July 1984 An independent magazine published by ECC Publications

95p

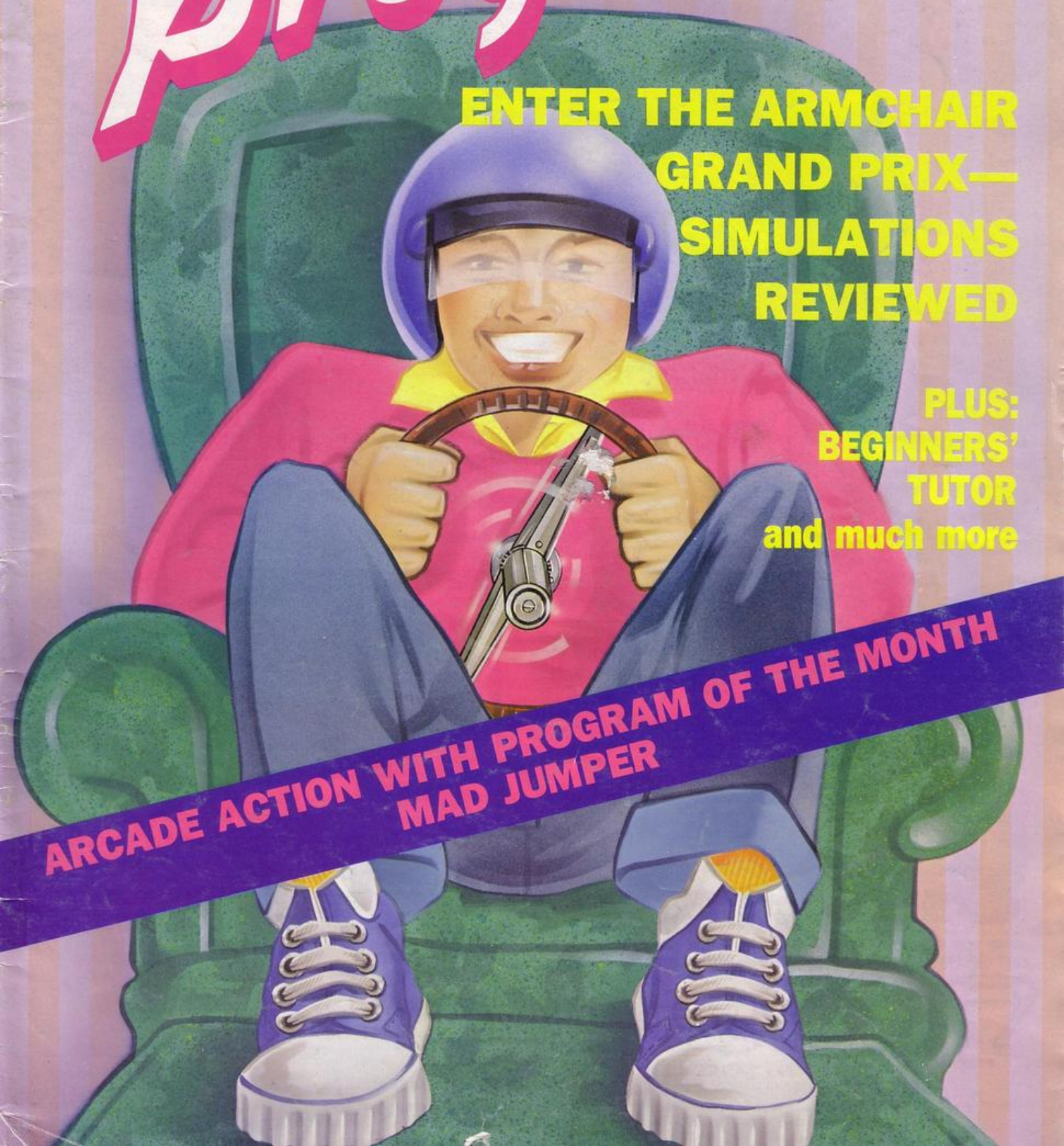
TOP LISTINGS FOR THE SPECTRUM AND ZX-81

R295

Sinclair Programs

ENTER THE ARMCHAIR GRAND PRIX— SIMULATIONS REVIEWED

PLUS:
BEGINNERS' TUTOR
and much more

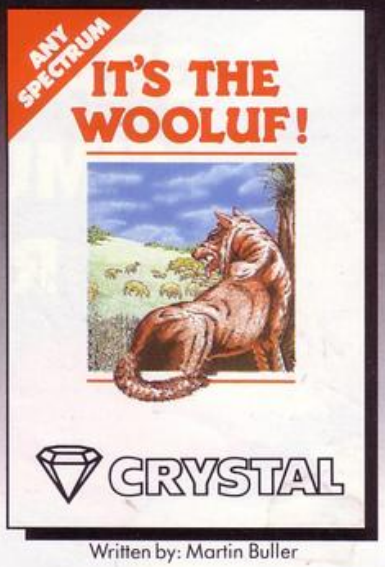


ARCADE ACTION WITH PROGRAM OF THE MONTH MAD JUMPER

TWO NEW RELEASES FROM CRYSTAL

IT'S THE WOOLUF!

TUBE WAY ARMY



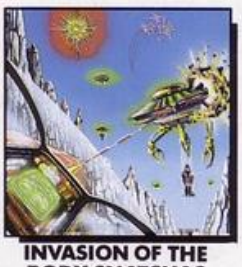
Written by: Martin Buller

Written by: Rainbow Software

From the creators of 'Halls of the Things,' 'Invasion of the body snatchas,' and many other software classics come these exciting new games.
Games to tax your judgement and puzzle and frustrate you for months on end.
Don't forget our other titles, which have attracted enthusiastic reviews like
"Spectacular, one of the best games I've seen"... POPULAR COMPUTING WEEKLY and
"Excellent, dangerously addictive, could change the Spectrum games scene overnight"... SINCLAIR USER.

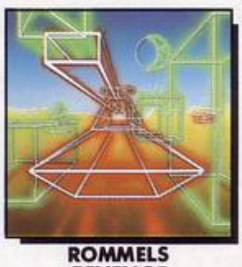
COMING SOON RETURN OF THE THINGS

HALLS OF THE THINGS
Written by: Neil Mottershead, Simon Brattel and Martin Horsley



INVASION OF THE BODY SNATCHAS
Written by: Simon Brattel and Neil Mottershead

Written by: Graham Stafford



ROMMELS REVENGE
Written by: Martin Horsley

THE DUNGEON MASTER
Written by: Graham Stafford

All titles for 48K Spectrum unless otherwise stated

PROGRAMMERS! WRITTEN ANY SOFTWARE THAT COMES UP TO OUR STANDARDS? IF SO SEND IT TO US FOR EVALUATION. WE OFFER GENEROUS ROYALTIES.

Selected titles available from:– John Menzies, Boots, Spectrum, HMV, WOOLWORTH, other large department stores and all good major software retailers. Alternatively, send the coupon to:–

Please supply:

HALLS OF THE THINGS	£7.50	INVASION OF THE BODY SNATCHAS	£6.50
IT'S THE WOOLUF	£6.50	THE DUNGEON MASTER	£7.50
TUBE WAY ARMY	£7.50	ROMMELS REVENGE	£6.50
CATALOGUE OF LATEST SOFTWARE		ZEUS 64	£9.95

NAME _____

ADDRESS _____

_____

I enclose cheque/p.o. for .....
P & P included. Overseas orders, please add £1.50 per item.

SP 7

CRYSTAL

CRYSTAL COMPUTING, 2 ASHTON WAY,
EAST HERRINGTON, SUNDERLAND SR3 3RX.
TRADE ENQUIRIES WELCOME:– Tel: 061-205 6603.
CRYSTAL COMPUTING IS THE TRADING NAME OF CHANDREX LTD.
The name Crystal is used under license

ABC

Editor
Rebecca Ferguson

Consultant editor
John Campbell

Managing production editor
Harold Mayes MBE

Staff writer
June Mortimer

Design
Elaine Bishop

Group advertisement manager
Holly Fleming

Production assistant
Dezi Epaminondou

Editorial assistant
Colette McDermott

Managing editor
Nigel Clark

Managing director
Terry Cartwright

Assistant managing director
Barry Hazel

Chairman
Richard Hease

U.S. Press representative: J Eisenberg, JE Publishers' representative, 6855 Santa Monica Blvd, Suite 202, Los Angeles, CA 90038.

Sinclair Programs is published monthly by ECC Publications Ltd.

Telephone 01-359 3525

If you would like your original programs to be published in Sinclair Programs, please send your contributions, which must not have appeared elsewhere, to:
Sinclair Programs,
ECC Publications,
196-200 Balls Pond Road,
London N1 4AQ

Programs should be on cassette. We cannot undertake to return them unless a stamped-addressed envelope is included. We pay £10 for the copyright of each program published.

ISSN No 0263-0265

Printed and typeset by Cradley Print PLC, Warley, West Midlands

Distributed by Spotlight Magazine Distribution Ltd, 1 Benwell Road, Holloway, London N7. 01-607 6411

Cover Design—Ivan Hissey

Contents

Zx81

Beginners

Spectrum

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

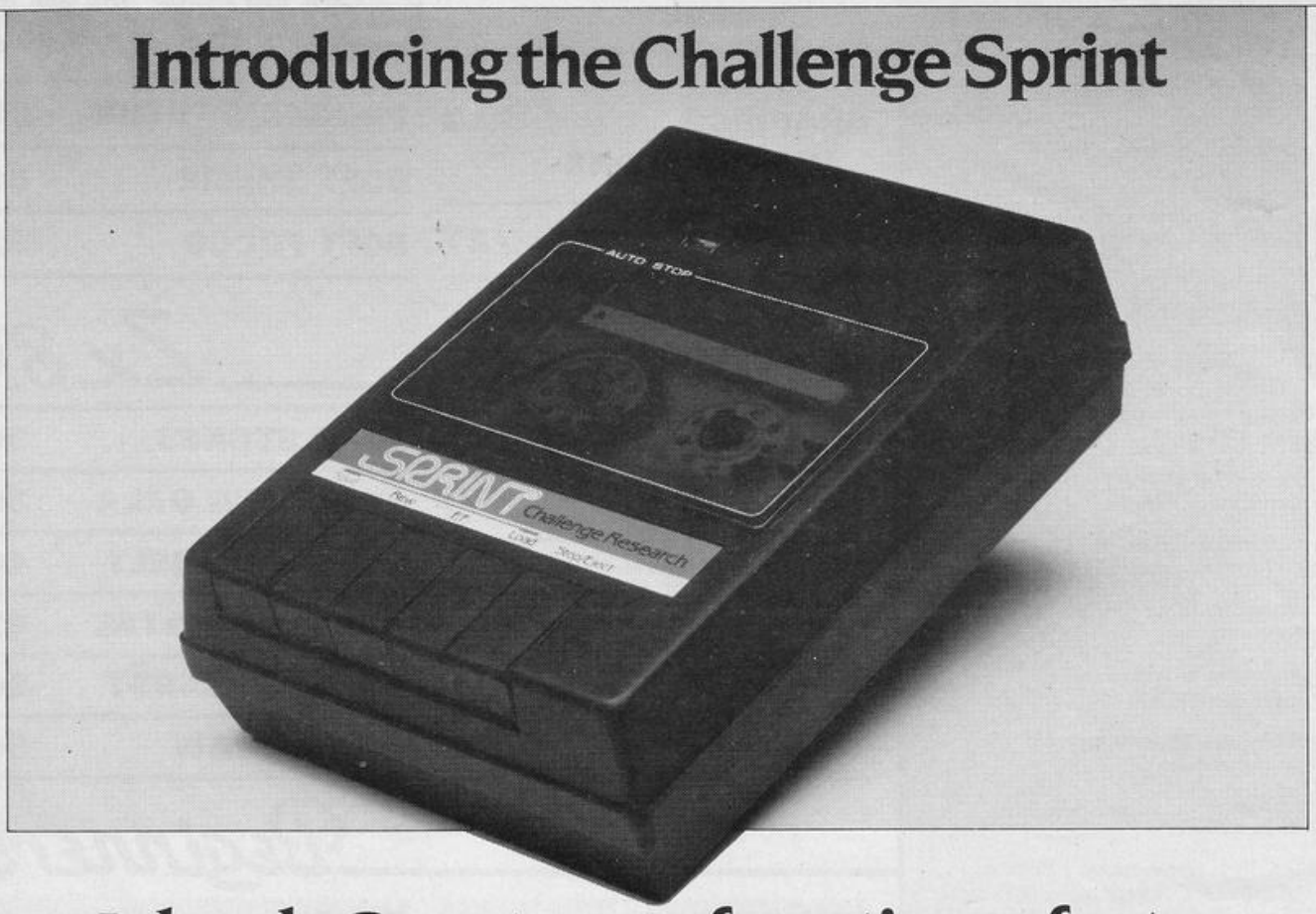
Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

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

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

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

Introducing the Challenge Sprint



It loads Spectrums four times faster than an ordinary cassette player, uses standard cassette software, and has improved loading reliability. All for just £64.95.

The new Sprint from Challenge Research will load and save Spectrum programs at four times the speed of conventional cassette players, this even applies to standard program and games cassette software that has been pre-recorded at normal speed. All this plus improved loading reliability is available for just £64.95 inclusive of post, packing, VAT and a 12 month guarantee. The Sprint is dedicated to both the 16K and 48K Spectrum and provides an innovative but inexpensive new concept in cassette tape storage.

Use of the Sprint is simplicity itself:

- Retains the standard Spectrum commands and format.
- Advanced digital circuitry and signal processing improves loading reliability and eliminates volume setting.
- Simply plugs into the Spectrum port – no interface or external power unit is required, it even has it's own expansion slot so that you can still use other peripherals at the same time.
- A full 48K program will load or save in 75 seconds rather than five minutes with a conventional cassette recorder.

Spend less on a Sprint. Spend more time working your Spectrum and be the envy of your friends.
If you have Visa or Access cards you may phone your order to ensure faster delivery by calling Potters Bar (0707) 44063, or post the coupon below.
Please allow 28 days for delivery. If you are not delighted with your Challenge Sprint simply return it within 7 days and we will refund your money in full.

TRADE ENQUIRIES WELCOME

CHALLENGE RESEARCH
A DIVISION OF A.E. HEADEN LTD.

218 High Street, Potters Bar, Herts EN6 5JS Potters Bar Tel: (0707) 44063

To: Challenge Research,
218 High Street, Potters Bar, Herts EN6 5BJ. Tel: Potters Bar (0707) 44063
Please supply 1 Challenge Sprint at £64.95 (inclusive of post, packing, VAT and 12 months guarantee).

Please tick box if you require a further 2 years guarantee at an additional cost of £7.50 ☐

Name (*Please print*)

Address

Signature

I enclose cheque/postal order made payable to Challenge Research for £

Please charge my Access/Visa No (*delete as appropriate*) the sum of £

SP7/84

CHALLENGE RESEARCH

TREASURE QUEST

ENTER the co-ordinates of the position in which you think the treasure lies. The chest is shown on the map to make it easier for you. If you are correct you receive five points but five points will be deducted for an incorrect guess. You must score 50 points for a successful quest and if your score falls below zero you will fail.

Treasure Quest was written for the 16K ZX-81 by Kenneth Moore, aged 13, of Glasgow.

```
  1 LET SC=25
 10 PRINT AT 5,23;"SCORE= ";SC
 13 PRINT AT 7,22;"TREASURE"
 15 PRINT AT 8,22;"ISLAND  "
 20 FOR F=1 TO 20
 30 PRINT AT F,0;"▌"
 40 NEXT F
 50 FOR N=1 TO 20
 55 PRINT AT 20,N;"▄"
 60 NEXT N
 65 FOR N=1 TO 20
 70 PRINT AT 0,N;"▄"
 75 NEXT N
 80 FOR F=1 TO 20
 85 PRINT AT F,20;"▌"
 90 NEXT F
 91 PRINT AT 3,5;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
 92 PRINT AT 4,6;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
 93 PRINT AT 5,5;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
 94 PRINT AT 6,7;"▀▀▀▀▀▀▀▀▀▀▀▀▀"
 95 PRINT AT 7,5;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
 96 PRINT AT 8,8;"▀▀▀▀▀▀▀▀▀▀▀"
 97 PRINT AT 9,7;"▀▀▀▀▀▀▀▀▀▀▀"
 98 PRINT AT 10,9;"▀▀▀▀▀▀▀"
 99 PRINT AT 11,10;"▀▀▀▀▀"
100 PRINT AT 15,6;"▀▀▀▀▀"
101 PRINT AT 16,7;"▀▀▀▀▀"
107 PRINT AT 17,8;"▀▀▀▀"
108 PRINT AT 13,13;"▀▀▀"
109 PRINT AT 0,0;"0"
110 PRINT AT 0,5;"5"
112 PRINT AT 0,10;"10"
115 PRINT AT 0,15;"15"
117 PRINT AT 5,0;"5"
118 PRINT AT 10,0;"10"
119 PRINT AT 15,0;"15"
120 LET A=INT (RND*19)
125 LET B=INT (RND*19)
130 PRINT AT A,B;"*"
135 PRINT AT 21,0;"ENTER X CO-O
RDINATES"
140 INPUT X
145 PRINT AT 21,0;"ENTER Y CO-O
RDINATES"
150 INPUT Y
155 PRINT AT Y,X;"+"
160 IF Y=A AND X=B THEN PRINT A
T 21,0;"WELL    DONE          "
165 IF Y<>A OR X<>B THEN PRINT
AT 21,0;"HARD LUCK (TRY AGAIN)"
166 PAUSE 100
167 CLS
170 IF Y=A AND X=B THEN LET SC=
SC+5
175 IF Y<>A OR X<>B THEN LET SC
=SC-5
180 IF SC=50 THEN PRINT "WELL D
ONE YOU HAVE THE TREASURE"
183 IF SC=50 THEN STOP
185 IF SC=0 THEN PRINT "HARD LU
CK YOU HAVE NO TREASURE"
187 IF SC=0 THEN STOP
190 GOTO 10
```

MAD JUMPER

MAD JUMPER is a very addictive game in which you have to move along the walls collecting fruit you can reach only by jumping at it. Avoid the creature which follows you and watch your time limit. On reaching stage three the game becomes more difficult, as the ladders increase and the creature is able to fire at you if you are both on the same wall. Mind where you jump, as you knock off bricks when jumping and cannot land twice in the same place.

The program is in two parts to enable it to fit into the 16K Spectrum. Type-in the graphics program and SAVE it. Then type-in the main program and SAVE. Both programs can be SAVEd by entering GOTO 9999. **Mad Jumper** was written by Henning Jon Grini of Bergen, Norway.

Never let it be said that it is impossible to write good games in Basic. After playing Mad Jumper for a time, it can be said that it is of commercial quality.

The object is to gain as many points as possible by collecting the fruit which is hanging from the roof. You do so by jumping about left to right or merely by moving in the mentioned directions. You can also go up and down ladders.

Things are not so easy, though, and the danger is the little monster which is constantly chasing you. Should you be touched, you lose a life.

It is one of those ladder types of game with five levels of playing area. If you jump and collect a piece of fruit, the ceiling, which is part of the floor above, disappears, and if you jump on to the weakened floor you will lose a life, so be careful where you jump.

Note that to avoid the monster, you can go off the screen left or right. Also there are ladders on the top and bottom levels which give a wraparound effect. So if you go up the top ladder, you will appear on the bottom.

You have only a certain amount of time to collect a fruit and that is displayed, together with your number of lives and the number of fruits to collect. After all the fruit has been collected for that stage, you move to the next where there will be more ladders and a laser base at each edge. Should the monster touch a base when you are on that level, a life is lost. It is possible to jump over the monster — good luck.

The program is in two parts. First, there is the start-up section which contains all the data for the user-defined graphics and machine code sound routines. Be very careful when entering this section, as some of the data is related to machine code; you could crash the machine if any of the numbers is incorrect. After the first part has been entered, save it to tape immediately.

Here is a very brief description of the main section. Line 100 sets up the main variables. Lines 370–377 are checks at higher stages of the game — stage three. Lines 393–400 are screen checks for the position of the monster and lines 400 to 409 read the keyboard and are part of a main loop — 370–420. Lines 500–1080 are checks on the screen position of the man and the routine is called only after he has been moved.

Lines 1115–1530 are a junction routine which caters for both left and right movement of the man — this is called from the keyboard entry routine. Lines 3100–3300 check and alter the time display and also alter the number of lives remaining. Lines 3500–3555 print the fruit but checks are made to see if the location is valid — i.e., is there a ladder there?

Lines 6004–6666 display the starting screen. The colour of MAD JUMPER and the line are changed at 6333 to 6666.

An interesting point about the program is that the data used to make up some of the UDGs is machine code. You can see the machine code in the game, as the explosion when a life is lost is made up of all the characters which are machine code.

MAIN ROUTINES

100	Sets up variables.
370–377	High-level routine.
393–400	Screen checks.
400–409	Read keyboard.
500–1080	Check man.
1115–1530	Check direction.
3100–3300	Print time.
3500–3555	Print fruit.
6004–6666	Display scores.
6888	Alternative coloured line as in score table.
8000–8100	Initial set-up routine.
8111–8166	Display playing area.
8177–8199	Start game tune.

VARIABLES USED

Arrays

A () Holds top five scores.
X$() Holds top five score names.

String

C$ Holds the words 'MAD JUMPER' for the score screen.
F$ Used as one-character input buffer when entering name.
G$ Temporary store for high score name.
K$ Holds user-defined character whose address is a musical routine — caught fruit.
L$ Holds several men which are used in lives display.
Q$ Holds user-defined character whose address is a sound routine — laser zap.
T$ Holds line display.
U$ Holds user-defined character whose address is a sound routine — all other sounds.
Z$ Holds status message — 'WELL DONE, NEW HIGH SCORE . .'.

Numeric

A Used as FOR . . NEXT index as well as index for AT statements.
C Holds CODE of object.

D Used as part of J, e.g., ATTRE(E,J+D).
E Used as index for column in ATTR, e.g., ATTR(x,E).
F Used in part of score formula as well as a decision switch, IF F=. . . .
G Numeric constant with value of 1.
H Flag variable used to determine whether symbol shift was pressed.
I Holds random number which is used as a pointer for the placing of ladders, fruit.
J As E but for row.
L Used as index for L$ which holds number of lives.
N Counter in FOR . . . NEXT loop.
O Numeric constant with value of 0.
P Holds the number corresponding to the maximum number of ladders on any one line.
Q Fruit count−1.
R Holds random number corresponding to INK colour of object, fruit.
S Line position of man.
T Used as an index for T$
U Used as time counter, corresponding to U=T×8+8.
V Holds number corresponding to the stage the game has reached.
X Line position of chaser.
Y Column position of chaser.
Z Column position of man.
HI Holds run-time high score.
SC Holds current score.

```
  1 INVERSE 0: BRIGHT 0: OVER 0
: FLASH 0: INK 6: PAPER 0: BORDE
R 0: CLS
  2 FOR N= USR "A" TO  USR "U"+
7
  4 READ X: POKE N,X: NEXT N
 100 DATA 60,24,126,153,24,36,66
,195,-1,129,X,X,-1,129,X,X,8,60,
26,63,28,60,24,31,144,184,252,19
2,252,184,144,240,192,96,80,72,6
8,238,X,68,60,126,118,126,X,60,0
,0,16,8,42,127,X,X,62,28,24,126,
-1,126,X,60,X,24,16,60,88,252,56
,60,24,248,-1,X,4,4,-1,64,X,-1
 200 DATA 1,30,6,33,-1,0,17,60,0
,229,213,197,205,181,3,193,209,2
25,125,145,111,16,242,201
 300 DATA 6,1,197,33,0,1,17,1,0,
229,205,181,3,225,17,16,0,167,23
7,82,32,240,193,16,233,201
 400 DATA 0,17,3,0,6,90,229,213,
197,205,181,3,193,209,225,35,16,
244,201,0,0,0,-1,X,0,0,0,0,0,0,9
,29,63,3,63,29,9,15
 500 PLOT 71,105: DRAW 0,34: DRA
W 14,-34: DRAW 14,34: DRAW 0,-34
: PLOT 114,105: DRAW 18,55: DRAW
 18,-55: PLOT 121,125: DRAW 22,0
: PLOT 165,105: DRAW 0,34: DRAW
17,0: DRAW 7,-8: DRAW 0,-18: DRA
W -7,-8: DRAW -17,0
 600 PLOT 25,86: DRAW 20,0: DRAW
 0,-44: DRAW -20,0: PLOT 40,64:
DRAW 10,0: PLOT 58,86: DRAW 0,-4
4: DRAW 24,0: DRAW 0,44: PLOT 91
,42: DRAW 0,44: DRAW 22,-44: DRA
W 22,44: DRAW 0,-44: PLOT 144,42
: DRAW 0,44: DRAW 22,0: DRAW 0,-
22: DRAW -22,0: PLOT 198,42: DRAW
-22,0: DRAW 0,44: DRAW 22,0: P
LOT 176,64: DRAW 14,0
 700 PLOT 207,42: DRAW 0,44: DRA
W 22,0: DRAW 0,-22: DRAW -22,0:
DRAW 22,-22: PRINT  INK 7; AT 19
,1; CHR$ 127;" HENNING JON GRINI
 - JAN 1984"
 800 INK 0: LOAD ""
9999 PAPER 7: INK 0: CLS : SAVE
"MAD JUMPER" LINE 1
```

```
 100 LET O=0: LET G=1: LET HI=0:
 DIM X$(5,15): DIM A(5): BORDER
7: INK 0: PAPER 7: CLS : GO TO 6
001
 370 IF  ATTR (X-1,Y)=56+R THEN
 FOR N=168-J*8 TO 175-J*8: BEEP
.025,2: PLOT  INVERSE G;E*8,N: D
RAW  INVERSE G;7,0: NEXT N: PRIN
T  INK 7; AT J,E;" ": GO SUB 350
0
 377 IF Y=1 OR Y=30 THEN  GO SUB
 3600
 393 PRINT  OVER 1; AT X,Y;O$
 395 IF  ATTR (X-1,Y)=56 THEN  I
F X>S THEN  LET X=X-1: GO TO 398
 396 IF  ATTR (X+1,Y)=56 THEN  I
F X<S THEN  LET X=X+1: GO TO 398
 397 IF X=15 OR X=12 OR X=9 OR X
=6 OR X=3 THEN  LET Y=Y+W: IF Y=
30 THEN  LET O$= CHR$ 152: LET W
=-1
 398 IF Y=1 THEN  LET O$= CHR$ 1
46: LET W=1
 399 IF X=S THEN  IF Z=Y THEN  G
O TO 4E3
 400 PRINT  OVER 1; AT X,Y;O$
 401 IF  CODE  INKEY$ =120 THEN
 LET H=0: GO TO 1500
 402 IF  CODE  INKEY$ =122 THEN
 LET H=1: GO TO 1500
 403 IF  CODE  INKEY$ =88 THEN
LET H=0: GO TO 2E3
 404 IF  CODE  INKEY$ =90 THEN
LET H=1: GO TO 2E3
 408 IF  CODE  INKEY$ =111 THEN
 GO TO 1E3
 409 IF  CODE  INKEY$ =48 THEN
IF  ATTR (S-1,Z)=56 THEN  PRINT
 AT S,Z; CHR$ 145: LET S=S-1: IF
 S=0 THEN  LET S=16
 410 IF X=S THEN  IF Z=Y THEN  G
O TO 4E3
 411 PRINT  AT S,Z; CHR$ 144
 412 IF K THEN  GO SUB 3E3
 415 PLOT U,7: DRAW 0,8: LET U=U
-1: IF U<0 THEN  FOR N=255 TO 0
STEP -3: BEEP .008,N/7: OUT 254,
N: NEXT N: GO TO 4020
 420 GO TO 400-Q
 500 IF  ATTR (S-1,Z)=56 THEN  P
RINT  AT S,Z; CHR$ 145: GO TO 70
0
 600 PRINT  AT S,Z;" "
 700 IF S=15 OR S=12 OR S=9 OR S
=6 OR S=3 THEN  RETURN
 800 IF S=14 OR S=11 OR S=8 OR S
=5 OR S=2 THEN  LET S=S+1: LET Z
=Z-H: IF  NOT H THEN  LET Z=Z+1
 900 GO TO 410
1000 IF  ATTR (S+1,Z)=56 THEN  I
F  ATTR (S-1,Z)=56 THEN  PRINT
AT S,Z; CHR$ 145: GO TO 1060
1010 IF  ATTR (S+1,Z)=56 THEN  P
RINT  AT S,Z;" ": GO TO 1060
1050 GO TO 410
1060 LET S=S+1
1070 IF S=17 THEN  LET S=1
1080 GO TO 410
1515 GO SUB 500: IF  NOT H THEN
 IF Z=30 THEN  LET Z=1: GO TO 41
0
1517 IF H THEN  IF Z=1 THEN  LET
 Z=30: GO TO 410
1520 LET Z=Z+1
1522 IF H THEN  LET Z=Z-2
1530 GO TO 410
2022 GO SUB 500: GO SUB 2500
2031 LET S=S-G: LET Z=Z+G
2033 IF H THEN  LET Z=Z-2
2040 GO SUB 2700: GO SUB 2600
2044 PRINT  INK 7; AT S,Z;" "
2045 GO SUB 2500: LET Z=Z+G
2063 IF H THEN  LET Z=Z-2
2066 GO SUB 2700: GO SUB 2600
2068 PRINT  INK 7; AT S,Z;" ": G
O SUB 2500: LET Z=Z+G: LET S=S+G
2095 IF H THEN  LET Z=Z-2
2099 IF  ATTR (S+G,Z)=57 THEN  L
ET S=S+G: GO SUB 4030: LET S=S-G
: GO TO 4020
2120 GO TO 410
2500 IF  NOT H THEN  IF Z=30 THE
N  LET Z=G: LET Z=Z-G
2510 IF H THEN  IF Z=G THEN  LET
 Z=30: LET Z=Z+G
2555 RETURN
2600 PRINT  AT S,Z; CHR$ 144: RA
NDOMIZE  USR  USR N$: IF  ATTR (
S-G,Z)=56 THEN  GO TO 410
2666 RETURN
2700 IF  ATTR (S,Z)=56+R THEN  L
```

```
ET SC=SC+U+Q: LET K=G: LET F=F+G
: PRINT  AT S,Z;" ": RANDOMIZE
USR  USR K$: PRINT  AT 0,13- LEN
  STR$ SC; INVERSE G;SC: PRINT
INK G; AT J-G,E; CHR$ 163: IF J=
2 THEN  PRINT  INK G; AT 16,E; C
HR$ 163
2777 IF  ATTR (S,Z)=57 THEN  GO
SUB 4030: LET S=S+G: PRINT  INK
7; AT S-G,Z;" ": GO TO 4020
2800 IF F=Q+V THEN  POKE  USR K$
+G,30: POKE  USR K$+2,6: LET V=V
+G: LET Q=Q+8: LET F=0: LET T=T-
2: LET S=15: RANDOMIZE : LET Z=
INT ( RND *28)+2: LET X=3: LET Y
=15: LET L=L+G: GO TO 8111
2900 RETURN
3000 PRINT  INK 7; AT J,E;" "
3100 LET K=0: IF F=Q+V-G THEN  P
OKE  USR K$+G,10: POKE  USR K$+2
,99
3222 IF V=6 THEN  PRINT  PAPER 5
; AT 20,5; CHR$ 138+"    "+ CHR$
 133
3230 IF V>6 THEN  PRINT  PAPER 5
; AT 20,6;"    ": LET Q=48: LET
T=0
3232 RANDOMIZE : LET U=127-Q: PR
INT  PAPER 5; AT 20,V;T$( TO T)

3240 IF M THEN  RETURN
3300 PRINT  AT 20,22;Q+V-F;" "

3500 LET R= INT ( RND *4)+2: LET
 C=146+R: LET E= INT ( RND *28)+
2: LET D= INT ( RND *5): LET J=D
*3+2: IF  ATTR (J-G,E) <> 49 THE
N  GO TO 3500
3520 IF  ATTR (J+2,E+G)=57 THEN
 IF  ATTR (J+2,E+2)=57 THEN  GO
TO 3500
3530 IF  ATTR (J,E+G)=57 OR  ATT
R (J,E-G)=57 THEN  GO TO 3500
3533 IF  SCREEN$ (J,E) <> " " TH
EN  GO TO 3500
3540 PRINT  INK G*R; AT J,E; CHR
$ C
3555 RETURN
3600 INK 2: GO SUB 3700: INK 0
3610 POKE  USR Q$,33: POKE  USR
Q$+G,156: RANDOMIZE  USR  USR Q$
: POKE  USR Q$,233: POKE  USR Q$
+G,201
3620 IF S=X THEN  GO SUB 3700: G
O TO 4E3
3630 GO SUB 3700: RETURN
3700 PLOT G,172-X*8: DRAW  OVER
G;252,0: RETURN
4000 GO SUB 4030
4020 BORDER 7: PRINT  AT S,Z;" "

4022 LET L=L-G: IF S=X AND Z=Y T
HEN  GO TO 4024
4023 PRINT  OVER G; AT X,Y;O$
4024 IF  ATTR (S-G,Z)=56 THEN  P
RINT  AT S,Z; CHR$ 145
4025 PRINT  AT 18,L+22;" ": FOR
N=0 TO 100: NEXT N: IF L=0 THEN
 GO TO 4033
4028 LET M=G: GO SUB 3222
4029 RANDOMIZE : LET M=0: LET S=
15: LET Z= INT ( RND *28)+2: LET
 X=3: LET Y=15: GO TO 8177
4030 POKE  USR N$+5,3: FOR N=154
 TO 163: RANDOMIZE  USR  USR N$:
 PRINT  INK G; AT S,Z; CHR$ N: N
EXT N: POKE  USR N$+5,G: RETURN

4033 POKE 23658,8: IF SC>HI THEN
  LET HI=SC: PRINT  AT 0,30- LEN
  STR$ HI; FLASH G;HI
4040 FOR A=G TO 5: IF SC <= A(A)
 THEN  NEXT A: GO TO 6E3
4044 FOR N=0 TO 300: NEXT N
4100 LET X=G: LET Y=30
4106 FOR N=0 TO 6
4111 PAUSE G: PRINT  INK N; AT 2
0,G;Z$(X TO Y)
4122 LET Y=Y+G: LET X=X+G: IF Y=
 LEN Z$+G THEN  GO TO 4141
4140 NEXT N: GO TO 4106
4141 IF M THEN  RETURN
4199 IF A <> 5 THEN  FOR B=5 TO
A+G STEP -G: LET X$(B)=X$(B-G):
LET A(B)=A(B-G): NEXT B
4211 LET G$="": FOR N=G TO 15
4215 PRINT  FLASH G; AT 20,15+N;
 CHR$ 67: PAUSE 0: LET F$= INKEY
$ : IF  CODE F$=13 THEN  GO TO 4
277
4222 IF  CODE F$=12 AND N=G THEN
  GO TO 4211
4225 IF  CODE F$=12 THEN  LET N=
N-G: PRINT  AT 20,15+N;"  ": LET
 G$=G$( TO  LEN G$-G): GO TO 421
5
4233 IF  CODE F$<33 OR  CODE F$>
91 THEN  LET F$=" "
4244 PRINT  AT 20,15+N;F$
4255 LET G$=G$+F$: NEXT N
4277 LET X$(A)=G$: LET A(A)=SC

4288 LET Z$=" NAME PLEASE! "+ CH
R$ 143+G$+ CHR$ 143+"
                    ": LET M=G: G
O SUB 4100
6000 FOR N=G TO 18: PRINT  AT N,
0; CHR$ 143+"
          "+ CHR$ 143: NEXT N

6004 FOR N=8 TO 23: PRINT  INK 3
; AT 5,N; CHR$ 163: NEXT N: FOR
N=12 TO 19: PRINT  INK 3; AT 13,
N; CHR$ 163: NEXT N
6005 PLOT 30,86: DRAW 195,0: DRA
W 0,43: DRAW -195,0: DRAW 0,-43

6006 PLOT 38,30: DRAW 180,0: DRA
W 0,35: DRAW -180,0: DRAW 0,-35:
 PLOT 128,30: DRAW 0,35
6010 LET C$="MAD JUMPER": PRINT
 AT 2,3; CHR$ 147; AT 2,28; CHR$
 164; INK G; AT 4,8;"TODAYS  GRE
ATEST"; AT 12,12;"USE KEYS"
6014 FOR A=G TO 5: PRINT  AT 5+A
,4;A;". 00000": NEXT A: FOR A=G
TO 5: IF A(A) THEN  PRINT  AT 5+
A,13;X$(A); AT 5+A,12- LEN  STR$
 A(A);A(A): NEXT A
6144 PRINT  AT 14,5;"O.......UP"
; AT 15,5;"O.....DOWN"; AT 16,5;
"Z.....LEFT"; AT 17,5;"X....RIGH
T"
6155 PRINT  AT 14,20;"Push"; AT
16,17;"and Z or X"; AT 17,18;"to
 jump!"; AT 15,17;"CAPS SHIFT"

6222 PRINT  BRIGHT G; AT 20,G;"
    Press ENTER to start      "

6333 FOR N=0 TO 7
6400 PRINT  INK N; AT 2,11;C$
6444 GO SUB 6888: GO SUB 6888
6500 IF  CODE  INKEY$ =13 THEN
GO TO 8E3
6666 NEXT N: GO TO 6250
6888 PLOT  OVER G;25,156: DRAW
OVER G;61,0: PLOT  OVER G;229,15
6: DRAW  OVER G;-61,0: PAUSE 10-
N: RETURN
8000 PAPER 0: CLS : PAPER 7: POK
E 23658,0: INK 0: LET K$= CHR$ 7
5: POKE  USR K$+G,30: POKE  USR
K$+2,6
8088 LET Q$= CHR$ 81: LET Z$="
                              WELL
 DONE!  YOU HAVE REACHED ONE OF
TODAYS HIGHEST SCORES.
                    NAME PLEAS
E! "+ CHR$ 143+"                 "

8090 RESTORE 8090: RANDOMIZE : R
EAD W,S,Z,M,F,K,L,SC,Q,T,X,Y,V,T
$,O$,N$: DATA G,15, INT ( RND *2
8)+2,0,0,0,2,0,8,14,3,15,G,"
          ", CHR$ 146, CHR$ 78

8099 DIM L$(10): FOR N=G TO 10:
LET L$(N)= CHR$ 144: NEXT N
8100 PRINT  INVERSE G; AT 0,G;"
SCORE=00000  ST1  HIGH=00000"
8111 PRINT  AT 0,30- LEN  STR$ H
I; INVERSE G;HI; AT 0,17;V
8112 FOR N=3 TO 15 STEP 3: PRINT
  AT N,G;"
          "; INK 7; AT N-G,G;"
                              ": NEX
T N
8125 FOR N=G TO 16 STEP 3: FOR J
=2 TO 29: PRINT  INK G; PAPER 6;
 AT N,J; CHR$ 153: NEXT J: NEXT
N
8127 FOR N=3 TO 15 STEP 3: PRINT
  AT N,0; CHR$ 138; AT N,31; CHR
$ 133; AT N-G,0; CHR$ 138; AT N-
G,31; CHR$ 133: NEXT N
8133 FOR N=G TO 30: PRINT  INVER
SE G; AT 17,N; CHR$ 163: NEXT N:
 PRINT  AT 18,G;"(((( TIME ))))"
+ CHR$ 143+"LIVES:          "; AT
 18,22;L$( TO L); AT 20,16;"FRUI
T:          "; INVERSE G; AT 20,G
;"          "
8144 IF V>2 THEN  FOR N=3 TO 15
STEP 3: PRINT  AT N,0; CHR$ 147;
 AT N,31; CHR$ 164: NEXT N
8148 LET P=V: IF V>2 THEN  LET P
=2: IF V>5 THEN  LET P=V-3: LET
Q=Q-4
8150 RANDOMIZE : FOR J=G TO P: L
ET I= RND *27+2: FOR N=G TO 3: P
RINT  AT N,I; CHR$ 145: NEXT N:
PRINT  AT 16,I; CHR$ 145: FOR N=
4 TO 15 STEP 3: LET I= RND *27+2
: PRINT  AT N,I; CHR$ 145; AT N+
G,I; CHR$ 145; AT N+2,I; CHR$ 14
5: NEXT N: NEXT J
8155 IF V>4 THEN  FOR J=5 TO V:
FOR N=2 TO 17 STEP 3: LET I= RND
 *27+2: IF  ATTR (N,I)=63 THEN
PRINT  INK G; AT N,I; CHR$ 127;
OVER G; CHR$ 8; CHR$ 99: NEXT N

8166 NEXT N: NEXT J: GO SUB 3100

8177 POKE  USR N$+5,17: RANDOMIZ
E  USR  USR N$: POKE  USR N$+5,G

8199 GO TO 400
9999 PAPER 7: INK 0: CLS : SAVE
"mad jumper" LINE 1
```

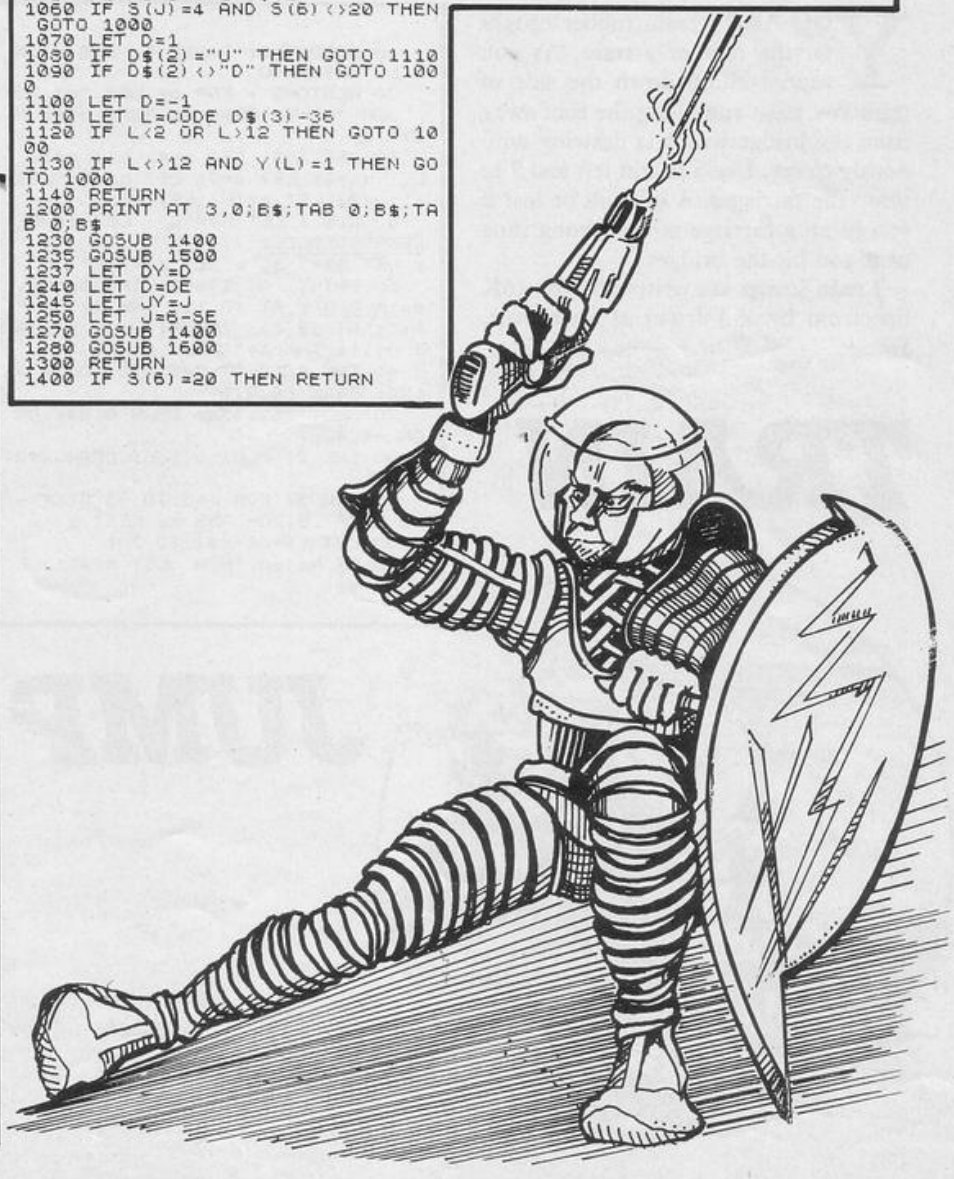
FUTURE WAR

FUTURE WAR is a game of strategy which requires thought and cunning. The computer force is shown on the left of the screen and the white force on the right is the one you move. Each force has 11 pieces made up of 10 lasers and a king. There are also some shields which can be moved by either player.

