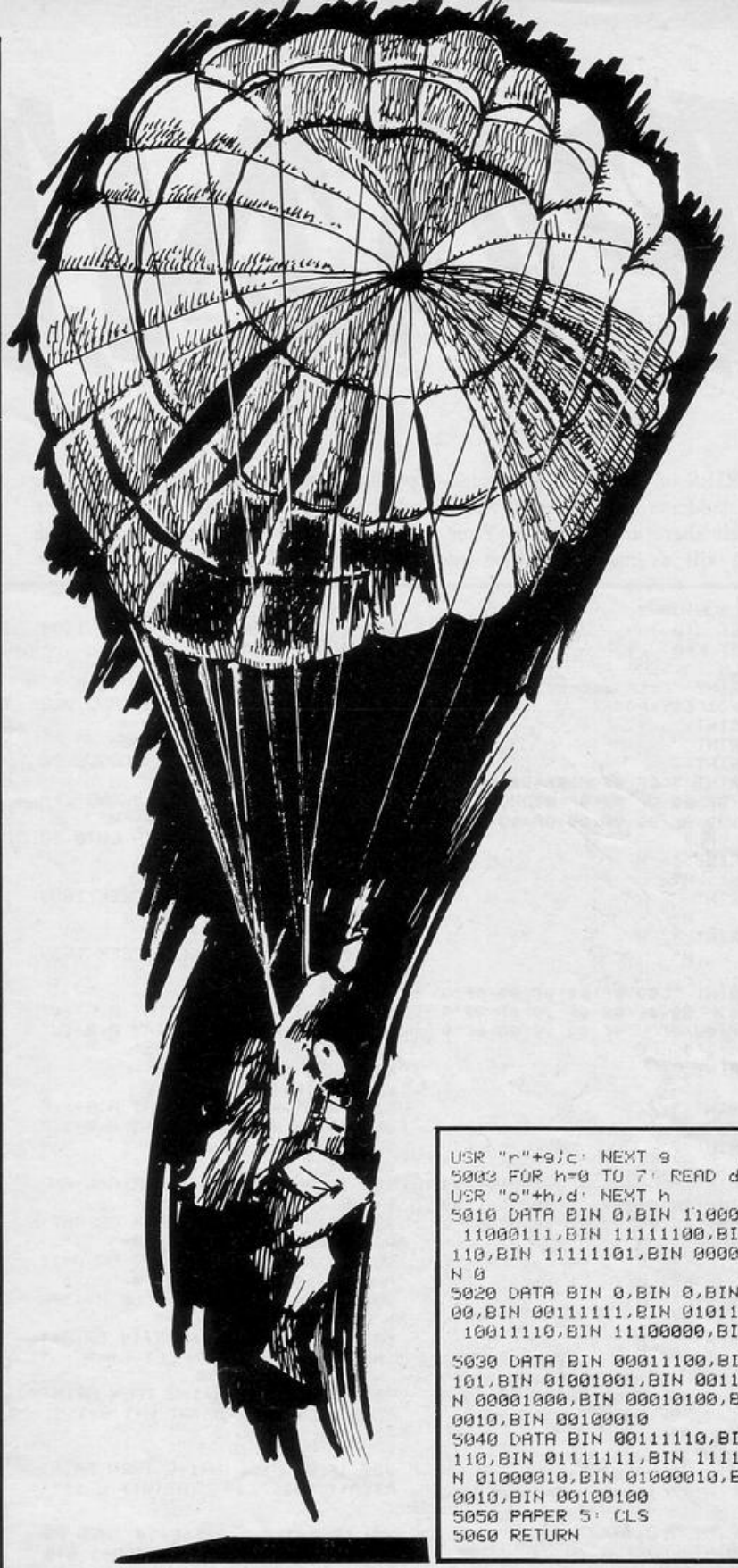
CHASER





```
 715 LET S=S+10
 720 RETURN
 800 LET A=A+1
 810 PRINT AT X,A-1;"(isp)"
 815 LET S=S+10
 820 RETURN
 900 LET A=A-1
 910 PRINT AT X,A+1;"(isp)"
 915 LET S=S+10
 920 RETURN
 921 FOR F=0 TO 10
 930 PRINT AT X,A;"(i+)"
 931 FOR G=0 TO 2
 932 NEXT G
 933 PRINT AT X,A;"+"
 934 NEXT F
 940 LET X=INT (RND*19+1)
 950 LET A=INT (RND*29+1)
 959 PRINT AT X,A;" "
 960 PRINT AT X,A;"*"
 961 LET S=S-20
 970 RETURN
 971 LET S=S+100
 972 FOR R=0 TO 5
 973 PRINT AT X,A;"(i$)"
 974 FOR B=0 TO 2
 975 NEXT B
 976 PRINT AT X,A;"(i*)"
 977 NEXT R
 979 RETURN
1000 REM GAME OVER
1010 CLS
1020 PRINT "YOUR SCORE WAS ";S
1021 PRINT
1022 PRINT "YOU LASTED ";T;" SEC
ONDS"
1030 PRINT
1040 IF HS<S THEN LET HS=S
1050 PRINT "THE HIGHEST SCORE IS
 ";HS
1090 PRINT AT 15,0;"PRESS ANY KE
Y TO PLAY"
1100 FOR A=0 TO 2
1110 NEXT A
1120 PRINT AT 15,0;"Press any ke
y to Play"
1130 FOR A=0 TO 2
1140 NEXT A
1150 IF INKEY$="" THEN GOTO 1090
1160 GOTO 5
2000 REM INSTRUCTIONS
2010 CLS
2015 FOR T=0 TO 10
2020 PRINT AT 0,13;"* CHASE *"
2021 FOR N=0 TO 2
2022 NEXT N
2023 PRINT AT 0,13;"  chase  "
2030 PRINT TAB 1;"PROGRAM BY ""A
NDREW DOLLOCHAN"""
2040 PRINT TAB 5;"AND ""IAN DUNL
OP"""
2041 PRINT
2065 PRINT
2066 PRINT "YOU ARE PURSUED BY T
HREE STUPID THOUGH DETERMINED GH
OSTS WHOSE  SINGLE AIM IN LIFE O
R SHOULD I  SAY DEATH IS TO CATC
H AND KILL  YOU.YOU ARE NOT ALLO
WED TO HIT  YOUR TRAIL (isp) THE
 WALLS (isp)  SPLURDGE PATCHES (
9h) BUT IF YOU HIT ($) THEN YOU
GAIN POINTS."
2070 PRINT
2080 PRINT "KEYS USED ARE ARROW
KEYS."
2090 PRINT "(5,6,7,8)"
2100 PRINT "1 OR 0 IS HYPERSPACE
."
2101 PRINT
2102 PRINT "20 POINTS ARE TAKEN
OFF IF YOU    USE HYPERSPACE."
2103 NEXT T
2110 PRINT AT 21,0;"Press any ke
y to Play"
2120 FOR A=0 TO 2
2130 NEXT A
2140 PRINT AT 21,0;"PRESS ANY KE
Y TO PLAY"
2150 FOR A=0 TO 2
2160 NEXT A
2170 IF INKEY$="" THEN GOTO 2110
2180 RETURN
```

```
   1 REM "drop"
   2 GO SUB 5000
   3 LET p$=" O "
   4 LET sc=0: LET n=2: LET l=3:
 LET i=3: LET cs=120
   5 LET t=INT (RND*31)
   6 IF t>27 THEN GO TO 2: IF t<
2 THEN GO TO 2
   7 LET g$="(96*isp)"
   8 LET m$=" R "
   9 LET a$=" PT "
  10 INPUT "what speed? ";s
  11 PRINT AT 19,0; INK 4;g$
  12 IF s>10 THEN GO TO 10
  20 PRINT AT 21,3;"Press any ke
y to start"
  40 PAUSE 0
  41 PAUSE 20: CLS : FOR e=10 TO
 1 STEP -1
  42 LET t=INT (RND*30)
  43 CLS : PRINT AT 0,0;"SCORE="
;sc;"  LIVES=";l;"  DROPS=";e

  45 LET a=n: LET b=0
  47 PRINT AT 18,t; INK 0;"XXX"
  49 REM **PLANE**
  50 PRINT AT a,b;a$: PAUSE s
  51 PRINT AT 19,0; INK 4;g$
  60 LET b=b+1: IF b>30 THEN PRI
NT AT 10,7;"out of time": PAUSE
40: CLS : PRINT AT 19,0; INK 4;g
$: PRINT AT 18,t; INK 0;"XXX": G
O TO 3000
  70 IF INKEY$="0" THEN GO TO 10
00
  80 GO TO 50
 999 REM **FALL**
1000 LET c=a: LET d=b
1002 PRINT AT 18,t; INK 0;"XXX"
1010 PRINT AT c,d;m$;AT c-1,d+1;
" "
1013 IF INKEY$="9" THEN GO TO 10
39

1015 PAUSE 3
1020 LET c=c+1: IF c>18 THEN GO
TO 3000
1030 GO TO 1010
1039 IF C>17 THEN GO TO 1002
1040 LET z=c
1041 PRINT AT c,d;p$;TAB d;m$;AT
 c-1,d+1;" ": FOR f=1 TO 50: NEX
T f
1042 PRINT AT c,d+1;" "
1043 LET c=c+1
1045 IF c=17 AND d=t THEN GO TO
2000
1046 IF c>17 THEN GO TO 3000
1050 LET d=d+(INKEY$="8")-(INKEY
$="5"): IF d>30 THEN LET d=d-1
1060 IF d<0 THEN LET d=d+1
1070 GO TO 1041
2000 PRINT AT 17,t;m$: BEEP .05,
10
2010 LET sc=sc+z
2015 PAUSE 50
2020 NEXT e
2998 IF l=i AND sc>=cs THEN LET
l=l+1: GO TO 4200
2999 REM **LIVES**
3000 LET l=l-1
3001 IF l=0 THEN GO TO 4000
3002 BEEP .5,-10
3010 NEXT e
4000 PRINT AT 19,0; INK 4;g$: PR
INT AT 0,0;"SCORE=";sc;"  LIVES=
";l+1;AT 0,19;" DROPS=";e+1: PRI
NT AT 15,10;"GAME OVER"
4001 FOR g=5 TO -5 STEP -1: BEEP
 .05,g: NEXT g: STOP
4200 LET n=n+2: FOR z=1 TO 20: B
EEP .01,z+1: BEEP .01,z-1: NEXT
z: IF a>13 THEN PRINT AT 10,0;"y
ou've succesfully finished your
mition": STOP
4201 LET i=i+1: LET cs=cs
4205 LET e=10: GO TO 20
5000 FOR f=0 TO 7: READ a: POKE
USR "p"+f,a: NEXT f
5001 FOR n=0 TO 7: READ b: POKE
USR "t"+n,b: NEXT n
5002 FOR g=0 TO 7: READ c: POKE
```



```
USR "r"+g,c: NEXT g
5003 FOR h=0 TO 7: READ d: POKE
USR "o"+h,d: NEXT h
5010 DATA BIN 0,BIN 11000000,BIN
 11000111,BIN 11111100,BIN 11111
110,BIN 11111101,BIN 00000111,BI
N 0
5020 DATA BIN 0,BIN 0,BIN 111000
00,BIN 00111111,BIN 01011111,BIN
 10011110,BIN 11100000,BIN 0

5030 DATA BIN 00011100,BIN 01011
101,BIN 01001001,BIN 00111110,BI
N 00001000,BIN 00010100,BIN 0010
0010,BIN 00100010
5040 DATA BIN 00111110,BIN 00111
110,BIN 01111111,BIN 11111111,BI
N 01000010,BIN 01000010,BIN 0100
0010,BIN 00100100
5050 PAPER 5: CLS
5060 RETURN
```

PARACHUTE DROP

AS THE aircraft flies across the screen, jump by pressing 0. Pressing 9 opens your parachute, allowing you to steer with keys 5 and 8. Your aim is to land on the randomly-placed landing pad each time and the later you open your parachute the more points you gain.

After you have dropped 10 times, if your score is more than 120 and you still have five lives remaining the game will continue with the aircraft flying slightly lower.

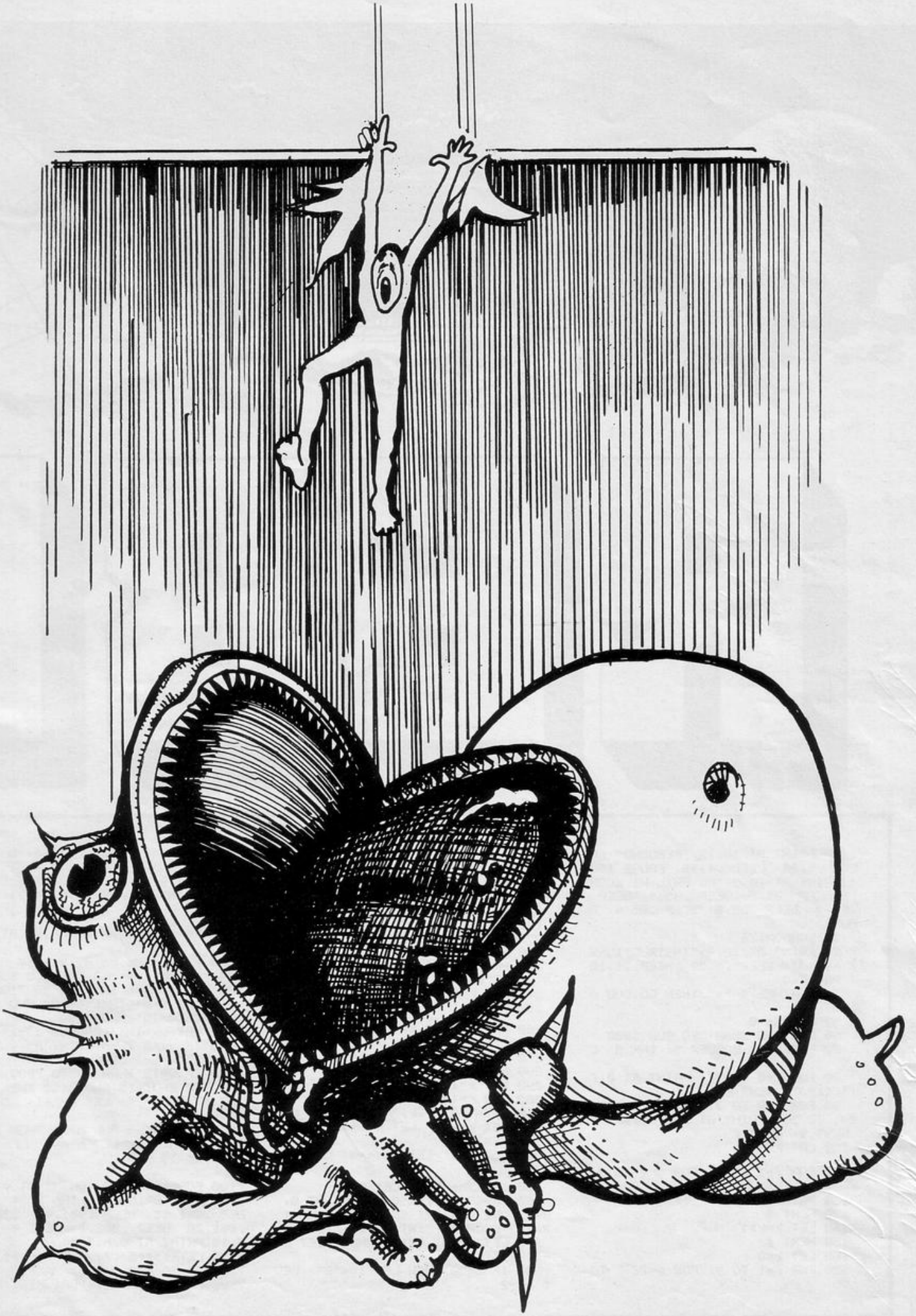
Parachute Drop was written for the Spectrum by Andrew Burton of Worksop, Notts.

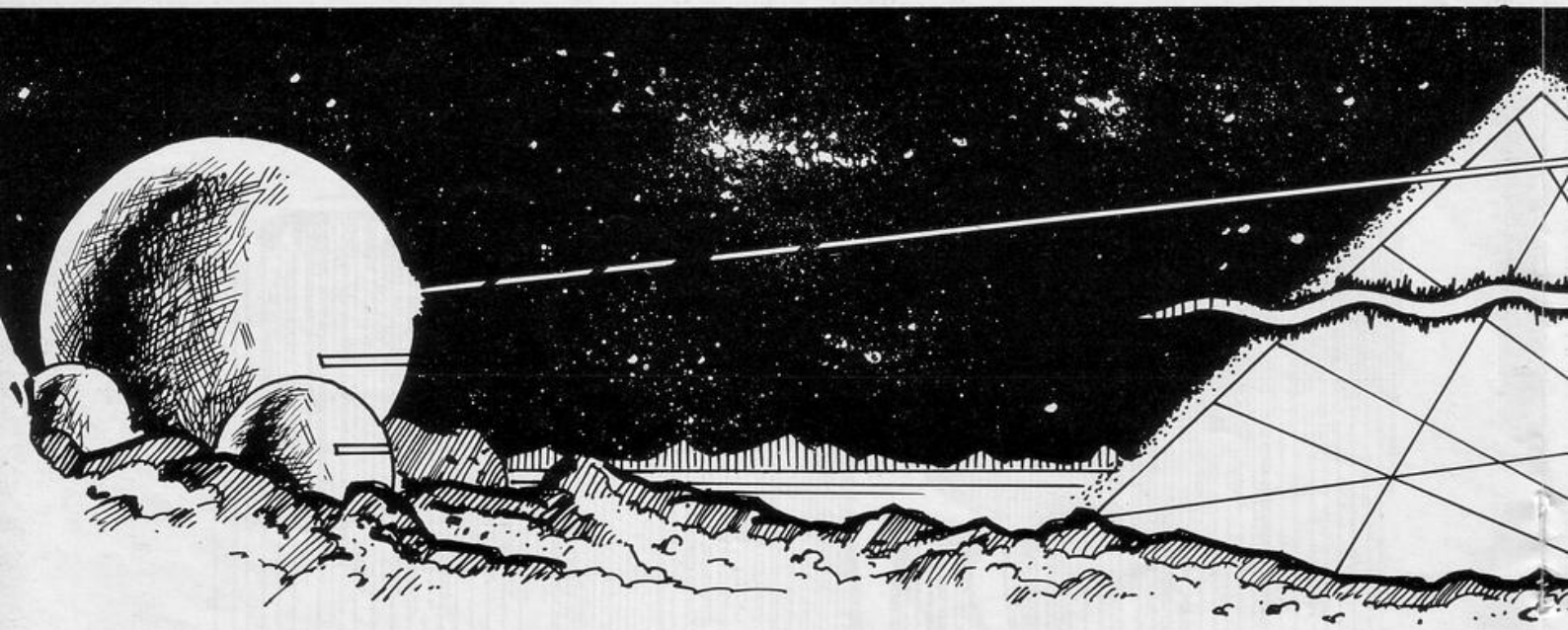
PANIC

A SERIES of levels are connected by ladders. On some of those levels there are monsters. Your task is to kill as many monsters as possible, by standing next to a monster and pressing key 0. Each time a monster is killed a hole will appear in the floor and if you fall into one you will be killed. Forethought is needed to allow you to survive for as long as possible.

Panic was written for the 16K ZX-81 by S Miller of Bideford East, Devon.

