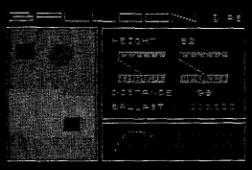
ADJUDICATOR

Keep the enemy out of your base, but let your allies in – beware, the game is played over a six-century timespan (from the 15th to the 21st centuries). The enemies' weapons change from cannons to aircraft and tanks: your base also changes form, transforming itself from a medieval castle to a nuclear reactor.



BALLOON FLIGHT SIMULATION

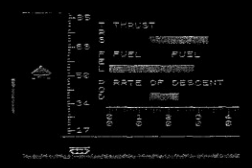
Fly your own balloon, using an altitude simulator. But you are unlikely to have enough fuel to make the trip which means that you will almost certainly have to land in the large white cross and take on more fuel.

HORSE RACE

Test your reactions and experience the thrills of the turf. You and your opponent play against a computer controlling the other horses in the race – and it can stop the reel whenever it likes. The computer, unlike you and your opponent, never makes mistakes.

TREASURE HUNT

Blackbeard, the fierce pirate captain, has hidden all his treasure on a desert island. All you have to do is find it. However, you may find it a little difficult to locate the treasure because the island is covered by the tide every eight hours!



LUNAR LANDING

You must land your spaceship on the moon before the life support system fails, or you will smash into the rocky surface below.

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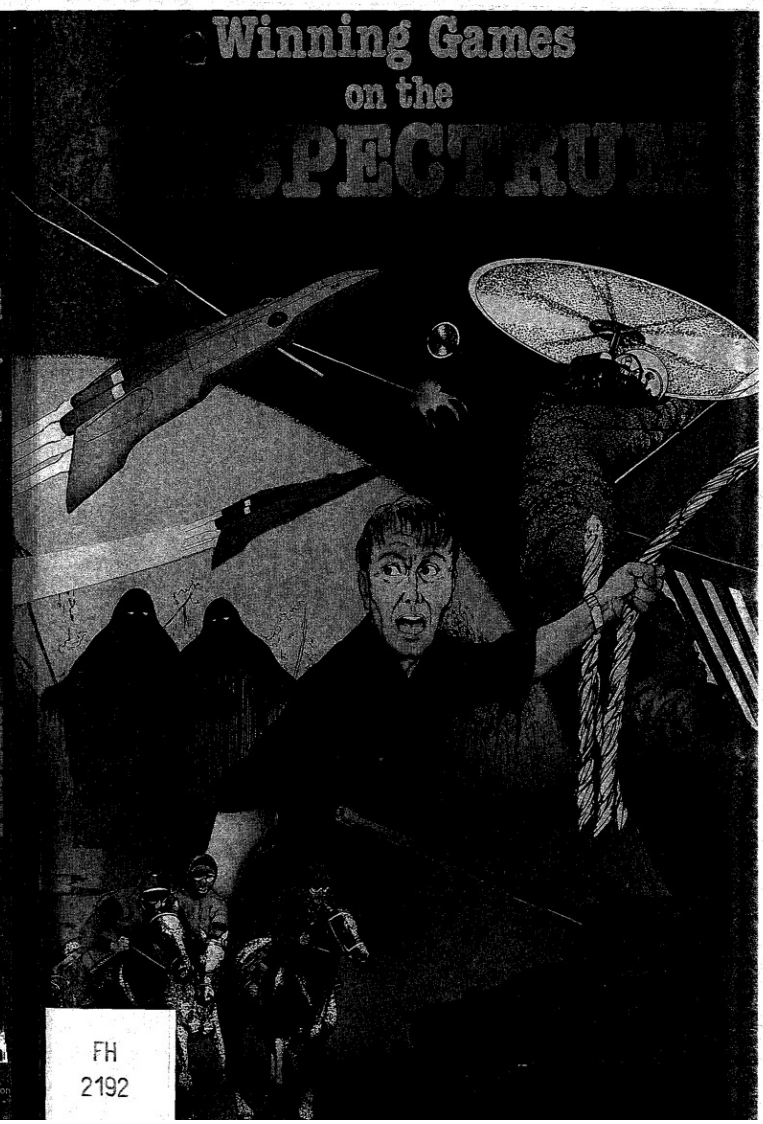
Winning Games on the SPECTRUM



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WINNING GAMES ON THE ZX SPECTRUM

TOBY MATTHEWS and PAUL SMITH
with assistance from EDWARD PETERS

This book has been written to provide a range of exciting and addictive games for the ZX Spectrum owner. Most of the programs can be run on a 16K or 48K machine. The simple shorter programs offer more than usual in the way of themes, including some classic "shoot-em-up" games, but the majority require imagination and skill on the user's part. Some of the longer games can equal commercial software for speed and variety; many will be pleasantly surprised to find such a novel and stimulating selection in a book of this kind.

Beginners and old hands alike can use the book. Newcomers will find the games will help them learn good basic general programming for the Spectrum, whilst the experienced reader with a knowledge of BASIC will find the longer games (and those using machine code subroutines) helpful in expanding their existing skills. Whatever the level, there is something in this book for every reader.

Readership: Spectrum computer users, of all ages and at all levels.

Winning Games on the ZX SPECTRUM

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Contents

Introduction

This book has been written to provide a range of exciting and addictive games for the ZX Spectrum owner, of either a 16K or 48K machine. The majority of programs will run on both machines, and even the shorter and simpler ones offer a bit more than the usual in the way of themes. We have included a couple of the classic 'shoot-em-up' types of games, but most require a little more imagination and skill. Some of the longer games, for example, are at least the equivalent of much more commercial software in their speed and variety. In fact, users will be pleasantly surprised to find that the majority of the games are novel, not being found in other books or software.

The book can be used by both beginners to games computing and those who are old hands on the ZX Spectrum. Newcomers will find the games teach a lot of basic skills which are helpful in general programming for the Spectrum, whilst experienced readers with a good knowledge of BASIC will find the longer games and those that use machine code subroutines useful in expanding their programming skills. But whatever your level of skill, we are sure that you will find there is something for you in the book.

The programs listed in the book increase in length from short programs which will run on both 16K and 48K Spectrums to longer ones which are suitable for the larger machine. However, if your fingers do get tired of typing in the listings, you can always cheat by buying the software on the cassettes which are available from John Wiley & Sons, Baffins Lane, Chichester, Sussex.

Hints on trouble shooting

All of the games in this book have been thoroughly tested, and will work as they should if they are properly listed. A few hints on entering and running games will probably be useful, however, to avoid making the sort of minor mistakes which lead to programs crashing or not working as they should.

It is a good idea to get someone to help with typing in programs, particularly the longer ones where it is easy to miss a line. We have found it helpful if one person types while the other reads the program out: this speeds things up a lot and reduces the error rate. It may seem obvious, but using a ruler to go through the program line by line works wonders to cut down the error rate. If you cannot get somebody to help you type in programs, then flatten the book (but try not to break the spine) and use a ruler.

It is *very* important to make sure that *all* spaces are included when typing in programs. Because the spaces tell the computer to carry out certain operations, leaving them out causes havoc! If in doubt, check each line carefully to make sure that you have typed it in exactly as listed. We have also included a 'Key to graphic characters' with each game, so that it is quite clear how the graphics are defined in each game. If you follow the key precisely, you will have no problems in getting the characters to work properly in the games.

When programs do not run as they should, it is usually due to the fact that a line, space, or character has not been inserted where it should be. One of the things that you must never do is try to 'read' a program as if it were written in English. Programs for Spectrums are written in BASIC, and it is the Sinclair 'dialect' form of that computer language which must be learned. Eventually, all programmers are able to 'read' a computer language in its own terms, but it takes a lot of practice and experience. All of the listings in this book appear in a layout very similar to what appears on the TV screen when the program is being typed in or listed, so if you do find that the program is not running properly try to check that the BASIC of what has been typed in is correct, rather than the English. All too often mistakes occur because people type in a line of BASIC having translated it into English first. It makes more sense as a sentence to you, but not, unfortunately as an instruction to the computer!

If a line *is* typed in incorrectly an ERROR message is likely to appear at the bottom of the screen when the program is RUN. On the Spectrum, error messages look like this example:

B Integer out of range, 2Ø5Ø : 3

If this happens simply get out the ZX Spectrum Manual supplied with the computer. Appendix B on pages 189–192 of the Manual lists all the error messages and tells you what they mean.

Where a program contains machine code, it is a good idea to ensure that you SAVE it on tape immediately after it has been typed in. This is because even small mistakes in machine code can cause the program to crash when it is run, and if it has not been saved several hours tedious work can be lost. If you have saved the program on tape, the cause of the crash can be easily found by carefully inspecting the machine code entry after relisting the program.

If nothing happens on one of these programs when you press one of the operation keys, check the *mode* in which the computer has been set. All of the programs listed in this book must be run with the computer in *lower case mode*, i.e. so that the flashing L cursor appears on the screen rather than the flashing C cursor.

Never RUN any part of a program before you have finished typing the whole listing. This is important because an unfinished program often includes undefined lines, and if it is run incomplete, these will cause it to crash and for all your hard work to be lost. You may SAVE the unfinished program on tape, of course, so that it can be completed at a later date.

We have always found it best to make two copies of programs, especially of the longest games, so that any 'mistakes' in running or damage to the tape does not mean wasted effort.

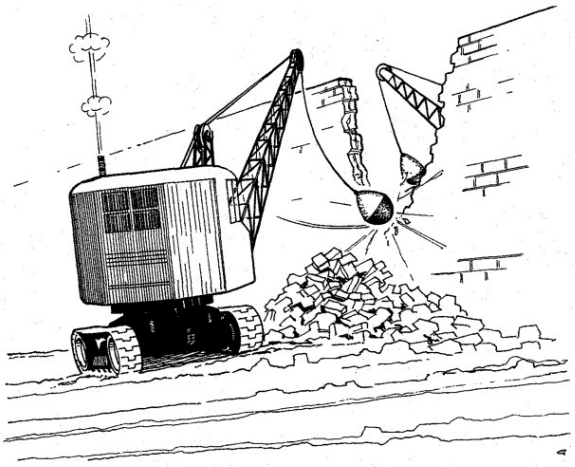
The 'Key to graphics characters' sections in the program instructions are a helpful guide to how we have defined the graphics to be used in our games. You will often see graphics characters which do not normally exist in the Spectrum character set. This is because we have used the user-defined graphics capability of the machine. Where this occurs, you must use the computer in its *graphics mode*, i.e. press CAP SHIFT and 9 simultaneously. Upper case letters will appear in the screen; this is confusing, but do not worry because the computer will define the required characters automatically.

Take especial care when typing-in DATA, DRAW, PLOT and POKE statements that the numbers following them are correct. Some are in machine code in this book, and may cause the program to crash if entered incorrectly. Others, whilst not in machine code, may cause various parts of the program to malfunction – placing graphics characters in odd parts of the screen, for example.

Games for the ZX Spectrum

1

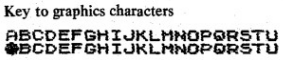
Break Through



(16K)

A version of the classic 'break out' game for two players. This game has a time limit, which can be set by the players, from a minimum of 100 seconds up to a maximum of 900 seconds. The object is of course to break down your opponent's wall before he breaks down yours.

Key to graphics characters



```
  10 REM ■■■ © PAUL SMITH / ■■■
           ELLIS HORWOOD ■■■
  20 FOR Z=USR "A" TO USR "A"+7
  30 READ X: POKE Z,X: NEXT Z
  40 DATA 24,126,126,255,255,126
,126,24
  50 POKE 23658,8
 100 REM ■ START ■
 110 LET PL1=0: LET PL2=0
 120 GO SUB 200
 190 BEEP .005,60
 195 GO TO 300
 200 REM ■ VARIABLES ■
 210 LET A$="■■■■■■■■■■■■■■■■
■■■■■■■■■■■■■■■■"
 220 LET B$="■■■■■■■■■■■■■■■■
■■■■■■■■■■■■■■■■"
 240 LET C$="
■
 250 LET D$="
"
 260 LET A=12: LET B=15
 270 LET D=-1: LET C=1: IF RND>.
5 THEN LET C=-1: LET D=1
 290 RETURN
 500 REM ■ SCREEN ■
 510 PRINT AT 0,0;"
THROUGH BREAK
 520 PLOT 0,148: DRAW 255,0
 530 PLOT 0,12: DRAW 255,0
 540 PRINT AT 21,0;"PLAYER 1:0
PLAYER 2:0  TIME:"; INVERSE 1;"©
PS"
 550 PRINT AT 5,0; INK 4;A$;AT 1
8,0; INK 5;B$
 560 PRINT AT 6,0;C$;AT 17,0;D$
 570 PRINT AT A,B; INK 3;"●"
 590 PRINT AT 3,1;"PLAYER 1 -  Z
:LEFT  X:RIGHT"
 595 PRINT AT 15,1;"PLAYER 2 -
B:LEFT  N:RIGHT"
 600 PRINT #0;"PRESS NUMBER FOR
 10ds OF SECONDS"
 610 LET Z$=INKEY$: IF Z$>"9" OR
 Z$<"1" THEN GO TO 610
 620 BEEP .1,10: INPUT 0
 630 LET MAX=VAL Z$*100
 700 FOR Z=1 TO 15: BEEP .1,Z: N
EXT Z
 710 PRINT AT 21,29;"   "
 720 PRINT AT 8,0;,,;AT 15,0;,,
 900 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
1000 REM ■ MAIN LOOP ■
1010 IF IN 65278=253 THEN LET C$
=C$(2 TO )+C$(1)
1020 IF IN 65278=251 THEN LET C$
=C$(32)+C$( TO 31)
1030 PRINT AT 6,0; INK 5;C$
1040 IF IN 32766=239 THEN LET D$
=D$(2 TO )+D$(1)
1050 IF IN 32766=247 THEN LET D#
=D$(32)+D$( TO 31)
1060 PRINT INK 4;AT 17,0;D$
```



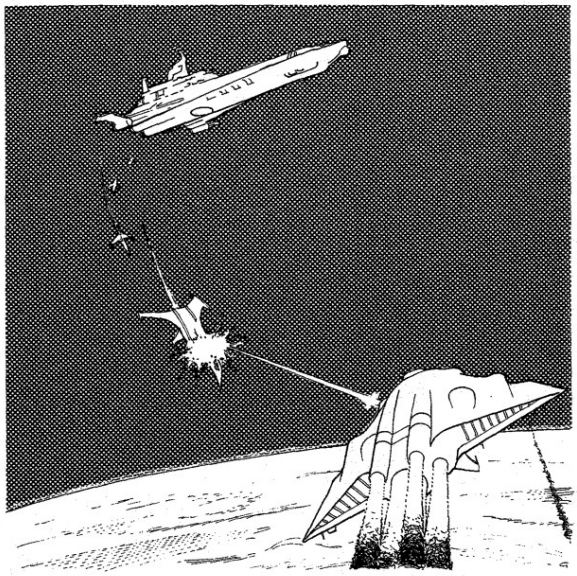
```
1100 LET A1=A: LET B1=B
1110 LET A=A+C: LET B=B+D
1120 PRINT AT A,B; INK 3;"●"
1130 IF A1<>6 AND A1<>17 THEN PR
INT AT A1,B1;" "
1200 LET C1=C
1205 IF A=7 AND C$(B+1)="■" THEN
 LET C=1: LET D=0
1210 IF A=16 AND D$(B+1)="■" THE
N LET C=-1: LET D=0
1214 IF A=7 AND C$(B+1)<>" " THE
N LET C=1: LET D=0
1215 IF A=16 AND D$(B+1)<>" " TH
EN LET C=-1: LET D=0
1220 IF B=30 THEN LET D=-1
1230 IF B=1 THEN LET D=1
1235 IF B=0 THEN LET B=1
1236 IF B=31 THEN LET B=30
1240 IF A=7 AND C$(B+D+1)=" ■" TH
EN LET D=-1: LET C=1
1250 IF A=7 AND C$(B+D+1)="■ " TH
EN LET D=1: LET C=1
1260 IF A=16 AND D$(B+D+1)=" ■" T
HEN LET D=-1: LET C=-1
1270 IF A=16 AND D$(B+D+1)="■ " T
HEN LET D=1: LET C=-1
1280 IF C1<>C THEN BEEP .01,20
1300 IF (A=6 OR A=5) AND A$(B+1)
<>" " THEN BEEP .05,0: LET A$(IN
T (B/4)*4+1 TO INT (B/4)*4+4)="
    ": LET C=1: PRINT AT 5,0; INK
4;A$
1310 IF (A=17 OR A=18) AND B$(B+
1)<>" " THEN BEEP .05,0: LET B$(
INT (B/4)*4+1 TO INT (B/4)*4+4)=
"    ": LET C=-1: PRINT AT 18,0;
INK 5;B$
1350 IF A=4 OR A=19 THEN GO TO 2
000
1400 LET TI=(65536*PEEK 23674+25
6*PEEK 23673+PEEK 23672)/60
1410 PRINT AT 21,29;INT TI
1420 IF TI>MAX THEN GO TO 3000
1990 GO TO 1000
2000 REM ■ SCORE ■
2010 IF A=4 THEN LET PL2=PL2+1
2020 IF A=19 THEN LET PL1=PL1+1
2030 PRINT AT 4,0;,,,,,,
2040 PRINT AT 17,0;,,,,,,
2050 GO SUB 200
2060 PRINT AT 5,0; INK 4;A$;AT 1
7,0;D$; INK 5;AT 6,0;C$;AT 18,0;
B$
2070 PRINT AT 21,9;PL1;AT 21,21;
PL2
2080 FOR Z=10 TO 0 STEP -1: BEEP
 .1,Z: NEXT Z
2084 PRINT AT A,B; INK 3;"●"
2085 FOR X=1 TO 100: NEXT X: BEE
P .1,10: BEEP .1,10
2090 GO TO 1000
3000 REM ■ THE END ■
3005 PRINT #0;" PRESS ANY KEY FO
R ANOTHER GAME"
```

Listing continued next page

```
3005 FOR Z=0 TO 15: BEEP .1,Z: N
EXT Z
3010 FOR Z=0 TO 7
3020 PLOT OVER 1;0,Z: DRAW OVER
1;183,0
3030 IF INKEY$="" THEN NEXT Z: G
O TO 3010
3050 BEEP .1,0: INPUT 0: RUN
9999 RUN
```

2

Space Attack



(16K)

As the last spaceship on earth your task is to defend your home planet from marauding aliens. One of the classic 'shoot-em-up' types of games, this one is easy and simple to type in, being relatively short. However, although it is easy to run on the computer, it is good fun and challenging. There are twenty stages of play, in which the aliens attack at increasing speed, and eventually become invisible. Do remember to watch out for the aliens' mother ship which patrols the upper atmosphere. If you manage to shoot her down, you will receive a bonus of 200 points; unfortunately, she will be replaced by another, equally deadly mother ship!

Key operations are given below:

Z	Steers your spaceship left
X	Steers your spaceship right
<SPACE>	Is used to fire your laser cannon

The game uses a multi-key input routine, which you will find explained later in the book. This routine is well worth investigating, as it is the way in which simultaneous key operation can be used to control two operations, such as in this case steering and laser cannon firing.

The program includes a 'high score' routine which will enable the player to keep a record of his scores in the game. In fact it lists the four best game scores in order alongside the player's name. Simply type in your name (you can only use five characters or fewer: If your name were Alexander you could only use Alex, for example), when the computer asks for your 'Name'.

Once the game is finished, it will ask you if you want another go. Simply type in Y for 'Yes' or N for 'No'.

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
[A][B][C]EFGHIJKLMNOPQRSTU
```

```
  10 REM ********************
  20 REM *   SPACE ATTACK    *
  30 REM *  © TOBY MATTHEWS  *
  50 REM *  & ELLIS HORWOOD  *
  60 REM ********************
  62 GO SUB 660
  65 LET N$=""
  70 BORDER 2: INK 7: PAPER 0: C
LS
  72 DIM H$(5,12): FOR Z=1 TO 5:
 LET H$(Z,6 TO )="--00000": NEXT
 Z
  75 PRINT #0; INVERSE 1;" © TOB
Y MATTHEWS/ELLIS HORWOOD. "
  80 FOR N=17 TO 0 STEP -1
  85 REM ■INTRODUCTION■
  90 PRINT AT N,9;" SPACE ATTACK 
"
 100 PRINT AT N+3,0;,,
 110 NEXT N
 115 POKE 23658,8
 120 BEEP 1,10
 130 GO SUB 5000
 160 DIM A$(32)
 170 DIM B$(32)
 180 LET S=0
 185 REM ■CHANGE LEVEL■
 190 FOR W=1 TO 20
 200 BORDER 2: IF W=1 OR W=8 OR
W=15 OR W=20 THEN LET P=0
```



```
 210 IF W=3 OR W=10 OR W=17 THEN
 LET P=2
 220 IF W=4 OR W=11 OR W=18 THEN
 LET P=3
 230 IF W=5 OR W=12 THEN LET P=5
 240 IF W=6 OR W=13 THEN LET P=6
 250 IF W=7 OR W=14 OR W=19 THEN
 LET P=7
 260 IF W=2 OR W=9 OR W=16 THEN
LET P=1
 270 IF P<=4 THEN LET I=7
 280 IF P>=4 THEN LET I=0
 290 IF W=20 THEN LET I=0
 300 PAPER P: INK I: CLS
 305 REM ■VARIABLES■
 310 LET X=16
 320 LET E=2
 330 LET U=29
 340 LET Y=5
 350 LET A$=" [A] [A] [A] [A] [A] [A] [A] [A] [A]
[A] [A] [A] [A] [A] [A] "
 355 REM ■MAIN LOOP■
 360 CLS : PRINT AT 0,0; PAPER 0
; INK 7;"SCORE ";AT 0,25;"WAVE "
 365 PRINT #0; INVERSE 1;" © TOB
Y MATTHEWS/ELLIS HORWOOD. "
 370 FOR N=1 TO 25-W
 380 PRINT AT 0,6; PAPER 0; INK
7;S;AT 0,30;;W
 390 LET X=X+(IN 65278=251 AND X
<30)-(IN 65278=253 AND X>0)
 400 LET G=I: IF W=20 THEN LET G
=7
 410 PRINT AT 21,X; INK G;"[B]";AT
 21,X-1;" ";AT 21,X+1;" "
 420 PRINT AT E,U;"[C]";AT E,U+2;
" ": LET K=INT (RND*2): IF K=1 T
HEN PLOT (U*8)+7,151: LET H=INT
(RND*32): DRAW 16-H,-148: OVER 1
: PLOT (U*8)+7,151: DRAW 16-H,-1
48: OVER 0: IF K=1 AND (U*8)+(16
-H)+7>X*8 AND (U*8)+(16-H)+7<(X+
1)*8 THEN GO TO 600
 440 IF U=1 THEN PRINT AT E,U;"
  ": LET U=28
 450 PRINT AT Y,0;A$( TO 32);AT
Y+2,0;A$( TO 32);AT Y+4,0;A$( TO
 32);AT Y+6,0;A$( TO 32)
 460 LET A$=A$(2 TO )+A$(1)
 470 BEEP .21-(W/100),-30
 480 IF IN 32766=254 THEN INK G:
 PLOT 8*X+4,5: DRAW 0,154: INK I
: BEEP .01,10: OVER 1: PLOT 8*X+
4,5: DRAW 0,154: OVER 0: IF A$(X
)="[A]" THEN LET A$(X)=" ": LET S=
S+40
 485 IF IN 32766=254 THEN IF U=X
 OR X=U+1 THEN PRINT AT E,U;"
";: BEEP 1,10: LET S=S+200: LET
U=28
 490 IF A$=B$ THEN GO TO 530
 495 LET U=U-1
 500 NEXT N
 510 LET Y=Y+1: PRINT AT Y-1,0;,
```

Listing continued next page

```
,AT Y+1,0;,,AT Y+3,0;,,AT Y+5,0;
,,: IF Y=14 THEN GO TO 540
 520 GO TO 370
 530 NEXT W
 535 REM ■ALIENS HAVE LANDED■
 540 CLS : INK 6: FOR N=50 TO -1
0 STEP -1: BEEP .01,N: NEXT N
 550 PRINT AT 12,7;"YOUR SCORE W
AS ";S
 555 IF W=20 AND A$="" THEN PRIN
T AT 10,2; INVERSE 1;"YOU MADE I
T SPACE CAPTAIN!!!": GO TO 565
 560 PRINT AT 10,5; INK 7; PAPER
 0; FLASH 1;"THE ALIENS HAVE LAN
DED!"
 565 GO SUB 9900
 570 PRINT AT 15,10;"ANOTHER GO?
": PAUSE 0: IF INKEY$="N" THEN S
TOP
 580 IF INKEY$="Y" THEN GO TO 75
 590 GO TO 570
 595 REM ■DESTROY SHIP■
 600 CLS : INK 6: FOR N=50 TO -1
0 STEP -1: BEEP .01,N: NEXT N
 610 PRINT AT 12,7;"YOUR SCORE W
AS ";S
 620 PRINT AT 10,1; INK 7; PAPER
 0; FLASH 1;"YOUR SHIP HAS BEEN
DESTROYED!"
 625 GO SUB 9900
 630 PRINT AT 15,10;"ANOTHER GO?
": PAUSE 0: IF INKEY$="N" THEN S
TOP
 640 IF INKEY$="Y" THEN GO TO 75
 650 GO TO 630
 655 REM ■CHARACTER SET■
 660 FOR N=0 TO 31: READ A: POKE
 USR "A"+N,A: NEXT N
 670 DATA 60,126,219,255,195,126
,66,129,0,24,24,24,36,60,90,195,
0,0,63,127,255,146,255,0,0,0,252
,254,255,73,255,0
 680 RETURN
5000 REM ■KEYS■
5010 PRINT AT 6,2;"KEYS-"
5020 PRINT AT 8,2; INVERSE 1;"Z.
..LEFT"
5030 PRINT AT 10,2; INVERSE 1;"X
...RIGHT"
5040 PRINT AT 12,2; INVERSE 1;"<
SPACE>...FIRE"
5050 PRINT AT 17,10;"READY (Y/N)
?"
5060 IF INKEY$="Y" THEN RETURN
5070 GO TO 5060
9900 FOR N=1 TO 200: NEXT N: CLS
 : FOR N=1 TO 20: BEEP .01,N: NE
XT N: IF S>VAL H$(5,8 TO ) THEN
INPUT "NAME:"; LINE N$
9905 LET N$=(N$+"          ")( TO 5
)
9909 FOR Z=4 TO 1 STEP -1
9910 IF S>VAL H$(Z,8 TO ) THEN L
ET H$(Z+1)=H$(Z): LET H$(Z)=N$+"
--"+("00000"( TO 5-LEN STR$ S))+
```



```
STR$ S
9920 NEXT Z
9930 PRINT AT 6,0; PAPER 0; INK
7;"HIGH SCORES:"
9950 FOR Z=1 TO 4
9960 PRINT AT Z+8,10; INK 7; PAP
ER 0;H$(Z): NEXT Z
9970 RETURN
9999 RUN
```

3

Treasure Hunt

(16K)

Blackbeard the fierce pirate captain has hidden all his treasure on a desert island. All you have to do is find it. Easy!

However, you may find it a little difficult to locate the treasure because the island is covered by the tide every eight hours (represented by 30 seconds 'real time' on the computer).

All you need to remember is to type in 'R' as the instructions scroll across the screen. This will start the game. A number of clues will then appear at the bottom of the screen. which will tell you either in which direction the treasure is to be found or

how many moves away it is. All you have to do is to find the treasure before the time limit is up.

If you want to have another go type Y for 'Yes'. If not, simply type N for 'No'.

Happy treasure hunting!

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
▚▝CDEFGHIJKLMNOPQRSTU
```

```
  10 REM ************************
  20 REM *     TREASURE HUNT      *
  30 REM *   © TOBY MATTHEWS      *
  40 REM *    & ELLIS HORWOOD     *
  50 REM ************************
  60 POKE 23658,8
  70 GO SUB 9000
  80 PAPER 7: INK 0: BORDER 7
  90 CLS
 100 PRINT AT 0,3; PAPER 1; INK
7;"T R E A S U R E  H U N T !"
 105 PLOT 0,152: DRAW 255,0
 110 BEEP 1,10
 120 PRINT AT 4,0; INVERSE 1;"KE
YS-"
 130 PRINT AT 6,3; INK 7; PAPER
2;"P     NORTH"
 140 PRINT AT 7,3; INK 7; PAPER
3;"L     SOUTH"
 150 PRINT AT 8,3; INK 7; PAPER
4;"Z      WEST"
 160 PRINT AT 9,3; INK 7; PAPER
5;"X      EAST"
 180 PLOT 0,88: DRAW 255,0
 185 PLOT 0,52: DRAW 255,0
 187 PLOT 0,57: DRAW 255,0
 188 PRINT AT 16,2;"PRESS ""R""
KEY TO START PLAY!"
 190 LET A$="
            YOU MUST FIND THE T
REASURE BEFORE YOUR TIME RUNS OU
T,USING ONLY THE CLUES AT THE BO
TTOM OF THE SCREEN!!"
 200 PRINT AT 14,0; INVERSE 1;A$
( TO 32)
 210 LET A$=A$(2 TO )+A$(1)
 220 IF INKEY$="R" THEN GO TO 25
0
 230 BEEP .01,10: FOR N=1 TO 2:
NEXT N: BEEP .01,10
 240 GO TO 200
 250 LET G=0: GO SUB 5000
 260 REM ■MAIN LOOP■
 265 INK 0: PAPER 6
 270 LET TX=INT (RND*31)
 280 LET TY=4+INT (RND*14)
 290 IF CODE SCREEN$ (TY,TX)=0 T
HEN GO TO 270
 300 LET X=10: LET Y=10
```

Listing continued next page

```
 310 PRINT AT Y,X;"A"
 320 LET M=0
 330 POKE 23674,0: POKE 23673,0:
 POKE 23672,0:
 340 LET T=30-((65536*PEEK 23674
+256*PEEK 23673+PEEK 23672)/50)
 350 PRINT AT 2,30; PAPER 7;"  "
;AT 2,0;"MOVES:";M;AT 2,25;"TIME
:";INT T
 360 LET A=INT (RND*2)
 390 IF INT T<=0 THEN GO TO 7000
 400 IF INKEY$="P" THEN IF CODE
SCREEN$ (Y-1,X)=32 THEN PRINT AT
 Y,X;" ";: LET Y=Y-1: PRINT AT Y
,X;"A": LET M=M+1
 410 IF INKEY$="L" THEN IF CODE
SCREEN$ (Y+1,X)=32 THEN PRINT AT
 Y,X;" ";: LET Y=Y+1: PRINT AT Y
,X;"A": LET M=M+1
 420 IF INKEY$="Z" THEN IF CODE
SCREEN$ (Y,X-1)=32 THEN PRINT AT
 Y,X;" ";: LET X=X-1: PRINT AT Y
,X;"A": LET M=M+1
 430 IF INKEY$="X" THEN IF CODE
SCREEN$ (Y,X+1)=32 THEN PRINT AT
 Y,X;" ";: LET X=X+1: PRINT AT Y
,X;"A": LET M=M+1
 440 IF X=TX AND Y=TY THEN GO TO
 6000
 450 GO SUB 3000+(A*100)
 460 FOR N=1 TO 30: NEXT N: GO T
O 340
3000 REM ■DISTANCE■
3005 LET D1=0: LET D2=0
3010 IF TX>X THEN LET D1=TX-X
3020 IF TX<X THEN LET D1=X-TX
3030 IF TY>Y THEN LET D2=TY-Y
3040 IF TY<Y THEN LET D2=Y-TY
3045 IF G=1 THEN RETURN
3050 PRINT AT 20,0; PAPER 7;"
                              ";A
T 20,2; PAPER 7;"THE TREASURE IS
 "D2+D1;" MOVES AWAY"
3055 BEEP .1,10
3060 FOR N=1 TO 60: NEXT N
3070 RETURN
3100 REM ■DIRECTION■
3110 LET D$=""
3120 IF TY>Y THEN LET D$=D$+"SOU
TH "
3130 IF TY<Y THEN LET D$=D$+"NOR
TH "
3140 IF TX>X THEN LET D$=D$+"EAS
T"
3150 IF TX<X THEN LET D$=D$+"WES
T"
3160 PRINT AT 20,0; PAPER 7;"
                              ";A
T 20,0;"THE TREASURE'S TO THE ";
D$
3165 BEEP .1,10
3170 FOR N=1 TO 60: NEXT N
3180 RETURN
5000 REM ■SET UP SCREEN■
5010 PAPER 1: INK 6: BORDER 1
5020 PRINT AT 3,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
```



```
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5030 PRINT AT 4,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5040 PRINT AT 5,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5050 PRINT AT 6,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5060 PRINT AT 7,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5070 PRINT AT 8,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5080 PRINT AT 9,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5090 PRINT AT 10,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5100 PRINT AT 11,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5110 PRINT AT 12,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5120 PRINT AT 13,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5130 PRINT AT 14,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5140 PRINT AT 15,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5150 PRINT AT 16,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5160 PRINT AT 17,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5170 PRINT AT 18,0;"▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚
▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚▚"
5180 RETURN
6000 REM ■WIN■
6010 CLS
6020 FOR N=1 TO 20: BEEP .02,N:
NEXT N
6030 PRINT AT 6,5;"YOU DID IT IN
 ";M;" MOVES!"
6040 PRINT AT 8,8;"AND ";30-T;"
SECONDS"
6050 GO TO 7050
7000 REM ■OUT OF TIME■
7010 CLS
7020 FOR N=-20 TO -30 STEP -1: B
EEP .1,N: NEXT N
7030 PRINT AT 4,2;"OH DEAR! YOU
RAN OUT OF TIME"
7035 LET G=1: GO SUB 3000
7040 PRINT AT 6,8;"YOU WERE ";D1
+D2;" MOVES";AT 8,7;" FROM THE T
REASURE"
7050 PRINT AT 10,10;"ANOTHER GO
?"
7060 IF INKEY$="Y" THEN RUN
7070 IF INKEY$="N" THEN STOP
7080 GO TO 7060
9000 FOR N=0 TO 15: READ A: POKE
 USR "A"+N,A: NEXT N
9010 DATA 0,24,36,219,36,219,36,
195,56,56,16,254,16,40,68,130
9020 RETURN
9999 RUN
```

4

Living Dead

(16K)

The main object of this game is to get to the treasure trove, marked with an X, which can appear anywhere on the screen. However, after you materialize in the swampland, you will have to avoid the zombies who chase after you, at the same time as skirting the marshes. If you fall into a marsh, you will lose one of the five lives which the game allows you. If a zombie catches you, you will also lose a life. If this was not enough, you must also be careful not to run out of time (the amount of time taken is displayed at the top of the screen).