You have to input three characters to move. The first decides which column of shields to move, the second the direction in which they will move and the third determines the laser to be fired. Remember that although you move first, the computer always fires before you and also that your king will move in the opposite direction to the shields. If a shield is directed to move off the bottom of the field it will appear at the top and vice versa. Your king is able to fire, so if you shoot at one of your own lasers it will be lost.

Future War was written for the 16K ZX-81 by Jerome Laskowski, of London SE6.

```
   5 FAST
  10 RAND 0
  20 DIM E(12)
  30 DIM N(12)
  40 DIM S(7)
  50 DIM Y(12)
  60 DIM A$(12,5)
  70 DIM B$(11)
  80 DIM C$(32)
  90 LET ELASERS=10
 100 LET LASERS=10
 110 LET X$=""
 120 LET Y$=""
 130 GOSUB 400
 150 GOSUB 700
 160 GOSUB 1000
 170 GOSUB 1200
 180 GOSUB 1700
 190 GOSUB 1800
 195 IF Y(1)=2 THEN GOTO 220
 200 GOSUB 2100
 210 GOSUB 2200
 220 GOSUB 2550
 230 IF Y(1)<2 THEN GOTO 150
 240 GOSUB 3000
 250 STOP
 400 PRINT TAB 7;"<<< FUTURE WAR
 >>>"
 410 LET WR=500
 420 PRINT AT 4,12;"SHIELDS";TAB
 13;"54321";TAB 13;"-----"
 430 LET 0$=CHR$ 176+CHR$ 18
 440 LET R$=CHR$ 19+CHR$ 48
 450 LET KE=INT (RND*10+2)
 460 LET KY=INT (RND*10+2)
 470 IF (KY-KE)/2<>INT ((KY-KE)/
2) THEN GOTO 460
 490 FOR J=1 TO 5
 500 FOR K=1 TO 4
 510 LET P=INT (RND*10+2)
 520 IF A$(P,J)="I" THEN GOTO 51
0
 530 LET A$(P,J)="I"
 540 LET N(P)=N(P)+1
 550 NEXT K
 560 NEXT J
 570 FOR K=2 TO 11
 580 LET L$=CHR$ (K+164)+">    "+
A$(K)+"    <"+CHR$ (K+36)
 590 PRINT TAB 8;L$
 600 LET X$=X$+">>"
 610 LET Y$=Y$+"<<"
 620 NEXT K
 630 PRINT TAB 13;"-----";TAB 13
;"54321";TAB 24;"WR ";WR
 640 PRINT AT 5+KE,5;0$;AT 5+KY,
24;R$
 650 SLOW
 660 RETURN
 700 LET N(1)=N(11)
 710 LET N(12)=N(2)
 720 LET L=KE-1
 730 LET KU=N(L)+1+Y(L)-E(L)
 740 IF KY=L THEN LET KU=KU+1
 750 LET L=KE+1
 760 LET KD=N(L)+1+Y(L)-E(L)
 770 IF KY=L THEN LET KD=KD+1
 780 LET DE=1
 790 IF KU>KD OR (KU=KD AND INT
(RND*2)=0) THEN LET DE=-1
 800 LET BEST=0
 810 FOR L=2 TO 11
 820 LET VALUE=(1-E(L))*(6-3*Y(L
)-N(L))
 830 IF (ABS (KY-L)=1 OR ABS (KY
-L)=9) AND E(L)+N(L)-Y(L)+1=0 TH
EN LET VALUE=VALUE+3
 840 IF VALUE<BEST THEN GOTO 880
 850 IF VALUE=BEST AND INT (RND*
2)=0 THEN GOTO 880
 860 LET FE=L
 870 LET BEST=VALUE
 880 NEXT L
 890 IF E(KE+DE)=1 AND N(KE+DE)<
2 AND (Y(KE+DE)=0 OR (Y(KE+DE)=1
 AND KE=KY)) THEN LET FE=12
 900 LET SE=INT (RND*5+1)
 910 IF S(6-SE)=4 AND S(6)<>20 T
HEN GOTO 900
 920 RETURN
1000 PRINT AT 20,0;"INPUT: SHIEL
D DIRECTION LASER"
1005 PRINT TAB 0;"""SDL""    5-1
   U OR D    A-K"
1010 INPUT D$
1020 PRINT AT 20,0;C$;TAB 0;C$
1030 IF LEN D$<>3 THEN GOTO 1000
1040 IF D$(1)<"1" OR D$(1)>"5" T
HEN GOTO 1000
1050 LET J=6-VAL D$(1)
1060 IF S(J)=4 AND S(6)<>20 THEN
 GOTO 1000
1070 LET D=1
1080 IF D$(2)="U" THEN GOTO 1110
1090 IF D$(2)<>"D" THEN GOTO 100
0
1100 LET D=-1
1110 LET L=CODE D$(3)-36
1120 IF L<2 OR L>12 THEN GOTO 10
00
1130 IF L<>12 AND Y(L)=1 THEN GO
TO 1000
1140 RETURN
1200 PRINT AT 3,0;B$;TAB 0;B$;TA
B 0;B$
1230 GOSUB 1400
1235 GOSUB 1500
1237 LET DY=D
1240 LET D=DE
1245 LET JY=J
1250 LET J=6-SE
1270 GOSUB 1400
1280 GOSUB 1600
1300 RETURN
1400 IF S(6)=20 THEN RETURN
1405 PRINT AT 6,12+J;CHR$ (3+(1-
D)*64);AT 17,12+J;CHR$ (3+(1-D)*
64)
1410 LET TOP=13-(6.5+D*5.5)
1415 LET BOT=6.5+D*3.5
1420 FOR K=TOP TO BOT STEP D
1425 IF A$(K,J)=A$(K+D,J) THEN G
OTO 1440
1430 LET N(K)=N(K)+1
1440 IF A$(K+D,J)<A$(K,J) THEN L
ET N(K)=N(K)-2
1445 LET A$(K,J)=A$(K+D,J)
1447 IF K<>TOP THEN PRINT AT K+5
,13;A$(K)
1450 NEXT K
1455 IF A$(BOT+D,J)=A$(TOP,J) TH
EN GOTO 1470
1460 LET N(BOT+D)=N(BOT+D)+1
1465 IF A$(TOP,J)<A$(BOT+D,J) TH
EN LET N(BOT+D)=N(BOT+D)-2
1470 LET A$(BOT+D,J)=A$(TOP,J)
1475 PRINT AT BOT+D+5,13;A$(BOT+
D)
1480 PRINT AT 6,13;"-----";AT 17
,13;"-----"
1490 RETURN
1500 PRINT AT 5+KY,24;"  "
1540 LET KY=KY+D
1550 IF KY=1 THEN LET KY=11
1560 IF KY=12 THEN LET KY=2
1570 PRINT AT 5+KY,24;R$
1580 RETURN
1610 PRINT AT 5+KE,5;"  "
1620 LET KE=KE+DE
1630 IF KE=1 THEN LET KE=11
1640 IF KE=12 THEN LET KE=2
1650 PRINT AT 5+KE,5;0$
1660 RETURN
```

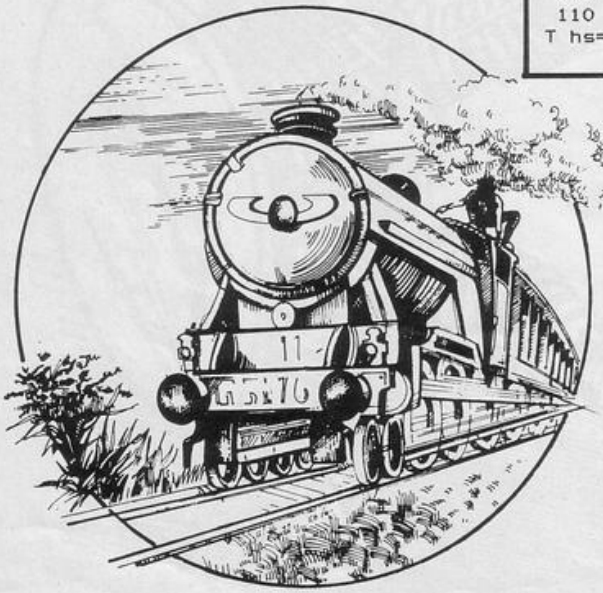


```
1700 LET RANGE=0
1710 LET RS=0
1720 LET FP=FE
1730 IF FE<>12 THEN RETURN
1740 LET RANGE=3
1750 LET FP=KE
1760 LET RS=-3
1770 RETURN
1800 LET LOSS=0
1810 LET K$=A$(FP)
1820 IF N(FP)=0 THEN GOTO 1920
1830 FOR K=1 TO 5
1840 IF A$(FP,K)="I" THEN GOTO 1
860
1850 NEXT K
1860 LET N(FP)=N(FP)-1
1865 LET LOSS=10*K
1870 LET A$(FP,K)=" "
1880 LET RANGE=RANGE+3+K
1890 LET S(K)=S(K)+1
1900 LET S(6)=S(6)+1
1910 GOTO 2030
1920 IF Y(FP)=1 THEN GOTO 1990
1930 LET RANGE=RANGE+13
1940 LET LOSS=80
1950 LET Y(FP)=1
1955 IF FP=11 THEN LET Y(1)=1
1960 IF FP=2 THEN LET Y(12)=1
1965 LET LASERS=LASERS-1
1970 IF LASERS=0 THEN LET Y(1)=2
1980 GOTO 2030
1990 LET RANGE=RANGE+16
2000 IF KY<>FP THEN GOTO 2030
2010 LET LOSS=500
2020 LET Y(1)=2
2030 LET F$=X$(1 TO RANGE)
2040 GOSUB 2050
2045 RETURN
2050 LET E$=C$(1 TO RANGE)
2060 FOR T=1 TO 5
2070 PRINT AT 5+FP,13;K$;AT 5+FP
,10+RS;F$
2080 PRINT AT 5+FP,10+RS;E$
2090 NEXT T
2095 RETURN
2100 LET RANGE=0
2105 LET KSHOT=0
2110 LET FP=L
2120 IF L<>12 THEN RETURN
2125 LET KSHOT=1
2130 IF Y(KY)=0 THEN RETURN
2140 LET RANGE=3
2150 LET FP=KY
2160 LET L=KY
2170 RETURN
2200 LET GAIN=0
2205 IF KSHOT=1 AND Y(KY)=0 THEN
 RETURN
2210 IF KSHOT=0 AND Y(L)=1 THEN
RETURN
2215 LET K$=A$(L)
2220 IF N(L)=0 THEN GOTO 2350
2230 FOR K=5 TO 1 STEP -1
2240 IF A$(L,K)="I" THEN GOTO 22
60
2250 NEXT K
2260 LET GAIN=10*(6-K)
2270 LET N(L)=N(L)-1
2280 LET A$(L,K)=" "
2290 LET RANGE=RANGE+9-K
2300 LET RS=2+K
2310 LET S(K)=S(K)+1
2320 LET S(6)=S(6)+1
2330 GOTO 2500
2350 IF E(L)=1 THEN GOTO 2450
2360 LET RANGE=RANGE+13
2370 LET GAIN=100
2380 LET E(L)=1
2385 IF L=11 THEN LET E(1)=1
2390 IF L=2 THEN LET E(12)=1
2395 LET ELASERS=ELASERS-1
2400 LET RS=-2
2410 IF ELASERS=0 THEN LET Y(1)=
2
2420 GOTO 2500
2450 LET RANGE=RANGE+16
2460 IF KE<>L THEN GOTO 2490
2470 LET GAIN=1000
2480 LET Y(1)=2
2490 LET RS=-5
2500 LET F$=Y$(1 TO RANGE)
2510 GOSUB 2050
2520 RETURN
2550 LET S(7)=S(7)+GAIN-LOSS
2560 LET NET=GAIN-LOSS
2570 PRINT AT 3,0;"GAIN ";GAIN;T
AB 0;"LOSS ";LOSS;TAB 1;"NET ";N
ET
2580 PRINT AT 5,21;"SCORE ";S(7)
;
2585 IF S(7)<1000 THEN PRINT "
"
2590 RETURN
3000 PRINT AT 20,0;"WAR OVER - Y
OU LOSE"
3010 IF GAIN=1000 OR ELASERS=0 T
HEN PRINT AT 20,15;"WIN "
3020 PRINT TAB 0;"WORLD RECORD R
EMAINS UNCHANGED"
3030 IF S(7)>WR THEN PRINT AT 21
,13;"BEATEN. WELL DONE"
3040 RETURN
```

YOU ARE a train robber caught on the roof of a train. As you cannot climb down the side of train you must run along the roof away from the bridge which is drawing ominously closer. Use 5 to run left and 7 to jump the carriages. A life will be lost if you jump a carriage at the wrong time or if you hit the bridge.

Train Jump was written for the 16K Spectrum by P J Irwin of Sherborne, Dorset.

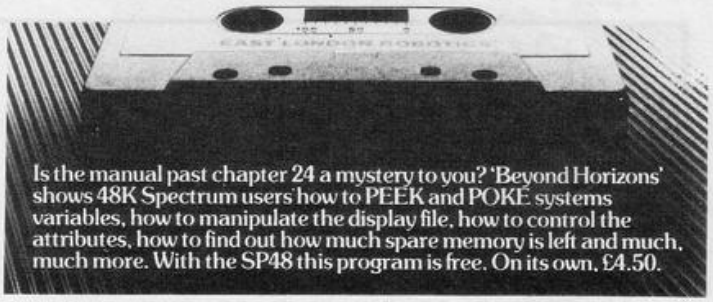
TRAIN JUMP



```
  10 BORDER 0: PAPER 0: CLS : IN
K 5: LET hs=0
  20 RESTORE : FOR q= USR "a" TO
  USR "e"+7: READ s: POKE q,s: N
EXT q
  30 LET a=3: LET b=4: LET c=1:
LET cs=0: LET e=0: LET hf=0: LET
 liv=3: LET p=19: LET sc=0
  40 CLS : LET n$="D": LET t$="E
DEDEDEDEDEDCB                  "
: LET e$=" BC": LET c$="DE"
  50 PRINT  AT 14,11; INK 3;"Liv
es:A A A"; AT 10,11; INK 4;"Scor
e:"; AT 12,11; INK 4;"High :"; A
T 0,11; INK 6;"Train Jump"
  60 INK 4: PLOT 248,136: DRAW 0
,24: DRAW -4,4,1
  70 PLOT 252,136: DRAW 0,24: DR
AW -4,4,-1
  80 INK 2: PLOT 0,135: DRAW 245
,0
  90 INK 5: FOR z=3 TO -3 STEP -
1: BEEP .5,20- ABS z: NEXT z
 100 LET t$=n$+t$( TO 30)
 110 IF hs<sc THEN  LET hf=1: LE
T hs=sc
 120 PRINT  AT 10,17; INK 4;sc;
AT 12,17; FLASH hf; INK 4;hs
 130 PRINT  AT a,b; INK 6;"A"
 140 PRINT  AT 4,0;t$
 150 IF e>0 THEN  LET e=e+1-(e=3
)*4: IF e <> 0 THEN  LET n$=e$(e
): GO TO 180
 160 IF c=2 AND  RND >(p/20) THE
N  LET c=0: LET e=1: LET n$=e$(1
): GO TO 180
 170 LET c=c+1-(c=2)*2: LET n$=c
$(c)
 180 BEEP (p/200)+.001,0-(p/2)

 190 LET a1=a: LET b1=b
 200 IF a<3 THEN  LET a=3: GO TO
 250
 210 IF  INKEY$ ="7" THEN  LET a
=a-1: BEEP .005,30: GO TO 250
 220 IF  INKEY$ ="5" THEN  GO TO
 250
 230 LET b=b+1: LET sc=sc-1
 250 IF a=3 AND t$(b)=" " THEN
LET liv=liv-1: LET a=2: PRINT  A
T 14,17+liv*2;" ": BEEP 1,-30: I
F liv=0 THEN  GO TO 300
 260 IF b=31 THEN  LET liv=0: BE
EP 1,-30: PRINT  AT 14,17;"
": GO TO 300
 270 LET sc=sc+1: IF (sc+1)/20=
INT ((sc+1)/20) THEN  LET p=p-1+
(p=0)
 280 IF a <> a1 OR b <> b1 THEN
 PRINT  AT a1,b1;" "
 290 GO TO 100
 300 FOR z=1 TO 6
 310 DIM i$(704): PRINT  AT 0,0;
 OVER 1; INK z;i$: BEEP z/10,-z*
2: NEXT z
 320 INPUT "'ENTER' y/n to play
again:"; LINE z$: IF z$="n" THEN
  STOP
 330 FOR z=30 TO -30 STEP -1: BE
EP .01, ABS z: NEXT z: GO TO 30
 900 DATA 24,24,128,254,24,40,38
,96,0,8,136,252,252,254,255,48,0
,192,60,63,63,255,24,0,252,14
6,146,242,254,255,24,0,63,100,10
0,127,127,255,12
```

Ask for our products at your local computer shop

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



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

SP48B, 32k Memory Extension with Program — £27

The SP48 simply plugs into the sockets provided by Sinclair inside your Spectrum and turns your 16k machine into an absolutely standard 48k ready to run 48k programs.

The SP48 fits Issue 2 and Issue 3 Spectrums. Full step-by-step instructions are provided. Fitting is easy and there is no soldering.

The SP48 carries our full warranty and all our customers enjoy the benefits of our renowned product support.

And you get a free copy of Beyond Horizons, and educational program which has already enlightened thousands of 48k Spectrum owners about the inner workings of their computers.

48/80 FORTH

This compiler and editor is fast becoming recognised as the most professional and highest quality implementation of the FORTH language on the Spectrum. FORTH gives you the speed of machine code without the tedium of machine-code programming.

All the Spectrum's excellent graphics commands are retained including DRAW, PLOT and CIRCLE. Real arcade quality sounds can be produced using BEEP.

More advanced FORTH programmers will find that 48/80 FORTH provides a complete implementation of FIG-FORTH, including the sophistications of BUILDS, DOES and CODE.

Each 48/80 FORTH cassette includes a separate FORTH editor which uses part of RAM as if it were disk. The 48K Spectrum allows a 16k RAM 'disk', while leaving nearly 20k of dictionary space. A comprehensive user-manual is also included, which covers both compiler and editor, and has a lucid beginners introduction.

Extensions to 48/80 FORTH will shortly be available to existing customers at a nominal charge. These will include floating point arithmetic, and microdrive handling.

TRADE ENQUIRIES WELCOME — Are you on our trade/export mailing list?

All products on this order form are in stock. Same day dispatch for phoned Access and Visa orders.

To East London Robotics Ltd; Please send by return (tick items required)

☐ SP48B (for Spectrum Issues 2 or 3) £27 _____

☐ BEYOND HORIZONS (48k) £4.50 _____

☐ 48/80 FORTH (48k or 80k) £14.95 _____

Postage 0.65p. I enclose a cheque/PO for _____ My Access/Visa No. is

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

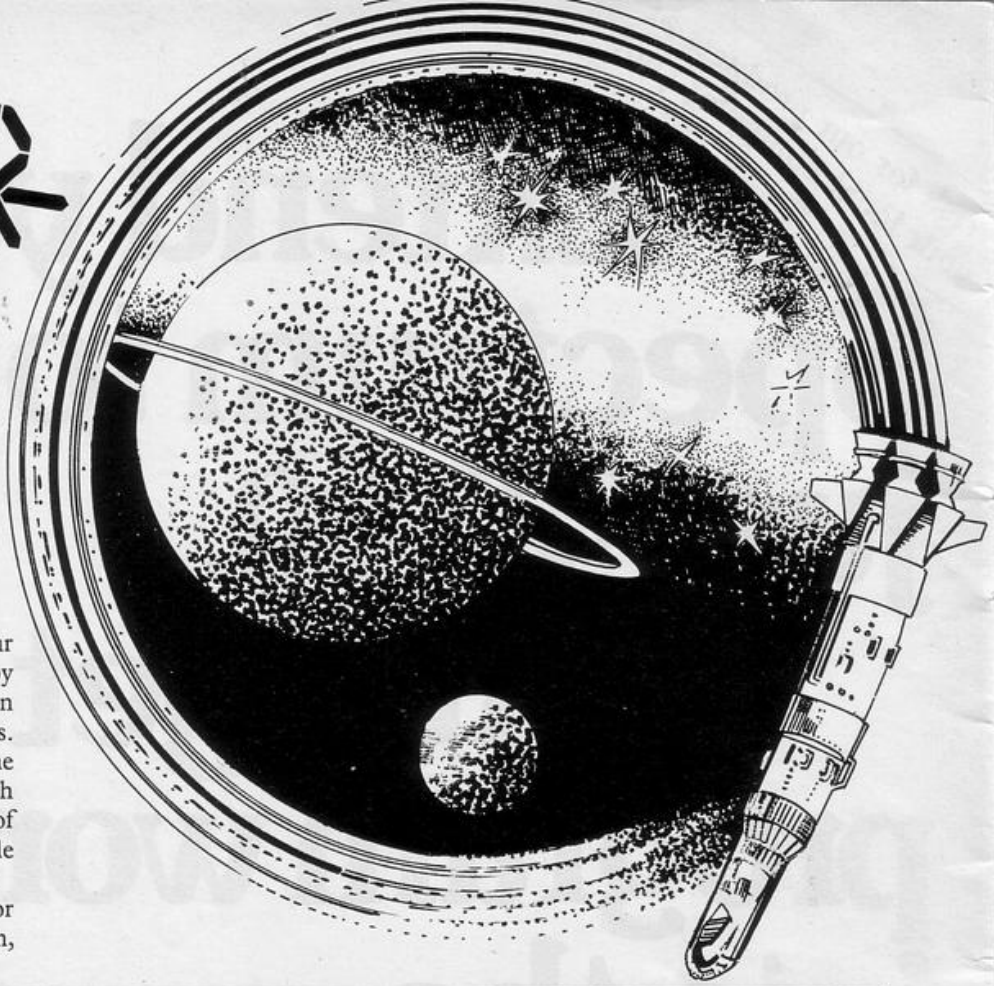
Name _____

Address _____

East London Robotics Limited, Gate 11, Royal Albert Dock, London E16.
Orders and special enquiries
01-474 4430
Telex 8813271 (Trade only)

EAST LONDON ROBOTICS

SATELLITE COLLECTOR



TRAVEL through space in your craft collecting satellites by flying over them. Extra fuel can be gained by hitting the fuel dumps. Forcefields appear from time to time and they have only one gap through which you can pass. If you run out of fuel or hit a forcefield you will hurtle through space and the game will end.

Satellite Collector was written for the 16K ZX-81 by Ian Dando of Leigh, Lancs.

```
    1 LET HISCORE=0
    2 LET A$="??????????"
    3 PRINT AT 0,10;"STARFLIGHT";
AT 1,10;"▒▒▒▒▒▒▒▒▒";AT 3,0;"IN
THIS GAME YOU HAVE TO COLLECTSAT
ELITES (O) IN YOUR CRAFT.    AS
TIME GOES BY YOUR FUEL GETS  LOW
ER,YOU CAN GAIN EXTRA FUEL BYHIT
TING THE FUEL DUMPS ($).     ALS
O FORCEFIELDS APPEAR EVERY SOOFT
EN WITH ONLY 1 GAP IN THEM.    TH
E GAME ENDS IF YOU HIT A       F
ORCEFIELD OR RUN OUT OF FUEL.
  USE KEYS 5 AND 8."
    4 PAUSE 4E4
    5 LET X=15
    8 LET FUEL=50
    9 RAND
   10 LET SCORE=0
   11 CLS
   30 PRINT AT 21,INT (RND*30)+1;
"O"
   35 IF RND<.05 THEN GOSUB 200
   37 IF RND<.02 THEN GOSUB 300
   40 PRINT AT 6,X;
   50 IF PEEK (PEEK 16398+256*PEE
K 16399)=52 THEN LET SCORE=SCORE
+10
   55 IF PEEK (PEEK 16398+256*PEE
K 16399)=141 THEN LET FUEL=FUEL+
30
   56 IF PEEK (PEEK 16398+256*PEE
K 16399)=128 THEN GOTO 900
   60 PRINT "▒"
   65 PRINT AT 6,X;" "
   70 LET X=X+(INKEY$="8")-(INKEY
$="5")
   80 PRINT AT 6,X;"▒"
   90 SCROLL
   95 LET FUEL=FUEL-1
   96 IF FUEL<=0 THEN GOTO 1000
  100 GOTO 30
  200 PRINT AT 21,INT (RND*30)+1;
"$"
  220 RETURN
  300 SCROLL
  305 PRINT "
                              "
  310 PRINT AT 21,INT (RND*30)+1;
" "
  320 RETURN
  500 FOR F=6 TO 21
  510 PRINT AT F,X;"▒"
  515 PRINT AT F,X;"O"
  516 PRINT AT F,X;"▒"
  520 NEXT F
  525 FOR F=1 TO 25
  530 PRINT AT 21,X-1;"▒▒▒"
  540 PRINT AT 21,X-1;"▒▒▒"
  541 PRINT AT 21,X-1;"OOO"
  542 PRINT AT 21,X-1;"   "
  550 NEXT F
  599 PRINT AT 21,X-2;"CRUMP"
  610 FOR F=0 TO 21
  620 PRINT AT F,0;"
                                "
  630 NEXT F
  645 IF DESCISION=1 THEN PRINT A
T 5,5;"YOU HIT A FORCE FIELD"
  646 IF DESCISION=2 THEN PRINT A
T 5,5;"YOU RAN OUT OF FUEL"
  650 PRINT AT 10,8;"YOUR SCORE W
AS:";SCORE
  670 IF SCORE>HISCORE THEN GOTO
800
  675 PRINT AT 15,10;"HIGH-SCORE:
";HISCORE
  676 PRINT AT 17,10;"BY:";A$
  677 PRINT AT 20,10;"PRESS A KEY
"
  678 PRINT AT 20,10;"
                "
  679 IF INKEY$="" THEN GOTO 677
  680 GOTO 5
  800 PRINT AT 15,2;"WELL DONE, A
 NEW HIGH SCORE"
  810 LET HISCORE=SCORE
  820 PRINT AT 17,4;"PLEASE INPUT
 YOUR NAME"
  830 INPUT A$
  831 PRINT AT 20,10;"PRESS A KEY
"
  832 PRINT AT 20,10;"
                "
  835 IF INKEY$="" THEN GOTO 831
  840 GOTO 5
  900 LET DESCISION=1
  910 GOTO 500
 1000 LET DESCISION=2
 1001 GOTO 500
 9998 SAVE "STAR"
 9999 RUN
```

ROMAN SQUASH

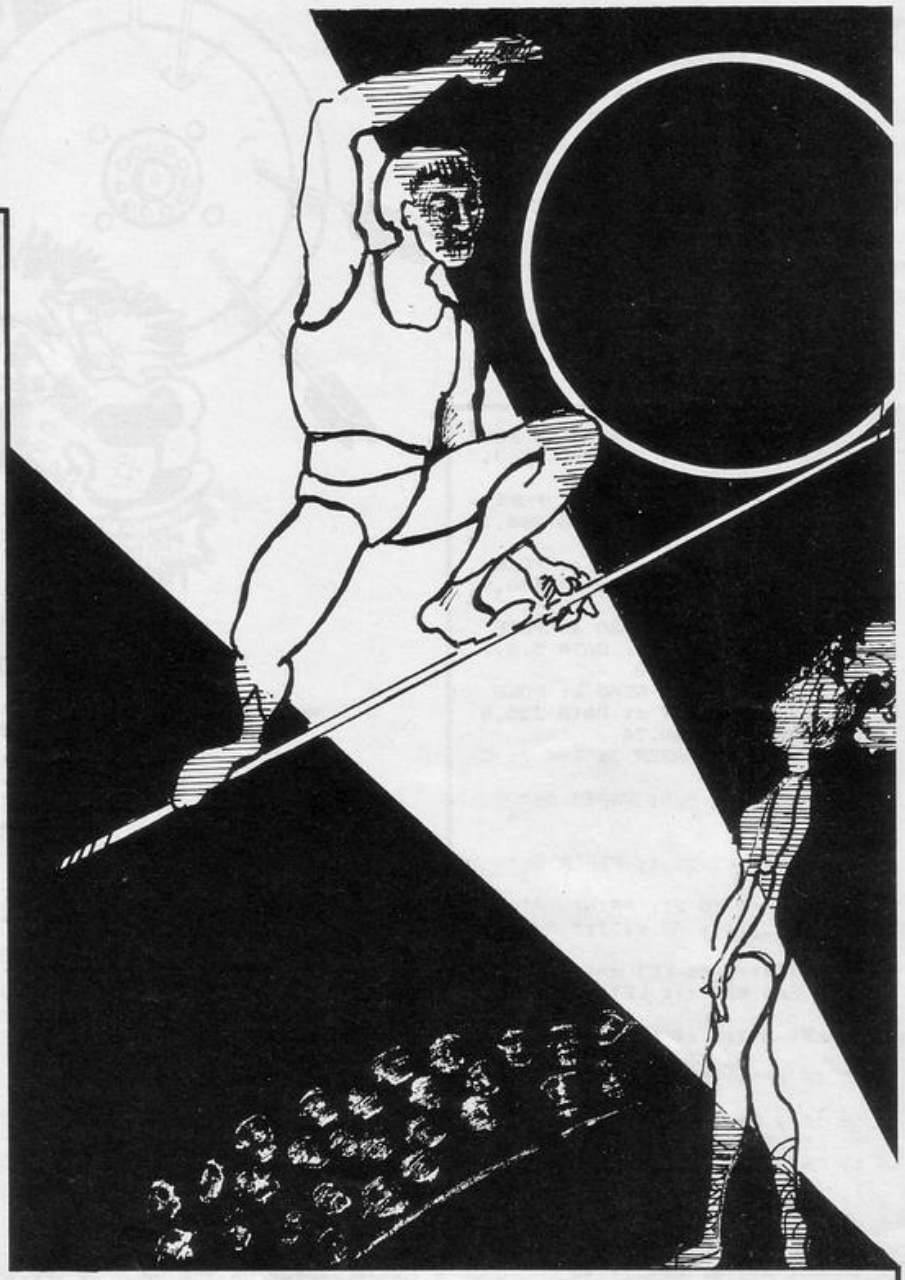
YOU CONTROL the Roman who is standing in the pit and you must help him in his fight for life by moving him so that the arrows hit his shield and rebound. If the arrow passes him and hits the bottom of the pit, he will be fed to the lions. Use keys Q and P to move left and right and see how many time units you can survive.

Roman Squash was written for the 16K Spectrum by Barry Sims of Leek, Staffs.

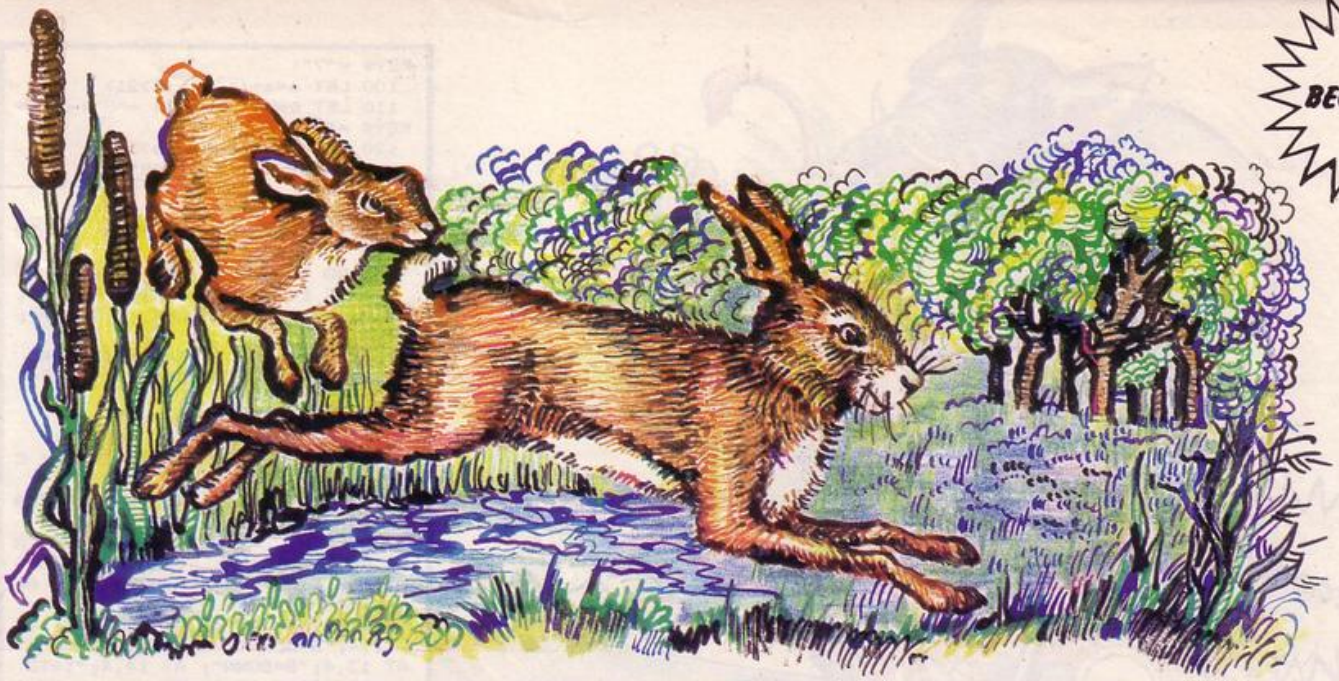
```
    1 FOR x=0 TO 7: READ a: POKE
 USR "a"+x,a: NEXT x: DATA 31,3,
5,9,17,224,96,160
   2 FOR x=0 TO 7: READ a: POKE
 USR "b"+x,a: NEXT x: DATA 248,1
92,160,144,136,7,6,5
   3 FOR x=0 TO 7: READ a: POKE
 USR "c"+x,a: NEXT x: DATA 160,9
6,224,17,9,5,3,31
   4 FOR x=0 TO 7: READ a: POKE
 USR "d"+x,a: NEXT x: DATA 5,6,7
,136,144,160,192,248
   5 FOR x=0 TO 7: READ a: POKE
 USR "e"+x,a: NEXT x: DATA 255,6
6,102,102,90,60,60,24
  10 BORDER 3: PAPER 3: INK 7: C
LS
  20 PRINT  AT 0,0; PAPER 0;"
                              "


  25 PRINT  AT 21,1; PAPER 5;"
                              "
  30 FOR x=0 TO 21: PRINT  AT x,
0; PAPER 0;" "; AT x,31;" "
  35 NEXT x
  40 LET a$="A": LET x=1: LET y=
 INT ( RND *29)+1: LET c=18: LET
 d=15
  50 LET a=1: LET ball=4: LET t=
0
  52 IF y >= 15 THEN  LET b=-1

  55 IF y <= 14 THEN  LET b=1
  56 LET ball=ball-1
  58 PRINT  AT 0,27; PAPER 0;"
 "; AT 0,2; PAPER 0; INK 7;"Time
=";t; AT 0,23;"Men=";: FOR w=1 T
O ball: PRINT  PAPER 0;"E";: NEX
T w
  60 LET x=x+a: LET y=y+b
  61 IF t=999 THEN  GO TO 600
  62 LET t=t+1: PRINT  AT 0,7; P
APER 0; INK 7;t
  65 LET d=d+( INKEY$ ="p" AND d
+1<30)-( INKEY$ ="q" AND d>0)
  70 PRINT  AT x,y; OVER 1; PAPE
R 3; INK 0;a$
  75 PRINT  AT c+1,d;" E "
  80 IF d=0 OR d+2=31 THEN  PRIN
T  AT c+1,0; INK 0;"(ig8)"; AT c
+1,31; INK 0;"(ig8)"
  92 IF a=1 AND b=1 THEN  PRINT
 AT x-1,y-1; PAPER 3;" "
  94 IF a=-1 AND b=1 THEN  PRINT
  AT x+1,y-1; PAPER 3;" "
  96 IF a=1 AND b=-1 THEN  PRINT
  AT x-1,y+1; PAPER 3;" "
  98 IF a=-1 AND b=-1 THEN  PRIN
T  AT x+1,y+1; PAPER 3;" "
 105 IF ball=0 THEN  GO TO 500
 110 IF x=1 THEN  LET a=1
 120 IF y=1 THEN  LET b=1
 125 IF y=d+1 AND x=c AND a=-1 T
HEN  LET a=1: BEEP .01,20
 127 IF y=d+1 AND x=c AND a=1 TH
EN  LET a=-1: BEEP .01,20
 130 IF y=30 THEN  LET b=-1
 131 IF a=1 AND b=1 THEN  LET a$
="C"
 132 IF a=-1 AND b=1 THEN  LET a
$="A"
 133 IF a=1 AND b=-1 THEN  LET a
$="D"
 134 IF a=-1 AND b=-1 THEN  LET
a$="B"
 135 IF (y=30 OR y=1 OR x=20 OR
x=1) THEN  BEEP .01,15
 136 IF x=20 THEN  GO SUB 200: L
ET a=-1: IF ball>0 THEN  GO TO 5
6
 140 GO TO 60
 200 LET a=-1: BEEP 1,-20: BEEP
2,-30: RETURN
 500 CLS
 510 PRINT  AT 3,3;"Your three m
en lasted for ";t
 520 PRINT "    time units."
 530 PRINT : PRINT " Too bad the
 lions are going     to enjoy a
nice dinner.!!"
 540 FOR w=0 TO 10: FOR r=0 TO 7
: BORDER r: BEEP .01,r: NEXT r:
NEXT w
 550 BORDER 3
 560 INPUT "Another game ? (y/n)
.";d$
 570 IF d$="y" THEN  RUN
 580 STOP
 600 CLS : FOR w=0 TO 50: BEEP .
01,w: NEXT w
 610 CLEAR
 620 LET x=20: LET y=1: LET a=20
: LET b=30
 630 LET x=x-1: LET y=y+1: LET a
=a-1: LET b=b-1
 635 IF x=5 THEN  GO TO 670
 640 BEEP .01,x: BEEP .01,a
 650 PRINT  AT x,y;"A"; AT a,b;"
B"
 655 PRINT  AT x+1,y-1;" "; AT a
+1,b+1;" "
 660 GO TO 630
 670 FOR c=0 TO 30: PRINT  AT x-
1,y-2; INK  INT ( RND *7);"(ig2:
2*ig8:ig1)"
 675 BEEP .001, INT ( RND *20)+4
0
 680 PRINT  AT x,y-2; INK  INT (
 RND *7);"(4*ig8)"
 690 PRINT  AT x+1,y-2; INK  INT
 ( RND *7);"(g7:2*ig8:ig4)"
 700 NEXT c
 710 CLS
 720 PRINT  AT 3,0;"   You finis
hed the time limit    you are no
w a general in the    army.!!"

 730 INPUT "Another game ? (y/n)
.";d$
 740 IF d$="y" THEN  RUN
 750 STOP
```

ALONG THE WIRE

ALONG THE WIRE is a version of the fairground game, the idea being to guide a hoop along a randomly-generated wire. You have to keep the right-hand side of the hoop on the wire or the game ends. Written for the 16K Spectrum by Andrew Holder of Weymouth, Dorset.



```
    1 BORDER 2: PAPER 4: CLS
    2 GO SUB 500
    4 CLEAR
    5 LET w=14
    6 LET i=1
    8 LET t=90
    9 LET sc=0
   10 CLS
   11 DIM z(250)
   12 PRINT  AT 0,0;"(iL:iE:iV:
iE:iL) ";i
   15 PLOT 29,90
   20 FOR a=30 TO 220 STEP 10
   25 LET b=a/a
   26 LET k=a
   27 GO SUB 300
   40 FOR q=a TO a+9
   41 IF t<50 OR t>130 THEN  GO S
UB 80
   42 LET t=t+s
   45 LET z(q)=t
   50 DRAW 1,s
   60 NEXT q
   70 NEXT a
   75 GO TO 100
   80 LET a=k: GO SUB 300
   85 RETURN
  100 LET c=95
  110 FOR g=30 TO 230 STEP 2
  115 LET d=c
  120 OVER 1: PLOT g,c: DRAW -w,0
: DRAW 0,-w: DRAW w,0: DRAW 0,w-
1
  130 IF C-Z(G)=1 THEN  GO TO 210

  133 IF c-z(g)=0 THEN  GO TO 210

  135 IF c-z(g)=w THEN  GO TO 210

  140 IF C-Z(G)=W+1 THEN  GO TO 2
10
  150 IF  INKEY$ ="6" THEN  LET c
=c-2
  160 IF  INKEY$ ="7" THEN  LET c
=c+2
  180 IF  INKEY$ ="" THEN  GO TO
149
  190 OVER 1: PLOT g,d: DRAW -w,0
: DRAW 0,-w: DRAW w,0: DRAW 0,w-
1
  200 NEXT g
  205 GO TO 230
  210 BEEP 1,6: BEEP 1,2
  215 PRINT  AT 2,10;"(iT:iO:iU:i
G:iH:sp:iL:iU:iC:iK)"
  220 PRINT "        YOU REACHED L
EVEL ";I
  225 GO TO 280
  230 FOR N=30 TO 50 STEP 3: BEEP
 .05,N: NEXT N
  232 IF I=5 THEN  GO TO 270
  235 PRINT  AT 2,10;"(iW:iE:iL:i
L:sp:iD:iO:iN:iE)"
  240 PRINT  AT 3,5;"NOW THINGS G
ET HARDER": FOR F=1 TO 100: NEXT
 F
  250 LET w=w-2: LET i=i+1
  260 GO TO 8
  270 CLS : PRINT  AT 10,10;"(iY:
iO:iU:i':iV:iE:sp:iD:iO:iN:iE:sp
:iI:iT)"
  275 FOR N=1 TO 15: BEEP .15, IN
T ( RND *20): NEXT N
  280 INPUT "ANOTHER GAME (Y/N) :
";V$: IF V$="Y" OR V$="y" THEN
GO TO 2
  290 STOP
  300 LET l= INT ( RND *3)+1
  310 IF l=1 THEN  LET s=1
  320 IF l=2 THEN  LET s=0
  330 IF l=3 THEN  LET s=-1
  335 IF A<32 THEN  LET S=0
  340 RETURN
  500 PRINT  AT 1,9;"(iA:iL:iO:iN
:iG:sp:iT:iH:iE:sp:iW:iI:iR:iE)"

  510 PRINT ,,"      The object of
 the game is
re hoop along
ure that you
hand side of
 the wire."
  520 PRINT ,,"
lete the 1st
 onto the
the hoop gets
  530 PRINT ,,"
 if the right
e hoop strays
 you complete
.(unlikely)."
  540 PRINT ,,"      6-Down  7-Up
 8-Foward",,,,"Press any key"
  550 IF  INKEY$ ="" THEN  GO TO
550
  560 RETURN
to guide a squa
a wire,making s
keep the right-
the square over

   Once you comp
screen you move
next level and
smaller."
   The game ends
hand side of th
off the wire,or
all 5 screens.-
```



BEGINNER

HUNT SABOTEUR

CHASE the hares from the field into the woods to save them from coursing the next day. Your task is made more difficult by a policeman who runs after you. Use the cursor keys to move.