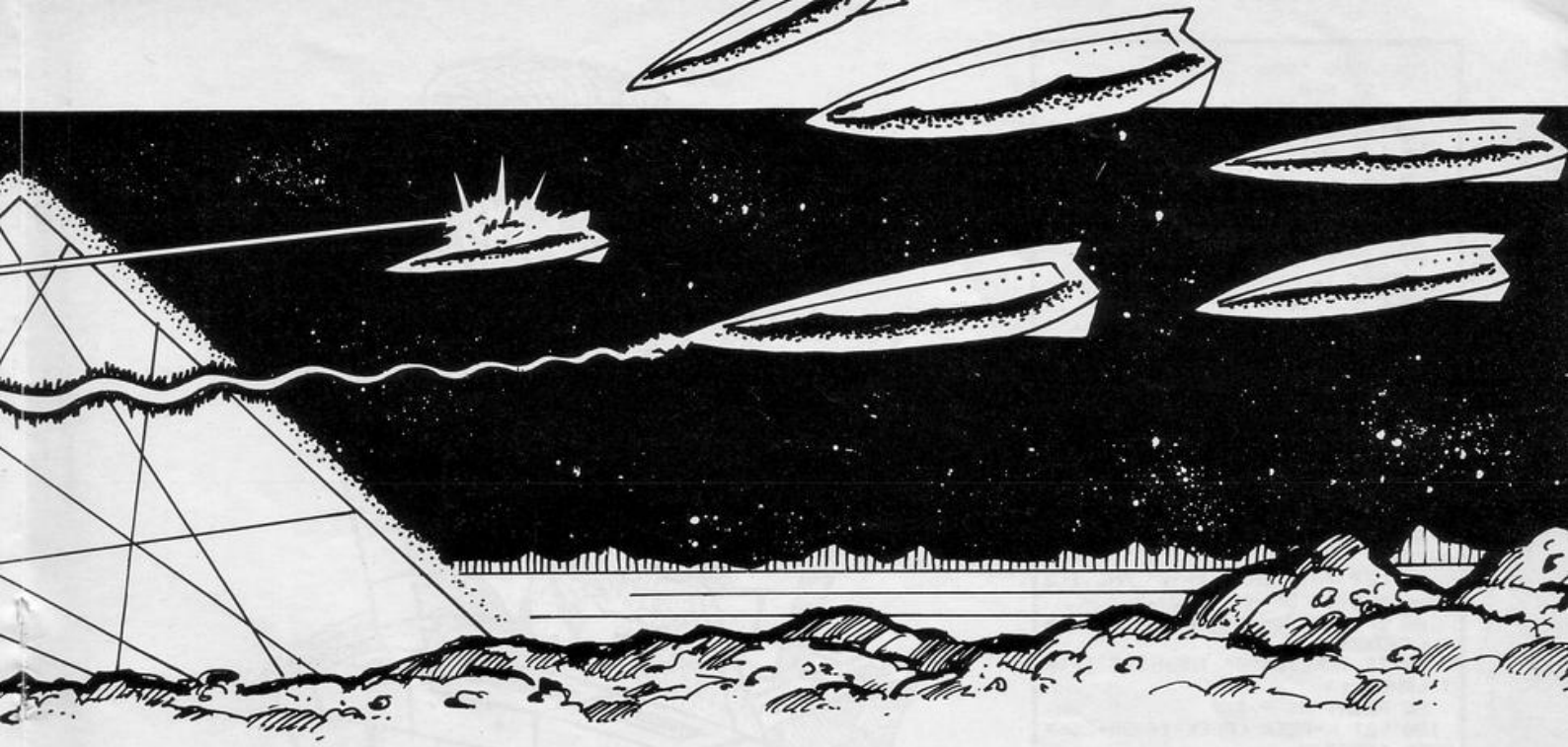
```
   1 GOSUB 3000
  10 LET S=0
  11 LET K=0
 100 CLS
 101 PRINT "(isP)score(10*isP)00
0(6*isP)a(6*isP)"
 110 PRINT
 120 PRINT
 130 PRINT
 160 PRINT "(9f:99)H(9f:99:9f:99
:9f:99:9f:99:9f:99:9f:99)H(99:9f
:99:9f:99:9f:99:9f:99:9f:9
9:9f)H(9f)"
 170 PRINT "  H              H
          H"
 180 PRINT "  H              H
          H"
 190 PRINT "  H              H
          H"

 210 PRINT "(99:9f:99:9f:99:9f:9
9:9f:99)H(99:9f:99:9f:99:9f:99:9
f:99:9f:99:9f)H(9f:99:9f:99:9f:9
9:9f:99:9f)"
 220 PRINT "          H
  H"
 230 PRINT "          H
  H"
 240 PRINT "          H
  H"
 260 PRINT "(9f:99)H(9f:99:9f:99
:9f:99:9f:99:9f:99:9f:99)H(9f:99
:9f:99:9f:99:9f:99:9f:99:9f:99:9
f:99):H(99)"
 270 PRINT "  H              H
          H"
 280 PRINT "  H              H
          H"
 290 PRINT "  H              H
          H"
 300 PRINT "99:9f:99:9f:99:9f:99
:9f:99:9f:99:9f:99:9f:99:9f:99:9
f:99:9f:99:9f:99:9f:99:9f:99:9f:
9:9f:99:9f)"
 310 PRINT "(32*9a)"
 320 PRINT "(32*9a)"
 330 PRINT "(12*9a)zxlPanic(12*9
a)"
 340 PRINT "(32*9a)"
 350 PRINT "(32*9a)"
 370 LET A=15
 380 LET B=11
 390 LET D=1
 400 LET C=0
 401 LET E=3
 410 LET C$="    "
 420 LET D$=" (i") "
 430 LET E$=" (i") "
 440 LET F$=" (i") "
 450 LET G$="    "
 500 PRINT AT 3,E;D$;AT 7,E+14;E
$;AT 11,E+7;F$;AT 15,E;C$;AT 15,
E+14;G$
 510 LET E=E+D
 540 PRINT AT A,B;
 550 LET A$=CHR$ PEEK (PEEK 1639
8+256*PEEK 16399)
 552 PRINT AT A+1,B;
 553 LET Z$=CHR$ PEEK (PEEK 1639
8+256*PEEK 16399)
 560 PRINT AT A,B;"A"
 561 IF Z$=" " THEN GOTO 1000
 570 LET B=B+(INKEY$="8" AND B<3
1)-(INKEY$="5" AND B>0)
 571 IF K=20 THEN GOTO 580
 572 IF INKEY$="9" THEN GOSUB 90
00
 580 LET A=A+(INKEY$="6" AND Z$=
"H")-(INKEY$="7" AND A$="H")
 590 IF INKEY$<>"0" THEN GOTO 50
0
 591 PRINT AT A,B+1;
 592 LET Y$=CHR$ PEEK (PEEK 1639
8+256*PEEK 16399)
 593 PRINT AT A,B-1;
 594 LET V$=CHR$ PEEK (PEEK 1639
8+256*PEEK 16399)
 600 FOR N=1 TO 5
 610 PRINT AT A,B;"A";AT A,B+1;"
(9t)";AT A,B+1;"(9v)";AT A,B+1;"
";AT A,B;" "
 620 NEXT N
 621 FOR N=1 TO 5
 622 PRINT AT A,B;"A";AT A,B-1;"
(9t)";AT A,B-1;"(9v)";AT A,B-1;"
";AT A,B;" "
 623 NEXT N
 900 IF A=3 AND B+1=E OR A=3 AND
B-1=E THEN LET D$="    "
 901 IF A=7 AND B+1=E+14 OR A=7
AND B-1=E+14 THEN LET E$="    "
 902 IF A=11 AND B+1=E+7 OR A=11
AND B-1=E+7 THEN LET F$="    "
 904 IF A=15 AND B+1=E OR A=15 A
ND B-1=E THEN LET C$="    "
 905 IF A=15 AND B+1=E+14 OR A=1
5 AND B-1=E+14 THEN LET G$="    "

 906 IF A=3 AND B+1=E THEN PRINT
 AT A+1,B+1;"(i")";AT A+1,B+1;"
"

 907 IF A=3 AND B-1=E THEN PRINT
 AT A+1,B-1;"(i")";AT A+1,B-1;"
"

 908 IF A=7 AND B+1=E+14 THEN PR
INT AT A+1,B+1;"(i")";AT A+1,B+1
;" "

 909 IF A=7 AND B-1=E+14 THEN PR
INT AT A+1,B-1;"(i")";AT A+1,B-1
;" "

 910 IF A=11 AND B+1=E+7 THEN PR
INT AT A+1,B+1;"(i")";AT A+1,B+1
;" "

 920 IF A=11 AND B-1=E+7 THEN PR
INT AT A+1,B-1;"(i")";AT A+1,B-1
;" "

 930 IF A=15 AND B+1=E+7 THEN PR
INT AT A+1,B+1;"(i")";AT A+1,B+1
;" "

 940 IF A=15 AND B-1=E+7 THEN PR
INT AT A+1,B-1;"(i")";AT A+1,B-1
;" "

 941 PRINT AT 3,E;D$;AT 7,E+14;E
$;AT 11,E+7;F$;AT 15,E;C$;AT 15,
E+14;G$

 942 IF V$="(i")" OR Y$="(i")" T
HEN LET S=S+20
 995 PRINT AT 0,15;S;"(5*isP)"
 996 IF C$="    " AND D$="    " AN
D E$="    " AND F$="    " AND G$="
    " THEN GOTO 1065
 998 GOTO 500

1010 PRINT AT A,B;"a";AT A,B;"A"

1030 PRINT AT 19,12;"GAME-OVER"

1031 PRINT AT 21,9;"PRESS ANY KE
Y"
1032 PAUSE 100
1040 IF INKEY$="" THEN GOTO 1040
1050 CLS

1060 RUN

1065 PRINT AT A,B;" "
1070 LET A=3

1080 LET B=1

2000 GOTO 410

3000 PRINT "********PANIC S.MILL
ER**********"
3001 PRINT ,,

3002 PRINT "THE IDEA OF THIS GAM
E IS TO MOVEAROUND (USING CURSOR
 KEYS) AND  KILL THE MONSTERS.
            ALSO ON THE BOTTOM F
LOOR THEIR  IS THREE MONEY BAGS
WHICH IF    COLLECTED WILL GATHE
R POINTS."
3003 PRINT
3004 PRINT "EVERY TIME YOU KILL
A MONSTER   IT WILL MAKE A HOLE
IF YOU FALL IN A HOLE YOU DIE"

3005 PRINT "TO KILL A MONSTER YO

U SIMPLY    PLACE YOURSELF NEXT

TO A MONSTERAND HIT IT WITH YOUR
 AXE (KEY ""0"" )"

3006 PRINT

3010 PRINT

3060 PRINT
4020 PRINT "          Press any k
ey"

4021 IF INKEY$="" THEN GOTO 4021
4022 CLS

4040 RETURN
9008 RETURN
9010 SAVE "PANIc"
9020 RUN
```





REBO

```
  10 PRINT AT 10,12;"REBOUND": B
EEP .5,20: BEEP .4,15: PAUSE 150
: PRINT AT 10,9;"by PHIL WILLCOX
": BEEP .05,6: BEEP .05,4: BEEP
.05,2: BEEP .05,0: BEEP .05,4: P
AUSE 100
  15 RANDOMIZE
  20 PRINT AT 10,8;"INSTRUCTIONS
? (y/n)": BEEP .1,20: BEEP .1,10
: PAUSE 0
  30 IF INKEY$="y" THEN GO SUB 8
500
  50 LET hs=0
  60 RESTORE 9000: GO SUB 9000
  70 PAPER 0: BORDER 5: INK 5: C
LS
  80 FOR f=0 TO 31: PRINT AT 0,f
;"(isp)": NEXT f
  90 FOR f=0 TO 31 STEP 31: FOR
g=1 TO 20: PRINT AT g,f;"(isp)":
 NEXT g: NEXT f
 100 LET k=0

 110 FOR f=1 TO 9: FOR g=1 TO 9-
k
 120 PRINT AT f,g;"(isp)"
 130 NEXT g
 140 LET k=k+1
 150 NEXT f
 160 LET k=0
 170 FOR f=1 TO 9: FOR g=22+k TO
30
 180 PRINT AT f,g;"(isp)"
 190 NEXT g
 200 LET k=k+1
 210 NEXT f
 220 PRINT AT 12,15;"(2*isp)";AT
 13,14;"(4*isp)";AT 14,13;"(6*is
p)";AT 15,12;"(8*isp)"
 230 FOR f=16 TO 20: FOR g=11 TO
 20: PRINT AT f,g;"(isp)": NEXT
g: NEXT f
 240 LET k=10: LET p=21
 250 FOR f=1 TO 10

 260 PRINT AT f,k;"(ia)";AT f,p;
"(ib)"
 270 LET k=k-1: LET p=p+1
 280 NEXT f
 290 LET k=14: LET p=17
 300 FOR f=12 TO 15
 310 PRINT AT f,k;"A";AT f,p;"B"
 320 LET k=k-1: LET p=p+1
 330 NEXT f
 340 LET s=0: LET miss=0: LET c=
1

 350 IF s>hs THEN LET hs=s
 360 PAPER 5: INK 0: PRINT AT 0,
0;"SCORE ";s,"HI SCORE ";hs;AT 1
7,12;"ESCAPED:";AT 19,15;miss
 370 LET h=INT (21+9*RND): LET v
=21
 380 IF c<20 THEN LET a$="E": LE
T co=2
 390 IF c>=20 THEN LET a$="D": L
ET co=6
 400 LET g=5
 410 PRINT ; PAPER 0;AT 21,1;"
        "

 420 PAPER 0: INK 7: PRINT AT 21
,9;" C "
 430 PRINT INK co;AT v,h;a$
 440 IF INKEY$="b" THEN GO SUB 7
900: IF g=30-h THEN GO TO 7100
 450 LET g=g+(INKEY$="8" AND g<9
)-(INKEY$="5" AND g>0)
 460 LET vy=INT (RND*60-c)+1
 470 IF vy<2 THEN PRINT AT v,h;"
": LET v=v-1
 480 IF v=12 THEN GO TO 7500
 500 IF RND<.15 AND h<30 THEN PR
INT AT v,h;" ": LET h=h+1: GO TO
 410
 510 IF RND<.3 AND h>21 THEN PRI
NT AT v,h;" ": LET h=h-1
 520 GO TO 410

7100 FOR q=1 TO 3: PRINT AT v,h;
 FLASH 1; BRIGHT 1; INK 2;"*": B
EEP .001,50: BEEP .001,40: BEEP
.001,20: BEEP .002,1: NEXT q
7110 PRINT AT v,h;" "
7115 LET s=s+5+c*3: LET c=c+1
7120 GO TO 350
7500 PRINT FLASH 1; BRIGHT 1;AT
```



OUND

```
v,h;"*": BEEP .05,-2: BEEP .05,-
12: BEEP .02,-40: PRINT AT v,h;"
 ": LET miss=miss+1:
7505 IF miss=5 THEN GO TO 7600
7510 GO TO 350
7600 CLS : PRINT AT 10,13;"SORRY
!";AT 12,10;"YOU LET TOO";AT 14,
10;"MANY ESCAPE": PAUSE 50: PRIN
T AT 5,1;"You scored ";s: FOR f=
30 TO -30: BEEP .0025,f: NEXT f:
 PRINT AT 20,3;"Press a key for
another go"
7610 PAUSE 0
7620 GO TO 60
7900 BEEP .01,1: BEEP .01,15: BE
EP .01,35
8000 BEEP .01,1: BEEP .01,15: BE
EP .01,35
8010 PLOT 9*8+12,9: DRAW 0,75+9*
8: BEEP .01,30: PLOT OVER 1;9*8+
12,9: DRAW OVER 1;0,75+9*8: BEEP
 .015,35
8020 PLOT 9*8+12,9+(75+9*8): DRA
W 232-9*16,0: PLOT OVER 1;9*8+12
,9+(75+9*8): DRAW OVER 1;232-9*1
6,0
8030 PLOT (9*8+12)+(232-9*16),9+
(75+9*8): DRAW 0,-(75+9*8): BEEP
 .0075,20: PLOT OVER 1;(9*8+12)+
(232-9*16),9+(75+9*8): DRAW OVER
 1;0,-(75+9*8)
8040 RETURN
8500 CLS : PRINT TAB 8;"INSTRUCT
IONS"'"Shoot the      s as they
 try to escape"'"Move your cosm
ic cannon with the ~5~ and ~8~ k
eys, and Press ~b~to fire"'"The
y become Progressively harderto
hit - but score more Points  as
they do"
8510 PRINT '"The game ends if y
ou let five   escape (they disap
pear into     hyperspace at a ce
rtain         altitude)"'"Pres
s a key to Play"
8520 PAUSE 0
8530 CLS : RETURN
8998 RETURN
9000 FOR f=144 TO 148
9010 FOR n=0 TO 7: READ z
9020 POKE USR CHR$ f+n,z: NEXT n
: NEXT f
9030 DATA 1,3,7,15,31,63,127,255

9031 DATA 128,192,224,240,248,25
2,254,255
9032 DATA 24,24,60,60,60,126,126
,126
9033 DATA 60,126,219,219,126,60,
66,129
9034 DATA 129,102,126,60,60,126,
102,129
9040 RETURN
```

SHOOT THE missiles as they try to escape their planet's atmosphere on the right of the screen. If five escape into hyperspace they will destroy your home planet and the game will end. Your cosmic cannon is situated on the left of the screen. It moves left with "5", right with "8", and fires with "B". Its shots travel upwards, hit the top of the play area and ricochet down on the right. Skill is needed to aim them correctly.

Rebound was written for the 16K Spectrum by P J Willcox of Ely, Cardiff and is this month's program of the month. Willcox works in a local hospital and bought his Spectrum primarily for his children to use. He found the games which could be played on it captivating and began to write his own.

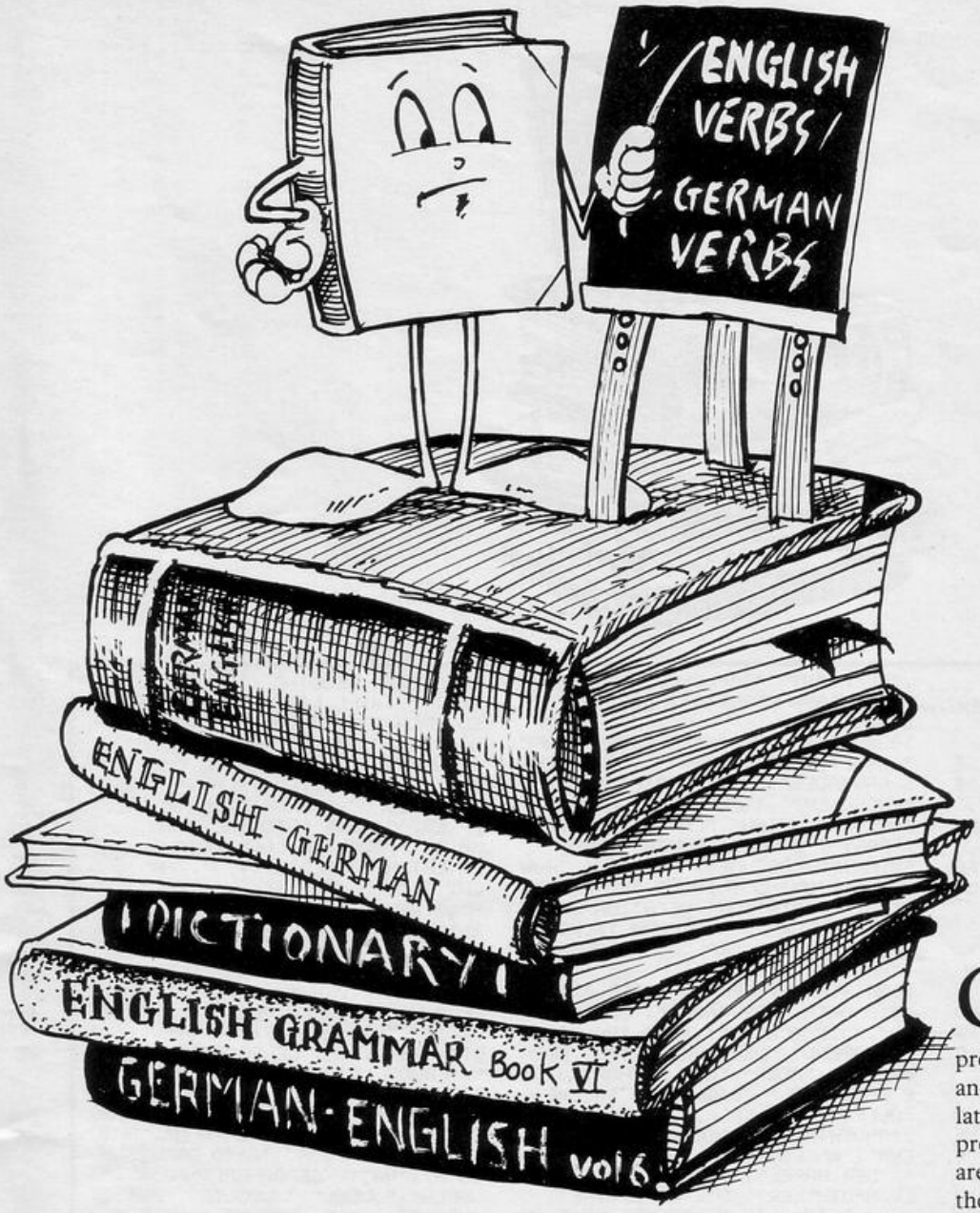
In the future he would like to write a program which would provide complete horoscopes. After that his plans are more optimistic. He would like to learn machine code and write a program which would make his fortune.

```
   1 GOSUB 5000
   2 LET H=0
   3 LET T=0
   4 LET U=3
   5 LET P=10
   6 LET P1=10
   8 LET D=0
   9 CLS
  10 FAST
  11 LET P=10
  12 LET T=0
  13 GOSUB 1000
  15 FOR I=1 TO H+100
  20 PRINT AT INT (RND*24),INT (
RND*29)+3;"(isp)"
  30 NEXT I
  35 SLOW
  40 PRINT AT P,0;"(i$)"
  41 FOR I=1 TO 20
  42 NEXT I
  45 PRINT AT P,0;" "
  55 LET H=H+1
  60 LET P=P+(INKEY$="6")-(INKEY
$="7")
  70 LET T=T+(INKEY$="8" AND T<3
1)-(INKEY$="5" AND T>0)
  80 IF INKEY$="0" THEN LET P=IN
T (RND*21)
  85 IF INKEY$="0" THEN LET T=IN
T (RND*31)
  90 PRINT AT P,T;
 100 LET K=PEEK (PEEK 16398+256*
PEEK 16399)
 110 IF K=128 THEN GOTO 150
 115 IF K=27 THEN LET D=D+10
 120 PRINT AT P,T;"(i$)";AT P,T;
" "
 130 LET P1=P
 135 IF INT (RND*100)<>INT (RND*
100) THEN PRINT AT INT (RND*21)+
0,INT (RND*31)+0;"(isp)"
 140 GOTO 55
 146 GOTO 200
 150 FOR R=1 TO 15
 155 PRINT AT P,T;"(9a)";AT P,T;
"$";AT P,T;"(i$)"
 159 NEXT R
 160 PRINT AT P,T;" "
 170 PRINT AT 10,2;" you have be
en destroyed "
 172 PRINT AT 11,5;" on sheet ";
U
 173 LET U=U-1
 174 IF U=0 THEN GOTO 215
 180 FOR Y=1 TO 150
 190 NEXT Y
 195 GOTO 9
 215 CLS
 216 PRINT "the end",,"you got s
plooched"
 220 PRINT AT 15,0;"  your score
 is  ";D
 230 PRINT "DO YOU WISH TO GO AG
AIN?"
 240 POKE 16418,2
 250 INPUT Z$
 260 GOTO 4000
1000 POKE 16418,0
1001 FOR F=0 TO 23
1010 PRINT AT F,0;"(32*isp)"
1020 NEXT F
1030 FOR F=1 TO 22
1040 PRINT AT F,1;"..............
................."
1050 NEXT F
1111 RETURN
4000 LET GO=0
4001 PRINT AT 9,GO;"(sp:9a:sp:9t
:9y:2*sp:95:9t:24*sp:isp:97:95:9
8:2*sp:9e:94:24*sp:9w:sp:9y:9t:9
3:sp:95:98:sp)"
4002 LET GO=GO+1
4003 IF GO=29 THEN GOTO 4010
4004 GOTO 4001
4010 PRINT AT 10,0;"              "
;AT 11,0;"              ";AT 12,0;"
              "
4020 PRINT AT 9,GO;"(sp:9a:sp)";
AT 10,GO;"(97:9h:9y)";AT 11,GO;"
(98:sp:95)"
4030 FOR F=1 TO 60
4040 PRINT AT 9,GO-1;"(93:sp)";A
T 9,GO-1;"(sp:94)"
4050 IF Z$(1)<>"N" THEN PRINT AT
 9,0;"here we go"
4060 IF Z$(1)="N" THEN PRINT AT
9,0;"good bye"
4100 NEXT F
4500 IF Z$(1)<>"N" THEN GOTO 1
4999 STOP
5000 GOSUB 9000
5002 CLS
5009 PRINT AT 0,0;"            gob
ble]trap              "
5010 PRINT "
                    "
5015 PRINT
5020 PRINT " YOU ARE REPRESENTED
 BY A (i$).     YOUR TASK IS TO G
OBBLE YOUR WAY AROUND THE SCREEN
 EATING DOTS.  ON YOUR JOURNEY Y
OU RUN THE RISKOF BEING DESTROYE
D IF YOU HIT A WALL ( (isp) ) OR
 YOU ARE HIT BY ONEAS IT FALLS.
          "
5030 PRINT "controls are as foll
ows:",,"UP=7",,"DOWN=6",,"LEFT=5
",,"RIGHT=8"
5040 PRINT ,,,,"0=HYPERSPACE (US
E IF NEEDED      (I.E. YOU ARE TR
APPED),BUT YOU  MAY LAND ON A WA
LL AND BE        splooched)"
5050 PRINT AT 21,0;" hit a key
                          "
5060 IF INKEY$="" THEN GOTO 5060
5070 CLS
5071 FOR F=1 TO 20
5075 PRINT AT 10,10;"Prepare you
rself";AT 10,10;"PREPARE YOURSEL
F"
5080 NEXT F
5200 RETURN
9000 CLS
9001 PRINT AT 0,0;"            gob
ble]trap
                          THIS IS ""P
AC MAN"" WITH A                  D
IFFERENCE"
9002 PRINT
9010 PRINT "WHAT IS THE DIFFEREN
CE?          WELL,THERE ARE no g
hosts.
            but TO COMPENSATE FO
R THIS THE  MAZE IS COMPLETELY R
ANDOM and   IT IS CONSTANTLY BEI
NG FILLED INAND PASSAGES CAN OFT
EN GET      BLOCKED."
9011 PRINT
9020 PRINT "FOR EACH DOT (.) YOU
 EAT YOU    SCORE 10 POINTS."
9025 PRINT AT 21,0;"    hit a ke
y                  "
9030 IF INKEY$="" THEN GOTO 9030
9035 RETURN
9990 STOP
9998 SAVE "(96)"
9999 GOTO 1
```