Each time you manage to get to the cross on the screen, the time allowance for the

game is re-set to zero. Therefore, if you continue to reach the treasure trove without losing any lives, or running out of time, your score will increase. The faster you find the treasure trove, the quicker your score will mount.

One final sophistication should be explained. If you wish you can redefine the movement keys. Simply press E to *Edit*, and type in the letter, figure or symbol you require to change the key.

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
Ψ▚DEFGHIJKLMNOPQRSTU
```

```
  5 REM ▚ LIVING DEAD ▞
        ▚ © P.SMITH /  ▞
        ▚ ELLIS HORWOOD ▞
 10 FOR a=1 TO 3: READ a$
 20 FOR b=0 TO 7
 30 READ c: POKE USR a$+b,c
 40 NEXT b
 50 NEXT a
 60 DATA "a",0,146,146,84,56,16
,56,0
 70 DATA "c",56,84,40,124,186,1
86,40,108
 80 DATA "b",0,60,90,255,165,60
,231,0
 140 BORDER 0: PAPER 0: INK 7: C
LS
 150 POKE 23658,8
 180 LET K$="8765"
 190 GO SUB 9000
 200 REM ■ VARIABLES ■
 210 DIM a$(19,32)
 220 FOR z=1 TO 60
 230 LET a$(INT (RND*19)+1,INT (
RND*32+1))="Ψ"
 240 NEXT z
 250 LET sc=0
 260 DIM c(10): DIM d(10)
 270 FOR z=1 TO 10
 280 LET c(z)=INT (RND*19+1)
 290 LET d(z)=INT (RND*32)
 300 IF a$(c(z),d(z)+1)="Ψ" THEN
GO TO 280
 310 NEXT z
 320 LET a=INT (RND*19+1)
 330 LET b=INT (RND*32)
 340 LET i=5
 350 LET i=INT (RND*19+1)
 360 LET j=INT (RND*32)
 370 LET A$(I,J+1)="X"
 380 LET TIME=0
 400 CLS
 410 PRINT AT 21,0;"SCORE:";sc
 415 GO SUB 8000
 420 FOR z=1 TO 10
 430 PRINT INK (RND*4+2);AT c(z)
,d(z);"▚"
 440 NEXT z
```

Listing continued next page

```
 445 INPUT AT 0,0;"ENTER SKILL L
EVEL                1 - EASY  1
0 - HARD:";SK
 450 GO SUB 7000
 980 LET f=INT (RND*9+1)
 990 FOR g=1 TO INT (RND*5+6)
1000 LET a1=a: LET b1=b
1010 LET z$=INKEY$
1020 LET a=a+(z$=K$(3) AND a<19)
-(z$=K$(2) AND a>1)
1030 LET b=b+(z$=K$(1) AND b<31)
-(z$=K$(4) AND b>0)
1040 IF a1=a AND b1=b THEN GO TO
 1060
1050 PRINT AT a1,b1;a$(a1,b1+1)
1060 PRINT INK 6;AT a,b;"☻"
1080 IF a$(a,b+1)="Ψ" THEN PRINT
 AT a,b; INK 4;"Ψ": PRINT FLASH
1;AT 21,16;"SPLASH";: GO TO 3005
1100 REM LET e=INT (RND*10+1)
1101 FOR e=f TO f+1
1105 LET c1=c(e): LET d1=d(e)
1110 IF a<c(e) THEN LET c(e)=c(e
)-1
1120 IF a>c(e) THEN LET c(e)=c(e
)+1
1130 IF b>d(e) THEN LET d(e)=d(e
)+1
1140 IF b<d(e) THEN LET d(e)=d(e
)-1
1150 PRINT AT c1,d1;a$(c1,d1+1)
1160 PRINT INK (RND*4+2);AT c(e)
,d(e);"☻"
1180 IF a$(c(e),d(e)+1)="Ψ" OR A
$(C(E),D(E)+1)="X" THEN GO SUB 2
000
1190 NEXT e
1200 IF ATTR (A,B)<>7 THEN GO TO
 3000
1300 IF a=i AND b=j THEN GO TO 5
000
1500 PRINT AT I,J; INK 7;"X"
1510 LET TIME=TIME+SK
1520 PLOT 0,175: DRAW TIME,0
1530 IF TIME>245 THEN GO TO 6000
1900 NEXT g
1990 GO TO 950
2000 LET sc=sc+1
2010 BEEP .1,30
2020 PRINT INK 4;AT c(e),d(e);"Ψ
"
2030 LET c(e)=INT (RND*19+1)
2040 LET d(e)=INT (RND*32)
2050 IF a$(c(e),d(e)+1)="Ψ" THEN
 GO TO 2030
2060 PRINT INK 7;AT 21,6;sc
2090 RETURN
3000 REM ■ CAUGHT ■
3001 PRINT FLASH 1;AT 21,16;"CAU
GHT";
3005 PRINT "    ";
3010 LET li=li-1
3020 BEEP .02,10: BEEP .02,20
3030 IF INKEY$<>"" THEN GO TO 30
20
3040 PRINT INK 7;AT 21,16;"LIVES
```



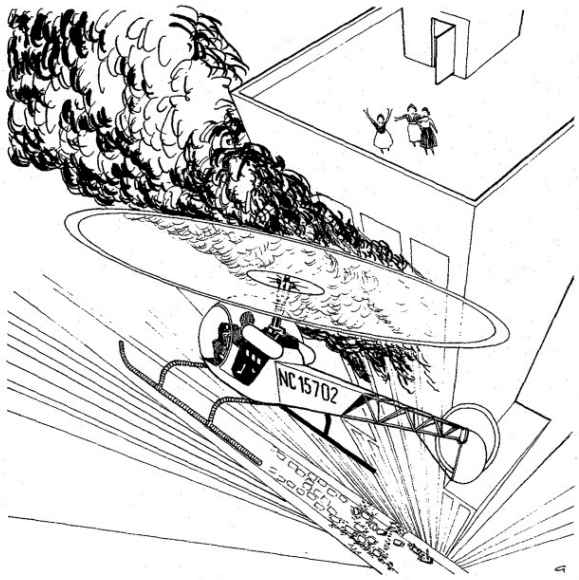
```
:";li;"    "
3050 LET a=INT (RND*19+1)
3060 LET b=INT (RND*32)
3070 IF a$(a,b+1)="Ψ" THEN GO TO
 3050
3080 IF li=0 THEN GO TO 4000
3085 GO SUB 7000
3090 GO TO 1000
3500 INK 2
3590 GO TO 1000
4000 PRINT FLASH 1;AT 10,12;"GAM
E";
4010 PRINT " ";
4020 PRINT INVERSE 1; FLASH 1;"O
VER"
4030 PRINT AT 21,16;"PRESS 1 TO
RERUN"
4040 IF INKEY$<>"1" THEN GO TO 4
040
4050 RUN
5000 REM ■ SUCCESS ■
5010 LET BO=255: FOR Z=TIME TO 0
 STEP -1
5020 LET BO=BO-1: PRINT AT 21,15
;"BONUS:";BO;" "
5030 BEEP .01,Z/4.25: PLOT OVER
1;Z,175: NEXT Z
5031 LET TIME=0: LET SC=SC+BO: P
RINT AT 21,6;SC
5035 LET A$(I,J+1)=" "
5040 LET I=INT (RND*19+1): LET J
=INT (RND*32)
5045 IF A$(I,J+1)="Ψ" THEN GO TO
 5040
5050 FOR Z=1 TO 10: PRINT AT I,J
;" ": FOR X=1 TO 10: NEXT X: PRI
NT AT I,J;"X": FOR X=1 TO 10: NE
XT X: NEXT Z
5060 IF INKEY$="" THEN GO TO 506
0
5065 PRINT AT 21,16;"LIVES:";LI;
"  "
5070 GO TO 1310
6000 REM ■ DEAD ■
6005 BEEP .8,-10: FOR X=1 TO 30:
 NEXT X
6010 FOR Z=LI TO 0 STEP -1: BEEP
.2,Z*10: PRINT AT 21,16;"LIVES:
";Z: FOR X=1 TO 10: NEXT X: NEXT
 Z: GO TO 4000
7000 FOR Z=0 TO 7 STEP .2
7010 BEEP .05,Z*10-10
7020 PRINT AT A,B; INK Z;"☻"
7030 NEXT Z
7040 IF INKEY$="" THEN GO TO 704
0
7050 RETURN
8000 FOR z=1 TO 19
8001 PLOT 0,169: DRAW 255,0
8002 PLOT 0,14: DRAW 255,0
8005 FOR X=0 TO 31
8010 IF a$(z,X+1)="Ψ" THEN PRINT
 AT Z,X; INK 4;"Ψ"
8015 NEXT X
```

Listing continued next page

```
8020 NEXT I
8050 PRINT AT i,j; INK 7;"X"
8090 RETURN
9000 REM ■ INTRODUCTION ■
9010 CLS
9020 PRINT "    L I V I N G    D
 E A D       ",,,,"-------------
-----------";,,,," KEYS -"
9030 PRINT AT 6,13;K$(1); INK 3;
" - RIGHT"
9040 PRINT AT 8,13;K$(2); INK 4;
" - UP"
9050 PRINT AT 10,13;K$(3); INK 5
;" - DOWN"
9060 PRINT AT 12,13;K$(4); INK 6
;" - LEFT"
9070 PRINT AT 14,0;"-----------
----------------------"
9080 PRINT ,,;"   PRESS "; INK 5
;"E";
9090 PRINT " TO EDIT "; INK 4;"P
";
9100 PRINT " TO PLAY"
9110 PRINT ,,;"-----------------
---------------"
9120 PRINT AT 21,0;"     L I V I
N G     D E A D"
9130 IF INKEY$="E" THEN GO TO 92
00
9140 IF INKEY$="P" THEN BEEP .1,
0: RETURN
9190 GO TO 9130
9200 REM ■ EDIT ■
9201 IF INKEY$<>"" THEN GO TO 92
01
9205 FLASH 1
9210 FOR Z=1 TO 4
9220 PRINT AT 4+Z*2,13;K$(Z)
9230 LET Z$=INKEY$
9240 IF Z$="" THEN GO TO 9230
9250 PRINT FLASH 0;AT 4+Z*2,13;Z
$
9260 LET K$(Z)=Z$: BEEP .01,45:
IF INKEY$<>"" THEN GO TO 9260
9265 NEXT Z
9270 FLASH 0
9275 LET WWW=0: FOR Z=1 TO 4: FO
R X=1 TO 4: IF Z<>X THEN LET WWW
=WWW+(K$(Z)=K$(X))
9280 NEXT X: NEXT Z: IF WWW<>0 T
HEN GO TO 9200
9290 GO TO 9130
9999 RUN
```

5

Helicopter Rescue



(16K)

The object of this game is to rescue the beautiful maidens in distress. But instead of being stranded in medieval castles we have brought things a little more up to date and placed them on top of burning skyscrapers. You pilot a helicopter to rescue them: you must get all of them off the skyscrapers and land them safely on the white platform at the right of the screen before the fire reaches them.

But be careful. No more than one maiden can ride in the helicopter at a time: if you try to get more than one inside you will cause a fatal accident. And if you fly into a skyscraper you will have failed in your mission.

The game incorporates a difficulty factor – the fire reaches the top of the buildings more rapidly as the game progresses, so you have less time to rescue the maidens. As soon as three maidens are killed the game is over. Once the game is running, press P to play: you can do this at any time whilst the instructions are scrolling past. The following keys operate the helicopter:

P = Up
L = Down
Z = Left
X = Right

The game features a high score routine which allows you to type in your name and automatically displays your four best scores on the screen.

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
■■■■■GHIJKLMNOPQRSTU
```

```
  10 REM ************************
  20 REM *  HELICOPTER RESCUE   *
  30 REM *    © TOBY MATTHEWS    *
  40 REM *    & ELLIS HORWOOD    *
  50 REM ************************
  60 POKE 23658,8
  70 PAPER 5: BORDER 1: INK 5: C
LS
  80 GO SUB 9000
  85 LET N$="TOBY": LET H$="■"
  86 DIM B$(5,12): FOR Z=1 TO 5:
 LET B$(Z,6 TO )="--00000": NEXT
 Z
  89 LET S=0
  90 LET MK=0: LET M$=""
 100 LET SK=7: LET D=10: GO SUB
5000
 105 PRINT AT 4,1; PAPER 0;"PRES
S ""P"" KEY TO COMMENCE PLAY"
 110 LET A$="
                P..UP  L..DOWN  Z..
LEFT   X..RIGHT                RESCU
E THE MAIDENS FROM THE BURNING S
KYSCRAPERS AND LAND THEM ON THE
PLATFORM ON THE RIGHT OF THE SCR
EEN"
 120 PRINT AT 6,0; INK 0;A$( TO
32)
 130 LET A$=A$(2 TO )+A$(1)
 140 BEEP .01,10: FOR N=1 TO 5:
BEEP .01,10
 150 IF INKEY$="P" THEN GO TO 17
0
 160 GO TO 120
 170 REM ■MAIN LOOP■
 180 PRINT AT 6,0;"
 185 PRINT AT 4,0;"
```



```
 190 LET Q$="TOBY": LET HI=0: LE
T L=0: LET Y=3: LET X=10
 200 PRINT AT Y,X; INK 0;"■"
 210 LET B=22: GO SUB 3000
 220 FOR O=1 TO 40
 230 PRINT AT 0,0; INK 0;"SCORE
";S;AT 0,16;"MAIDENS KILLED ";MK
 235 PRINT AT 1,0; INK 0;"MAIDEN
S SAVED ";M$
 240 IF INKEY$="P" THEN GO SUB 1
000
 250 IF INKEY$="L" THEN GO SUB 1
500
 260 IF INKEY$="Z" THEN GO SUB 2
000
 270 IF INKEY$="X" THEN GO SUB 2
500
 280 IF LEN M$+MK=5K THEN GO TO
5000
 285 IF Y+1=21 THEN IF X>=27 THE
N IF X<=30 THEN IF L=1 THEN GO S
UB 7000
 287 IF MK=3 THEN GO TO 8000
 290 NEXT O
 300 GO SUB 3000
 310 GO TO 220
1000 REM ■UP■
1005 IF Y=2 THEN RETURN
1010 PRINT AT Y,X;"  "
1020 LET Y=Y-1
1030 PRINT AT Y,X; INK 0;H$
1040 RETURN
1500 REM ■DOWN■
1505 IF Y=20 THEN RETURN
1510 IF L=0 THEN IF ATTR (Y+1,X)
=41 OR ATTR (Y+1,X+1)=41 THEN LE
T L=1: BEEP .1,10: LET S=S+100:
GO TO 1600
1515 IF L=1 THEN IF ATTR (Y+1,X)
=41 OR ATTR (Y+1,X+1)=41 THEN LE
T MK=MK+1: BEEP .1,-20
1530 IF ATTR (Y+1,X+1)=40 OR ATT
R (Y+1,X+1)=42 THEN GO TO 8000
1540 IF ATTR (Y+1,X)=40 OR ATTR
(Y+1,X)=42 THEN GO TO 8000
1600 PRINT AT Y,X;"  "
1610 LET Y=Y+1
1620 PRINT AT Y,X; INK 0;H$
1630 RETURN
2000 REM ■LEFT■
2005 LET H$="■"
2010 IF L=0 THEN IF ATTR (Y,X-1)
=41 THEN LET L=1: BEEP .1,10: LE
T S=S+100: GO TO 2100
2020 IF X=0 THEN RETURN
2030 IF L=1 THEN IF ATTR (Y,X-1)
=41 THEN LET MK=MK+1: BEEP .1,-2
0
2040 IF ATTR (Y,X-1)=40 OR ATTR
(Y,X-1)=42 THEN GO TO 8000
2100 PRINT AT Y,X;"
2110 LET X=X-1
2120 PRINT AT Y,X; INK 0;H$
2130 RETURN
```

Listing continued next page

```
2500 REM ■RIGHT■
2505 LET H$="■"
2510 IF L=0 THEN IF ATTR (Y,X+2)
=41 THEN LET L=1: BEEP .1,10: LE
T S=S+100: GO TO 2600
2520 IF X=30 THEN RETURN
2530 IF L=1 THEN IF ATTR (Y,X+2)
=41 THEN LET MK=MK+1: BEEP .1,-2
0
2540 IF ATTR (Y,X+2)=40 OR ATTR
(Y,X+2)=42 THEN GO TO 8000
2600 PRINT AT Y,X;"
2610 LET X=X+1
2620 PRINT AT Y,X; INK 0;H$
2630 RETURN
3000 REM ■BURN BUILDING■
3010 LET H=0: LET B=B-1
3020 FOR N=0 TO 24 STEP 4
3030 IF ATTR (B,N)<>40 THEN LET
H=H+1: NEXT N
3040 IF N>=25 THEN GO TO 3080
3050 PRINT AT B,N; INK 2;"■■■■"
3060 IF ATTR (B-1,N+1)=41 THEN B
EEP 1,-10: LET MK=MK+1: PRINT AT
 B-1,N+1;" "
3070 NEXT N
3080 RETURN
4000 REM ■HI SCORES■
4005 CLS
4006 FOR N=1 TO 20: BEEP .01,N:
NEXT N
4030 IF S>VAL B$(4,8 TO ) THEN I
NPUT "PLEASE ENTER YOUR NAME:";
LINE N$
4040 LET N$=(N$+"          ")( TO 5
)
4045 FOR Z=4 TO 1 STEP -1
4050 IF S>VAL B$(Z,8 TO ) THEN L
ET B$(Z+1)=B$(Z): LET B$(Z)=N$+"
--"+("00000"( TO 5-LEN STR$ S))+
STR$ S
4055 PRINT AT 6,0; PAPER 1;"HIGH
 SCORES:"
4060 NEXT Z
4070 FOR Z=1 TO 4
4080 PRINT AT Z+8,11; PAPER 1;B$
(Z): NEXT Z
4090 PRINT AT 15,11; PAPER 1;"AN
OTHER GO ?"
4100 IF INKEY$="Y" THEN CLS : GO
 TO 89
4110 IF INKEY$="N" THEN STOP
4120 GO TO 4100
5000 REM ■SET UP SCREEN■
5010 FOR N=0 TO 27 STEP 4
5015 LET A=D+(INT (RND*7))
5020 FOR F=21 TO A STEP -1
5030 PRINT AT F,N; INK 0;"■■■■"
5040 NEXT F
5050 PRINT AT F,N+1; INK 1;"*"
5060 NEXT N
5070 PRINT AT 21,28; INK 7;"■■■■"
5080 PRINT AT 0,0; INK 0;"SCORE
";S;AT 0,16;"MAIDENS KILLED ";MK
5090 PRINT AT 1,0; INK 0;"MAIDEN
S SAVED ";M$
```



```
5100 RETURN
6000 REM ■BONUS■
6010 FOR N=1 TO 20: BEEP .01,N:
NEXT N
6020 PRINT AT 6,11; PAPER 1;"BON
US ";5K*100
6025 LET S=S+(5K*100)
6030 LET 5K=5K+7
6040 FOR N=1 TO 100: NEXT N: CLS

6050 LET D=D+1: GO SUB 5000
6060 GO TO 210
7000 REM ■LAND MAIDEN■
7010 LET M$=M$+"*": LET S=S+100
7020 LET L=0
7025 BEEP .1,10
7030 RETURN
8000 REM ■CRASH■
8010 FOR N=0 TO -20 STEP -1: BEE
P .1,N: NEXT N
8020 PRINT AT 6,12; FLASH 1; PAP
ER 1;"GAME OVER"
8030 FOR N=1 TO 100: NEXT N: GO
TO 4000
9000 REM ■CHARACTER SET■
9010 FOR N=0 TO 47: READ A: POKE
 USR "A"+N,A: NEXT N
9020 DATA 56,56,16,254,56,124,25
4,40,255,153,153,255,255,153,153
,255,254,128,240,144,156,254,254
,252,127,1,7,7,143,207,255,255,1
27,1,15,9,57,127,127,63,254,128,
224,224,241,243,255,255
9030 RETURN
9999 RUN
```

6

Skiing: Downhill Racer

(16K)

Fancy yourself as Franz Klammer, but without taking the bone-breaking risks? Well this program provides all the thrills of the blue riband ski event – downhill racing. Unfortunately you will have to ski a difficult course: it has rocks and trees in it. As in the real thing, you must stay inside the red posts – if you ski outside them you will be disqualified. Hitting rocks or trees will slow you down – and hitting too many eventually breaks your skis, so go carefully.

The game incorporates six difficulty levels (1 'easy' to 6 'hard') and can be skied over a range of run lengths. Like real downhill racing, an audible signal tells you when to

start. The screen will show the half-way split time, and once you have completed your run it will show your total elapsed time and your average speed.

You will be surprised how much skill is required to ski a fast run.

Good luck!

Key to graphics characters

ABCDEFGHIJKLMNOPQRSTU
[illegible]EFGHIJKLMNOPQRSTU

```
  10 REM **********************
  20 REM *      SKIING          *
  30 REM *   © TOBY MATTHEWS    *
  40 REM *   & ELLIS HORWOOD    *
  50 REM **********************
  60 PAPER 7: INK 0: BORDER 7: C
LS
  80 LET N$="TOBY": DIM H$(5,10)
: FOR Z=1 TO 5: LET H$(Z,6 TO )=
"--000": NEXT Z
  90 GO SUB 9000
 110 REM ■INTRODUCTION■
 115 INK 0
 120 POKE 23658,8
 130 PLOT 40,168: DRAW -32,0: DR
AW 0,-16: DRAW 32,0: DRAW 0,-16:
 DRAW -32,0
 140 PLOT 48,168: DRAW 0,-16: DR
AW 32,16: PLOT 48,136: DRAW 0,16
: DRAW 32,-16
 150 PLOT 88,168: DRAW 16,0: DRA
W 0,-32: DRAW 16,0
 160 PLOT 120,168: DRAW -16,0: D
RAW 0,-32: DRAW -16,0
 170 PLOT 128,168: DRAW 16,0: DR
AW 0,-32: DRAW 16,0
 180 PLOT 160,168: DRAW -16,0: D
RAW 0,-32: DRAW -16,0
 190 PLOT 168,136: DRAW 0,32: DR
AW 32,-32: DRAW 0,32
 200 PLOT 240,168: DRAW -32,0: D
RAW 0,-32: DRAW 32,0: DRAW 0,16:
 DRAW -16,0
 210 PLOT 0,128: DRAW 255,0
 220 BEEP 1,10
 230 PRINT AT 7,0;"KEYS:-"
 240 PRINT AT 8,6;"P--MORE SPEED
"
 250 PRINT AT 9,6;"L--LESS SPEED
"
 260 PRINT AT 10,6;"Z--TURN LEFT
"
 270 PRINT AT 11,6;"X--TURN RIGH
T"
 280 PRINT AT 13,0; INVERSE 1;"P
LEASE INPUT LEVEL OF DIFFICULTY"
 290 INPUT "'1' (EASY) TO '6' (HAR
D)";D
 295 LET D=7-D
```

Listing continued next page

```
 300 IF D<1 OR D>5 THEN GO TO 29
0
 310 LET D=D+3
 320 BEEP .1,10
 330 PRINT AT 15,0; INVERSE 1;"P
LEASE INPUT LENGTH OF SKI RUN"
 340 INPUT "0.5km TO 5km";L
 350 IF L<.5 OR L>5 THEN GO TO 3
40
 360 BEEP .1,10
 370 LET L=INT (L*100)+25
 380 INK 7
 390 LET P=14
 400 LET X=16
 410 LET S=40
 420 LET TH=0
 500 REM ■MAIN LOOP■
 510 CLS : FOR N=0 TO 20: PRINT
AT N,P; INK 2;"■";AT N,P+D;"■":
NEXT N
 520 PRINT AT 0,X; INK 0;"■"
 530 FOR N=1 TO S: BEEP .05,20:
FOR F=1 TO 75: NEXT F: NEXT N
 540 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
 550 FOR O=1 TO L
 560 LET E=INT (RND*2)
 570 LET P=P-(E=1 AND P>1)+(E=0
AND P<10)
 580 POKE 23692,-1
 590 PRINT AT 21,P; INK 2;"■";AT
 21,P+D;"■": PRINT
 595 PRINT AT 0,X; INK 0;"■"
 600 FOR N=1 TO INT (RND*4): PRI
NT AT 21,INT (RND*32); INK 4;"■"
: NEXT N
 610 FOR N=1 TO INT (RND*3): PRI
NT AT 21,INT (RND*32); INK 0;"■"
: NEXT N
 620 IF O=L-20 THEN PRINT AT 21,
P; PAPER 2;"F I N I S H": PRINT
: LET T=(65536*PEEK 23674+256*PE
EK 23673+PEEK 23672)/50
 700 IF INKEY$="P" THEN GO SUB 1
000
 710 IF INKEY$="L" THEN GO SUB 1
500
 720 IF INKEY$="Z" THEN GO SUB 2
000
 730 IF INKEY$="X" THEN GO SUB 2
500
 740 IF ATTR (1,X)=56 THEN GO SU
B 7000
 750 IF ATTR (1,X)=60 THEN BEEP
.1,-30: FOR C=1 TO 375: NEXT C:
LET TH=TH+1
 760 IF ATTR (1,X)=56 THEN BEEP
.1,-30: FOR I=1 TO 400: NEXT I:
LET TH=TH+1
 770 IF TH=3 THEN GO TO 8000
 790 IF O=INT ((L/2)-10) THEN PR
INT #0;"SPLIT TIME = ";(65536*PE
EK 23674+256*PEEK 23673+PEEK 236
72)/50;" SECONDS": BEEP 1,10
 810 FOR N=1 TO 5: NEXT N: NEXT
O
```



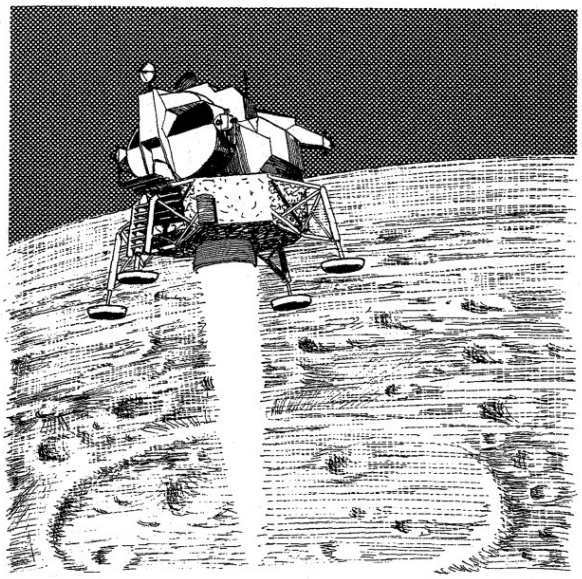
```
 900 CLS
 930 FOR N=1 TO 20: BEEP .1,N: N
EXT N
 940 PRINT AT 6,0; INK 0; FLASH
1;"CONGRATULATIONS YOU MADE IT!!
!!"
 950 PRINT AT 8,0; INK 0; INVERS
E 1;"YOUR TIME WAS ";T;" SECONDS
"
 960 PRINT AT 10,0; INK 0; INVER
SE 1;"THAT IS AN AVERAGE OF ";IN
T (((L-24)*10)/T)*3.6);" km/h"
 970 FOR N=1 TO 20: BEEP .01,N:
NEXT N
 980 FOR N=1 TO 150: NEXT N
 990 GO SUB 4000
1000 REM ■SPEED UP■
1005 IF S=0 THEN RETURN
1010 LET S=S-5
1020 RETURN
1500 REM ■SLOW DOWN■
1510 LET S=S+5
1520 RETURN
2000 REM ■LEFT■
2010 IF ATTR (0,X-1)=56 THEN GO
SUB 7000
2020 IF ATTR (0,X-1)=60 THEN BEE
P .1,-30: FOR N=1 TO 50: NEXT N:
 LET TH=TH+1
2030 IF ATTR (0,X-1)=56 THEN BEE
P .1,-30: FOR N=1 TO 75: NEXT N:
 LET TH=TH+1
2040 PRINT AT 0,X;" "
2050 LET X=X-1
2070 PRINT AT 0,X; INK 0;"■"
2080 RETURN
2500 REM ■RIGHT■
2510 IF ATTR (0,X+1)=56 THEN GO
SUB 7000
2520 IF ATTR (0,X+1)=60 THEN BEE
P .1,-30: FOR N=1 TO 50: NEXT N:
 LET TH=TH+1
2530 IF ATTR (0,X+1)=56 THEN BEE
P .1,-30: FOR N=1 TO 75: NEXT N:
 LET TH=TH+1
2540 PRINT AT 0,X;" "
2550 LET X=X+1
2560 PRINT AT 0,X; INK 0;"■"
2570 RETURN
4000 REM ■TOP SPEEDS■
4002 FOR N=1 TO 20: BEEP .01,N:
NEXT N: CLS
4005 LET SC=INT ((((L-24)*10)/T)
*3.6)
4030 IF SC>VAL H$(5,8 TO ) THEN
INPUT "PLEASE ENTER YOUR NAME:";
 LINE N$
4040 LET N$=(N$+"          ")( TO 5
)
4050 FOR Z=4 TO 1 STEP -1
4060 IF SC>VAL H$(Z,8 TO ) THEN
LET H$(Z+1)=H$(Z): LET H$(Z)=N$+
"--"+("000"( TO 3-LEN STR$ SC))+
STR$ SC
```

Listing continued next page

```
4070 NEXT Z
4075 PRINT AT 4,0; PAPER 1;"TOP
SPEEDS TODAY:"
4080 FOR Z=1 TO 4
4090 PRINT AT 6+Z,11; PAPER Z-1;
H$(Z);"KM/H": NEXT Z
4100 PRINT AT 14,10; PAPER 0;"AN
OTHER GO ?"
4110 IF INKEY$="Y" THEN CLS : GO
 TO 110
4120 IF INKEY$="N" THEN STOP
4130 GO TO 4110
7000 REM ■DISQUALIFY■
7010 FOR N=0 TO -20 STEP -1: BEE
P .1,N: NEXT N
7020 CLS
7030 PRINT AT 6,0; PAPER 0;"YOU
ARE DISQUALIFIED FOR HITTING"
7040 PRINT AT 7,12; PAPER 0;"A P
OST!"
7045 FOR N=1 TO 200: NEXT N
7050 CLS : LET SC=-1: GO TO 4010
8000 REM ■BROKEN SKIS■
8010 FOR N=0 TO -20 STEP -1: BEE
P .1,N: NEXT N
8020 CLS
8030 PRINT AT 6,0; PAPER 0;"YOUR
 SKIS HAVE BROKEN HARD LUCK!"
8040 GO TO 7045
9000 REM ■CHARACTER SET■
9010 FOR N=0 TO 31: READ A: POKE
 USR "A"+N,A: NEXT N
9020 DATA 36,36,60,126,126,231,1
65,36,255,255,255,129,129,129,12
9,0,7,13,56,99,15,224,240,96,24,6
0,60,126,126,255,24,24
9030 RETURN
9999 RUN
```

7

Lunar Rover

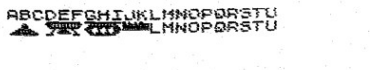


(16K)

This game tests your ability to fly a lunar module. How do you think your skills would compare with those of Neil Armstrong, the first man on the moon? Here is your chance to find out.