Hunt Saboteur was written for the 16K Spectrum by Nathan Roche of Birkenhead, Merseyside.

The theme is that you play the part of someone who wishes to disrupt the hunt the next day. To do so, you have to chase as many hares into the forest as you can but the police know your intention, so while you are trying to save the hares you have to watch your step as well.

You chase the hare ' . ' into the forest using the cursor keys, after which another hare will be dumped on the screen in a random position. Note that the policeman can travel in a diagonal fashion but you cannot.

Here is how the program works. Lines 10–15 print the instructions. Notice the PAUSE 0, which makes the program stop until a key is pressed. Lines 20–80 set up the initial variables and display the grass and forest. The double loop in line 60 prints the '*' which makes up the forest.

Lines 100–130 check to see which key is being pressed and print the man. Notice the neat way the keys are checked in lines 110 and 120.

The logic behind the hare running away from you is in lines 150–180. If you are more than three lines or columns away from the hare, nothing will happen but if you are, checks are made and the hare runs.

Lines 250–280 are a similar thing, except that they control the policeman, with the main difference that he sometimes does not move.

Lines 300–360 are the checks to see if you have chased a hare into the forest and whether you have been caught. Finally, the GOTO in line 360 loops back to 100, where all the checks are done again.

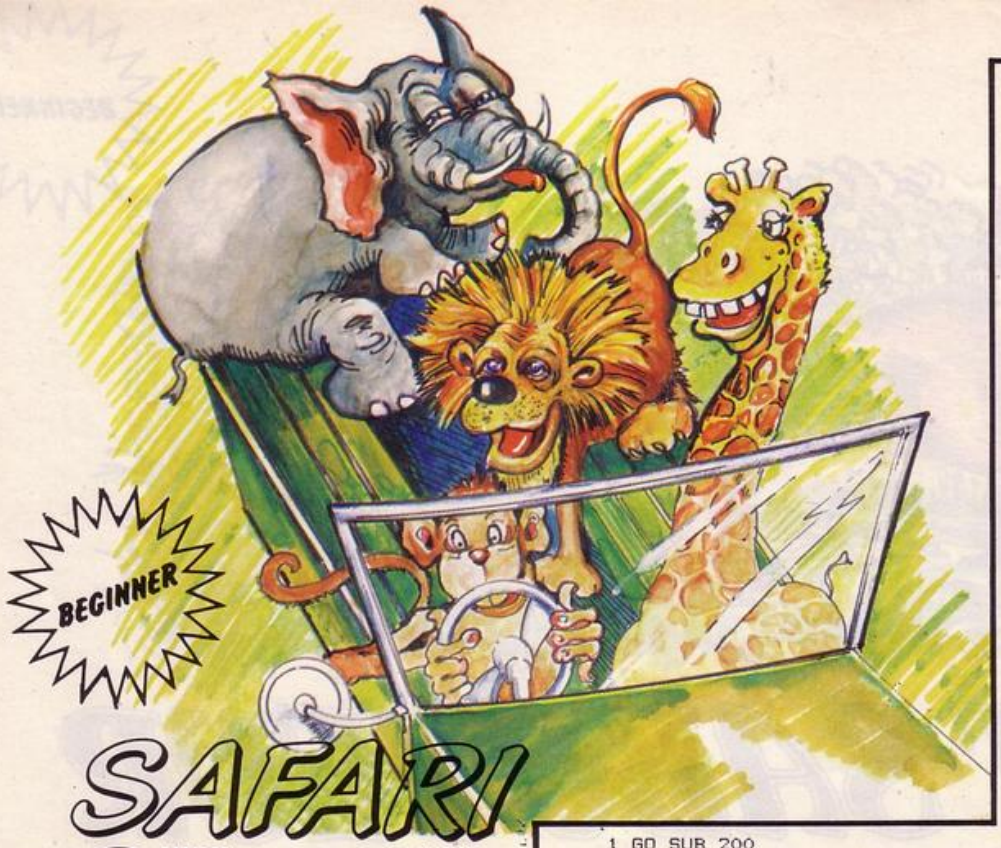
Variables used

a Row number for saboteur.
b Column number for saboteur.
c Row number for policeman.
d Column number for policeman.
e Row number for hare.
f Column number for hare.
g Used as FOR/PLOT index when drawing grass.
j Used to hold row number when drawing forest.
k Used to hold column number when drawing forest.
sc Holds score.

Subroutines

10–15 Print instructions.
20–80 Initialisation.
100–130 Print saboteur.
150–180 Print hare and calculate.
250–280 Print cop and calculate.
300–360 Caught /won checks.

```
  10 PRINT "You (_) must chase t
he hares (.) into the woods (top
-right) to  save them from hare
coursing the next day. The cops
((c)) are     trying to catch you"

  15 PRINT  AT 10,0;"CONTROLS: c
ursor keys"; AT 12,0;"Press any
key to start": PAUSE 0: CLS
  20 LET a=21: LET b=16: LET c=0
: LET d=0: LET sc=0
  25 PAPER 7: INK 4
  30 FOR g=0 TO 255 STEP 3: PLOT
 g,0: DRAW 0,175: NEXT g
  60 FOR j=0 TO 7: FOR k=22 TO 3
1: PRINT  AT j,k; INK 4;"*": NEX
T k: NEXT j
  80 LET e= INT ( RND *22): LET
f= INT ( RND *30)
 100 PRINT  AT a,b; OVER 1;"_"

 110 LET a=a+( INKEY$ ="6")-( IN
KEY$ ="7")
 115 IF a>21 THEN  LET a=21
 120 LET b=b+( INKEY$ ="8")-( IN
KEY$ ="5")
 125 IF b>31 THEN  LET b=31
 130 PRINT  AT a,b; INK 2; OVER
1;"_"
 150 PRINT  AT e,f; OVER 1;"."
 160 IF  ABS (a-e)>3 THEN  GO TO
165
 161 IF a>e THEN  LET e=e-1
 162 IF a<e THEN  LET e=e+1
 165 IF e>20 THEN  LET e=20
 166 IF e<1 THEN  LET e=1
 170 IF  ABS (b-f)>3 THEN  GO TO
175
 171 IF b>f THEN  LET f=f-1
 172 IF b<f THEN  LET f=f+1
 175 IF f>30 THEN  LET f=30
 176 IF f<1 THEN  LET f=1
 180 PRINT  AT e,f; INK 3; OVER
1;"."
 250 PRINT  AT c,d; OVER 1;"(c)"

 255 IF  RND >.5 THEN  GO TO 277

 260 IF a>c THEN  LET c=c+1
 265 IF a<c THEN  LET c=c-1
 270 IF b>d THEN  LET d=d+1
 275 IF b<d THEN  LET d=d-1
 280 PRINT  AT c,d; OVER 1; INK
1;"(c)"
 300 IF a=c AND b=d THEN  GO TO
2000
 350 IF e<8 AND f>21 THEN  GO TO
 500
 360 GO TO 100
 500 BEEP .1,10: BEEP .15,12: LE
T sc=sc+1: GO TO 80
2000 INK 0: PRINT  AT 10,9; FLAS
H 1;"YOU'RE NICKED!": BEEP .1,5:
 BEEP .3,-5:
2010 PRINT  AT 12,0;"But before
your arrest you saved";sc;" hare
s from a horrible death": STOP
```



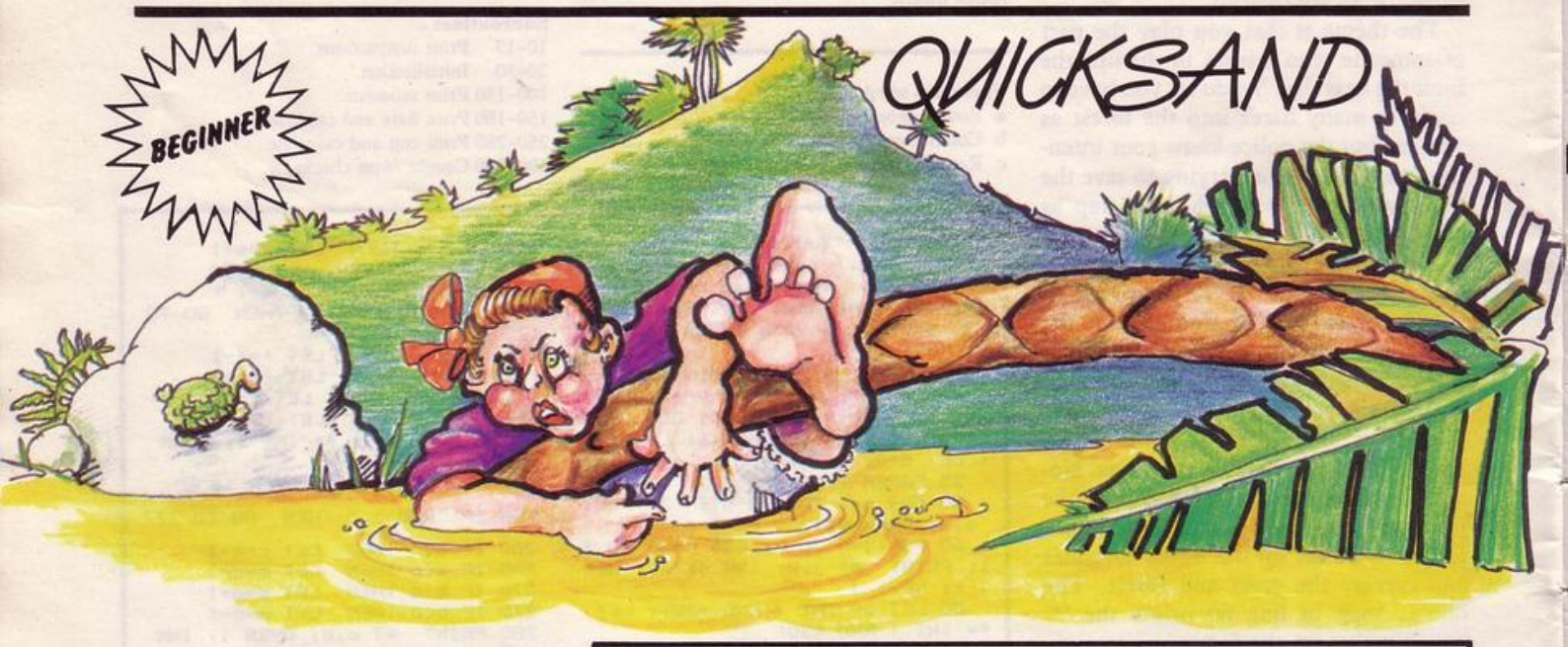
BEGINNER

SAFARI

GUIDE your cage around Africa collecting wild animals. At the beginning of the game you can enter the number of animals you wish to round up. Once you have caged all the animals you are told how long you needed to do so.

Safari was written for the 16K Spectrum by Gary Blake of Woodhouse, Notts.

```
  1 GO SUB 200
  2 LET T=0: LET A=0: LET B=0

  4 INPUT "HOW MANY ANIMALS ? "
;N
  5 CLS
  6 IF N>100 THEN  GO TO 4
 19 FOR Y=1 TO N
 40 PRINT  AT ( RND *20),( RND
*31);"C "
 50 BEEP .009,-10
 70 NEXT Y
 85 LET T=T+1
 90 LET a=a+( INKEY$ ="6")-( IN
KEY$ ="7")
 100 LET a=a+(a<0)-(a>21)
 110 LET b=b+( INKEY$ ="8")-( IN
KEY$ ="5")
 120 LET b=b+(b<0)-(b>30)
 130 PRINT  AT a,b;"AB"
 132 BEEP .03,1
 135 PRINT  AT a,b;"  "
 140 IF  INKEY$ ="1" THEN  GO TO
 161
 150 GO TO 80
 161 IF t<70 THEN  PRINT  AT 10,
6; FLASH 1;"WELL DONE !  TIME=";
T
 162 IF t >= 70 THEN  PRINT  AT
10,6; FLASH 1;"OH DEAR !  TIME="
;T
 165 FOR p=1 TO 500: NEXT p
 170 CLS : GO TO 1
 200 PAPER 4: BORDER 4: INK 2: C
LS
 210 PRINT  AT 0,13; FLASH 1;"SA
FARI"
 220 PRINT  AT 5,2;"GUIDE THE CA
GE ROUND AFRICA   TRAPING WILD A
NIMALS.FIRST ENTER THE NUMBER OF
 ANIMALS WANTED."
 230 PRINT  AT 10,4;"5=LEFT"; AT
 11,4;"6=DOWN"; AT 12,4;"7=UP";
AT 13,4;"8=DOWN"; AT 14,4;"1=TO
FINISH GAME (WHEN ALL          ANI
MALS ARE COLLECTED)"
 250 RESTORE : FOR n=0 TO 7: REA
D r: POKE  USR "A"+N,R: NEXT N
 260 DATA  BIN 11111111, BIN 101
01010, BIN 10101010, BIN 1010101
0, BIN 10101010, BIN 10101010, B
IN 10101010, BIN 11111111
 270 FOR N=0 TO 7: READ R: POKE
 USR "B"+N,R: NEXT N
 280 DATA  BIN 11111110, BIN 101
01010, BIN 10101010, BIN 1010101
0, BIN 10101010, BIN 10101010, B
IN 10101010, BIN 11111110
 290 FOR N=0 TO 7: READ R: POKE
 USR "C"+N,R: NEXT N
 300 DATA  BIN 10010000, BIN 011
00000, BIN 10010010, BIN 0110111
1, BIN 01111111, BIN 10101111, B
IN 10100001, BIN 0110010
 310 RETURN
```



BEGINNER

QUICKSAND

WALK AROUND the island avoiding the quicksand which appears suddenly. Treading on a patch of quicksand will result in instant death. One hundred points are gained for every step you take.

Quicksand was written for the 16K ZX-81 by Richard Papworth of Limekilns, Fife.

```
  1 REM "QUICKSAND"
  2 CLS
  3 PRINT "QUICKSAND"
 10 RAND
 20 LET S=0
 30 PRINT AT 14,0;"
■";AT 2,0;"
 40 FOR X=0 TO 10
 50 PRINT "■";TAB 12;"■"
 60 NEXT X
 70 LET L=INT (RND*11)+1
 80 LET R=INT (RND*11)+3
 90 PRINT AT R,L;
100 IF PEEK (PEEK 16398+256*PEE
K 16399)=128 THEN GOTO 190
110 PRINT "■";AT R+(RND(.5)-(RN
D(.5),L+(RND(.5);"■" AND PEEK (P
EEK 16398+256*PEEK 16399)<>21
120 LET S=S+100
130 LET A$=INKEY$
140 IF A$<"5" OR A$>"8" THEN GO
TO 130
150 PRINT AT R,L;" "
160 LET L=L+(A$="8")-(A$="5")
170 LET R=R+(A$="6")-(A$="7")
180 GOTO 90
190 CLS
200 PRINT "YOU SCORED ";S;"POIN
TS"
210 PRINT "ANOTHER GAME (Y/N)"
220 INPUT B$
230 IF B$="Y" THEN GOTO 2
240 IF B$<>"Y" THEN STOP
250 STOP
```

LADDER ATTACK

PREVENT the ladders coming down and picking up your humanoids by hitting them with your bullets. If the ladder hits a humanoid it will take it to the top of the screen. Be careful not to run into the ladder, as doing so will take one of your three lives.

Ladder Attack was written for the 16K Spectrum by Andrew Bradford of Birstall, Leicester.

```
  4 GO SUB 8000: GO SUB 9000
  5 INK 4: PAPER 0: BORDER 0: C
LS
 10 LET a=19: LET b=15: LET b1=
b+1
 12 LET m1=0: LET m=0
 14 LET sc=0
 16 LET l=3
 18 LET p=0
 46 PRINT  AT 0,26;l
 48 FOR f=1 TO 30 STEP 3: PRINT
 AT 21,f; INK 5;"D": NEXT f
 52 PRINT  AT 0,2;"000000"
 54 PRINT  AT 0,8- LEN  STR$ sc
;sc
 56 PRINT  AT 1,0; INK 7;"BBBBB
BBBBBBBBBBBBBBBBBBBBBBBBBBBB"
 90 LET e=2: LET e1= INT ( RND
*29)+1
 100 IF  INKEY$ ="0" THEN  LET m
1=1: LET b1=b+1: FOR m=18 TO 2 S
TEP -1: PRINT  AT m,b1; INK 5;"A
"
 105 PRINT  AT a,b;" A "
 110 IF  INKEY$ ="1" AND b>2 THE
N  LET b=b-1
 120 IF  INKEY$ ="2" AND b<30 TH
EN  LET b=b+1
 150 PRINT  AT e,e1; INK 7;"B":
BEEP .01,e
 160 LET e=e+1
 175 IF m1=1 AND e1=b1 AND m<e T
HEN  FOR f=5 TO 1 STEP -1: BEEP
.01,f: NEXT f: PRINT  AT e-1,e1;
 INK 6;"C": FOR f=5 TO 1 STEP -1
: BEEP .01,f: NEXT f: FOR d=e TO
 1 STEP -1: PRINT  AT d,e1;" ";
AT m,b1;" ": LET m1=0: NEXT d: L
ET sc=sc+10: GO TO 52
 180 IF e=19 AND e1=b+1 THEN  FO
R f=1 TO 7: PRINT  AT a,b+1; INK
 f;"C": BEEP .01,50: BEEP .01,51
: BEEP .01,49: NEXT f: LET l=l-1
: PRINT  AT a,b;" ": GO TO 281

 190 IF l=0 THEN  GO TO 350
 200 IF p=10 THEN  GO TO 350
 250 PRINT  AT 0,8- LEN  STR$ sc
;sc
 255 PRINT  AT 0,26;l
 280 IF e >= 20 AND  ATTR (e+1,e
1)=5 THEN  GO SUB 300
 281 IF e >= 20 THEN  FOR r=21 T
O 0 STEP -1: PRINT  AT r,e1;" ":
 NEXT r: GO TO 52
 290 IF m1=1 AND m>1 THEN  PRINT
  AT m,b1;" ": NEXT m
 295 IF m1=1 AND b+1=e1 AND m=e
THEN  BEEP .5,0
 299 GO TO 100
 300 FOR r=21 TO 1 STEP -1: PRIN
T  AT r,e1; INK 5;"D": BEEP .01,
r: PRINT  AT r,e1;" ": NEXT r
 310 PRINT  AT m,b1;" ": LET m1=
0
 315 LET p=p+1
 320 GO TO 52
 350 PRINT  AT 10,10; INK 5;" GA
ME OVER "
 360 FOR x=50 TO 0 STEP -2: BEEP
 .01,x: NEXT x
 370 IF  INKEY$ ="" THEN  GO TO
370
 380 CLS : GO TO 10
8000 PRINT '"        LADDER ATTAC
K"'"        ------------"

8010 PRINT ''" The object of thi
s game"'"is to prevent the alien
s "'"from taking human prisoners
  "'"by destroying their ladders"

8020 PRINT ''"   CONTROLS"''"1-l
eft"''"2-right"''"0-fire"
8030 PAUSE 0: RETURN

9000 FOR n=144 TO 147: FOR x=0 T
O 7: READ a: POKE  USR  CHR$ n+x
,a: NEXT x
9010 NEXT n
9100 DATA 16,16,56,56,186,254,14
6,0
9110 DATA 16,124,16,16,16,16,16,
16
9120 DATA 16,32,19,196,32,10,41,
201
9130 DATA 16,56,84,124,16,56,40,
108
9150 CLS : RETURN
```

SHOOTING GALLERY

BEGINNER

SHOOT the targets in the gallery as they move across the screen. If the targets reach the other side three times, the game will end.

Shooting Gallery was written for the 16K ZX-81 by Deepak Damania of London, E10.

```
  1 LET S=0
  2 LET L=3
  5 LET A=0
  6 LET D=19
  7 LET B=7
  8 LET C=13
  9 PRINT AT 0,10;"SCORE ";S
 50 PRINT AT 0,0;"LIVES= ";L
 60 PRINT AT B,A;" ▟▙ ";
 70 LET A=A+1
 80 PRINT AT D,C;" ▀▀ "
 90 IF INKEY$="5" THEN LET C=C-
1
100 IF INKEY$="8" THEN LET C=C+
1
110 IF INKEY$="0" THEN GOTO 150
115 IF A=29 THEN LET L=L-1
120 IF A=29 THEN GOTO 3335
125 IF B=17 THEN GOTO 3370
127 IF L=0 THEN GOTO 3390
130 GOTO 60
150 FOR F=19 TO 7 STEP -1
160 PRINT AT F,C+2;"*"
170 PRINT AT F,C+2;" "
180 NEXT F
195 IF C<>A-1 THEN GOTO 9
210 LET S=S+10
215 PRINT AT 0,10;"SCORE ";S
217 PRINT AT B,A;"     "
218 PRINT AT D,C;"     "
220 GOTO 3340
3335 PRINT AT B,A;"     "
3340 LET A=0
3350 LET B=B+1
3360 PRINT AT B,A;" ▟▙ "
3365 GOTO 10
3370 IF B=17 THEN PRINT AT B,A;"
 "
3380 GOTO 4
3400 PRINT AT 13,12;"GAME OVER"
4000 PRINT AT B,A;"     "
```

ARCADE

GAMES THAT FIGHT BACK!

NEW RELEASE

THE PRIZE

UP TO £5000 FIRST PRIZE

A Fast-furious racing in this Arcade game for the Spectrum. 'Pontoon' on side B free!

B Funny goings-on deep in a mine. Can you escape the evil in its depths? "Original and fun . . . . dexterity needed . . . . strategy is also involved" — Games Computing.

C Defuse a bomb hidden on the complex planet, Lattica, before it blows!! "... action packed game... addictive" — Sinclair user.

D The mobs out to get ya' in this no-holds-barred 25 screen, action-packed game. "Tricky and highly entertaining" — Personal Computing News.

E 50 different screens of mayhem. "A fun game for all ages . . . . which I thoroughly enjoyed." — Home Computing Weekly.

F ***The Prize*** Your mission to discover the innermost chamber of Midas in a huge planetary maze. If successful you could be in with a chance of winning up to £5000! Only the strongest will survive the devious traps set by the guardians, but just imagine what you could do with the *prize*. . . . .

Cassette carries a special £2 discount voucher off your next purchase!

Dealers, please contact us for very special discounts on our games. Phone Orpington 35639.

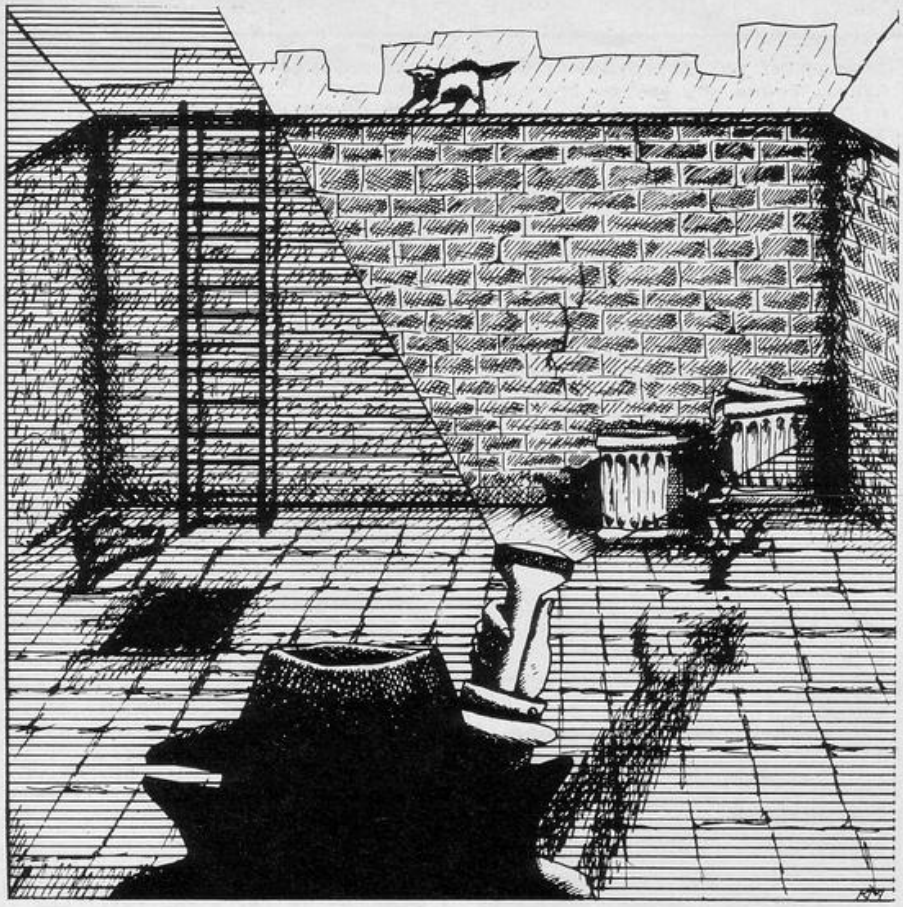
Programmers. We are looking for high quality m/c games for the Spectrum and Commodore 64 home computers, send them in for evaluation. You have nothing to lose!

All games are for the ZX Spectrum 48K and cost just £5.50 each inc. p.p. VAT etc.

Arcade Software Ltd, Technology House,
32 Chislehurst Road, Orpington, Kent BR6 0DG
Tel: Orpington 35639

A ☐ I enclose a cheque for £_____ or
B ☐ debit my Barclaycard/Access Account★
C ☐ Name _____
D ☐ Address _____
E ☐ _____
F ☐ _____ SP7

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐★



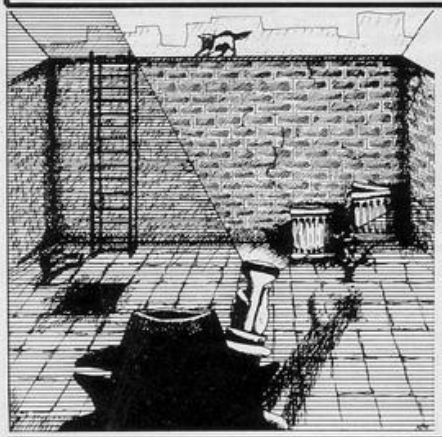
DETECTIVE

A MURDER has been committed in your town and it is your job to find the killer and put him or her behind bars, thus ensuring the safety of other residents. You are given the name of the victim, the time and place of the murder, and also the murder weapon. There are 19 suspects and you can choose to name the murderer in three to 40 questions.

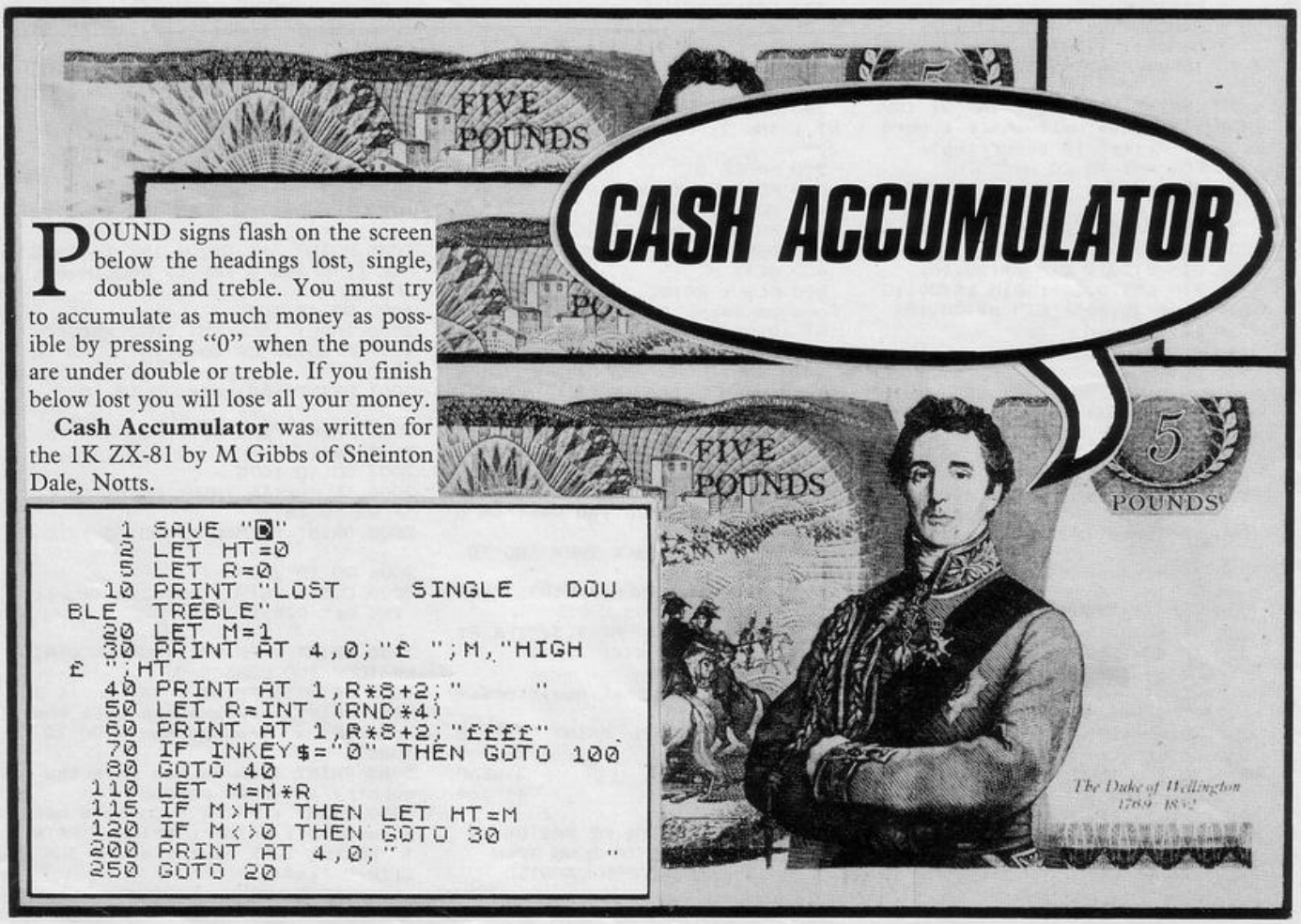
Detective was written for the 48K Spectrum by David Pankhurst of Strood, Kent.

```
   1 POKE 23609,50
   2 INPUT "SKILL LEVEL i.e no.
of questions you can ask ?(3-40)
";sk
   3 IF sk<3 OR sk>40 THEN  GO T
O 2
   4 INPUT "Town of residence?";
z$
   5 RESTORE
   6 RANDOMIZE
   7 DIM a$(21,19)
  10 INPUT "ENTER YOUR NAME";a$(
21)
  12  PRINT  AT 10,0; INK 2; INV
ERSE 1;"Please wait while a murd
er in    ";z$;" is occurring"
  15 FOR n=1 TO 20
  20 READ a$(n)
  25 NEXT n
  30 DIM s(20): DIM t(20): DIM w
(20): DIM p(20)
  35 DIM c(20): DIM c$(20,10)
  40 DIM s$(20,10): DIM t$(20,12
): DIM w$(20,10): DIM p$(20,15)
  50 LET goes=0
 100 FOR n=1 TO 20
 110 LET s(n)= INT ( RND *2): LE
T t(n)= INT ( RND *2): LET w(n)=
 INT ( RND *3): LET p(n)= INT (
RND *3)
 115 LET c(n)= INT ( RND *3)
 120 NEXT n
 140 LET vic= INT ( RND *20)+1

 200 LET mur= INT ( RND *20)+1

 210 IF mur=vic THEN  GO TO 200

 220 FOR n=1 TO 20
 230 IF n=mur THEN  GO TO 250
 240 IF s(n)=s(mur) AND t(n)=t(m
ur) AND c(n)=c(mur) AND w(n)=w(m
ur) AND p(n)=p(mur) THEN  LET s(
n)= INT ( RND *2): GO TO 240
 250 NEXT n
 300 LET n=mur
 310 GO SUB 9500
 315 CLS : PRINT "victim: "; INK
 2;a$(vic): PRINT "part of town:
"; INK 2;s$(mur);t$(mur)
 317 PRINT "murder weopan:"; INK
 2;w$(mur)
 320 PRINT "location: "; INK 2;p
$(mur)
 325 LET hol= INT ( RND *3): LET
 ho= INT ( RND *10): LET minl= I
NT ( RND *6): LET min= INT ( RND
 *10)
 327 IF hol=2 AND ho>4 THEN  GO
TO 325
 330 PRINT "time of death: "; IN
K 2;hol;ho;":";minl;min
 350 FOR n=1 TO 20
 360 GO SUB 9500
 370 NEXT n
 380 PRINT : PRINT : PRINT : PRI
NT ; INK 2; FLASH 1;"Press any k
ey"
 390 PAUSE 0
 400 FOR n=1 TO 21
 405 POKE 23692,10
 410 PRINT : PRINT
 420 BEEP .01,n
 430 NEXT n
 500 CLS : PRINT  AT 10,0;"Quest
ions asked:"; INK 2;goes: PRINT
 AT 12,0;"Limit on questions:";
INK 2;sk
 501  INPUT "Do you wish to accu
se someone?  (y/n)";f$
 502 IF f$="y" OR f$="Y" THEN  G
O TO 4000
 503 IF f$="n" OR f$="N" THEN  G
O TO 505
 504 GO TO 501
 505 INPUT "who do you want to q
uestion?";q
 506 IF q>20 OR q<1 THEN  GO TO
505
 507 IF q=vic  THEN  PRINT "THE
VICTIM": GO TO 505
1050 CLS : PRINT  AT 1,3;"THE FI
LE OF "; INK 1;a$(q)
1052 GO SUB 7000
1055 PRINT "personal questions:-
"
1058 IF q>10 THEN  PRINT "1)SIDE
 SHE WAS ON                2)UP O
R DOWN TOWN               3)WEAP
ON CARRIED                4)";q$
: GO TO 1062
1060 PRINT "1)SIDE HE WAS ON
            2)UP OR DOWN TOWN
            3)WEAPON CARRIED
            4)";q$
1063 PRINT "5)COLOUR OF HAIR": P
RINT : PRINT : PRINT
1064 INPUT "option?";op
1065 IF op>5 OR op<1 THEN  GO TO
 1064
1066 GO TO 1066+op
1067 PRINT "I was on the ";s$(q)
: GO TO 1075
1068 PRINT "I was ";t$(q): GO TO
 1075
1069 PRINT "I carry ";w$(q): GO
TO 1075
1070 GO TO 2000+2*( INT (q/6))

1071 PRINT "my hair is ";c$(q)

1075 LET goes=goes+1
1080 IF goes>sk THEN  GO TO 3000

1085 PRINT  AT 21,0; INK 1; INVE
RSE 1;"press a key to continue":
 PAUSE 0
1090 GO TO 500
2000 INPUT "SUSPECT CONCERNED?";
su: IF su>20 OR su<1 THEN  GO TO
 2000
2001 PRINT ;p$(su): GO TO 1075

2002 PRINT "the killers hair is
";c$(mur)
2003 GO TO 1075
2004 IF mur<11 THEN  PRINT "MALE
": GO TO 1075
2005 PRINT "FEMALE": GO TO 1075

2006 GO TO 2000
3000 CLS : PRINT  INK 2;a$(mur);
 INK 0;" DID IT "

3050 PRINT : PRINT "YOUR ENQUIRI
ES TOOK TOO LONG "
3055 PRINT : PRINT : IF mur>11 T
HEN  PRINT "now she has left the
 country a  free person": GO TO
3080
3065 PRINT "now he has left the
country a  free person"
3080 PRINT : PRINT "you have bee
n demoted": PRINT : PRINT : PRIN
T "better luck next time "; INK
2;"P.C ";a$(21)
```

```
3090 PRINT  AT 21,0; INK 1; INVE
RSE 1;"Press any key to try agai
n"
3100 PAUSE 0
3105 CLS
3110 GO TO 1
4000 CLS : PRINT "OKAY WHO IS IT
?": PRINT : PRINT "(suspect's nu
mber)"
4010 INPUT gu
4020 PRINT ;"SO YOU THINK IT IS
"; INK 2;a$(gu)
4030 PRINT : PRINT : PRINT : PRI
NT
4040 PRINT "WELL "; INK 1;a$(mur
); INK 0;" DID IT"
4050  IF gu=mur  THEN  GO TO 450
0
4060 PRINT "WHAT A DETECTIVE YOU
 ARE         CONVICTING THE WRONG
 PERSON"
4065 PRINT  AT 15,0;"You have be
en demoted .          Your career
 is ruined "; INK 2;"P.C ";a$(21
)
4068 PRINT  AT 20,0; INK 1; INVE
RSE 1;"Press a key to redeem you
rself"
```



```
4070 PAUSE 0
4080 CLS
4090 GO TO 1
4500 PAUSE 0: CLS
4510 FOR n=1 TO 20
4520 LET i= INT ( RND *50): LET
sfg= INT ( RND *2)
4530 IF sfg=1 THEN  LET i=-i
4540 BEEP .2,i
4550 NEXT n
4600 PRINT  AT 10,0;"CORRECT THE
 TOWN OF "; INK 2;z$; INK 0;" CA
N  FEEL SAFE AGAIN WITH THE KILL
ER "; INK 1;a$(mur); INK 0;" BEH
IND BARS": PRINT "it took you ";
goes;" questions"
4601 PRINT  AT 21,0;"Press a key
": PAUSE 0
4602 PRINT  AT 21,0;"
"
4605 CIRCLE 100,40,20
4606 CIRCLE 92,50,3: CIRCLE 108,
50,3: PLOT 89,30: DRAW 3,5: DRAW
 16,0: DRAW 3,-5
4607 PRINT  AT 14,9; OVER 1; INK
 3;"(6*ig4:ig5)": PAUSE 30: PRIN
T  AT 15,9; INK 3; OVER 1;"(7*ig
5)": PAUSE 30: PRINT  AT 16,9; I
NK 3; OVER 1;"(7*ig5)": PAUSE 30
: PRINT  AT 17,9; INK 3; OVER 1;
"(7*ig5)": PAUSE 30: PRINT  AT 1
8,9; INK 3; OVER 1;"(6*ig1:ig5)"
4608 PRINT "Have a vacation "; I
NK 2; INVERSE 1;"CHIEF DETECTIVE
 "; INK 0; INVERSE 0;a$(21): PRI
NT  INK 1; INVERSE 1;"Press a ke
y to have another go"
4609 PAUSE 0
4610 FOR n=1 TO 100
4620 LET x= INT ( RND *21): LET
y= INT ( RND *31)
4630 LET ink= INT ( RND *7): LET
 j= INT ( RND *30): LET sfg= INT
 ( RND *2)
4635 IF sfg=1 THEN  LET j=-j
4640 PRINT  AT x,y; INK ink;"(ig
8)"
4650 BEEP .01,j
4660 NEXT n
4670 CLS
4680 GO TO 1
7000 GO SUB 7100+( INT (q/6))
7020 RETURN
7100 LET q$="WHEREABOUTS OF SUSP
ECTS": RETURN
7101 LET q$="COLOUR OF MURDERER'
S HAIR": RETURN
7102 LET q$="SEX OF MURDERER": R
ETURN
7103 LET q$="WHEREABOUTS OF SUSP
ECTS": RETURN
9000 DATA "BASHER BRIGGS","TEA L
EAF TOM","PSYCHO JONES","FORGER
FRED","SHOTGUN SID","SLIPPERY SA
M","MANIAC SMITH","MICKEY MOBB",
"CRUSHER CUMMINS","RAZOR RULER",
"STRANGLER SUE","DEMENTED DOREEN
","CUT THROAT CAROLE","BETTY'CHO
PPER'JONES","SADISTIC SUE","LILY
'LIONESS'KIDD","FELINE FREDA","K
ILLER IVY","POISON PENNY","SPECT
RUM SUZIE"
9500 LET s$(n)="EAST SIDE,"
9510 IF s(n)=1 THEN  LET s$(n)="
WEST SIDE,"
9520 LET t$(n)="UP TOWN"
9530 IF t(n)=1 THEN  LET t$(n)="
DOWN TOWN"
9540 LET w$(n)="A REVOLVER"
9550 IF w(n)=1 THEN  LET w$(n)="
A KNIFE"
9560 IF w(n)=2 THEN  LET w$(n)="
AN AXE"
9570 LET p$(n)="THEATRE"
9580 IF p(n)=1 THEN  LET p$(n)="
DOCKS"
9590 IF p(n)=2 THEN  LET p$(n)="
FOOTBALL GROUND"
9600 LET c$(n)="BLONDE"
9610 IF c(n)=1 THEN  LET c$(n)="
BLACK"
9620 IF c(n)=2 THEN  LET c$(n)="
BROWN"
9630 RETURN
```