GOBBLE TRAP

RICHARD PARR of Ipswich, Suffolk, who wrote **Gobble Trap** for the 16K ZX-81, defines it as "Pac-man with a difference", the difference being that there are no ghosts. Move round the maze eating the power pills but the maze develops around you and eventually will either trap you or squash you beneath a wall.

You have three screens on which to achieve as high a score as you are able.



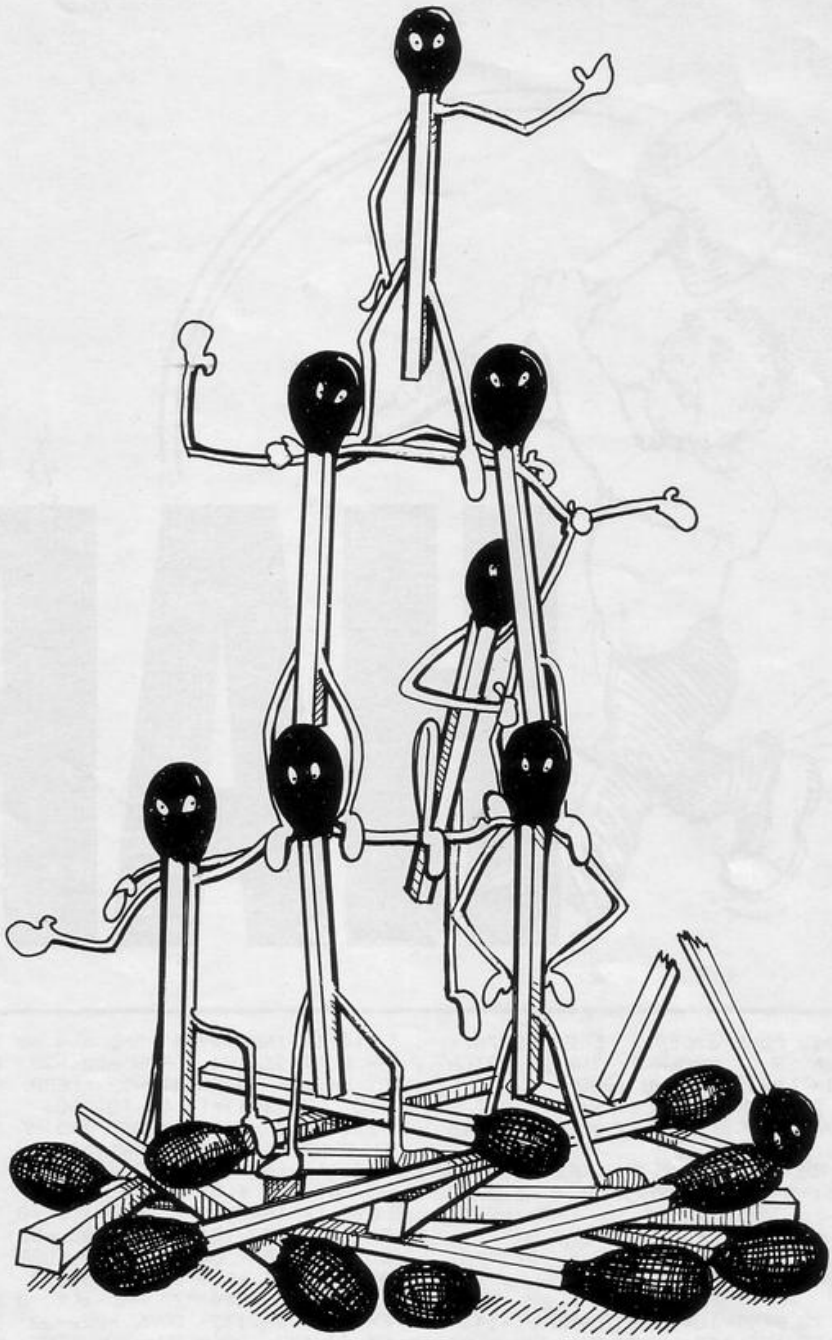
COLIN CLARKE of Colchester, Essex wrote **German Tester** for 48K Spectrum owners. The program tests your vocabulary, definite and indefinite articles, verbs and translation. A menu at the beginning of the program allows you to choose on which area you are to be tested and how long the test should be.

GERMAN TESTER

```
 30 CLS
 40 PRINT AT 0,9;"GERMAN TESTER
": PLOT 64,168: DRAW 120,0: PLOT
 64,165: DRAW 120,0
 60 PRINT AT 6,2;"1-VOCABULARY"
;AT 9,2;"2-VERBS";AT 12,2;"3-DEF
INITE ARTICLE";AT 15,2;"4-INDEFI
NITE ARTICLE";AT 18,2;"5-TRANSLA
TION"
 70 PRINT AT 21,8;"ENTER NO.(1
TO 5)"
 80 REM ***SET-UP VARIABLES***
 90 IF INKEY$="1" THEN LET I$="
VOCABULARY": LET R=1000: GO TO 1
50
 100 IF INKEY$="2" THEN LET I$="
VERB": LET R=2000: GO TO 150
 110 IF INKEY$="3" THEN LET I$="
DEFINITE ARTICLE": LET R=3000: G
O TO 150
 120 IF INKEY$="4" THEN LET I$="
INDEFINITE ARTICLE": LET R=4000:
 GO TO 150
 130 IF INKEY$="5" THEN LET I$="
GERMAN TRANSLATION": LET R=INT (
(RND*2)+1)*1000: LET TR=0: LET N
T=500: GO TO 160
 140 GO TO 90
 150 LET TR=500: LET NT=0
 160 LET SCORE=0: LET Q=0
 170 REM ***VARIABLES NOW SET***
 180 PAUSE 50
 190 CLS
 200 REM *SORT OUT INSTRUCTIONS*
 210 LET Y=((32-LEN I$)-7)/2: PR
INT AT 0,Y;I$;" TESTER": PRINT A
T 1,Y;: FOR N=1 TO LEN I$+7: PRI
NT "(93)";: NEXT N: PRINT AT 3,9
;"INSTRUCTIONS:";AT 4,9;"(13*93)
"
 220 IF NT=500 THEN LET K$="A GE
RMAN": LET J$="ENGLISH": GO TO 2
40
 230 LET K$="AN ENGLISH": LET J$
="GERMAN"
 240 PRINT AT 7,0;"WHEN ";K$;" W
ORD IS DISPLAY-ED,TYPE-IN ITS ";
J$;" EQUIVLENT AND PUSH 'ENTER'.
TO REPRESENT AN UMLAUT,PUT THE L
ETTER 'U' IN   BRACKETS,WITH THE
 LETTER THAT IT SHOULD BE OVER F
OLLOWING."
 250 PRINT AT 14,0;"   E.G.   DE
R APFEL (U)E : THIS MEANS AN UML
AUT SHOULD BE OVER  THE LETTER '
E'."
 260 PRINT AT 20,5; FLASH 1;"HOW
 MANY QUESTIONS ?"
 270 INPUT DQ: IF DQ<1 THEN GO T
O 270
 280 PRINT AT 20,3;"PRESS 'ENTER
' TO CONTINUE": INPUT Z$
 290 REM ************
 300 REM **MAIN LOOP**
 310 REM ************
 320 CLS
 330 PRINT AT 0,Y;I$;" TESTER":
PRINT AT 1,Y;: FOR N=1 TO LEN I$
+7: PRINT "(93)";: NEXT N
 333 IF R=1000 THEN LET RD=INT (
RND*55)+1
 335 IF R=2000 THEN LET RD=INT (
RND*53)+1
 340 IF R=3000 OR R=4000 THEN LE
T RD=INT (RND*16)+1
 370 RESTORE R+NT
 380 FOR E=1 TO RD: READ E$: NEX
T E
```

```
 410 RESTORE R+TR
 420 FOR G=1 TO RD: READ G$: NEX
T G
 430 LET Q=Q+1
 440 PRINT AT 6,0;"QUESTION "; I
NVERSE 1;Q;AT 6,23; INVERSE 0;"S
CORE "; INVERSE 1;SCORE;AT 3,6;
INVERSE 0;"REPLY 'G' TO GIVE-UP"
 450 PRINT AT 10,0;E$;"=";
 460 POKE 23658,8: INPUT A$: IF
A$="G" THEN PRINT "GIVE-UP": GO
TO 470
 465 PRINT A$
 470 FOR N=1 TO 32: PRINT "_";:
NEXT N
 480 REM **CHECK ANSWER**
 490 IF A$=G$ THEN LET SCORE=SCO
RE+1: PRINT TAB 12;"CORRECT": PR
INT TAB 11;"(9*93)": PAUSE 50: G
O TO 590
 500 IF A$="G" OR A$="GIVE UP" T
HEN PRINT TAB 12;"GIVEN UP!": PR
INT TAB 11;"11*93)": PRINT '"THE
 ANSWER WAS """;G$;""": PRINT '
: PRINT TAB 4;"(FANCY GIVING UP
THOUGH!)": GO TO 580
 560 PRINT TAB 12;"WRONG!": PRIN
T TAB 11;"(7*93:92)"
 570 PRINT AT 16,0;"IT WASN'T ";
A$;",";AT 18,0;"IT WAS """;G$;""
""
 580 PRINT AT 21,4; INVERSE 1;"P
RESS 'ENTER' TO CONTINUE": INPUT
 Z$
 590 IF Q<>DQ THEN GO TO 290
 600 REM ***RESULTS***
 610 IF SCORE>DQ/2 THEN LET C$="
NOT BAD"
 620 IF SCORE=DQ THEN LET C$="WE
LL DONE"
 630 IF SCORE<DQ/2 THEN LET C$="
POOR"
 640 IF SCORE=DQ/2 THEN LET C$="
AVERAGE"
 650 CLS
 660 PRINT AT 0,12;"RESULTS";AT
1,11;"(9*93)"
 670 PRINT AT 5,0;C$;":-"
 680 PRINT AT 7,0;"YOUR SCORE WA
S ";SCORE;" OUT OF ";Q
 690 PRINT AT 10,0;"DO YOU WISH
TO USE THIS AGAIN ?"
 700 IF INKEY$="Y" THEN RUN 40
 710 IF INKEY$="N" THEN GO TO 99
9
 720 GO TO 700
 999 STOP
1000 REM ((((ENGLISH VOCAB.))))
1010 DATA "HORSE","PIG","BARN","
TRACTOR","IN THE EVENING","EVENI
NG","SUPPER","BUT","DEPARTURE","
DEPARTMENT","BRIEF CASE","ALONE"
,"ALL SORTS OF","THEREFORE","OLD
","ONE AND A HALF","FISHING ROD"
,"PLEASANT","EMPLOYED","THEN","A
PPLE","APPLETREE","APPLE TART","
ORANGE"
1020 DATA "CHEMIST'S SHOP","WORK
","DOCTOR","ASH TRAY","COLD MEAT
S/SAUSAGES","EYE","TRIP","EXIT",
"EXCELLENT","TEMPORARY WAITER","
FOREIGN","VIEW","CAR","MOTORWAY"
,"BABY","BAKER","BAKER'S SHOP","
SWIMMING COSTUME","SWIMMING TRUN
KS","SWIMMING THINGS","BATHROOM"
,"BATH","STATION","STATION MASTE
R","PLATFORM","PLATFORM TICKET",
"SOON","BALL","BALCONY","BANANA"
,"BANK"
1500 REM ((((GERMAN VOCAB.))))
1510 DATA "DAS PFERD","DAS SCHWE
IN","DIE SCHEUNE","DER TRAKTOR",
"AM ABEND","DER ABEND","DAS ABEN
DESSEN","ABER","DIE ABFAHRT","DI
E ABTEILUNG","DIE AKTEN TASCHE",
"ALLEIN","ALLERLEI","ALSO","ALT"
,"ANDERTHALB","DIE ANGEL","ANGEN
EHM","ANGESTELLT","ANSCHLIESSEND
","DER APFEL","DER APFELBAUM","D
ER APOTHEKER","DIE APFELSINE"
1520 DATA "DIE APOTHEKE","DIE AR
BEIT","DER ARZT","DER ASCHENBECH
ER","DER AUFSCHNITT","DAS AUGE",
"DER AUSFLUG","DER AUSGANG","AUS
GEZEICHNET","DER AUSHILFSKELLNER
","AUSLANDISCH","DIE AUSSICHT","
DAS AUTO","DIE AUTO BAHN","DAS B
ABY","DER BACKER(U)A","DIE BACKE
REI(U)A","DER BADEANZUG","DIE BA
DEHOSE","DIE BADESACHEN","DAS BA
DEZIMMER","DIE BADEWANNE","DER B
AHNHOF","DER BAHNHOFSVORSTEHER",
"DER BAHNSTEIG","DIE BAHNSTEIGKA
RTE","BALD","DER BALL","DER BALK
ON","DIE BANANE","DIE BANK"
2000 REM (((ENGLISH VERBS)))
2010 DATA "TO REMAIN","IS REMAIN
ING (PRES.)","WAS REMINING (IMP.
)","REMAINED (PER.)","TO BRING",
"IS BRINGING (PRES.)","WAS BRING
ING (IMP.)","BROUGHT (PER.)","TO
 THINK","IS THINKING (PRES.)","W
AS THINKING (IMP.)","THOUGHT (PE
R.)","TO BE ALLOWED","IS ALLOWED
 (PRES.)","WAS ALLOWED (IMP.)","
WAS ALLOWED (PER.)","TO EAT","IS
 EATING (PRES.)","WAS EATING (IM
P.)","ATE (PER.)","TO GO (BY VEH
ICLE)","IS GOING (PRES.)","WAS G
OING (IMP.)","WENT (PER.)"
2020 DATA "TO PUSH","IS PUSHING
(PRES.)","WAS PUSHING (IMP.)","P
USHED (PER.)","WILL PUSH (FUT.)"
,"HAD PUSHED (PLU.)","TO CHEER",
"IS CHEERING (PRES.)","WAS CHEER
ING (IMP.)","CHEERED (PER.)","WI
LL CHEER (FUT.)","HAD CHEERED (P
LU.)","TO LEAD","IS LEADING (PRE
S.)","WAS LEADING (IMP.)","LED (
PER.)","WILL LEAD (FUT.)","HAD L
ED (PLU.)","TO CHAT","IS CHATTIN
G (PRES.)","WAS CHATTING (IMP.)"
,"CHATTED (PER.)","WILL CHAT (FU
T.)","HAD CHATTED (PLU.)","TO CA
TCH A COLD","IS CATCHING A COLD
(PRES.)","WAS CATCHING A COLD (I
MP.)","CAUGHT A COLD (PER.)","WI
LL CATCH A COLD (FUT.)","HAD CAU
GHT A COLD (PLU.)"
2500 REM (((GERMAN VERBS)))
2510 DATA "BLEIBEN","BLEIBT","BL
IEB","IST GEBLIEBEN","BRINGEN","
BRINGT","BRACHTE","HAT GEBRACHT"
,"DENKEN","DENKT","DACHTE","HAT
GEDACHT","DURFEN (U)U","DARF","D
URFTE","HAT GEDURFT","ESSEN","IS
ST","ASS","HAT GEGESSEN","FAHREN
","FAHRT (U)A","FUHR","IST GEFAH
REN "
2520 DATA "DRANGELN (U)A","DRANG
ELT (U)A","DRANGELTE (U)A","HAT
GEDRANGELT (U)A","WIRD DRANGELN
(U)A","HATTE GEDRANGELT (U)A","J
UBELN","JUBEL","JUBELTE","HAT GE
JUBELT","WIRD JUBELN","HATTE GEJ
UBELN","FUHREN (U)U","FUHRT (U)U
","FUHRTE (U)U","HAT GEFUHRT (U)
U","WIRD FUHREN (U)U","HATTE FUH
RT (U)U","PLAUDERN","PLAUDERT","
PLAUDERTE","HAT GEPLAUDERT","WIR
D PLAUDERN","HATTE GEPLAUDERT","
SICH ERKALTEN (U)A","SICH ERKALL
T (U)A","SICH ERKALTETE (U)A","H
AT SICH ERKALT (U)A","WIRD ERKAL
TEN","HATTE SICH ERKALT"
3000 REM (ENG.DEFINATE ARTICLE)
3010 DATA "NOM. MASC.","NOM. FEM
.","NOM. NEUT.","NOM. PLURAL","A
CC. MASC.","ACC. FEM.","ACC. NEU
T.","ACC. PLURAL","GEN. MASC.","
GEN. FEM.","GEN. NEUT.","GEN. PL
URAL","DAT. MASC.","DAT. FEM.","
DAT. NEUT.","DAT. PLURAL"
3500 REM (GER.DEFINATE ARTICLE)
3510 DATA "DER","DIE","DAS","DIE
","DEN","DIE","DAS","DIE","DES",
"DER","DES","DER","DEM","DER","D
EM","DEN"
4000 REM ((ENG.INDEF.ARTICLE))
4010 DATA "NOM. MASC.","NOM. FEM
.","NOM. NEUT.","NOM. POSS.","AC
C. MASC.","ACC. FEM.","ACC. NEUT
.","ACC. POSS.","GEN. MASC.","GE
N. FEM.","GEN. NEUT.","GEN. POSS
.","DAT. MASC.","DAT. FEM.","DAT
. NEUT.","DAT. POSS."
4500 REM ((GER.INDEF.ARTICLE))
4510 DATA "EIN","EINE","EIN","SE
INE","EINEN","EINE","EIN","SEINE
","EINES","EINER","EINES","SEINE
R","EINEM","EINER","EINEM","SEIN
EN"
```

```
   1 REM **PRINT INSTRUCTIONS**
   5 PRINT AT 0,12;"TWIGGY"
  10 PRINT "  IN THIS GAME YOU M
UST IMAGINE"
  20 PRINT "YOU HAVE A PILE OF M
ATCHES IN"
  30 PRINT "FRONT OF YOU.THE IDE
A OF THE"
  40 PRINT "GAME IS TO TAKE MATC
HES FROM THE"
  50 PRINT "PILE UNTIL THE LOSER
 HAS TO TAKE"
  60 PRINT "THE LAST MATCH.BUT T
HERE IS A"
  70 PRINT "LIMIT TO THE AMOUNT
OF MATCHES  TAKEN."
  90 PRINT
 100 PRINT "  HOW MANY MATCHES A
RE  THERE IN THE PILE? ";
 110 INPUT M
 115 PRINT M
 120 PRINT
 130 PRINT "   WHAT IS OUR LIMIT
 CONCERNING MATCHES BEING TAKEN?
 ";
 150 INPUT N
 160 CLS
 165 REM **CHECK LIMIT**
 170 IF N<>1 AND N<M THEN GOTO 2
20
 180 PRINT "LIMIT IS TO HIGH OR
LOW FOR A GOOD GAME"
 210 GOTO 100
 220 PRINT "DO YOU WISH TO GO FI
RST (Y/N)"
 230 LET Z=0
 240 INPUT A$
 250 IF A$="Y" THEN LET Z=1
 260 LET Y=0
 270 LET X=0
 275 REM **PRINT SCORE**
 280 PRINT AT 8,2;"GAME PILE:";M
;"  "
 290 PRINT AT 9,2;"YOUR PILE:";X
;"  "
 300 PRINT AT 10,4;"MY PILE:";Y;
"  "
 301 REM **CHECK IF FINISHED**
 305 IF Z=3 THEN GOTO 550
 306 REM **IS IT COMPS GO**
 310 IF Z=0 THEN GOTO 290
 315 REM **FLASH LINE**
 320 PRINT AT 19,2;"ITS YOUR GO"
 321 GOSUB 630
 322 PRINT AT 19,2;"its your go"
 323 GOSUB 630
 324 IF INKEY$="" THEN GOTO 320
 330 INPUT A
 335 REM **CHECK ENTRY**
 340 IF A>N OR A=0 THEN GOTO 330
 345 CLS
 346 REM **RENEW VALUES**
 350 LET M=M-A
 360 LET Z=0
 370 LET X=X+A
 375 REM **REPRINT BOARD**
 380 GOTO 200
 385 REM **HAS COMP LOST**
 390 IF M=1 THEN GOTO 510
 395 REM **HAS COMP WON**
 400 IF M<=N+1 THEN GOTO 470
 405 LET Z=1
 407 REM **FIND COMPS GO**
 410 LET A=M-(N+1)*INT ((M-1)/(N
+1))-1
 411 IF RND>0.1 THEN GOTO 420
 412 PRINT AT 21,0;"OOPS,I THINK
 IVE MADE A MISTAKE"
 413 LET A=INT (RND*N)+1
 415 REM **RENEW VALUES**
 420 IF A=0 THEN LET A=N
 421 LET Y=Y+A
 430 LET M=M-A
 431 LET A$="ES"
 432 IF A=1 THEN LET A$="  "
 440 PRINT AT 20,2;"I TAKE ";A;"
 MATCH";A$;" AWAY"
 445 REM **REPRINT SCORE**
 460 GOTO 280
 470 PRINT AT 21,2;"**I WIN**"
 480 LET A=M-1
 490 LET Z=3
 500 GOTO 420
 510 PRINT AT 21,2;"**I LOSE**NO
T BAD,SEEN BETTER."
 520 LET A=1
 530 LET Z=3
 540 GOTO 420
 545 REM **FLASH LINE**
 550 PRINT AT 0,0;"DO YOU WANT A
ONTHER GAME(Y/N)?"
 551 GOSUB 630
 552 PRINT AT 0,0;"do you want a
nother game(y\n)!"
 553 GOSUB 630
 554 IF INKEY$="" THEN GOTO 550
 590 INPUT A$
 600 IF A$="N" THEN NEW
 610 CLS
 620 GOTO 100
 625 REM **DELAY FOR FLASH**
 630 LET S=0
 640 LET S=S+1
 650 GOTO 20*(S=3 OR INKEY$<>"")
+640
 660 RETURN
```