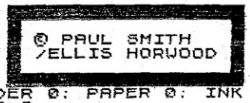
The game has two main variables: the amount of thrust used in the descent (controlled by any key on the keyboard) and the quantity of fuel remaining in the module – which reduces as the rocket thrusters are fired. So you have to get down before the fuel runs out: otherwise you will crash! Like Neil Armstrong, you won't get a second chance.

Key to graphics characters.



```
ABCDEFGHIJKLMNOPQRSTU
```

```
    5 REM
```




```
   10 BORDER 0: PAPER 0: INK 7: C
LS : OVER 0
   20 BEEP .2,45
  100 REM ■ GRAPHICS CHARACTERS ■
  105 FOR A=USR "A" TO USR "K"+7
  110 READ B: POKE A,B: NEXT A
  120 DATA 0,0,0,0,0,3,15,31
  130 DATA 0,24,60,60,255,171,255
,213
  140 DATA 0,0,0,0,0,192,240,248
  150 DATA 63,122,58,31,2,4,8,60
  160 DATA 255,170,170,255,60,126
,255,0
  170 DATA 252,174,172,248,64,32,
16,60
  180 DATA 127,10,31,60,120,56,28
,16
  190 DATA 255,170,255,231,66,66,
231,255
  200 DATA 254,176,248,60,30,28,5
6,240
  210 DATA 200,221,255,255,255,0,
0,0
  220 DATA 152,191,255,255,255,0,
0,0
  300 REM ■ VARIABLES ■
  310 LET MH=INT (RND*48+50)
  320 LET A$="
      "
  330 LET A=1
  340 LET TR=9
  350 LET FU=18
  360 LET RO=0
  380 LET C$="                              "
  400 LET E$="
"
  410 LET X=0
  420 LET H=MH
  700 REM ■ INITIALISE ■
  710 GO SUB 5000: GO SUB 6000
  750 INPUT AT 0,0;"SKILL LEVEL-1
(EASY & SLOW)                TO 1
0(HARD & FAST);";SK
  760 IF SK>10 OR SK<1 THEN GO TO
  750
  800 PRINT INK 6;AT 19,3;"PRESS
2 TO PLAY";AT 20,7;"ANY TO THRUS
T"
  810 IF INKEY$<>"2" THEN GO TO 8
00
  820 BEEP .1,45
```



```
  830 PRINT INK 6;AT 19,3;"
      "
  840 PRINT INK 6;AT 20,7;"
      "
 1000 REM ■ MAIN LOOP ■
 1010 LET X=X+1
 1050 IF INKEY$<>"" THEN LET TR=T
R+2
 1060 LET TR=TR-1
 1070 IF TR<0 THEN LET TR=0
 1080 IF TR>18 THEN LET TR=18
 1090 IF A<19 THEN PRINT AT A+2,4
;" ": IF TR>0 THEN PRINT AT A+2,
4; INK 2;"v"
 1100 LET RO=RO-TR/9+1: IF RO<0 T
HEN LET RO=0
 1110 IF X/INT (MH/50+(10-SK))=IN
T (X/INT (MH/50+(10-SK))) THEN L
ET A$=A$(2 TO )+A$(1): PRINT AT
20,2; INK 7;A$
 1120 LET H=H-RO/9+TR/36
 1130 LET FU=FU-TR/(72*(11-SK))
 1135 LET A1=A
 1140 LET A=INT ((100-INT (H/MH*1
00))/5.26+1)
 1150 IF A<1 THEN LET A=1
 1160 IF FU<1 THEN LET FU=0: LET
TR=0
 1500 IF A<A1 THEN PRINT AT A1+2,
4;"
 1510 IF A<>A1 THEN PRINT AT A1,3
;"  ";AT A1+1,3;"  ";AT A,3; I
NK 5;"▲";AT A+1,3;"▀▀"
 1520 PRINT AT A+2,0;"▐";AT A+1,0
;"
 1550 BEEP .01,(TR/3)+10
 1600 IF A=19 THEN LET Z$=" YOU C
RASHED ON THE   LUNAR SURFACE.SC
ORE:00": GO TO 4000
 1605 IF A=18 AND (A$(1)="₹" OR A
$(2)="₹" OR A$(3)="₹") THEN GO T
O 2000
 1610 IF A=18 AND (A$(2)<>" " OR
A$(3)<>" " OR A$(4)<>" ") THEN L
ET Z$=" YOU MISSED THE LUNAR ROV
ER. SCORE:"+STR$ INT (4*FU)+"
      ": GO TO 4000
 1630 IF A$(1)="₹" THEN GO TO 300
0
 1640 IF RO>18 THEN LET Z$=" YOUR
 RATE OF DESCENT CAUSED YOU TO B
REAK UP": GO TO 4000
 1900 GO SUB 6000: GO TO 1000
 2000 REM ■ HIT BASE ■
 2010 IF RO<16-SK THEN GO TO 2500
 2020 LET Z$="  YOU HIT THE ROVER
   TOO FAST. SCORE:"+STR$ INT (4
*FU)+"      ": GO TO 4000
 2500 REM ■ SUCCESSFUL LANDING ■
 2510 IF A$(1)="₹" OR A$(3)="₹" T
HEN LET Z$="  YOU HIT THE EDGE O
F THE TARGET. SCORE:"+STR$ INT (
FU*6)+"      ": GO TO 4000
 2520 LET Z$="  YOU HIT THE TARGE
```

```
T  EXACTLY.  SCORE:"+STR$ INT (F
U*8)+"                ": GO TO 4000
3000 REM ■ TELEPORT ■
3010 FOR Z=7 TO 0 STEP -.5
3020 PRINT AT 20,2; INK Z;"■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
3030 PRINT AT 20,10; INK (7-Z);"
■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
3035 BEEP .01,Z*10-10
3040 NEXT Z
3050 LET A$="                    ■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■
                                "
3080 INK 6
3090 GO TO 1000
4000 REM ■ REPORT ■
4005 FOR Z=10 TO -10 STEP -2: BE
EP .1,Z: NEXT Z
4006 INK 7
4010 FOR Z=1 TO 18: PRINT AT Z,2
;"                ": NEXT Z: PRINT AT 19,2;
"                                ";
AT 20,2;"

4020 PRINT AT 19,2; INK 5;"REPOR
T;"
4030 FOR Z=1 TO 22: PRINT AT 19,
Z+6;Z$(Z): NEXT Z
4040 FOR Z=23 TO 44: PRINT AT 20
,Z-14;Z$(Z): NEXT Z
4050 LET Z$=" PRESS 1 TO RUN": F
OR Z=1 TO 16: PRINT AT Z,4;Z$(Z)
: NEXT Z
4060 OVER 1: FOR Z=48 TO 159: PL
OT 30,Z: DRAW 11,0
4070 IF INKEY$="1" THEN RUN
4080 NEXT Z: FOR Z=30 TO 41: PLO
T Z,48: DRAW 0,111
4090 IF INKEY$="1" THEN RUN
4100 NEXT Z
4105 IF RND>.5 THEN GO TO 4080
4110 GO TO 4060
5000 REM ■ SCREEN DISPLAY ■
5010 INK 4: PLOT 16,160: DRAW 40
,0: DRAW 0,-140: DRAW 192,0: DRA
W 0,-25: DRAW -233,0: DRAW 0,165
5020 PRINT AT 21,2;"■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■
                                "
5025 INK 6
5030 PLOT 64,32: DRAW 0,136: FOR
 Z=32 TO 167 STEP 3.2: PLOT 64,Z
: DRAW 2,0: NEXT Z: FOR Z=32 TO
167 STEP 16: PLOT 64,3+Z: DRAW 7
,0: NEXT Z
5035 INK 7
5040 PRINT AT 17,9;INT (MH/5);AT
 13,9;INT (MH/2.5);AT 9,9;INT (M
H/1.67);AT 5,9;INT (MH/1.25);AT
1,9;INT (MH)
5050 PRINT AT 20,2; INK 7;A$
5060 PRINT AT A,3; INK 5;"▲";A
T A+1,3;"■■■"
5070 FOR Z=20 TO A+2 STEP -1: PR
INT INK 7-Z/4;AT Z,0;"■": NEXT Z
5080 INK 6: PLOT 104,63: DRAW 14
3,0: FOR Z=105 TO 247 STEP 3.2:
PLOT Z,63: DRAW 0,-4: NEXT Z: FO
R Z=108 TO 247 STEP 16: PLOT Z,6
```



```
3: DRAW 0,-7: NEXT Z
5090 INK 7: PRINT AT 15,13;"0
1    2    3    4";AT 16,13;"0    0
 0    0    0    0"
5100 LET Z$="TRS FEL ROD": FOR Z
=2 TO 12: PRINT AT Z,12;Z$(Z-1):
 NEXT Z
5110 FOR Z=2 TO 12: PRINT AT Z,1
3; INK 2;"    "; INK 3;"    "; INK
4;"    "; INK 5;"    "; INK 6;"
    ": NEXT Z: INK 7
5120 FOR Z=6 TO 8: PRINT AT Z,13
; INK 7;"    "; INK 6;"    "; INK
5;"    "; INK 4;"    "; INK 3;"
    "; INK 2;"    ": NEXT Z: INK 7
5130 PRINT AT 21,0; INK 2;"■"
5140 PRINT AT 2,14;"THRUST";AT 5
,14;"FUEL    FUEL";AT 10,14;"RAT
E OF DESCENT"
5190 RETURN
6000 REM ■ GRAPHIC UPDATE ■
6010 INK 0: PAPER 6
6020 PRINT AT 4,13;C$( TO TR);E$
(TR+1 TO )
6030 PRINT AT 8,13;C$( TO FU);E$
(FU+1 TO )
6040 PRINT AT 12,13;C$( TO RO);E
$(RO+1 TO )
6090 RETURN
9999 RUN
```

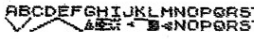
8

Mission Impossible

(16K)

Your mission is to bomb as many alien ground stations as possible whilst flying through the vast caverns of the alien planet. An interesting variant on the 'shoot-em-up' type of game which demands a lot of skill: you will have to launch your bombs at exactly the right moment in order to knock out the alien positions, and make sure that you do not fly into the cavern walls. You will also need a certain sense of humour: the mission really is impossible!

Key to graphics characters.



```
  1 REM ■MISSION IMPOSSIBLE■
  5 REM ■   © PAUL SMITH /
        ELLIS HORWOOD ■
 10 FOR a=1 TO 13: READ a$
 20 FOR b=0 TO 7
 30 READ c: POKE USR a$+b,c
 40 NEXT b
 50 NEXT a
 60 DATA "a",128,64,32,16,8,4,2
,1
 70 DATA "b",1,2,4,8,16,32,64,1
28
 75 DATA "m",0,0,6,26,100,26,6,
0
 80 DATA "j",0,0,3,14,3,0,0,0
 85 DATA "l",0,126,126,126,126,
126,126,0
 90 DATA "i",146,84,0,198,0,84
,146,0
 95 DATA "h",255,16,184,230,184
,16,255,0
100 DATA "g",0,16,16,40,40,64,1
08,0
120 DATA "k",255,0,0,0,0,0,0,0
150 DATA "d",3,12,48,192,0,0,0,
0
160 DATA "c",0,0,0,0,3,12,48,19
2
170 DATA "e",192,48,12,3,0,0,0,
0
180 DATA "f",0,0,0,0,192,48,12,
3
290 BORDER 0: PAPER 0: INK 7: C
LS
300 LET a$="
310 LET b$="▲▲▲▲   ▲   ▲▲   ▲▲
▲  ▲▲▲▲ "
330 LET c$="
340 LET f=0: LET sc=0
370 LET fu=32
380 LET li=2
700 PLOT 0,15: DRAW 255,0
710 PLOT 0,96: DRAW 255,0
720 PRINT AT 8,1;"SCORE:";sc
730 GO SUB 9500
760 INPUT AT 0,0;"ENTER SKILL L
EVEL 1(EASY) TO
     5(HARD):";v
761 IF v>5 OR v<1 THEN GO TO 76
0
765 LET v=v-1
767 PRINT AT 0,1; INK 7;"MISSIO
N   IMPOSSIBLE"
770 BEEP 2,30
```

Listing continued next page

```
 780 PRINT AT 21,0;"
 790 FOR z=6 TO 2 STEP -1
 800 PRINT INK z;AT z,0;"■■■■■■■■
■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
 810 NEXT z
 815 POKE 23658,0
 820 PRINT AT 12,1;"KEYS -  P -
THRUST";AT 13,9;"O - HOLD POSITI
ON";AT 14,9;"Q - UP";AT 15,9;"A
 - DOWN";AT 16,9;"M - BOMB"
 830 PRINT AT 21,4;"PRESS BOMB T
O PLAY"
 840 IF INKEY$<>"m" THEN GO TO 8
40
 850 PRINT AT 21,0;,,
 900 FOR z=11 TO 17
 910 PRINT AT z,0;"
 920 NEXT z
 930 LET a=12: LET b=8
 940 LET c=0: LET d=2: LET e=2
 950 LET g=0: LET h=0: LET i=0
 960 LET j=0: LET k=10: LET l=10
 990 POKE 23658,0
1000 LET z$=INKEY$
1010 LET a1=a: LET b1=b
1020 IF z$="p" THEN LET b=b+2
1030 LET b=b-1
1040 LET a=a+(z$="a" AND a<17)-(
z$="q" AND a>11)
1045 IF z$="o" THEN LET b=b+1
1048 IF b>31 THEN GO SUB 6000
1060 PRINT AT a1,b1;" "
1065 IF b<0 THEN GO TO 4000
1070 PRINT INK 4;AT a,b;"■"
1080 IF b1>b AND a1=a THEN GO TO
 1100
1090 IF b1>0 THEN PRINT INK 2;AT
 a1,b1-1;" "
1095 IF b>0 THEN PRINT INK 2;AT
a,b-1;"■"
1100 GO SUB 9000: GO SUB 9100
1105 IF a=INT k AND l=b THEN GO
TO 4000
1190 LET z$=INKEY$
1200 IF c<>1 AND IN 32766=255 TH
EN GO TO 1300
1210 IF c=0 THEN LET d=a: LET e=
b: LET c=1: LET fu=fu-1: PRINT A
T li,fu;" ": IF fu=0 THEN GO TO
4000
1220 LET d1=d: LET e1=e
1230 LET d=d+1: LET e=e+1
1240 PRINT AT d1,e1;" "
1250 PRINT INK 6;AT d,e;"■"
1260 IF e>30 THEN PRINT AT d,e;"
": LET c=0
1270 IF d>17 THEN GO TO 2000
1280 IF i=e AND d=h THEN GO TO 3
000
1290 IF INT k=d AND l=e THEN GO
TO 3500
1300 IF f<14 THEN GO TO 1400
1310 IF a$<>"" THEN GO TO 1400
```



```
1320 LET b$="▲▲▲▲   ▲   ▲▲   ▲▲
▲   ▲▲▲▲
1330 LET f=0
1400 IF g=0 AND (b+(18-a)-v-2<1
OR b+(18-a)-v-1>32) THEN GO TO 1
500
1410 IF g=0 AND (" "+b$+"
")(b+(18-a)-v+3)<>"▲" THEN GO TO
 1500
1420 IF g=1 THEN GO TO 1450
1430 LET g=1: LET i=b+(18-a)-v-2
: LET h=18
1440 LET b$(b+(18-a)-v-1)=" ": L
ET f=f+1
1450 LET h1=h: LET i1=i
1460 IF b<i THEN LET i=i-1
1470 IF b>i THEN LET i=i+1
1475 LET h=h-1
1480 PRINT AT h1,i1;" "
1483 IF h=10 THEN LET g=0: GO TO
 1500
1485 PRINT INK 5;AT h,i;"▲"
1490 IF h=a AND i=b THEN GO TO 4
000
1498 IF i=e AND d=h THEN GO TO 3
000
1501 IF j=1 THEN GO TO 1550
1510 IF b<20 THEN GO TO 1600
1520 LET j=1
1530 LET k=a: LET l=31
1550 LET k1=k: LET l1=l
1555 LET l=l-1
1560 IF a<k THEN LET k=k-.2
1565 IF a>k THEN LET k=k+.2
1570 PRINT AT INT k1,l1;" "
1580 PRINT INK 3;AT INT k,l;"◄"
1590 IF l=0 THEN LET j=0: PRINT
AT INT k,0;" ": LET l=10: LET k=
10
1595 IF a=INT k AND l=b THEN GO
TO 4000
1596 IF l=e AND d=INT k THEN GO
TO 3500
1990 GO TO 1000
2000 PRINT INK 6;AT d,e;"※"
2010 BEEP .03,0
2020 IF b$(e+1)="▲" THEN LET sc=
sc+10: BEEP .1,45: LET b$(e+1)="
": LET f=f+1: PRINT AT 8,7;sc
2030 PRINT AT d,e;" "
2040 LET c=0
2090 GO TO 1300
3000 PRINT INK 6;AT d,e;"※"
3010 BEEP .1,45
3020 PRINT AT d,e;" "
3030 LET c=0: LET g=0
3040 LET sc=sc+INT (RND*3+3)*10
3050 PRINT AT 8,7;sc
3060 LET h=0: LET i=0
3080 LET d=2: LET e=2
3090 GO TO 1500
3500 PRINT AT d,e;"※"
3510 BEEP .1,45
3520 PRINT AT d,e;" "
3530 LET j=0: LET c=0
```

```
3540 LET sc=sc+100: PRINT AT 8,7
;sc
3550 LET k=10: LET l=10: GO TO 3
000
4000 PRINT INK li;AT li,0;"■■■■■
■■■■■■■■■■■■■■■■■■■■■■■■■■■"
4002 PRINT AT li,li*2;"TERMINATE
D"
4005 LET li=li+1
4010 LET fu=32
4040 FOR z=60 TO 0 STEP -5: BEEP
 .1,z: NEXT z
4080 IF li=7 THEN GO TO 5000
4090 GO TO 900
5000 PRINT AT 14,9; FLASH 1; INK
 2;"MISSION FAILED"
5005 LET a$="              PRESS A
NY KEY FOR ANOTHER GAME..
                 © PAUL SMITH / E
LLIS HORWOOD                     "
5010 BEEP .05,20: BEEP .05,30
5012 LET a$=a$(2 TO LEN a$)+a$(1
)
5017 PRINT AT 21,0; INK RND*6+2;
a$(1 TO 32)
5020 IF INKEY$="" THEN GO TO 501
0
5030 RUN
6000 PRINT AT a,30;" "
6005 IF fu>23 THEN PRINT AT li,0
; INK li;"■■■■■■■■■■■■■■■■■■■■■■
■■■■■■■■■■": LET fu=32: GO TO 60
50
6010 FOR z=fu TO fu+8
6020 LET fu=fu+1: PRINT AT li,z;
 INK li;"■"
6030 NEXT z
6050 LET sc=sc+50: PRINT AT 8,7;
sc
6080 LET b=2
6090 RETURN
9000 LET a$=a$(2 TO 32)+a$(1)
9010 LET b$=b$(2 TO 32)+b$(1)
9020 LET c$=c$(2 TO 32)+c$(1)
9090 RETURN
9100 PRINT INK 5;AT 18,0;b$
9110 PRINT a$
9120 PRINT AT 10,0;c$
9190 RETURN
9500 LET z$="[illegible]
[illegible]
[illegible]"; LET y$="[illegible]
[illegible]
[illegible]": LET x
$="[illegible]
[illegible]          PRESS A KEY
    "
9501 PRINT AT 21,6;"PRESS ANY KE
Y TO PLAY"
9502 PRINT AT 10,0;c$(1 TO 32)
9503 PRINT AT 18,0; INK 5;b$(1 T
O 32)
9504 PRINT a$(1 TO 32)
9510 LET z$=z$(2 TO LEN z$)+z$(1
)
9515 BEEP .004,INT (RND*30+20)
9520 LET y$=y$(2 TO LEN y$)+y$(1
```



```
)
9530 LET x$=x$(2 TO LEN x$)+x$(1
)
9540 PRINT INK 4;AT 2,0;z$(1 TO
32)
9550 PRINT INK 5;y$(1 TO 32)
9560 PRINT INK 6;x$(1 TO 32)
9570 IF INKEY$<>"" THEN GO TO 96
00
9590 GO TO 9510
9600 PRINT AT 21,3;"© P.SMITH /
ELLIS HORWOOD"
9650 BEEP 2,20
9900 RETURN
9999 RUN
```

9

Code Breaker

(16K)

This game is a real test of intelligence and memory. The object is to guess a sequence of between three and eight number characters which can be selected either by the computer or by one of the players. (One or two players can play the game) The positions of the number characters and whether they have been correctly guessed or not are indicated on the screen by ticks and crosses. A # symbol indicates that a number has been duplicated. A maximum of 17 guesses are allowed by the game. and there is a facility for estimating 'intelligence'. The game also includes a variable time limit, and therefore can be played over a range from relatively simple to ferociously complex.

The game includes a machine code sound routine as illustrated later in the book.

Key to graphics characters

ABCDEFGHIJKLMNOPQRSTU
FGHIJKLMNOPQRSTU

```
    1 REM ■■■ © PAUL SMITH ✓ ■■■
        ■■■ ELLIS HORWOOD ■■■
    5 LET I$="© P.SMITH/E.HORWOOD
"
   10 POKE 23658,8
   12 CLS
   20 FOR Z=USR "A" TO USR "B"+28
   30 READ X: POKE Z,X: NEXT Z
   40 DATA 0,1,2,4,8,80,32,0
   50 DATA 6,1,197,33,16,0,17,1,0
,229,205,181,3,225,17,5,0,167,23
7,90,125,254,255,32,237,193,16,2
30,201
  300 REM ■VARIABLES■
  310 LET A=4: LET B=4
  320 LET C=1: LET X$="          "
  330 LET E=0
  340 LET MODE=0
  500 REM ■TYPE OF GAME■
  510 PLOT 0,172: DRAW 255,0
  520 PRINT AT 1,0;"■CODE BREAKER■
";I$
  530 PLOT 0,156: DRAW 255,0
  540 PRINT AT 4,0; INK 1;"■INPUT■"
; INK 0;" INFORMATION REQUIRED B
ELOW THEN SELECT YOUR CHOICE:"
  550 PRINT AT 7,1; INK 2;"■1■"; IN
K 0;"-INPUT YOUR OWN NUMBER USIN
G    NUMBER OF CHARACTERS SELEC
TED"
  560 PRINT AT 10,1; INK 2;"■2■"; I
NK 0;"-GET COMPUTER TO SELECT RA
NDOM   CHARACTERS NON-DUPLICATED
"
  570 PRINT AT 13,1; INK 2;"■3■"; I
NK 0;"-GET COMPUTER TO SELECT RA
NDOM   CHARACTERS MAYBE DUPLICAT
ED"
  575 PRINT AT 16,1; INK 2;"■4■"; I
NK 0;"-SAVE GAME FACILITY"
  576 PLOT 0,28: DRAW 255,0
  577 INPUT AT 0,0;"ENTER NUMBER
OF CHARACTERS:";D
  578 IF D>8 OR D<3 THEN GO TO 57
7
  579 PRINT AT 19,0;" NUMBER OF C
HARACTERS:";D
  580 INPUT AT 0,0;"ENTER NUMBER
OF GUESSES:";GUS: PRINT AT 20,0;
" MAXIMUM NUMBER OF GUESSES:";GU
S;"      ": IF GUS<1 OR GUS>17 THE
N GO TO 580
  581 IF INKEY$="1" THEN LET L=US
R USR "B": GO TO 9000
```

Listing continued next page

```
 582 IF INKEY$="2" THEN LET L=US
R USR "B": GO TO 9100
 583 IF INKEY$="3" THEN LET L=US
R USR "B": GO TO 9200
 584 IF INKEY$="4" THEN LET L=US
R USR "B": GO TO 9300
 585 GO TO 581
 590 PRINT AT 21,6;"PRESS ""0""
TO COMMENCE"
 595 IF INKEY$<>"0" THEN GO TO 5
95
 597 POKE USR "B"+1,1: POKE USR
"B"+7,10: POKE USR "B"+15,3: LET
 L=USR USR "B"
 599 CLS
 600 REM SCREEN
 601 PRINT AT 10,0; FLASH 1;"WAR
NING"; FLASH 0;" ANY CHARACTER L
EFT BLANKWILL BE REPLACED RANDOM
LY !"
 602 PLOT 0,100: DRAW 255,0: PLO
T 0,76: DRAW 255,0
 603 PAUSE 300: CLS
 605 PLOT 0,172: DRAW 255,0
 610 PRINT AT 1,0;"CODE BREAKER
© P.SMITH/E.HORWOOD"
 615 PLOT 0,156: DRAW 255,0
 620 PRINT INK 2;AT 3,13;"▒▒"
 630 PRINT AT 3,18; INK 1;"INSTR
UCTIONS"
 640 PRINT AT 5,16; INK 2;"▒"; I
NK 0;"=RIGHT IN RIGHT";AT 6,18;"
PLACE"
 650 PRINT AT 8,16; INK 2;"▒"; I
NK 0;"=RIGHT IN WRONG";AT 9,18;"
PLACE"
 660 PRINT AT 11,16; INK 1;"▒";
INK 0;"=CURSOR RIGHT";AT 12,18;"
WHEN SHIFTED"
 670 PRINT AT 14,16; INK 1;"▒";
INK 0;"=CURSOR LEFT";AT 15,18;"W
HEN SHIFTED"
 680 PRINT AT 17,16; INK 1;"▒";
INK 0;"=PERCENTAGE";AT 18,18;"IN
TELLIGENCE"
 690 PRINT AT 20,16; INK 1;"▒";
INK 0;"=QUIT PLAY"
 695 PLOT 0,4: DRAW 255,0
 700 POKE USR "B"+1,1: POKE USR
"B"+7,1: POKE USR "B"+15,5: LET
L=USR USR "B"
 710 LET A$="----------"
 720 LET A$=A$( TO D)+" "
 730 DIM C$(GUS,D)
 740 DIM D$(GUS)
 750 DIM E$(GUS)
 755 PRINT AT 3,1; INK 2;"MODE";
 INK 0;":";MODE
 760 INPUT AT 0,0;"TIME ALLOWED
FOR EACH              GUESS:";TIME
 770 IF MODE<>2 THEN PRINT #0;"
IN MODES 1 & 3,# = DUPLICATION"
1000 REM INPUT
1005 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
1010 LET Z$=STR$ C
```



```
1020 LET Z$=X$(1 TO 3-LEN Z$)+Z$
1030 PRINT AT A,E;Z$;"▒"
1100 PRINT AT A,E+4;A$(1 TO B-4)
;AT A,E+B; FLASH 1;A$(B-3); FLAS
H 0;A$(B-2 TO D+1)
1110 LET Z$=INKEY$
1112 IF INT ((65536*PEEK 23674+2
56*PEEK 23673+PEEK 23672)/50)>TI
ME THEN GO TO 1300
1115 IF Z$="" THEN GO TO 1110
1116 LET L=USR USR "B"
1120 IF Z$>="0" AND Z$<="9" AND
B-4<>D THEN GO TO 1200
1130 LET B=B+((CODE Z$=9 OR Z$="
(") AND B-3<>D+1)-((CODE Z$=8 OR
 Z$="%") AND B-3<>1)
1140 IF CODE Z$=13 AND B-3=D+1 T
HEN PRINT AT A,E+D+4;" ": GO TO
1300
1150 IF Z$="P" THEN GO SUB 2000
1160 IF Z$="Q" THEN LET C=C-1: G
O SUB 9500
1180 IF INKEY$<>"" THEN GO TO 11
80
1190 GO TO 1100
1200 LET A$(B-3)=Z$: LET B=B+1
1210 PRINT AT A,E+B-1;A$(B-4)
1280 IF INKEY$()"" THEN GO TO 12
80
1290 GO TO 1100
1300 REM CHECK THE GUESS
1310 LET Z$="1234567890"
1320 FOR Z=1 TO D
1330 IF A$(Z)="-" THEN LET A$(Z)
=Z$(INT (RND*10+1))
1340 NEXT Z
1350 LET A$=A$(1 TO D)
1355 LET C$(C)=A$
1360 PRINT AT A,3;"-";C$(C)
1400 REM CHECK 1
1410 LET A1=0
1420 FOR Z=1 TO D
1430 IF A$(Z)=B$(Z) THEN LET A1=
A1+1
1440 NEXT Z
1450 LET D$(C)=STR$ A1
1460 PRINT AT A,13;D$(C)
1500 REM CHECK 2
1510 LET A1=0
1520 FOR Z=1 TO D
1530 FOR X=1 TO D
1540 IF Z=X THEN GO TO 1580
1550 IF B$(Z)=A$(X) THEN LET A1=
A1+1
1580 NEXT X: NEXT Z
1585 LET E$(C)=STR$ A1
1586 IF A1>9 THEN LET E$(C)="#"
1590 PRINT AT A,14;E$(C)
1595 IF A$=B$ THEN GO TO 1700
1600 REM UPDATE
1610 LET A=A+1: LET B=4
1620 LET A$="----------"
1630 LET A$=A$( TO D)+" "
1650 IF C=GUS THEN GO TO 9500
```