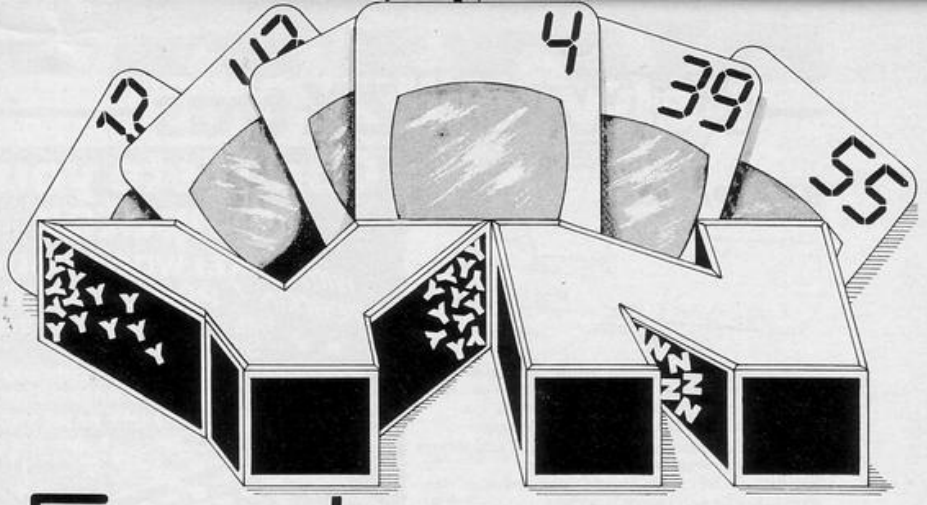
POUND signs flash on the screen below the headings lost, single, double and treble. You must try to accumulate as much money as possible by pressing "0" when the pounds are under double or treble. If you finish below lost you will lose all your money.

Cash Accumulator was written for the 1K ZX-81 by M Gibbs of Sneinton Dale, Notts.

```
   1 SAVE "■"
   2 LET HT=0
   5 LET R=0
  10 PRINT "LOST     SINGLE    DOU
BLE   TREBLE"
  20 LET M=1
  30 PRINT AT 4,0;"£ ";M,"HIGH
£ ";HT
  40 PRINT AT 1,R*8+2;"     "
  50 LET R=INT (RND*4)
  60 PRINT AT 1,R*8+2;"£££"
  70 IF INKEY$="0" THEN GOTO 100
  80 GOTO 40
 110 LET M=M*R
 115 IF M>HT THEN LET HT=M
 120 IF M<>0 THEN GOTO 30
 200 PRINT AT 4,0;"                "
 250 GOTO 20
```

THINK of a number between one and 63 and remember it. The computer will then show you six cards with different numbers on them. Each time a card is shown you must press 'Y' or 'N', depending on whether or not the number of which you thought is on that particular card. Once that has been done, the computer will work out the number of which you thought.

Think of a Number was written for the 16K Spectrum by John Betty, aged 15, of Leyland, Lancashire.



THINK OF A NUMBER

```
    1 BORDER 1: PAPER 1: INK 7: C
LS
   2 FOR p=1 TO 8: READ a: POKE
 USR "A"+p,a: NEXT p: FOR S=0 TO
 7: READ Q: POKE  USR "S"+S,Q: N
EXT S: DATA 8,8,56,120,164,189,7
2,48: DATA 0,96,252,26,37,253,18
,12: GO SUB 2000
   3 LET s=0
   9 LET q$="IS YOUR NUMBER ON T
HIS CARD?                (Y/N)?
"
  10 DIM a$(250): DIM b$(250): D
IM c$(250): DIM d$(250): DIM e$(
250): DIM f$(250)
  20 READ a$: READ b$: READ c$:
READ d$: READ e$: READ f$
  30 CLS : PRINT  TAB 10; INK 6;
 INVERSE 1;"NUMBERS GAME":
  40 PRINT  AT 10,4; INK 7;a$: P
RINT  AT 2,4; INK 7; INVERSE 1;"
CARD 1": BORDER 1
  45 PRINT  AT 20,3; INK 7;"IS Y
OUR NUMBER ON THIS CARD ?"; AT 2
1,15;" (Y/N)"
  46 IF  INKEY$ ="y" OR  INKEY$
="Y" THEN  LET n=2: PAUSE 10: BE
EP 1,55: GO TO 49
  47 IF  INKEY$ ="n" OR  INKEY$
="N" THEN  LET n=0: PAUSE 10: BE
EP 1,30: GO TO 49
  48 GO TO 46: GO TO 47
  49 CLS : PRINT  AT 10,4;b$: PR
INT  AT 2,4; INK 7; INVERSE 1;"C
ARD 2": PRINT  AT 20,3;q$: BORDE
R 2
  50 IF  INKEY$ ="y" OR  INKEY$
="Y" THEN  LET n=n+4: PAUSE 10:
BEEP 1,55: GO TO 55
  51 IF  INKEY$ ="N" OR  INKEY$
="n" THEN  LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 55
  53 GO TO 50: GO TO 51
  55 CLS : PRINT  AT 10,4; INK 7
;c$: PRINT  AT 2,4; INK 7; INVER
SE 1;"CARD 3": PRINT  AT 20,3;q$
: BORDER 3
  56 IF  INKEY$ ="y" OR  INKEY$
="Y" THEN  LET n=n+1: PAUSE 10:
BEEP 1,55: GO TO 60
  57 IF  INKEY$ ="n" OR  INKEY$
="N" THEN  LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 60
  58 GO TO 56: GO TO 57
  60 CLS : PRINT  AT 10,4; INK 7
;d$: PRINT  AT 2,4; INK 7; INVER
SE 1;"CARD 4": PRINT  AT 20,3; I
NK 7;q$: BORDER 4
  61 IF  INKEY$ ="Y" OR  INKEY$
="y" THEN  LET n=n+16: PAUSE 10:
 BEEP 1,55: GO TO 65
  62 IF  INKEY$ ="n" OR  INKEY$
="N" THEN  LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 65
  63 GO TO 61: GO TO 62
  65 CLS : PRINT  AT 10,3; INK 7
;e$: PRINT  AT 2,4; INK 7; INVER
SE 1;"CARD 5": PRINT  AT 20,4; I
NK 7;q$: BORDER 5
  66 IF  INKEY$ ="y" OR  INKEY$
="Y" THEN  LET n=n+32: PAUSE 10:
 BEEP 1,55: GO TO 70
  68 IF  INKEY$ ="n" OR  INKEY$
="N" THEN  LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 70
  69 GO TO 66: GO TO 68
  70 CLS : PRINT  AT 10,3; INK 7
;f$: PRINT  AT 2,4; INK 7; INVER
SE 1;"CARD 6": PRINT  AT 20,3; I
NK 7;q$: BORDER 6
  73 IF  INKEY$ ="y" OR  INKEY$
="Y" THEN  LET n=n+8: PAUSE 10:
BEEP 1,55: GO TO 80
  74 IF  INKEY$ ="n" OR  INKEY$
="N" THEN  LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 80
  76 GO TO 73: GO TO 74
  80 CLS : BORDER 1: PRINT  AT 1
4,4; INK 7;"I BET YOUR NUMBER IS
  "; FLASH 1;n
  81 INPUT "AM I CORRECT (Y/N) "
;Y$
  82 FOR U=1 TO 25: IF Y$="Y" OR
 Y$="y" THEN  PRINT  AT 18,3; FL
ASH 1; INK 7;"BRAINS IS THE NAME
": BEEP .1, RND *U: NEXT U
  83 FOR T=25 TO 1 STEP -1: IF Y
$="n" OR Y$="N" THEN  PRINT  AT
18,1; INK 7;"WELL ! "; INK 5; FL
ASH 1;"WE"; INK 7; FLASH 0;" ARE
 NOT ALL PERFECT.": BEEP .1,T: N
EXT T
  90 PAUSE 50: PRINT  AT 20,5; I
NK 4; FLASH 1;"PRESS A KEY": PAU
SE 0: CLS
 100 PRINT  AT 6,6; INK 5;"PRESS
 DESIRED KEY"
 105 PRINT  AT 10,4; INK 4; FLAS
H 1;"(R)"; INK 5; FLASH 0;" RUN"
; AT 12,4; INK 4; FLASH 1;"(S)";
 INK 5; FLASH 0;" SAVE"; AT 14,4
; INK 4; FLASH 1;"(E)"; INK 5; F
LASH 0;" END"
 106 IF  INKEY$ ="R" OR  INKEY$
="r" THEN  BEEP .1,55: CLS : RUN
 : GO TO 106
 109 IF  INKEY$ ="s" OR  INKEY$
="S" THEN  CLS : BEEP .1,55: PRI
NT  AT 19,2; INK 5;"YOU ARE SAVI
NG "; FLASH 1;"NUMBER GAME": SAV
E "N/GAME" LINE 1: GO TO 109
 111 IF  INKEY$ ="E" OR  INKEY$
="e" THEN  BEEP .1,55: RANDOMIZE
  USR 0: GO TO 111
 112 GO TO 106: GO TO 109
1000 DATA "2 3 6 7 10 11 14 15

          18 19 22 23 26 27 30
31
          34 35 38 39 42 43 46
 47
          50 51 54 55 58 59 6
2 63"
1001 DATA "4 5 6 7 12 13 14 15

          20 21 22 23 28 29 30
31
          36 37 38 39 44 45 46
47
          52 53 54 55 60 61 62
63"
1003 DATA "1 3 5 7 9 11 13 15

          17 19 21 23 25 27 29
31
          33 35 37 39 41 43 45
47
          49 51 53 55 57 59 61
63"
1004 DATA "16 17 18 19 20 21 22
23
          24 25 26 27 28 29 30
31
          48 49 50 51 52 53 54
55
          56 57 58 59 60 61 62
63"
1005 DATA "32 33 34 35 36 37 38
39
          40 41 42 43 44 45 46
47
          48 49 50 51 52 53 54
55
          56 57 58 59 60 61 62
63"
1006 DATA "8 9 10 11 12 13 14 15

          24 25 26 27 28 29 30
31
          40 41 42 43 44 45 46
47
          56 57 58 59 60 61 62
63"
2001 FOR g=1 TO 6: PRINT  AT 1,1
0; INK g;"NUMBER GAME": BEEP .1,
g: NEXT g: NEXT g
2005 PRINT  AT 8,2; INK 7;"YOU M
UST THINK OF A NUMBER "; AT 9,2;
"BETWEEN 1 AND 63."; AT 11,2;"WH
EN YOU HAVE THOUGHT OF A "; AT 1
2,2;"NUMBER, THEN CHECK THE 6 CA
RDS"; AT 13,2;"IF YOUR NUMBER IS
 ON THE CARD,"; AT 14,2;"THEN PR
ESS 'Y'."; AT 16,2;"IF YOUR NUMB
ER IS NOT"; AT 17,2;" THEN PRESS
"; AT 18,2;"'N'."
2006 PAUSE 170: FOR R=17 TO 2 ST
EP -1: PRINT  AT 20,R; INK 4; BR
IGHT 1;" AS---PRESS A KEY ": BEE
P .1,R: NEXT R: PAUSE 0: CLS
2010 PRINT  AT 4,4; INK 5; BRIGH
T 1;"THINK OF A NUMBER BETWEEN";
 AT 6,8; INK 6;"1 AND 63"
2011 PAUSE 50: PRINT  AT 9,10; I
NK 6; FLASH 1;"O.K": PRINT  AT 1
4,14; INK 5; FLASH 1;"Y/N": PRIN
T  AT 11,2; INK 7;"HAVE YOU THOU
GHT OF A NUMBER": IF  INKEY$ ="Y
" OR  INKEY$ ="y" THEN  GO TO 20
20:
2012 IF  INKEY$ ="N" OR  INKEY$
="n" THEN  CLS : GO TO 2000
2013 GO TO 2011: GO TO 2012
2020 CLS : RETURN
```

SNOOKER

ONE OF the first things to do when playing **Snooker** is to make a note of the instructions. Although the game contains no graphics, it is very interesting and the players can choose the number of frames to play. If the asterisk finishes beneath an "R" it means you have potted a ball and you then have a chance to play a colour.

Snooker was written for the 16K ZX-81 by M Gibbs of Sneinton Dale, Notts.

```
   1 SAVE "SNOOKER"
   5 LET X=7
  10 DIM A$(2,12)
  20 LET B$="RED    YELLOWGREEN B
ROWN BLUE   PINK   BLACK FINISH"
  30 DIM F(2)
  35 GOSUB 6000
  40 PRINT " INPUT NAMES (12 LET
TERS MAXIMUM)"
  50 INPUT A$(1)
  60 INPUT A$(2)
  70 PRINT A$(1),A$(2)
  80 PRINT ,,,,"HOW MANY FRAMES
?"
  90 INPUT FR
 100 LET C$="YYGBBPB"
 110 LET FW=0
 120 LET Q=0
 140 DIM W(2)
 200 CLS
 210 LET AG=0
 220 DIM S(2)
 230 LET T=INT (RND*2)+1
 240 LET RE=15
 245 LET W(1)=1
 250 IF RE>0 AND X<>1 THEN GOTO
270
 260 LET W(1)=INT (RND*10)+1
 270 LET B=0
 290 LET V=1
 355 IF RE=0 THEN GOTO 800
 380 GOTO 1000
 600 DIM Z(12)
 610 FOR I=1 TO 12
 620 LET Z(I)=INT (RND*14)+1
 630 NEXT I
 635 FOR I=1 TO 6
 640 PRINT AT 7+I,24;"          "
 645 PRINT AT 7+I,15;I+1;".";B$(
(I*6)+1 TO (I+1)*6);TAB 24;Z(I);
TAB 28;Z(I+6)
 650 NEXT I
 660 INPUT X
 670 LET W(2)=Z(X-1)
 675 LET W(1)=Z(X+5)
 677 LET V=2
 680 GOTO 1100
 800 IF RE=0 THEN LET X=1
 810 LET X=X+1
 820 LET RE=-1
 850 IF X=8 THEN GOTO 4000
1050 IF RE>0 THEN LET X=1
1100 FOR I=1 TO 15
1150 IF I=15 THEN PRINT AT 18,30
;"F"
1200 IF I>W(V) AND I<>15 THEN PR
INT AT 18,I*2;"O"
1250 IF I<=W(V) THEN PRINT AT 18
,I*2;C$(X)
1270 NEXT I
1280 GOSUB 7000
1290 PRINT AT 19,Q*2;" "
1400 LET Q=INT (RND*15)+1
1450 PRINT AT 19,Q*2;"*"
1500 IF INKEY$="0" THEN GOTO 200
0
1510 IF INKEY$="F" THEN GOTO 400
0
1550 PRINT AT 19,Q*2;" "
1600 GOTO 1400
2000 IF Q>W(V) THEN GOTO 2100
2010 PRINT AT 10,0;"POT ";B$((X
-1)*6)+1 TO X*6)
2020 LET B=B+X
2030 PRINT "BREAK=";B
2040 IF X=1 THEN LET RE=RE-1
2050 IF X=1 THEN GOTO 600
2055 LET V=1
2060 IF RE<=0 THEN GOTO 800
2070 GOTO 1000
2100 IF Q<>15 THEN GOTO 3000
2150 LET FW=X
2200 IF FW<=4 THEN LET FW=4
2400 PRINT AT 15,0;"FOWL ";FW;"
AWAY"
2500 FOR I=1 TO 50
```

```
2600 NEXT I
2700 PRINT AT 15,0;"
"
3000 LET S(T)=S(T)+B
3100 PRINT AT 10,0;"                "
3200 PRINT "                "
3300 IF T=1 THEN GOTO 3420
3400 IF T=2 THEN LET T=1
3410 GOTO 3450
3420 LET T=2
3450 IF AG=1 THEN RETURN
3500 IF FW=0 THEN GOTO 250
3600 LET S(T)=S(T)+FW
3650 LET AG=1
3700 LET FW=0
3800 GOTO 250
4000 LET S(T)=S(T)+B
4010 IF S(1)>S(2) THEN LET F(1)=
F(1)+1
4100 IF S(1)<S(2) THEN LET F(2)=
F(2)+1
4120 GOSUB 7000
4140 FOR J=1 TO 50
4145 NEXT J
4150 IF F(1)=INT (FR/2)+1 OR F(2
)=INT (FR/2)+1 THEN GOTO 5000
4200 IF S(1)<>S(2) THEN GOTO 200
4300 LET X=6
4350 LET W(1)=INT (RND*4)+1
4400 GOTO 800
5000 CLS
5100 PRINT A$(1);" ";F(1),A$(2);
" ";F(2)
5200 STOP
6000 PRINT "**** SNOOKER : HOW T
O PLAY ****"
6010 PRINT "
"
6020 PRINT " TO STOP THE ""*"" P
RESS  ""0"""
6030 PRINT " TO END THE FRAME  P
RESS ""F"""
6040 PRINT
6050 PRINT "IF YOU FINISH UNDER
THE ""0"" IT  IS THEN YOUR OPPON
ENTS TURN "
6060 PRINT
6070 PRINT "IF YOU FINISH UNDER
THE ""R"" YOU HAVE POTTED THE BA
LL AND IT IS  YOUR TURN TO GO FO
R A COLOUR"
6080 PRINT "YOU MAY THEN SEE  2
.YELLOW 11 6"
6090 PRINT
6100 PRINT " IF YOU GO FOR THE Y
ELLOW YOU  INPUT 2.YOU THEN HA
VE 11 YELLOWS AND IF YOU POT THA
T,6 REDS"
6110 PRINT
6120 PRINT " IF YOU FINISH UNDER
 THE ""F"" YOU HAVE FOWLED AND G
IVE THE PENALTYAWAY. YOUR OPPONE
NT MAY ASK YOU TO PLAY AGAIN BY
PRESSING ""A"" OR NOT BY PRESSIN
G ""0"""
6200 IF INKEY$="" THEN GOTO 6200
6400 CLS
6500 RETURN
6900 STOP
7000 PRINT AT 5,0;"
                "
7050 PRINT AT 0,30;"  "
7100 IF RE>0 THEN PRINT AT 0,9;F
(1);" FRAMES ";F(2);TAB 25;"REDS
:";RE
7200 IF RE<=0 THEN PRINT AT 0,9;
F(1);" FRAMES ";F(2);TAB 25;B$((
(X-1)*6)+1 TO X*6)
7300 PRINT TAB 3;A$(1),A$(2)
7400 PRINT TAB 8;S(1);TAB 18;S(2
)
7500 PRINT AT 5,0;A$(T);" TO PLA
Y"
7600 IF AG=1 THEN GOTO 8000
7700 RETURN
8000 PRINT AT 5,20;"PLAY AGAIN?"
8100 IF INKEY$="A" THEN GOTO 850
0
8200 IF INKEY$="0" THEN GOTO 900
0
8300 GOTO 8100
8500 GOSUB 3300
9000 LET AG=0
9100 GOTO 7000
```

TEST PILOT

YOU ARE on a test flight in a new fighter aircraft when the controls malfunction. The aircraft flies into a valley and you must guide it through the narrow passageways, avoiding the walls.

After loading the program RUN 100 and enter the following data: 33, 123, 64, 62, 231, 219, 254, 203, 103, 202, 149, 64, 203, 87, 194, 150, 64, 52, 52, 53, 42, 14, 64, 6, 0, 78, 201. Lines 100-103 can then be deleted.

Test Pilot was written for the 16K ZX-81 by Michael Hicken, of Cardigan, Dyfed.

```
  1 REM AAAAAAAAAAAAAAAAAAAAAAA
AAAA(=+-*-+=<>)(?:$£$:?()><=+-*/
;,.0123210.,;/*-+=<><=+-*/;/*-+=
<>)()>
  2 LET A$="■■    ■■"
  3 FOR I=VAL "0" TO VAL "9"
  4 PRINT TAB LEN A$;A$
  5 NEXT I
  6 POKE 16507,CODE "£"
  7 FOR U=VAL "0" TO LEN A$
  8 FOR I=VAL "0" TO CODE "INKE
Y$"
  9 SCROLL
 10 PRINT AT 0,PEEK 16507;
 11 IF USR 16514=128 THEN GOTO
20
 12 PRINT "V";AT 9,PEEK (I+1654
1)-12;A$
 13 NEXT I
 14 IF U=VAL "3" THEN LET A$="■
■    ■■"
 15 IF U=LEN A$ THEN LET A$="■■
■■"
 16 NEXT U
 20 PRINT I+U*CODE "PI"
100 FOR I=16514 TO 16540
101 INPUT A
102 POKE I,A
103 NEXT I
```

World-beating computer thrown on scrap heap

LIKE many others, I was caught by the computer revolution and managed to persuade my parents to buy me a ZX-81 in March, 1982. Last Christmas I was given a Spectrum as well but now, after the joy of 48K and a reasonable keyboard, I find it extremely difficult to return to the primitive ZX-81 with its wobbling RAM pack.

The only trouble is that it seems impossible to sell on the second-hand market, although it is still working well and has had no faults. Are people still buying them? What can I do to sell it? Or should I put it down?

I must say, however, that all the time I have been using a computer I have been buying *Sinclair User* and *Sinclair Programs* and, for the money, I think they are the best. One of my favourite games was Treasure Hunt for the 16K ZX-81, which was published long ago. I intend to convert it with a more advanced version for my Spectrum.

Thank you again for a great magazine. Keep it up.

J Freeman,
Wakefield,
West Yorkshire.

Meet your match

IN THE APRIL edition of *Sinclair Programs* I saw a program called Matches for the ZX-81. Probably like many other people I considered it a good game, so decided to program it into my computer. When I had finished programming I ran the program and, after doing so many times, I found it was impossible to beat the computer, because the computer always takes away two of the 23 matches, leaving 21.

Then the person playing takes away either one, two or three of the matches. After your turn the computer then does the same but always takes away such a number that both numbers added together make a total of four matches which have been taken away. It repeats that action every round until you find that you are forced to take away the last match. In the description of the game it said that it was not easy to win but I have found that to be untrue — it is impossible to win.

Jason Goodwin,
Shaw, Olham.

Alphabet record

IN *The Best of Sinclair Programs,* Spring/Summer, 1984 there was a program for the 16K ZX-81 called Alphabet Timer. The published record was 179 units. The first time I tried it I scored 564 units but the next time 109 units. I should be interested to know if anyone has beaten my score.

Duncan Cayless,
Banbury, Oxon.

Squashed ants

I AM writing to tell you about my highest score on Ant Raid, published in the April edition of *Sinclair Programs.* I managed to squash 56 ants before the ants ate my fruit. I would like to know if anyone has beaten my score.

Stephen Tunstall,
Leyland,
Lancashire.

Best programs

I ENJOY going to my local newsagent every month for my copy of *Sinclair Programs.* I started collecting the magazine at the beginning of the year. I found it had as many ZX-81 as Spectrum programs, which is unusual as well as fair. I had missed some programs in other issues so I was glad to see *The Best of Sinclair Programs* where I found some of the programs I had missed. I would also like to wish *Sinclair Programs* good luck.

Paul Taylor,
aged 12,
Shoreham-on-Sea,
Sussex.

● The Best of Sinclair Programs, *containing 100 of the best programs we published last year, is available from newsagents now for £2.25.*

48K problems

I AGREE that you have some exciting programs but when I bought my first edition, the April, 1984 issue, to my dismay I found of the 30 programs you printed only three were for the 48K Spectrum.

There are those of us who own them, although to look in your magazine you would not think so. I am sure I am writing for other 48K Spectrum owners who would appreciate it if you would print the same number of programs for the ZX-81 and both Spectrums.

Kenneth Bridge,
Bedworth,
Warwickshire.

● *All Spectrum programs printed in* Sinclair Programs *will run on the 48K model. Those which are described as being for the 48K machine will run only on the 48K.*

Drum analysis

I AM WRITING because I need a tuning instrument urgently for guitars or drums. I play tablas, a set of drums which require fine tuning. My ear is not, as yet, sufficiently developed.

In the March, 1984 issue of *Sinclair Programs* I saw a program called Voice Sound Analyser which would be satisfactory except that it is for a Spectrum and I have a ZX-81. Can the program be converted to run on a ZX-81? My machine is a 16K.

I think your magazine is the best for price against quality; all the other magazines are twice your price and I am amazed that they sell.

Colin Green,
Portsmouth, Hampshire.

● *If any readers have converted Voice Sound Analyser for the ZX-81 please let us know and we can pass the information to the writer.*

Jet set poke

FOR ALL Jet-Set Willy fans, here is a simple POKE to make Willy indestructible. All you have to do is type MERGE " " before LOADing. When the OK message appears type:

35 POKE 35899,0 (enter)

Then type RUN and start the tape. When the full program has loaded, Willy will be indestructible. If, however, you manage to get the program working so that Wily is being killed continually, CAPS SHIFT and BREAK will take you back to the music and triangle at the beginning of the program.

My record is 63 items collected.

Dave Shortman,
Hull, East Yorkshire.

Polish user

I AM SORRY about my poor English but I have not been to England for 37 years, since I was a Polish soldier. I hope that you can help me to improve my knowledge of the ZX-81 and English.

Could you send me listings, cassettes and books published for the 1K ZX-81? In exchange I can send you sets of Polish stamps. Do you have any philatelists among your readers? Can you also send me listings for games?

I hope that you can send me interesting programs for the 1K ZX-81. I can also speak Italian, Polish and German.

Joszf Piotr Mrowec,
wl. Anlota nr 4,
Skr poczt.2205,
40 936 Katowice Zalaze,
Poland.

● *If any reader is interested in contacting him, his address is given above.*

Searching and sorting on Sinclair computers

Computers can examine data more quickly and efficiently than humans can. David Janda shows how you can make use of this ability in your programs.

IF YOU have ever wondered what computers are really good at doing, wonder no longer — the answer is searching and sorting. They are so good at it that about 40 percent of all data processing on big computers is taken up by those two tasks alone.

Coming down to earth, humble ZX users can still make use of searching and sorting in our programs and many commercial programs we buy incorporate search and sort routines, even if we do not realise it.

The types of data we search and sort are numerous — pieces of text in word processing programs, records and fields in a databases, and so on. As for sorting, the situation is the same — there are so many applications it is unbelievable. Games, too, can use search and sort techniques; the program of the month, **Mad Jumper,** uses a small sort routine to ensure the top five scores and names are kept in order.

The problem for the user of the routines is which to use. There are so many algorithms for searching and sorting that complete volumes have been written on the subject.

The reason behind this plethora is that each routine is good for a particular task. Taking sorting as an example, there are routines which are good for sorting small sets of numbers, large sets, medium-sized sets, even numbers in general. You name it and there is bound to be a search or sort routine to cater for your needs.

It should be noted that all searching and sorting should be carried-out on a data structure, in our case the array. It can be numeric or string, with single or multiple dimensions. Searching or sorting can also be performed on strings and, to a degree, on memory locations but that is best done in machine code.

The two main reasons why searching/sorting should be done on an array are because it is a convenient means of storing data and individual pieces of data can be referenced easily.

Program 1.

```
 10 DIM A(10)
 20 PRINT "ENTER 10 NUMBERS"
 30 FOR C=1 TO 10
 40 INPUT A(C)
 50 NEXT C
 60 PRINT "ENTER A NUMBER THAT
    YOU"
 70 PRINT "IS IN THE ARRAY"
 80 INPUT T
 90 REM THE SEARCH
100 FOR C=1 TO 10
110 IF A(C)=T THEN GOTO 200
120 NEXT C
130 PRINT "THAT NUMBER IS NOT
    PRESENT"
140 GOTO 60
200 PRINT "FOUND ";T;" IN
    POSITION" ;A(C)
```

Program one is a sequential search of a numeric array. You can see that the array A is filled with the numbers from one to 10. You then enter the number you wish to look for and the program searches the array for the specified number which is held in T. Notice that the search line is in line 110, where the content of each element in array A is looked at.

Program two demonstrates how a string can be searched. Because the string-handling on Sinclair machines is very powerful, it allows us to examine any portion of the string to be searched. So string S$ contains the main text and string T$ contains the text to be searched for.

The business end of the program is the loop at lines 60-80. The loop index P is used as a pointer on the main string S$. As P is moved on to the next element — character — of the string, the target string T$ is compared to the main string from position P to P+ the length of T$. If you have grasped that, you will understand why the length of the FOR..NEXT loop is not equal to the length of S$. That is best demonstrated by an example:

If S$ contains THIS IS A STRING and T$ contains STRING, the length of S$ is 16 and T$ is 6. When the loop index P reaches 11, the situation looks like this:

```
THIS IS A STRING
      STRING
```

That is satisfactory and we have a match but if the loop boundary is extended to the length of S$, we might have a situation like this:

```
THIS IS A STRING
      STRING
```

An error would be reported because we have tried to reach beyond the length of string S$. Program two will not allow that to happen.

Program 2.

```
10 REM STRING SEARCH
20 PRINT "ENTER STRING"
30 INPUT S$
40 PRINT "ENTER STRING TO BE
   SEARCHED FOR"
50 INPUT T$
60 FOR P=1 TO (LEN S$-LEN T$+1)
70 IF S$(P TO (P+LEN T$)-1)=T$
   THEN PRINT "FOUND"
80 NEXT P
```

The last search to be dealt with is one of the fastest searches. To understand how it works, imagine you are looking for a telephone number for John Smith. You open the telephone directory and hold with one hand all the S section. Divide the S section in half and look at the name on the top. If it is greater than Smith you divide the section between the beginning and the opened section. If it is less than Smith, you divide the remaining section in half. That is repeated until you will finally reach the name you want.

The method is called a binary chop and it works by shrinking the area to be searched constantly as the search progresses. It is so efficient that if we could dimension an element of one million DIM A(1000000) it would need to look at no more than 20 entries before the item was found.

Program 3.

```
 10 DIM A(1000)
 20 FOR C=1 TO 1000
 30 LET A(C)=C
 40 NEXT C
 50 PRINT "ENTER NUMBER TO
    FIND"
 60 INPUT T
 70 LET F=1
 80 LET L=1000
 90 LET M=INT ( (F+L)/2)
100 IF T<A(M) THEN LET L=M-1
110 IF T>A(M) THEN LET F=M-1
120 IF F>L THEN GOTO 200
130 IF T< >A(M) THEN GOTO 90
140 PRINT "FOUND ";T
150 STOP
200 PRINT "FAILED TO FIND ";T
```

Program 4.

```
 10 LET P=10
 20 LET X=0
 30 LET T=0
 40 LET Z=0
 50 DIM A(10)
 60 FOR C=1 TO 10
 70 LET A(C)=INT (RND*65535)
 80 PRINT AT C+5,10;A(C)
 90 NEXT C
100 LET S=0
110 LET Z=Z+1
120 PRINT AT 21,20;"PASS ";Z
130 FOR C=1 TO 9
140 LET X=X+1
150 PRINT AT 21,0;"COMP ";X
160 IF A(C)<=A(C+1) THEN GOTO 360
170 PAUSE P
180 PRINT AT C+5,10;"(5* sp)"; AT C+5,16;A(C)
190 PAUSE P
200 PRINT AT C+6,10;"(5* sp)"; AT C+6,4;A(C+1)
210 PAUSE P
220 PRINT AT C+5,16;"(5* sp)"; AT C+6,16;A(C)
230 PAUSE P
240 PRINT AT C+6,4;"(5* sp)"; AT C+5,4;A(C+1)
250 PAUSE P
260 PRINT AT C+6,16;"(5* sp)"; AT C+6,10;A(C)
270 PAUSE P
280 PRINT AT C+5,4;"(5* sp)"; AT C+5,10;A(C+1)
290 PAUSE P
300 LET T=A(C)
310 LET A(C)=A(C+1)
320 LET A(C+1)=T
330 LET S=1
340 LET Y=Y+1
350 PRINT AT 21,10; "SWAPS ";Y
360 NEXT C
370 IF S=1 THEN GOTO 100
```

Enter and run program three which is set up with 1,000 numbers. To see the numbers being examined include the extra line 135 PRINT A(M).

The difficulty with many search algorithms including the binary chop is that the data to be searched must already be in an ordered form. There are so many sorts, each good for their own purpose, that it would be impossible to mention them all. Here is a small selection. One of the most common sorts is the bubble sort which is used extensively in data processing. Why it is used is beyond me, as it is one of the slowest and most inefficient sorts. The only good thing about it is that it is easy to implement and that, I suppose, is part of the reason for its popularity.

Pairs of numbers are considered and if one is greater than the next they are swapped. That happens until the end of the list is reached. Note that the list is not sorted yet and the program has to go through the list again until no more swaps are performed in a pass.

The data following represents one pass of the list. Note that the 21 has been shuffled to the right but the 9 has moved only one place to the left.

Enter and run program four, which not only sorts the five numbers but also displays them bubbling up — hence the name — in order. To change the speed alter the value of P at line 10.

```
10  21  16   5  12   9
10  16  21   5  12   9
10  16   5  21  12   9
10  16   5  12  21   9
10  16   5  12   9  21
```

There are many other sorts — heap sort, insertion sort, quicksort and so on. Of them all, there is one which is very popular among micro users because it is fast.

Program 5.

```
 10 DIM A(100)
 20 FOR C=1 TO 100
 30 LET A(C)=INT(RND*1000)
 40 NEXT C
 50 REM THE SORT
100 LET S=100
110 LET S=INT(S/2)
120 IF S=0 THEN GOTO 240
130 LET PL=100-S
140 LET J=1
150 LET I=J
160 LET L=I+S
170 IF A(I)<=A(L) THEN GOTO 210
180 LET T=A(I)
182 LET A(I)=A(L)
185 LET A(L)=T
190 LET I=I-S
200 IF I>=1 THEN GOTO 160
210 LET J=J+1
220 IF J>P THEN GOTO 110
230 GOTO 150
```

Program five is the ever-popular Shell-Metzner sort, one of the fastest. The operation is complex, so I will not explain it. Note that the bigger the list, the better the Shell-Metzner performs.

Program six is strange in that it sorts things in a random order. That may seem strange but it never repeats any number, so we can use it to shuffle a pack of cards.

Enter and run program six, which first will print the names of the cards in order and then shuffle the pack and print it again, but in its shuffled state. I leave it to you to determine how it works.

Program 6.

```
 10 REM CARD SHUFFLE
 20 REM CREATE CARDS
 30 DIM A(52)
 40 FOR A=1 TO 52
 50 LET A(A)=A
 60 GOSUB 250
 70 NEXT A
 80 REM SHUFFLE CARDS
 90 LET B=52
100 LET C=0
110 LET R=INT(RND*B)+C
120 IF B=0 THEN GOTO 200
130 LET F=A(B)
140 LET A(B)=A(R)
150 LET A(R)=F
160 LET B=B-1
170 LET C=C+1
180 GOTO 110
190 REM DISPLAY CARDS
200 PRINT
210 FOR A=1 TO 52
220 GOSUB 250
230 NEXT A
240 STOP
250 IF A(A)<14 THEN LET S$="
    CLUBS"
260 IF A(A)>13 AND A(A)<27 THEN
    LET S$=" DIAMONDS"
270 IF A(A)>26 AND A(A)<40 THEN
    LET S$=" SPADES"
280 IF A(A)>39 THEN LET S$="
    HEARTS"
290 LET T=INT(A(A)/13)+1
300 IF A(A)=1 OR A(A)=14 OR A(A)=27
    OR A(A)=40 THEN LET N$="ACE
    "
310 IF A(A)=11 OR A(A)=24 OR A(A)=37
    OR A(A)=50 THEN LET N$="JACK
    "
320 IF A(A)=12 OR A(A)=25 OR A(A)=38
    OR A(A)=51 THEN LET
    N$="QUEEN "
330 IF A(A)=13 OR A(A)=26 OR A(A)=39
    OR A(A)=52 THEN LET N$="KING
    "
340 IF T>3 THEN LET T=A(A)-39 :
    GOTO 380
350 IF T=3 THEN LET T=A(A)-26 :
    GOTO 380
360 IF T=2 THEN LET T=A(A)-13 :
    GOTO 380
370 IT T=1 THEN LET T=A(A)
380 IF T>1 AND T<11 THEN LET
    N$=STR$(T)+" "
390 PRINT N$; "OF";S$;" ";A(A)
400 LET S$="" : LET N$="" : LET
    T=0
410 RETURN
```

Wanted — racing driver, pilot, prime minister . . .