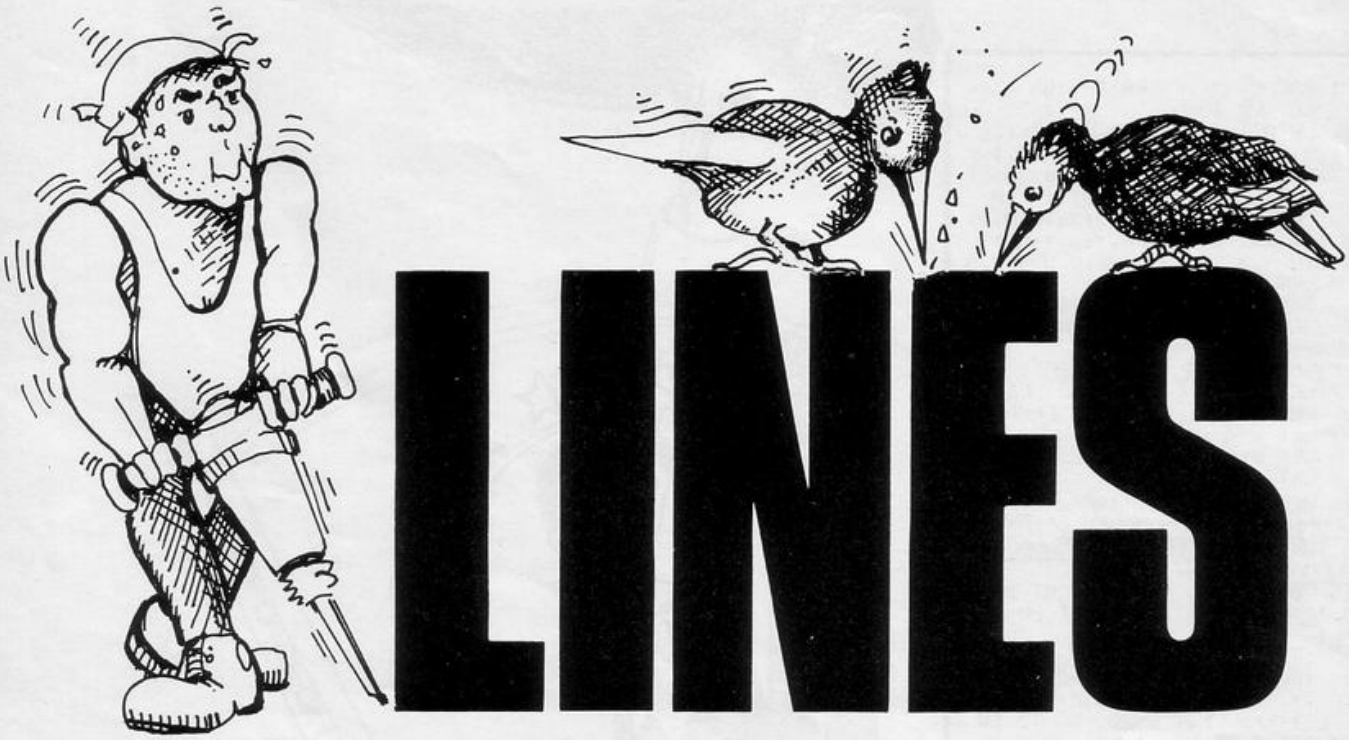


TWIGGY

SET THE SIZE of a pile of matches and the maximum number of matches which can be removed from it at once. Then you and the computer take turns to remove matches. The object is to force your opponent to remove the last match.

Twiggy was written by M Clarkson of Leeds for the 16K ZX-81.

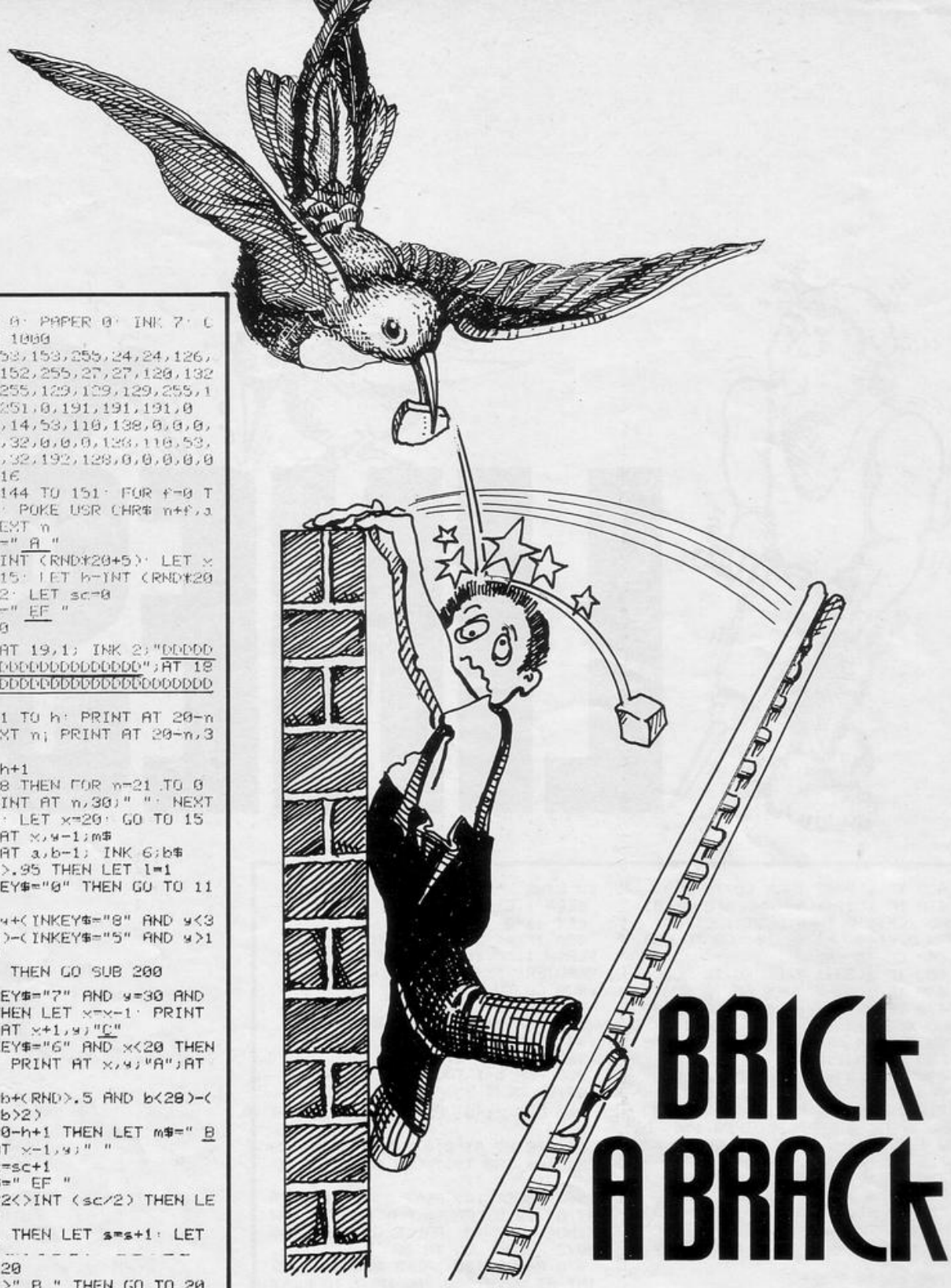
```
  10 POKE 23659,2: CLEAR 32767:
BORDER 0: PAPER 7: INK 0: BRIGHT
 1: CLS : GO SUB 1000
  20 LET cs=0: LET ws=0
  30 DIM a(9): LET p=INT (RND*6)
+1
  50 FOR i=2 TO 20: BEEP .03,300
/(i+5): PRINT PAPER p;AT i,0;"
     ";AT i,25;"        ": NEXT i
  60 PRINT PAPER p;AT 1,0;"
                              ";AT
20,0;"
     "
  70 PLOT 104,160: DRAW 0,-144:
PLOT 152,160: DRAW 0,-144: PLOT
56,112: DRAW 144,0: PLOT 56,64:
DRAW 144,0
  80 PRINT OVER 1;AT 2,7;"7
8     9";AT 8,7;"4     5     6";
AT 14,7;"1     2     3"
  90 LET r=INT (RND*2): IF r=0 T
HEN GO TO 340
 100 PRINT AT 0,0;"YOU ARE X's:-
          "; FLASH 1;"YOU START"
: GO TO 170
 110 GO SUB 470
 120 FOR i=1 TO 9
 130 IF a(i)=0 THEN GO TO 160
 140 NEXT i
 150 GO TO 840
 160 PRINT AT 0,13;"          ";
FLASH 1;"YOUR MOVE"
 170 PRINT AT 21,0;"PRESS No. OF
SQUARE YOU REQUIRE ": PAUSE 0
 180 IF INKEY$="1" AND a(1)=0 TH
EN PLOT 96,56: DRAW -32,-32: PLO
T 64,56: DRAW 32,-32: BEEP .05,1
0: LET a(1)=1: GO TO 290
 190 IF INKEY$="2" AND a(2)=0 TH
EN PLOT 144,56: DRAW -32,-32: PL
OT 112,56: DRAW 32,-32: BEEP .05
,10: LET a(2)=1: GO TO 290
 200 IF INKEY$="3" AND a(3)=0 TH
EN PLOT 192,56: DRAW -32,-32: PL
OT 160,56: DRAW 32,-32: BEEP .05
,10: LET a(3)=1: GO TO 290
 210 IF INKEY$="4" AND a(4)=0 TH
EN PLOT 96,104: DRAW -32,-32: PL
OT 64,104: DRAW 32,-32: BEEP .05
,10: LET a(4)=1: GO TO 290
 220 IF INKEY$="5" AND a(5)=0 TH
EN PLOT 144,104: DRAW -32,-32: P
LOT 112,104: DRAW 32,-32: BEEP .
05,10: LET a(5)=1: GO TO 290
 230 IF INKEY$="6" AND a(6)=0 TH
EN PLOT 192,104: DRAW -32,-32: P
LOT 160,104: DRAW 32,-32: BEEP .
05,10: LET a(6)=1: GO TO 290
 240 IF INKEY$="7" AND a(7)=0 TH
EN PLOT 96,152: DRAW -32,-32: PL
OT 64,152: DRAW 32,-32: BEEP .05
,10: LET a(7)=1: GO TO 290
 250 IF INKEY$="8" AND a(8)=0 TH
EN PLOT 144,152: DRAW -32,-32: P
LOT 112,152: DRAW 32,-32: BEEP .
05,10: LET a(8)=1: GO TO 290
 260 IF INKEY$="9" AND a(9)=0 TH
EN PLOT 192,152: DRAW -32,-32: P
LOT 160,152: DRAW 32,-32: BEEP .
05,10: LET a(9)=1: GO TO 290
 270 FOR f=1 TO 10: BEEP .05,20:
BEEP .05,0: NEXT f
 280 GO TO 160
 290 GO SUB 470
 300 FOR i=1 TO 9
 310 IF a(i)=0 THEN GO TO 350
 320 NEXT i
 330 GO TO 840
 340 PRINT AT 0,0;"YOU ARE X's:-
"; FLASH 1;"THE COMPUTER STARTS"
; FLASH 0: PAUSE 150: GO TO 360
 350 PRINT AT 21,0; FLASH 1;"REM
EMBER"; FLASH 0;"   A COMPLETE L
INE LOSES": PRINT AT 0,13;"
"; FLASH 1;"COMPUTERS MOVE": PAU
SE 100
 360 LET s=INT (RND*9)+1
 370 IF s=1 AND a(1)=0 THEN CIRC
LE 80,40,16: BEEP .05,5: LET a(1
)=2: GO TO 110
 380 IF s=2 AND a(2)=0 THEN CIRC
LE 128,40,16: BEEP .05,5: LET a(
2)=2: GO TO 110
 390 IF s=3 AND a(3)=0 THEN CIRC
LE 176,40,16: BEEP .05,5: LET a(
3)=2: GO TO 110
 400 IF s=4 AND a(4)=0 THEN CIRC
LE 80,88,16: BEEP .05,5: LET a(4
)=2: GO TO 110
 410 IF s=5 AND a(5)=0 THEN CIRC
LE 128,88,16: BEEP .05,5: LET a(
5)=2: GO TO 110
 420 IF s=6 AND a(6)=0 THEN CIRC
LE 176,88,16: BEEP .05,5: LET a(
6)=2: GO TO 110
 430 IF s=7 AND a(7)=0 THEN CIRC
LE 80,136,16: BEEP .05,5: LET a(
7)=2: GO TO 110
 440 IF s=8 AND a(8)=0 THEN CIRC
LE 128,136,16: BEEP .05,5: LET a
(8)=2: GO TO 110
 450 IF s=9 AND a(9)=0 THEN CIRC
LE 176,136,16: BEEP .05,5: LET a
(9)=2: GO TO 110
 460 GO TO 360
 470 IF a(7)=a(8) AND a(7)=a(9)
AND a(7)<>0 THEN PLOT 56,136: DR
AW 144,0: PAUSE 15: GO TO 490
 480 GO TO 510
 490 IF a(7)=1 THEN GO TO 800
 500 IF a(7)=2 THEN GO TO 820
 510 IF a(4)=a(5) AND a(4)=a(6)
AND a(4)<>0 THEN PLOT 56,88: DRA
W 144,0: PAUSE 15: GO TO 530
 520 GO TO 550
 530 IF a(4)=1 THEN GO TO 800
 540 IF a(4)=2 THEN GO TO 820
 550 IF a(1)=a(2) AND a(1)=a(3)
AND a(1)<>0 THEN PLOT 56,40: DRA
W 144,0: PAUSE 15: GO TO 570
 560 GO TO 590
 570 IF a(1)=1 THEN GO TO 800
 580 IF a(1)=2 THEN GO TO 820
 590 IF a(1)=a(4) AND a(1)=a(7)
AND a(1)<>0 THEN PLOT 80,160: DR
AW 0,-144: PAUSE 15: GO TO 610
 600 GO TO 630
 610 IF a(1)=1 THEN GO TO 800
```



LINES

```
 620 IF a(1)=2 THEN GO TO 820
 630 IF a(2)=a(5) AND a(2)=a(8)
AND a(2)<>0 THEN PLOT 128,160: D
RAW 0,-144: PAUSE 15: GO TO 650
 640 GO TO 670
 650 IF a(2)=1 THEN GO TO 800
 660 IF a(2)=2 THEN GO TO 820
 670 IF a(3)=a(6) AND a(3)=a(9)
AND a(3)<>0 THEN PLOT 176,160: D
RAW 0,-144: PAUSE 15: GO TO 690
 680 GO TO 710
 690 IF a(3)=1 THEN GO TO 800
 700 IF a(3)=2 THEN GO TO 820
 710 IF a(3)=a(5) AND a(3)=a(7)
AND a(3)<>0 THEN PLOT 60,156: DR
AW 136,-136: PAUSE 15: GO TO 730
 720 GO TO 750
 730 IF a(3)=1 THEN GO TO 800
 740 IF a(3)=2 THEN GO TO 820
 750 IF a(1)=a(5) AND a(1)=a(9)
AND a(1)<>0 THEN PLOT 196,156: D
RAW -136,-136: PAUSE 15: GO TO 7
70
 760 GO TO 790
 770 IF a(1)=1 THEN GO TO 800
 780 IF a(1)=2 THEN GO TO 820
 790 RETURN
 800 PRINT AT 21,0;"  A LINE OF
'X's:-  "; FLASH 1;"YOU LOSE"; F
LASH 0;"    ": BEEP 1,-10: LET c
s=cs+1: GO TO 870
 810 BEEP 1,-10: LET cs=cs+1: GO
 TO 870
 820 PRINT AT 21,0;"  A LINE OF
'O's:-  "; FLASH 1;"YOU LOSE"; F
LASH 0;"    "
 830 BEEP 1,-10: LET cs=cs+1: GO
 TO 870
 840 PRINT AT 21,0;" CONGRATULAT
IONS:-   "; FLASH 1;"YOU WIN"; F
LASH 0;"    "
 850 FOR i=1 TO 24: BEEP .03,i*2
: NEXT i
 860 LET ys=ys+1: GO TO 870
 870 IF cs=5 THEN PRINT AT 0,0;
FLASH 1;" HARD-LINES! THE COMPUT
ER WINS  ": BEEP 1,10: BEEP 1,5:
 BEEP 1,0: BEEP 2,-10: LET cs=0:
 LET ys=0: GO TO 970
 880 IF ys=5 THEN PRINT AT 0,0;
FLASH 1;" YOU HAVE BEATEN THE C
OMPUTER! ": GO TO 900
 890 GO TO 950
 900 FOR a=1 TO 4
 910 FOR i=0 TO 20 STEP 3: BEEP
.05,i: NEXT i
 920 NEXT a
 930 FOR b=1 TO 25 STEP 1: BEEP
.05,b: NEXT b
 940 LET cs=0: LET ys=0: GO TO 9
70
 950 PRINT AT 0,0;" COMPUTER SCO
RE:";cs;TAB 19;"YOUR SCORE:";ys;
TAB 31;" "
 960 PAUSE 10: POKE 23659,1: PRI
NT AT 22,0;"PRESS ANY KEY TO CON
TINUE GAME  ": PAUSE 0: POKE 236
59,2: CLS : GO TO 30
 970 PAUSE 100: POKE 23659,1: PR
INT AT 22,0;"DO YOU WANT TO PLAY
 AGAIN: (Y/N)": PAUSE 0: POKE 23
659,2
 980 IF INKEY$<>"n" THEN CLS : G
O TO 30
 990 STOP
1000 PRINT AT 1,11; PAPER 2; INK
 6;"""HARD-LINES"""
1010 PRINT ''" The object of the
 game is to    fill all nine squ
ares without   completing a line
 of either     O's or X's."
1020 PRINT ''" Each time you win
 a round you   score 1 point. To
 win the game  you must reach 5
points before  the computer."
1030 PRINT ''" You print the X's
 and the start is decided at ran
dom."
1040 PRINT AT 21,0; FLASH 1;"PRE
SS"; FLASH 0;" ANY KEY TO START
THE GAME": PAUSE 0: CLS : RETURN
```

OUR CHALLENGE earlier in the year to write a Noughts and Crosses program in which the computer took part resulted in several programs being sent to us, the best of which was printed last month. Stuart Humphreys, Pip Wright and Ian Humphreys of Newtown, Powys took the basic formula of the game and changed it round to produce the game **Hard Lines** for the 48K Spectrum. Here the idea is to avoid either you or the computer forming a line. If no line is completed you win the game; if not, the computer wins.