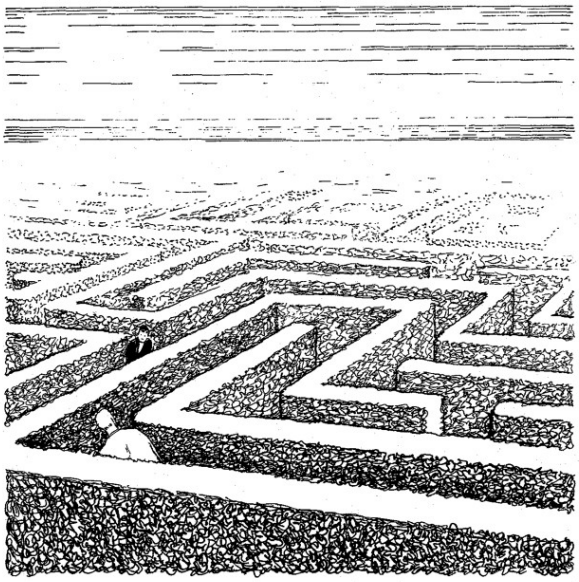
Listing continued next page

```
1660 LET C=C+1
1690 GO TO 1000
1700 REM HI
1710 PRINT AT 1,0;,,;AT 1,0;"YOU
'VE DONE IT IN ";(C);" GUESS";:
IF C>1 THEN PRINT "ES"
1790 GO TO 9515
2000 REM INTELLIGENCE
2010 INPUT AT 0,0;"INTELLIGENCE
AT WHICH GUESS ?";A2
2011 IF A2=0 THEN RETURN
2015 IF A2>=C OR A2<1 THEN GO TO
 2010
2017 IF MODE<>2 THEN PRINT AT 3+
A2,4;"WRONG MODE!": GO TO 2021
2020 PRINT AT 3+A2,4;" ";INT (VA
L D$(A2)*(100/D)+.5*VAL E$(A2)*(
100/D));"%
2030 LET L=USR USR "B": PAUSE 20
0
2040 PRINT AT 3+A2,4;C$(A2);X$(
TO 3-LEN C$(A2));D$(A2);E$(A2)
2090 RETURN
9000 INPUT AT 0,0;"ENTER YOUR ";
(D);" CHARACTERS:"; LINE B$
9010 IF LEN B$<>D THEN GO TO 900
0
9015 LET MODE=1
9020 FOR Z=1 TO D
9030 IF B$(Z)<"0" OR B$(Z)>"9" T
HEN GO TO 9000
9040 NEXT Z
9090 GO TO 590
9100 PRINT AT 21,0;" COMPUTER NO
W PRODUCING NUMBER  "
9105 LET MODE=2
9110 LET Z$="1234567890"
9120 FOR Z=1 TO 40
9130 LET ZZ=INT  (RND*10+1)
9140 LET Z1=INT  (RND*10+1)
9150 LET Q$=Z$(ZZ)
9160 LET Z$(ZZ)=Z$(Z1)
9170 LET Z$(Z1)=Q$: NEXT Z
9180 LET B$=Z$( TO D)
9185 PRINT AT 21,0;,,
9190 GO TO 590
9200 PRINT AT 21,0;" COMPUTER NO
W PRODUCING NUMBER  ": LET Z$="1
234567890"
9205 LET MODE=3
9210 LET B$="": FOR Z=1 TO D
9220 LET B$=B$+Z$(INT (RND*10+1)
): NEXT Z
9280 PRINT AT 21,0;,,
9290 GO TO 590
9300 INPUT "ENTER FILE NAME:"; L
INE Z$
9310 IF LEN Z$>10 THEN GO TO 930
0
9320 SAVE Z$
9330 RUN
9500 PRINT AT 1,0;,,"YOU FAILED,NU
MBER WAS "; FLASH 1;B$
9515 GO SUB 9900: LET F$=STR$ A3
+"%"
```



```
9516 IF A3<=25 AND A3<=50 THEN L
ET F$=F$+" POOR TRY"
9517 IF A3>25 AND A3<=50 THEN LE
T F$=F$+" NOT BAD"
9518 IF A3>50 THEN LET F$=F$+" V
ERY GOOD"
9519 IF A3=1000 THEN LET F$="MOD
E 2 ONLY !"
9520 INPUT AT 0,0;"INTELLIGENCE:
";(F$);AT 1,0;"ANOTHER GAME ? ";
 LINE Z$
9530 IF Z$="" THEN GO TO 9520
9540 IF Z$(1)="Y" THEN RUN
9550 IF Z$(1)<>"N" THEN GO TO 95
20
9560 STOP
9900 REM INTELLIGENCE
9905 IF MODE<>2 THEN LET A3=1000
: RETURN
9910 LET A1=0: LET A2=0
9920 FOR Z=1 TO C
9930 LET A1=A1+VAL D$(Z)
9940 LET A2=A2+VAL E$(Z)
9950 NEXT Z
9955 IF C=0 THEN LET A3=1000: RE
TURN
9960 LET A1=A1/C
9970 LET A2=A2/C
9980 LET A3=INT (A1*(100/D)+.5*A
2*(100/D))
9990 RETURN
9999 RUN
```

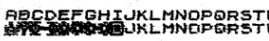
10
Duel



(16K)

An exciting two-player maze game using multi-key inputs to enable simultaneous play by both players. The object is to fill in as much of the maze as possible, and to block or box in the other player. But be careful! You will lose the game if you crash into your own or your opponent's trail. The game will not finish, but will wait for your opponent to complete the rest of the remaining maze. A bonus is awarded to the first player to trap his opponent.

Key to graphics characters



```
 10 REM **********************
 20 REM *       DUEL         *
 30 REM *   © TOBY MATTHEWS  *
 50 REM *   & ELLIS HORWOOD  *
 60 REM **********************
 70 POKE 23658,8
 75 LET P=0
 80 PAPER 0: INK 7: BORDER 0
 85 REM ■TITLE■
 90 CLS : GO SUB 9000
100 PLOT 20,168
110 DRAW 0,-32: DRAW 48,0: DRAW
0,32: DRAW -48,0
120 PLOT 24,168
130 DRAW 0,-32
140 PLOT 76,168
150 DRAW 0,-32: DRAW 48,0: DRAW
0,32:
160 PLOT 80,168
170 DRAW 0,-32
180 PLOT 100,136
190 DRAW -48,0: DRAW 0,32: DRAW
48,0:
200 PLOT 136,168
210 DRAW 0,-32
220 PLOT 132,152
230 DRAW 48,0
240 PLOT 188,168
250 DRAW 0,-32: DRAW 48,0
260 PLOT 192,168
270 DRAW 0,-32
280 PLOT 0,128
290 DRAW 255,0
295 REM ■INTRODUCTION■
300 PLOT 0,175: DRAW 255,0: DRA
W 0,-47
310 PLOT 0,175: DRAW 0,-47
315 IF P=1 THEN RETURN
320 PRINT AT 8,1; PAPER 1;"KEYS
-   PLAYER 1   PLAYER 2 "
330 PRINT AT 9,1; PAPER 2;" UP
          Q           P
340 PRINT AT 10,1; PAPER 3;"DOW
N         A           L
350 PRINT AT 11,1; PAPER 4;"RIG
HT        C           M
360 PRINT AT 12,1; PAPER 5;"LEF
T         X           N
370 PRINT AT 14,1; PAPER 1;"SHI
PS-       ▲           ▲
380 BEEP 1,10: PRINT AT 18,1; P
APER 2; FLASH 1;"PRESS A KEY TO
COMMENCE BATTLE"
390 IF INKEY$<>"" THEN GO TO 39
5
392 GO TO 390
```

Listing continued next page

```
 395 REM ■SET UP SCREEN■
 400 LET A$="□□□□□□□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□"
 420 PAPER 0: INK 0: CLS
 430 PRINT AT 1,0; INK 7;A$;AT 2
1,0;A$
 440 FOR N=2 TO 20
 445 PRINT AT N,0; INK 7;"■";AT
N,31;"■"
 450 NEXT N
 455 FOR N=3 TO 19 STEP 2: FOR F
=2 TO 12 STEP 2
 460 PRINT AT N,F; INK 7;"■"
 465 NEXT F: NEXT N
 470 FOR N=3 TO 19 STEP 2
 480 PRINT AT N,15; INK 7;"■■":
NEXT N
 485 FOR N=3 TO 19 STEP 2: FOR F
=19 TO 29 STEP 2
 490 PRINT AT N,F; INK 7;"■"
 495 NEXT F: NEXT N
 496 REM ■VARIABLES■
 500 LET S1=0
 505 LET F=0
 507 LET G=0
 510 LET S2=0
 515 LET L=0: LET M=0
 520 LET X=1: LET Y=11
 530 LET S=30: LET T=11
 540 LET C$="■"
 550 LET D$="■"
 560 GO SUB 1010
 570 GO SUB 1020
 580 PRINT AT 0,0; INK 7;" P.1 S
CORE:";S1;AT 0,17;"P.2 SCORE:";S
2
 590 REM ■MAIN LOOP■
 599 IF L=1 THEN GO TO 649
 610 IF IN 64510=254 THEN LET C$
="■": LET F=1
 620 IF F=1 AND ATTR (Y-1,X)=7 T
HEN LET F=0
 625 IF F=1 AND ATTR (Y-1,X)=66
OR F=1 AND ATTR (Y-1,X)=69 THEN
GO TO 2000
 630 IF F=1 THEN LET Y=Y-1: LET
S1=S1+10
 635 IF F=1 THEN GO SUB 1010
 640 IF F=1 THEN PRINT AT Y+1,X;
 BRIGHT 1; INK 4;"■";
 649 IF M=1 THEN GO TO 710
 660 IF IN 57342=254 THEN LET D$
="■": LET G=1
 680 IF G=1 AND ATTR (T-1,S)=7 T
HEN LET G=0
 685 IF G=1 AND ATTR (T-1,S)=66
OR G=1 AND ATTR (T-1,S)=69 THEN
GO TO 3000
 690 IF G=1 THEN LET T=T-1: LET
S2=S2+10
 695 IF G=1 THEN GO SUB 1020
 700 IF G=1 THEN PRINT AT T+1,S;
 BRIGHT 1; INK 5;"■";
 705 IF L=1 THEN GO TO 749
 720 IF IN 65022=254 THEN LET C$
="■": LET F=2
```



```
 725 IF F=2 AND ATTR (Y+1,X)=7 T
HEN LET F=0
 727 IF F=2 AND ATTR (Y+1,X)=66
OR F=2 AND ATTR (Y+1,X)=69 THEN
GO TO 2000
 730 IF F=2 THEN LET Y=Y+1: LET
S1=S1+10
 735 IF F=2 THEN GO SUB 1010
 740 IF F=2 THEN PRINT AT Y-1,X;
 BRIGHT 1; INK 4;"■";
 749 IF M=1 THEN GO TO 805
 760 IF IN 49150=253 THEN LET D$
="■": LET G=2
 770 IF G=2 AND ATTR (T+1,S)=7 T
HEN LET G=0
 775 IF G=2 AND ATTR (T+1,S)=66
OR G=2 AND ATTR (T+1,S)=69 THEN
GO TO 3000
 780 IF G=2 THEN LET T=T+1: LET
S2=S2+10
 785 IF G=2 THEN GO SUB 1020
 790 IF G=2 THEN PRINT AT T-1,S;
 BRIGHT 1; INK 5;"■";
 805 IF L=1 THEN GO TO 849
 820 IF IN 65278=251 THEN LET C$
="■": LET F=3
 825 IF F=3 AND ATTR (Y,X-1)=7 T
HEN LET F=0
 827 IF F=3 AND ATTR (Y,X-1)=66
OR F=3 AND ATTR (Y,X-1)=69 THEN
GO TO 2000
 830 IF F=3 THEN LET X=X-1: LET
S1=S1+10
 835 IF F=3 THEN GO SUB 1010
 840 IF F=3 THEN PRINT AT Y,X+1;
 BRIGHT 1; INK 4;"■";
 849 IF M=1 THEN GO TO 905
 860 IF IN 32766=247 THEN LET D$
="■": LET G=3
 870 IF G=3 AND ATTR (T,S-1)=7 T
HEN LET G=0
 875 IF G=3 AND ATTR (T,S-1)=66
OR G=3 AND ATTR (T,S-1)=69 THEN
GO TO 3000
 880 IF G=3 THEN LET S=S-1: LET
S2=S2+10
 885 IF G=3 THEN GO SUB 1020
 890 IF G=3 THEN PRINT AT T,S+1;
 BRIGHT 1; INK 5;"■";
 905 IF L=1 THEN GO TO 949
 920 IF IN 65278=247 THEN LET C$
="■": LET F=4
 925 IF F=4 AND ATTR (Y,X+1)=7 T
HEN LET F=0
 927 IF F=4 AND ATTR (Y,X+1)=66
OR F=4 AND ATTR (Y,X+1)=69 THEN
GO TO 2000
 930 IF F=4 THEN LET X=X+1: LET
S1=S1+10
 935 IF F=4 THEN GO SUB 1010
 940 IF F=4 THEN PRINT AT Y,X-1;
 BRIGHT 1; INK 4;"■";
 949 IF M=1 THEN GO TO 580
 960 IF IN 32766=251 THEN LET D$
="■": LET G=4
```

```
 970 IF G=4 AND ATTR (T,S+1)=7 T
HEN LET G=0
 975 IF G=4 AND ATTR (T,S+1)=68
OR G=4 AND ATTR (T,S+1)=69 THEN
GO TO 3000
 980 IF G=4 THEN LET S=S+1: LET
S2=S2+10
 985 IF G=4 THEN GO SUB 1020
 990 IF G=4 THEN PRINT AT T,S-1;
 BRIGHT 1; INK 5;"■";
1000 GO TO 580
1010 PRINT AT Y,X; INK 4; BRIGHT
 1;C$: RETURN
1020 PRINT AT T,S; INK 5; BRIGHT
 1;D$: RETURN
2000 REM ■DESTROY PLAYER 1■
2005 IF M=1 THEN GO TO 5000
2010 BEEP 1,-20: LET L=1: LET S2
=S2+100
2020 GO TO 580
3000 REM ■DESTROY PLAYER 2■
3005 IF L=1 THEN GO TO 5000
3010 BEEP 1,-20: LET M=1: LET S1
=S1+100
3020 GO TO 580
4990 REM ■GAME OVER■
5000 LET P=1: CLS : INK 7: GO SU
B 100
5005 FOR N=1 TO 30: BEEP .01,N:
NEXT N
5010 PRINT AT 7,12; FLASH 1;"GAM
E OVER"
5020 FLASH 0
5030 PRINT AT 9,0;"PLAYER 1 SCOR
ED ";S1
5040 PRINT AT 10,0;"PLAYER 2 SCO
RED ";S2
5050 IF S1>S2 THEN PRINT AT 13,8
;"PLAYER 1 WINS!!"
5060 IF S2>S1 THEN PRINT AT 13,8
;"PLAYER 2 WINS!!"
5070 IF S2=S1 THEN PRINT AT 13,1
3;"A DRAW!"
5080 PRINT AT 15,10;"ANOTHER GO?
"
5090 IF INKEY$="Y" THEN RUN
5100 IF INKEY$="N" THEN STOP
5110 GO TO 5090
8999 REM ■CHARACTER SET■
9000 FOR N=0 TO 71: READ A: POKE
 USR "A"+N,A: NEXT N
9010 DATA 24,24,153,189,231,219,
102,189,189,102,219,231,189,153,
24,24,189,112,216,175,175,216,11
2,189,61,14,27,245,245,27,14,61
9020 DATA 24,90,126,102,231,189,
126,90,90,126,189,231,102,126,90
,24,48,222,124,231,231,124,222,4
8,12,123,62,231,231,62,123,12
9030 DATA 255,129,189,189,189,18
9,129,255
9040 RETURN
9999 RUN
```

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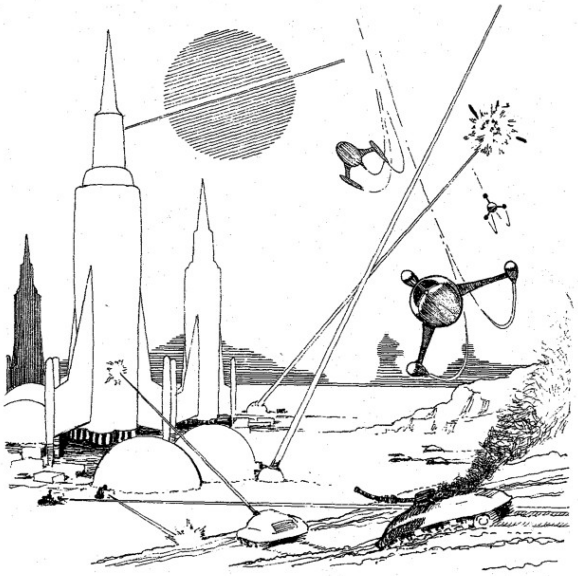
Lazers

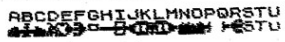


(16K)

A novel variant on the classic 'shoot-em-up' type of game. Having landed on the planet Zog, your space fleet is attacked by an alien task force. You must prevent them from destroying your vital fuel supplies, and your reserve of four space cruisers.

The high score remains in the computer merely as long as the power supply is switched on.

Key to graphics characters



```
  10 REM ┌──────────────────┐
         │ © PAUL SMITH     │
         │ / ELLIS HORWOOD  │
         └──────────────────┘
  14 POKE 23658,8
  15 REM
        ■ USER GRAPHICS ■
  16 IF PEEK (USR "A"+5)=255 THE
N GO TO 100
  20 LET A$="000000012060255255
5425405601505601625525505612400
0000961202542542542541950360500
0102189165165240200012030030012
00240"
  22 LET A$=A$+"240215028254254
2821624000012850650561260000000
0000000002552550000000001260650
6255255056056125"
  25 LET A$=A$+"003015056248248
5501500324825514314314313725124
9063255226226226034191063"
  27 LET A$=A$+"128224056062062
5622412300003411025525525525525
5000040792392552552552555"
  30 LET A$=A$+"000016016240240
0160160000000060060160150060060
0015027056127127056027015"
  40 LET X=USR "A"
  50 FOR Z=1 TO LEN A$ STEP 3
  60 LET Z$=A$(Z)+A$(Z+1)+A$(Z+2
): POKE X,VAL Z$: LET X=X+1: NEX
T Z
  90 POKE USR "U",0: POKE USR "U
"+1,0
 100 REM ■ VARIABLES ■
 110 LET A$="
     "
 120 LET L=5: LET A=1
 140 LET E$="
     "
 150 LET D$="
     "
 160 LET C$="
     "
 170 LET B=0
 180 LET E=1: LET E1=3: LET E2=1
 190 LET D=1: LET D1=2
 200 LET FU=1000: LET SC=0
 500 REM ■ INITIALIZE ■
 510 LET B$="                DON'T
 LET THE ENEMY DESTROY YOUR FUEL
 (8 & 9) OR YOU WILL BE DESTROYE
D  -  KEYS  -  Z=LEFT , X=RIGHT
```



```
& [ENTER]=FIRE     PRESS ANY KEY
TO START          "
 600 GO SUB 5000
 610 INK 8: PAPER 8
 640 FOR Z=1 TO 310
 650 PRINT AT 14,7;B$( TO 18)
 660 LET B$=B$(2 TO )+B$(1)
 670 BEEP .05,Z/5
 680 IF INKEY$="" THEN NEXT Z
 690 BEEP .1,0
 700 IF INKEY$<>"" THEN GO TO 70
0
 710 PRINT AT 14,7;"
     "
 720 PRINT #0;" ENTER SKILL LEVE
L 1(EASY) TO 5"
 730 LET Z$=INKEY$: IF Z$<"1" OR
 Z$>"5" THEN GO TO 730
 735 BEEP .1,10
 740 LET FU=1000-VAL Z$*INT (RND
*10+90)
 750 INPUT 0: PRINT #0;"ENTER EN
EMY LAZER RATE 1(SLOW)-9"
 755 IF INKEY$<>"" THEN GO TO 75
5
 760 LET Z$=INKEY$: IF Z$<"1" OR
 Z$>"9" THEN GO TO 760
 765 BEEP .1,10
 770 LET SK=VAL Z$/10
 775 IF INKEY$<>"" THEN GO TO 77
5
 780 INPUT 0: PRINT #0;"  © PAUL
 SMITH / ELLIS HORWOOD"
 790 FOR Z=5 TO 0 STEP -1: PRINT
 INVERSE 1;AT 16,3;Z: BEEP .1,0:
 FOR X=1 TO 70: NEXT X: NEXT Z:
PRINT AT 16,3;"  "
 800 INPUT 0
 810 PRINT AT 18,5;"
     "
1000 REM ■ MAIN LOOP ■
1010 LET B=B+1
1100 LET Z$=INKEY$
1110 LET A=A+(Z$="X" AND A<26)-(
Z$="Z" AND A>1)
1190 PRINT AT 16,A;"
1300 REM ■
1310 IF B/3<>INT (B/3) THEN GO T
O 1500
1320 IF E=1 THEN LET E$=E$(30)+E
$( TO 29)
1330 IF E=-1 THEN LET E$=E$(2 TO
 )+E$(1)
1340 PRINT AT 4,1;E$
1345 LET E1=E1+E
1350 IF E$(29)=">" THEN LET E=-1
1355 IF E$(2)="<" THEN LET E=1
1370 IF E1<7 OR E1>24 OR RND>SK
THEN GO TO 1500
1380 PLOT E1*8+7,135: DRAW -4,-1
11: BEEP .005,30
1390 IF E1>A+3 OR E1<A+1 THEN GO
 TO 1420
```

Listing continued next page

```
1400 PLOT OVER 1;E1*8+7,135: DRA
W OVER 1;-4,-111
1410 GO TO 8000
1420 IF A$(E1)<>" " THEN PRINT A
T 19,E1;" ": PRINT AT 20,E1;A$(E
1): LET A$(E1+32)=A$(E1): LET A$
(E1)=" ": GO TO 1490
1430 IF A$(E1+32)<>" " THEN PRIN
T AT 20,E1;" ": PRINT AT 21,E1;A
$(E1+32): LET A$(E1+32)=" ": LET
 FU=FU-40: GO TO 1490
1490 PLOT OVER 1;E1*8+7,135: DRA
W OVER 1;-4,-111
1500 REM ■ ■■■■ ■
1510 IF (B+1)/3<>INT ((B+1)/3) T
HEN GO TO 1600
1520 IF D=1 THEN LET D$( TO 24)=
D$(24)+D$( TO 23)
1530 IF D=-1 THEN LET D$( TO 24)
=D$(2 TO 24)+D$(1)
1540 PRINT INK E2;AT 8,1;D$( TO
30)
1550 LET D1=D1+D
1560 IF D$(24)="4" THEN LET D=-1
: IF D$(25)="3" THEN LET FU=FU-1
00: BEEP .01,0: LET D$(24)="3":
LET D$(25)=" "
1570 IF D$(2)="H" THEN LET D=1:
LET D$(5)="4": LET D$(25 TO )=D$
(25 TO )+" ": IF D$(25 TO 30)="
      " THEN LET D$(30 TO 39)="33
33 33 3"
1600 REM ■ M M M M ■
1610 IF (B+2)/3<>INT ((B+2)/3) T
HEN GO TO 1600
1615 IF (B+2)/9=INT ((B+2)/9) TH
EN LET C$=C$(2 TO )+"M": GO TO 1
630
1620 LET C$=C$(2 TO )+" "
1630 PRINT AT 12,1;C$
1640 LET X=INT (RND*10+11)
1660 IF C$(X)<>"M" THEN GO TO 16
00
1665 LET Y=INT (RND*18+7)
1670 IF RND>.6 AND B>200 THEN LE
T Y=A+INT (RND*5)
1680 PLOT 8*X+4,71: DRAW 8*(Y-X)
+4,-43: BEEP .005,30
1690 IF Y<A+1 OR Y>A+3 THEN GO T
O 1750
1700 PLOT OVER 1;8*X+4,71: DRAW
OVER 1;8*(Y-X)+4,-43
1710 GO TO 8000
1790 PLOT OVER 1;8*X+4,71: DRAW
OVER 1;8*(Y-X)+4,-43
1800 REM ■ FIRE ■
1810 IF (IN 49150=255 AND PEEK 2
3560<>13) OR FU<1 OR A<5 OR A>22
 THEN GO TO 1900
1815 BEEP .005,40
1820 PLOT 8*A+19,32: DRAW 0,112
1830 IF A+3>=E1 AND A<=E1 THEN L
ET E=1: BEEP .1,0: PRINT AT 4,E1
-1;"▬▬▬": LET SC=SC+10: LET E1=
3: LET E$="
```



```
1840 IF C$(A+2)="M" THEN BEEP .1
,0: PRINT AT 12,A+2;"*": LET SC=
SC+15+INT (RND*3): LET C$(A+2)="
"
1850 IF D$(A+2)<>" " THEN LET E2
=E2+.25: IF E2>5 THEN LET E2=1:
BEEP .1,0: PRINT AT 8,A+2;"*": L
ET SC=SC+200+INT (RND*20): LET D
$( TO 24)="      ■■■■
    ": LET D=-1
1860 PLOT OVER 1;8*A+19,32: DRAW
 OVER 1;0,112
1900 PRINT INVERSE 1;AT 0,21;SC
1910 PRINT INVERSE 1;AT 1,21;FU;
"  "
1920 IF FU<1 THEN PRINT AT 1,21;
 INVERSE 1;"0   ": GO TO 9000
1990 GO TO 1000
5000 REM ■ PRINT SCREEN ■
5005 BORDER 0: PAPER 7: INK 0: C
LS
5010 PRINT PAPER 6; INVERSE 1;AT
 0,0;"      LAZERS SCORE:
 © PS      FUEL :
    "
5020 FOR Z=3 TO 18: PRINT AT Z,0
;"■";AT Z,31;"■": NEXT Z
5030 FOR Z=6 TO 14 STEP 4: PRINT
 INVERSE 1; PAPER (Z-2)/4+3;AT Z
,1;"▬▬▬▬▬▬▬▬▬▬▬▬▬▬";AT Z,25;"▬▬▬▬▬▬": NE
XT Z
5040 PRINT AT 19,0;A$
5050 PRINT PAPER 6;AT 21,7; INVE
RSE 1;"□□□□□□□□□□□□□□□□"
5060 PRINT AT 20,1; INVERSE 1; P
APER 5;"▟▙▟▙";AT 21,26;"▟▙▟▙";AT 2
1,1; PAPER 4;"▟▙▟▙";AT 20,28;"▟▙▟▙
"
5070 PRINT INK 2;AT 18,A;" ▟▙▟▙ =
 YOUR SHIP
5080 PRINT INK 3;AT 4,1;E$;AT 4,
7;"= 10 POINTS"
5090 PRINT INK 4;AT 8,1;D$( TO 3
0);AT 8,7;"= 200-220 POINTS"
5100 PRINT INK 2;AT 12,1;C$;AT 1
2,14;"= 15-17 POINTS"
5190 RETURN
8000 REM ■ LOSE LIFE ■
8010 LET LI=LI-1
8015 INVERSE 1
8020 IF LI=4 THEN PRINT AT 20,1;
"  "
8030 IF LI=3 THEN PRINT AT 20,26
;"  "
8040 IF LI=2 THEN PRINT AT 21,1;
"  "
8050 IF LI=1 THEN PRINT AT 21,26
;"  "
8060 FOR Z=10 TO 0 STEP -1: BEEP
 .1,Z: NEXT Z
8065 INVERSE 0
8070 FOR Z=1 TO 5
8080 PRINT AT 18,A;" ▟▙▟▙ "
```

Listing continued next page

```
8090 FOR X=1 TO 30: NEXT X
8100 PRINT AT 18,A;"          "
8110 FOR X=1 TO 30: NEXT X
8120 NEXT Z
8150 IF LI=0 THEN GO TO 9000
8170 BEEP .1,20: BEEP .1,20
8180 LET A=1: LET B=0
8190 GO TO 1000
9000 REM ■ THE END ■
9010 PRINT AT 6,1;D$( TO 30)
9020 PRINT AT 6,9; FLASH 1;"T H
E   E N D";AT 10,11;"SCORE:";SC
9030 LET HS=PEEK USR "U"+100+PEE
K (USR "U"+1)
9040 IF SC>HS THEN LET HS=SC
9050 PRINT AT 14,8; FLASH 1;"HIG
H SCORE:";HS
9060 POKE USR "U",INT (HS/100)
9070 POKE USR "U"+1,(HS/100-INT
(HS/100))*100
9080 FOR Z=10 TO 0 STEP -1: BEEP
.2,Z: NEXT Z
9090 INPUT 0: PRINT #0;"      PRE
SS ANY KEY TO START"
9100 IF INKEY$="" THEN GO TO 910
0
9110 RUN
```

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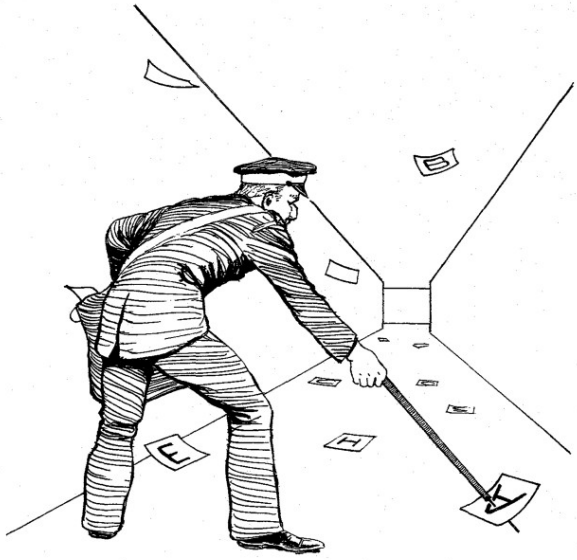
Word Search



(16K)

A fascinating and original game which tests your vocabulary, and your skill at negotiating a constantly variable maze. The idea is to pick up and assemble the letters of a word which are placed at a number of points in the maze. Because the maze is infinitely variable in configuration, it can take a while to collect all the letters – and there is a time limit. You can also choose between six levels of difficulty, from three-to eight-letter words. Once you have picked up all the letters in the maze you cannot assemble the word until you have escaped through the little door which opens at the top of the maze. You then have twenty seconds to guess the word.