Simulation programs are fun and educational. Among a selection of excellent games, many of them best-sellers, we find one leads the field.

SPEND YOUR TIME playing **Manic Miner** or **The Hobbit** and, although you may gain remarkable proficiency on the Spectrum keyboard, the chances are that you will not feel any better-equipped for any real-life experiences of wandering beneath the streets of Surbiton, or controlling the movements of a recalcitrant dwarf. Spend your time playing simulation games and not only will you enjoy some of the best games on the market but also you will benefit from the educational qualities of simulation games.

Whether your dream has always been to bring the government to its knees, form a successful rock band, become a millionaire or simply to get away from the city and take up sport in the countryside, there is a simulation game designed to help you achieve your dream in the comfort of your home. Simulation games put you into the place of another person, a jet pilot for example, provide some background information and instructions, and then allow you to make all the decisions.

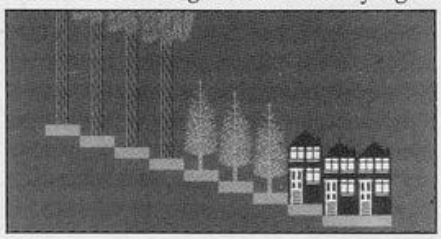
Unrivalled success

In the field of simulation games nothing has arrived in the *Sinclair Programs* office to rival **The Forest** — Phipps Associates, 48K Spectrum. It is a simulation of that sport seemingly least likely ever to be played on a microcomputer, orienteering. Orienteering is essentially a crosscountry race across difficult terrain, to which has been added the extra dimension of navigational problems. Contestants are supplied with a map, on which is marked a number of points, each of which must be visited in order.

Points are often separated by lakes or dense forest, so the quickest route is not necessarily a straight line but can be found only by a skilled map reader. An added complication is that the map, and the area, do not include roads, footpaths or streams, and so map and compass must be used throughout.

Graham Relf, author of The Forest has, amazingly, made it possible to orienteer with a Spectrum and, more incredibly still, has fitted 11,200 sq. km. of map into the program. When the game is loaded, the scene is the start of the course, on the edge of the town and the forest. Objective number one lies around 100 metres to the north-east and is marked by a flag on arrival. The map shows that a direct route would not be too difficult; most of it is downhill and the forest through which a straight path would run is not too dense.

It is difficult, however, to run even 100 metres through trees while trying to



follow a compass bearing, so the booklet accompanying the program suggests that beginners first aim for the nearby lake and then for the small flag in the middle of the forest.

The screen shows the view six metres in front of the player. It may be lake, tall trees, small trees, a town, or a selection of other types of terrain. Ten terrain symbols are shown on the screen at any time. Turning to right and left can be done by means of left and right cursor keys. Turning to face the way you have come is achieved by pressing the downward cursor key, and movement forward by pressing the upward cursor key.

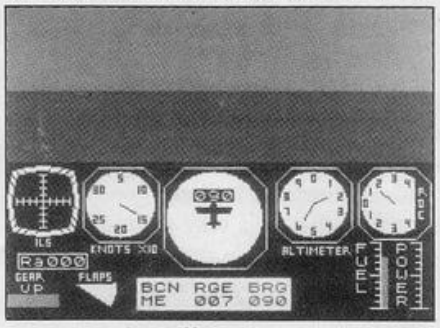
Each step you take is roughly one metre long although, as in real life, your steps will vary in length and you will move with much more difficulty uphill through thick trees than when running downhill across grass. A sight set in front of you shows where the ground directly ahead of you would be if the ground were completely level. That gives a clear indication as to whether you are running uphill or downhill.

Running on a compass bearing is not possible with a computer. It is possible to estimate on which bearing you should walk, and for how far, but most players will find that a ruler and protractor make life easier.

The forest is an extremely good educational aid for anyone wishing to teach or learn map reading, compass bearings, or simply the use of ruler and protractor. The map is very accurate and there is an immense sense of achievement to be gained from finding a flag after navigating through a kilometre of forest. The program also gives a clear idea of how contour lines marked on a map relate to hills and valleys. Experienced players will find that by following the curve of a hill as they run along, they can follow contour lines on the map, which can be very helpful when crossing large areas of forest.

Best-selling programs

Better-known simulation games are the flight simulation programs **Flight Simulation** — 48K Spectrum and 16K ZX-81, Sinclair Research — and **Fighter Pilot** — 48K Spectrum, Digital Integration — both best-selling programs. Flight Simulation allows the player to take off, fly and land an aeroplane. The aircraft controls are complex and so the long instructions should be read in full before any attempt at flying is made. Despite that, first flights tend to be unmitigated disasters. Experience quickly makes the controls and instru-

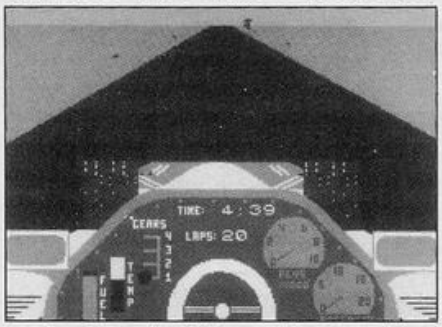


ment panels sufficiently comprehensible to make taking-off and flying possible.

The most difficult aspect of Flight Simulation is landing. There are 13 control keys to remember with which the aircraft can be controlled and even experienced simulator pilots tend to find that number is around 12 controls too many when trying to reduce height and speed at the appropriate rate, while keeping on course and keeping the air-

craft level. Fighter Pilot gives the player a bigger range of options than Flight Simulation. The player can choose between being a trainee, squadron instructor or ace pilot. Flight, take-off and landing can be practised with or without the effect of cross-winds and turbulence. As can be deduced from the program title, other options include not more complicated routes or aerial manoeuvres but the opportunity to kill as many other pilots like yourself as you wish.

While both Fighter Pilot and Flight Simulation are excellent simulation programs, the wider range of options open



to the player in Fighter Pilot provide a more lasting challenge.

Chequered Flag — Sinclair Research, 48K Spectrum — is also a well-known example of a simulation game. The screen display is of the driver's view from a racing car. Before the game begins the driver can choose between three cars and a variety of the most famous racing circuits in the world.

As in a real car, there are a variety of controls from which to choose, although in a real car drivers are not expected to steer, accelerate, brake and change gear all with their hands. Moving at high speed is hair-raising enough, without the added difficulty of having to search for the brake quickly among a group of very similar Spectrum keys.

Not a novel experience

As a simulation the game is not as successful as flight simulation programs, partly because the large number of its imitators make the idea of driving a car on your Spectrum seem stale. Driving a car or being driven in a car is not a novel experience for Spectrum owners and so differences from real life are much more apparent than when trying to fly an aeroplane.

1984 — Incentive Software, 48K Spectrum — gives the player control of the Government of Britain from 1984 onwards. All decisions on Government spending and allocation of resources are made by the player. Radical changes in spending will not be accepted by the computer and budgetary changes which leave certain departments short of money will be queried by the computer before they are accepted.

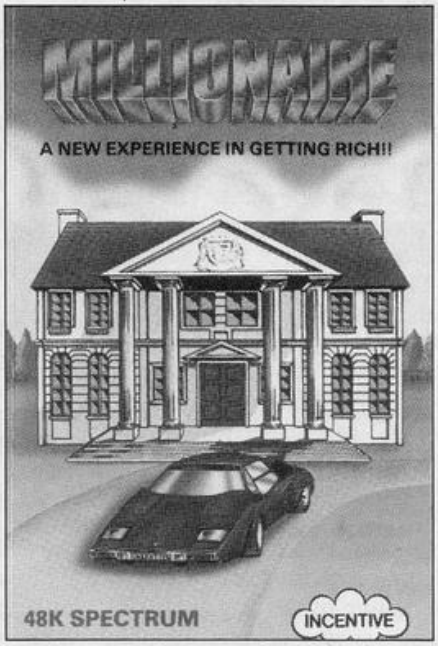
Management game

1984 states that it is "a game of Government management" and so computer owners wishing to become involved in other aspects of British political activity, or to overthrow the Government and set up a different political system, will not find it suited to their needs.

The cassette insert includes a complex diagram, demonstrating how different sections of the economy are linked and what effects budgetary changes in any area will have. Students of economics or government may find it a helpful game to play, although it is necessarily simplistic in some areas.

It is a complex and well-thought-out simulation game. People using it for educational purposes, though, will find that the help of an experienced teacher would be necessary to indicate the problems which necessarily will arise when the player attempts to run the country on a microcomputer.

Rather more frivolous is **Millionaire** — Incentive, 48K Spectrum. The game



involves running a software company and the aim is to make a million pounds. It is fast-moving, easily comprehensible but necessarily repetitive with clear graphics on-screen. Decisions must be made as to which kind of software should be written, how much should be produced, how it should be advertised, and how it should be marketed.

As profits increase, the size of your house, shown at the beginning of each round, will increase from being a small terrace to a large mansion.

Production of cassettes cannot exceed a certain level each month, so once you have made all the correct decisions and are selling out of stock each month there is no chance of becoming an overnight success. Another problem with the game is the irritating over-use of a luck element throughout, so that making the same decisions two games running will produce very different results.

Over-use of chance is always a flaw in a simulation game and in Millionaire it gives rise to the suspicion that success would be obtained as quickly by throwing dice to make decisions.

Busking in the subway

Along the same lines as Millionaire is **It's Only Rock 'n' Roll** — Virgin, 48K Spectrum. The aim is to make it as a rock star, "making it" being defined in this case as earning a million pounds and acquiring three status symbols. From busking in the subway it is possible to rise to tours of Japan and the U.S., number one hit records and sold-out concerts at Wembley Stadium.

All that takes time, however, and Virgin judges rock stars to be over the hill within five years of the start of the game, or fewer if you choose a more difficult level. It is necessary, therefore, to take a few risks to achieve high popularity levels as quickly as possible. It is disappointing that once you have made it in the set time there is no winning display — you continue the game until you are over the hill and then finish.

Very similar sieges

A similar lack of any appropriate ending is apparent in **Jerico 2** — Elephant Software, 48K Spectrum. The game can be considered with **Fort Apache** — Contrast Software, 16K Spectrum — as, except in theme, the two games are remarkably similar in all respects. In both the player leads a siege, in one case on an Apache fort, in the other on the city of Jerico.

Battles must be fought, weapons and equipment built and supplies fetched. Not the most accurate of simulations and not the most involving, either. Success can be obtained on Jerico 2 within half an hour, though Fort Apache is slightly more difficult.

Despite the similarities of the games, Fort Apache is better than Jerico 2, as it makes full use of the ZX-81 facilities.

Surbiton millionaire jet sets on to screen

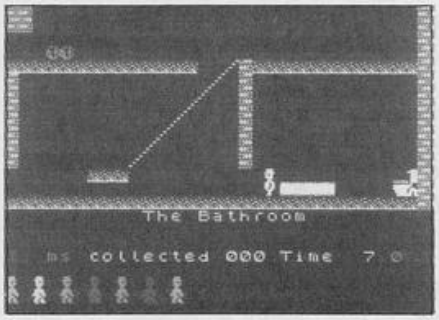
This month we focus on the exploits of hero Willy after his mining experience and on some of the best and worst new Spectrum games.

IN THE BEGINNING was **Manic Miner,** the game with the potential to break up more friendships and families than any others. Obsessed players, with eyes for nothing but Miner Willy and the mines beneath Surbiton, played all day and all night long.

Now there is **Jet Set Willy,** which is more fun, more enjoyable and more addictive than almost any game on the market. It is so addictive that not only did our review department play it for hours but members of our circulation and advertising departments remained after hours to play.

Willy, having made his fortune in the mines beneath Surbiton, must clean up his mansion after a wild party before his housekeeper will allow him to go to bed. Each room contains an obstacle course and various enemies to be avoided. Superbly animated characters fill each room, each posing a threat to the miner. The game is also a form of maze, for some rooms may be reached only by a long and tortuous route. Other rooms, such as the wine cellar and the yacht, need very exact timing to make escape possible.

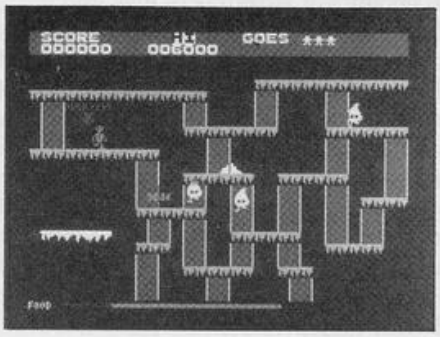
At first sight the pace of the game is sedate. Willy strolls along, bounces gently upwards, and reaches for the litter strewn round the house. Meanwhile the security guards, demons and revolving peardrops move relentlessly onwards



and the hapless player hammers at the keys.

There can be months of enjoyment from this original and brilliant game. Any Spectrum owner willing to sacrifice sleep and peace of mind should rush out and buy it immediately.

Jet Set Willy is produced for the 48K Spectrum by Software Projects, Bear Brand Complex, Allerton Road, Woolton, Liverpool. It costs £5.95.



The Snowman

THE SNOWMAN — 48K Spectrum, £5.95 — is not a new concept in computer games. It is, though, a brilliant example of a fusion of the best elements from some games already on the market, with several new ideas. The result is an attractive, gentle game which will appeal to all kinds of computer owner.

The central character must be moved round an ice structure, made up of several levels linked by ladders. On the first level the aim is to build a snowman by collecting snow from the ice structure and carrying it to the appropriate site. The main difficulty is to move the wandering flames, which will melt any snow which is being carried. If you fall from the ice structure or run out of energy you simply drift down to bed at the bottom of the screen.

An easy way of amassing points is to remain on the first level and not collect snow but instead collect the food and gifts which appear at intervals. The food supplies energy, the gifts supply points, and the only way of losing is to fall off the ice structure.

More daring players will prefer to complete their snowman as soon as possible to move to the next level. There are four levels with the same layout and they are then repeated with a different layout. The second level involves collecting the snowman's features, the third his clothes, and the fourth ice cubes to prevent him melting. Those levels are made more difficult by the sleep monsters which send you to sleep on contact and which can be defeated only by collecting alarm clocks. Quicksilva, 13 Palmerston Road, Southampton SO1 1LL.

The Pyramid

THE PYRAMID, by Fantasy Software, sends its players searching through the 15-level pyramid in search of the Ultimate Answer to Life, the Universe and Everything.

Each chamber of the pyramid is occupied by a different type of alien. To escape from a chamber, crystals must be used to neutralise the energy fields around the exit and to obtain a crystal a certain number of aliens must be destroyed.

Points are gained for the speed with which a chamber is negotiated, so the more quickly the player acts the better. Aliens must be avoided, which is not always an easy task, as each type of alien has a different flight path. Crystals must be caught at the appropriate time, guarded from destruction by aliens, and negotiated to an exit as quickly as possible.

The Pyramid works with Fuller, Kempston, AGF/Protek and Mikrogen joysticks and contains four keyboard options. It is produced for the 48K Spectrum by Fantasy Software and can be bought at W H Smith for £5.50.

Pedro

PEDRO is the eponymous hero of a new game for the 48K Spectrum. To preserve his garden, he must build a wall round it, stamp out any animals which appear, plant new seeds, and scare away the tramp who tries to steal his seeds.

Finding the correct point to stamp on an animal, pick up a brick or even plant a seed is very difficult, and since so much attention must be paid to that detail, the game quickly loses its sparkle. It is from Imagine House, 5 Sir Thomas Street, Liverpool and costs £5.50.

Sorcery

SORCERY — 48K Spectrum £5.95 — has a very ambitious scenario. The Necromancer and his demonic servants have conquered the earth, causing it to fall into the dark ages. The player is the last of the great sorcerers and it is the player's task to cross the 15 screens between the sorcerer's homeland and Stonehenge to rescue fellow sorcerers and save the world from eternal darkness.

For those who enjoy arcade games, **Sorcery** is fast and furious. The sorcerer and his enemies are large sprite graphics, the course is a form of a maze, and objects to be found on the way are useful, although their uses can be found only by experiment. The major disadvantage of the game is the keys used for movement. Q and A move the sorcerer left and right and there is no chance to re-define keys. From Virgin Games, 61-63 Portobello Road, London W11.

Timebomb

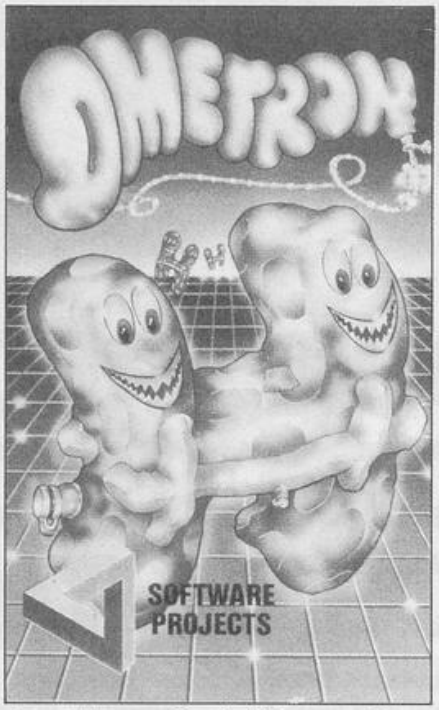
TIMEBOMB — Spectrum £5.95 — is a game which calls for fast reactions and even faster thinking. The player moves round a grid, trying to reach the time bomb as quickly as possible. If a bomb is left for too long it will explode. Each square of the grid can be touched only once on each screen and six bombs must be defused on each screen. Further complications are the static skulls and walking boots which are deadly to the touch.

The game is simple in concept and infuriatingly difficult to complete. It does not, however, have the sophistication and lasting appeal of many games on the market. To represent value for money it would have been better presented on a cassette with other games of a similar standard. From CDS Microsystems, 10, Westfield Close, Tickhill, Doncaster DN11 9LA.

Ometron

OMETRON — 48K Spectrum, £5.95 — leaves its player stranded on an uninhabited outpost of an empire to protect the landing pad there from hostile forces. The player is situated in the middle of the landing grid in a revolving turret aiming cannons.

It is yet another of those arcade-type games where the aim is to blast a number of three-dimensional space ships into oblivion and is very boring. From Software Projects, Bear Brand Com-



plex, Allerton Road, Woolton, Liverpool.

The Island

THE ISLAND — 48K Spectrum, £7.50 — is an adventure game in which the aim is to escape from a Pacific island with the treasure. The program is infuriating, for it is not an adventure which can be worked through steadily, and in which death is the inevitable consequence of bad decision-making.

Moving in certain directions will kill you instantly, without warning. One object explodes unexpectedly, another causes death if you go the wrong way with it. You survive by chance and not by skill.

It seems unlikely that any Spectrum owner will find it fun for more than a few minutes to play this repetitive, text-only adventure, which is filled with instances of the programmer's inane humour. It appears to be aimed solely at players who never read reviews. Do not be tempted to buy it. Crystal Comput-

ing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX.

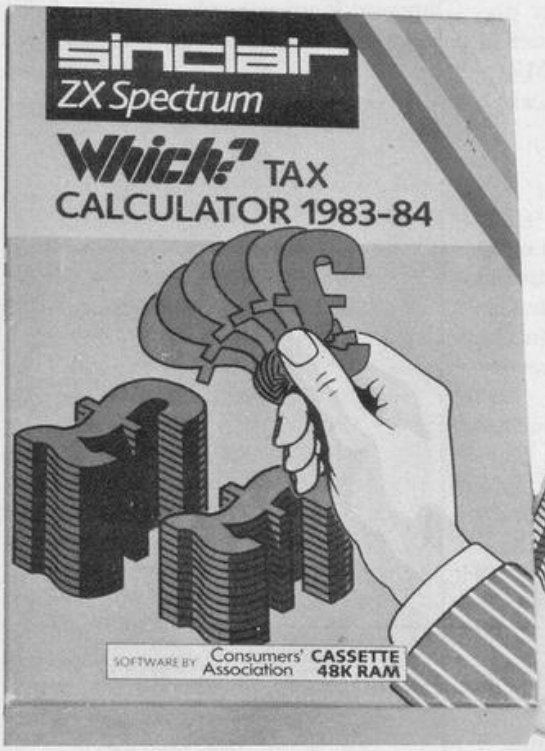
Rommel's Revenge

CRYSTAL has produced some excellent games for the Spectrum, so when the cover for **Rommel's Revenge** claims it is "a brilliant interpretation of the most visually stunning arcade game ever" it is tempting to believe it. Do not believe it.

Nowhere is the aim of the game explained, so players who have never seen the arcade game will be mystified. The reviewer was mystified. Thunder across the landscape in a tank which crashes into strange, geometric frameworks with no apparent effect, aiming for mountains which are never reached.

At that moment another tank appeared. For lack of anything else to do, it was shot. The score chart indicated that was a good thing to do, so other hapless tanks to destroy were sought. With radar scanned, the tank thundered across the landscape again. At long last another tank appeared and was shot. After another long delay, a second tank appeared, to be shot as well.

Rommel's Revenge is not gripping and it is certainly not the spectacular game claimed on the cassette cover. It also appears to be pointless. It is produced for the 48K Spectrum by Crystal Computing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX and costs £6.50.



Special offer from Sinclair Programs Save £1 on normal price!

PUT YOUR SPECTRUM TO WORK ON DAD'S INCOME TAX!

The easy-to-use Which? Tax Calculator helps ALL tax payers – not just Dad – and can save a lot of money too. Are you eligible for a rebate on your tax bill? The Which? Tax Calculator helps you find out — and tells you how much!

Specially developed by the Consumers' Association, this personal tax program for the Sinclair Spectrum reckons your personal tax accurately and automatically — taking you step-by-step through your tax form. You simply answer the questions about job earnings, building society interest and other income. Then you enter your outgoings like mortgage, and allowances — and the program does the rest, showing your correct tax assessment, and size of rebates due.

So DON'T pay more tax than you need!

Here's an EASY way to pay only the right amount: send off right away for this comprehensive, fully documented package.

Sinclair Programs

Sinclair Programs
196-200 Balls Pond Road, London N1 4AQ

Please send me the Which? Tax Calculator 83/84 for the 48K Spectrum. I enclose a cheque for £11.99 (including VAT and P & P) made payable to Sinclair Programs.

NAME _____

ADDRESS _____

_____

_____

Please allow 28 days for delivery.

PEARL DIVER

PHILIP NEWBY of Dobcross, Oldham wrote **Pearl Diver** for the 48K Spectrum. The king has sent you on a mission to collect six pearls from the legendary oyster. Dive into the ocean from your boat and collect the pearls, while avoiding the octopus, piranhas and shark. Each time you pick up a pearl you must return with it to your boat and dive again for the next one. If you disturb the oyster the game will end.

```
  10 GO SUB 7500: GO SUB 8000
 100 LET mx=2: LET my=30: LET bx
=3: LET by=my-6: LET bo=1: LET s
x=5: LET sy=3: LET ox=10: LET oy
=28: LET px1= INT ( RND *8)+5: L
ET py1= INT ( RND *20)+5: LET px
2= INT ( RND *8)+5: LET py2= INT
 ( RND *20)+5
 110 LET o$="": LET z$="": LET s
$="": LET sd=1: LET od=-1
 120 DIM p$(2,3,3): LET p1d=2: L
ET p2d=1
 130 LET p$(1,1)=" H": LET pearl
=0:
 131 LET p$(1,3)=" H": LET b$=""

 132 LET p$(1,2)="HH"
 133 LET p$(2,1)="I "
 134 LET p$(2,2)="II"
 135 LET p$(2,3)="I "
 150 LET dead=5000: LET deader=5
500: LET win=6000:
1000 LET bx1=bx: LET mx1=mx: LET
 my1=my: LET by1=by: LET sx1=sx:
 LET sy1=sy: LET ox1=ox: LET oy1
=oy: LET px11=px1: LET px21=px2:
 LET py11=py1: LET py21=py2
1010 PRINT  INK 7; PAPER 1; AT b
x,by-1;" F(5*ig8)G "; AT mx,my;
INK 9; PAPER 8;("D" AND ((mx <=
3 OR  INKEY$ ="7")))+("E" AND ((
mx>3 AND  INKEY$  <> "7"))); AT
bx-1,by-1; INK 7; PAPER 1;" "+b$
+"  "
1020 PRINT  AT ox,oy-1; INK 4; P
APER 5;o$; AT sx,sy-1; INK 1; PA
PER 5;s$; AT ox+1,oy-1; INK 4; P
APER 5;z$
1030 FOR f=1 TO 3: PRINT  AT px1
+f,py1; INK 2; PAPER 5;p$(p1d,f)
; AT px2+f,py2;p$(p2d,f): NEXT f

1040 LET mx=mx+( INKEY$ ="6" AND
 mx<18)-( INKEY$ ="7" AND mx>2)

1045 LET my=my+( INKEY$ ="8" AND
 my<31)-( INKEY$ ="5" AND my>0)

1050 LET by=by+( INKEY$ ="8" AND
 bo=1 AND by<31-7)-( INKEY$ ="5"
 AND bo=1 AND by>1)
1060 IF mx <> 2 THEN  LET bo=0

1061 IF mx=2 AND my=by+6 THEN  L
ET bo=1
1070 LET sy=sy+sd: IF sy=3 THEN
 LET sd=1:
1071 LET s$=" JAK ": IF sd=-1 TH
EN  LET s$=" LAM "
1075 IF sy=29 THEN  LET sd=-1:
1080 LET oy=oy+od: IF oy=3 THEN
 LET od=1:
1081 LET o$=" NO ": IF od=-1 THE
N  LET o$=" RS "
1082 LET z$=" PQ ": IF od=-1 THE
N  LET z$=" TU "
1085 IF oy=28 THEN  LET od=-1:

1087 IF mx <= 3 THEN  GO TO 1096

1090 LET px1=px1-.25*(mx<px1 AND
 px1<3)+.25*(mx>px1 AND px1>12)

1091 LET py1=py1-.25*(my<py1)+.2
5*(my>py1)
1092 LET py2=py2-.25*(my<py2)+.2
5*(my>py2)
1093 LET px2=px2-.25*(mx<px2 AND
 px2>3)+.25*(mx>px2 AND px2<12)

1094 LET p1d=(2 AND my>py1)+(1 A
ND my<py1)+(p1d AND my=py1)
1095 LET p2d=(2 AND my>py2)+(1 A
ND my<py2)+(p2d AND my=py2)
1096 IF mx>16 AND  ATTR (mx,my)=
47 THEN  LET pearl=1
1097 IF mx<15 AND ( SCREEN$ (mx,
my)<" " AND ( ATTR (mx,my)>40 AN
D  ATTR (mx,my)<45)) THEN  LET r
$="blood": GO TO deader: REM som
eone else got you
1100 IF pearl=1 AND bo=1 THEN  L
ET b$=b$+"B": LET pearl=0: IF b$
="BBBBBB" THEN  GO TO win
2010 PRINT  AT mx1,my1; PAPER 8;
 INK 9;(" " AND ((mx1 <= 3 OR  I
NKEY$ ="7")))+(" " AND ((mx1>3 A
ND  INKEY$  <> "7")))
2030 FOR f=1 TO 3: PRINT  AT px1
1+f,py11; INK 2; PAPER 5;"  ";
AT px21+f,py21;"  ": NEXT f
3000 GO TO 1000
5000 FOR f=0 TO 4 STEP .1: PLOT
 INK 2;57,32: DRAW  OVER 1; INK
2;100,0,-f: NEXT f
5010 FOR f=4 TO 2.1 STEP -.1: PL
OT 57,32: DRAW  INK 8; OVER 1;10
0,0,-f: NEXT f
5020 FOR f=2.1 TO .5 STEP -.1: P
LOT  INK 1;57,32: DRAW  INK 1;10
0,0,-f: NEXT f
5050 PRINT  AT 1,1;"You have los
t the pearls and    your life .Y
ou desturbed the    great oyster
 with your blood "
5499 STOP
5500 FOR f=1 TO 50: LET a=my1*8+
4+( RND *16-8): LET b=(21-mx1)*8
+4+( RND *16-8): PLOT  INK 2;(a
AND (a>0 AND a<255)),(b AND (b>0
 AND b<170)): NEXT f: GO TO 5000

5999 STOP
6000 PAPER 4: BORDER 4: CLS
6010 PRINT  AT 7,10;"(ig1:2*sp:i
```

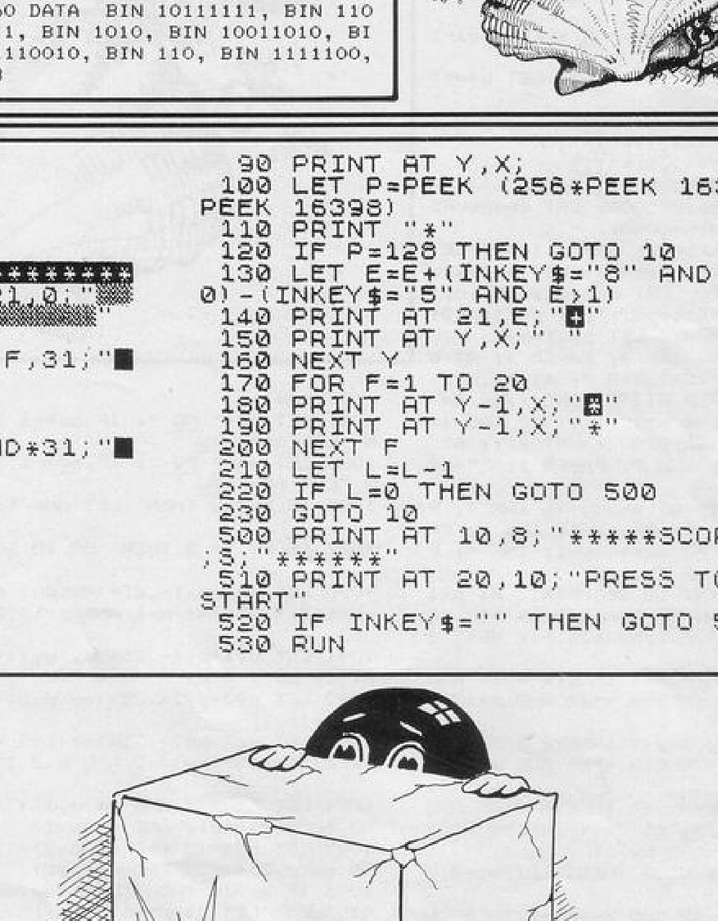
```
g2:ig1:2*sp:ig2)"
6020 PRINT  AT 8,10;"(ig8:ig1:ig
2:2*sp:ig1:ig2:ig8)"
6030 PRINT  AT 9,10;"(ig8:8*sp:i
g8)"
6040 PRINT  AT 10,10;"........"

6050 PRINT "Well Done !!! The ki
ng is         pleased and gives yo
u a large   reward"
7000 STOP
7500 CLS : PRINT  AT 1,1; INK 2;
"PEARL DIVER":
7510 PRINT  AT 3,0; INK 9;"You p
lay the part of the king's pearl
 diver the king has told   you t
o get the six pearls from  the l
egendary great oyster.     The s
ea around the oyster is    full
of nasty creatures such as shark
s piranhas and octopus     which
would all like to eat you.You c
an only carry one pearl at once
and you take it to the     right
 side of your boat where itstack
s itself and you can get   anoth
er  ":
7520 PRINT : PRINT " You use the
 cursor keys to move your man
                              Pr
ess any key to play ": PAUSE 0:
RETURN
8000 GO SUB 9000: BORDER 6: PAPE
R 5: INK 9: CLS
8005 FOR f=10 TO 245 STEP 5: PLO
T  INK 4;f,0: DRAW  INK 4;0,16+
RND *8,( RND *(2))-1: NEXT f
8010 FOR f=0 TO 2.1 STEP .1: PLO
T  INK 1;57,32: DRAW  INK 1;100,
0,f: NEXT f
8033 PRINT  AT 21,9; INK 6;"(ig2
:ig1)"; AT 21,16;"(ig2:ig1)"
8040 PRINT  AT 17,7; INK 2;"C":
FOR f=1 TO 12 STEP 2: PRINT  AT
17,7+f; INK 7;"B"; INK 2;"C": NE
XT f
8080 FOR f=0 TO 3: PRINT  AT f,0
; PAPER 1; OVER 1; TAB 31;" ": N
EXT f
8999 RETURN
9000 RESTORE : FOR f= USR "a" TO
  USR "u"+7: READ a: POKE f,a: N
EXT f
9010 DATA 24,60,255,255,255,255,
24,0
9020 DATA 60,126,255,255,255,255
,126,60
9030 DATA 0,0,0,60,126,126,255,2
55
9040 DATA 24,60,24,60,126-60+24,
60,126-60
9050 DATA 126-60,126-60,126-60,6
0,126-60+24,60,24,60,24
9060 DATA 255,127,63,31,15,7,3,1

9070 DATA 1,3,7,15,31,63,127,255

9080 DATA 0,24, BIN 111101, BIN
1101111,127, BIN 11101, BIN 1111
000,0
9090 DATA 0,24, BIN 10111100, BI
N 11110110,254, BIN 10111000, BI
N 11110,0
9100 DATA  BIN 11000000, BIN 111
0000, BIN 111111, BIN 11111, BIN
 1111, BIN 1100, BIN 1000,0
9110 DATA 0,0,255, BIN 11101110,
 BIN 11111100, BIN 11110000,0,0

9120 DATA 0,0,255, BIN 1110111,6
3, BIN 1111,0,0
9130 DATA  BIN 11, BIN 1110, BIN
 11111100, BIN 11111000, BIN 111
10000, BIN 110000, BIN 10000,0

9140 DATA 128, BIN 1111100, BIN
110, BIN 1110010, BIN 10011010,
BIN 1010, BIN 1001111, BIN 10000
111
9150 DATA 0,0,60,126, BIN 111001
11, BIN 11110011, BIN 11100111,2
55
9160 DATA  BIN 10111111, BIN 110
1111, BIN 1010, BIN 10011010, BI
N 1110010, BIN 110, BIN 1111100,
128
9170 DATA 255, BIN 11100111, BIN
 11110011, BIN 11100111,126,60,0
,0
9180 DATA 0,0,60,126,231, BIN 11
001111,231,255
9190 DATA 1, BIN 111110, BIN 110
0000, BIN 1001110, BIN 1011001,
BIN 1010000, BIN 11110110, BIN 1
1111101
9200 DATA 255,231, BIN 11001111,
231,126,60,0,0, BIN 11100001, BI
N 1111010, BIN 01010000, BIN 010
11001, BIN 01001110, BIN 1100000
, BIN 111110,1
9997 RETURN
```

```
  1 LET L=3
  2 LET S=-1
 10 FAST
 11 CLS
 12 LET S=S+1
 15 PRINT AT 0,0;"████████████
███████████████████";AT 21,0;"▒
▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
 16 FOR F=1 TO 21
 17 PRINT AT F,0;"█";AT F,31;"█
"
 18 NEXT F
 20 FOR F=1 TO 10
 30 PRINT AT RND*10+5,RND*31;"█
"
 40 NEXT F
 50 LET E=20
 60 LET X=INT (RND*29+1)
 65 PRINT AT 0,X;"█"
 68 SLOW
 70 FOR Y=1 TO 21
 75 PRINT AT 21,E;"▒"
 80 LET X=X+(E>X)-(E<X)
 90 PRINT AT Y,X;
100 LET P=PEEK (256*PEEK 16399+
PEEK 16398)
110 PRINT "*"
120 IF P=128 THEN GOTO 10
130 LET E=E+(INKEY$="8" AND E<3
0)-(INKEY$="5" AND E>1)
140 PRINT AT 21,E;"■"
150 PRINT AT Y,X;" "
160 NEXT Y
170 FOR F=1 TO 20
180 PRINT AT Y-1,X;"■"
190 PRINT AT Y-1,X;"*"
200 NEXT F
210 LET L=L-1
220 IF L=0 THEN GOTO 500
230 GOTO 10
500 PRINT AT 10,8;"*****SCORE:"
;S;"******"
510 PRINT AT 20,10;"PRESS TO RE
START"
520 IF INKEY$="" THEN GOTO 520
530 RUN
```

LOADSTONE

A BALL falls from the top of the screen and is attracted to the loadstone at the bottom. Using keys 5 and 8 to move left and right, you must move the black blocks so that they block the path of the ball. If the ball reaches the loadstone three times the game ends.

Loadstones was written for the 16K ZX-81 by Luuk Hilhorst of Assendelft in the Netherlands.



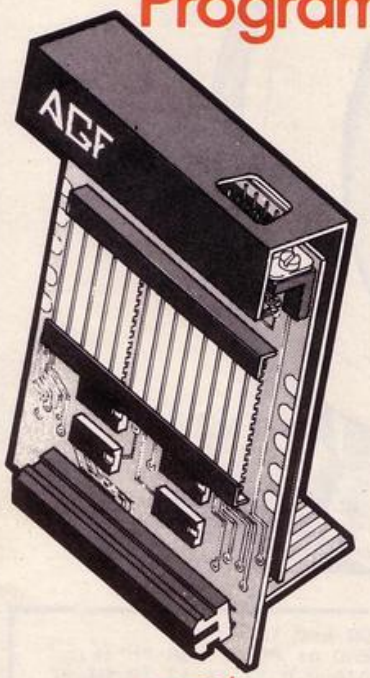
AGF

JOYSTICKS

SPECTRUM ZX81

INTERFACES

Programmable Interface



Hardware programmed, this interface attains Joystick or Trackball compatibility with ALL Spectrum or ZX81 software.

Without internal memories or tapes to load the direct addressing mode offers the fastest computer response to controller movement with programming being retained when the power is off.

Eight directional capability is automatically achieved by just setting up, down, left and right.

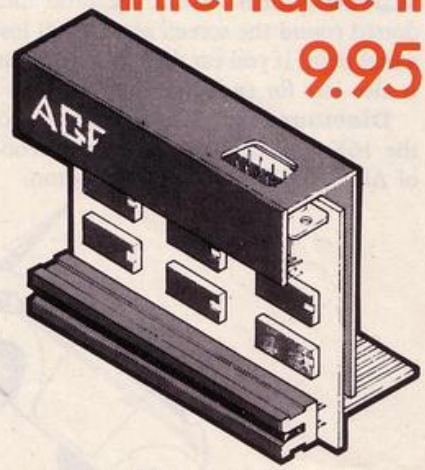
The hardware approach is totally compatible with all key reading techniques unlike memory programmed devices.

Supplied with Quick Reference Cards, to speed up setting to your favourite games, demonstration cassette and twelve months guarantee.

26.95 plus £1 post & packing

Interface II

9.95



Now the AGF Interface II is even better value. Since we pioneered the cursor-key interface in October 1982 there are now over 100 games or utility programs with either the AGF option or cursor key controlled – that makes it unbeatable at this new low price.

Still incorporating the all important rear expansion connector which means other peripherals can be connected at the same time i.e Ram Packs, Printers, Speech Units etc, and of course the key replication principle used guarantees this will never conflict electrically with any other add-ons.

RomSlot

Now is your chance to enter the growing world of instant loading games.

All ROM Cartridge software can be keyboard controlled so a joystick is not essential.

Only high quality programs are available on ROM and soon a whole new range is to be launched by Parker Games exclusively on cartridge, for the Spectrum.

RomSlot's unique 'Game Restart' will restart the game at any time during play. When no game cartridge is in use this becomes a useful computer reset facility from crashes or conventional machine code programs.

RomSlot is fully compatible with all other add-ons via a rear connector and is cased and fully guaranteed for twelve months.

only 11.95 plus 50p post & packing

Quickshot

8.50

Quickshot II

11.95

SEND TO (NO STAMP NEEDED):– AGF HARDWARE, DEPT SP, FREEPOST, BOGNOR REGIS, W. SUSSEX PO22 9BR

Please tick:

☐ I enclose a cheque/postal order payable to AGF Hardware for £.....

☐ Please charge my Access/Barclaycard Account No. .....

Signature ..... (Telephone orders (0243) 823337)

FROM: MR/MRS/MISS

ADDRESS:

☐ Please send information on .....

Please allow up to 28 days from receipt of your order although we normally despatch from stock within 7 days. All AGF products are guaranteed for 12 months and are supplied on a 14 day money back undertaking. AGF Hardware, Bognor Regis, West Sussex. Telephone: (0243) 823337.