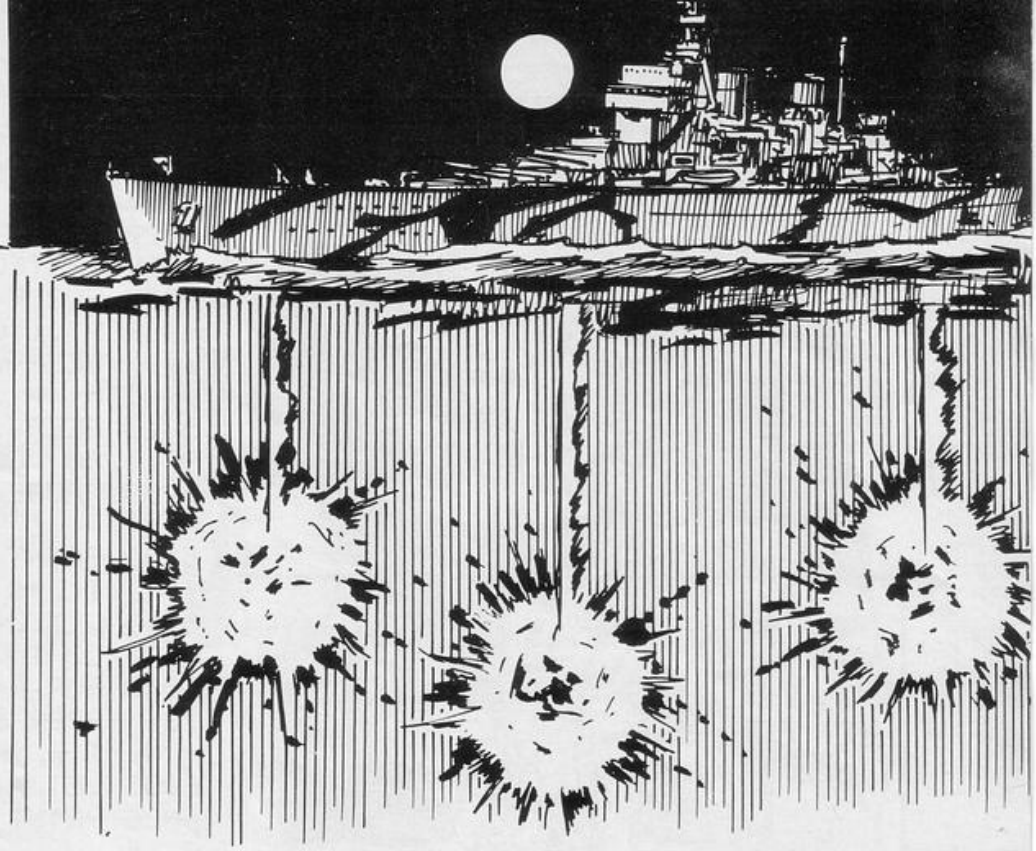
BRICK A BRACK

YOU ARE a bricklayer who has just completed a wall. A bird flies over, dropping rocks which chip away bricks.

Repair the wall by climbing to the top of the ladder on the right of the screen to get some bricks and place them in the appropriate place.

M Green of Maidstone, Kent, who wrote **Brick a Brack** for the 16K Spectrum, says that a score of more than 1,000 is excellent.

```
   1 BORDER 0: PAPER 0: INK 7: C
LS : GO SUB 1000
   2 DATA 153,153,255,24,24,126,
66,195,152,152,255,27,27,120,132
,4,129,129,255,129,129,129,255,1
29,251,251,251,0,191,191,191,0
   3 DATA 0,14,53,110,138,0,0,0,
0,0,128,192,32,0,0,0,128,110,53,
14,10,0,0,0,32,192,128,0,0,0,0,0
   4 LET s=16
   5 FOR n=144 TO 151: FOR f=0 T
O 7: READ a: POKE USR CHR$ n+f,a
  NEXT f: NEXT n
   6 LET m$=" A "
   7 LET y=INT (RND*20+5): LET x
=20: LET a=15: LET b=INT (RND*20
+5): LET h=2: LET sc=0
   8 LET b$=" EF "
   9 LET l=0
  10 PRINT AT 19,1; INK 2;"DDDDD
DDDDDDDDDDDDDDDDDDDDDDD";AT 18
,1; INK 3;"DDDDDDDDDDDDDDDDDDDD
DDDDDDDD"
  15 FOR n=1 TO h: PRINT AT 20-n
,30;"C": NEXT n; PRINT AT 20-n,3
0;"D"
  17 LET h=h+1
  18 IF h=18 THEN FOR n=21 TO 0
STEP -1: PRINT AT n,30;" ": NEXT
 n: LET h=2: LET x=20: GO TO 15
  20 PRINT AT x,y-1;m$
  30 PRINT AT a,b-1; INK 6;b$
  31 IF RND>.95 THEN LET l=1
  35 IF INKEY$="0" THEN GO TO 11
0
  40 LET y=y+(INKEY$="8" AND y<3
0 AND x>=20)-(INKEY$="5" AND y>1
 AND x>=20)
  45 IF l=1 THEN GO SUB 200
  50 IF INKEY$="7" AND y=30 AND
x>=20-h+1 THEN LET x=x-1: PRINT
AT x,y;"A";AT x+1,y;"C"
  55 IF INKEY$="6" AND x<20 THEN
 LET x=x+1: PRINT AT x,y;"A";AT
x-1,y;"C"
  60 LET b=b+(RND>.5 AND b<28)-(
RND<.5 AND b>2)
  70 IF x=20-h+1 THEN LET m$=" B
": PRINT AT x-1,y;" "
  80 LET sc=sc+1
  85 LET b$=" EF "
  90 IF sc/2<>INT (sc/2) THEN LE
T b$=" GH "
  99 IF l=1 THEN LET s=s+1: LET
l=0
 100 GO TO 20
 110 IF m$<>" B " THEN GO TO 20
 111 LET m$=" A "
 112 LET sc=sc+5
 115 FOR n=19 TO a+1 STEP -1
 120 IF SCREEN$ (n,y)=" " THEN P
RINT AT n,y; INK 5;"D": BEEP .01
,20: GO TO 15
 121 IF SCREEN$ (n,y)=" " THEN G
O TO 15
 130 NEXT n
 140 GO TO 15
 200 IF SCREEN$ (s,b)<>" " THEN
PRINT AT s,b;"*": BEEP .01,s: PR
INT AT s,b;" ": LET sc=sc-5: LET
 s=16: RETURN
 205 PRINT AT s,b;"*": BEEP .01,
s: PRINT AT s,b;" "
 210 LET s=s+1
 211 IF s=21 THEN GO TO 250
 220 GO TO 200
 250 PRINT AT 10,11; FLASH 1;"BA
D LUCK!": BEEP 1,-10
 260 PRINT AT 12,11; INVERSE 1;"
SCORE="; FLASH 1;sc
 300 FOR n=1 TO 400: NEXT n
 400 CLS
 500 RUN
1000 PRINT AT 5,9; FLASH 1;"BRIC
K-A-BRACK"
1100 PRINT AT 7,3;"POINTS:"
1200 PRINT AT 9,10;"BRICK=5 Poin
ts"
1300 PRINT AT 11,0;"EVERY BRICK
DEMOLISHED=-5 Points"
1400 PRINT ''"   EVERY SECOND LA
STED=1 Point"
1450 PRINT ''"USE CURSOR KEYS TO
 MOVE(5,6,7,8)"
1460 PRINT ''"   USE ""0"" TO RE
PLACE A BRICK."
1500 INPUT "PRESS ENTER TO PLAY.
",o$
1600 CLS : RETURN
9999 SAVE "brick" LINE 1
```



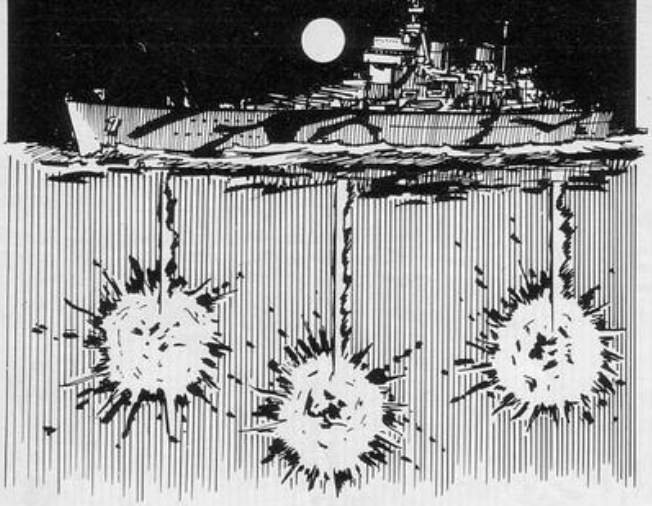
YOU ARE a submarine-destroying ship armed with 50 depth charges. Your equipment continually throws shock waves towards the sea bed. When a submarine is within range the shock waves will bounce back more quickly than usual.

Judge from the shock waves how deep to set the depth charges. You will have two strikes at each submarine. If you miss they will fire back and damage your ship.

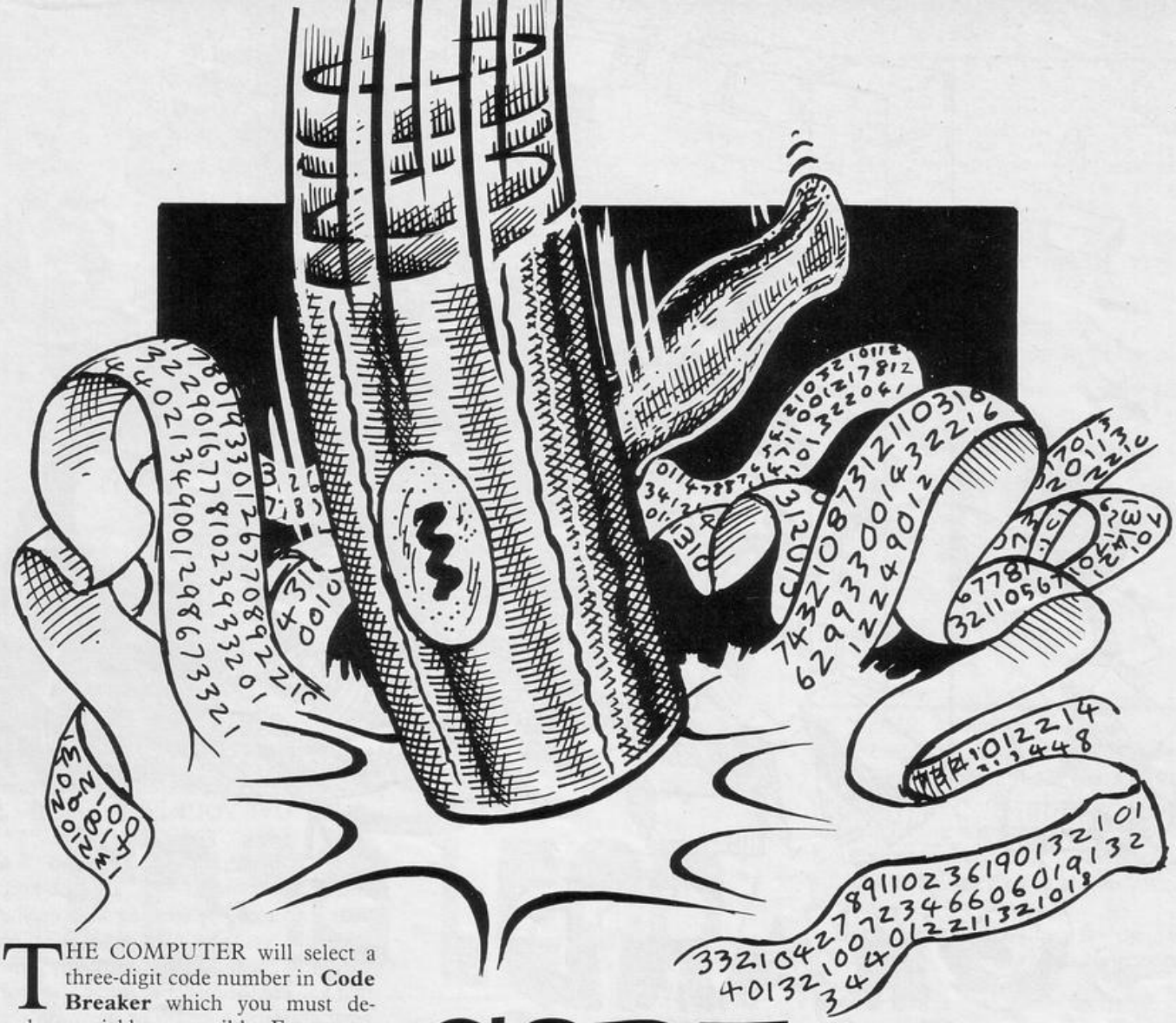
Depth Charge was written for the 16K Spectrum by Neil Seward of Yate, Bristol.

DEPTH CHARGE

```
   1 CLS
   2 INK 0: BORDER 3: FLASH 0
   5 LET GO=0: LET J=10
   6 LET L=6
   7 LET PL=240
   8 LET W=5
  10 PRINT AT 0,4; INK 1;"D E P
T H  C H A R G E "
  20 PLOT 0,0: DRAW 255,0: DRAW
0,163: DRAW -255,0: DRAW 0,-163
  25 PLOT 255,100
  30 DRAW -155,0
  35 DRAW 0,-100
  40 PLOT 0,96: DRAW 96,0: DRAW
0,-96
  45 FOR f=10 TO 20: PRINT AT f,
1; INK 5;"(11*isp)": NEXT f
  50 PRINT AT 14,6; INK 0; PAPER
 5;"|"
  55 PRINT AT 15,5; INK 0; PAPER
 5;"- -";AT 16,6; INK 0; PAPER 5
;"|"
  60 PLOT 110,162: DRAW 0,-63
  70 PLOT 7,7: DRAW 0,88
  72 PLOT 7,7: DRAW 88,0
  80 PRINT AT 2,18; PAPER 4;"COM
PUTER"
  90 PRINT AT 2,1;"CHARGES=50"
  95 PRINT AT 3,1; INK 2;"HITS..
.=0"
 100 PRINT AT 4,1;"DAMAGE%=0"
 110 LET CH=50: LET H=0: LET D=0
 115 GO SUB 6000
 120 FOR F=0 TO 7: READ A: POKE
USR "a"+F,A: NEXT F
 125 FOR F=0 TO 7: READ A: POKE
USR "b"+F,A: NEXT F
 130 DATA 1,3,3,127,255,255,127,
0,0,192,192,248,255,255,248,0
 140 PRINT AT 6,15;"ALL SYSTEMS
GO!"
 150 FOR F=0 TO 7: READ A: POKE
USR "c"+F,A: NEXT F
 155 DATA 23,46,175,170,240,45,1
76,170
 200 IF L>1 THEN LET L=INT (30*R
ND)+1
 205 IF ch<1 THEN GO TO 8000
 210 IF L=1 THEN GO SUB 4000
 220 IF GO=1 THEN GO SUB 4050
 300 PLOT PL,95
 310 IF GO=0 THEN DRAW -10,-87
 315 IF GO=1 THEN DRAW -10,-W*8:
 BEEP .1,-10: DRAW 8-10,W*8
 400 IF (J=6 OR J=5) THEN PRINT
AT 6,15;"SET CHRGES NOW": PRINT
AT 4,15;"HOW MANY FEET   ";AT 5,
15;"IN HUNDREDS(1-9)": GO TO 410
 402 GO TO 600
 410 INPUT "HOW MANY HUNDREDS OF
 FEET";FEET
```



```
 420 PRINT AT 6,15;FEET*100;" FE
ET"
 425 IF  FEET =W THEN LET CH=CH-
1: GO TO 5000
 500 IF J<5 THEN PRINT AT 4,15;"
                  ";AT 5,15;"
              ";AT 6,15; FLASH 1; P
APER 4;"TARGET MISSED  "
 510 LET X=INT (RND*30)
 550 PRINT AT 4,14;"YOU MISSED T
ARGET";AT 5,14;"SUB FIRES BACK";
AT 6,14;"RESULT ";X;"% DAMAGE"
 560 LET D=D+X
 570 IF D>=100 THEN GO SUB 9000
 580 PAUSE 100: PRINT AT 4,14;"
                  ";AT 5,14;"
              ";AT 6,14;"
          "
 590 PRINT AT 4,9;D
 600 LET PL=PL-20: IF PL=100 THE
N GO SUB 6000
1900 BEEP .1,10
2000 GO TO 200
4000 PRINT AT 6,15;"SUB IN RANGE
  "
4005 LET W=INT (RND*10): LET Q=W
+11
4010 FOR F=1 TO 2: BEEP .1,0: BE
EP .1,10: BEEP .1,30: BEEP .1,40
: BEEP .1,60: BEEP .1,50: BEEP
.1,30: BEEP .1,10: BEEP .1,-10
4020 NEXT F
4030 LET L=0
4050 PRINT AT 15,J; PAPER 5; INK
 0;"  ": LET J=J-1: PRINT AT 15,
J; PAPER 5;"ab"
4060 IF J=1 THEN LET L=6: PRINT
AT 6,15;"SUB PASSED      ": LET J
=10: PRINT AT 15,1; PAPER 5;"  "
: PRINT AT 15,5; PAPER 5;"- -":
LET GO=0: PRINT AT 6,15;"ALL SYS
TEMS GO!": RETURN
4070 LET BE=1: LET GO=1
4080 RETURN
5000 PRINT AT 15,5; INK 2; PAPER
 6; FLASH 1;"ccc"
5010 PRINT AT 4,15;"
    ";AT 5,15;"                    "
5015 LET H=H+1
5016 PRINT AT 2,9;CH;AT 3,9;H
5020 PRINT AT 6,15; INK 2;"TARGE
T DESTROYED"
5030 FOR F=0 TO 10: BEEP .01,-10
: BEEP .1,0: BEEP .1,20: BEEP .1
,40: BEEP .1,0: BORDER (RND*7):
NEXT F
5040 BEEP .1,10: BEEP .2,40: BEE
P .5,20: BEEP .3,-10
5090 PAUSE 50: PRINT AT 6,15;"
                  "
5100 PRINT AT 15,5; PAPER 5;"- -
": LET L=6: LET GO=0:
5110 LET L=6: LET J=10
5500 GO TO 600
6000 FOR F=10 TO 20: PRINT AT F,
13; PAPER 6;"                    "
: NEXT F
6005 LET pl=240
6006 PRINT AT 6,15;"SCANNING ARE
A  "
6010 RETURN
8000 CLS : PAPER 6: INK 1: BORDE
R 5
8005 FOR f=40 TO 0 STEP -1: BEEP
 .01,20: BEEP .01,50: BEEP .01,-
10: BEEP .01,f: NEXT f
8010 PRINT AT 3,1;"YOU ARE OUT O
F CHARGES"
8020 PRINT AT 5,2;"BUT..."
8030 PRINT AT 6,1;"YOU SCORE ";H
;" HITS"
8040 PRINT AT 10,1;"YOUR DAMAGE
WAS ";D;" %"
8050 PRINT AT 20,2;"ANOTHER GO (
Y/N)"
8060 INPUT A$
8070 IF A$="y" THEN RUN
8080 STOP
9000 FOR F=0 TO 22: BEEP .1,F: B
EEP .01,10: RANDOMIZE USR 3280:
NEXT F
9010 BEEP .4,20: BEEP .5,16: BEE
P .2,20: BEEP .6,10
9020 PRINT AT 3,5; BRIGHT 1; PAP
ER 6; INK 1;"THE SUB DESTROYED Y
OU"
9030 INK 2
9040 PRINT AT 7,2;"YOU HAD ";H;"
 HITS"
9041 PRINT AT 9,2; PAPER 3; INK
6;"THE DAMAGE WAS TO MUCH ";AT 1
0,2;"YOUR SHIP WAS BLOWN TO BITS
"
9050 PRINT AT 21,0;"ANOTHER GAME
 ?(Y/N)"
9060 IF INKEY$="y" THEN RUN
9070 IF INKEY$="n" THEN STOP
9080 GO TO 9050
```