Two game modes are possible: the first in which the computer selects the word from its memory, and a second where you or your opponent can type in a word of any length. Why not try 'antidisestablishmentarianism' (one of the longest words in the English language)?

Key to graphics characters

ABCDEFGHIJKLMNOPQRSTU
■CDEFGHIJKLMNOPQRSTU

```
  10 REM ************************
  20 REM *    WORD SEARCH       *
  30 REM *  © TOBY MATTHEWS     *
  40 REM *  & ELLIS HORWOOD     *
  50 REM ************************
  60 POKE 23658,8
  70 BORDER 4: PAPER 4: INK 7
  80 GO SUB 9000
  90 CLS
  95 REM ■MENU■
 100 PRINT AT 0,6; PAPER 1;"W O
R D   S E A R C H"
 110 BEEP 1,10
 120 PRINT AT 14,0; PAPER 2;"GAM
E OPTION:"
 130 PRINT AT 16,0; PAPER 1;"1-U
SE COMPUTER VOCABULARY"
 140 PRINT AT 18,0; PAPER 1;"2-U
SE OWN WORD"
 145 GO SUB 1000
 150 INPUT PAPER 1; INK 7;"PRESS
 1 OR 2 THEN (ENTER) ";A
 155 IF A>2 OR A<1 THEN GO TO 15
0
 160 IF A=1 THEN GO TO 180
 170 IF A=2 THEN GO TO 8000
 180 BEEP .2,10: PRINT AT 20,0;
PAPER 0;"PLEASE INPUT DIFFICULTY
!"
 190 INPUT PAPER 2; INK 7;"1 (EA
SY) TO 6 (HARD)";D
 200 IF D<1 OR D>6 THEN GO TO 19
0
 210 GO SUB 6000
 215 LET A$=W$(9)
 220 FOR N=1 TO 20
 240 LET X=INT (RND*(D+2)+1)
 250 LET Y=INT (RND*(D+2)+1)
 260 LET T$=A$(X)
 270 LET A$(X)=A$(Y)
 280 LET A$(Y)=T$
 290 NEXT N
 300 GO SUB 5000
 310 REM ■MAIN LOOP■
 320 FOR N=1 TO LEN A$
 330 LET V=2+(INT (RND*19))
 340 LET U=INT (RND*31)
 350 IF CODE SCREEN$ (V,U)=0 THE
N GO TO 330
 360 PRINT AT V,U; PAPER 1; INK
7;A$(N)
```



```
 370 NEXT N
 380 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
 385 LET D$="": LET M=1: LET L=1
0
 390 LET T=INT (250-((65536*PEEK
 23674+256*PEEK 23673+PEEK 23672
),50))
 400 PRINT AT 1,24;"    ";AT 1,24
; PAPER 1;T
 410 PRINT AT 1,2;D$
 420 PRINT AT L,M; INK 0;"▲"
 450 IF INKEY$="P" THEN IF CODE
SCREEN$ (L-1,M)>=65 THEN LET H=C
ODE SCREEN$ (L-1,M): LET D$=D$+C
HR$ H: PRINT AT L-1,M;" "
 455 IF INKEY$="P" THEN IF CODE
SCREEN$ (L-1,M)<>0 THEN PRINT AT
 L,M;" ": LET L=L-1: PRINT AT L,
M; INK 0;"▲"
 460 IF INKEY$="L" THEN IF CODE
SCREEN$ (L+1,M)>=65 THEN LET H=C
ODE SCREEN$ (L+1,M): LET D$=D$+C
HR$ H: PRINT AT L+1,M;" "
 465 IF INKEY$="L" THEN IF CODE
SCREEN$ (L+1,M)<>0 THEN PRINT AT
 L,M;" ": LET L=L+1: PRINT AT L,
M; INK 0;"▲"
 470 IF INKEY$="X" THEN IF CODE
SCREEN$ (L,M+1)>=65 THEN LET H=C
ODE SCREEN$ (L,M+1): LET D$=D$+C
HR$ H: PRINT AT L,M+1;" "
 475 IF INKEY$="X" THEN IF CODE
SCREEN$ (L,M+1)<>0 THEN PRINT AT
 L,M;" ": LET M=M+1: PRINT AT L,
M; INK 0;"▲"
 480 IF INKEY$="Z" THEN IF CODE
SCREEN$ (L,M-1)>=65 THEN LET H=C
ODE SCREEN$ (L,M-1): LET D$=D$+C
HR$ H: PRINT AT L,M-1;" "
 485 IF INKEY$="Z" THEN IF CODE
SCREEN$ (L,M-1)<>0 THEN PRINT AT
 L,M;" ": LET M=M-1: PRINT AT L,
M; INK 0;"▲"
 550 FOR N=1 TO 2
 560 LET V=3+(INT (RND*17))
 570 LET U=INT (RND*31)
 580 IF CODE SCREEN$ (V,U)>=65 T
HEN GO TO 560
 585 IF V=L OR U=M THEN GO TO 56
0
 590 PRINT AT V,U;"■"
 600 NEXT N
 610 FOR N=1 TO 2
 620 LET V=3+(INT (RND*17))
 630 LET U=1+(INT (RND*30))
 640 IF CODE SCREEN$ (V,U)>=65 T
HEN GO TO 620
 650 PRINT AT V,U;" "
 660 NEXT N
 665 IF LEN D$=LEN A$ THEN PRINT
 AT 2,15;"  "
 670 IF L=2 AND LEN D$=LEN A$ TH
EN GO TO 2000
```

Listing continued next page

```
 680 IF T=0 THEN GO TO 3000
 800 GO TO 390
1000 REM ■KEYS■
1010 PRINT AT 4,0; PAPER 2;"P...
..UP"
1020 PRINT AT 6,0; PAPER 1;"L...
..DOWN"
1030 PRINT AT 8,0; PAPER 2;"Z...
..LEFT"
1040 PRINT AT 10,0; PAPER 1;"X..
...RIGHT"
1050 RETURN
2000 REM ■GUESS WORD■
2010 FOR N=1 TO 20: BEEP .01,N:
NEXT N
2020 CLS : PRINT AT 0,0; PAPER 0
;"WELL DONE YOU SURVIVED THE MAZ
E!"
2030 FOR N=1 TO 20: BEEP .01,N:
NEXT N
2035 PRINT AT 3,(32-LEN D$)/2; P
APER 2;D$
2040 PRINT AT 5,2; PAPER 1;"NOW
ENTER THE WORD YOU FOUND!"
2050 PRINT AT 14,3; PAPER 1;"TO
DELETE WORD PRESS '0'."
2060 POKE 23674,0: POKE 23673,0:
 POKE 23672,0
2065 LET G$=""
2070 LET T1=INT (20-((65526*PEEK
 23674+256*PEEK 23673+PEEK 23672
)/50))
2072 PRINT AT 7,25;"  "
2075 PRINT AT 7,7; PAPER 1;"YOU
HAVE ";T1;" SECONDS"
2080 LET C$=INKEY$
2090 LET G$=G$+C$
2095 IF C$="0" THEN PRINT AT 10,
0;"
   ": LET G$=""
2100 PRINT AT 10,(32-LEN D$)/2;
PAPER 2;G$
2105 FOR N=1 TO 20: NEXT N
2110 IF LEN G$=LEN D$ THEN GO TO
 2150
2115 IF T1=0 THEN GO TO 3000
2120 GO TO 2070
2150 IF G$=I$ THEN GO TO 4000
2155 REM ■WRONG!■
2160 CLS : BEEP 1,-30
2170 PRINT AT 6,0; PAPER 2;"OH D
EAR! YOU GOT THE WORD WRONG!"
2180 PRINT AT 8,((18-LEN I$)/2);
 PAPER 1;"THE WORD WAS ";I$
2190 FOR N=1 TO 100: GO TO 7000
3000 REM ■TIME OUT!■
3005 CLS : BEEP 1,-30
3010 PRINT AT 6,2; PAPER 2;"OH D
EAR! YOU RAN OUT OF TIME"
3020 PRINT AT 8,((18-LEN I$)/2);
 PAPER 1;"THE WORD WAS ";I$
3030 FOR N=1 TO 100: GO TO 7000
4000 REM ■WIN!■
4005 FOR N=1 TO 20: BEEP .01,N:
NEXT N
4010 CLS
```



```
4020 PRINT AT 6,2; PAPER 1;"CONG
RATULATIONS YOU MADE IT!"
4030 PRINT AT 8,3; PAPER 2;"YOU
DID IT IN ";270-(T1+T);" SECONDS
"
4040 FOR N=1 TO 100: NEXT N
4050 GO TO 7000
5000 REM ■SET UP MAZE■
5010 CLS : PRINT AT 0,4; PAPER 1
;"LETTERS";AT 0,23;"TIME:"
5020 PRINT AT 2,0;"■■■■■■■■■■■■■■
■■■■■■■■■■■■■■■■■■"
5030 PRINT AT 3,0;"■
                 ■"
5040 PRINT AT 4,0;"■ ■■ ■ ■  ■■■
 ■  ■ ■■■  ■ ■ ■■ ■"
5050 PRINT AT 5,0;"■ ■  ■ ■ ■■ ■
 ■  ■ ■    ■ ■  ■ ■"
5060 PRINT AT 6,0;"■ ■■ ■ ■ ■■ ■
      ■ ■■ ■ ■ ■■ ■"
5070 PRINT AT 7,0;"■    ■ ■  ■ ■
■ ■■ ■■ ■  ■ ■    ■"
5080 PRINT AT 8,0;"■ ■     ■ ■ ■
■ ■■ ■■ ■ ■     ■ ■"
5090 PRINT AT 9,0;"■ ■ ■■■ ■ ■
            ■ ■ ■ ■ ■"
5100 PRINT AT 10,0;"■ ■ ■ ■■■ ■■
■■■    ■■ ■■■■ ■ ■ ■ ■"
5110 PRINT AT 11,0;"■ ■ ■
  ■  ■        ■ ■ ■ ■"
5120 PRINT AT 12,0;"■ ■ ■■■ ■■■■
■ ■    ■ ■■■■■■■■ ■ ■ ■"
5130 PRINT AT 13,0;"■■■   ■ ■
■ ■    ■           ■■■"
5140 PRINT AT 14,0;"■   ■■■ ■ ■■
■ ■    ■ ■■■ ■ ■■■    ■"
5150 PRINT AT 15,0;"■■■
                 ■■■"
5160 PRINT AT 16,0;"■ ■ ■■■■■■■■
■■■    ■■■■■■■■■■■■■ ■"
5170 PRINT AT 17,0;"■ ■
                 ■ ■"
5180 PRINT AT 18,0;"■ ■■■■■■■■■■
■■■    ■■■■■■■■■■■■■ ■"
5190 PRINT AT 19,0;"■
                    ■"
5200 PRINT AT 20,0;"■■■■■■■■■■■■
■■■■■■■■■■■■■■■■■■■■"
5210 RETURN
6000 REM ■VOCABULARY■
6005 RANDOMIZE
6010 GO SUB 6000+(D*100)
6020 LET A=INT (RND*8+1)
6025 LET W$(9)=W$(A)
6030 LET I$=W$(9)
6040 RETURN
6100 DIM W$(9,3)
6110 LET W$(1)="DOG"
6120 LET W$(2)="MAT"
6130 LET W$(3)="KID"
6140 LET W$(4)="BOX"
6150 LET W$(5)="PIN"
6160 LET W$(6)="SAY"
6170 LET W$(7)="HIT"
```

Listing continued next page

```
6180 LET W$(8)="FAN"
6190 RETURN
6200 DIM W$(9,4)
6210 LET W$(1)="BYTE"
6220 LET W$(2)="QUIZ"
6230 LET W$(3)="SOFT"
6240 LET W$(4)="ACRE"
6250 LET W$(5)="ZEST"
6260 LET W$(6)="DARK"
6270 LET W$(7)="BOWL"
6280 LET W$(8)="LORD"
6290 RETURN
6300 DIM W$(9,5)
6310 LET W$(1)="LAUGH"
6320 LET W$(2)="EARTH"
6330 LET W$(3)="BUILD"
6340 LET W$(4)="APRIL"
6350 LET W$(5)="SPORT"
6370 LET W$(7)="UNCLE"
6380 LET W$(8)="CAROL"
6390 RETURN
6400 DIM W$(9,6)
6410 LET W$(1)="ANTLER"
6420 LET W$(2)="FLIGHT"
6430 LET W$(3)="MOTIVE"
6440 LET W$(4)="SACRED"
6450 LET W$(5)="LUMBER"
6460 LET W$(6)="UNISON"
6470 LET W$(7)="ZODIAC"
6480 LET W$(8)="WIZARD"
6490 RETURN
6500 DIM W$(9,7)
6510 LET W$(1)="SPECIAL"
6520 LET W$(2)="NOVELTY"
6530 LET W$(3)="NOTABLE"
6540 LET W$(4)="INTRUDE"
6550 LET W$(5)="PHANTOM"
6560 LET W$(6)="MIXTURE"
6570 LET W$(7)="QUIBBLE"
6580 LET W$(8)="TORPEDO"
6590 RETURN
6600 DIM W$(9,8)
6610 LET W$(1)="SPECTRUM"
6620 LET W$(2)="COMPUTER"
6630 LET W$(3)="CREATION"
6640 LET W$(4)="SQUANDER"
6650 LET W$(5)="THANKFUL"
6660 LET W$(6)="COMPRISE"
6670 LET W$(7)="HYDROGEN"
6680 LET W$(8)="RESOLUTE"
6690 RETURN
7000 REM ■AGAIN?■
7010 PRINT AT 10,10; PAPER 1;"AN
OTHER GO ?"
7020 IF INKEY$="Y" THEN RUN
7030 IF INKEY$="N" THEN STOP
7040 GO TO 7020
8000 REM ■ENTER WORD■
8010 INPUT ; PAPER 1; INK 7;"ENT
ER WORD"; LINE I$
8020 BEEP .2,10
8025 LET A$=I$
8030 FOR N=1 TO 20
8050 LET X=INT (RND*LEN A$)+1
8060 LET Y=INT (RND*LEN A$)+1
8070 LET T$=A$(X)
```



```
8080 LET A$(X)=A$(Y)
8090 LET A$(Y)=T$
8100 NEXT N
8110 GO TO 300
9000 REM ■CHARACTER SET■
9010 FOR N=0 TO 15: READ A: POKE
 USR "A"+N,A: NEXT N
9020 DATA 255,129,189,189,189,18
9,129,255
9030 DATA 56,56,16,254,16,40,68,
130
9040 RETURN
9999 RUN
```

13
Horse Race

(16K)
All the thrills of the turf are contained in this game, which tests your reactions to the limit. One or two players can take part in the game, the object being to stop a continuously scrolling number reel at the bottom of the screen, on the number corresponding to the lane in which your horse is running. However, you and your opponent are plying against the computer which controls the other two or three horses in the game, and can also stop the reel when it wants to. But unlike the players, the computer never makes a mistake: it can stop the reel at exactly the right point to make sure its horses lead the race.

The game starts automatically when the number of players and the lanes they have chosen are typed in. The game will list the overall winner after any number of games up to a maximum of twenty.

Key to graphics characters

ABCDEFGHIJKLMNOPQRSTU
[illegible]IJKLMNOPQRSTU

```
  10 REM **********************
  20 REM *    HORSE RACING     *
  30 REM * © TOBY MATTHEWS,  *
  50 REM * & ELLIS HORWOOD.  *
  60 REM **********************
  65 LET Y=0
  67 LET U=0
  68 GO SUB 9000
  70 REM [illegible]OPTIONS[illegible]
  75 POKE 23658,8
  80 INK 7: BORDER 4: PAPER 4: C
LS
  90 PRINT AT 0,0; PAPER 2;"[illegible]
  91 PRINT AT 21,0; PAPER 2;"[illegible]
  93 FOR n=1 TO 20
  94 PRINT AT n,0; PAPER 2;"[illegible]
  95 NEXT n
  96 PRINT AT 4,0; PAPER 2;"[illegible]
 100 PRINT AT 1,2; PAPER 2;"[illegible]
 110 PRINT AT 2,2; PAPER 2;"[illegible]
 120 PRINT AT 3,2; PAPER 2;"[illegible]
 125 IF Y=1 THEN GO TO 5030
 126 IF Y=2 THEN GO TO 292
 130 BEEP .5,0
 140 PRINT AT 6,1; PAPER 4;" PLE
ASE IMPUT NO. OF PLAYERS. "
 150 PRINT AT 7,13; PAPER 1;"1 O
R 2"
 160 INPUT A
 170 IF A>2 OR A<1 THEN GO TO 16
0
 180 BEEP .5,0
 190 PRINT AT 9,5; PAPER 1;"PLAY
ER 1 USES KEY:A"
 200 IF A=2 THEN PRINT AT 10,5;
PAPER 3;"PLAYER 2 USES KEY:L"
 205 PRINT AT 12,13;"LANES:"
 210 FOR N=14 TO 17
 220 PRINT AT 14,N; PAPER N-13;N
-13
 230 NEXT N
 240 PRINT AT 16,1; PAPER 4;"PLE
ASE IMPUT LANE NO. PLAYER 1"
 245 INPUT B
 246 IF B<1 OR B>4 THEN GO TO 24
0
```

Listing continued next page

```
 250 IF A=2 THEN PRINT AT 17,1;
PAPER 1;"PLEASE IMPUT LANE NO. P
LAYER 2"
 260 IF A=2 THEN INPUT C: IF C<1
 OR C>4 OR C=B THEN GO TO 260
 280 PRINT AT 19,5;"PLAYER 1 CHO
SE LANE:"; PAPER B;B
 290 IF A=2 THEN PRINT AT 20,5;"
PLAYER 2 CHOSE LANE:"; PAPER C;C
 291 FOR N=1 TO 200: NEXT N: LET
 Y=2: GO TO 70
 292 PRINT AT 0,1; PAPER 1;"ENTE
R NUMBER OF RACES 1 TO 20": INPU
T NO:
 293 IF NO<1 OR NO>20 THEN GO TO
 292
 295 LET S=0: LET T=0: LET W=0
 300 REM ■PRINT TRACK■
 305 FOR D=1 TO NO: PAUSE 150: C
LS
 310 PLOT 0,160: DRAW 255,0
 320 FOR N=0 TO 255 STEP 8
 330 PLOT N,160: DRAW 0,-8
 340 NEXT N
 345 PLOT 255,160: DRAW 0,-8
 350 PLOT 0,55: DRAW 255,0
 360 FOR N=0 TO 255 STEP 8
 370 PLOT N,55: DRAW 0,-8
 380 NEXT N
 390 PLOT 255,55: DRAW 0,-8
 400 PLOT 16,160: DRAW 0,10
 410 INK 2: CIRCLE 16,172,3
 420 INK 2: CIRCLE 16;172,2
 430 INK 7
 440 LET H=3
 450 FOR N=1 TO 4
 460 PRINT PAPER N;AT H,0;" ";AT
 H+1,0;N;AT H+2,0;" "
 470 LET H=H+3
 480 NEXT N
 500 REM ■SET UP VARIABLES■
 520 LET K=29: LET L=29: LET M=2
9: LET N=29
 530 PRINT AT 3,K;"▗";AT 4,K;"▐
▙";AT 5,K;" ▝▘"
 535 PRINT AT 6,L;"▗";AT 7,L;"▐
▙";AT 8,L;" ▝▘"
 540 PRINT AT 9,M;"▗";AT 10,M;"
▐▙";AT 11,M;" ▝▘"
 545 PRINT AT 12,N;"▗";AT 13,N;
"▐▙";AT 14,N;" ▝▘"
 550 LET O=17
 555 LET O=0
 570 PRINT AT 21,15;"↑"
 580 PLOT 47,7: DRAW 0,9: DRAW 1
53,0: DRAW 0,-9: DRAW -153,0
 600 REM ■MAIN LOOP■
 630 LET A$=""
 640 RESTORE 800: FOR Z=1 TO 80:
 READ X: LET A$=A$+CHR$ X: NEXT
Z
 645 FOR J=4 TO 0 STEP -1
 647 FOR G=1 TO 40
 650 PRINT AT 20,5;A$( TO 57)
 660 LET A$=A$(4 TO )+A$( TO 3)
 670 IF J=0 THEN GO TO 645
```



```
 680 IF IN 65022=254 THEN PRINT
AT 18,0;"PLAYER 1 STOPPED REEL A
T LANE "; PAPER VAL A$(15);A$(15
): GO SUB VAL A$(15)*1000
 690 IF A=2 THEN GO TO 750
 700 LET U=INT (RND*3)
 701 IF U=1 AND VAL A$(15)=B THE
N GO TO 700
 702 IF A=1 THEN GO TO 710
 703 IF U=1 AND VAL A$(15)=C THE
N GO TO 700
 710 IF U=1 THEN PRINT AT 18,0;"
   I STOPPED REEL AT LANE "; PAP
ER VAL A$(15);A$(15);AT 18,27; P
APER 4;" ": LET D=D+1: GO SU
B VAL A$(15)*1000
 715 BEEP (5-J)/500,10
 730 NEXT G: NEXT J
 750 IF IN 49150=253 THEN PRINT
AT 18,0;"PLAYER 2 STOPPED REEL A
T LANE "; PAPER VAL A$(15);A$(15
): GO SUB VAL A$(15)*1000
 760 GO TO 700
 800 DATA 0,1,49,0,2,50,0,3,51,0
,4,52,0,1,49,0,2,50,0,3,51,0,4,5
2,0,1,49,0,2,50,0,3,51,0,4,52,0,
1,49,0,2,50,0,3,51,0,4,52,0,1,49
,0,2,50,0,3,51,0,4,52
1000 REM ■MOVE HORSES■
1001 LET R=1
1010 GO SUB 6000
1030 PRINT AT 3,K;"  ";AT 4,K;"
  ";AT 5,K;"
1040 LET K=K-J
1050 PRINT AT 3,K;"▗";AT 4,K;"▐
▙";AT 5,K;" ▝▘"
1060 IF K<2 THEN GO TO 5000
1070 RETURN
2000 LET R=2
2010 GO SUB 6000
2030 PRINT AT 6,L;"  ";AT 7,L;"
  ";AT 8,L;"
2040 LET L=L-J
2050 PRINT AT 6,L;"▗";AT 7,L;"▐
▙";AT 8,L;" ▝▘"
2060 IF L<2 THEN GO TO 5000
2070 RETURN
3000 LET R=3
3010 GO SUB 6000
3030 PRINT AT 9,M;"  ";AT 10,M;"
  ";AT 11,M;"
3040 LET M=M-J
3050 PRINT AT 9,M;"▗";AT 10,M;"
▐▙";AT 11,M;" ▝▘"
3060 IF M<2 THEN GO TO 5000
3070 RETURN
4000 LET R=4
4010 GO SUB 6000
4030 PRINT AT 12,N;"  ";AT 13,N;
"  ";AT 14,N;"
4040 LET N=N-J
4050 PRINT AT 12,N;"▗";AT 13,N;
"▐▙";AT 14,N;" ▝▘"
4060 IF N<2 THEN GO TO 5000
```

Listing continued next page

```
4070 RETURN
5000 REM ■END OF RACE■
5001 FOR N=20 TO 0 STEP -1: BEEP
 .01,N: NEXT N
5010 FOR N=0 TO 20: BEEP .01,N:
NEXT N
5020 LET Y=1: GO TO 70
5030 IF A=2 THEN GO TO 5100
5040 IF R=5 THEN PRINT AT 5,5; P
APER R; FLASH 1;"PLAYER 1 WINS R
ACE ";D: LET W=W+1: GO TO 5200
5050 PRINT AT 5,10; PAPER R; FLA
SH 1;"I WIN RACE ";D: LET S=S+1
5060 GO TO 5200
5100 IF R=C THEN PRINT AT 5,5; P
APER R; FLASH 1;"PLAYER 2 WINS R
ACE ";D: LET T=T+1: GO TO 5200
5110 GO TO 5040
5200 LET C$=" RACES"
5210 LET D$=" RACE."
5220 PRINT AT 9,2;"I HAVE WON ";
S;C$: IF S=1 THEN PRINT AT 9,15;
D$
5230 PRINT AT 10,2;"PLAYER 1 HAS
 WON ";W;C$: IF W=1 THEN PRINT A
T 10,20;D$
5240 IF A=2 THEN GO TO 5250
5245 GO TO 5290
5250 PRINT AT 11,2;"PLAYER 2 HAS
 WON ";T;C$: IF T=1 THEN PRINT A
T 11,20;D$
5290 NEXT D
5300 REM ■END OF GAME■
5310 IF A=2 THEN GO TO 5400
5320 IF W>S THEN PRINT AT 13,5;
PAPER B;"PLAYER 1 WINS OVERALL"
5330 IF S>W THEN PRINT AT 13,9;"
I WIN OVERALL"
5340 PRINT AT 15,10; PAPER 1;"AN
OTHER GO?"
5350 IF INKEY$="N" THEN STOP
5360 IF INKEY$="Y" THEN RUN
5370 GO TO 5350
5400 IF W>S AND W>T THEN PRINT A
T 13,5; PAPER B;"PLAYER 1 WINS O
VERALL"
5410 IF S>W AND S>T THEN PRINT A
T 13,9;"I WIN OVERALL"
5420 IF T>S AND T>W THEN PRINT A
T 13,5; PAPER C;"PLAYER 2 WINS O
VERALL"
5430 GO TO 5340
6000 FOR V=1 TO 75: NEXT V
6001 PRINT AT 18,0;"
                    "
6002 IF U=1 THEN GO TO 6100
6005 IF A=2 THEN GO TO 6050
6010 IF B=R THEN PRINT AT 18,2;"
YOU PICKED PLAYER 1'S HORSE"
6030 IF B<>R THEN PRINT AT 18,6;
"YOU PICKED MY HORSE"
6040 GO TO 6090
6050 IF C=R THEN PRINT AT 18,2;"
YOU PICKED PLAYER 2'S HORSE"
6070 IF B=R THEN PRINT AT 18,2;"
YOU PICKED PLAYER 1'S HORSE"
```



```
6080 IF B<>R AND C<>R THEN PRINT
 AT 18,6;"YOU PICKED MY HORSE"
6090 RETURN
6110 IF B=R THEN PRINT AT 18,3;"
I PICKED PLAYER 1'S HORSE"
6130 IF B<>R THEN PRINT AT 18,6;
"I PICKED MY HORSE"
6140 GO TO 6090
9000 REM ■CHARACTER SET■
9010 RESTORE 9020: FOR N=0 TO 63
: READ A: POKE USR "A"+N,A: NEXT
 N
9020 DATA 0,0,1,3,7,1,0,16,0,0,0
,126,192,240,248,120,60,126,127,
95,127,243,225,0,126,126,111,141
,189,189,189,129,0,0,48,250,251,
250,251,249,1,0,0,1,1,3,0,0,255,
255,249,177,29,173,247,0,248,231
,247,174,98,192,192,192
9030 RETURN
9999 RUN
```

14
Minefield

(48K)

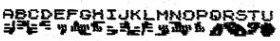
Can you cross a cratered minefield in your tank without setting off one of the mines? This game tests your skill and judgement. You must not get blown up by a mine, fall in one of the craters or run out of fuel in the middle of the minefield. 'Adolf', the enemy, also makes frequent sorties through the minefield. If he gets your tank, or if you run over any of the mines he has just laid, your game will be finished.

Although the mines are concealed, you do have a detection device, which will tell you when you are right next to a mine. It displays the number of mines next to your

tank in the top left-hand corner of the screen. But it is rather a crude device: it will not tell you the direction in which the mine will be found – you have to guess!

The quicker you get across the minefield, the higher your score will be. A bit of care is necessary not to go off the edge of the screen: because you will fall in a hole if you do so.