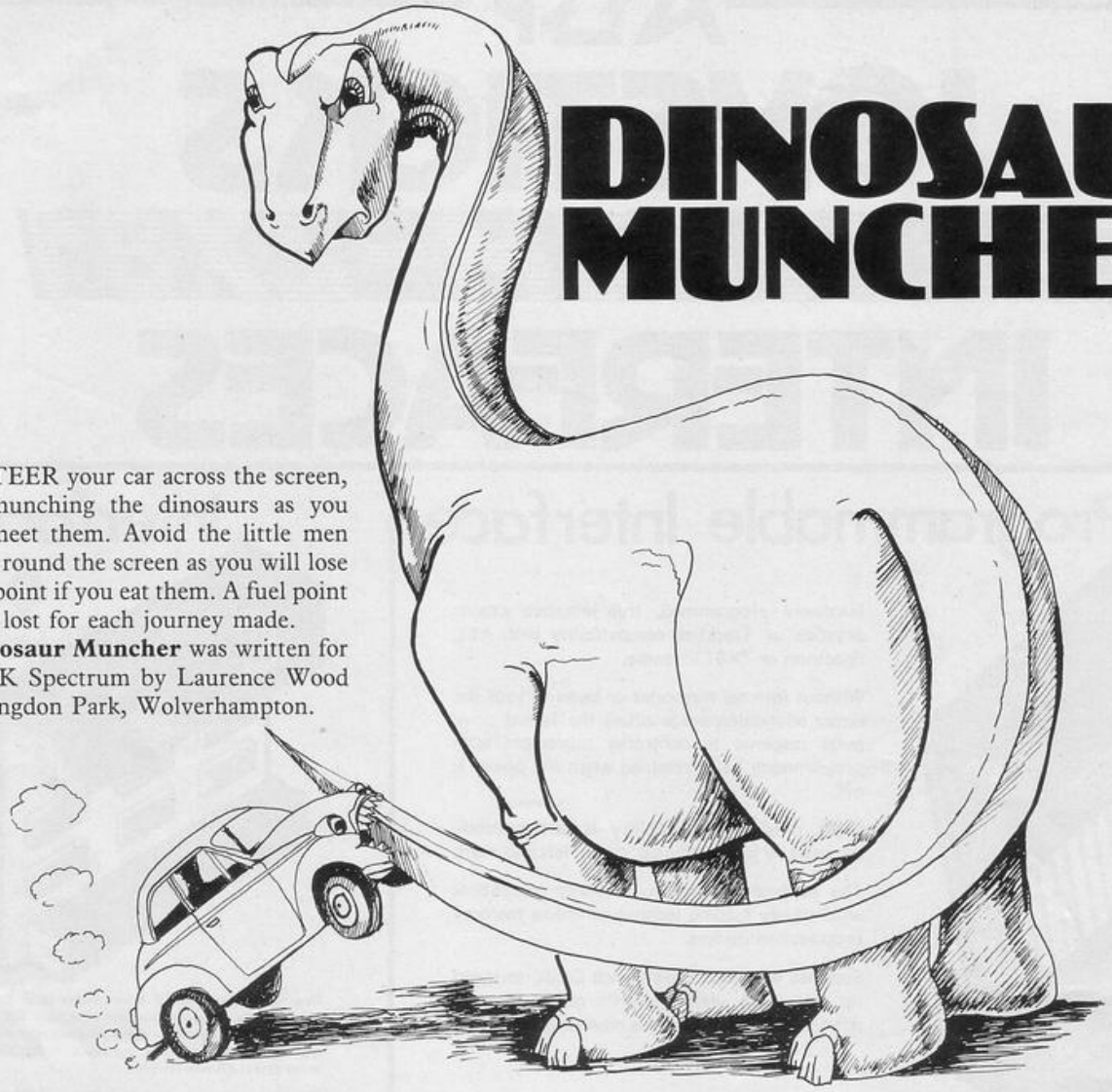
QTY	ITEM	ITEM PRICE	TOTAL
	ZX81 ☐ ZX SPECTRUM ☐ Please tick	FINAL TOTAL	

VISA

OVERSEAS PRICES ON APPLICATION

DEALER ENQUIRIES WELCOME

DINOSAUR MUNCHER



STEER your car across the screen, munching the dinosaurs as you meet them. Avoid the little men dotted round the screen as you will lose a fuel point if you eat them. A fuel point is also lost for each journey made.

Dinosaur Muncher was written for the 16K Spectrum by Laurence Wood of Abingdon Park, Wolverhampton.

```
   1 CLS : GO SUB 300: LET h=0

   2 RESTORE : PRINT  AT 10,0;"-
-------Dinosaur Muncher--------"
; AT 12,8;"By Laurence Wood"; AT
 20,0;"
      ": FOR F=0 TO 25: PRINT
AT 15,F;" RC M": BEEP .005,F: BE
EP .005,F+10: NEXT F
   3 INPUT "Would you like to re
ad the       instructions (y/n)
?";i$: IF i$="y" OR i$="Y" THEN
 GO SUB 600
   5: LET k=2: LET s=0: LET l=0

  10 CLS : INK 1: BORDER 4: PAPE
R 6: CLS
  20 PRINT  AT 0,0; FLASH 1;" sc
ore----"; INVERSE 1;"DINOSAUR MU
NCHER"; INVERSE 0;"----hi "
  30 PRINT  AT 1,0; INK 6; PAPER
 1;"*0**************************
****"; AT 1,27;h
  40 PRINT  AT 21,0; INK 5; PAPE
R 0;"FUEL
 FULL"
  50 FOR f=0 TO 60
  60 PRINT  AT ( RND *18)+2,( RN
D *28)+3; INK 2;"M"
  61 NEXT f
  65 FOR f=0 TO 20
  70 PRINT  AT ( RND *18)+2,( RN
D *28)+3; INK 0;"H"
  80 NEXT f
  85 BEEP .2,0: BEEP .5,20
  99 LET f=26
 100 FOR l=0 TO 28
 110 PRINT  AT k,l;" RC"
 111 PRINT  AT 1,0; PAPER 1; INK
 6;s
 120 IF  ATTR (k,l+3)=50 THEN  B
EEP .005,10: BEEP .006,20: PRINT
  AT k,l+3; PAPER 6;" ": LET s=s
+10
 130 IF  ATTR (k,l+3)=48 THEN  B
EEP .08,-10: BEEP .08,-30: PRINT
  AT k,l+3; PAPER 6;" ": LET f=f
-1
 135 IF  INT ( RND *7)=0 THEN  P
RINT  AT ( RND *18)+2,( RND *28)
+3; INK 0;"H"
 136 IF  INT ( RND *7)=0 THEN  P
RINT  AT ( RND *18)+2,( RND *28)
+3; INK 2;"M"
 137 IF  INKEY$ ="d" AND k>2 THE
N  PRINT  AT k,l;"   ": LET k=k-
1
 138 IF  INKEY$ ="c" AND k<20 TH
EN  PRINT  AT k,l;"   ": LET k=k
+1
 140 PRINT  AT 21,f;"  "
 141 IF  INT f=4 THEN  GO TO 180

 149 NEXT l
 150 LET f=f-1
 155 PRINT  AT k,l;"   ": LET k=
k+1: IF k<21 THEN  GO TO 100
 160 LET k=2: GO TO 100
 180 PRINT  AT 21,0; BRIGHT 1; P
APER 3; INK 7; FLASH 1;"--------
--FUEL TANKS EMPTY------"
 190 BEEP .5,0: BEEP .2,4: BEEP
.2,5: BEEP .2,7: BEEP .2,0
 200 PAPER 5: FOR f=0 TO 100: NE
XT f: CLS : PRINT  AT 10,3; INK
1;"SCORE = ";s
 210 IF s>h THEN  LET h=s: BEEP
1,20: PRINT  AT 15,10; FLASH 1;
PAPER 4;"NEW HIGH SCORE"
 220 PRINT  AT 20,4;"  ANY KEY T
O RE-PLAY": PAUSE 0
 230 GO TO 2

 300 FOR k=0 TO 7
 310 READ b: POKE  USR "r"+k,b
 320 DATA 0,0,32,16,12,19,18,12

 330 NEXT k
 340 FOR k=0 TO 7
 350 READ b: POKE  USR "c"+k,b

 360 DATA 0,0,0,192,192,240,234,
16
 370 NEXT k
 400 FOR k=0 TO 7
 410 READ b: POKE  USR "m"+k,b

 420 DATA 96,228,34,50,50,52,44,
96
 430 NEXT k
 500 FOR k=0 TO 7
 510 READ b: POKE  USR "h"+k,b

 520 DATA 24,36,36,24,231,24,24,
102
 530 NEXT k
 540 RETURN
 600 BORDER 2: PAPER 5: INK 1: C
LS : PRINT  AT 0,3;"GUIDE TO DIN
OSAUR MUNCHING"; AT 3,2; INK 0;"
Using key 'D' for up, and key 'C
' for down, steer yourdinosaur-m
unching racing car to  eat the r
ed dinosaurs, and avoid the litt
le men ."
 610 PRINT ; INK 1;'"  10 point
s are given for each  dinosaur m
unched, but a unit of  fuel is l
ost for each man eaten,and for e
ach journey across the screen."
 620 FOR f=1 TO 100: NEXT f: PRI
NT  AT 20,4;"  ANY KEY TO START"
: IF  INKEY$ ="" THEN  GO TO 620
 630 BEEP .5,10: RETURN
```

SWIMMING GALA

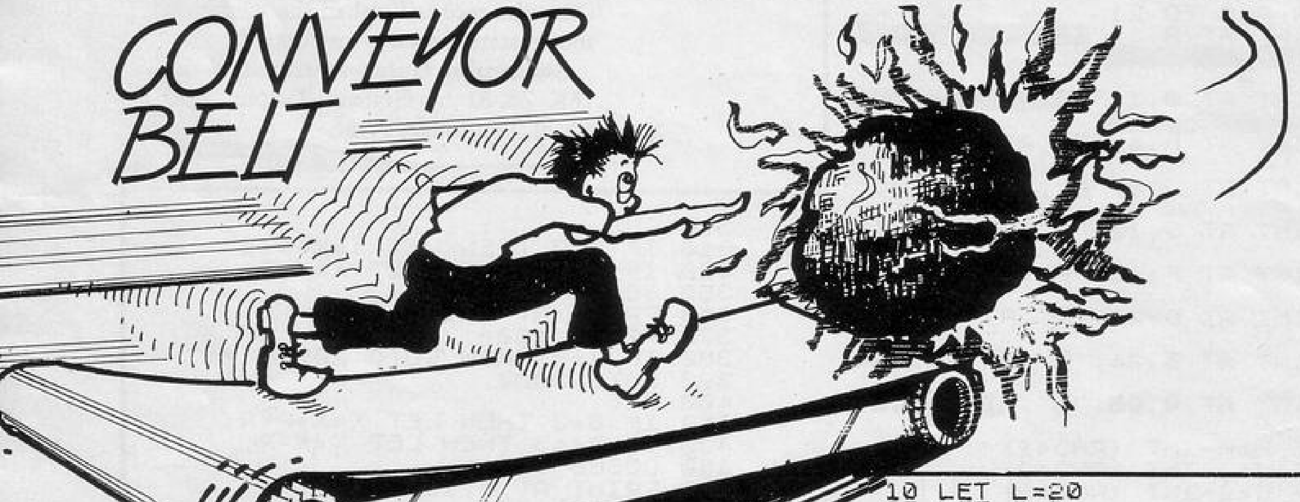
AFTER PLACING your bet you can choose the swimmer you think will win. The race will then begin and the seven swimmers must complete one length of the pool. Once the race is finished the winner is shown standing on a rostrum.

Swimming Gala was written for the 16K ZX-81 by Graham Turpin, aged 12, of Tonbridge, Kent.

```
    1 LET X=100
    2 LET J=19
    3 LET G=19
    4 LET F=19
    5 LET D=19
    6 LET S=19
    7 LET Q=19
    9 LET H=19
   10 CLS
   11 PRINT "HOW MUCH OF YOUR £";
X;" DO YOU       WANT TO BET ?"
   12 INPUT P
   13 CLS
   14 LET W=INT (RND*33)+1
   15 LET E=INT (RND*33)+1
   16 LET R=INT (RND*33)+1
   17 LET T=INT (RND*33)+1
   18 LET Y=INT (RND*33)+1
   19 LET U=INT (RND*33)+1
   20 LET I=INT (RND*33)+1
   22 PRINT "CHOSE YOUR SWIMMER."
   23 PRINT AT 3,0;"1   ";W;"-1"
   24 PRINT AT 6,0;"2   ";E;"-1"
   25 PRINT AT 9,0;"3   ";R;"-1"
   26 PRINT AT 12,0;"4   ";T;"-1"
   27 PRINT AT 15,0;"5   ";Y;"-1"
   28 PRINT AT 18,0;"6   ";U;"-1"
   29 PRINT AT 21,0;"7   ";I;"-1"
   32 INPUT B
   33 CLS
   34 FOR A=0 TO 21
   35 PRINT AT A,1;"
"
   36 NEXT A
   38 PRINT AT 0,1;"  1  2  3
 4  5  6  7  "
   39 PRINT AT H,4;"1";AT H+1,4;"
"
   40 PRINT AT J,8;"2";AT J+1,8;"
"
   45 PRINT AT G,12;"3";AT G+1,12
;"
"
   55 PRINT AT F,16;"4";AT F+1,16
;"
"
   65 PRINT AT D,20;"5";AT D+1,20
;"
"
   75 PRINT AT S,24;"6";AT S+1,24
;"
"
   85 PRINT AT Q,28;"7";AT Q+1,28
;"
"
  100 LET H=H-INT (RND*2)
  101 LET J=J-INT (RND*2)
  102 LET G=G-INT (RND*2)
  103 LET F=F-INT (RND*2)
  104 LET D=D-INT (RND*2)
  105 LET S=S-INT (RND*2)
  106 LET Q=Q-INT (RND*2)
  107 IF H<=0 THEN GOTO 200
  108 IF J<=0 THEN GOTO 300
  109 IF G<=0 THEN GOTO 400
  110 IF F<=0 THEN GOTO 500
  111 IF D<=0 THEN GOTO 600
  112 IF S<=0 THEN GOTO 700
  113 IF Q<=0 THEN GOTO 800
  120 GOTO 39
  200 CLS
  210 IF B=1 THEN LET X=X+P*W
  220 IF B<>1 THEN LET X=X-P
  250 GOSUB 950
  260 PRINT AT 8,15;"1"
  270 PAUSE 400
  280 IF X=0 THEN GOTO 2000
  290 GOTO 3000
  300 CLS
  310 IF B=2 THEN LET X=X+P*E
  320 IF B<>2 THEN LET X=X-P
  350 GOSUB 950
  360 PRINT AT 8,15;"2"
  370 PAUSE 400
  380 IF X=0 THEN GOTO 2000
  390 GOTO 3000
  400 CLS
  410 IF B=3 THEN LET X=X+P*R
  420 IF B<>3 THEN LET X=X-P
  450 GOSUB 950
  460 PRINT AT 8,15;"3"
  470 PAUSE 400
  480 IF X=0 THEN GOTO 2000
  490 GOTO 3000
  500 CLS
  510 IF B=4 THEN LET X=X+P*T
  520 IF B<>4 THEN LET X=X-P
  550 GOSUB 950
  560 PRINT AT 8,15;"4"
  570 PAUSE 400
  580 IF X=0 THEN GOTO 2000
  590 GOTO 3000
  600 CLS
  610 IF B=5 THEN LET X=X+P*Y
  620 IF B<>5 THEN LET X=X-P
  650 GOSUB 950
  660 PRINT AT 8,15;"5"
  670 PAUSE 400
  680 IF X=0 THEN GOTO 2000
  690 GOTO 3000
  700 CLS
```

```
710 IF B=6 THEN LET X=X+P*U
720 IF B<>6 THEN LET X=X-P
750 GOSUB 950
760 PRINT AT 8,15;"6"
770 PAUSE 400
780 IF X=0 THEN GOTO 2000
790 GOTO 3000
800 CLS
810 IF B=7 THEN LET X=X+P*I
820 IF B<>7 THEN LET X=X-P
850 GOSUB 950
860 PRINT AT 8,15;"7"
870 PAUSE 400
880 IF X=0 THEN GOTO 2000
890 GOTO 3000
950 FOR H=15 TO 21
960 PRINT AT H,5;"                    "
965 NEXT H
970 PRINT AT 17,14;"1ST"
1000 PRINT AT 14,13;"   ";AT 13,14;"  ";AT 12,14;"  ";AT 11,14;"  "
1010 PRINT AT 10,14;"  ";AT 9,14;"  ";AT 8,12;"    ";AT 7,12;"      ";AT 6,15;" ";AT 5,14;"  ";AT 4,14;"  ";AT 3,14;"  "
1020 PLOT 29,36
1025 PLOT 32,36
1030 IF X=0 THEN PRINT AT 20,12;"BAD LUCK"
1035 RETURN
2000 CLS
2010 PRINT AT 10,5;"SORRY,YOUR BROKE"
2500 STOP
3000 IF X>=10 THEN GOTO 3010
3010 PRINT AT 0,5;"ANOTHER BET (Y/N)";AT 2,5;"YOU HAVE ";X;" POUNDS LEFT"
3012 PAUSE 4E4
3015 IF INKEY$="Y" THEN GOTO 2
3020 IF INKEY$="N" THEN CLS
3022 CLS
3025 PRINT AT 10,0;"YOU ENDED UP WITH ";X;" POUNDS"
3030 STOP
```

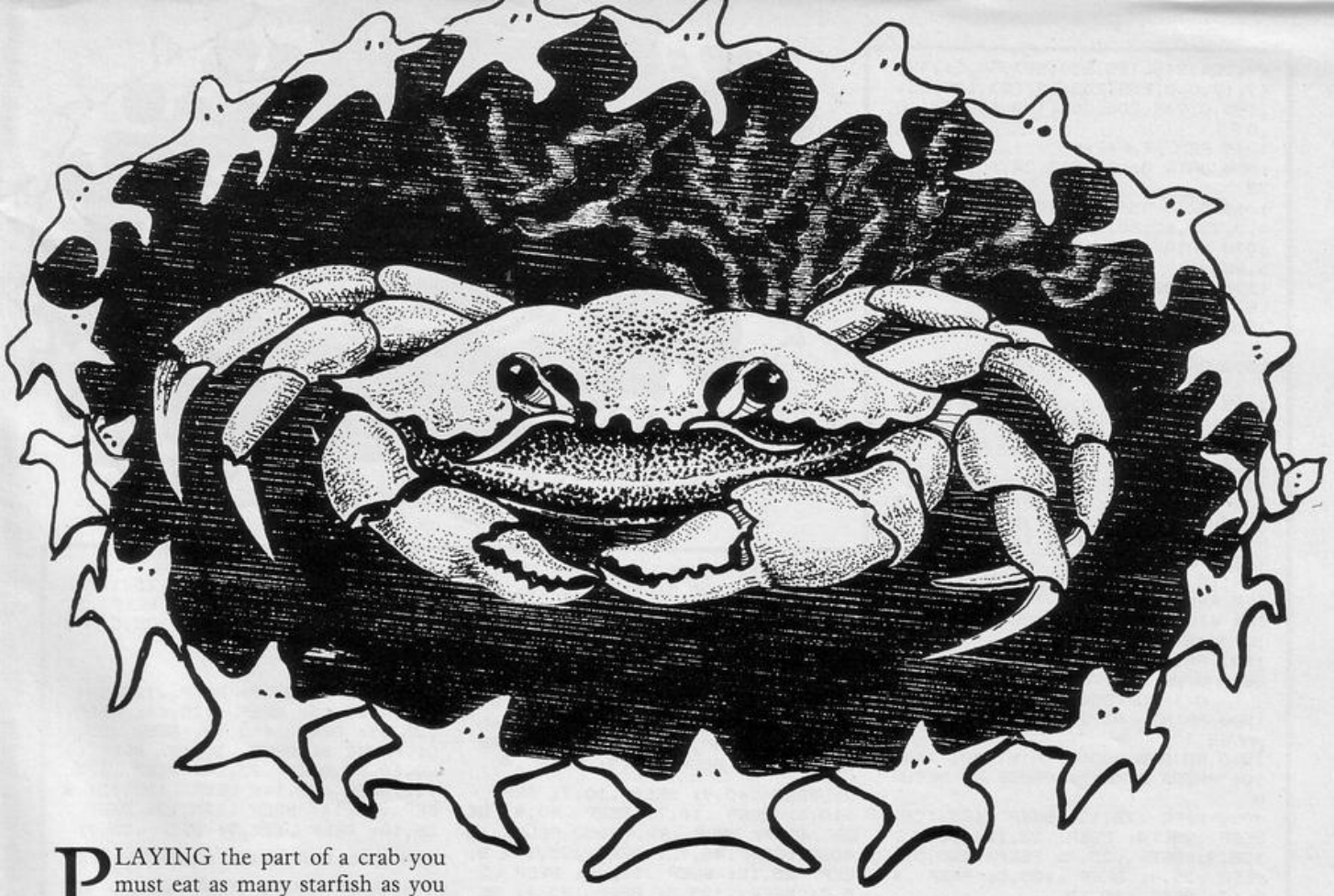
CONVEYOR BELT



HELP YOUR man to avoid a sticky end as he tries to survive on a fast-moving conveyor belt heading towards a pot of oil. You must also help him to jump over the fire balls using keys 8 and 0.

Conveyor Belt was written for the 1K ZX-81 by Gerald Hayden, aged 15, of Tunbridge Wells, Kent.

```
10 LET L=20
15 LET S=0
20 PRINT AT 4,0;"  ";TAB 0;"                                "
30 LET A$="    *   *  *  *        *   *  *    *   *  *   *    *  *"
35 PRINT AT 4,2;A$( TO 30)
40 LET L=L-1+(INKEY$="8")
45 PRINT AT 4,L;"A"
50 IF INKEY$="0" THEN GOSUB 100
55 LET S=S+1
60 IF A$(L-1)="*" OR L=2 THEN GOTO 200
70 LET A$=A$(2 TO )+A$(1)
80 GOTO 35
100 LET L=L+2
110 PRINT AT 4,L-2;" ";AT 3,L-1;"A";AT 3,L-1;" ";AT 4,L;"A"
120 RETURN
200 PRINT AT 0,0;S
```

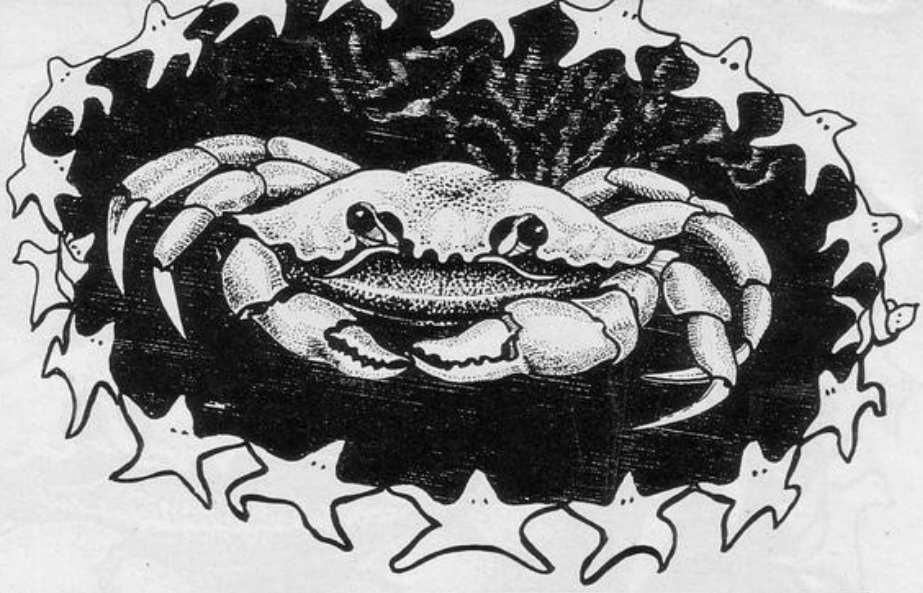


CRABS

PLAYING the part of a crab you must eat as many starfish as you can before you run out of time or lives. Avoid the waves which will wash you away if you are caught. The game has very good graphics and sound.

Crab was written for the 16K Spectrum by P Hammond of Ipswich, Suffolk.

```
  1 GO SUB 1000
  2 GO SUB 1500
  5 PAPER 6: INK 4: BORDER 6: C
LS
  6 LET c=0
  7 LET n=0
  8 LET d=0
  9 LET l=3
 10 LET sc=0
 11 LET f=300
 12 LET q=0
 20 LET t=0
 30 LET x=18: LET y=15
 31 IF l=0 THEN  PRINT  AT 21,2
6;"0": FOR g=0 TO 2: PRINT  AT g
,0; INK 6;"(32*ig8)": NEXT g: GO
 TO 300
 32 CLS
 35 LET a= INT ( RND *15)+3: LE
T b= INT ( RND *25)+3
 40 PRINT  AT x-2,y-1;"      "

 50 PRINT  AT x-1,y-1;" ABC "

 60 PRINT  AT x,y-1;" D(ig8)E "

 70 PRINT  AT x+1,y-1;" FGH "

 80 PRINT  AT x+2,y-1;"      "

 81 LET t=t+1: LET d= INT ( RND
 *4)- INT ( RND *3): LET n=n+d:
IF t=f THEN  GO TO 300
 82 IF q=0 THEN  IF t >= f-50 A
ND l=1 THEN  FOR m=1 TO 5: FOR n
=1 TO 5: BEEP .001,60: BEEP .001
,50: NEXT n: PAUSE 5: NEXT m: LE
T q=1: IF t >= 300 THEN  LET f=t
+50
 83 IF n >= 30 THEN  GO TO 400

 84 PRINT  AT a,b; INK 2;"P"
 85 IF  ATTR (x-1,y+1)=50 THEN
 LET sc=sc+1: BEEP .09,-30: BEEP
 .09,-60: GO TO 30
 87 PRINT  AT 21,0;"TIME:";t; A
T 21,20;"LIVES:";l
 90 LET x=x+( INKEY$ ="i" AND x
<18)-( INKEY$ ="0" AND x>2)
 91 LET y=y+( INKEY$ ="w" AND y
<28)-( INKEY$ ="q" AND y>1)
 92 IF  INKEY$ <> "" THEN  GO
TO 100
 95 GO TO 40
100 PRINT  AT x-2,y-1;"      "
110 PRINT  AT x-1,y-1;" IBJ "
120 PRINT  AT x,y-1;" K(ig8)L "
130 PRINT  AT x+1,y-1;" MNO "
140 PRINT  AT x+2,y-1;"      "
141 BEEP .003,60: BEEP .003,30:
 PAUSE 5: BEEP .003,60: BEEP .00
3,30
150 GO TO 40
300 IF l>1 THEN  LET f=f+50: GO
 TO 40
304 IF t=f THEN  PRINT  AT 8,10
;"OUT OF TIME"; AT 21,5;t: GO TO
 309
305 IF t <= 300 OR l=0 THEN  PR
INT  AT 8,10;"OUT OF LIVES"; AT
21,5;t
309 FOR n=1 TO 3: BEEP .125,6:
BEEP .125,4: BEEP .125,2: NEXT n
: BEEP .4,6: BEEP .4,4: BEEP .4,
2
310 PRINT  AT 21,0;"TIME:";t; A
T 21,10;"SCORE=";sc; AT 21,20;"L
IVES:";l; AT 10,10;"ANOTHER GAME
 ?"
312 IF  INKEY$ ="y" THEN  GO TO
5
315 PAUSE 0: PAUSE 0
320 IF  INKEY$ ="n" THEN  STOP
330 GO TO 312
410 FOR n=33 TO 46: PRINT  INK
1; AT c,0;"(32*ig8)"; PAPER 1; I
NK 7; AT c+1,0;"SSSSSSSSSSSSSSSS
SSSSSSSSSSSSSSS": PRINT  INK 7;
 AT c+2,0;"QQRQRRRQRRRQRRRQRRRQR
QRRQRRRQRRR": BEEP .0005,n+3: BE
EP .0005,n
412 IF  ATTR (x-1,y+1)=55 THEN
 LET l=l-1: LET c=c+2: GO TO 500
415 IF c=13 THEN  GO TO 500
420 LET c=c+1: NEXT n
500 FOR n=46 TO 33 STEP -1: PRI
NT  INK 1; AT c,0;"(32*ig8)"; PA
PER 1; INK 7; AT c+1,0;"SSSSSSSS
SSSSSSSSSSSSSSSSSSSSSSSSSSSS": PRINT
  INK 7; AT c+2,0;"QQRQRRRQRRRQR
RRQRRRQRRRQRRRQRRRQRRRQRRR"
501 BEEP .0005,n+3: BEEP .0005,
n
502 PRINT  AT c+3,0;"
                    "
505 IF c=0 THEN  LET n=0: GO TO
 30
510 LET c=c-1: NEXT n: GO TO 50
0
999 STOP
1000 FOR a= USR "a" TO  USR "s"+
7: READ b: POKE a,b: NEXT a: RET
URN
1010 DATA 24,24,48,127,127,120,5
6,60,0,0,68,40,40,40,60,126,24,2
4,12,252,252,60,124,124,15,15,67
,227,191,31,67,255
1030 DATA 124,248,194,199,253,24
8,194,255,129,131,6,12,12,12,4,0
,255,255,60,24,0,0,0,0,249,193,2
24,48,48,48,32,0
1039 REM 2nd crab
1040 DATA 0,0,63,63,63,120,56,60
,0,0,254,254,254,60,124,124,15,1
5,3,3,7,31,121,103,124,248,194,1
```



```
99,224,248,158,230,207,59,51,49,
49,17,0,0,255,255,60;153,129,231
,195,0,243,204,204,140,140,136,0
,0
1049 REM starfish
1050 DATA 0,103,148,24,60,69,70,
32
1060 DATA 255,255,127,126,56,24,
0,0,255,62,30,28,28,12,12,0
1070 DATA 0,28,62,127,255,255,25
5,255
1500 BORDER 5: PAPER 5: INK 2: C
LS
1501 PRINT  AT 3,11;"C R A B S"

1502 PRINT  OVER 1; AT 3,11;"___
     "
1505 PRINT  AT 5,0;"   YOU MUST
TRY TO EAT AS MANY  STARFISH AS
YOU CAN BEFORE YOU  RUN OUT OF L
IVES OR TIME."
1506 PRINT  AT 8,0;"   YOU HAVE
300 TIME UNITS TO   START WITH A
ND THREE LIVES. IF  YOU HAVE 2 O
R 3 LIVES LEFT WHEN TIME >= 300
THEN YOU WILL HAVE     ANOTHER 50
 UNITS ADDED. WHEN     ONLY ONE L
IFE REMAINS & TIME IS >300 A BUZ
ZER WILL SOUND AND YOUWILL HAVE
50 TIME UNITS LEFT."
1507 PRINT  AT 17,0;" THE KEYS A
RE:- Q/W= LEFT/RIGHT
     O/I= UP/DOWN."
1508 PRINT  AT 20,6;"BEWARE THE
WAVES!!"
1510 GO SUB 4000: PRINT #0; TAB
10;"PRESS A KEY": PAUSE 0: RETUR
N
4000 BEEP .25,12: BEEP .125,12:
BEEP .25,14: BEEP .25,12: BEEP .
125,9: BEEP .25,7: BEEP .125,5:
BEEP .25,4: BEEP .125,5: BEEP .4
0,12: BEEP .75,12
4010 PAUSE 10
4020 BEEP .25,12: BEEP .25,14: B
EEP .25,12: BEEP .125,8: BEEP .2
5,7: BEEP .125,5: BEEP .25,4: BE
EP .125,5: BEEP .75,14
4030 PAUSE 10

4040 BEEP .25,14: BEEP .40,16: B
EEP .25,14: BEEP .125,10: BEEP .
25,9: BEEP .25,7: BEEP .25,6: BE
EP .125,7: BEEP .40,14: BEEP .40
,12: BEEP .40,10: BEEP .25,9: BE
EP .125,6: BEEP .40,9: BEEP .40,
7: BEEP .40,9: BEEP .10,7: BEEP
.10,6: BEEP .10,7: BEEP .40,9: BE
EP .40,7: BEEP .40,4 4050 PAUSE 15
4060 BEEP .40,12: BEEP .25,14: B
EEP .25,12: BEEP .125,9: BEEP .2
5,7: BEEP .125,5: BEEP .25,4: BE
EP .125,5: BEEP .40,12: BEEP .75
,12
4070 PAUSE 15
4080 BEEP .40,14: BEEP .25,12: B
EEP .125,9: BEEP .25,7: BEEP .12
5,5: BEEP .25,4: BEEP .125,5: BE
EP .75,14
4090 PAUSE 5

5000 BEEP .25,13: BEEP .125,14:
BEEP .25,15: BEEP .125,14: BEEP
.25,15: BEEP .125,14: BEEP .25,1
5: PAUSE 6: BEEP .30,15: BEEP .1
25,10.5: BEEP .25,14: BEEP .125,
12: BEEP .25,14: BEEP .125,12: B
EEP .40,14: BEEP .125,12: BEEP .
25,10: BEEP .125,9: BEEP .25,7:
BEEP .40,14: PAUSE 10: BEEP .125
,9: BEEP .25,7: BEEP .125,9: BEE
P .75,5
5010 RETURN
```

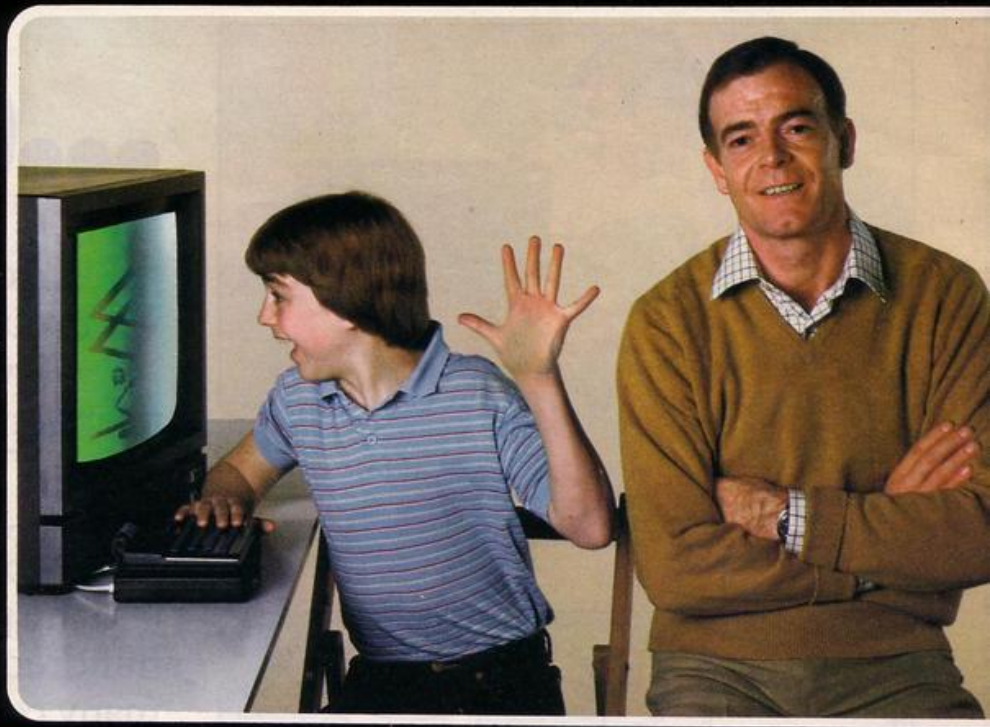
POWER CRYSTAL

THE OBJECT of **Power Crystal** is to visit different locations to find a power crystal which will enable you to return to your own time. There are several places for you to search, including the river, forest, lake and hills. N, S, E and W commands are used.

Power Crystal was written for the 1K ZX-81 by G Dahl of Norway.

```
  10 LET A=SGN PI
  20 LET E=NOT PI
  30 LET W=-A
  40 LET S=W+W
  50 LET N=S+W
  60 DIM A$(VAL "5",VAL "10")
  70 LET X$="5332250114122534415
5"
  80 LET A$(A)="RIVER NSWE"
  90 LET A$(-S)="LAKE    SEW"
 100 LET A$(-N)="FOREST NSEW"
 110 LET A$(S*S)="HILL    NSW"
 120 LET A$(VAL "5")="CAVERN NS"
 130 LET B=A
 140 PRINT A$(B),,"WHAT NOW?"
 150 INPUT A
 160 LET A=VAL X$(B*S*S+A)
 170 CLS
 180 IF A THEN GOTO 130
 190 PRINT "POWER CRYSTAL"
 200 PRINT "CONGRATULATIONS"
```

Today, we talked to our user group, booked our holiday, zapped nine monsters, checked the football results, bought two games, looked at share prices, learnt some French, and conquered the universe!



Prism VTX 5000

winner
– Peripheral of the year –
British Microcomputing
Awards 1984

Prism gi

information, commu

Games

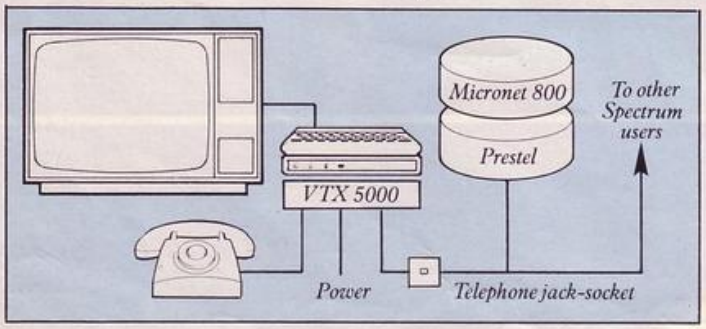
Swapping

Educational software

News

Competitions

Telesoftware



...and so n

Access a world of information with your Spectrum.

Simply by connecting it to the telephone line, via the award winning Prism VTX 5000 communications modem, you can link into a wide variety of services, including Prestel and the popular Micronet 800. Access hundreds of software programs – many completely free. Talk to fellow users. Keep up to date with all the latest national, international and micro news. Play on-screen games. Check sports results. Book travel and

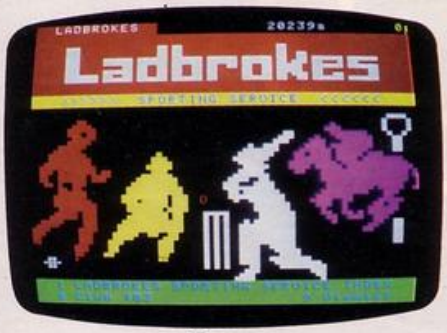
ves you nication, education...

BRITISH MICROCOMPUTING AWARD
Peripheral
VTX 5000
of the Year.
1984

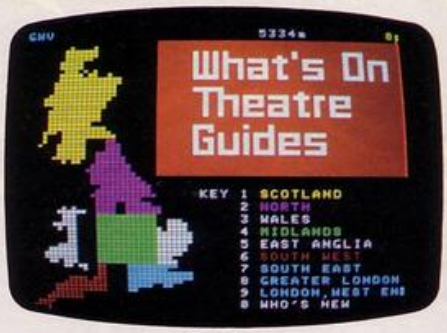
Shopping

Travel

Teach yourself programming



Sport



Booking

Mailbox

much more!

entertainment. Learn a language. Check share prices.

The choice is simply vast.

Plus, your Prism VTX 5000, allows you to communicate directly with other Spectrum owners.

And now, our special offer means that you can do all this for just £11* a month. So complete the coupon and send it to us today, and we will let you have full details of our unbeatable offer.

FOR JUST £11* A MONTH YOU WILL GET:

- **A Prism VTX 5000 worth £99.95.**
- **One year's subscription to Prestel worth £20.00.**
- **One year's subscription to Micronet worth £32.00.**
- **Free user-to-user software – normally retailing at £19.00.**
- **Quarterly hardware and software offers.**
- **Discounted software through Micronet (up to 20% off retail prices).**

*All prices quoted refer to domestic use only. For business use the Prestel annual standing charge is £66. Therefore business users will be billed £44.50 per quarter.

Prestel and the Prestel symbol are trademarks of British Telecommunications.

SP7

Please send me full information on your special offer to Spectrum users.

Name: _____

Address: _____

_____

_____

Return to: **Prism Microproducts Ltd.**
Prism House, 18-29 Mora Street, City Road
London EC1V 8BT. Tel: 01-253 2277

PRISM

ULTIMATE
PLAY THE GAME

48K SINCLAIR ZX SPECTRUM

£9.95

LONDON RAID

FLY your aircraft over London and protect St Paul's from enemy bombs. Crashing into the cathedral will reduce your score but you will lose a life if you are hit by enemy fire or collide with an enemy aircraft.