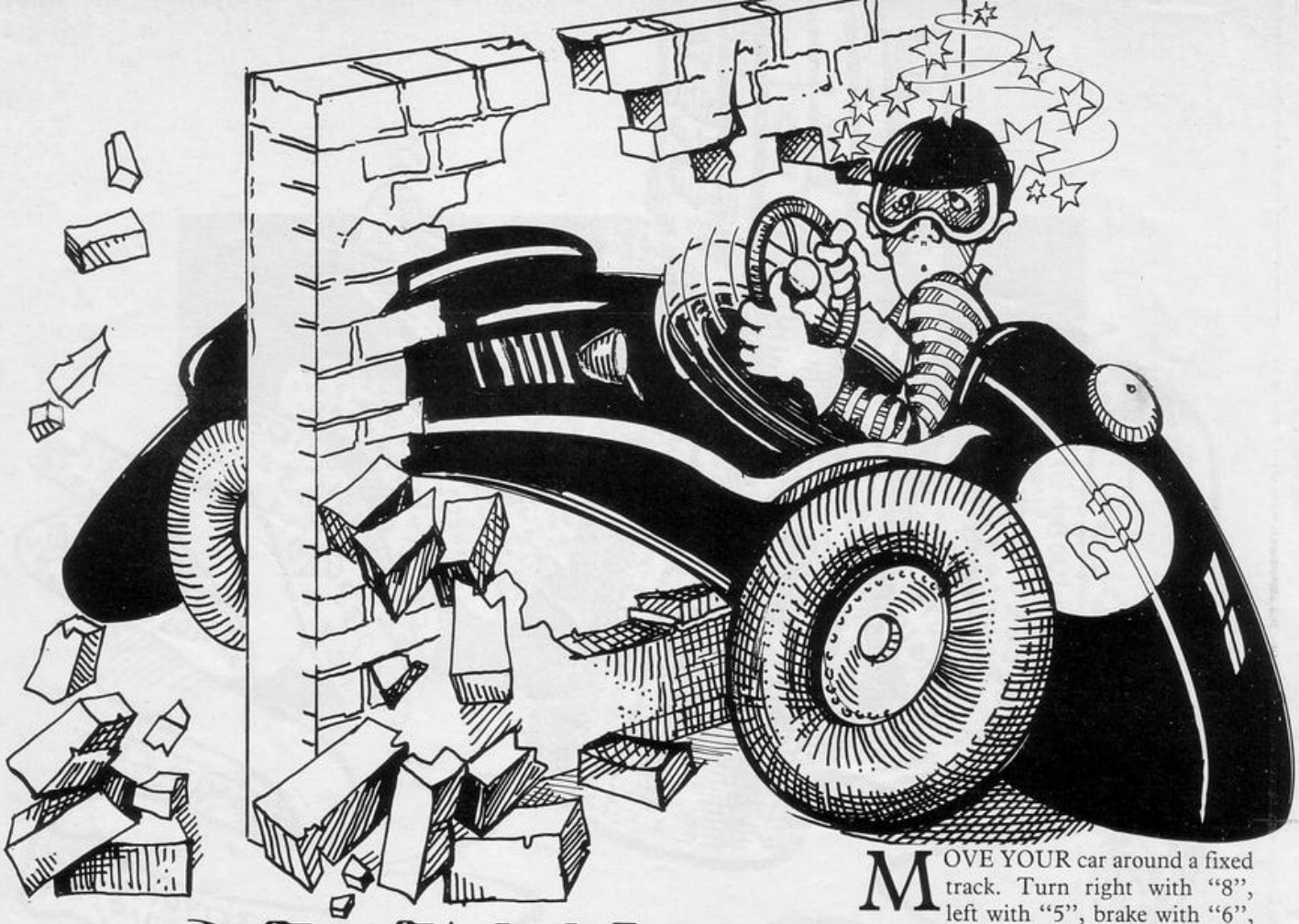


CODE BREAKER

THE COMPUTER will select a three-digit code number in **Code Breaker** which you must decode as quickly as possible. Enter your version, one digit at a time, and the computer will tell you which numbers are correct. It should be possible to find the number in fewer than 10 attempts. If you are completely baffled enter A, B and C for the correct answer.

Written for the 16K ZX-81 by B Merry of Clifton, Bedfordshire.

```
  10 REM "CODE"
  12 PRINT "-DO YOU REQUIRE INST
RUCTONS?    (Y/N)"
  13 PAUSE 4E4
  14 IF INKEY$="Y" THEN GOSUB 20
00
  15 LET N=0
  16 CLS
  17 PRINT TAB 12;"THE 1ST CLUE
SHOWS";TAB 12;"ANY RIGHT DIGITS"
;TAB 12;"IN THE right PLACES."
  18 PRINT TAB 12;" ";TAB 12;"TH
E 2ND CLUE SHOWS";TAB 12;"ANY RI
GHT DIGITS";TAB 12;"IN THE wrong
 PLACES."
  20 LET Z=1
  40 LET H=1
  50 LET A=INT (RND*10)
  60 LET B=INT (RND*10)
  70 LET C=INT (RND*10)
  82 LET I=0
  85 LET J=0
  86 IF N=17 THEN GOSUB 3000
  89 PRINT AT N,0;"---";
 100 INPUT R
 110 INPUT S
 120 INPUT T
 135 PRINT AT N,0;R;S;T;
 137 LET N=N+1
 140 IF R=A AND S=B AND T=C THEN
 GOTO 999
 150 IF R=A THEN LET I=Z
 160 IF S=B THEN LET I=I+Z
 170 IF T=C THEN LET I=I+Z
 190 IF R<>A AND ((R=B AND S<>B
AND T<>B) OR (R=C AND S<>C AND T
<>C)) THEN LET J=Z
 200 IF S<>B AND ((S=A AND R<>A
AND T<>A) OR (S=C AND R<>C AND T
<>C)) THEN LET J=J+Z
 205 IF T<>C AND ((T=B AND R<>B
AND S<>B) OR (T=A AND R<>A AND S
<>A)) THEN LET J=J+Z
 210 IF R<>A AND S=A AND T=A THE
N LET J=J+Z
 215 IF S<>B AND R=B AND T=B THE
N LET J=J+Z
 220 IF T<>C AND R=C AND S=C THE
N LET J=J+Z
 230 PRINT TAB 7;I;J
 240 LET H=H+Z
 260 GOTO 82
1000 PRINT AT 15,11;"congratulat
ions"
1020 PRINT AT 16,11;H;" TRIE";
1025 IF H>1 THEN PRINT "S"
1030 PRINT AT 17,11;"ANOTHER GAM
E?  (Y/N)"
1040 PAUSE 4E4
1050 IF INKEY$="N" THEN STOP
1060 GOTO 15
2000 CLS
2020 PRINT "THE IDEA OF THE GAME
 IS TO CRACK THE THREE DIGIT COD
E WHICH WILL BE GENERATED BY THE
 COMPUTER.  THE DIGITS WILL BE I
N THE RANGE OF 0-9.AT THE START
OF THE GAME --- WILL APPEAR AT T
HE TOP OF  THE SCREEN.THEN INPU
T 3 NUMBERS EACH FOLLOWED BY N/L
.YOU WILL  THEN BE GIVEN CLUES,
 AS TO HOW CLOSE TO THE NUMBER
YOU ARE.   THESE WILL  BE EXPLA
INED DURING THE GAME...happy cod
eJcracking
2030 PRINT
2040 PRINT "Press a key to conti
nue"
2050 PAUSE 4E4
2060 RETURN
3000 LET N=0
3010 PRINT AT 19,0;"Please copy
down any informationthat you nee
d` as i have run outof roomres
s a key to continue
3020 PAUSE 4E4
3025 CLS
3030 RETURN
```



GRAND PRIX

MOVE YOUR car around a fixed track. Turn right with "8", left with "5", brake with "6", and accelerate with "7". Do not keep your finger on the steering keys or you will find yourself turning more than once and crashing into a wall. Imagine that you are the driver of the car, so that what appears to be up or down on the television screen involves a turn either to left or right.

Grand Prix was written for the 16K Spectrum by C Stock of Chelmsford, Essex.

```
 10 GO TO 710
 101 REM *Main loop*
 120 IF INKEY$="5" THEN LET c=a:
 LET a=-b: LET b=c
 130 IF INKEY$="8" THEN LET c=b:
 LET b=-a: LET a=c
 140 IF INKEY$="7" THEN LET k=k-
7: IF k<1 THEN LET k=1
 150 IF INKEY$="6" THEN LET k=k+
7
 160 IF k>49 THEN LET k=50: GO T
O 200
 170 PRINT AT y,x;"(isP)": LET y
=y+a: LET x=x+b
 180 IF SCREEN$ (y,x)<>" " THEN
LET y=y-a: LET x=x-b: LET k=50:
PRINT AT y,x; FLASH 1; PAPER 6;"
*": BEEP 1.5,-14: LET s=s+300
 201 PRINT AT y,x;a$(a+2,b+2): B
EEP .08,0: IF y=1 AND x=1 THEN G
O TO 410
 210 FOR n=1 TO k: NEXT n: LET s
=s+20+k: GO TO 120
 301 REM **Start**
 310 PRINT AT 0,2; PAPER 3;" Pre
ss any key to start "
 320 PAUSE 0: PRINT AT 0,2; PAPE
R 3;"#.....#.....#.....#...#"
 330 FOR q=1 TO 4: PRINT AT 1,4;
 INK 2; PAPER 0; FLASH 1; BRIGHT
 1;" ": BEEP .5,0: BEEP .5,12: N
EXT q
 350 PRINT AT 1,4; PAPER 4;" ":
BEEP .2,24: PAPER 5
 360 GO TO 100
 401 REM **Finish**
 420 PAPER 6: PRINT AT 7,9;" Poi
nts=";s;" "
 430 FOR n=1 TO 30: BEEP .1,(RND
*20+10): NEXT n
 440 IF s<hs THEN LET hs=s
 460 PRINT AT 8,8;" ToP Score=";
hs;" "
 490 GO TO 470
 601 REM **Variables**
 610 LET hs=100000: DIM a$(3,3)
 620 LET a$(1)=" A": LET a$(2)="
B C": LET a$(3)=" D"
 625 LET s=0: LET k=50: LET x=2:
 LET y=1: LET a=0: LET b=1: PAPE
R 7: CLS
 630 PRINT "XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXX(19*isP)XXXXXXXXXXX
XX(isP)XXXXXXXXXXXXXXXX(2*isP)XX
(9*isP)XX(isP)XXXXXXXXXXXXXXXX(2
*isP)XX(2*isP)XXXXXX(2*isP)XX(2*i
sP)XX(12*isP)XX(isP)XX(2*isP)XXX
XX(2*isP)XX(2*isP)XX(2*isP)XXXXX
XX(2*isP)XX(isP)XX(6*isP)XX(isP
)XXX(isP)XX(2*isP)X(6*isP)XX(isP
)XX(isP)XXXXXX(2*isP)XX(isP)XXX(
isP)XXX(isP)X(2*isP)XX(2*isP)XX(
isP)XX(9*isP))XX(isP)XXX(isP)XXX
(3*isP)XXX(2*isP)XX(isP)XXXXXXXX
XXXXX(isP)XX(2*isP)XXX(3*isP)XXX
(isP)XXXX(isP)XXXXXXXXXXXXX(isP)X
X(2*isP)XXXXXXXXXX(isP)XX(2*isP)X
XXX(6*isP)XX(2*isP)X"
 640 PRINT "X(isP)XXXXXXXXXX(isP
)XX(2*isP)XXXX(2*isP)XXX(isP)XX(
2*isP)XX(isP)XX(9*isP)XX(2*isP)X
XXX(isP)XX(3*isP)XX(isP)XXX(isP)
XX(2*isP)XXXXXXXXX(7*isP)XX(3*is
P)XX(isP)XXX(isP)XX(2*isP)XXXXXX
XXXXXXXXXXX(isP)XXXX(isP)XXX(is
P)XX(isP)XXXXXXXXXXXXXXXXXX(6*i
sP)XXX(isP)XX(isP)XX(9*isP)XXX(4
*isP)X(6*isP)XXX(2*isP)X(4*isP)X
XXXXXX(2*isP)X(2*isP)X(2*isP)XXX
XXXXXXX(2*isP)X(4*isP)XXXXXXXX(3
*isP)XX(9*isP)XXX(2*isP)XXXXXXXX
XXXXXXXXXXXXXXXX(2*isP)XXX(29*i
sP)XXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXX"
 650 PRINT AT 1,2; PAPER 5;"C"
 670 GO TO 310
 701 REM **Introduction**
 710 BORDER 4: PAPER 7: CLS : PR
INT AT 5,6; INVERSE 1;" G R A N
D  P R I X "
 720 PRINT AT 14,9;"5/8 = Steeri
ng";AT 15,10;"7  = Throttle";AT
16,10;"6  = Brake"

 810 FOR c=0 TO 31: READ d: POKE
USR "A"+c,d: NEXT c
 820 PAUSE 0: CLS : GO TO 610
 901 DATA 231,195,231,231,231,16
5,129,165
 910 DATA 255,248,189,0,0,189,24
8,255
 920 DATA 255,31,189,0,0,189,31,
255
 930 DATA 165,129,165,231,231,23
1,195,231
```

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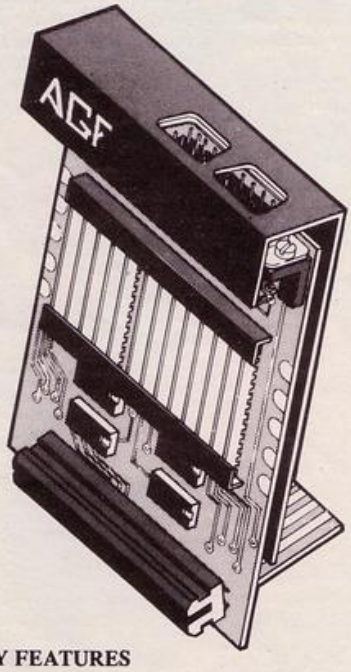

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- ★ Rear extension connector for all other add-ons.
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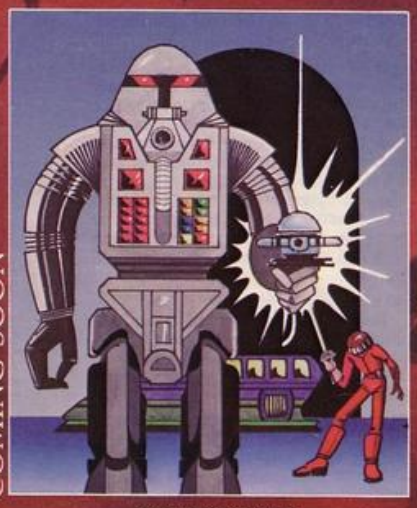

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2 extracts from *ZX Computing,* Oct/Nov '82

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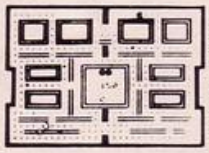
The Times, Saturday 11th December 1982 (about Cassette 4)

NEW! FOR 16K SPECTRUM

(will also run on 48K Spectrum)

CASSETTE A **Ten programs for £6**



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

ALIENKILL Control lasers, rockets and a force-field to stop the aliens from landing.
MOUSETRAP Trap the mouse in the corner but not anywhere else.
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LASER DEFENCE Control the laser sight to shoot down the alien ships. Machine code sound routines.

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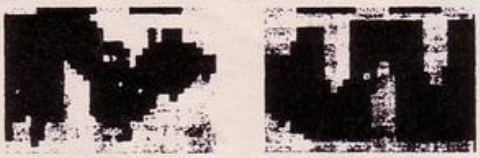
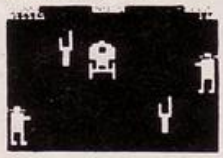
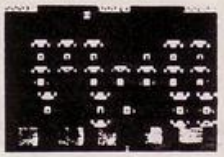
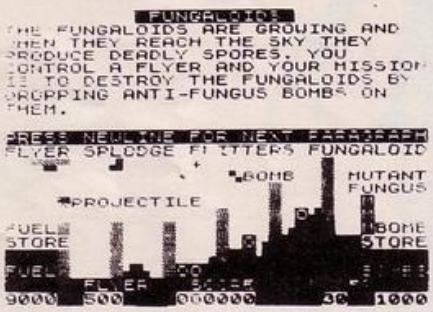


GUNFIGHT (machine code)



INVADERS (machine code)





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

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

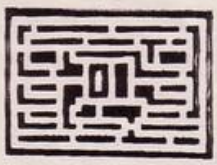
LIFE (machine code)
A ZX81 version of the well known game.

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

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

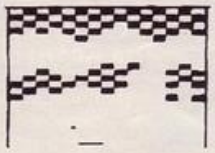
CASSETTE 5 **8 games for 16k ZX81** **£6**

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



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

BREAKOUT (machine code)



BLITZ (machine code)

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

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ZX81 & SPECTRUM SOFTWARE WANTED

PLONS

PLONS is a Space Invader-type game written for the 16K Spectrum by Umer Nalla of Bolton, Lancashire. Thirty Plons start at the top of the screen and move downwards rapidly. Move left with Q, right with W and fire with P. If you succeed in clearing one screen, a new screen will appear on which the Plons move even more quickly.

```
  1 LET me=1: PAPER 7: INK 1: B
ORDER 0: CLS : PRINT : PRINT : L
ET m$="

        USE KEYS  'q'  & 'w'
                  '<'     '>'
            'p' to fire missile

        THE PLONS ARE INVADING.
          NOW DEFEND YOUR RIGHTS
AND THE   RIGHTS OF OTHERS  OR YO
U WILL    ALL BE MADE SLAVES >>"
  2 IF m$(me)=">" THEN GO TO 5
  3 PRINT ;m$(me);: IF m$(me)<>

CHR$ 32 THEN BEEP .01,50:
  4 LET me=me+1: GO TO 2
  5 PAUSE 50: FOR k=0 TO 10: PR

INT AT 21,k;" Press a key": BEEP
 .005,k*2: NEXT k: PAUSE 0

 10 BORDER 0: INK 7: PAPER 0: C
LS : LET hi=0: PRINT AT 5,9; INV
ERSE 1; FLASH 1;"          ";AT 10

,10; BRIGHT 0; INVERSE 0;"PLEASE
 WAIT": PAUSE 40: GO SUB 320: PA
USE 30: GO TO 50

 20 PRINT AT mx,my;" ": LET mx=
mx-1: IF mx=a(my) AND a(my)>=1 T
HEN PRINT AT a(my),my; INK 2; PA

PER 1;"c": LET mi=0: BEEP .05,5:
 BEEP .05,7: BEEP .05,6: BEEP .0
5,8: PRINT AT a(my),my;" ": LET

sc=sc+10: LET a(my)=0: LET kill=
kill+1: RETURN
 30 IF mx<=1 THEN LET mi=0: RET
URN

 40 BEEP .005,55: PRINT AT mx,m
y; INK 5;"↑": RETURN
 50 BORDER 0: PAPER 0: INK 7: C
LS : DIM a(30): LET mi=0: LET by
=15: LET kill=0: LET sc=0: LET w
ave=2

 60 FOR x=1 TO 30: LET a(x)=wav
e+5: PRINT AT a(x),x; INK 0; PAP
ER 7;"a": NEXT x

 70 PRINT AT 0,0; INK 6; PAPER
1;"Kill ";kill;AT 0,10; INVERSE
1; BRIGHT 1;"SCORE ";sc;AT 0,22;
 INVERSE 0; BRIGHT 0;"Wave ";wav
e/2

 80 PLOT 7,0: DRAW 0,166: PLOT
248,0: DRAW 0,166: DRAW -241,0:
PAPER 0: INK 7

 90 FOR x=1 TO 30: IF a(x)=0 TH
EN GO TO 120

 100 IF RND>((wave+2)/9) THEN GO
 TO 120
 110 LET a(x)=a(x)+2: PRINT AT a
(x),x; INK 4;"a";AT a(x)-2,x;" "
 120 IF INKEY$="" THEN GO TO 160

 130 LET ty=by: LET by=by+(INKEY
$="w")-(INKEY$="q"): IF ty<>by T
HEN BEEP .005,5: IF by>30 OR by<
1 THEN LET by=ty
 140 PRINT AT 21,ty; INK 7; PAPE
R 0;" ";AT 21,by; INK 7; PAPER 2
;"b"
 150 IF IN 57342=254 AND mi=0 TH
EN LET my=by: LET mx=20: LET mi=
1: GO SUB 20

 160 IF mi THEN GO SUB 20: PRINT
 AT 0,0; INK 6; PAPER 1;"Kill ";
kill;AT 0,10; INVERSE 1; BRIGHT
1;"SCORE ";sc;AT 0,22; INVERSE 0
; BRIGHT 0;"Wave ";wave/2
 170 IF kill=30 THEN GO TO 290
 180 IF a(x)>=21 THEN GO TO 210
 190 NEXT x
 200 GO TO 90

 210 FOR k=1 TO 3: FOR j=0 TO 7:
 OUT 254,j: BEEP .03,8: BEEP .03
,6: BEEP .03,7: BEEP .03,5: BEEP
 .08,-20: NEXT j: NEXT k

 220 PAUSE 70: INK 1: PAPER 7: B
ORDER 7: CLS : PRINT AT 2,9;"HAR
D LUCK THE";AT 4,11; INVERSE 1;"
aALIENSa"; INVERSE 0;AT 6,9;"HAV
E MADE YOU";AT 9,12; BRIGHT 1;"S
LAVES"
 230 FOR f=5 TO 1 STEP -1: BEEP
.5,f: PAUSE 1: NEXT f
 240 IF sc>hi THEN LET hi=sc

 250 PRINT AT 18,7;"HIGH SCORE "
;HI;AT 19,7;"YOUR SCORE ";SC: PA
USE 30: FOR K=0 TO 10: PRINT AT
21,K;" S to start": BEEP .002,k*
2: NEXT k

 260 BEEP .04,5: BEEP .04,7: BEE
P .04,6: BEEP .04,8: IF INKEY$<>
"s" THEN GO TO 260
 270 CLS : GO TO 50
 280 STOP
 290 PAUSE 60: CLS : PRINT AT 12
,10; BRIGHT 1; INK 0; PAPER 7;"W
ELL DONE";AT 13,5; FLASH 1; INVE
RSE 1;"BUT NOW THINGS GET";AT 15
,9; INVERSE 0;"H A R D E R";AT 2
1,2; BRIGHT 0; FLASH 0;"  Press
any key to continue": FOR k=1 TO
 10: BEEP .04,8: BEEP .04,6: BEE
P .04,7: BEEP .04,5: NEXT k: PAU
SE 0: LET kill=0: LET wave=wave+
2
 300 IF wave>12 THEN LET wave=12
 310 CLS : GO TO 60

 320 FOR f=USR "a" TO USR "c"+7:
 READ a: POKE f,a: NEXT f

 330 DATA 195,36,126,219,126,195
,126,165,90,60,231,36,126,90,66,
231,33,31,64,14,32,175,126,31
 340 RETURN
```