Key to graphics characters




```
  10 REM ********************
  20 REM *    MINE FIELD.   *
  30 REM *  © TOBY MATTHEWS *
  50 REM *  & ELLIS HORWOOD *
  60 REM ********************
  61 GO SUB 9010
  65 REM INTRODUCTION
  67 POKE 23658,8
  70 BORDER 0: PAPER 0: INK 7: C
LS
  80 PRINT AT 0,7; PAPER 2;"M I
N E F I E L D."
  90 PRINT AT 2,0;"------------
--------------------"
 100 PRINT AT 20,0;"------------
--------------------"
 120 PRINT AT 4,0; PAPER 1;"KEYS
:"
 130 PRINT AT 4,10; PAPER 0;"P";
AT 4,12;"UP"
 140 PRINT AT 6,10; PAPER 1;"L";
AT 6,12;"DOWN"
 150 PRINT AT 8,10; PAPER 2;"Z";
AT 8,12;"RIGHT"
 160 PRINT AT 10,10; PAPER 3;"X"
;AT 10,12;"LEFT"
 170 PRINT AT 12,0;"------------
--------------------"
 180 PRINT AT 14,5;" YOU.
  ADOLF."
 190 PRINT AT 16,7;"
  "
 200 PRINT AT 17,7;"
  "
 220 PRINT AT 19,2;"PRESS ""R""
KEY TO START PLAY!"
 240 BEEP .01,-10
 245 PAUSE 2
 250 BEEP .01,10
 260 IF INKEY$="R" THEN GO TO 30
0
 265 REM VARIABLES
 270 GO TO 220
 300 LET S=1000
 305 LET L=1
 310 LET X=15
 320 LET Y=20
 330 LET F=1
```

Listing continued next page

```
 340 LET P=0
 350 LET D=0
 390 REM █DRAW MINEFIELD█
 400 PAPER 4: CLS
 410 PRINT AT 0,7; PAPER 2;"M I
N E F I E L D."
 420 PRINT AT 2,0; INK 0;"██████
███████████"
 430 PRINT AT 2,17; INK 0;"█████
████████████"
 440 PRINT AT 21,0; INK 0;"█████
████████████"
 450 PRINT AT 21,17; INK 0;"████
█████████████"
 460 FOR A=3 TO 10
 470 PRINT AT A,0; INK 0;"█"
 480 PRINT AT A,31; INK 0;"█"
 490 NEXT A
 500 FOR A=13 TO 21
 510 PRINT AT A,0; INK 0;"█"
 520 PRINT AT A,31; INK 0;"█"
 530 NEXT A
 590 REM █LAY MINES█
 600 FOR M=1 TO L*5+30
 610 LET V=INT (RND*30)+1
 620 LET Q=INT (RND*18)+1: IF Q<
5 THEN GO TO 620
 630 PRINT AT Q,V; INK 4;"O"
 640 NEXT M
 645 REM █MAKE HOLES█
 650 FOR N=1 TO L*3
 660 LET V=INT (RND*30)+1
 670 LET Q=INT (RND*18)+1: IF Q<
5 THEN GO TO 670
 690 PRINT AT Q,V; INK 0;"●"
 700 NEXT N
 710 GO SUB 6000
 720 REM █MAIN LOOP█
 730 LET A$="[illegible]": LET B$="[illegible]"
 740 LET U=INT (RND*19)+1: IF U<
4 THEN GO TO 740
 750 LET T=27: LET J=0
 800 PRINT AT Y,X; INK 0;A$;AT Y
+1,X;B$
 802 PRINT AT 1,0; PAPER 1;"MINE
S:";D
 803 PRINT AT 1,28; PAPER 1;"
";AT 1,23;"FUEL:";S
 804 REM █MINE DETECTOR█
 805 LET D=0
 810 IF ATTR (Y-1,X)=36 THEN LET
 D=D+1
 820 IF ATTR (Y+2,X)=36 THEN LET
 D=D+1
 830 IF ATTR (Y-1,X+1)=36 THEN L
ET D=D+1
 840 IF ATTR (Y+2,X+1)=36 THEN L
ET D=D+1
 850 IF ATTR (Y,X+2)=36 THEN LET
 D=D+1
 860 IF ATTR (Y+1,X+2)=36 THEN L
ET D=D+1
 870 IF ATTR (Y,X-1)=36 THEN LET
 D=D+1
 880 IF ATTR (Y+1,X-1)=36 THEN L
ET D=D+1
```



```
 890 PRINT AT 1,0; PAPER 1;"MINE
S:";D
 891 GO TO 1027
 895 REM █CHECK FOR MINE█
 900 IF INKEY$="P" AND ATTR (Y-1
,X)=36 OR INKEY$="P" AND ATTR (Y
-1,X+1)=36 THEN GO TO 3000
 910 IF INKEY$="L" AND ATTR (Y+2
,X)=36 OR INKEY$="L" AND ATTR (Y
+2,X+1)=36 THEN GO TO 3000
 920 IF INKEY$="Z" AND ATTR (Y,X
-1)=36 OR INKEY$="Z" AND ATTR (Y
+1,X-1)=36 THEN GO TO 3000
 930 IF INKEY$="X" AND ATTR (Y,X
+2)=36 OR INKEY$="X" AND ATTR (Y
+1,X+2)=36 THEN GO TO 3000
 940 IF INKEY$="P" AND ATTR (Y-1
,X)=32 OR INKEY$="P" AND ATTR (Y
-1,X+1)=32 THEN GO TO 7000
 950 IF INKEY$="L" AND ATTR (Y+2
,X)=32 OR INKEY$="L" AND ATTR (Y
+2,X+1)=32 THEN GO TO 7000
 960 IF INKEY$="Z" AND ATTR (Y,X
-1)=32 OR INKEY$="Z" AND ATTR (Y
+1,X-1)=32 THEN GO TO 7000
 970 IF INKEY$="X" AND ATTR (Y,X
+2)=32 OR INKEY$="X" AND ATTR (Y
+1,X+2)=32 THEN GO TO 7000
1025 IF Y=2 THEN GO TO 2000
1026 RETURN
1027 REM █MOVE TANK█
1030 IF INKEY$="P" THEN LET A$="
[illegible]": LET B$="[illegible]"
1040 IF INKEY$="P" THEN GO SUB 9
00: LET Y=Y-1: PRINT AT Y,X; INK
 0;A$;AT Y+1,X;B$;AT Y+2,X; BRIG
HT 1; PAPER 4;"  "
1050 IF INKEY$="L" THEN LET A$="
[illegible]": LET B$="[illegible]"
1060 IF INKEY$="L" THEN GO SUB 9
00: LET Y=Y+1: PRINT AT Y,X; INK
 0;A$;AT Y+1,X;B$;AT Y-1,X; BRIG
HT 1; PAPER 4;"  "
1070 IF INKEY$="Z" THEN LET A$="
[illegible]": LET B$="[illegible]"
1080 IF INKEY$="Z" THEN GO SUB 9
00: LET X=X-1: PRINT AT Y,X; INK
 0;A$;AT Y+1,X;B$;AT Y,X+2; BRIG
HT 1; PAPER 4;" ";AT Y+1,X+2;" "
1090 IF INKEY$="X" THEN LET A$="
[illegible]": LET B$="[illegible]"
1100 IF INKEY$="X" THEN GO SUB 9
00: LET X=X+1: PRINT AT Y,X; INK
 0;A$;AT Y+1,X;B$;AT Y,X-1; BRIG
HT 1; PAPER 4;" ";AT Y+1,X-1;" "
1150 LET S=S-5
1160 IF S=0 THEN GO TO 4000
1190 REM █ADOLF█
1200 IF ATTR (Y,X+2)=33 THEN GO
TO 5000
1210 IF ATTR (Y+1,X+2)=33 THEN G
O TO 5000
1220 IF J=1 AND T>=1 THEN GO TO
1400
```

Listing continued next page

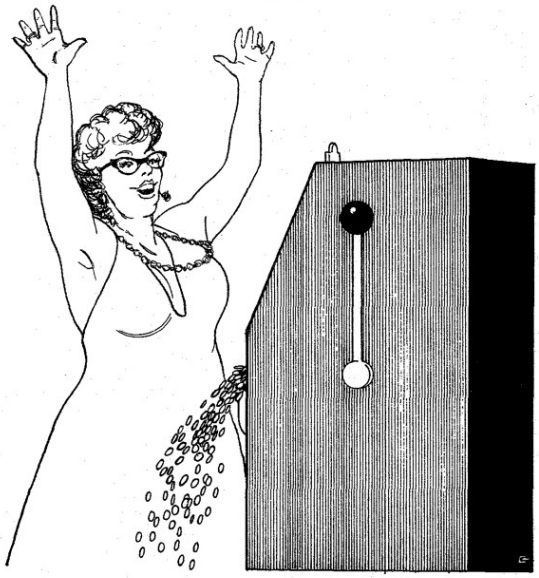
```
1250 LET U=INT (RND*19)+1: IF U<
4 THEN GO TO 740
1260 LET T=27: LET J=0
1330 LET K=INT (RND*25)+1
1340 IF K=5 THEN GO TO 1400
1350 GO TO 740
1400 PRINT AT U,T; INK 1;"▲";AT
 U+1,T;"▼"
1410 PRINT AT U,T+2;" ";AT U+1,T
+2;" "
1415 BEEP .01,10
1420 LET T=T-1
1425 PRINT AT U,1;"  ";AT U+1,1;
"  "
1430 LET E=INT (RND*4)+1
1440 IF E=1 THEN PRINT AT U,T+3;
 INK 4;"O"
1450 LET J=1: GO TO 800
2000 REM ■YOU MADE IT!■
2005 LET F=.5: LET P=0: GO SUB 6
000
2010 INK 7: PAPER 2:
2020 CLS
2030 LET 0$=" CONGRATULATIONS YO
U MADE IT!!"
2040 LET C=30
2050 GO SUB 7500
2070 LET L=L+1
2085 LET S=S+1000
2087 LET Y=20
2090 PRINT AT 10,0;"YOUR SCORE I
S ";S*((20*L)-Y)
2100 BEEP 1,10
2110 LET 0$="  GET READY FOR NEX
T ATTEMPT!"
2120 LET C=29
2130 GO SUB 7500
2150 PAUSE 200
2190 GO TO 310
2990 REM ■BANG!■
3000 INK 7: PAPER 2:
3010 CLS
3020 PRINT AT 7,1;"▀▀▀▀▀▀▀   ▀▀▀
 ▀      ▀ ▀▀▀▀▀▀▀ ▀"
3030 PRINT AT 8,1;"▀    ▀ ▀▀▀  ▀▀▀
▀▀▀    ▀ ▀   ▀ ▀"
3040 PRINT AT 9,1;"▀    ▀ ▀    ▀
▀▀▀    ▀ ▀   ▀ ▀"
3050 PRINT AT 10,1;"▀    ▀ ▀
▀ ▀ ▀  ▀ ▀     ▀"
3060 PRINT AT 11,1;"▀▀▀▀▀  ▀▀▀▀▀
▀ ▀ ▀  ▀ ▀     ▀"
3070 PRINT AT 12,1;"▀    ▀ ▀
▀ ▀ ▀  ▀ ▀▀▀▀▀ ▀"
3080 PRINT AT 13,1;"▀    ▀ ▀
▀ ▀ ▀  ▀ ▀     ▀"
3090 PRINT AT 14,1;"▀    ▀ ▀
▀ ▀    ▀▀▀ ▀   ▀"
3092 PRINT AT 14,1;"▀    ▀ ▀
▀ ▀    ▀▀▀ ▀   ▀"
3095 PRINT AT 15,1;"▀▀▀▀▀▀▀ ▀
▀ ▀      ▀▀▀▀▀▀▀ ▀"
3100 LET F=2
3110 LET P=16
3120 GO SUB 6000
3130 CLS
```



```
3140 PRINT AT 10,10;"ANOTHER GO
?"
3150 PRINT AT 12,0;"YOUR SCORE W
AS ";INT S*((20*L)-Y)
3160 IF INKEY$="Y" THEN RUN 65
3170 IF INKEY$="N" THEN STOP
3180 GO TO 3160
3990 REM ■OUT OF FUEL!■
4000 LET F=2: LET P=10: GO SUB 6
000
4010 INK 7: PAPER 2:
4020 CLS
4030 LET 0$="      OH DEAR!! OUT
OF FUEL!"
4040 LET C=27
4050 GO SUB 7500
4060 PRINT AT 10,0;"YOUR SCORE W
AS ";100*L
4070 BEEP 1,10
4080 PRINT AT 12,10;"ANOTHER GO
?"
4090 IF INKEY$="Y" THEN RUN 65
4100 IF INKEY$="N" THEN STOP
4110 GO TO 4090
4990 REM ■ADOLF GOT YOU!■
5000 LET F=2: LET P=10: GO SUB 6
000
5010 INK 7: PAPER 2:
5020 CLS
5030 LET 0$="   OH DEAR!! ADOLF
GOT YOU!"
5040 LET C=27
5050 GO SUB 7500
5060 PRINT AT 10,6;"YOUR SCORE W
AS ";S*((20*L)-Y)
5070 BEEP 1,10
5080 PRINT AT 12,10;"ANOTHER GO
?"
5090 IF INKEY$="Y" THEN RUN 65
5100 IF INKEY$="N" THEN STOP
5110 GO TO 5090
5990 REM ■MUSIC■
6010 FOR N=1 TO 3
6020 BEEP .15*F,4-P
6030 BEEP .15*F,3-P
6040 NEXT N
6050 FOR N=1 TO 2
6060 BEEP .3*F,5-P
6070 NEXT N
6080 PAUSE 10
6090 FOR N=1 TO 2
6100 BEEP .3*F,5-P
6110 NEXT N
6120 FOR N=1 TO 2
6140 BEEP .15*F,4-P
6150 BEEP .15*F,3-P
6160 NEXT N
6170 BEEP .4*F,3-P
6180 RETURN
6990 REM ■YOU FELL IN A HOLE■
7000 LET F=2: LET P=10: GO SUB 6
000
7010 INK 7: PAPER 2:
7020 CLS
```

```
7030 LET Q$=" OH DEAR!! YOU FELL
 IN A HOLE!"
7040 LET C=30
7050 GO SUB 7500
7090 PRINT AT 10,0;"YOUR SCORE W
AS ";S*((20*L)-Y)
7100 BEEP 1,10
7110 PRINT AT 12,10;"ANOTHER GO
?"
7120 IF INKEY$="Y" THEN RUN
7130 IF INKEY$="N" THEN STOP
7140 GO TO 7120
7490 REM ■PRINT STRING■
7500 FOR N=1 TO C
7510 PRINT AT 8,N;Q$(N)
7520 BEEP .01,10
7530 PAUSE 5
7540 BEEP .01,10
7550 NEXT N
7560 RETURN
9000 REM ■CHARACTER SET■
9010 FOR N=0 TO 167: READ A: POK
E USR "A"+N,A: NEXT N
9020 DATA 1,1,57,1,63,7,63,6,62,
7,63,0,56,0,0,0,126,126,156,126,
252,224,252,96,124,224,252,0,28,
0,0,0,0,0,21,21,21,7,7,6,7,7,2,
1,21,21,0,0,0,0,64,64,64,240,240
,127,127,240,240,64,64,64,0,0
9030 DATA 0,0,0,56,0,63,7,62,6,6
3,7,63,1,57,1,1,0,0,0,28,0,252,2
24,124,96,252,224,252,126,156,12
8,128
9050 DATA 0,0,42,42,42,15,15,254
,254,15,15,42,42,42,0,0,0,0,168,
168,168,224,224,96,96,224,224,16
8,168,168,0,0
9060 DATA 0,7,15,31,63,115,115,1
27,127,119,123,60,31,15,7,0,0,32
4,240,248,252,206,206,254,254,23
6,222,60,248,240,224,0
9080 DATA 60,126,255,255,255,255
,126,60
9100 RETURN
9999 RUN
```

15
Jackpot



A game for up to four players designed for lovers of one-armed bandits! Jackpot works just like a fruit machine although the symbols on the reels are a little different. The game allows you to check the winning lines and permanently displays the winnings of each player, as well as the amount of money left in the fruit machine. It also incorporates: an extra gambling facility which allows you to double your winnings or lose the lot; a 'nudge' facility which permits you to move any of the reels along one place; and a 'hold' facility which allows any of the reels to remain stationary whilst the others are spun.

The computer will ask the player whether he wants to gamble, nudge or hold. Use Y and N keys for 'Yes' and 'No' to these questions. The game runs automatically – you will not need to press any keys to start the reels turning.

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
■■■■■■■GHIJKLMNOPQRSTU
```

```
  10 REM **********************
  20 REM *      JACKPOT.      *
  30 REM *  © TOBY MATTHEWS   *
  50 REM *  & ELLIS HORWOOD   *
  60 REM **********************
  70 POKE 23658,8
  75 GO SUB 9000
  80 PAPER 4: INK 7: BORDER 4: C
LS
  85 RANDOMIZE
  90 GO SUB 6000
  95 REM ■OPTIONS■
 100 PRINT AT 7,2; PAPER 1;"PLEA
SE INPUT NO. OF PLAYERS."
 110 PRINT AT 9,12; PAPER 2;"(1
TO 4)"
 120 INPUT A
 130 IF A>4 OR A<1 THEN GO TO 12
0
 140 DIM M(A)
 150 FOR N=1 TO A
 160 LET M(N)=5
 170 NEXT N
 190 PRINT AT 11,7; PAPER 0;"GET
READY TO PLAY!"
 195 LET B=0
 200 BEEP 1,10
 210 PAUSE 100
 220 CLS
 230 GO SUB 6000
 235 REM ■SET UP VARIABLES■
 240 LET A$="■■£$■■■■■■£■■■■$■■
£■■■£■■■■"
 250 LET B$="£■■■■■■■■■■■■$■■■■
■■■■£■■■■"
 260 LET C$="$■■■■■■£$■■■■■$■■
■■■■■£■■"
 265 REM ■DRAW MAIN SCREEN■
 270 PRINT AT 8,0; PAPER 0;"REEL
:1"
 280 PRINT AT 11,0; PAPER 1;"REE
L:2"
 290 PRINT AT 14,0; PAPER 2;"REE
L:3"
 300 LET J=100
 310 LET A=1
 314 REM ■MAIN LOOP■
 315 INK 0
 320 PLOT 103,112: DRAW 41,0: DR
AW 0,-9: DRAW -41,0: DRAW 0,9
 330 PLOT 103,88: DRAW 41,0: DRA
W 0,-9: DRAW -41,0: DRAW 0,9
```



```
 340 PLOT 103,64: DRAW 41,0: DRA
W 0,-9: DRAW -41,0: DRAW 0,9
 350 FOR N=7 TO 13 STEP 3: PRINT
 AT N,15;"■";AT N+2,15;"■": NEXT
 N
 370 LET T=1
 375 INK 0
 380 PLOT 169,120: DRAW 0,-120:
DRAW 86,0: DRAW 0,120: DRAW -86,
0
 385 PLOT 0,45: DRAW 169,0
 390 INK 7
 400 LET P$="P L A Y E R "
 420 FOR N=1 TO 12: PRINT AT N+7
,22; PAPER T;P$(N): NEXT N
 430 PRINT AT 20,22; PAPER T;T
 440 PRINT AT 9,24; PAPER 1;"MON
EY";AT 10,24;"LEFT:"
 450 PRINT AT 11,25; PAPER 4;"
    ";AT 11,24; PAPER 1;"£";M(T)
 460 PRINT AT 13,24; PAPER 2;"RO
UNDS";AT 14,24;"PLAYED"
 470 PRINT AT 15,26; PAPER 2;R
 480 PRINT AT 17,24; PAPER 3;" M
ONEY ";AT 18,24;"LEFT IN";AT 19,
24;"MACHINE";AT 20,24;"£";J
 500 PRINT AT 17,0; PAPER 0;"PRE
SS-";AT 18,0; PAPER 1;"0 TO QUIT
 GAME";AT 19,0; PAPER 2;"W TO SE
E WINNING";AT 20,0;"LINES"
 510 BEEP .3,10: FOR N=1 TO 150
 520 IF INKEY$="W" THEN GO TO 70
00
 530 IF INKEY$="0" THEN GO TO 80
00
 540 NEXT N
 550 FOR N=17 TO 20: PRINT AT N,
0;"                ": NEXT N
 600 FOR N=1 TO A: IF M(N)=0 THE
N LET B=B+1: NEXT N: IF B=A THEN
 GO TO 8050
 610 IF M(T)=0 THEN GO SUB 1000
 620 IF J<=0 THEN LET J=0: GO TO
 8050
 630 LET M(T)=M(T)-.10: LET J=J+
.10
 640 PRINT AT 11,25; PAPER 4;"
    ";AT 11,25; PAPER 1;M(T);AT 2
0,25; PAPER 4;"          ";AT 20,25;
PAPER 3;J
 700 GO SUB 2000
 999 REM ■NO MONEY■
1000 BEEP .1,-20: FOR N=17 TO 20
: PRINT AT N,0;"
    ": NEXT N
1010 PRINT AT 19,0; PAPER 0;"PLA
YER ";T;" HAS NO MONEY"
1015 IF T=A THEN GO TO 315
1017 LET T=T+1: GO TO 375
1020 FOR N=1 TO 50: NEXT N: FOR
N=17 TO 20: PRINT AT N,0;"
                ": NEXT N
1030 RETURN
1999 REM ■SPIN REELS■
```

Listing continued next page

```
2000 LET D=20+INT (RND*40)
2005 LET E=20+INT (RND*40)
2010 LET F=20+INT (RND*40)
2020 LET G=0: LET K=0: LET I=0
2030 PRINT AT 8,13; PAPER 0;A$(
TO 5)
2040 PRINT AT 11,13; PAPER 1;B$(
 TO 5)
2050 PRINT AT 14,13; PAPER 2;C$(
 TO 5)
2060 PRINT AT 8,7;"      ": PRINT
 AT 11,7;"      ": PRINT AT 14,7;
"      "
2100 LET H=INT (RND*10): IF H=5
THEN GO SUB 3000
2210 IF G=D THEN GO TO 2250
2220 PRINT AT 8,13; PAPER 0;A$(
TO 5)
2230 LET A$=A$(2 TO )+A$(1)
2240 LET G=G+1
2250 IF K=E THEN GO TO 2290
2260 PRINT AT 11,13; PAPER 1;B$(
 TO 5)
2270 LET B$=B$(2 TO )+B$(1)
2280 LET K=K+1
2290 IF I=F THEN GO TO 2330
2300 PRINT AT 14,13; PAPER 2;C$(
 TO 5)
2310 LET C$=C$(2 TO )+C$(1)
2320 LET I=I+1
2330 IF I=F AND K=E AND G=D THEN
 GO TO 2350
2340 GO TO 2210
2350 LET Q=INT (RND*15): IF Q=10
 AND H<>5 THEN GO SUB 4000
2360 GO SUB 5000
2370 IF T=A THEN LET R=R+1: GO T
O 315
2380 LET T=T+1: GO TO 375
2999 REM ■HOLD■
3000 PRINT AT 8,7; PAPER 0;"HOLD
 "
3010 PRINT AT 11,7; PAPER 1;"HOL
D "
3020 PRINT AT 14,7; PAPER 2;"HOL
D "
3030 PRINT AT 17,0; PAPER 0;"HOL
D REEL 1 ?"
3040 IF INKEY$="Y" THEN LET G=D:
 PRINT AT 17,14; PAPER 0;"YES":
LET A$(2)=A$(3): GO TO 3070
3050 IF INKEY$="N" THEN PRINT AT
 17,14; PAPER 0;"NO": PRINT AT 8
,7; PAPER 4;"      ": GO TO 3070
3060 GO TO 3040
3070 FOR N=1 TO 50: NEXT N: PRIN
T AT 18,0; PAPER 1;"HOLD REEL 2
?"
3080 IF INKEY$="Y" THEN LET K=E:
 PRINT AT 18,14; PAPER 1;"YES":
LET B$(2)=B$(3): GO TO 3110
3090 IF INKEY$="N" THEN PRINT AT
 18,14; PAPER 1;"NO": PRINT AT 1
7,7; PAPER 4;"      ": GO TO 3110
3100 GO TO 3080
3110 FOR N=1 TO 50: NEXT N: PRIN
```



```
T AT 19,0; PAPER 2;"HOLD REEL 3
?"
3120 IF INKEY$="Y" THEN LET F=I:
 PRINT AT 19,14; PAPER 2;"YES":
LET C$(2)=C$(3): GO TO 3150
3130 IF INKEY$="N" THEN PRINT AT
 19,14; PAPER 2;"NO": PRINT AT 1
4,7; PAPER 4;"      ": GO TO 3150
3140 GO TO 3120
3150 FOR N=1 TO 100: NEXT N: FOR
 N=17 TO 19: PRINT AT N,0;"
          ": NEXT N
3160 RETURN
3999 REM ■NUDGE■
4000 PRINT AT 8,7; PAPER 0;"NUDG
E"
4010 PRINT AT 11,7; PAPER 1;"NUD
GE"
4020 PRINT AT 14,7; PAPER 2;"NUD
GE"
4030 PRINT AT 17,0; PAPER 0;"NUD
GE REEL 1 ?"
4040 IF INKEY$="Y" THEN PRINT AT
 17,15; PAPER 0;"YES": PRINT AT
8,13; PAPER 0;A$(TO 5): LET A$(
2)=A$(3): GO TO 4070
4050 IF INKEY$="N" THEN PRINT AT
 17,15; PAPER 0;"NO": GO TO 4070
4060 GO TO 4040
4070 FOR N=1 TO 50: NEXT N: PRIN
T AT 18,0; PAPER 1;"NUDGE REEL 2
?"
4080 IF INKEY$="Y" THEN PRINT AT
 18,15; PAPER 1;"YES": PRINT AT
11,13; PAPER 1;B$(TO 5): LET B$
(2)=B$(3): GO TO 4100
4090 IF INKEY$="N" THEN PRINT AT
 18,15; PAPER 1;"NO": GO TO 4100
4095 GO TO 4080
4100 FOR N=1 TO 50: NEXT N: PRIN
T AT 19,0; PAPER 2;"NUDGE REEL 3
?"
4110 IF INKEY$="Y" THEN PRINT AT
 19,15; PAPER 2;"YES": PRINT AT
14,13; PAPER 2;C$(TO 5): LET C$
(2)=C$(3): GO TO 4140
4120 IF INKEY$="N" THEN PRINT AT
 19,15; PAPER 2;"NO": GO TO 4140
4130 GO TO 4110
4150 FOR N=1 TO 100: NEXT N: FOR
 N=17 TO 19: PRINT AT N,0;"
          ": NEXT N
4160 RETURN
4999 REM ■WIN MONEY■
5000 FOR N=1 TO 20: BEEP .01,N:
NEXT N
5010 LET W$=A$(2)+B$(2)+C$(2)
5035 LET W=0
5040 IF W$(1)="●" THEN LET W=.30
5050 IF W$(TO 2)="●●" THEN LET
W=.50
5060 IF W$="●●●" THEN LET W=.80
5070 IF W$(1)="♦" THEN LET W=.50
```

Listing continued next page

```
5080 IF W$( TO 2)="◆◆" THEN LET
W=.70
5090 IF W$="◆◆◆" THEN LET W=1.20
5100 IF W$(1)="♣" THEN LET W=.40
5110 IF W$( TO 2)="♣♣" THEN LET
W=.60
5120 IF W$="♣♣♣" THEN LET W=1
5130 IF W$="£££" THEN LET W=5
5140 IF W$="$$$" THEN LET W=10
5150 PRINT AT 19,4; PAPER T;W$;A
T 19,8;"PAYS:£";W: FOR N=1 TO 10
0: NEXT N
5155 IF W>0 THEN GO SUB 5500
5160 LET M(T)=M(T)+W: LET J=J-W
5170 PRINT AT 11,25; PAPER 4;"
   ";AT 11,25; PAPER 1;M(T);AT 2
0,25; PAPER 4;"      ";AT 20,25;
PAPER 3;J
5180 BEEP 1,10: FOR N=1 TO 100:
NEXT N: FOR N=17 TO 19: PRINT AT
 N,0;"                          ": NEX
T N
5190 RETURN
5500 BEEP .2,10: FOR N=17 TO 19:
 PRINT AT N,0;"
   ": NEXT N
5510 PRINT AT 17,6; PAPER T;"GAM
BLE ?"
5520 IF INKEY$="Y" THEN GO TO 55
50
5530 IF INKEY$="N" THEN RETURN
5540 GO TO 5520
5560 LET L=10+INT (RND*10): LET
V=0
5570 IF V=L THEN GO TO 5800
5580 PRINT AT 18,6; PAPER T;"WIN
";AT 18,10; PAPER 4;"      "
5590 LET V=V+1: BEEP .1,10
5600 IF V=L THEN GO TO 5700
5610 PRINT AT 18,6; PAPER 4;"
";AT 18,10; PAPER T;"LOSE"
5620 LET V=V+1: BEEP .2,-10
5630 GO TO 5570
5710 LET W=W*2
5720 BEEP .5,10: PRINT AT 20,5;
PAPER T;"YOU WIN £";W
5750 FOR N=1 TO 100: NEXT N: FOR
 N=17 TO 20: PRINT AT N,0;"
                ": NEXT N
5760 RETURN
5800 BEEP .5,-10: PRINT AT 20,4;
 PAPER T;"YOU LOSE YOUR";AT 21,6
;"WINNINGS!"
5810 FOR N=1 TO 100: NEXT N: LET
 W=0
5850 FOR N=17 TO 21: PRINT AT N,
0;"                          ": NEXT N
5860 RETURN
5999 REM █DRAW JACKPOT█
6000 PRINT AT 0,0;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀
▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
6002 PRINT AT 5,0;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀
▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
6010 PRINT AT 1,2;"███ ███ ███ █
 █ ███ ███ ███"
6020 PRINT AT 2,2;" █ █ █ █   █
 █ █ █ █ █   █ "
6030 PRINT AT 3,2;"█ █ ███ █   █
 █ ███ █ █   █ "
6040 PRINT AT 4,2;"███ █ █ ███ █
 █ █   ███ █ █"
6050 RETURN
6999 REM █WINNING LINES█

7000>BEEP .1,10
7010 FOR N=17 TO 20: PRINT AT N,
0;"                          ": NEXT N
7020 PRINT AT 17,0; PAPER 1;"●--
 PAYS £0.30"
7030 PRINT AT 18,0; PAPER 1;"●●-
 PAYS £0.50"
7040 PRINT AT 19,0; PAPER 1;"●●●
 PAYS £0.80"
7050 GO SUB 7500
7060 PRINT AT 17,0; PAPER 2;"♣--
 PAYS £0.40"
7070 PRINT AT 18,0; PAPER 2;"♣♣-
 PAYS £0.60"
7080 PRINT AT 19,0; PAPER 2;"♣♣♣
 PAYS £1.00"
7090 GO SUB 7500
7100 PRINT AT 17,0; PAPER 3;"◆--
 PAYS £0.50"
7110 PRINT AT 18,0; PAPER 3;"◆◆-
 PAYS £0.70"
7120 PRINT AT 19,0; PAPER 3;"◆◆◆
 PAYS £1.20"
7130 GO SUB 7500
7140 PRINT AT 17,0; PAPER 1;"£££
 PAYS £5.00"
7150 PRINT AT 19,0; PAPER 2;"$$$
 PAYS £10.00"
7155 GO SUB 7500
7160 FOR N=17 TO 20: PRINT AT N,
0;"                          ": NEXT N
: FOR N=1 TO 100: NEXT N: GO TO
500
7500 PRINT AT 21,0; PAPER 0;"PRE
SS 'C' TO CONTINUE"
7510 IF INKEY$="C" THEN BEEP .1,
10: GO TO 7550
7520 GO TO 7510
7550 FOR N=17 TO 21: PRINT AT N,
0;"                          ": NEXT
N
7560 RETURN
8000 REM █END OF GAME█
8010 FOR N=17 TO 21: PRINT AT N,
0;"                          ": NEXT
N
8020 PRINT AT 19,0; PAPER 0;"ARE
 YOU SURE (Y OR N)": BEEP .5,10
8030 IF INKEY$="N" THEN FOR N=17
 TO 21: PRINT AT N,0;"
          ": NEXT N: GO TO 500
8040 IF INKEY$="Y" THEN GO TO 80
50
8045 GO TO 8030
8050 CLS : GO SUB 6000
8060 FOR N=1 TO -6 STEP -1: BEEP
 .3,N: NEXT N
```

```
8070 PRINT AT 7,9; PAPER 0;"AFTE
R ";R;" ROUNDS"
8080 FOR N=1 TO A
8090 PRINT AT N+10,0; PAPER N;"P
LAYER ";N;" FINISHED WITH £";M(N
)
8100 NEXT N
8110 PRINT AT N+12,0; PAPER 0;"T
HE MACHINE FINISHED WITH £";J
8120 PRINT AT N+14,10; PAPER 2;"
ANOTHER GO ?"
8130 IF INKEY$="N" THEN STOP
8140 IF INKEY$="Y" THEN RUN
8150 GO TO 8130
9000 REM ■CHARACTER SET■
9010 FOR N=0 TO 47: READ A: POKE
 USR "A"+N,A: NEXT N
9020 DATA 24,60,126,255,255,126,
60,24,16,22,127,255,255,255,126,
60,60,126,219,255,189,195,126,60
,60,126,219,255,195,189,126,60,6
0,36,36,231,66,36,24,255,255,24,
36,66,231,36,36,60
9030 RETURN
9999 RUN
```

16

Musical Memory

(48K)

The principle of this challenging game is to memorize patterns of colour and sound created either by the computer or by your opponent.

Four game types are possible:

A: the computer produces the sequence you are to follow (in other words this is a one-person game).

B: a two-person game in which each player, after repeating the sequence of notes, adds his own note to extend the sequence;

C: as game A, without a visual indication of the notes played;
D: as game B, but without a visual indication of the notes played.

Key to graphics characters

```
ABCDEFGHIJKLMNOPQRSTU
SCORE- ┌┐─└┘ 1 ENT DEL OPQRSTU
```

```
    1 REM ******************
          *                *
          * © PAUL SMITH &  *
          *                *
          * /ELLIS HORWOOD *
          *                *
          ******************
    2 OVER 0
    3 POKE 23658,0
    5 BORDER 0
    6 RANDOMIZE
   10 FOR A=USR "A" TO USR "N"+7:
 READ B: POKE A,B: NEXT A
   20 DATA 0,119,68,116,20,119,0,
0
   30 DATA 0,119,85,87,86,117,0,0
   40 DATA 0,112,64,102,64,112,0,
0
   50 DATA 0,0,0,31,31,24,24,24
   60 DATA 0,0,0,248,248,24,24,24
   70 DATA 0,0,0,255,255,0,0,0
   80 DATA 24,24,24,31,31,0,0,0
   90 DATA 24,24,24,248,248,0,0,0
  100 DATA 0,8,24,40,8,6,12,12
  110 DATA 0,7,4,7,4,7,0,0
  120 DATA 0,69,100,84,76,68,0,0
  130 DATA 0,195,129,129,129,191,
0,0
  140 DATA 0,221,81,89,81,221,0,0
  150 DATA 0,0,0,0,0,192,0,0
  200 REM VARIABLES
  210 LET SPD=1: LET G$="A"
  220 DIM A$(5,16)
  230 LET A1=12: LET B1=8: LET C1
=16: LET D1=12
  240 LET A$(1)="PWJS-1-ASCORE-00000
"
  250 LET A$(2)="TSM -2-BSCORE-00000
"
  260 LET A$(3)="JAF -3-CSCORE-00000
"
  270 LET A$(4)="E.H.-4-DSCORE-00000
"
  280 LET B$="ABCD"
  290 LET F=0: LET F1=1
  700 GO SUB 2000
  710 GO SUB 3000
  715 GO SUB 9600: FOR B=1 TO 40:
 NEXT B
  720 GO SUB 4000
  800 IF INKEY$="c" THEN GO TO 50
00
  810 IF INKEY$="p" THEN GO TO 60
00
```