London Raid was written for the 48K Spectrum by Julian Hagley of Windsor, Berkshire.

```
  5 LET hi=0
 10 GO SUB 9500
 20 GO SUB 8500
 30 GO SUB 8000
 40 GO SUB 9000
1000 LET h= INT (( RND *18)/3)+1
: FOR t=31 TO 0 STEP -1: PRINT
AT h,t;"  "
1010 LET h=h+ INT ( RND *3-1)
1020 IF h<1 THEN  LET h=1
1030 IF h>6 THEN  LET h=6
1040 PRINT  INK 6; AT h,t; CHR$
145
1050 LET y=y+1: IF y >= 31 THEN
 PRINT  AT x,y-1;" ": LET y=0
1060 IF  ATTR (x,y)=7 THEN  GO S
UB 3500
1070 PRINT  INK 4; AT x,y; CHR$
144; AT x,y-1;" "
1080 IF h=x AND t=y THEN  GO SUB
 4000
1090 PRINT  AT h, INT ( RND *31)
; INK h; CHR$ 147
1110 IF  RND >.93 THEN  GO SUB 1
500
1120 FOR n=0 TO z: NEXT n
1130 BEEP .002,15
1140 LET i$= INKEY$
1150 IF i$="" THEN  NEXT t
1160 IF i$="5" AND y>0 THEN  PRI
NT  AT x,y;" ": LET y=y-1: NEXT
t
1170 IF i$="8" AND y<31 THEN  PR
INT  AT x,y;" ": LET y=y+1: IF
ATTR (x,y)=7 THEN  GO SUB 3500

1180 IF i$="7" AND x>1 THEN  PRI
NT  AT x,y;" ": LET x=x-1: NEXT
t
1190 IF i$="6" AND x<21 THEN  PR
INT  AT x,y;" ": LET x=x+1: IF
ATTR (x,y)=7 THEN  GO SUB 3510

1200 IF i$="0" THEN  GO SUB 2000

1210 NEXT t
1220 PRINT  AT h,0;" ": GO TO 10
00
1500 POKE 35050,45: FOR n=t-2 TO
 1 STEP -1: PRINT  INK 6; AT h,n
; CHR$ 45
1510 PRINT  AT h,n+1;" ": RANDOM
IZE  USR 35049: IF h=x AND n-1=y
 THEN  GO SUB 2500
1520 NEXT n
1530 PRINT  AT h,1;" ": NEXT t
2000 POKE 35050,39: FOR n=y+2 TO
 31 STEP 1: PRINT  INK 4; AT x,n
; CHR$ 45
2010 PRINT  AT x,n-1;" ": RANDOM
IZE  USR 35049: IF x=h AND n+1=t
 THEN  GO SUB 3000
2020 IF  ATTR (x,n+1)=7 THEN  GO
 SUB 4500
2030 NEXT n
2040 PRINT  AT x,31;" ": NEXT t

2500 PRINT  INK 2; AT x,y; CHR$
146;" ": POKE 35001,17: RANDOMIZ
E  USR 35000: LET li=li-1: PRINT
  AT 0,6;li: PRINT  AT x,y;" ":
LET y=0: LET x=12: IF li=0 THEN
 GO TO 7500
2510 NEXT t
3000 PRINT  INK 2; AT h,t-1;" ";
 CHR$ 146: POKE 35001,14: RANDOM
IZE  USR 35000: LET sc=sc+5: LET
 f=f+5: PRINT  AT h,t;" ": PRINT
  AT 0,17;sc;" ": IF f=50 THEN
GO SUB 7000
3010 GO TO 1000
3500 PRINT  INK 2; AT x,y-1; CHR
$ 146: POKE 35001,11: RANDOMIZE
 USR 35000: PRINT  AT x,y-1;" ":
 GO TO 3520
3510 PRINT  INK 2; AT x-1,y; CHR
$ 146: POKE 35001,11: RANDOMIZE
 USR 35000: PRINT  AT x-1,y;" "

3520 LET x=12: LET y=0: LET f=f-
10: LET sc=sc-10: PRINT  AT 0,17
;sc;" ": RETURN
4000 PRINT  INK 2; AT x,y; CHR$
146;" ": POKE 35001,29: RANDOMIZ
E  USR 35000: LET li=li-1: PRINT
  AT 0,6;li: PRINT  AT x,y;" ":
LET y=0: LET x=12: IF li=0 THEN
 GO TO 7500
4010 GO TO 1000
4500 PRINT  INK 2; AT x,n; CHR$
146: POKE 35001,4: RANDOMIZE  US
R 35000: PRINT  AT x,n;" "; AT x
,y;" ": LET y=0: LET x=12: LET f
=f-10: LET sc=sc-10: PRINT  AT 0
,17;sc;" ": NEXT t
7000 PRINT  FLASH 1; PAPER 1; IN
K 4; AT 3,13;"BONUS"
7010 FOR r=130 TO 0 STEP -3: OUT
 160,r-1: BEEP .007,r/3: NEXT r

7020 LET sc=sc+30: LET f=0: PRIN
T  AT 3,13;"     "; AT x,y-1;" "
: RETURN
7500 PRINT  INK 0; PAPER 5; FLAS
H 1; AT 4,11;"GAME OVER"
7510 FOR a=1 TO 10: FOR b=0 TO 7

7520 BORDER b: BEEP .02,b
7530 NEXT b: NEXT a
7540 POKE 23693,6: BORDER 0: CLS

7550 PAUSE 10
7560 FOR z=60 TO 0 STEP -3: BEEP
 .01,60-z: BEEP .02,z: NEXT z
7570 PRINT : PRINT : PRINT
7580 LET c$=" Your mission is ov
er,you have    lost all 3 of you
r planes.            Your score w
as:-"
7590 LET n=30: GO SUB 7720
7600 PRINT  INK 3; FLASH 1;sc
7610 IF sc>hi THEN  LET hi=sc: G
O TO 7650
7620 PRINT : PAUSE 40: LET c$="
Unfortunately your score does
 not beat todays high of:-"
7630 LET n=-15: GO SUB 7720
7640 PRINT  INK 3; FLASH 1;hi: G
O TO 7670
7650 PRINT : PAUSE 40: LET c$="
  However your score is the
     highest of the day."
7660 LET n=42: GO SUB 7720
7670 PRINT  FLASH 1; AT 18,7;"AN
OTHER GAME (y/n)"
7680 IF  INKEY$ ="" THEN  BEEP .
02, RND *15: GO TO 7680
7690 IF  INKEY$ ="y" THEN  CLS :
 FOR n=1 TO 25: NEXT n: GO SUB 8
700: INK 3: RANDOMIZE  USR 35037
: PRINT  AT 0,27;hi: GO TO 40
7700 IF  INKEY$ ="n" THEN  PRINT
  USR 0
7710 GO TO 7680
7720 FOR x=1 TO  LEN c$: PRINT c
$(x);: BEEP .1,n: NEXT x: RETURN

8000 POKE 23693,3: BORDER 0: CLS

8010 PRINT  AT 0,0;"LIVES=3"; AT
 0,11;"SCORE=0"; AT 0,22;"HIGH=0
": POKE 23693,7
8020 RESTORE 8150: PLOT 66,0: FO
R n=1 TO 35: READ a,b: DRAW a,b:
 NEXT n
8030 PLOT 101,80: DRAW 59,0,- PI

8040: FOR n=1 TO 18: READ a,b,c,
```

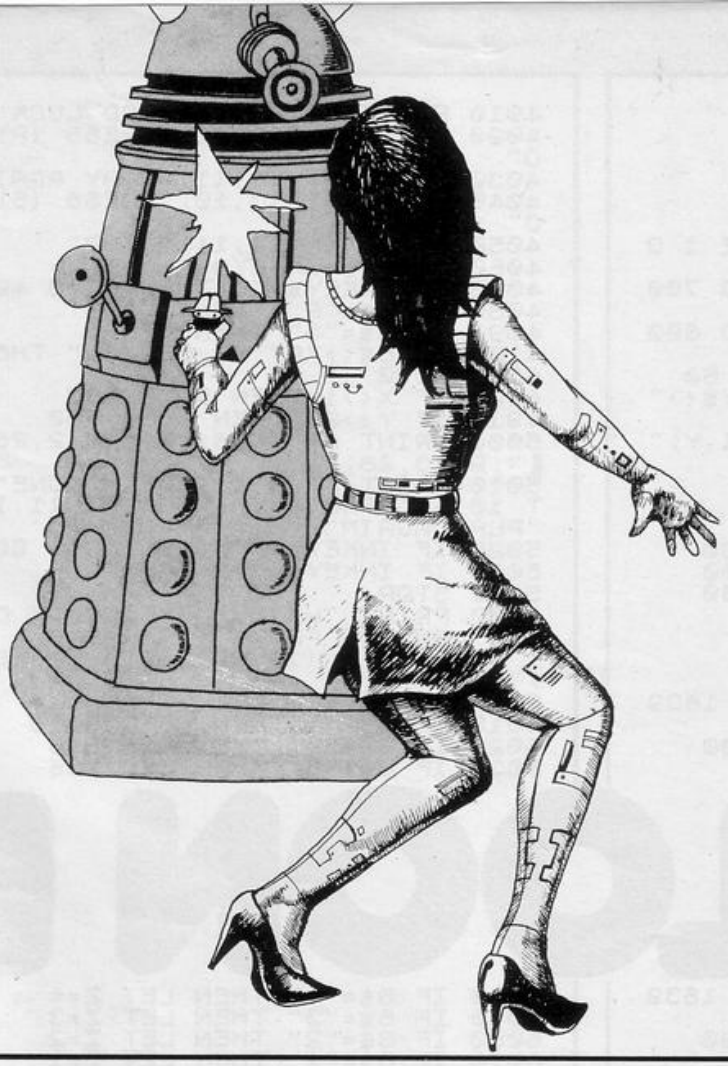
```
d: PLOT a,b: DRAW c,d: NEXT n: D
RAW 5,0: DRAW 0,8: DRAW -5,0,4

8050 CIRCLE 94,40,2: CIRCLE 181,
40,2: PLOT 94,40: PLOT 181,40
8060 FOR n=110 TO 150 STEP 10: P
LOT n,80: DRAW 0,-20: NEXT n
8070 FOR n=116 TO 144 STEP 7: PL
OT n,10: DRAW 0,20: NEXT n
8080 FOR n=94 TO 173 STEP 79: PL
OT n,25: DRAW 5,0: DRAW 0,-10: D
RAW -5,0: DRAW 0,10: NEXT n
8090 FOR n=90 TO 177 STEP 87: PL
OT n,46: DRAW 8,0: PLOT n,58: DR
AW 8,0: PLOT n+2,46: DRAW 0,12:
PLOT n+4,46: DRAW 0,12: PLOT n+6
,46: DRAW 0,12: NEXT n:
8100 FOR n=103 TO 153 STEP 10: P
LOT n,78: DRAW 5,0: DRAW 0,-5: D
RAW -5,0: DRAW 0,4: NEXT n
8110 FOR n=106 TO 156 STEP 10: P
LOT n,58: DRAW 3,0: DRAW 0,-10:
DRAW -3,0: DRAW 0,10: NEXT n
8120 FOR n=103 TO 153 STEP 10: P
LOT n,40: DRAW 0,20: NEXT n
8130 PLOT 127,110: DRAW 3,3: DRA
W 3,-3: PLOT 130,113: DRAW 0,6:
DRAW 0,-2: DRAW 2,0: DRAW -4,0

8140 FOR n=1 TO 4: PLOT 130,110:
 READ a,b,c: DRAW a,b,c: NEXT n

8150 DATA 0,30,4,4,18,0,0,10,2,0
,0,16,4,16,4,-16,0,-14,1,0,0,-6,
2,0,0,18,-2,0,0,2,2,0,0,20,60,0,
0,-20,2,0,0,-2,-2,0,0,-18,6,0,-2
,0,0,-10,8,0,0,10,2,0,0,-2,2,0,0
,18,4,16,4,-16,0,-56,94,75,0,2,1
81,72,0,2,100,60,60,0,100,40,66,
0,66,30,118,0,130,40,-14,-10,130,
40,14,-10,66,10,118,0,88,30,0,-
20,162,30,0,-20,106,30,0,-20,70,
34,0,2,88,30,0,4,100,40,0,-10,10
0,34,20,0,139,34,33,0,130,110,0,
-30,74,22,0,-8,-20,-30,1,-10,-30
,1.1,10,-30,-1.1,20,-30,-1
8160 FOR a=1 TO 150
8170 LET b= INT ( RND *7): LET c
= INT ( RND *255): LET d= INT (
RND *160): IF c>60 AND c<195 AND
 d<120 THEN  GO TO 8170
8180 PLOT  INK b;c,d: NEXT a
8190 POKE 23693,3: RANDOMIZE  US
R 35025: RETURN
8500 POKE 23693,7: BORDER 0: CLS

8510 PRINT  FLASH 1; AT 10,8; PA
PER 7; INK 1;"INSTRUCTIONS (Y/N)
"
8520 LET i$= INKEY$
8530 IF i$="" THEN  BEEP .01, RN
D *35
8540 IF i$="n" THEN  CLS : GO SU
B 8700: FOR n=1 TO 20: NEXT n: R
ETURN
8550 IF i$="y" THEN  CLS : FOR n
=1 TO 20: NEXT n: GO TO 8570
8560 GO TO 8520
8570 GO SUB 8690
8580 PRINT  AT 3,1;"It is your m
ission to shoot     down as many
enemy air craft as possible. Eve
ry one destroyed    will gain you
 five points.        However if y
ou fire and hit or  should you cr
ash into St.Pauls   then ten poin
ts will be lost.     If you are s
hot by enemy air    craft or cras
h into enemy craft  then one life
 will be lost."
8590 PRINT  AT 17,9; INK 4; CHR$
 144; INK 7;" THIS IS YOU"; INK
6; AT 19,9; CHR$ 145; INK 7;" EN
EMY CRAFT"
8600 PRINT  FLASH 1; INK 6; AT 2
1,6;"PLEASE PRESS ANY KEY": PAUS
E 0
8610 CLS
8620 GO SUB 8690
8630 PRINT  AT 4,12;"CONTROLS"
8640 PRINT  PAPER 2; AT 6,11;"UP
     :-7"; AT 8,11;"DOWN   :-6";
 AT 10,11;"HOVER  :-5"; AT 12,11
;"THRUST :-8"; AT 14,11;"FIRE
:-0"
8650 GO SUB 8700
8660 PRINT  INK 6; PAPER 0; FLAS
H 1; AT 21,0;"      PRESS ANY KEY
 TO PLAY       "
8670 PAUSE 0
8680 CLS : FOR n=1 TO 20: RETURN

8690 PRINT  AT 1,11; PAPER 1;" A
IR RAID ": PLOT 87,159: DRAW 79,
0: DRAW 0,9: DRAW -79,0: DRAW 0,
-9: RETURN
8700 PRINT  AT 21,0;"PLEASE SELE
CT LEVEL 1 TO 5(easy)"
8710 IF  INKEY$ <"1" OR  INKEY$
>"5" THEN  GO TO 8700
8720 LET z=( VAL  INKEY$ -1)*5:
FOR n=1 TO 20: NEXT n: RETURN

9000 LET y=0: LET x=12: LET f=0:
 LET sc=0: LET li=3: RETURN
9500 RESTORE 9520: FOR a= USR "a
" TO  USR "d"+7: READ b: POKE a,
b: NEXT a
9510 RESTORE 9560: FOR n=0 TO 73
: READ a: POKE 35000+n,a: NEXT n
: RETURN
9520 DATA 0,16,152,255,152,16,0,
0
9530 DATA 0,8,25,255,25,8,0,0
9540 DATA 16,66,72,1,20,68,8,34

9550 DATA 1,0,0,0,0,0,0,128
9560 DATA 17,10,0,33,10,0,6,14,1
97,213,229,205,181,3,1,100,0,225
,237,74,209,193,16,240,201,33,0,
64,17,200,175,1,192,26,237,176,2
01,33,200,175,17,0,64,1,192,26,2
37,176,201,1,1,7,33,255,0,17,10,
0,229,213,197,205,181,3,193,209,
225,125,145,111,16,242,251,201
```

DALEK RAID

```
   5 DIM a$(5,5): DIM b$(2,5)
   6 GO SUB 9000
   7 BORDER 6: PAPER 6: INK 0: C
LS
   8 GO SUB 9100
   9 CLS
  10 LET hs=0:
  12 LET a$(1)="      "
  13 LET a$(2)=" ABC "
  14 LET a$(3)=" DEF "
  15 LET a$(4)=" GHI "
  16 LET a$(5)=" JKL "
  17 LET b$(1)="  MM "
  18 LET b$(2)="  OP "
  19 LET sc=30
  20 LET xx= INT ( RND *6)+3: LE
T yy=0
  25 CLS
  30 LET i= INT ( RND *7)
  40 LET dr=1
  60 LET a=12: LET b=6
 200 GO SUB 8000
 210 PRINT  AT a,b; INK 2;"X": P
RINT  AT a,b;" ": OVER 0
```

PREVENT the dalek releasing the other daleks you are holding prisoner by firing at it with your twin lasers. If the dalek reaches the bottom it will open the gate and your prisoners will escape.

Dalek Raid was written for the 48K Spectrum by Melvin Carter of Aston, Birmingham.

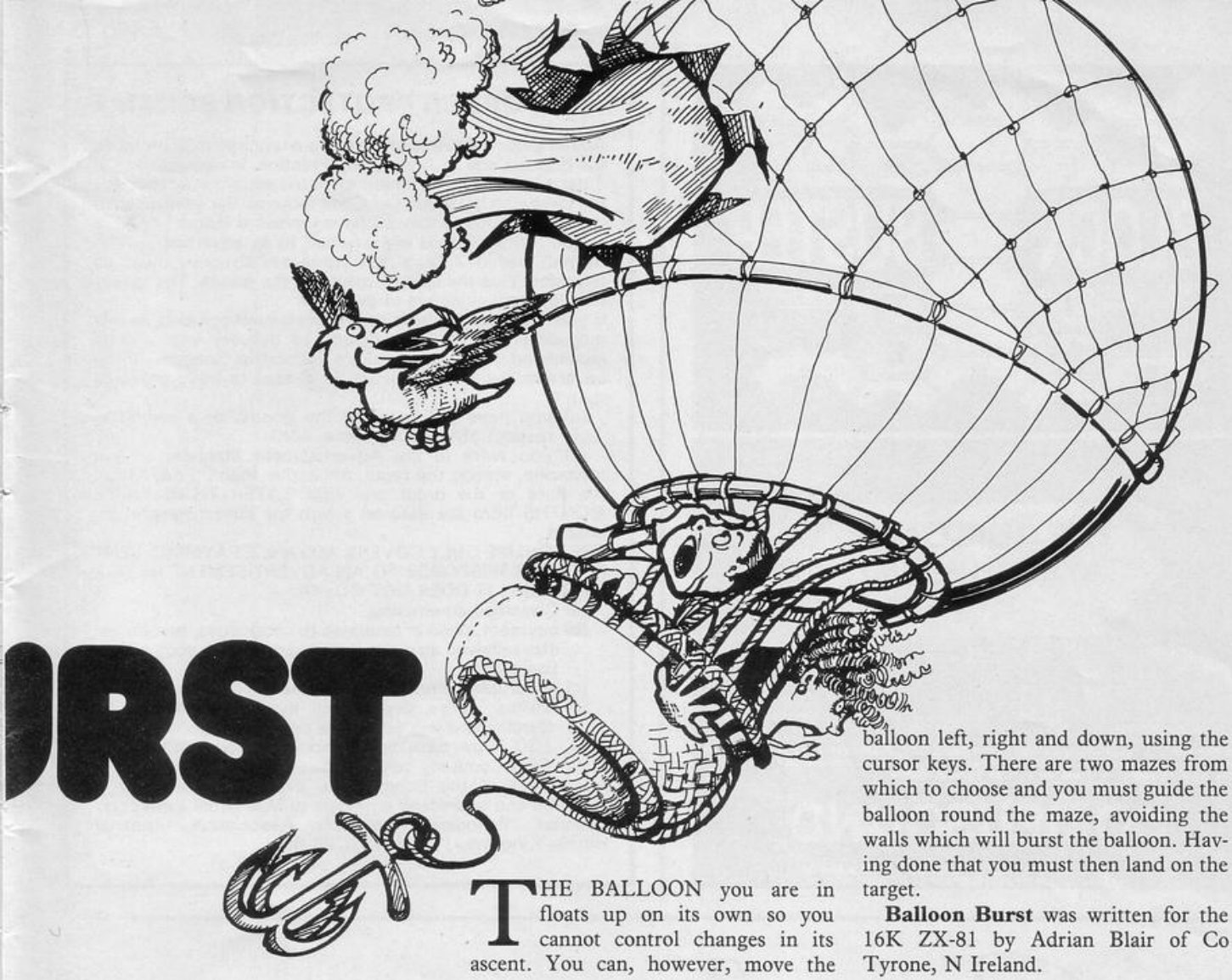


```
 220 LET a=a+( INKEY$ ="a" AND a
<13)-( INKEY$ ="q" AND a>3): LET
 b=b+( INKEY$ ="p" AND b<31)-( I
NKEY$ ="o" AND b>1)
 225 IF  INKEY$ ="m" AND a=xx+3
AND b=yy+2 THEN  GO TO 7500
 230 IF  INKEY$ ="m" THEN  GO SU
B 7000
 240 PRINT  INK i; AT xx,yy;a$(1
); AT xx+1,yy;a$(2); AT xx+2,yy;
a$(3); AT xx+3,yy;a$(4); AT xx+4
,yy;a$(5)
 250 PRINT  AT a,b;"X": LET yy=y
y+dr
 252 PRINT  AT 1,1;"SCORE=";sc;"
"; AT 1,14;"HI SCORE=";hs
 255 IF xx=13 THEN  GO TO 280
 260 IF yy>27 OR yy<0 THEN  LET
dr=-dr: LET xx=xx+1
 262 IF sc=0 THEN  GO TO 7800
 265 IF xx=11 THEN  GO TO 280
 270 GO TO 210
 280 PRINT  AT 10,7; INK 1;"DALE
KS BLOW UP PRISON"; AT 11,7;"  P
RISONERS ESCAPE"; AT 12,7;"
 SCORE=";sc: PAUSE 300
 285 IF sc>hs THEN  PRINT "YOU G
OT TOP SCORE": LET hs=sc: PAUSE
300
5000 CLS : PRINT  AT 5,2;"WELL Y
OU DIDN'NT LAST LONG       DO YOU
 WANT TO TRY AND BEAT          TH
E SUPREME DALEKS           ------
----  AGAIN ? ---------- "'"
  YOU HAVE TO ANSWER
   OR YOU WILL BE"
5100 PRINT  AT 15,4; INK 2; FLAS
H 1; "E*X*T*E*R*M*I*N*A*T*E*D"

5200 IF  INKEY$ =" " THEN  GO TO
 5300
5400 IF  INKEY$ ="n" THEN  GO TO
 5600
5500 IF  INKEY$ ="y" THEN  GO TO
 19
5555 GO TO 5200
5600 PAUSE 20: PRINT  AT 17,5; I
NK  RND *6;"CHICKEN";
5700 GO TO 5600
7000 LET l=8*(14-a): LET j=(b*8)
: LET k=255-(b*8)-4: FOR z=0 TO
1: OVER 1: PLOT 248,64: DRAW -k,
l: PLOT 7,64: DRAW j,l: FOR p=0
TO 4: BEEP .04, RND *55: NEXT p:
 NEXT z: OVER 0
7050 LET sc=sc-10
7100 RETURN
7500 LET l=8*(14-a): LET j=(b*8)
: LET k=255-(b*8)-4: FOR z=0 TO
1: OVER 1: PLOT 248,64: DRAW -k,
l: PLOT 7,64: DRAW j,l: FOR p=0
TO 4: BEEP .04, RND *55: NEXT p:
 NEXT z: OVER 0
7550 FOR n=0 TO 12: PRINT  INK n
/2; AT xx,yy;a$(1); AT xx+1,yy;b
$(1); AT xx+2,yy;b$(2); AT xx+3,
yy;a$(4); AT xx+4,yy;a$(5): BEEP
 .01,n: NEXT n
7552 PRINT  AT 1,1;"SCORE="; INT
 sc; AT 1,14;"HI SCORE=";hs
7555 PRINT  AT a,b;"X"
7560 PRINT  AT xx,yy;a$(1); AT x
x+1,yy;a$(1); AT xx+2,yy;a$(1);
AT xx+3,yy;a$(1); AT xx+4,yy;a$(
1): BEEP .01,35
7600 IF i=6 THEN  LET sc=sc+50:
GO TO 20
7700 LET sc=sc+10: GO TO 20
7800 PRINT ; FLASH 1;"          NO
 POINTS NO PLAY                P
RESS ANY  KEY": PAUSE 250: PAUSE
 0: GO TO 500
8000 PRINT  AT 1,1;"SCORE=";sc;
AT 1,14;"HI SCORE=";hs
8100 PRINT  AT 2,0;"QQQQQQQQQQQQ
QQQQQQQQQQQQQQQQQQQQQQ"
8150 PRINT  AT 14,0; INK 2;"R QQ
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ SQQQ
 ABC ABC ABC ABC ABC ABC QQQQQQ
 DEF DEF DEF DEF DEF DEF QQQQQQ
 GHI GHI GHI GHI GHI GHI QQQQQQ
 JKL JKL JKL JKL JKL JKL QQQQQQQ
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ"
8200 PRINT  INK 1;"QQQQQQQQQQQQQ
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ
QQQQQQQQQQQQQQQQQQQQ"
```

```
8999 RETURN
9000 REM ***************graphics

9001 FOR f= USR "a" TO  USR "s"+
7: READ a: POKE f,a: NEXT f
9005 REM  dalek head  **********

9010 DATA 0,4,7,4,0,0,0,0,1,31,2
40,32,63,21,63,21,128,192,32,16,
240,80,240,80,0,0,0,0,128,127,12
8,1,63,42,106,106,255,255,255,12
8,240,168,168,168,248,252,252,4

9015 REM  dalek body ***********

9020 DATA 1,3,3,2,2,2,4,5,0,109,
109,0,205,205,0,141,4,180,178,2,
178,178,2,178,9,8,19,51,32,127,1
27,127,141,0,25,25,0,255,255,255
,153,1,141,141,1,255,255,255
9025 REM destroyed head ******

9030 DATA 0,1,37,2,85,64,20,86,3
2,144,0,54,74,144,166,217,9,50,8
7,147,42,39,23,232,204,233,86,23
4,230,105,75,255
9035 REM floor graphic
9040 DATA 0,0,60,66,153,60,255,2
55
9045 REM laser graphics
9050 DATA 3,3,4,8,48,60,126,255,
192,192,32,16,12,60,126,255
9060 RETURN
9100 PRINT "        DALEK RAID
                  BY MELVIN CART
ER                PRESS A KEY TO
 PLAY
                ******************
************     IMPORTANT DISENG
AGE                    CAPS LOCK"
9150 PAUSE 0: CLS : PRINT "
   DALEK  RIAD                 This
game is not for the weak    heart
ed. You have been warned.   The o
bject of this game ???      is to
 stop the multicoloured     DALEK
S from rescuing the other   DALEK
 PRISONERS you captured     (it t
ook a long time to capture them
so don't lose!!!!)          you c
an shoot them with your     twin
lasers. Sounds simple huh,  the g
ame ends when the DALEK     reach
es the bottom
  PRESS A KEY "
9200 PAUSE 0: CLS : PRINT : PRIN
T "Oh,by the way some DALEKS
   cannot be seen,but if you fir
e  your lasers where the lasers
   cross the DALEK he will show
   through,you should be able to
   shoot it then if not then
       BYE BYE !!!
   POINTS =10 for each DALEK
    except an invisible DALEK wh
ich is worth 50 POINTS
   *****IMPORTANT***************
*** you lose 10 points every sho
t    except when you hit a DALEK
"
9300 PRINT  FLASH 1; INK 2;"PRES
S A KEY TO FIND OUT WHERE TO HIT
 DALEKS"
9400 PAUSE 0: CLS : PRINT " MOVE
 YOUR TARGET SIGHT ( X )    UP U
SING KEY      Q             DOWN
 USING KEY    A             LEFT
 USING KEY    O             RIGH
T USING KEY   P             FIRE
 USING KEY    M            "
9500 PRINT : PRINT "WHEN DALEKS
TRAVEL BACKWARDS    HIT THEM
    ABC
    DEF
    GHX< HERE
    JKL                WHEN DALEKS
TRAVEL FOREWARDS    HIT THEM
          ABC
          DEF
    HERE >X HI
          JKL          GOOD LUCK !!
!!!                   "
9700 PRINT  INK 1;"PRESS A KEY T
O LOSE GAME   ": PAUSE 0
9900 RETURN
9999 SAVE "DALEKRAID" LINE 0
```

BALLOON BU

```
   1 GOTO 8500
   5 CLS
  10 LET X=18
  20 LET Y=30
  30 GOTO 6000
  35 CLS
  40 PRINT "DO YOU WANT MAZE 1 O
R 2?"
  50 IF INKEY$="1" THEN GOTO 700
0
  60 IF INKEY$="2" THEN GOTO 800
0
  70 IF INKEY$="" THEN GOTO 50
  80 IF INKEY$<>"1" OR INKEY$<>"
2" THEN GOTO 50
 320 PRINT AT X,Y;"O";AT X+1,Y;"
X";AT X+2,Y;"█"
 800 GOTO 4900
 900 FOR N=1 TO Z
1000 LET B$=INKEY$
1010 IF B$="5" THEN GOTO 1400
1020 IF B$="6" THEN GOTO 1600
1030 IF B$="8" THEN GOTO 1800
1040 IF B$="" THEN NEXT N
1080 GOTO 2000
1090 STOP
1400 PRINT AT X,Y-1;
1410 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1420 IF C$="+" THEN GOTO 4000
1422 PRINT AT X+1,Y-1;
1423 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1424 IF C$="+" THEN GOTO 4000
1425 PRINT AT X+2,Y-1;
1426 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1427 IF C$="+" THEN GOTO 4000
1430 PRINT AT X,Y;" ";AT X+1,Y;"
 ";AT X+2,Y;" "
1440 LET Y=Y-1
1450 PRINT AT X,Y;"O";AT X+1,Y;"
X";AT X+2,Y;"█"
1460 GOTO 800
1600 PRINT AT X+3,Y;
1610 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1620 IF C$="+" THEN GOTO 4000
1630 PRINT AT X,Y;" ";AT X+1,Y;"
 ";AT X+2,Y;" "
1640 LET X=X+1
1650 PRINT AT X,Y;"O";AT X+1,Y;"
X";AT X+2,Y;"█"
1660 GOTO 800
1800 PRINT AT X,Y+1;
1810 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1820 IF C$="+" THEN GOTO 4000
1821 PRINT AT X+1,Y+1;
1822 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1823 IF C$="+" THEN GOTO 4000
1824 PRINT AT X+2,Y+1;
1825 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
1826 IF C$="+" THEN GOTO 4000
1830 PRINT AT X,Y;" ";AT X+1,Y;"
 ";AT X+2,Y;" "
1840 LET Y=Y+1
1850 PRINT AT X,Y;"O";AT X+1,Y;"
X";AT X+2,Y;"█"
1860 GOTO 800
2000 PRINT AT X-1,Y;
2010 LET C$=CHR$ PEEK (PEEK 1639
8+PEEK 16399*256)
2020 IF C$="+" THEN GOTO 4000
2030 PRINT AT X,Y;" ";AT X+1,Y;"
 ";AT X+2,Y;" "
2040 LET X=X-1
2050 PRINT AT X,Y;"O";AT X+1,Y;"
X";AT X+2,Y;"█"
2060 GOTO 800
4000 PAUSE 5
4010 PRINT AT 9,11;"HARD LUCK"
4020 PRINT AT 10,10;"PRESS (P) T
O"
4030 PRINT AT 11,11;"PLAY AGAIN"
4040 PRINT AT 13,10;"PRESS (S) T
O"
4050 PRINT AT 14,14;"STOP"
4060 LET B$=INKEY$
4070 IF INKEY$="" THEN GOTO 4060
4080 IF B$="P" THEN RUN
4090 IF B$="S" THEN STOP
4100 IF B$<>"P" OR B$<>"S" THEN
GOTO 4070
4900 IF X<>1 THEN GOTO 900
4910 IF Y<>29 THEN GOTO 900
5000 PRINT AT 1,28;"▛";AT 2,28;"
▌";AT 3,28;"▙"
5010 PRINT AT 9,11;"WELL DONE";A
T 10,10;"PRESS (P) TO";AT 11,11;
"PLAY AGAIN"
5020 IF INKEY$="" THEN GOTO 5020
5030 IF INKEY$="P" THEN RUN
5040 STOP
6000 PRINT "WHICH DIFFICULTY DO
YOU WANT TO PLAY      (1-6)?
           (1-HARDEST,6-EASIEST
)"
6010 LET B$=INKEY$
6015 IF B$="" THEN GOTO 6010
6020 IF B$="6" THEN LET Z=6
6030 IF B$="5" THEN LET Z=5
6040 IF B$="4" THEN LET Z=4
6050 IF B$="3" THEN LET Z=3
6060 IF B$="2" THEN LET Z=2
6070 IF B$="1" THEN LET Z=1
6080 GOTO 35
7000 CLS
7100 PRINT "++++++++++++++++++++
++++++++++++"
7110 PRINT "+++          +++
        ▛▀▜+"
7120 PRINT "++
        ▌█▐+"
7130 PRINT "++
        ▙▄▟+"
7140 PRINT "++ + ++++++       ++
++++++++++++"
7150 PRINT "++      ++++++++++++
++++++++++++"
7160 PRINT "++       +++++++++++
++++++++++++"
7170 PRINT "+++       +
  ++++++++++"
7180 PRINT "++++++    +
  ++++++++++"
7190 PRINT "+++++++   +
  ++++++++++"
7200 PRINT "+   +++ + +  +++++++
         +++"
7210 PRINT "+     +   +        +
         +++"
7220 PRINT "+         +        +
         +++"
7230 PRINT "+         +        +
+++++++  +++"
7240 PRINT "+  ++     ++  ++ + +
+++++++  +++"
7250 PRINT "+    ++   ++  ++
 ++        +"
7260 PRINT "+      +++++  ++
 ++        +"
7270 PRINT "+              +
           +"
7280 PRINT "+++            ++++
     ++++  +"
7290 PRINT "+++++          +++++
    +++++  +"
7300 PRINT "++++++++++++++++++++
+++++++++  +"
7310 PRINT "++++++++++++++++++++
++++++++++++"
7330 GOTO 320
8000 CLS
```



...RST

THE BALLOON you are in floats up on its own so you cannot control changes in its ascent. You can, however, move the balloon left, right and down, using the cursor keys. There are two mazes from which to choose and you must guide the balloon round the maze, avoiding the walls which will burst the balloon. Having done that you must then land on the target.

Balloon Burst was written for the 16K ZX-81 by Adrian Blair of Co Tyrone, N Ireland.

```
8005 PRINT "++++++++++++++++++++
++++++++++"
8010 PRINT "++++++++++++++++++++
++    +++ +"
8020 PRINT "++++++++++++++++++++
+     +++ +"
8030 PRINT "+++     ++++++++++++
      +++ +"
8040 PRINT "+++     ++++++++++++
   + +++   +"
8050 PRINT "+++      ++++     ++++
  ++   ++   +"
8060 PRINT "+++ +    +++        ++
  ++   ++  ++"
8070 PRINT "++   ++    +
  ++   ++   ++"
8080 PRINT "++    +        ++
  +++      ++"
8090 PRINT "++    ++      +++++
 ++++     +++"
8100 PRINT "++     ++    ++     +++
+++++     +++"
8110 PRINT "++     ++++++        ++
++++++++++"
8120 PRINT "+++     ++++         ++
++++++++++"
8130 PRINT "++++    +++     +    ++
++++++++++"
8140 PRINT "+++    +++      ++    ++
++++++++++"
8150 PRINT "++    +++       ++    ++
+++      ++++"
8160 PRINT "++    ++       +++ +  ++
++      +"
8170 PRINT "++     +    +++++
          +"
8180 PRINT "++         ++++++
    +++    +"
8190 PRINT "+++        ++++++
     +++++  +"
8200 PRINT "+++++    ++++++++++
+++++++   +"
8210 PRINT "++++++++++++++++++++
++++++++++"
8220 GOTO 320
8500 CLS
8510 PRINT "++++++++++INSTRUCTIO
NS++++++++++"
8514 PRINT AT 2,21;"O";AT 4,21;"
▌"
8520 PRINT AT 3,0;"YOU ARE IN A
BALLOON(X),AND YOU"
8525 PRINT AT 6,22;"▐▀";AT 8,22
;"▀▌"
8530 PRINT AT 7,0;"MUST REACH TH
E TARGET(▌▀▐) USING"
8540 PRINT AT 9,0;"THE CONTROLS.
BUT THE BALLOON    FLOATS UP ON
ITS OWN.THEREFORE  YOU CANNOT CO
NTROL UP MOVEMENT."
8550 PRINT AT 15,0;"+++++PRESS (
P) TO CONTINUE++++++"
8560 IF INKEY$="P" THEN GOTO 860
0
8570 IF INKEY$="" THEN GOTO 8560
8580 IF INKEY$<>"P" THEN GOTO 85
60
8600 CLS
8610 PRINT "++++++++++++CONTROLS
++++++++++++"
8620 PRINT
8630 PRINT AT 6,12;"5=LEFT";AT 8
,12;"6=DOWN";AT 10,12;"8=RIGHT"
8640 PRINT AT 15,0;"+++++PRESS (
P) TO CONTINUE++++++"
8650 IF INKEY$="P" THEN GOTO 5
8660 IF INKEY$="" THEN GOTO 8650
8670 IF INKEY$<>"P" THEN GOTO 86
50
```

MAIL ORDER PROTECTION SCHEME

Advertisements in this magazine are required to conform to the British Code of Advertising Practice. In respect of mail order advertisements where money is sought in advance of the despatch of goods the Code requires the advertiser to despatch goods within 28 days, unless a longer period is stated. Where goods are returned to an advertiser, undamaged, within 7 days, the purchaser's money must be refunded, plus the cost of returning the goods. The reader should retain evidence of despatch.

If you order goods from mail order advertisements in this magazine and pay in advance of delivery you will be considered for compensation under the Scheme if the advertiser becomes insolvent or ceases to trade provided that:

(a) you have not received the goods, or a refund in respect of returning same, AND:

(b) you write to the Advertisement Manager of this magazine, stating the facts, not earlier than 28 days from the date of the order and NOT LATER THAN THREE MONTHS from the date on which the advertisement appeared.

THE SCHEME ONLY COVERS ADVANCE PAYMENT SENT IN DIRECT RESPONSE TO AN ADVERTISEMENT IN THIS MAGAZINE. IT DOES NOT COVER:—

(a) Classified advertising;

(b) payment made in response to catalogues, brochures, etc. received as a result of responding to such advertisements;

(c) advertisers offering services as opposed to goods,

(d) claims where payment is made with Access or Barclaycard and where the cost of the goods is over £30. In this case claims should be made to the Credit Card Company concerned.

Full details of the Scheme are available by sending a stamped and addressed envelope to Mail Order Protection Scheme, Periodical Publishers Association, Imperial House, Kingsway, London WC2B 6UN.

If you want to know about computing . . .

THE FACTS DON'T HAVE TO BE BORING!

An entertaining, but **thorough** reference source with the most readable, comprehensive glossary you'll find anywhere. The Good Computing Book for Beginners is an essential A-Z of all the facts you need to know about computing — and none you don't!

Whether you're brand new to computing, or an old hand keen to stay ahead, you'll score by keeping this classic, top-selling book within reach to use again and again.

The author, Dennis Jarrett, is a successful journalist who was also founder editor of Which Computer? magazine — so his first edition quickly became a standard work. Now this new, substantially enlarged and revised edition covers the latest trends, terms and technology with the relevant facts — and ONLY the relevant facts — in **plain English.**

Here's another fact you'll find fascinating: **it will only cost you £2.95!**

Use the coupon below to get your copy right away — or buy it soon from your bookshop. It's the no-nonsense book you'll turn to again and again.