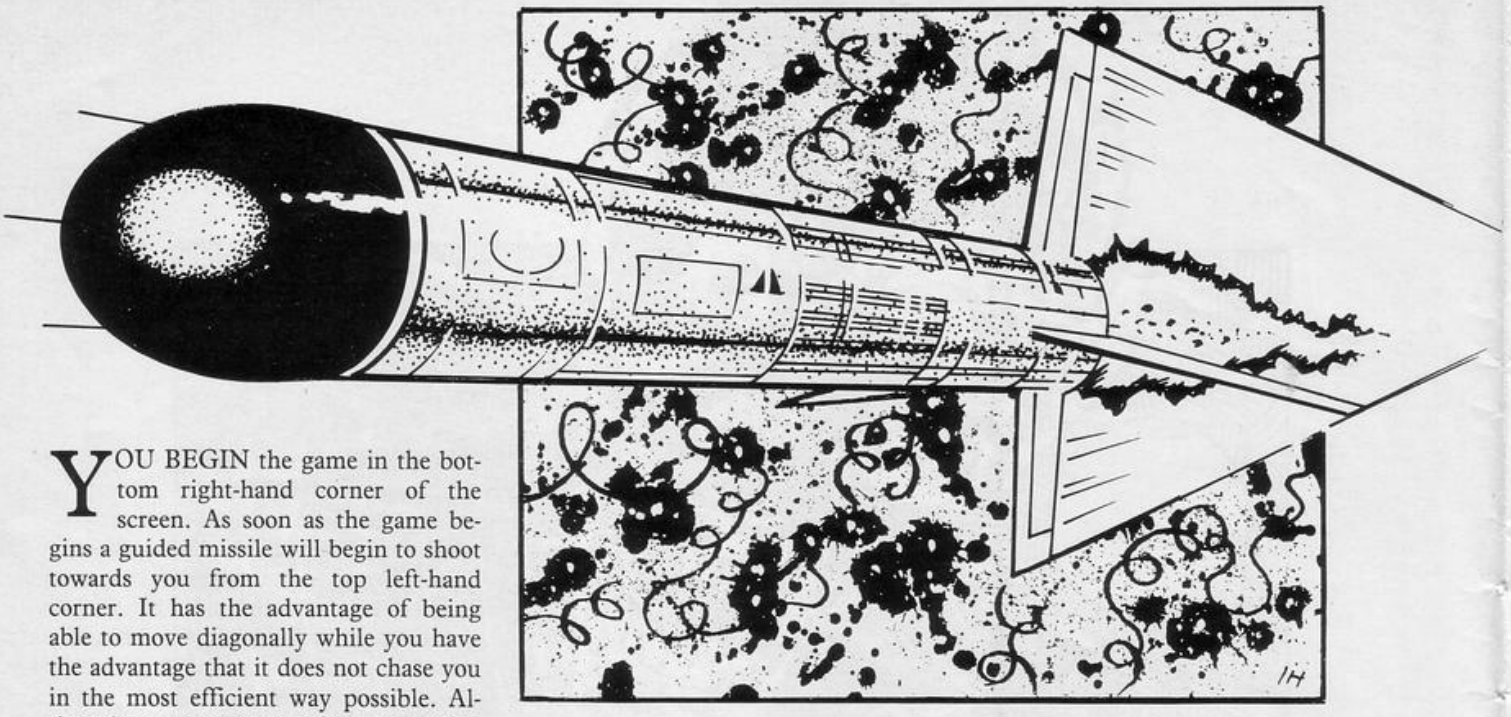
```
  13 REM
  15 LET G=0
  16 LET S=0
  20 LET L=16
  22 LET C=15
  30 LET A=6
  32 LET B=15
  37 CLS
  40 PRINT AT 2,8;"(2*isp)monste
r(2*isp)"
  50 PRINT AT 4,2;"YOU ARE INSID
E A DRAGONS LAIR.  IT WILL CHASE
 YOU THROUGH THE LAIR BUT IT WIL
L   DROP   ITS   TREASURE.PICK U
P ITS TREASURE(.)IF YOU MOVE  IN
TO  THE  BLOCKED EXIT(e) IT WILL
 NOT SENSE YOU."
  60 PRINT AT 18,17;"7";TAB 7;"U
SE KEYS:5+8";TAB 17;"6"
  70 PAUSE 40000
  80 PRINT AT 0,0;"TREASURE=
    HIGH=";G
  90 PRINT "(31*9a)"
 100 PRINT "(9h:14*isp:9h:14*isp
:9h)"
 110 PRINT "(9h:isp:6*9h:isp:5*9
h:isp:9h:isp:5*9h:isp:6*9h:isp:9
h)"
 120 PRINT "(9h:14*isp:9h:14*isp
:9h) "
 130 PRINT "(9h:isp:9h:isp:9h:is
p:9h:isp:9h:isp:9h:isp:9h:isp:3*
9h:isp:9h:isp:9h:isp:9h:isp:9h:i
sp:9h:isp:9h:isp:9h)"
 140 PRINT "(9h:isp:9h:isp:9h:is
p:9h:isp:9h:isp:9h:isp:9h:isp:3*
isp:isp:9h:isp:9h:isp:9h:isp:9h:
isp:9h:isp:9h:isp:9h)"
 150 PRINT "(9h:isp:9h:isp:9h:is
p:9h:isp:9h:isp:9h:isp:9h:isp:3*
isp:isp:9h:isp:9h:isp:9h:isp:9h:
isp:9h:isp:9h:isp:9h) "
 160 PRINT "(9h:isp:9h:isp:9h:is
p:9h:isp:9h:isp:9h:isp:9h:isp:3*
isp:isp:9h:isp:9h:isp:9h:isp:9h:
isp:9h:isp:9h:isp:9h)"
 170 PRINT "(9h:9*isp:9h:3*isp:9
h:isp:9h:3*isp:9h:9*isp:9h)"
 180 PRINT "(9h:isp:7*9h:isp:9h:
9*isp:9h:isp:7*9h:isp:9h)"
 190 PRINT "(9h:9*isp:9h:isp:7*9
h:isp:9h:9*isp:9h)"
 200 PRINT "(9h:isp:3*9h:isp:3*9
h:isp:9h:2*isp:5*9h:2*isp:9h:isp
:3*9h:isp:3*9h:isp:9h)"
 210 PRINT "(9h:13*isp:9h:ie:9h:
13*isp:9h)"
 220 PRINT "(9h:isp:5*9h:5*isp:9
h:isp:9h:isp:9h:isp:9h:5*isp:5*9
h:isp:9h)"
 230 PRINT "(9h:isp:3*9h:3*isp:3
*9h:isp:9h:5*isp:9h:isp:3*9h:3*i
sp:3*9h:isp:9h)"
 240 PRINT "(9h:29*isp:9h)"
 250 PRINT "(9h:isp:3*9h:3*isp:3
*9h:isp:9h:5*isp:9h:isp:3*9h:3*i
sp:3*9h:isp:9h)"
 260 PRINT "(9h:13*isp:3*9h:13*i
sp:9h)"
 270 PRINT "(9h:isp:3*9h:3*isp:3
*9h:isp:9h:isp:3*9h:isp:9h:isp:3
*9h:3*isp:3*9h:isp:9h)"
 280 PRINT "(9h:13*isp:3*9h:13*i
sp:9h)"
 290 PRINT "(31*9a)"
 300 REM MOVE MAN
 310 LET L1=L
 320 LET C1=C
 340 LET L=L+(INKEY$="6")-(INKEY
$="7")
 350 LET C=C+(INKEY$="8")-(INKEY
$="5")
 355 PRINT AT L,C;
 360 LET Q=PEEK (PEEK 16398+256*
PEEK 16399)
 370 IF Q<>8 THEN GOTO 390
 375 LET C=C1
 380 LET L=L1
```

WEREWOLF LAIR

YOU ARE trapped in the deadly maze which is the **Werewolf Lair** and the werewolf is on your trail. Avoid him for as long as possible and try to collect all the treasure he drops. If you hide in the doorway marked "E" the werewolf will not be able to sense you.

Written for the 16K ZX-81 by Neil Stevens of Shoreham-by-Sea, Sussex.

```
 390 IF Q=11 THEN GOTO 9000
 400 IF Q=151 THEN LET S=S+1
 410 PRINT AT L1,C1;"(isP)";AT L
,C;"(io)"
 500 REM MOVE MONSTER
 510 LET A1=A
 520 LET B1=B
 530 LET A=A+(A<L)-(A>L)
 540 PRINT AT A,B;
 550 LET Q=PEEK (PEEK 16398+256*
PEEK 16399)
 560 IF Q=180 THEN GOTO 9000
 570 IF A<>A1 AND Q<>8 THEN GOTO
 680
 580 LET A=A1
 590 LET B=B+(B<C)-(B>C)
 600 PRINT AT A,B;
 610 LET Q=PEEK (PEEK 16398+256*
PEEK 16399)
 620 IF Q=180 THEN GOTO 9000
 630 IF Q<>8 THEN GOTO 680
 640 LET B=B1
 680 PRINT AT A1,B1;"(i*)";AT A,
B;""""
 690 IF S/5=INT (S/5) THEN PRINT
 AT 0,10;S
 700 IF L<>13 OR C<>15 THEN GOTO
 300
 710 IF INKEY$<>"" THEN GOTO 300
 720 GOTO 700
9000 PRINT AT A1,B1;"(i*)"
9010 FOR F=1 TO 18
9020 PRINT AT L,C;"(9s)"
9030 PRINT AT L,C;"(9d)"
9040 NEXT F
9050 PRINT AT 21,8;"(99:9f:isP)9
ot yer(isP:9f:99)"
9060 IF S>G THEN LET G=S
9080 GOTO 16
9900 SAVE "MONSTEr"
9910 REM "BY NEIL STEVENS"
9920 RUN
```



GUIDED MISSILE

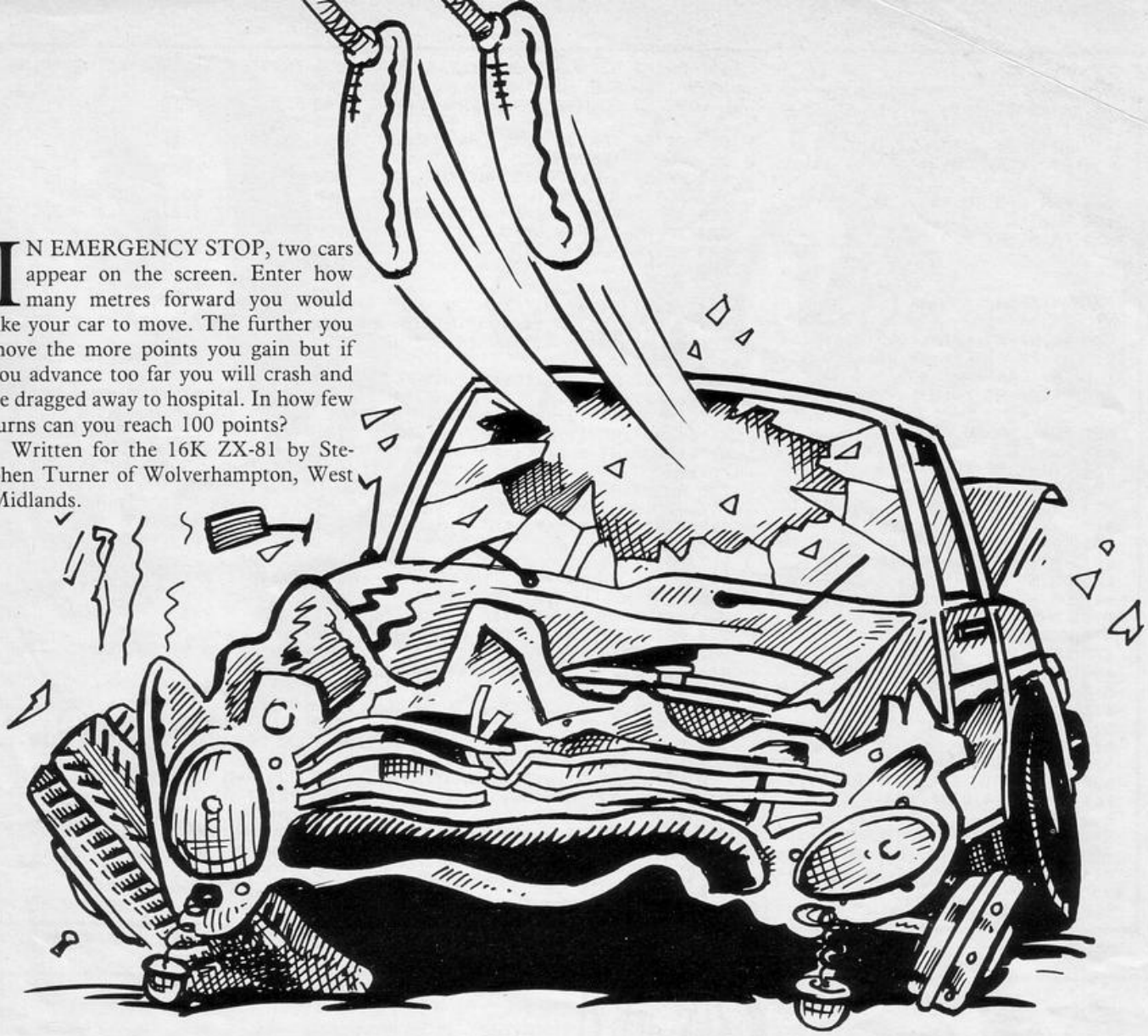
YOU BEGIN the game in the bottom right-hand corner of the screen. As soon as the game begins a guided missile will begin to shoot towards you from the top left-hand corner. It has the advantage of being able to move diagonally while you have the advantage that it does not chase you in the most efficient way possible. Although you can survive for a long time on slow speeds, it is very difficult to reach a high score on the fastest speed.

Guided Missile was written for the 16K Spectrum by D N Heathfield of Southampton, Hampshire.

```
  10 BORDER 0: PAPER 0: CLS
  20 INK 5: CLS : PRINT AT 8,9;"
SELECT SPEED"
  30 INK 2: PRINT AT 12,8;"  1 2
 3 4 5 "
  40 IF INKEY$="1" OR INKEY$="2"
 OR INKEY$="3" OR INKEY$="4" OR
INKEY$="5" THEN GO TO 60
  50 GO TO 40
  60 LET c=VAL INKEY$
  70 LET l=c
  80 PRINT AT 12,c*2+8; FLASH 1;
 INK 5;c
  90 FOR f=1 TO 100: NEXT f
 100 CLS : INK 2: PRINT AT 4,0;"
   DO YOU WANT SOUND ? (Y/N)"
 110 PAUSE 0
 120 IF INKEY$="N" OR INKEY$="n"
 THEN LET zx=1: GO TO 150
 130 IF INKEY$="Y" OR INKEY$="y"
 THEN LET zx=0: GO TO 150
 140 GO TO 110

 140>GO TO 110
 150 LET p=0
 160 LET aa=254: LET ab=0
 170 LET ba=0: LET bb=174
 180 CLS
 190 INK 5: CLS : PRINT AT 8,9;"
SELECT LEVEL"
 200 INK 2: PRINT AT 12,4;"  1 2
 3 4 5 6 7 8 9"
 210 IF INKEY$="1" OR INKEY$="2"
 OR INKEY$="3" OR INKEY$="4" OR
INKEY$="5" OR INKEY$="6" OR INKE
Y$="7" OR INKEY$="8" OR INKEY$="
9" THEN GO TO 230
 220 GO TO 210
 230 LET q=VAL INKEY$
 240 LET x=2-(q/10)
 250 PRINT AT 12,q*2+4; FLASH 1;
 INK 5;q
 260 FOR f=1 TO 100: NEXT f: PAP
ER 0: BORDER 0: CLS
 270 INK 2: PLOT OVER 1;aa,ab

 270>INK 2: PLOT OVER 1;aa,ab
 280 INK 6: PLOT OVER 1;ba,bb
 290 IF INT (aa/(3*l))=INT (ba/(
3*l)) AND INT (ab/(3*l))=INT (bb
/(3*l)) THEN GO TO 0510
 300 IF INKEY$="0" THEN CLS : GO
 TO 350
 310 IF INKEY$="5" THEN LET aa=a
a-(x*l): GO TO 350
 320 IF INKEY$="8" THEN LET aa=a
a+(x*l): GO TO 350
 330 IF INKEY$="7" THEN LET ab=a
b+(x*l): GO TO 350
 340 IF INKEY$="6" THEN LET ab=a
b-(x*l): GO TO 350
 350 IF aa>ba THEN LET ba=ba+l:
GO TO 370
 360 IF aa<ba THEN LET ba=ba-l
 370 IF ab<bb THEN LET bb=bb-l:
GO TO 390
 380 IF ab>bb THEN LET bb=bb+l
 390 IF aa>255 THEN LET aa=255

 390>IF aa>255 THEN LET aa=255
 400 IF ab>174 THEN LET ab=174
 410 IF ab<0 THEN LET ab=0
 420 IF aa<0 THEN LET aa=0
 430 LET p=p+1
 440 LET w=(ab-bb)-(aa-ba)
 450 IF w>0 THEN LET r=-w
 460 IF w<0 THEN LET r=w
 470 IF zx=1 THEN GO TO 490
 480 BEEP 0.004,INT r/7+40
 490 PRINT AT 0,26; INK 5;p: IF
p>1000 THEN GO TO 0600

 500 GO TO 270
 510 FOR f=1 TO 255: BORDER 6: B
ORDER 2: BORDER 6: BORDER 2: NEX
T f: BORDER 0: CLS
 520 INK 4: PRINT AT 5,0;"   THE
 MISSILE HAS GOT YOU !"
 530 PRINT AT 10,6;" YOU DID , H
OWEVER,
                    SURVIVE FOR "
;p;" PHASES"

 530>PRINT AT 10,6;" YOU DID , H
OWEVER,
                    SURVIVE FOR "
;p;" PHASES"
 540 PRINT : PRINT : PRINT "
PRESS 'A' TO PLAY AGAIN"
 550 PRINT : PRINT "       OR 'S
' TO SAVE"
 560 PAUSE 0
 570 IF INKEY$="S" OR INKEY$="s"
 THEN GO SUB 820: RUN
 580 IF INKEY$<>"A" AND INKEY$<>
"a" THEN GO TO 0560
 590 RUN
 600 FOR f=1 TO 255: BORDER 1: B
ORDER 2: BORDER 1: BORDER 2: NEX
T f: BORDER 0: CLS
 610 INK 4: PRINT AT 4,4;"THE MI
SSILE HAS RUN OUT."
 620 PRINT : PRINT "   YOU HAVE
SURVIVED THE FULL ": PRINT : PRI
NT "          1000 PHASES !"

 620>PRINT : PRINT "   YOU HAVE
SURVIVED THE FULL ": PRINT : PRI
NT "          1000 PHASES !"
 630 PRINT AT 11,4;"PRESS 'A' TO
 PLAY AGAIN."
 640 PRINT : PRINT "        OR '
S' TO SAVE"
 650 PAUSE 0
 660 IF INKEY$="S" OR INKEY$="s"
 THEN GO SUB 820: RUN
 670 IF INKEY$<>"A" AND INKEY$<>
"a" THEN GO TO 0650

 680 RUN
 690 INK 4: BORDER 0: PAPER 0: C
LS

 700 PRINT AT 2,0;"   THE KEYS F
OR GUIDED "
 710 PRINT : PRINT "   MISSILE A
RE :"
 720 PRINT : PRINT : PRINT "
  5 .... LEFT"
 730 PRINT : PRINT "       6 ....

 730>PRINT : PRINT "       6 ....
DOWN"
 740 PRINT : PRINT "       7 ....
UP"
 750 PRINT : PRINT "       8 ....
RIGHT"
 760 PRINT : PRINT "       0 ....
CLS "
 770 PRINT : PRINT "       S ....
SAVE THIS PROGRAM"
 780 PRINT AT 19,3; FLASH 1;"PRE
SS ANY KEY TO PLAY"
 790 PRINT AT 21,2;" (OR 'S' TO
SAVE)"
 800 PAUSE 0: IF INKEY$="S" OR I
NKEY$="s" THEN GO SUB 820

 810 RUN
 820 SAVE "G M" LINE 690: RETURN
```

IN EMERGENCY STOP, two cars appear on the screen. Enter how many metres forward you would like your car to move. The further you move the more points you gain but if you advance too far you will crash and be dragged away to hospital. In how few turns can you reach 100 points?