```
  820 BEEP .01,F
  830 LET F=F+F1
  840 IF F=15 THEN LET F1=-1
  850 IF F=0 THEN LET F1=1
  860 GO TO 800
1999 STOP
2000 REM SIC
2001 PAPER 4: CLS
2005 INK 7
2010 FOR Z=6 TO 8: PRINT PAPER 0
;AT Z,1;"                ":
 NEXT Z
2020 FOR Z=10 TO 12: PRINT PAPER
 1;AT Z,1;"
": NEXT Z
2030 FOR Z=14 TO 16: PRINT PAPER
 2;AT Z,1;"
": NEXT Z
2040 FOR Z=18 TO 20: PRINT PAPER
 3;AT Z,1;"
": NEXT Z
2050 PLOT 48,124: DRAW 24,0: DRA
W 0,-16: DRAW -24,0: DRAW 0,16
2060 PLOT 80,108: DRAW 0,16: DRA
W 24,-16: DRAW 0,16
2070 PLOT 136,108: DRAW -24,0: D
RAW 0,16: DRAW 24,0: PLOT 112,11
6: DRAW 12,0
2080 PLOT 48,92: DRAW 24,0: DRAW
 -12,0: DRAW 0,-16: PLOT 80,92:
DRAW 0,-16: DRAW 12,0: DRAW 0,8:
 DRAW 0,-8: DRAW 12,0: DRAW 0,16
: PLOT 112,92: DRAW 24,0: DRAW 0
,-16: DRAW -24,0: DRAW 0,16
2090 PLOT 16,60: DRAW 24,0: DRAW
 -12,0: DRAW 0,-16: PLOT 48,60:
DRAW 0,-16: DRAW 0,8: DRAW 24,0:
 DRAW 0,-8: DRAW 0,16: PLOT 80,4
4: DRAW 0,16: DRAW 24,0: DRAW 0,
-8: DRAW -24,0: DRAW 24,-8
2100 PLOT 136,44: DRAW -24,0: DR
AW 0,16: DRAW 24,0: PLOT 112,52:
 DRAW 12,0
2110 PLOT 168,44: DRAW -24,0: DR
AW 0,16: DRAW 24,0: PLOT 144,52:
 DRAW 12,0
2120 PLOT 32,12: DRAW 0,16: DRAW
 24,0: PLOT 32,20: DRAW 12,0: PL
OT 64,12: DRAW 0,16: DRAW 24,0:
DRAW 0,-16: DRAW -24,0
2130 PLOT 96,28: DRAW 0,-16: DRA
W 24,0: DRAW 0,16: PLOT 128,12:
DRAW 0,16: DRAW 24,0: DRAW 0,-8:
 DRAW -24,0: DRAW 24,-8
2140 PLOT 7,128: DRAW 169,0: DRA
W 0,-25: DRAW -169,0: DRAW 0,25
2150 PLOT 7,96: DRAW 169,0: DRAW
 0,-25: DRAW -169,0: DRAW 0,25
2160 PLOT 7,64: DRAW 169,0: DRAW
 0,-25: DRAW -169,0: DRAW 0,25
2170 PLOT 7,32: DRAW 169,0: DRAW
 0,-25: DRAW -169,0: DRAW 0,25
2200 INK 0: PAPER 7
```

```
2210 PRINT AT 1,1; INVERSE 1;"MU
SICAL MEMORY    © PAUL SMITH"
2215 INPUT 0; PRINT #0; PAPER 4;
 INK 0;"  © PAUL SMITH / ELLIS H
ARWOOD  "
2220 PLOT 4,171: DRAW 247,0: DRA
W 0,-16: DRAW -247,0: DRAW 0,16
2230 PRINT AT 4,1; INVERSE 1;"SP
EED:";SPD;AT 4,10;"GAME TYPE:";G
$;AT 4,23;"HI-SCORE"
2290 RETURN
3000 REM HI-SCORE
3010 PRINT AT 6,23; PAPER 1; INK
 7;A$(1,1 TO 8);AT 7,23;A$(1,9 T
O 16)
3020 PRINT AT 9,23; PAPER 1; INK
 7;A$(2,1 TO 8);AT 10,23;A$(2,9
TO 16)
3030 PRINT AT 12,23; PAPER 1; IN
K 7;A$(3,1 TO 8);AT 13,23;A$(3,9
 TO 16)
3040 PRINT AT 15,23; PAPER 1; IN
K 7;A$(4,1 TO 8);AT 16,23;A$(4,9
 TO 16)
3090 RETURN
4000 PRINT AT 18,23; FLASH 1;" P
RESS    "
4010 PRINT AT 19,23; INK 7; PAPE
R 2;"P-PLAY   ";AT 20,23;"C-CHANG
E"
4090 RETURN
5000 REM CHANGE
5010 FOR Z=18 TO 20: PRINT PAPER
 4;AT Z,23;"          ": NEXT Z
5020 FOR Z=6 TO 20: PRINT PAPER
7;AT Z,1;"
": NEXT Z
5030 PLOT 7,128: DRAW 169,0: DRA
W 0,-121: DRAW -169,0: DRAW 0,12
1
5040 INK 0
5050 PRINT AT 7,2; INK 2; INVERS
E 1;"GAME ALTERATIONS:"
5060 PRINT AT 9,2;"USE Z,X & ENT
ER TO";AT 10,2;"ADJUST GAME:-"
5070 PRINT AT 13,2; PAPER 1; INK
 7;"SPEED:"; INK 2; PAPER 7;" 1
2 3 4 5"
5080 PRINT AT 17,2; PAPER 1; INK
 7;"GAME TYPE:"; INK 2; PAPER 7;
" A B C D"
5090 PRINT AT A1,B1;"▛▜";AT A1+
2,B1;"▙▟";AT C1,D1;"▛▜";AT C1+
2,D1;"▙▟"
5100 LET A2=A1: LET B2=B1
5101 LET Z$=INKEY$
5105 IF CODE Z$=13 THEN BEEP .1,
5: GO TO 5195
5107 IF Z$<>"x" AND Z$<>"z" THEN
 GO TO 5101
5110 LET B1=B1+2*(Z$="X" AND B1<
17)-2*(Z$="z" AND B1>9)
5120 PRINT AT A2,B2;"    ";AT A2+
2,B2;"
"
5130 PRINT AT A1,B1;"▛▜";AT A1+
2,B1;"▙▟"
```



```
5170 LET SPD=B1/2-3: PRINT AT 4,
7; INVERSE 1;SPD
5180 BEEP .1,B1
5190 GO TO 5100
5195 FOR n=1 TO 50: NEXT n
5200 LET C2=C1: LET D2=D1
5201 LET Z$=INKEY$
5205 IF CODE Z$=13 THEN BEEP .1,
5: GO TO 5300
5207 IF Z$<>"x" AND Z$<>"z" THEN
 GO TO 5201
5210 LET D1=D1+2*(Z$="X" AND D1<
17)-2*(Z$="z" AND D1>13)
5220 PRINT AT C2,D2;"    ";AT C2+
2,D2;"
"
5230 PRINT AT C1,D1;"▛▜";AT C1+
2,D1;"▙▟"
5270 LET G$=B$(D1/2-5): PRINT AT
 4,20; INVERSE 1;G$
5280 BEEP .1,D1
5290 GO TO 5200
5300 FOR Z=5 TO 21: PRINT AT Z,0
; PAPER 4;"
  ": NEXT Z: GO SUB 2005: GO TO
710
6000 REM PLAY
6001 LET VI=1: FOR Z=1 TO 50: NE
XT Z: GO SUB 9600: FOR Z=18 TO 2
0: PRINT AT Z,23; PAPER 4;"
  ": NEXT Z
6002 PAUSE 100
6005 FOR B=1 TO 50: NEXT B
6010 IF G$<>"A" AND G$<>"C" THEN
 GO TO 6500
6011 IF G$="C" THEN GO SUB 9700
6015 PRINT AT 19,23; INVERSE 1;"
SCORE-0"
6020 LET C$=""
6030 LET NO=1
6040 LET SCR=0
6100 LET C$=C$+CHR$ (INT (RND*4)
+49)
6105 FOR A=1 TO LEN C$
6110 LET X1=VAL C$(A)*4+2
6120 LET SPD1=(7-SPD)/10
6130 GO SUB 9000
6135 NEXT A
6140 LET NO=NO+1
6200 FOR A=1 TO LEN C$
6205 LET Z$=INKEY$
6210 IF Z$<"1" OR Z$>"4" THEN GO
 TO 6205
6230 LET X1=VAL Z$*4+2: LET SPD1
=.1
6235 GO SUB 9000
6236 IF Z$<>C$(A) THEN LET SPD1=
.05: FOR B=1 TO 15: GO SUB 9000:
 NEXT B: GO TO 6300
6237 IF INKEY$<>"" THEN GO TO 62
37
6238 LET SCR=SCR+1
6239 PRINT AT 19,26;SCR
6240 NEXT A
6245 FOR B=1 TO 70: NEXT B
```

Listing continued next page

```
6250 GO TO 6100
6300 LET S$="00000"( TO 5-LEN (S
TR$ SCR))+STR$ SCR: GO SUB 9100
6310 INK 0: PAPER 4: GO SUB 2005
: GO TO 710
6500 IF G$="D" THEN GO SUB 9700
6510 PRINT AT 18,23; INVERSE 1;"
1 SCORE-0";AT 19,23;"2 SCORE-0"
6520 LET SCR1=0: LET SCR2=0
6530 LET C$=""
6540 LET N0=1
6545 PRINT AT 20,23; INK 7; PAPE
R 2;"PLAYER 1"
6550 LET Z$=INKEY$: IF Z$<"1" OR
 Z$>"4" THEN GO TO 6550
6555 LET X1=VAL Z$*4+2: LET SPD1
=(7-SPD)/10: GO SUB 9000
6560 LET C$=C$+Z$
6570 BEEP .05,50: BEEP .05,60
6600 PRINT AT 20,23; INK 7; PAPE
R 2;"PLAYER 2"
6610 FOR A=1 TO LEN C$
6620 LET Z$=INKEY$
6630 IF Z$<"1" OR Z$>"4" THEN GO
 TO 6620
6635 LET X1=VAL Z$*4+2: GO SUB 9
000
6640 IF Z$<>C$(A) THEN GO TO 680
0
6650 LET SCR2=SCR2+1: PRINT AT 1
9,27;SCR2
6660 NEXT A
6670 LET Z$=INKEY$: IF Z$<"1" OR
 Z$>"4" THEN GO TO 6670
6675 LET X1=VAL Z$*4+2: GO SUB 9
000
6680 LET C$=C$+Z$
6690 BEEP .05,50: BEEP .05,60
6700 PRINT AT 20,23; INK 7; PAPE
R 2;"PLAYER 1"
6710 FOR A=1 TO LEN C$
6720 LET Z$=INKEY$
6730 IF Z$<"1" OR Z$>"4" THEN GO
 TO 6720
6735 LET X1=VAL Z$*4+2: GO SUB 9
000
6740 IF Z$<>C$(A) THEN GO TO 690
0
6750 LET SCR1=SCR1+1: PRINT AT 1
8,27;SCR1
6760 NEXT A
6770 LET Z$=INKEY$: IF Z$<"1" OR
 Z$>"4" THEN GO TO 6770
6775 LET X1=VAL Z$*4+2: GO SUB 9
000
6780 LET C$=C$+Z$
6785 BEEP .05,50: BEEP .05,60
6790 GO TO 6600
6800 FOR B=1 TO 15: LET SPD1=.05
: GO SUB 9000: NEXT B
6810 PRINT AT 20,23; INK 7; PAPE
R 1;"ONE WINS"
6815 INK 7: PAPER 2
6820 FOR A=SCR2 TO 0 STEP -1
6830 LET SCR1=SCR1+1: PRINT AT 1
8,27;SCR1
```



```
6840 PRINT AT 19,27;A; PAPER 4;"
 "
6845 BEEP .05,0: BEEP .05,10
6850 NEXT A
6855 LET S$="00000"( TO 5-LEN (S
TR$ SCR1))+STR$ SCR1: GO SUB 910
0
6860 GO TO 6310
6900 FOR B=1 TO 15: LET SPD1=.05
: GO SUB 9000: NEXT B
6910 PRINT AT 20,23; INK 7; PAPE
R 1;"TWO WINS": INK 7: PAPER 2
6920 FOR A=SCR1 TO 0 STEP -1
6930 LET SCR2=SCR2+1: PRINT AT 1
9,27;SCR2
6940 PRINT AT 18,27;A; PAPER 4;"
 "
6945 BEEP .05,0: BEEP .05,10
6950 NEXT A
6955 LET S$="00000"( TO 5-LEN (S
TR$ SCR2))+STR$ SCR2: GO SUB 910
0
6960 GO TO 6310
8999 STOP
9000 INK 7: OVER 1
9010 IF VI=1 THEN PRINT AT X1+1,
1; PAPER 8;">"; PAPER 6;AT X1+1,
5;"                "; PAPER 8;AT X1
+1,21;"<"
9011 IF X1=6 THEN BEEP SPD1,-8
9014 IF X1=10 THEN BEEP SPD1,0
9016 IF X1=14 THEN BEEP SPD1,8
9020 IF X1=18 THEN BEEP SPD1,16
9025 INK 7: PAPER (X1-6)/4
9030 IF VI=1 THEN PRINT AT X1+1,
1;">";AT X1+1,5;"                ";
AT X1+1,21;"<"
9040 OVER 0
9090 RETURN
9100 REM HI-SCR
9101 INK 0: PAPER 7
9105 IF VAL S$<=VAL A$(4,12 TO 1
6) THEN RETURN
9110 FOR Z=6 TO 20: PRINT AT Z,1
;"                ": NEXT Z
9120 PLOT 7,128: DRAW 169,0: DRA
W 0,-121: DRAW -169,0: DRAW 0,12
1
9130 PRINT AT 7,2; INK 7; PAPER
2;"HI-SCORE:"
9140 PRINT AT 18,8;"      ";AT 1
9,9;"-----";AT 20,8;"      "
9150 PRINT AT 9,3; INK 1; PAPER
7;"■ ■ ■ ■ ■ ■ ■ ■ ■ ■"
9155 PRINT AT 11,3; INK 1; PAPER
 7;"■ ■ ■ ■ ■ ■ ■ ■ ■ ■"
9160 PRINT AT 13,3; INK 1; PAPER
 7;"■ ■ ■ ■ ■ ■ ■ ■ ■ ■"
9170 PRINT AT 15,3;"USE CURSOR K
EYS & ";AT 16,3;" ENTER TO INPUT
";AT 17,3;"    YOUR NAME"
9180 LET A5=8: LET B5=2
9190 LET E1=1: LET E$="-----"
9195 GO TO 9260
```

Listing continued next page

```
9200 LET A6=A5: LET B6=B5
9210 LET Z$=INKEY$
9215 IF CODE Z$=13 THEN GO TO 93
00
9220 IF Z$<"5" OR Z$>"8" THEN GO
 TO 9210
9230 LET A5=A5+2*(Z$="6" AND A5<
12)-2*(Z$="7" AND A5>8)
9240 LET B5=B5+2*(Z$="8" AND B5<
17)-2*(Z$="5" AND B5>2)
9250 PRINT AT A6,B6;"  ";AT A6+
2,B6;"  "
9260 PRINT AT A5,B5;"▗▄▖";AT A5+
2,B5;"▝ ▘"
9270 BEEP .1,A5+B5
9290 GO TO 9200
9300 LET X$=SCREEN$ (A5+1,B5+1)
9310 LET E$(E1)=X$
9320 PRINT AT 19,9;E$
9330 LET E1=E1+1
9340 BEEP .1,0
9345 IF INKEY$<>"" THEN GO TO 93
45
9350 IF E1<5 THEN GO TO 9200
9500 LET S1=4
9510 IF VAL S$>VAL A$(S1,12 TO 1
6) THEN LET A$(S1+1)=A$(S1): LET
 A$(S1)=E$+"-"+STR$ SPD+"-"+G$+"
SCORE-"+S$
9520 LET S1=S1-1: IF S1>0 THEN G
O TO 9510
9525 FOR Z=5 TO 21: PRINT AT Z,0
; PAPER 4;"
  ": NEXT Z
9530 GO SUB 3000
9540 RETURN
9600 REM MUSIC
9610 RESTORE 9600
9620 FOR A=1 TO 4
9630 BEEP .09,0: BEEP .1,2: BEEP
 .11,4
9640 READ B: BEEP .12,B: NEXT A
9650 DATA 11,9,7,5
9660 BEEP .05,0: BEEP .05,2: BEE
P .05,4: BEEP .1,2: BEEP .3,0
9690 RETURN
9700 REM END
9705 PRINT AT 19,23; FLASH 1;"EX
AMPLE!"
9710 LET SPD1=1
9715 FOR A=1 TO 2
9720 FOR B=6 TO 18 STEP 4
9730 LET X1=B: GO SUB 9000
9740 NEXT B: NEXT A: INK 0: PAPE
R 7: LET VI=0: FOR B=1 TO 30: NE
XT B: PRINT AT 19,23; PAPER 4;"
  ": GO SUB 9500: FOR B=1 T
O 40: NEXT B: RETURN
9999 RUN
```

17

Space Merchant

(48K)

How do you fancy your chances as a trader in the galactic market place? This game offers you the opportunity to trade amongst the planets of the galactic empire. Four commodities can be traded: their price, however, varies from planet to planet, and from day to day according to the laws of supply and demand. The commodities are:

Tobium:	a precious metal
Arms:	weaponry

Muipo: a valuable psychedelic drug sought throughout the galaxy, but subject to big variations in price

Computers: a basic part of planetary communication.

Your object is to trade as successfully as possible throughout the galaxy. Two game types are available. In one you play to make as much money (in megacredits or MCs) as possible in a specified time – 1 to 200 days. However, a sensible range is from 40 to 150 days. In the other game type your aim is to make a specific amount of money as quickly as possible. To avoid cheating, the game prevents you from entering as an amount to be made a sum less than the game equips you with.

Four levels of difficulty are available in the game from 1, the easiest, to 4, the hardest. In effect you are given varying amounts of megacredits to play the game in selecting difficulty level.

Before you can start trading you must equip your trading vessel. Firstly you must buy an engine: the faster the engine the more it costs, but a fast engine allows you to move around the galactic market place more repidly. Secondly, you must decide whether or not to buy an autotranslator: having one allows you to trade on those planets which do not speak English and thus gives you a bigger choice of markets. Thirdly, a defence computer can be bought: this will protect you from one of the hazards of galactic trading – Space Pirates!!! If they catch your ship, all of your cargo will be stolen. With a defence computer, you can fight them off and keep all your cargo.

Having equipped your space vessel, you can begin trading around the galaxy. Firstly, buy your cargo – any combination of goods is possible. Then you can start to move about the galaxy, selling and buying where prices are best. On Earth you have an option not possible on other planets. If you want to increase your cargo when you are getting a bit low on megacredits, you can go to Slaycrab – the galactic bank that opens on Saturday mornings. To protect its interests Slaycrab will allow you to borrow any amount up to half of your current stock of megacredits. But beware, they charge 10% per day interest on their loans, so it is sensible to repay them as rapidly as you can. Slaycrab will demand their money back once you owe 50,000 MCs: if you cannot repay immediately, they will repossess your space vessel and cargo and you will be made bankrupt.

It is possible to alter ship design at any point in the game. You may decide to update your ship after starting the game with a cheap set of options. Simply press the 'alter ship' key to do this.

During trading at the easiest level of the game you can request information on the planets' commodity requirements and which language they speak by pressing key 'H' for *Help*. This feature is only available on Earth. If you make a mistake in typing an option, (i.e. *move, sell, buy, borrow* or *repay*) you can return to the menu simply by typing 'MI' then <ENTER>.

The game also includes a machine code subroutine, the principles of which appear later in the book on pages 155–156.


```
  10 REM ************************
  20 REM *    SPACE MERCHANT,   *
  30 REM *      © TOBY MATTHEWS   *
  40 REM *      & ELLIS HORWOOD   *
  50 REM ************************
  60 POKE 23658,8
  70 GO SUB 9000
  80 PAPER 4: INK 7: BORDER 4: C
LS
  85 REM ■MENU■
  90 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
 100 PRINT AT 6,5; PAPER 1;"PLEA
SE INPUT YOUR NAME"
 110 INPUT N$: IF LEN N$>17 OR N
$="" THEN GO TO 110
 115 LET L=USR USR "A": PRINT AT
 8,(32-(5+LEN N$))/2; PAPER 1;"N
AME:";N$
 120 PRINT AT 10,0; PAPER 2;"PLE
ASE INPUT DIFFICULTY (1 TO 4)"
 130 INPUT "1(EASY) TO 4(HARD)";
D: IF D>4 OR D<1 THEN GO TO 130
 140 LET L=USR USR "A": PRINT AT
 12,12; PAPER 2;"LEVEL :";D
 142 LET D=5-D
 145 GO SUB 9000
 150 REM ■VARIABLES■
 160 LET IN=0: FOR N=1 TO 4: DIM
 C(N): LET C(N)=0: NEXT N
 170 LET M=D*35000
 180 DIM P$(9,7)
 190 LET P$(1)="EARTH"
 200 LET P$(2)="VENUS"
 210 LET P$(3)="MARS"
 220 LET P$(4)="MERCURY"
 230 LET P$(5)="JUPITER"
 240 LET P$(6)="SATURN"
 250 LET P$(7)="URANUS"
 260 LET P$(8)="NEPTUNE"
 270 LET P$(9)="PLUTO"
 280 LET B=0: LET LA=0: LET DE=0
 285 DIM R(9): FOR N=1 TO 9: LET
 R(N)=INT (RND*4)+1: NEXT N
 290 LET R=50
 295 LET MI=100
 300 FOR N=1 TO 4: DIM E(N): LET
 E(N)=0: NEXT N
 310 FOR N=1 TO 100: NEXT N: LET
 L=USR USR "A": GO SUB 3000
 320 LET T=1
 330 LET P=1
 340 LET LA1=0
 350 GO SUB 5500
 360 LET G=0: LET H=0: LET I=0:
LET J=0: LET P1=1: GO SUB 7300:
LET P1=0
 400 LET E(1)=(4000+INT (RND*100
0))+G
 410 LET E(2)=(500+INT (RND*1000
))+H
 420 LET E(3)=(6000+INT (RND*100
0))+I
```

Listing continued next page

```
 430 LET E(4)=(1000+INT (RND*100
0))+J
 440 PRINT AT 14,0; PAPER 4;"
    ";AT 15,0;"          ";AT 16,0;
"          ";AT 20,0;"          "
 450 PRINT AT 14,0; PAPER 1;E(1)
;"MC";AT 15,0;E(2);"MC";AT 16,0;
E(3);"MC";AT 20,0;E(4);"MC"
 500 REM ■MAIN LOOP■
 510 PRINT AT 1,0; PAPER 0;"PLAN
ET:";P$(P);"                DAY";T
 511 IF DE=1 AND INT (RND*15)=10
 THEN GO SUB 3500
 512 IF LA=1 AND INT (RND*15)=10
 THEN GO SUB 3610
 515 IF M<=0 AND R=50 THEN GO TO
 6500
 520 PRINT AT 5,0;"                "
 530 PRINT AT 6,0; PAPER 1;M;"MC
"
 545 IF C=1 THEN IF T>=C1 THEN G
O TO 6500
 550 IF C=2 THEN IF M>=C2 AND B=
0 THEN GO TO 6000
 555 PRINT AT 9,0;"          ";AT 9
,0; PAPER 2;B;"MC"
 560 IF B>=50000 THEN GO TO 7600
 570 FOR N=17 TO 20: PRINT AT N,
12;"                ": NEXT
N
 585 PRINT AT 12,28;"  ";AT 13,2
8;"  ";AT 14,28;"  ";AT 15,28;"
 590 PRINT AT 12,28; PAPER 2;C(1
);AT 13,28;C(2);AT 14,28;C(3);AT
 15,28;C(4)
 595 LET R=50-(C(1)+C(2)+C(3)+C(
4)): PRINT AT 10,24;"  ";AT 10,2
4; PAPER 0;R
 600 PRINT AT 17,12; PAPER 0;"KE
YS:-"
 605 IF D=4 AND P=1 THEN PRINT A
T 17,19; PAPER 1;"H-HELP"
 610 PRINT AT 18,12; PAPER 1;"M-
MOVE";AT 19,12;"S-SELL";AT 20,12
;"B-BUY";AT 18,19;"A-ALTER SHIP"
: IF P=1 THEN PRINT AT 19,19; PA
PER 1;"L-BORROW";AT 20,19;"R-REP
AY"
 620 IF INKEY$="S" AND R<50 THEN
 GO TO 4500
 630 IF INKEY$="B" AND R>0 THEN
GO TO 4000
 640 IF INKEY$="M" THEN GO TO 70
00
 650 IF INKEY$="A" THEN GO TO 97
00
 660 IF INKEY$="H" AND D=4 AND P
=1 THEN GO TO 2000
 670 IF INKEY$="L" AND P=1 THEN
GO TO 1000
 680 IF INKEY$="R" AND P=1 THEN
GO TO 1500
 700 GO TO 520
1000 REM ■BORROW■
1010 FOR N=1 TO 5: LET L=USR USR
```



```
 "A": NEXT N: FOR N=17 TO 20: PR
INT AT N,12;"
 ": NEXT N
1100 PRINT AT 17,12; PAPER 0;"■B
ORROW■"
1120 INPUT AT 0,0; PAPER 1; INK
7;"HOW MUCH DO YOU WANT ?";BA
1125 LET BA=INT BA
1130 IF BA=MI THEN GO TO 500
1135 IF INT (M/2)<50000 THEN GO
TO 1137
1136 IF BA>50000 THEN PRINT AT 1
9,12; PAPER 1;"YOU CAN ONLY BORR
OW";AT 20,12;"50000MC": GO TO 11
20
1137 IF BA>INT (M/2) THEN PRINT
AT 19,12; PAPER 1;"YOU CAN ONLY
BORROW";AT 20,12;INT (M/2);"MC":
 GO TO 1120
1140 LET B=B+BA
1150 PRINT AT 19,12;"
          ";AT 20,12;"
        ";AT 19,12; PAPER 2;BA;"M
C"
1155 LET M=M+BA
1160 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N: FOR N=1 TO 100: NE
XT N: FOR N=17 TO 20: PRINT AT N
,12;"                ": NEXT
N
1170 GO TO 500
1500 REM ■REPAY■
1510 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N: FOR N=17 TO 20: PR
INT AT N,12;"
 ": NEXT N
1520 PRINT AT 17,12; PAPER 0;"■R
EPAY■"
1530 INPUT AT 0,0; PAPER 1; INK
7;"HOW MUCH DO YOU REPAY?";RA
1535 LET RA=INT RA
1540 IF RA=MI THEN GO TO 500
1550 IF RA>B THEN GO TO 1530
1560 LET B=B-RA
1570 PRINT AT 19,12; PAPER 2;RA;
"MC"
1575 LET M=M-RA
1580 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N: FOR N=17 TO 20: PR
INT AT N,12;"
 ": NEXT N
1590 GO TO 500
2000 REM ■HELP!■
2010 CLS : FOR N=1 TO 5: LET L=U
SR USR "A": NEXT N
2015 DIM R$(4,9): LET R$(1)="TOB
IUM": LET R$(2)="ARMS": LET R$(3
)="MUIPO": LET R$(4)="COMPUTERS"
2020 PRINT AT 2,1; PAPER 0;"PLAN
ET    ENGLISH   REQUIREMENTS"
2025 IF C=1 THEN PRINT AT 0,1; P
APER 2;"DAYS LEFT=";C1-T
2026 IF C=2 THEN PRINT AT 0,1; P
```

Listing continued next page

```
APER 2;"MONEY STILL NEEDED=";C2-
N;"MC"
2030 PAPER 1
2040 PRINT AT 4,1;P$(1);"     YES
      ";R$(R(1))
2050 PRINT AT 6,1;P$(2);"     YES
      ";R$(R(2))
2060 PRINT AT 8,1;P$(3);"      NO
      ";R$(R(3))
2070 PRINT AT 10,1;P$(4);"      N
O     ";R$(R(4))
2080 PRINT AT 12,1;P$(5);"     YE
S     ";R$(R(5))
2090 PRINT AT 14,1;P$(6);"      N
O     ";R$(R(6))
2100 PRINT AT 16,1;P$(7);"     YE
S     ";R$(R(7))
2110 PRINT AT 18,1;P$(8);"      N
O     ";R$(R(8))
2120 PRINT AT 20,1;P$(9);"      N
O     ";R$(R(9))
2130 PAPER 4
2140 INPUT PAPER 1; INK 7;"PRESS
 'ENTER' TO  RETURN"; LINE O$
2150 GO SUB 3000
2160 GO TO 500
2500 REM ■ANOTHER GO■
2510 PRINT AT 14,10; PAPER 1;"AN
OTHER GO ?"
2520 IF INKEY$="Y" THEN RUN 80
2530 IF INKEY$="N" THEN STOP
2540 GO TO 2520
3000 REM ■DRAW SCREEN■
3010 INK 0: CLS
3020 PLOT 0,156: DRAW 255,0
3030 PLOT 87,156: DRAW 0,-152: D
RAW 168,0
3040 PLOT 87,100: DRAW 168,0
3050 PLOT 87,44: DRAW 168,0
3060 PLOT 0,4: DRAW 255,0
3070 PLOT 0,92: DRAW 87,0
3080 INK 7
3090 PRINT AT 0,(32-(15+LEN N$))
/2; PAPER D;"SPACE MERCHANT ";N$
3100 PRINT AT 3,17; PAPER 0;"PLA
NETS:"
3110 FOR N=1 TO 4: PRINT AT N+3,
12; PAPER N;N;"-";P$(N);AT N+3,2
2;N+5;"-";P$(N+5): NEXT N
3120 PRINT AT 8,12; PAPER 0;"5-"
;P$(5)
3130 PRINT AT 10,12; PAPER 0;"CA
RGO SPACE:";R
3140 PRINT AT 10,27; PAPER 1;"0T
Y."
3150 PRINT AT 12,12; PAPER 1;"1-
TOBIUM.....";AT 13,12;"2-ARMS..
.....";AT 14,12;"3-MUIPO.....
";AT 15,12;"4-COMPUTERS..."
3160 PRINT AT 12,28; PAPER 2;C(1
);AT 13,28;C(2);AT 14,28;C(3);AT
 15,25;C(4)
3170 PRINT AT 3,0; PAPER 0;"MONE
Y:"
3180 PRINT AT 5,0; PAPER 1;"YOUR
 MONEY";AT 6,0;M;"MC"
```