Please send me____ copy(ies) of The Good Computing Book for Beginners by Dennis Jarrett at £2.95 each plus 50p post and packing. I enclose a cheque for____ / Please debit my credit card account Visa/Access/Diners/Amex number____

Signature____

Name____ (please print clearly)

Address____

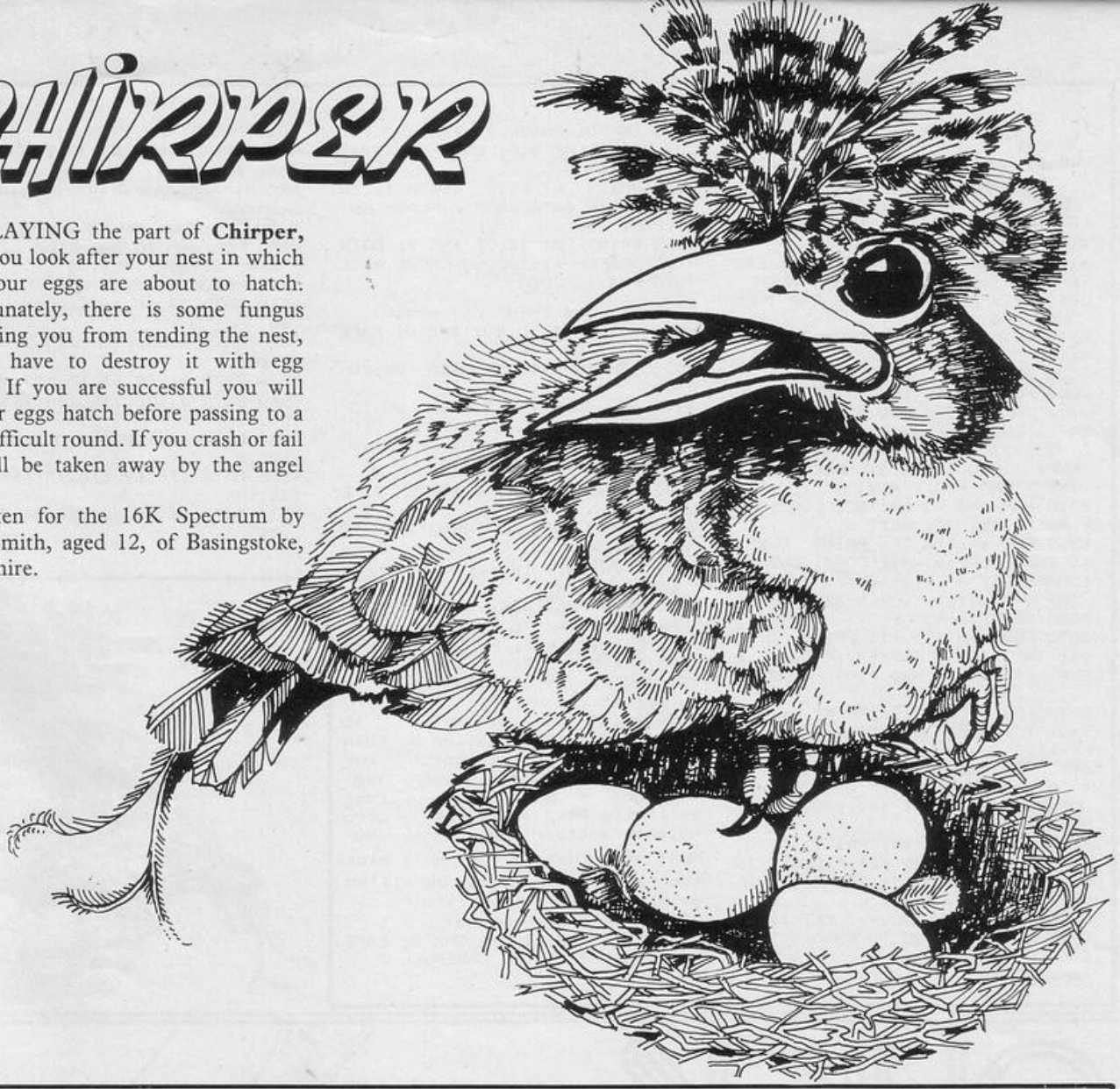
Send to: ECC PUBLICATIONS LIMITED
196-200 Balls Pond Road
Islington
London N1 4AO

GRID BATTLE

GRID BATTLE is a game for two players, written for the 16K Spectrum by Gary Winstanley, aged 13, of Wigan, Lancs. The object is to calculate your move so that you get within four squares of your opponent. You can then fire at your opponent, providing it is your move, and destroy him. Player 1 moves using the cursor keys and 0 to fire and player 2 uses keys O, P, Q, A and M.

```
 1 PAPER 2: INK 7: BORDER 2: C
LS
 2 GO SUB 9000
15 LET x=3
17 LET z$="BATTLE"
18 FOR y=1 TO  LEN z$
19 PRINT  AT x,y+10;z$
20 BEEP .01,y
24 NEXT y
25 LET x=x+3
26 IF x>20 THEN  GO TO 30
27 CLS
28 GO TO 17
30 PRINT  AT 10,5; INVERSE 1;"
DO YOU WANT INSTRUCTIONS?"
35 IF  INKEY$ ="y" THEN  GO TO
9900
36 IF  INKEY$ ="n" THEN  GO TO
39
37 IF  INKEY$ ="" THEN  GO TO
37
 38 GO TO 35
 39 INK 7: PAPER 1: BORDER 1: C
LS
 40 LET w=48
 45 PLOT w,0: DRAW 0,175
 47 LET w=w+8
 48 IF w>207 THEN  GO TO 50
 49 GO TO 45
 50 LET x=0
 55 PLOT 48,x: DRAW 159,0
 56 LET x=x+8
 57 IF x>175 THEN  GO TO 60
 58 GO TO 55
 60 PLOT 48,175: DRAW 159,0: DR
AW 0,-175
 70 PRINT  AT 0,0;"Player"; AT
1,3;"1"; AT 0,26;"Player"; AT 1,
29;"2"
 80 PRINT  AT 3,3; INK 2;"A"; A
T 3,29; INK 6;"A"
 85 LET a=10: LET b=6: LET c=10
: LET d=25
 87 LET a$="A": LET b$="A"
 88 LET g=1
 90 PRINT  AT a,b; INK 2;a$
110 PRINT  AT c,d; INK 6;b$
150 PRINT  AT 10,0;"YOUR"; AT 1
1,1;"GO"
160 IF  INKEY$ ="5" THEN  PRINT
 AT a,b;" ": LET b=b-1: GO TO 1
90
170 IF  INKEY$ ="8" THEN  PRINT
 AT a,b;" ": LET b=b+1: GO TO 1
90
175 IF  INKEY$ ="6" THEN  PRINT
 AT a,b;" ": LET a=a+1: GO TO 1
90
180 IF  INKEY$ ="7" THEN  PRINT
 AT a,b;" ": LET a=a-1: GO TO 1

90
185 IF  INKEY$ ="0" THEN  GO TO
500
189 GO TO 90
190 PRINT  AT a,b; INK 2;a$
195 PRINT  AT 10,0;"  "; AT 1
1,1;"  "
200 PRINT  AT 10,27;"YOUR"; AT
11,28;"GO"
210 IF  INKEY$ ="o" THEN  PRINT
 AT c,d;" ": LET d=d-1: GO TO 3
00
220 IF  INKEY$ ="p" THEN  PRINT
 AT c,d;" ": LET d=d+1: GO TO 3
00
230 IF  INKEY$ ="q" THEN  PRINT
 AT c,d;" ": LET c=c-1: GO TO 3
00
240 IF  INKEY$ ="a" THEN  PRINT
 AT c,d;" ": LET c=c+1: GO TO 3
00
250 IF  INKEY$ ="m" THEN  GO TO
600
260 GO TO 210
300 PRINT  AT c,d; INK 6;"A"
310 PRINT  AT 10,27;"  "; AT
11,28;"  "
320 GO TO 90
500 IF c=a+4 OR c=a-4 OR d=b+4
OR d=b-4 THEN  PRINT  AT c,d;"B"
: GO TO 510
505 IF c >= a+4 OR c >= a-4 OR
d >= b+4 OR d >= b-4 THEN  GO TO
190
510 PRINT  AT 21,0; FLASH 1;"
     PLAYER 1 WINS      ":
BEEP 3,5: PAUSE 100: CLS
520 PRINT  AT 10,10;"ANOTHER GA
ME?"
525 IF  INKEY$ ="y" THEN  GO TO
39
530 IF  INKEY$ ="n" THEN  STOP
532 IF  INKEY$ ="" THEN  GO TO
532
535 GO TO 525
600 IF a=c+4 OR a=c-4 OR b=d-4
OR d=b+4 THEN  PRINT  AT a,b;"B"
: GO TO 610
605 IF a >= c+4 OR a >= c-4 OR
b >= d-4 OR b >= d+4 THEN  GO TO
300
610 PRINT  AT 21,0; FLASH 1;"
     PLAYER 2 WINS      ":
BEEP 3,5: PAUSE 100: CLS
620 GO TO 520
8999 STOP
9010 FOR a= USR "a" TO  USR "b"+
7:: READ user: POKE a,user: NEXT
a: RETURN
9020 DATA 0,0,24,60,60,24,0,0
9030 DATA 0,145,90,124,56,28,118
,129
9900 PAPER 1: BORDER 1: INK 7: C
LS
9910 PRINT  AT 0,10; INVERSE 1;"
INSTRUCTIONS"; AT 1,10;"========
===="
9920 PRINT  AT 3,0;"   BATTLE is
 a game of strategy where you mu
st manouver your      ship around
the board avoiding    your opponen
ts range of fire.     When your op
ponent is four        squares away
 he can fire at you providing it
 is his turn to move"
9930 PRINT  AT 15,0;"PLAYER 1 ca
n move one square at a time usin
g the cursor keys..   Fire usin
g '0'                 PLAYER 2 ca
n move around the     using 'O,A,
O,P' in their         respective
positions and fire    using 'M'"

9935 PRINT  AT 21,10; FLASH 1;"A
NY KEY": PAUSE 0
9940 GO TO 39
```

CHIRPER

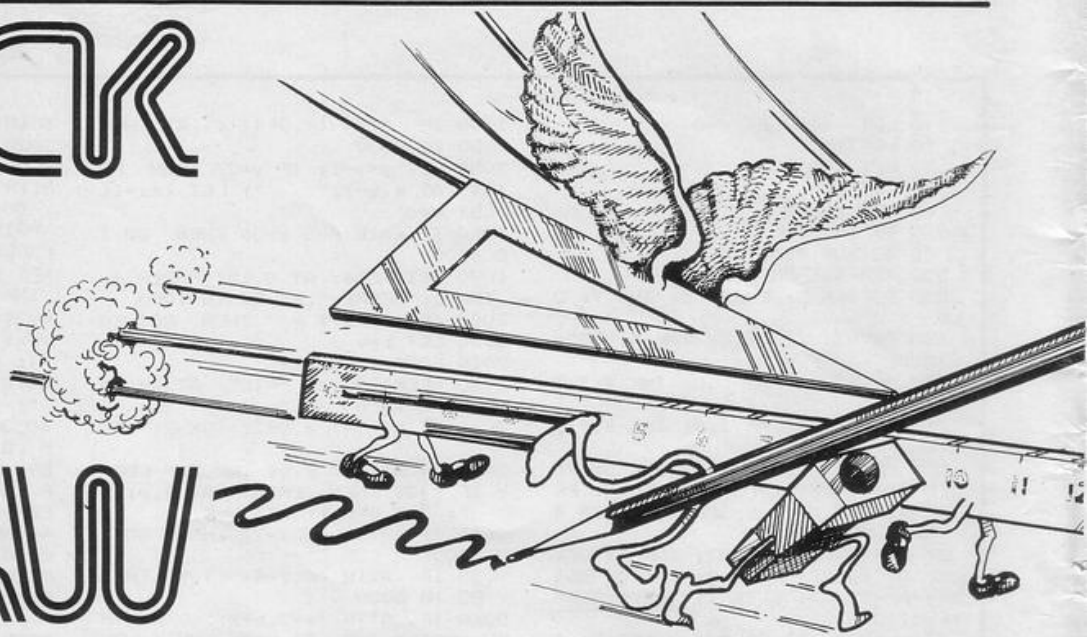


PLAYING the part of **Chirper,** you look after your nest in which four eggs are about to hatch. Unfortunately, there is some fungus preventing you from tending the nest, so you have to destroy it with egg bombs. If you are successful you will see your eggs hatch before passing to a more difficult round. If you crash or fail you will be taken away by the angel bird.

Written for the 16K Spectrum by Toby Smith, aged 12, of Basingstoke, Hampshire.

```
  10 LET x=0: LET y=0
  20 LET l=3
  30 LET s=0
  40 LET hs=0
  60 LET sk=10
  70 GO TO 9000
  80 GO SUB 9500
 500 REM Set up screen
 510 BORDER 5: PAPER 5: INK 7: C
LS
 530 PRINT  AT 21,0; INK 4;"(32*
ig8)"
 540 PRINT #1; AT 0,0; INK 4;"(3
2*ig8)"
 550 PRINT #1; AT 1,0; INK 4;"(3
2*ig8)"
 555 PRINT #1; AT 0,0; INK 0; PA
PER 4;"LIVES=": FOR a=1 TO l: PR
INT #1; AT 0,6+a; INK 7; PAPER 4
;"A";: NEXT a
 560 PRINT  AT 19,27; INK 7;"©©©
©"; AT 19,27; OVER 1; INK 0;"#&%
$"; AT 19,27; OVER 1;"(g5:ig5:g5
:ig5)"
 570 PRINT  AT 20,27; PAPER 5; I
NK 0;"(g7:2*ig8:ig4)"
 580 BEEP .5,14: BEEP .5,11: BEE
P .8,11: PAUSE 4: BEEP .5,12: BE
EP .5,9: BEEP .8,9: PAUSE 4: BEE
P .5,7: BEEP .5,9: BEEP .5,11: B
EEP .5,12: BEEP .5,14: BEEP .5,1
4: BEEP .6,7
1000 REM MAIN loop
1010 BEEP .002,0: PRINT  AT x,y;
 INK 2;" CDE"
1020 GO SUB 2000
1030 IF  INT ( RND *10) >= 3 THE
N  GO SUB 3000
1040 IF  ATTR (x,y+4) <> 47 THEN
  GO TO 8000
1050 LET y=y+1: IF y=27 THEN  PR
INT  AT x,y-1;"    ": LET x=x+1:
 LET y=0
1060 IF x=18 AND y=26 THEN  GO T
O 6000
1070 PRINT #1; AT 0,15; PAPER 4;
 INK 1;"SCORE=";s: GO TO 1000
2000 IF  INKEY$ ="" THEN  RETURN
2005 LET b=y
2010 FOR a=x TO 19
2020 BEEP .02,a: PRINT  AT a+1,b
+2; INK 7;"A"
2030 PRINT  AT a,b+2; INK 7;" "

2040 PRINT  AT x,y; INK 2;" CDE"
: IF y=27 THEN  PRINT  AT x,y;"
   ": LET x=x+1: LET y=0:
2045 IF x=18 AND y=26 THEN  GO T
O 6000
2050 IF  ATTR (x,y+4) <> 47 THEN
  GO TO 8000
2060 IF  ATTR (a+2,b+2) <> 47 TH
EN  PRINT  AT a+2,b+2; INK 1; FL
ASH 1;"F": BEEP .005,-10: LET s=
s+1
2070 LET y=y+1
2080 NEXT a
2090 LET s=s-1: LET y=y-1: RETUR
N
3000 FOR a=4 TO  INT ( RND *24+4
) STEP  INT ( RND *4+3)
3010 IF  ATTR (21,a) <> 169 AND
 ATTR (20,a) <> 41 THEN  FOR d=2
0 TO x+ INT ( RND *7+sk) STEP -1
: BEEP .0004,30: PRINT  AT d,a;
INK 1;"B": NEXT d
3015 NEXT a
3020 RETURN
6000 IF  ATTR (20,27) <> 40 OR
ATTR (20,28) <> 40 THEN  BEEP .3
,-30: BEEP .05,25: BEEP .005,20:
 PRINT  AT 2,5; FLASH 1; INK 6;
PAPER 0;"You (iB:iL:iE:iW:sp:iU:
iP) your nest.": PRINT  AT 15,0;
 INK 2; PAPER 6;"ACDEPress any k
ey to restartCDEA": LET x=0: LET
y=x: PAUSE 20: PAUSE 0: LET l=l
-1: GO TO 500
6010 PRINT  AT 18,23; INK 1;"CDE
"; INK 6;"AAAA"
6050 BEEP .5,14: BEEP .5,11: BEE
P .8,11: PAUSE 4: BEEP .5,12: BE
EP .5,9: BEEP .8,9: PAUSE 4: BEE
P .5,7: BEEP .5,9: BEEP .5,11: B
EEP .5,12: BEEP .5,14: BEEP .5,1
4: BEEP .6,14: PAUSE 4
6060 BEEP .5,14: BEEP .5,11: BEE
P .8,11: PAUSE 4: BEEP .5,12: BE
EP .5,9: BEEP .8,9: PAUSE 4: BEE
P .5,7: BEEP .5,11: BEEP .5,14:
BEEP .5,14: BEEP .8,7
6070 FOR a=27 TO 30: PRINT  AT 1
8,a; INK 3;"G": BEEP .8,20: NEXT
 a
6080 BEEP .4,2: BEEP .4,11: BEEP
 .4,2: BEEP .4,11: BEEP .4,2: BE
EP 1,11: PAUSE 3: BEEP .2,11: BE
EP .2,11: BEEP .2,11: BEEP .2,11
: BEEP .5,9: BEEP .5,9: BEEP .9,
7
6090 FOR a=18 TO 2 STEP -1: LET
s=s+5: PRINT #1; AT 0,15; FLASH
1; INK 2; PAPER 6;"SCORE=";s: BE
EP .5,50: PRINT  AT a,27; OVER 0
```

```
;"     ": PRINT  AT a,27; OVER 1;
 INK 1;"____": PRINT  AT a,27; O
VER 1; INK 1;"⊐⊐⊐⊐": AT a,27; OV
ER 1;"⊏⊏⊏⊏"; AT a-1,27; OVER 0;
"DDDD"; AT a+1,27; OVER 0;"    ";
 AT a-2,27; OVER 0;"GGGG": NEXT
a
6100 LET sk=sk-1: LET l=l+1: LET
 x=0: LET y=x: IF sk <= 2 THEN
LET sk=2: LET l=l-1: IF l=0 THEN
  LET l=1
6110 IF  INKEY$ ="" THEN  GO TO
6110
6120 GO TO 500
8000 FOR a=0 TO 10: PRINT  AT x,
y+1; INK  INT ( RND *7); PAPER
INT ( RND *7); OVER 1; CHR$ ( RN
D *131+33); CHR$ ( RND *131+33);
 CHR$ ( RND *131+33): BEEP .02,-
 INT ( RND *30): NEXT a
8010 FOR a=0 TO 10: BEEP .05,-30
: BEEP .05,-20: NEXT a
8015 FOR a=x TO 20: PRINT  OVER
1; INK 2; AT a,y+1;"CDE"; OVER 1
; PAPER 6; AT a,y+1;"///": PRINT
  AT a-1,y+1;"   ": NEXT a
8020 BEEP 2,-40
8030 FOR a=0 TO y+1: PRINT  AT 0
,a; INK  INT ( RND *4);" CDE": B
EEP .01, INT ( RND *50): NEXT a

8040 FOR a=1 TO 19: PRINT  AT a,
y+2;"|": BEEP .08,10: NEXT a: BE
EP .1,0
8050 FOR a=20 TO 1 STEP -1: PRIN
T  AT a,y+1; INK 7;" A ": BEEP .
009,20: PRINT  AT a+1,y+2;"  ":
NEXT a
8060 FOR a=y TO 27: PRINT  AT 0,
a; INK  INT ( RND *5);" CDE"; IN
K 7; AT 1,a+2;" A": BEEP .1,20:
NEXT a
8070 LET x=0: LET y=x: LET l=l-1
: IF l=0 THEN  GO TO 8500
8080 GO TO 500
8500 INK 0: PAPER 7: FOR a=0 TO
20: PRINT  AT a,0; OVER 1;"(32*i
g8)": NEXT a
8560 PRINT  AT 10,5; FLASH 1; IN
K 0; PAPER 6;"SCORE="; FLASH 0;
INVERSE 1;s
8580 PRINT  AT 13,0; INK 7; BRIG
HT 1; PAPER 1;;"ACDE  PRESS A KE
Y TO PLAY   CDEA"

8590 IF s>hs THEN  LET s=hs
8600 PRINT  AT 0,20; INK 0; PAPE
R 6;"HI=";hs
8700 IF  INKEY$ ="" THEN  GO TO
8700
8710 IF  INKEY$ ="" THEN  GO TO
8700
8720 LET s=0: LET x=0: LET y=x:
LET sk=8: GO TO 500

9000 INK 0: PAPER 2: BORDER 2: C
LS
9010 PRINT  INK 6; FLASH 1; AT 0
,0;"(32*ig5)"
9020 PRINT #1; INK 6; FLASH 1; A
T 1,0;"(32*ig5)"
9030 PRINT  AT 4,8; INK 1;"CDE "
; FLASH 1; INK 7; BRIGHT 1;"(iC)
H(iI)R(iP)E(iR)"; FLASH 0; INK 1
; BRIGHT 0;" CDE"
9040 PRINT  AT 6,9; INK 0;"By To
by Smith"
9050 PRINT  AT 8,0; INK 6;"   Yo
u are a bird 'CDE'called   CHIR
PER you are about to hatch  your
 chicks when suddanly you   see
a fungus 'B' poke his      rott
en little head above the   grou
nd then another and another you
MUST stop them or they will block
your path and you will be killed
by his deadly poison. You
only have 3 chances so"
9060 PRINT  AT 19,7; INK 2; PAPE
R 6; BRIGHT 1;" BE CAREFULL "
9080 PRINT  AT 21,3; INK 0; PAPE
R 5;"PRESS ANY KEY TO EGGBOM"
9090 PRINT #1; AT 0,0; INK 7; PA
PER 3;"AAAAAApressAanyAkeyAtoAPl
ayAAAAA"
9100 PAUSE 0: GO TO 80
9500 FOR q=0 TO 55: READ w: POKE
  USR "a"+q,w: NEXT q
9505 RETURN
9510 DATA 24,60,44,110,110,94,94
,60
9520 DATA 63,63,110,220,220,220,
126,63
9530 DATA 0,248,63,15,127,63,3,0
9540 DATA 0,126,255,190,185,167,
159,126
9550 DATA 48,120,206,223,254,248
,192,0
9560 DATA 170,69,176,13,169,189,
126,126
9570 DATA 16,40,124,84,56,56,124
,254
```



QUICK DRAW

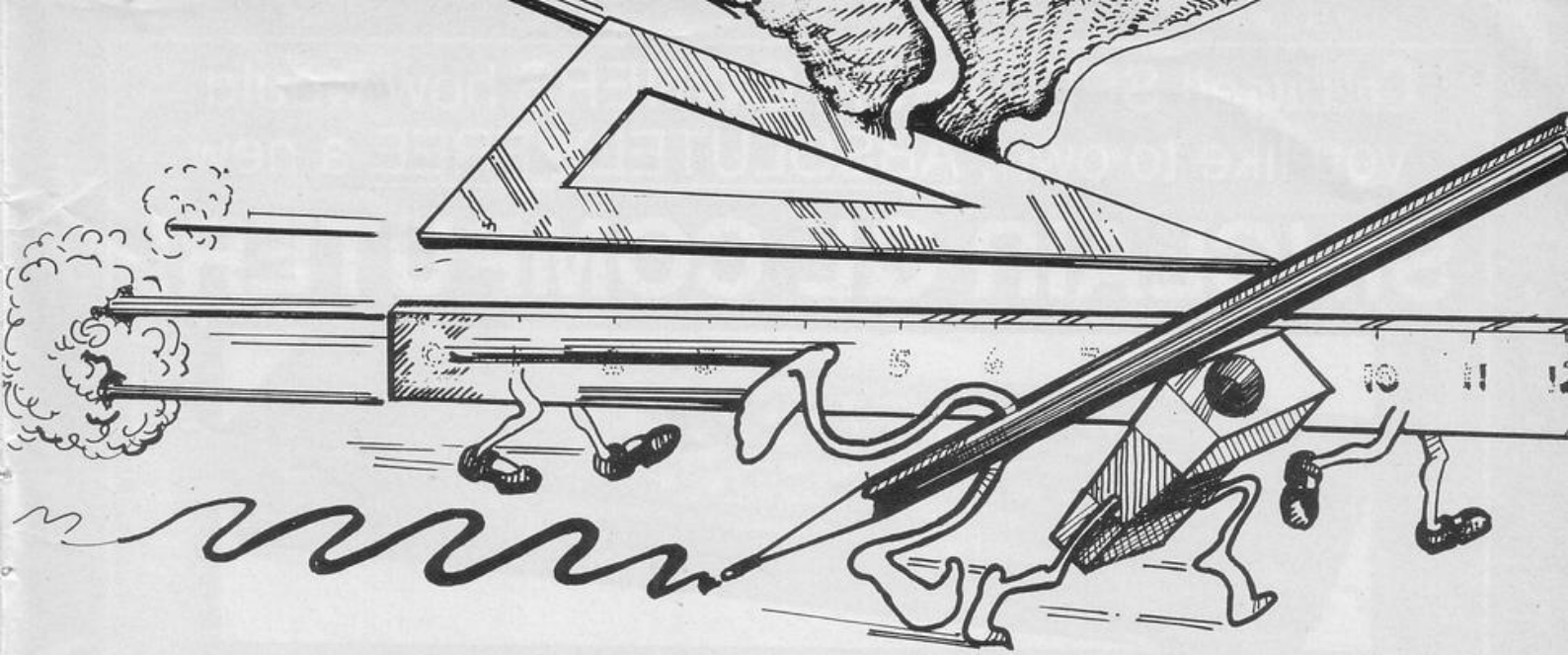
QUICK DRAW can READ DATA from REM lines so that the machine code takes the data from the Basic. If you look at the listing you will see that PLOT is used to move the drawing position, as on the Spectrum. A USR line follows and then a REM DATA line. The data in that line represents co-ordinates and not pixel displacements.

If the draw data is a variable you will be unable to use a REM line and must use POKE statements. The program was written for new ROM machines but has a few lines added which make it compatible with the Mk 1 ROM.

Care should be taken when typing-in lines 1 to 25. After the program has been ENTERed it should be SAVEd twice before being RUN. If the demonstration program works you can then delete the whole listing, starting with the bottom lines, apart from lines 1 and 2. Removing line 2 will cause the program to crash.

The program gives three demonstrations using the drawing routine and after deleting the lines specified more enthusiastic readers can add their own drawing program.

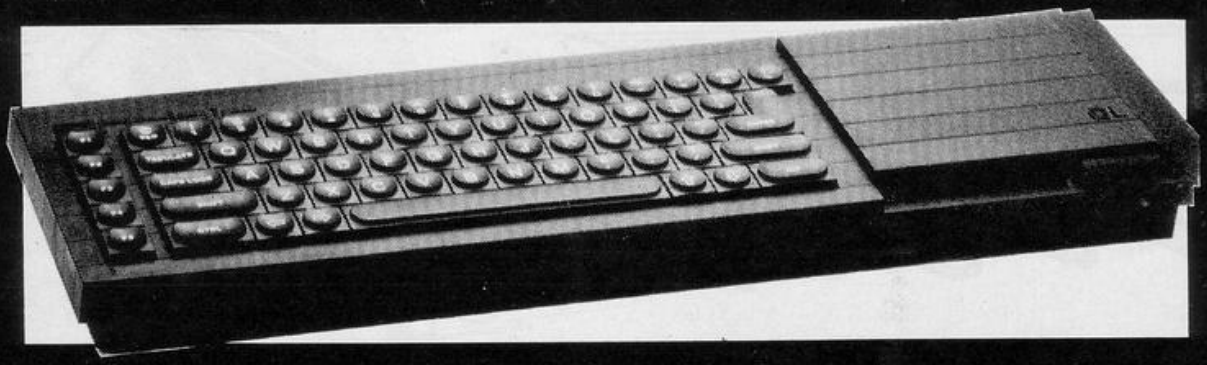
Quick Draw was written for the 16K ZX-81 by Barry Nicholson of Hebburn, Tyne and Wear.



```
   1 REM 490 CHARACTERS XXXXX111
1111111222222222233333333344444
4444455555555556666666667777777
7778888888888999999990000000000
0111111111122222222223333333334
4444444445555555555666666666777
7777777888888888899999999900000
0000011111111112222222222333333
3334444444444555555555666666866
6777777777788888888889999999990
0000000001111111111222222222333
3333333444444444455555555556666
6666677777777778888888888999999
9990000000000111111111122222222
2333333333344444444445555555556
6666666667777777777
   2 REM QUICK-DRAW B.NICHOLSON

   3 LET C$="2A16407E0E750CB9280
32318F6232323237EFEEA2003E5180
FCF1AFE1CFA9C40D61CFE0AF29C40C9E
1237ECD9E4057237EFE1A280ECD9E405
F7AA7171717828283180 27A2B4F237E"
   4 LET C$=C$+"FE1AC29C40237ECD
9E4057237EFE0E2814067504B8280ECD
9E405F7AA7171717828283180 27A2B47
ED433E40237E1E751CB8280EFE0E2803
C39C40E5CD0D41C3AB402A3640223C40
"
   5 LET C$=C$+"3E00214240772377
237723773A3E406F2600E53A3C406FD1
A7EBED5220053E01324240CB7C280C7C
2F677D2F6F233E013243402240224A
403A3F406FE53A3D406FD1A7EBED5220
"
   6 LET C$=C$+"053E01324240CB7C
280C7C2F677D2F6F233E013244402248
40E52A4A40D1A7ED52F28A412A484022
4A403E013245403A4240CB47C203423A
4A40470E0179C5CDB341C179C5E5CDDB
"
   7 LET C$=C$+"41C1453E9B323040
CDB20BC10C10E6C9CD1D153A4640CD1D
15EF04343A4A40CD1D15EF0534CDA70E
2A3C403A4340CB47200209C9A7ED42C9
CD1D153A4840CD1D15EF04343A4A40CD
"
   8 LET C$=C$+"1D15EF0534CDA70E
2A3D403A4440CB47200209C9A7ED42C9
3A4540CB47202F3A4A40470E01692600
C5E53A3C406FD13A4340CB4720031918
03A7ED523A3D40474D3E9B323040CDB2
"
   9 LET C$=C$+"0BC10C10D8C93A4A
40470E01692600C5E53A3D406FD13A44
40CB47200319180 3A7ED523A3C404F45
3E9B323040CDB20BC10C10D8C9"
  10 REM **** HEX LOADER ****
  11 LET A=16514
  12 FAST
  14 FOR I=1 TO LEN C$ STEP 2
  15 POKE A,16*(CODE C$(I)-28)+C
ODE C$(I+1)-28
  16 LET A=A+1
  17 NEXT I
  18 IF PEEK 3875=205 AND PEEK 5
274=42 THEN GOTO 100
  19 REM * ADJUST FOR MK.1 ROM *
  20 POKE 16820,25
  21 POKE 16826,25
  22 POKE 16835,25
  23 POKE 16860,25
  24 POKE 16866,25
  25 POKE 16875,25
 100 REM **** DEMONSTRATION ****
 105 SLOW
 110 LET DRAW=16514
 115 LET VARIABLE DRAW=16653
 120 PRINT "CASTLE"
 125 PLOT 37,5
 130 LET Q=USR DRAW
 135 REM 37,27:43,27:43,4:35,4:3
5,14:32,17:31,17:28,14:28,4:20,4
:20,27:26,27:26,5
 140 PLOT 19,6
 145 LET Q=USR DRAW
 150 REM 10,6:10,37:20,37:20,34:
24,34:31,41:32,41:39,34:43,34:43
,37:53,37:53,6:44,6
 155 PLOT 27,25
 160 LET Q=USR DRAW
 165 REM 36,25
 170 PRINT AT 2,5;"▪▪▪▪▪▪";AT 2,
21;"▪▪▪▪▪▪";AT 7,10;"▪ ▪ ▪";AT 7,
18;"▪ ▪ ▪"
 175 PRINT AT 10,11;"▌";AT 10,20
;"▌"
 180 PAUSE 250
 200 CLS
 210 PRINT "INKBLOT"
 215 RAND
 220 FOR I=1 TO 50
 225 LET X1=31
 230 LET Y1=21
 235 LET X2=INT (RND*60)
 240 LET Y2=INT (RND*40)
 245 PLOT X1,Y1
 250 POKE 16446,X2
 255 POKE 16447,Y2
 260 LET Q=USR VARIABLE DRAW
 265 NEXT I
 300 CLS
 305 PRINT "CHEERS"
 310 PLOT 35,3
 315 LET Q=USR DRAW
 320 REM 42,10:44,10:45,9:45,7:4
4,6:45,5:45,3:44,2:42,2:41,3:41,
6
 325 PLOT 50,8
 330 LET Q=USR DRAW
 335 REM 48,6:47,7:47,10:48,11:4
9,11:51,9:52,10:52,14:54,12:54,1
6:55,15:56,16:56,18
 340 PLOT 57,15
 345 LET Q=USR DRAW
 350 REM 59,17:59,20:59,4:56,4:5
4,6:54,8:63,17
 355 REM **********
 360 STOP
 365 SAVE "QUICK DRAW"
```

Calling all SPECTRUM OWNERS how would you like to own, ABSOLUTELY FREE a new

SINCLAIR QL COMPUTER!



dk'tronics offer you this unique chance

Plus FREE MEMBERSHIP

to the dk'tronics SPECTRUM OWNERS CLUB!

And the opportunity to win one of four great prizes!

1st THE NEW **SINCLAIR QL**
2nd £100 CASH!
3rd £50 CASH!
4th £25 CASH!

Complete the coupon and send it to us and by return you will receive your FREE MEMBERSHIP CARD. Don't delay post today!

I would like to beome a member of the dk'tronics SPECTRUM OWNERS CLUB plus the chance to enter the FREE DRAW.*
*(Free Draw for QL Computer plus other prizes to be held on August 1st 1984).

NAME: _____

ADDRESS: _____

_____ POST CODE: _____

TELEPHONE NUMBER _____ AGE _____

MY SINCLAIR SPECTRUM SERIAL NUMBER IS: _____

dk'tronics

DK Tronics Ltd., Unit 6, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ. Telephone: (0799) 26350 (24 hrs) 5 lines

The Spectrum Connection

ONLY ACES SURVIVE IN ...

NIGHT GUNNER

48K SPECTRUM

BY R.J.SWIFT

JOYSTICK COMPATIBLE
(Kempston, AGF, Sinclair, Protek and Others)

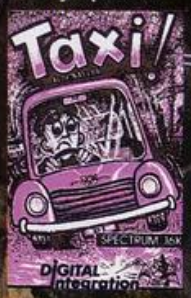
£6.95

– THE AMAZING AIR BATTLE SCENARIO THAT STRETCHES YOU TO THE VERY LIMIT – GUNS BLAZING, ENEMY FIGHTERS ATTACK FROM ALL DIRECTIONS – 3D GROUND ATTACK SORTIES AND THERE'S STILL THE FLIGHT BACK HOME.

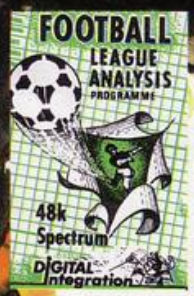
OTHER AMAZING FEATURES
★ 30 GROUND ATTACK MISSIONS
★ REALISTIC 3D EFFECTS
★ EXPLOSIVE SOUND
★ 1 OR 2 PLAYERS EACH WITH 4 LEVELS OF DIFFICULTY
★ HIGH SCORE TABLE.
★ WITH MEDALS
★ SELF DEMONSTRATING TITLE PAGE

Selected products available from:
Boots, Woolworths, H.M.V., Menzies, W.H. Smith, Greens, Lasky's, Rumbelows, Currys, Selfridges, Spectrum Dealers, Video Palace, Zappo, and all good Computer shops.

TAXI
£5.50
Any Spectrum



Become a Taxi Driver and test your skills – but beware the Reckless Drivers! Fun for all the family.



FOOTBALL
£7.95
48K Spectrum

League Analysis – Easy to use Pools Prediction.

With 9 methods of team performance analysis – let your Spectrum guide you to your pools selection.

FIGHTER PILOT
£7.95 48K Spectrum

Joystick compatible.

A spectacular flight simulation of the world's most exciting jet fighter with stunning 3-D cockpit view and the most realistic air to air combat ever seen on the spectrum!

DIGITAL INTEGRATION

Watchmoor Trade Centre,
Watchmoor Road,
Camberley, Surrey GU15 3AJ

Please send me the following games for the Spectrum

Night Gunner 48K	☐ £6.95
Fighter Pilot 48K	☐ £7.95
Football 48K	☐ £7.95
Taxi (Any Spectrum)	☐ £5.50

VAT and p. & p. inclusive within UK
(Overseas inc. 55p. per cassette)

Trade and Export enquiries welcome.

Lifetime Guarantee Cheques payable to Digital Integration

I enclose a cheque/P.O. for_____Total.

Name_____

Address_____

Or debit my Access Account No.

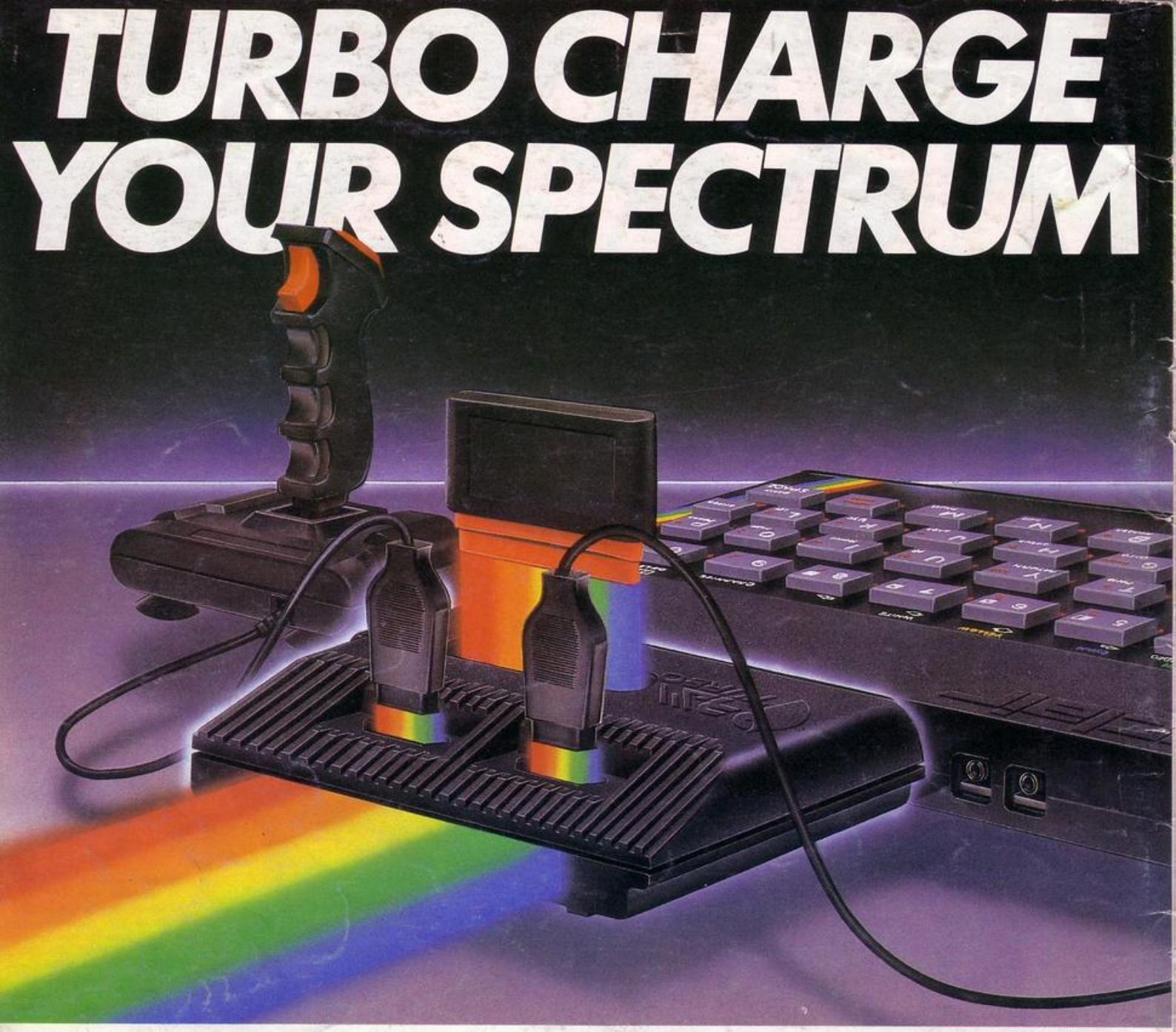
Access

Tele Sales Camberley (0276) 684959

Please send to Digital Integration, Dept SP7
Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3AJ

WIZARDS OF COMPUTER GAMES SOFTWARE

TURBO CHARGE YOUR SPECTRUM



Outperforms any Spectrum interface

The unique Turbo interface from Ram gives you all these features – and more – in one unit:

- A variety of interfaces including: Rom cartridges, two 9-way D plugs for standard joysticks, PLUS full expansion bus at rear.
- Compatible with Kempston and Protek protocols.
- Works with latest Quickshot Mk II auto rapid-fire joysticks!
- Choice of Rom cartridge or tape cassette software.
- Instant program loading with cartridge software.
- Built-in power safety device – unique to Ram Turbo.
- Full one year guarantee.
- Immediate availability – 24 Hr despatch on receipt of P.O./ credit card details (cheques – seven days).
- Incredible value – only £22.95.

So don't wait around – simply complete the coupon and send it to us today.

Or call our credit card hot line on 02514 25252. (Access and Visa welcome).

Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU13 8PA.

24 Hr despatch for credit cards and postal orders

Please send me:

_____ Spectrum Turbo Interface(s) at £22.95 + £1 p+p (overseas orders £3 p+p)

_____ Quickshot II Joystick(s) at £9.95
(Only when purchased with Turbo – normally £12.95 + £1 p+p)

I enclose cheque/postal order or charge my Access/Visa for: £_____

VISA

Name_____

Address_____

_____

_____ Tel _____ SP 7

To: Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU13 8PA.

RAM TURBO

Trade and export enquiries welcome.