Written for the 16K ZX-81 by Stephen Turner of Wolverhampton, West Midlands.



EMERGENCY STOP

```
  1 GOTO 700
  2 LET N=0
  4 LET G=INT (RND*50)+1
  5 LET A$="(sP:3*96)"
  6 LET B$="(sP:95)O"
  7 LET C$="(sP:5*isP)"
  8 LET D$=" O   O"
  9 CLS
 10 FOR A=0 TO 0
 20 LET B=INT (RND*10)+10
 25 PRINT AT 11,A;A$;AT 12,A;B$
;AT 13,A;C$;AT 14,A;D$
 50 PRINT AT 11,B;"(2*sP:3*96)"
;AT 12,B;"(4*sP:98)";AT 13,B;"(5
*isP)";AT 14,B;"O   O"
 55 FOR I=15 TO 21
 56 PRINT "(32*9a)"
 57 NEXT I
 60 PRINT AT 0,0;"HOW FAR UNTIL
 HE HAS TO BRAKE?"
 65 PRINT "MAX=20"
 70 INPUT H
 75 IF H>20 THEN GOTO 70
 80 PRINT H;" METRE(S)"
 85 FOR X=1 TO 50
 86 NEXT X
 90 PRINT AT 0,0;"
                                  "
100 LET A=A+1
105 IF A=H THEN GOTO 200
110 PRINT AT 11,A;A$;AT 12,A;B$
;AT 13,A;C$;AT 14,A;D$
115 PRINT AT 11,B;"(2*sP:3*96)"
;AT 12,B;"(4*sP:98)";AT 13,B;"(5
*isP)";AT 14,B;"O   O"
120 GOTO 100
210 IF A=B-14 THEN GOTO 290
220 IF A>B-5 THEN GOTO 400
290 LET N=N+A
295 IF N>=100 THEN GOTO 1000
300 PRINT AT 0,0;"WELL DONE YOU
 DID NOT BUMP THAT","ONE.."
305 PRINT "AND YOU GET ";N;" PO
INTS."
310 PRINT "PRESS ANY KEY TO PLA
Y AGAIN"
320 IF INKEY$="" THEN GOTO 320
330 CLS
340 GOTO 4
400 PRINT AT 11,0;"
                                  "
410 FOR Z=1 TO A
411 NEXT Z
420 PRINT AT 11,A;"(91:96:99:95
:96:92)";AT 12,A;"(sP:isP:2*9h:i
sP)";AT 13,A;"(sP:isP:2*i*:isP)"
;AT 14,A;"(94:97:9r:94:97:93)"
421 FOR O=1 TO 50
```

```
 422 NEXT O
 430 PRINT AT 9,A;"(91:96:isP:96
:99:96:92)";AT 10,A;"(sP:5*isP)"
;AT 11,A;"(isP:3*9h:isP)";AT 12,
A;"(isP:3*9f:isP)";A1 13,A;"(5*i
sP)";AT 14,A;"(94:97:9r:9e:isP:9
3)"
 440 FOR G=0 TO 49
 450 NEXT G
 455 PRINT AT 9,A;"
                    "
 460 PRINT AT 12,A;"(95:2*isP:2*
92)";AT 12,A;"(sP:94:2*isP:93)";
AT 14,A;"(94:3*9f:93)"
 466 PRINT AT 10,A-1;"(96:10:96)
"
 467 FOR L=0 TO 20
 468 NEXT L
 472 PRINT AT 10,A-1;"   ";AT 8,
A-3;"O(isP:99)"
 473 PRINT AT 12,A;"     ";AT 12
,A;"     "
 474 PRINT AT 13,A;"(99:9w:96:95
:94)";AT 14,A-1;"(6*isP)"
 475 PRINT AT 8,A-3;"   ";AT 12,
A-4;"O";AT 11,A-5;"(96:isP:94)";
AT 10,A-5;"(9r:sP:9e)"
 476 FOR D=0 TO 5
 477 NEXT D
 480 PRINT AT 12,A-4;" ";AT 11,A
-5;"   ";AT 10,A-5;"   ";AT 14,A
-5;"O(isP:99)"
 500 FOR P=0 TO 50
 510 NEXT P
 520 FOR V=0 TO A-7
 530 PRINT AT 12,V;" O";AT 13,V;
" (i+)";AT 14,V;" (iw)"
 540 NEXT V
 545 FOR W=A-7 TO 0 STEP -1
 550 PRINT AT 12,W;"O ";AT 13,W;
"(i+)O ";AT 14,W;"(99:sP:isP:99:
sP)"
 560 NEXT W
 600 PRINT AT 0,0;"YOU WILL BE I
N HOSPITAL FOR 10","WEEKS.AND WI
LL LOSE 20 POINTS","FOR EXPENCES
..."
 605 PRINT "DRIVE MORE CAREFULLY
ON YOUR ","RELEASE."
 610 PRINT ,,,,"PRESS ANY KEY TO
TRY AGAIN."
 620 IF INKEY$="" THEN GOTO 620
 621 IF N<=0 THEN GOTO 630
 625 LET N=N-20
 630 GOTO 5
 700 FOR X=0 TO 23
 710 PRINT AT 21,X;"(isP) O   O"
;AT 20,X;"(isP:sP:5*isP)";AT 19,
X;"(isP:sP:95:O:98)";AT 18,X;"(i
sP:sP:3*96)"
 720 PRINT AT 17,X;"(isP)";AT 16
,X;"(isP)";AT 15,X;"(isP)";AT 14
,X;"(isP)";AT 13,X;"(isP)";AT 12
,X;"(isP)";AT 11,X;"(isP)";AT 10
,X;"(isP)";AT 9,X;"(isP)";AT 8,X
;"(isP)"
 725 PRINT AT 7,X;"(isP)";AT 6,X
;"(isP)";AT 5,X;"(isP)";AT 4,X;"
(isP)";AT 3,X;"(isP)";AT 2,X;"(i
sP)";
 727 PRINT AT 21,0;"
                    "
 730 NEXT X
 731 PRINT AT 21,0;"(isP)"
 740 PRINT AT 21,24;"    O  ";AT
 20,24;"(4*sP:3*isP)";AT 19,24;"
(4*sP:95)O";AT 18,24;"(4*sP:2*96
)"
 750 PRINT AT 21,26;"      ";AT 2
0,26;"      ";AT 19,26;"      ";AT
 18,26;"     "
 760 FOR V=30 TO 25 STEP -1
 770 PRINT AT 21,V;"(99:sP)";AT
20,V;"(i':sP)";AT 19,V;"O "
 780 NEXT V
 790 FOR C=20 TO 3 STEP -1
 800 PRINT AT 19,24;"(94)";AT 20
,24;"(97)"
 810 FOR G=0 TO 10
 820 NEXT G
 830 PRINT AT 19,24;" ";AT 20,24
;"(9e)"
 840 FOR G=0 TO 10
 850 NEXT G
 855 PRINT AT C,1;"
                    "
 860 NEXT C
 865 PRINT AT 20,1;"(22*97)"
 870 PRINT AT 3,2;"  *EMERGENCY
STOP*"
 885 PRINT AT 5,2;"THE OBJECT OF
THE"
 890 PRINT AT 6,2;"GAME IS TO ES
TIMATE"
 891 PRINT AT 7,2;"THE DISTANCE
BETWEEN"
 895 PRINT AT 8,2;"THE TWO CARS.
"
 900 PRINT AT 9,2;"IF YOUR ESTIM
ATE IS";AT 10,2;"WRONG THE"
910 PRINT AT 11,2;"CONSEQUENCIE
S WILL BE";AT 12,2;"  fatal.."
 915 PRINT AT 13,2;"THE CLOSER Y
OU GET";AT 14,2;"THE MORE POINTS
";AT 15,2;"YOU GET.TRY AND GET";
AT 16,2;"100 OR MORE"
 920 PRINT AT 18,1;"PRESS ANY KE
Y TO CONT."
 930 IF INKEY$="" THEN GOTO 930
 940 GOTO 2
 941 STOP
1000 CLS
1010 PRINT TAB 6;"EMERGENCY STOP
"
1020 PRINT TAB 6;"(14*9s)"
1030 PRINT AT 6,2;"WELL DONE YOU
 GOT ";N;" POINTS","AND WOULD PA
SS YOUR DRIVING TESTFIRST TIME..
.."
1040 FOR A=0 TO 100
1045 PRINT AT 10,3;"Press any ke
y to cont..."
1050 IF INKEY$="" THEN GOTO 1050
1060 GOTO 2
8999 STOP
9000 SAVE "EMERGENCY STOP"
9100 RUN
```

GANGSTERS

YOU ARE involved in a desperate shoot-out with the **Gangsters** in a car park. Faces appear in the darkness and you must shoot them with key "ø". P J Irwin, of Bembridge, Isle of Wight, who wrote the game for the 16K Spectrum, says that anything more than 70 is a good score.

```
   3 DEF FN m(x,y)=(x+y+ABS (x-y
)/2
   5 DEF FN u()=(65536*PEEK 2367
4+256*PEEK 23673+PEEK 23672)/50
   7 DEF FN t()=FN m(FN u(),FN u
())
   9 LET hs=0
  10 PAPER 0: BORDER 0: INK 5: C
LS
  15 GO SUB 9000
  20 INPUT "Instructions?('ENTER
' y for yes)"; LINE a$: IF CODE
a$=121 OR CODE a$=89 THEN GO SUB
 800
  30 RESTORE 200: DIM a(32): FOR
 f=2 TO 30 STEP 2: READ a(f): NE
XT f
  40 INPUT "'ENTER' Level (5-har
d to 1-easy)";lev: IF lev<1 OR l
ev>5 THEN GO TO 40
  50 LET w=0: LET x=4: LET sc=0:
LET c=-1: LET g=15
  60 PAPER 0: BORDER 0: INK 5: C
LS
  70 CIRCLE 238,88,8: CIRCLE 238
,88,1.5
  80 PLOT 250,113: DRAW -5,-5: D
RAW -25,0: DRAW 0,-20: DRAW 6,0:
 DRAW 24,0,-3.3
  90 INK 6: PLOT 148,100: DRAW 3
2,0,-0.8: DRAW -32,0,-0.8: DRAW
0,-48: DRAW 32,0,0.8: DRAW 0,48
 100 PRINT AT 12,19;"oil"
 110 INK 4: PLOT 0,119: DRAW 32,
0: DRAW 0,-8: DRAW -32,0: DRAW 0
,-8: DRAW 32,0: DRAW 0,-8: DRAW
-32,0: DRAW 0,-8: DRAW 32,0: DRA
W 0,24
 120 PLOT 8,119: DRAW 0,-8: DRAW
 8,0: DRAW 0,-8: DRAW -8,0: DRAW
 0,-8: DRAW 8,0: DRAW 0,-8
 130 PLOT 24,119: DRAW 0,-8: PLO
T 24,103: DRAW 0,-8
 140 INK 2: PLOT 64,40: DRAW 48,
0,-2.5
 150 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
 160 INK 3: PRINT AT 2,11; INK 7
;"'shoot out'"
 170 FOR x=1 TO 3: BEEP .05,50:
PAUSE 5: NEXT x
 180 PRINT AT 10,15; INK 2;"B"
 190 PRINT AT 21,3; INK 5;"Score
:" : PRINT AT 21,21; INK 5;"High
:"
 200 LET q=FN t(): IF q>60 THEN
GO TO 900
 210 LET f=g-(INKEY$="5" AND g>0
)+(INKEY$="8" AND g<31)
 220 IF f<>g THEN PRINT AT 18,g;
" "
 230 IF f<>g THEN PRINT AT 18,f;
 INK 2;"B": LET g=f
 240 IF INKEY$="0" THEN GO SUB 7
50
 250 IF sc>hs THEN LET hs=sc: LE
T w=1
 260 PRINT AT 21,9; INK 5;sc: PR
INT AT 21,26; INK 5; FLASH w;hs
 500 LET c=c+1: IF c=23-lev*3 TH
EN LET c=0: PRINT AT a(x),x; PAP
ER 0;" "
 510 IF c=0 THEN LET x=INT (RND*
15)+1: LET x=x*2: PRINT AT a(x),
x;"A"
 520 GO TO 200
 750 IF q<>x THEN BEEP .5,-20: R
ETURN
 760 FOR c=7 TO 0 STEP -1: PRINT
 AT a(x),x; INK c;"A": BEEP .05,
c*INT (RND*7)+1: NEXT c
 770 PRINT AT a(x),x; PAPER 0;"
"
 780 LET sc=sc+lev: RETURN
 800 INK 6: CLS : PRINT "The ide
a of the game is to shoot"'"The
 outlaws 'A' who appear"'"from
behind the wall,car,rock"'"and
oil drum, by moving your gun"

 805 PRINT '"'B' using the curso
r keys 5 & 8"'"Fire using '0' :
your score is "'"dependent on y
our level"

 810 PRINT '"Note that it is not
 nesessarily"'"possible to hit
every time"'' "You have one minu
te"'''"    Press 'ENTER' to star
t"
 820 LET a$=INKEY$: IF CODE a$=1
3 THEN RETURN
 830 GO TO 820
 900 FOR x=0 TO 21: PRINT AT x,0
; OVER 1; INK 7;"(32*isp)": BEEP
.01,x*2: NEXT x
 910 PRINT AT 19,11; FLASH 1; PA
PER 7; INK 4;"Game  over"
 920 PRINT AT 21,3; PAPER 7;"Sco
re:";sc
 930 PRINT AT 21,21; PAPER 7;"Hi
gh:";hs
 940 INPUT "Another go?('ENTER'
n for no)"; LINE a$: IF CODE a$=
110 OR CODE a$=78 THEN STOP
 950 FLASH 0: GO TO 40
2000 DATA 6,8,16,14,13,14,17,10,
8,7,8,5,6,7,7
9000 RESTORE 9020: FOR x=USR "a"
 TO USR "b"+7: READ a: POKE x,a:
 NEXT x
9010 RETURN
9020 DATA 238,16,146,16,32,56,13
0,124
9030 DATA 0,0,16,16,56,56,254,25
4
```

```
  1 LET S=PI-PI
  2 LET O=VAL "5"
  3 FOR N=VAL "1" TO O
  4 LET Y=VAL "5"*N
  5 PRINT AT VAL "4",Y;
  6 FOR M=VAL "1" TO VAL "5"
  7 PRINT TAB Y;"(3*isp)"
  8 NEXT M
  9 PRINT AT VAL "6",Y+VAL "1";
N
 10 NEXT N
 11 LET W=INT (RND*O)+VAL "1"
 12 PRINT AT VAL "15",VAL "1";"
WHICH DOOR?"
 13 IF INKEY$="" THEN GOTO VAL
"13"
 14 LET X=CODE INKEY$-VAL "28"
 15 LET Y=VAL "5"*X
 16 IF X=W THEN GOTO VAL "26"
 17 LET S=S+1
 18 PRINT AT VAL "4",Y;
 19 FOR M=VAL "1" TO VAL "5"
 19~FOR M=VAL "1" TO VAL "5"
 20 PRINT TAB Y;"   "
 21 NEXT M
 22 CLS
 23 LET O=O-VAL "1"
 24 IF S/VAL "4"=INT (S/VAL "4"
) AND S>VAL "0" THEN GOTO VAL "2
"
 25 GOTO VAL "3"
 26 PRINT AT VAL "4",Y;"   ";TA
B Y;" O ";TAB Y;"(9t:isp:9y)";TA
B Y;" (9f) ";TAB Y;" (9f) "
 27 PRINT AT VAL "15",VAL "1";"
there is no escape"
 28 PRINT ,,"SCORE=";S;" ROOMS"
 29 STOP
```

YOU HAVE fallen unwittingly into the hands of an evil wizard from whom there is no escape. The wizard likes to play games, however, and has devised a special torment for you. A house with many rooms is the play area and each room has a certain number of doors. Behind one of those is the wizard. The longer you avoid him the longer you survive. **Doors** was written by Raymond Mitchell of Warrington, Cheshire for the 16K ZX-81.

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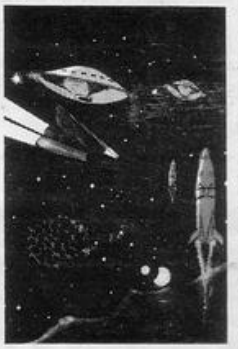

Mines of Saturn While piloting a routine orbit of Saturn, you are caught up in a radiation storm which forces you into the giant planet's rings. Your energy drained, you make a forced landing on the planet's surface. Luckily you crashed near an abandoned mining base and you set off in search of some di-lithium crystals to refuel your stranded space ship. Can you do it?

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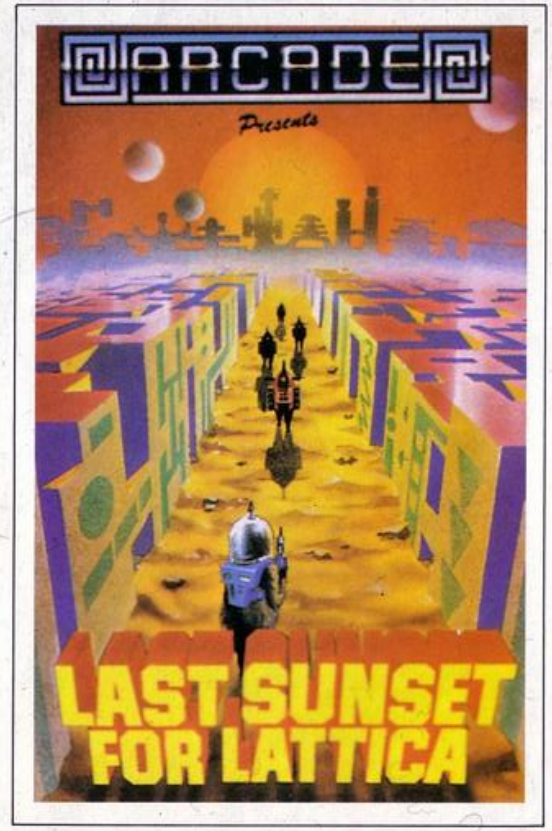
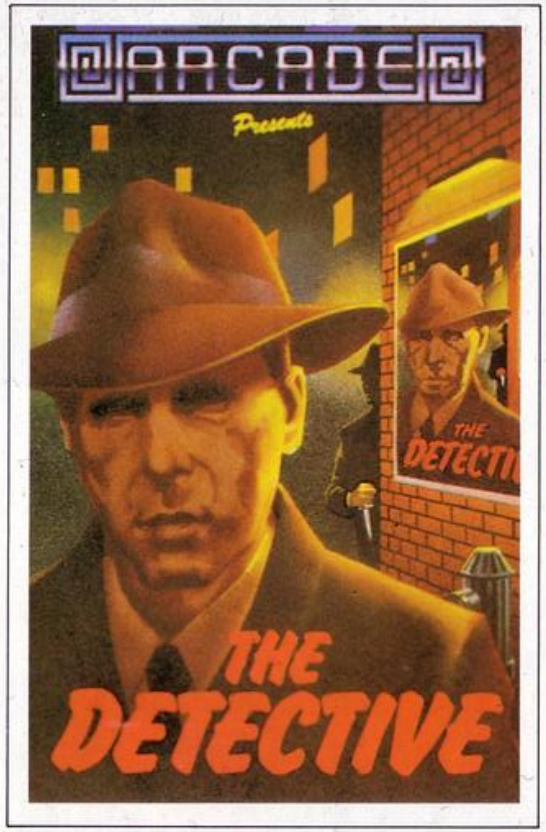


LAST SUNSET FOR LATTICA (Original) is a true graphical adventure game in real time. Your aim is to defuse a bomb hidden somewhere in a highly complicated maze avoiding many well armed androids along the way. Extra lives are there for the taking, so are the keys to take you to the next level and all the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



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