```
3190 PRINT AT 7,0; PAPER 2;"YOU
OWE ";AT 8,0;"SLAYCRAB";AT 9,0;B
;"MC"
3200 PRINT AT 11,2; PAPER 0;"PRI
CES"
3210 PRINT AT 13,0; PAPER 2;"TOB
IUM";AT 15,0;"ARMS";AT 17,0;"MUI
PO";AT 19,0;"COMPUTERS"
3220 PRINT AT 14,0; PAPER 1;E(1)
;"MC";AT 16,0;E(2);"MC";AT 18,0;
E(3);"MC";AT 20,0;E(4);"MC"
3230 RETURN
3500 REM ■BREAKDOWNS■
3510 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
3520 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
3530 PRINT AT 17,12; PAPER 1;"YO
UR DEFENCE";AT 18,12; PAPER 1;"C
OMPUTER HAS BROKEN";AT 19,12; PA
PER 1;"DOWN!"
3540 FOR N=1 TO 100: NEXT N: FOR
 N=1 TO 5: LET L=USR USR "A": NE
XT N
3560 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
3570 PRINT AT 17,12; PAPER 1;"DO
 YOU WANT TO";AT 18,12; PAPER 1;
"REPLACE IT (Y/N)?";AT 19,12; PA
PER 1;"IT WILL COST 30000MC"
3580 IF INKEY$="Y" THEN LET M=M-
30000: GO TO 3600
3590 IF INKEY$="N" THEN LET DE=0
: GO TO 3600
3595 GO TO 3580
3600 RETURN
3610 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
3620 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
3630 PRINT AT 17,12; PAPER 1;"YO
UR AUTO TRANSLATOR";AT 18,12; PA
PER 1;"HAS BROKEN DOWN!"
3640 FOR N=1 TO 100: NEXT N: FOR
 N=1 TO 5: LET L=USR USR "A": NE
XT N
3650 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
3660 PRINT AT 17,12; PAPER 1;"DO
 YOU WANT TO";AT 18,12; PAPER 1;
"REPLACE IT (Y/N)?";AT 19,12; PA
PER 1;"IT WILL COST 30000MC"
3670 IF INKEY$="Y" THEN LET M=M-
30000: GO TO 3600
3680 IF INKEY$="N" THEN LET LA=0
: GO TO 3600
3690 GO TO 3670
3700 RETURN
3999 STOP
4000 REM ■BUY■
```

Listing continued next page

```
4010 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
4020 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
4030 PRINT AT 17,12; PAPER 0;"*B
UY*"
4040 PRINT AT 19,12; PAPER 2;"WH
AT WOULD YOU LIKE";AT 20,18;"TO
BUY."
4050 INPUT AT 0,0; INK 7; PAPER
1;"1,2,3 OR 4 ";Q
4055 LET Q=INT Q
4060 IF Q=MI THEN GO TO 500
4070 IF Q<1 OR Q>4 THEN GO TO 40
50
4080 PRINT AT 19,12;"
                    ";AT 19,12; PAPER 1;"YOU
 CAN AFFORD ";INT (M/E(Q))
4085 PRINT AT 20,12;"
                    "
4090 LET L=USR USR "A": INPUT AT
 0,0; INK 7; PAPER 0;"HOW MANY D
O YOU WANT TO BUY ?";NB
4092 LET NB=INT NB
4095 IF NB<0 THEN GO TO 4090
4110 IF R-NB<0 THEN PRINT AT 19,
12; PAPER 1;"YOU DON'T HAVE ROOM
";AT 20,12;"FOR ";NB: FOR N=1 TO
 100: NEXT N: GO TO 4080
4115 IF M-(E(Q)*NB)<0 THEN PRINT
 AT 19,12; PAPER 1;"YOU CAN'T AF
FORD ";AT 20,12;NB: FOR N=1 TO 1
00: NEXT N: GO TO 4080
4120 LET C(Q)=C(Q)+NB
4130 LET M=M-(NB*E(Q))
4140 GO TO 500
4500 REM SELL
4510 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
4520 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
4530 PRINT AT 17,12; PAPER 0;"*S
ELL*"
4540 PRINT AT 19,12; PAPER 2;"WH
AT WOULD YOU LIKE";AT 20,18;"TO
SELL"
4550 INPUT AT 0,0; INK 7; PAPER
1;"1,2,3 OR 4 ";S
4555 LET S=INT S
4560 IF S=MI THEN GO TO 500
4565 IF S<1 OR S>4 THEN GO TO 45
50
4570 IF C(S)=0 THEN PRINT AT 19,
12; PAPER 1;"YOU DON'T HAVE ANY
";AT 20,12; PAPER 4;"
    ": GO TO 4550
4580 PRINT AT 19,12;"    "; PAPER
 1;"YOU HAVE ";C(S); PAPER 4;"
    "
4585 PRINT AT 20,12;"
                    "
4590 LET L=USR USR "A": INPUT IN
K 7; PAPER 0;AT 0,0;"HOW MANY DO
 YOU WANT TO SELL ?";NS
4600 IF NS<0 THEN GO TO 4590
```



```
4605 IF NS>C(S) THEN PRINT AT 19
,12; PAPER 0;"YOU DON'T HAVE ";N
S: FOR N=1 TO 3: LET L=USR USR "
A": NEXT N: FOR N=1 TO 100: NEXT
 N: GO TO 4580
4610 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
4620 LET C(S)=C(S)-NS
4630 LET M=M+(NS*E(S))
4640 GO TO 500
5500 REM SHIP DESIGN
5501 PRINT AT 17,12; PAPER 0;"SH
IP DESIGN:"
5510 PRINT AT 18,12; PAPER 1;"1L
IGHT SPEED 50000MC";AT 19,12;"2U
RRP SPEED  25000MC";AT 20,12;"3T
URBO BOOST 15000MC"
5520 LET L=USR USR "A": INPUT AT
 0,0; PAPER 2; INK 7;"INPUT ENGI
NE TYPE 1,2 OR 3 ";F
5525 LET F=INT F
5530 IF F>3 OR F<1 THEN GO TO 55
20
5540 IF F=1 THEN LET M=M-50000
5550 IF F=2 THEN LET M=M-25000
5560 IF F=3 THEN LET M=M-15000
5570 LET L=USR USR "A": FOR N=18
 TO 20: PRINT AT N,12;"
                    ": NEXT N
5575 IF LA=1 THEN GO TO 5625
5580 PRINT AT 18,12; PAPER 2;"WO
ULD YOU LIKE AN ";AT 19,12;"AUTO
 TRANSLATOR FOR";AT 20,15;"50000
MC (Y/N)?"
5590 IF INKEY$="Y" THEN LET LA=1
: LET M=M-50000: GO TO 5620
5600 IF INKEY$="N" THEN LET LA=0
: GO TO 5620
5610 GO TO 5590
5620 LET L=USR USR "A"
5625 IF DE=1 THEN GO TO 5670
5630 PRINT AT 18,12; PAPER 2;"WO
ULD YOU LIKE A";AT 19,12;"DEFENC
E COMPUTER FOR";AT 20,15;"50000M
C (Y/N)?"
5640 IF INKEY$="Y" THEN LET DE=1
: LET M=M-50000: GO TO 5670
5650 IF INKEY$="N" THEN LET DE=0
: GO TO 5670
5660 GO TO 5640
5670 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
5680 FOR N=17 TO 20: PRINT AT N,
12;"                    ": NEXT
N
5690 RETURN
6000 REM PIRATES
6010 CLS : FOR N=1 TO 2: FOR Y=1
 TO 7: LET L=USR USR "A": BORDER
 Y: NEXT Y: NEXT N
6015 BORDER 4: CLS
6020 PRINT AT 8,2; FLASH 1; PAPE
R 2;"YOU ARE ATTACKED BY PIRATES
```

Listing continued next page

```
!"
6030 IF DE=1 THEN PRINT AT 10,0;
 PAPER 1;"YOU DEFEND YOURSELF SU
CCESSFULY."
6040 IF DE=0 THEN PRINT AT 10,3;
 PAPER 2;"THEY SEIZE ALL YOUR CA
RGO!": FOR N=1 TO 4: LET C(N)=0:
 NEXT N
6050 FOR N=1 TO 200: NEXT N: CLS
 : FOR N=1 TO 5: LET L=USR USR "
A": NEXT N
6060 GO SUB 3000
6070 RETURN
6500 REM ■OUT OF TIME■
6505 LET L$="PROFIT"
6506 IF M-(35000*D)<0 THEN LET L
$="LOSS"
6510 CLS : FOR N=1 TO 10: LET L=
USR USR "A": NEXT N
6520 PRINT AT 6,12; PAPER 2;"THE
 END!"
6530 PRINT AT 8,0; PAPER 1;"YOU
FINISHED WITH ";M;"MC"
6540 PRINT AT 10,0; PAPER 2;"THA
T IS A ";L$;" OF ";ABS (M-(35000
*D));"MC"
6550 GO TO 2500
7000 REM ■MOVE■
7010 FOR N=17 TO 20: PRINT AT N,
12;"                ": NEXT
N
7020 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N
7030 PRINT AT 17,12; PAPER 0;"*M
OVE*"
7040 INPUT INK 7; PAPER 1;AT 0,0
;"WHICH PLANET DO YOU WANT 1-9";
P1
7041 LET P1=INT P1
7042 IF P1=MI THEN GO TO 500
7045 IF P1<1 OR P1>10 THEN GO TO
 7040
7046 IF P1=P THEN PRINT AT 19,12
; PAPER 1;"YOU ARE ALREADY ON";A
T 20,16;P$(P1): GO TO 7040
7047 FOR N=18 TO 20: PRINT AT N,
12;"                ": NEXT
N
7050 GO SUB 7200+(10*P1)
7055 GO SUB 7300
7060 IF LA<LA1 THEN PRINT AT 16,
12; PAPER 0;"YOU CANNOT VISIT";A
T 19,16;P$(P1)
7090 IF LA<LA1 THEN FOR N=1 TO 5
: LET L=USR USR "A": NEXT N: FOR
 N=1 TO 100: NEXT N: GO TO 7040
7100 IF LA<LA1 THEN FOR N=17 TO
20: PRINT AT N,12;"
          ": NEXT N
7140 IF P1<P THEN LET P2=(P-P1)*
F: GO TO 7160
7150 LET P2=INT (P1-P)*F
7160 PRINT AT 18,12; PAPER 1;"TH
E TRIP WILL TAKE";AT 19,17;P2;"
DAYS"
7170 IF P2=1 THEN PRINT AT 19,25
```



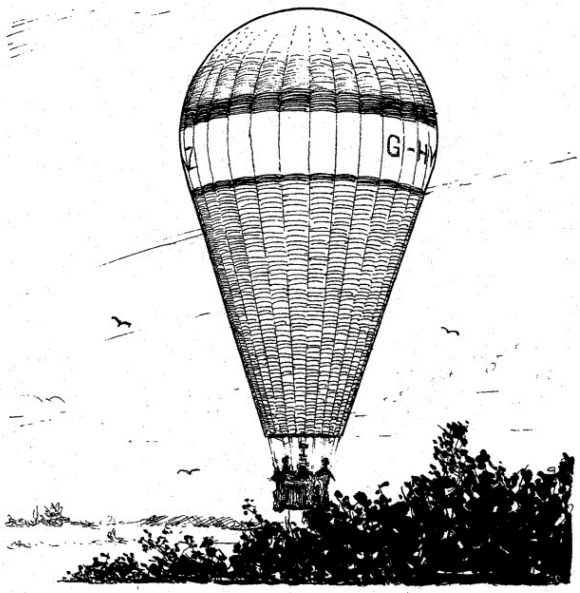
```
;" "
7180 LET IN=INT (P2*.1*B): LET B
=B+IN
7190 LET T=T+P2
7195 IF INT (RND*5)=3 THEN GO SU
B 6000
7200 FOR N=1 TO 100: NEXT N: FOR
 N=17 TO 20: PRINT AT N,12;"
                ": NEXT N
7205 LET P=P1: GO TO 400
7210 LET LA1=0: RETURN
7220 LET LA1=0: RETURN
7230 LET LA1=1: RETURN
7240 LET LA1=1: RETURN
7250 LET LA1=0: RETURN
7260 LET LA1=1: RETURN
7270 LET LA1=0: RETURN
7280 LET LA1=1: RETURN
7290 LET LA1=1: RETURN
7300 IF R(P1)=1 THEN LET G=1250+
(LA1*250)
7310 IF R(P1)=2 THEN LET H=1250+
(LA1*250)
7320 IF R(P1)=3 THEN LET I=1250+
LA1
7330 IF R(P1)=4 THEN LET J=1250+
(LA1*250)
7340 RETURN
7500 REM ■SLAYCRAB■
7510 CLS : FOR N=1 TO 10: LET L=
USR USR "A": NEXT N
7520 PRINT AT 4,2; PAPER 0;"SLAY
CRAB HAS GROWN IMPATIENT"
7530 PRINT AT 6,4; PAPER 2;"HE T
AKES ALL YOU OWE HIM"
7540 LET M=M-B
7545 LET B=0
7550 FOR N=1 TO 100: NEXT N: CLS
 : FOR N=1 TO 10: LET L=USR USR
"A": NEXT N: GO SUB 3000: GO TO
500
8000 REM ■TOTAL REACHED■
8010 CLS : FOR N=1 TO 10: LET L=
USR USR "A": NEXT N
8020 PRINT AT 6,12; PAPER 2;"THE
 END!"
8030 PRINT AT 8,5; PAPER 1;"YOU
REACHED YOUR TOTAL";AT 10,11;"IN
 ";T;" DAYS"
8040 GO SUB 2500
8500 REM ■BANKRUPT■
8510 CLS : FOR N=1 TO 10: LET L=
USR USR "A": NEXT N
8520 PRINT AT 6,12; PAPER 2;"THE
 END!"
8530 PRINT AT 8,8; PAPER 0;"YOU
ARE BANKRUPT!"
8540 PRINT AT 10,7; PAPER 1;"YOU
 LASTED ";T;" DAYS"
8545 IF T=1 THEN PRINT AT 10,23;
" "
8550 GO SUB 2500
9000 REM ■M/C SOUND■
9005 FOR A=USR "A" TO USR "A"+29
```

Listing continued next page

```
9010 READ B: POKE A,B: NEXT A
9020 DATA 6,1,197,33,0,0,17,1,0,
229,205,181,3,225,17,3,0,167,237
,90,125,254,1,32,237,193,16,230,
201,0
9030 RETURN
9700 REM ■ALTER SHIP■
9710 FOR N=1 TO 5: LET L=USR USR
 "A": NEXT N: FOR N=17 TO 20: PR
INT AT N,12;"
 ": NEXT N
9720 PRINT AT 17,12; PAPER 0;"*A
LTER SHIP*"
9730 PRINT AT 19,12; PAPER 1;"CH
ANGE ENGINE?"
9740 IF INKEY$="Y" THEN GO SUB 5
510: GO TO 9770
9750 IF INKEY$="N" THEN GO SUB 5
570: GO TO 9770
9760 GO TO 9740
9770 GO TO 500
9800 PRINT AT 14,0; PAPER 0;"INP
UT GAME TYPE"
9810 PRINT AT 16,0; PAPER 1;"1-P
LAY UNTIL SPECIFIED DAY";AT 18,0
;"2-PLAY UNTIL SPECIFIED TOTAL"
9820 INPUT C
9822 LET C=INT C
9825 LET L=USR USR "A"
9826 IF C>2 OR C<0 THEN GO TO 98
20
9830 IF C=1 THEN GO TO 9900
9835 PRINT AT 20,0; PAPER 1;"INP
UT TARGET:200000 - 10000000MC"
9840 INPUT C2
9845 LET C2=INT C2
9850 IF C2<200000 OR C2>10000000
 THEN GO TO 9840
9855 LET L=USR USR "A"
9860 RETURN
9900 PRINT AT 20,0; PAPER 1;"INP
UT NUMBER OF DAYS:2 TO 200"
9905 INPUT C1
9906 LET C1=INT C1
9910 IF C1<2 OR C1>200 THEN GO T
O 9900
9915 LET L=USR USR "A"
9920 RETURN
9999 RUN
```

18

Balloon Flight Simulation



(48K)

Can you fly a hot-air balloon? This program gives you a chance to try. Setting off from the take-off platform, you must get to the landing platform using your fuel and ballast reserves. But you are unlikely to have enough fuel to make the trip which means that you will almost certainly have to land in the large white cross and take on more fuel. Since you also get bonus points for doing this successfully, it will help your final score.

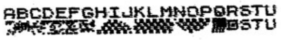
In order to help you work out how your flight is progressing, there is an altitude simulator to plot your path provided at the bottom of the screen. And, for those who

have a printer, you can make a hard copy of the trajectory of your flight from the graph which appears at the end of the game.

(Contains machine-code scroll routine.)

Key to graphics characters

ABCDEFGHIJKLMNOPQRSTU



```
  10 REM  © PAUL SMITH
          ELLIS HORWOOD
  90 POKE 23658,8
 100 REM ■ MACHINE CODE ■
 110 FOR A=USR "A" TO USR "A"+54
 120 READ B: POKE A,B: NEXT A
 130 DATA 62,32,1,1,3,17,11,18,3
3,223,67,245,213,17,32,0,4,25,16
,253,65,4,35,16,253,209,65,5,197
,6,0,75,213,229,17,32,0,25,209,2
29,237,176,225,209,193,120,16,23
6,241,67,119,35,16,252,201
 200 REM ■ GRAPHICS CHARACTERS ■
 210 FOR A=USR "H" TO USR "R"+7
 220 READ B: POKE A,B: NEXT A
 230 DATA 0,0,3,3,12,12,51,51
 240 DATA 76,204,51,51,204,204,5
1,51
 250 DATA 0,128,32,48,200,204,48
,50
 260 DATA 76,76,51,51,204,204,51
,51
 270 DATA 204,204,51,51,204,204,
51,51
 280 DATA 204,204,51,51,204,204,
51,50
 290 DATA 76,12,51,19,12,4,1,0
 300 DATA 204,204,51,51,204,204,
51,48
 310 DATA 204,204,48,48,192,192,
0,0
 320 DATA 255,255,191,191,191,17
0,170,170
 330 DATA 0,126,66,90,90,66,126,
0
 350 REM ■ FIX HI-VAR ■
 360 DIM H$(7,9)
 370 LET H$(1)="0000-PL.1"
 375 LET H$(2)="0000-PL.2"
 380 LET H$(3)="0000-PL.3"
 385 LET H$(4)="0000-PL.4"
 390 LET H$(5)="0000-PL.5"
 392 LET H$(6)="0000-PL.6"
 393 LET H$(7)="0000-PL.7"
 395 LET B$="76B": REM ■ OR
     FAVOURITE KEYS ■
 400 REM ■ VARIABLES ■
 405 LET G=5
```



```
 410 DIM A$(3,11)
 414 LET Y=0
 420 LET A$(1)="              "
 430 LET A$(2)="              "
 440 LET A$(3)="              "
 445 LET D=INT (RND*9+1)
 450 LET HE=0: LET BA=6
 455 LET E=INT (RND*7+1)
 460 LET TH=0: LET FU=47
 465 LET C=5
 470 LET A=0
 480 LET B=11
 485 LET F=5
 490 LET DI=INT (RND*10+140)
 491 DIM J(151): FOR Z=1 TO 151:
 LET J(Z)=-10.5: NEXT Z: FOR Z=1
51 TO DI STEP -1: LET J(Z)=0: NE
XT Z
 495 LET BON=0
 500 REM ■ INITIALISE ■
 510 GO SUB 5000
 520 PRINT AT 4,2;"KEYS -"
 530 PRINT INK 5;AT 6,2;B$(1);"
- MORE";AT 7,5;"THRUST"
 535 PRINT INK 4;AT 9,2;B$(2);"
- LESS";AT 10,5;"THRUST"
 540 PRINT INK 6;AT 12,2;B$(3);"
- DROP";AT 13,5;"BALLAST"
 550 PRINT AT 15,2;"PRESS -";AT
17,2; INK 5;"E - EDIT"; INK 6;AT
 19,2;"P - PLAY"
 560 IF INKEY$="E" THEN GO TO 60
0
 570 IF INKEY$="P" THEN GO TO 70
0
 590 GO TO 560
 600 REM ■ EDIT ■
 605 IF INKEY$<>"" THEN GO TO 60
5
 610 FOR Z=1 TO 3
 620 PRINT AT 3+Z*3,2; INK 8; IN
VERSE 1;B$(Z)
 630 LET Z$=INKEY$
 640 IF Z$="" THEN GO TO 630
 650 LET B$(Z)=Z$
 655 PRINT AT 3+Z*3,2; INK 8;B$(
Z)
 660 IF INKEY$<>"" THEN GO TO 66
0
 665 BEEP .05,Z*2
 670 NEXT Z
 690 GO TO 560
 700 FOR Z=3 TO 20: PRINT AT Z,2
;"              ": NEXT Z
 705 POKE USR "A"+1,32: FOR Z=1
TO 3: LET L=USR USR "A": NEXT Z
 710 LET L=USR USR "A": PRINT AT
 20,5; PAPER 6; INK 0;"    "
 720 FOR Z=1 TO 3: LET L=USR USR
 "A": PRINT AT 20,4; PAPER 6; IN
K 0;"      ": NEXT Z
 730 LET L=USR USR "A": PRINT AT
 20,5; PAPER 6; INK 0;"    "
```

```
 740 FOR Z=1 TO 3: LET L=USR USR
 "A": NEXT Z
 750 FOR Z=1 TO 2: LET L=USR USR
 "A": PRINT AT 20,3; PAPER 2; IN
K 0;"  ": NEXT Z
 760 FOR Z=1 TO 7: LET L=USR USR
 "A": NEXT Z
 770 INK 8: PAPER 8
 780 PRINT AT 5,1;A$(1)
 790 PRINT AT 6,1;A$(2)
 800 PRINT AT 7,1;A$(3)
1000 REM ■ MAIN LOOP ■
1020 LET Y=Y+1
1030 IF Y=100 THEN LET Y=0
1100 LET TH=TH+(CHR$ (PEEK 23560
)=B$(1) AND TH<47)*8-8*(CHR$ (PE
EK 23560)=B$(2) AND TH>0)
1110 IF CHR$ (PEEK 23560)=B$(3)
THEN LET BA=BA-1: GO SUB 3500
1120 POKE 23560,33
1150 IF FU<1 THEN LET FU=0: LET
TH=0
1200 LET HE=HE+INT (TH/12)-1-BA/
20
1210 IF HE<0 THEN LET HE=0
1220 IF HE>107 THEN LET HE=107
1230 LET FU=FU-TH/120
1500 IF HE>100 THEN GO TO 1508
1501 IF HE>80 AND INT (Y/2)=Y/2
THEN GO TO 1508
1502 IF HE>60 AND INT (Y/3)=Y/3
THEN GO TO 1508
1503 IF HE>40 AND INT (Y/4)=Y/4
THEN GO TO 1508
1504 IF HE>20 AND INT (Y/5)=Y/5
THEN GO TO 1508
1505 IF HE>10 AND INT (Y/8)=Y/8
THEN GO TO 1508
1507 GO TO 1700
1508 LET A=A+1
1509 IF A=1 THEN POKE USR "A"+1,
40: PRINT AT 20,1; PAPER 5; INK
0;"                "( TO INT (RND*7+2
)j
1510 IF A=8 THEN POKE USR "A"+1,
32: PRINT AT 20,1; PAPER 4; INK
0;"                "( TO INT (RND*7+2
)j
1520 IF A=20 THEN LET A=0: LET B
=INT (RND*5+7): LET C=INT (RND*1
0+1): LET F=INT (RND*10+1)
1550 IF A=15 OR A=16 THEN PRINT
AT 20,C; PAPER 2; INK 0;"  "
1555 IF A=5 OR A=6 THEN PRINT AT
 20,F; PAPER 3; INK 0;"  "
1560 IF DI=75 THEN PRINT AT 20,D
+1; PAPER 7; INK 0;"  "
1565 IF DI=76 THEN PRINT AT 20,D
; PAPER 7; INK 0;"  "
1570 IF DI=77 THEN PRINT AT 20,D
+1; PAPER 7; INK 0;"  "
1580 IF DI=16 OR DI=12 THEN PRIN
T AT 20,E+1; PAPER 6; INK 0;"
"
1590 IF DI=15 OR DI=14 OR DI=13
THEN PRINT AT 20,E; PAPER 6; INK
```



```
 0;"      "
1600 LET G1=G
1610 IF DI>90 OR (DI>18 AND DI<5
4) THEN LET G=G+INT (RND*3-1)
1620 IF G<1 THEN LET G=1
1625 IF G>9 THEN LET G=9
1630 IF DI<77 AND DI>55 THEN LET
 G=G+(D>G)-(D<G)
1640 IF DI<18 AND DI>-2 THEN LET
 G=G+((E+1)>G)-((E+1)<G)
1670 IF G1>G THEN FOR Z=1 TO 3:
LET A$(Z)=A$(Z,2 TO )+A$(Z,1): N
EXT Z
1675 IF G>G1 THEN FOR Z=1 TO 3:
LET A$(Z)=A$(Z,11)+A$(Z, TO 10):
 NEXT Z
1680 FOR Z=1 TO 3: PRINT AT 4+Z,
1;A$(Z): NEXT Z
1690 LET L=USR USR "A"
1691 IF DI>=1 THEN LET J(DI)=INT
 HE
1695 LET DI=DI-1
1700 GO SUB 7000
1710 IF INT DI=100 OR DI=28 THEN
 BEEP .02,20: BEEP .08,20
1720 IF DI<-10 THEN GO TO 5600
1750 OVER 1: PLOT 112+(151-DI)/1
.266,18+HE/4.65: OVER 0
1800 REM ■ RUN CHECKS ■
1810 IF HE>10 THEN GO TO 2100
1820 GO SUB 3000
1830 IF HE>0 THEN GO TO 2000
1840 FOR Z=1 TO 9
1850 FOR Z=1 TO 9
1860 IF I(Z)=56 THEN GO TO 4500
1870 IF I(Z)=48 THEN GO TO 5500
1890 NEXT Z
1900 REM ■ ROUGH LANDING ■
1910 PRINT AT 9,3; PAPER 7;"LAND
ED!";AT 14,1;"PRESS A KEY"
1915 LET BON=BON+INT (FU/2)
1920 PRINT AT 4,14; FLASH 1;"BON
US"; FLASH 0;"  :          ";AT 4,
22;BON
1926 FOR X=1 TO 2: FOR Z=0 TO 10
: BEEP .03,Z: NEXT Z: NEXT X
1930 IF INKEY$="" THEN GO TO 193
0
1990 GO TO 8000
2010 FOR Z=1 TO 9
2020 IF I(Z)=24 OR I(Z)=16 THEN
GO TO 5600
2030 NEXT Z
2990 GO TO 1000
3000 REM ■ COL UND BALLOON ■
3010 DIM I(9)
3020 LET I(1)=ATTR (5,G)
3030 LET I(2)=ATTR (5,G+1)
3040 LET I(3)=ATTR (5,G+2)
3050 LET I(4)=ATTR (6,G)
3060 LET I(5)=ATTR (6,G+1)
3070 LET I(6)=ATTR (6,G+2)
3080 LET I(7)=ATTR (7,G)
3090 LET I(8)=ATTR (7,G+1)
```

Listing continued next page

```
3095 LET I(9)=ATTR (7,G+2): RETU
RN
3500 IF BA=-1 THEN LET BA=0: RET
URN
3510 PRINT AT 13,24+BA;" ": RETU
RN
4500 REM ■ FUEL BASE ■
4510 PRINT AT 4,14; FLASH 1;"BON
US"; FLASH 0;" "
4520 LET Y=0: FOR Z=1 TO 9: LET
Y=Y+(I(Z)=56): NEXT Z
4530 LET X=BON: LET BON=BON+FU+Y
*10
4540 FOR Z=X TO BON: PRINT AT 4,
22;Z: BEEP .001,(Z/BON)*60: NEXT
 Z
4550 IF INKEY$="" THEN GO TO 455
0
4560 PRINT AT 4,14;"HEIGHT : 0
": LET HE=0
4565 LET J(DI)=0
4570 LET BON=INT BON: LET TH=24:
 LET HE=2: FOR Z=3 TO 9: FOR X=D
 TO D+2: IF ATTR (Z,X)=56 THEN P
RINT AT Z,X; OVER 1; PAPER 4;" "
4575 NEXT X: NEXT Z
4580 LET FU=47-8*SK
4585 LET J(DI)=0: LET J(DI-1)=0:
 LET J(DI-2)=0: LET J(DI-3)=0: L
ET DI=DI-3
4590 GO TO 1000
5000 REM ■ FIX SCREEN ■
5010 BORDER 0: INK 7: PAPER 0: C
LS
5020 GO SUB 6000
5030 PLOT 6,153: DRAW 91,0: DRAW
 0,-147: DRAW -91,0: DRAW 0,147
5040 PLOT 102,153: DRAW 147,0: D
RAW 0,-99: DRAW -147,0: DRAW 0,9
9
5045 FOR Z=115 TO 239 STEP 8: PL
OT Z,23: PLOT Z,35: NEXT Z: FOR
Z=16 TO 99 STEP 6: PLOT 182,Z: P
LOT 231,Z: NEXT Z
5050 PLOT 102,49: DRAW 147,0: DR
AW 0,-43: DRAW -147,0: DRAW 0,43
5060 PRINT AT 4,14;"HEIGHT : ";H
E
5065 PRINT AT 6,15; INK 6;"■■■■■■
■";AT 6,23; INK 5;"■■■■■■■";
5070 PRINT AT 9,15; INK 6; INVER
SE 1;"THRUST";AT 9,23; INK 5;"-F
UEL+"
5080 INK 6: PLOT 119,128: DRAW 4
9,0: DRAW 0,-33: DRAW -49,0: DRA
W 0,33
5090 INK 5: PLOT 183,128: DRAW 4
9,0: DRAW 0,-33: DRAW -49,0: DRA
W 0,33
5100 INK 7
5110 PRINT AT 11,14;"DISTANCE :
";DI
5120 PRINT AT 13,14;"BALLAST : "
; INK 4;"■■■■■■■"
5170 GO SUB 7000
5175 PRINT #0;"SKILL LEVEL 1(EAS
```



```
Y) TO 5(HARD)"
5180 LET Z$=INKEY$: IF Z$>"5" OR
 Z$<"1" THEN GO TO 5180
5185 LET FU=47-8*(VAL Z$-1): LET
 SK=VAL Z$: BEEP .1,30: GO SUB 7
000: INPUT AT 0,0: PRINT #0;"  ©
 PAUL SMITH / ELLIS HORWOOD"
5190 RETURN
5500 REM ■ WINNER ■
5510 IF DI>100 THEN GO TO 1000
5520 PRINT AT 4,14; FLASH 1;"BON
US"; FLASH 0;" "
5530 LET Y=0: FOR Z=1 TO 9: LET
Y=Y+(I(Z)=48): NEXT Z
5540 LET X=BON: LET BON=BON+Y*20
+FU*2+BA*5
5550 FOR Z=X TO BON: PRINT AT 4,
22;Z: BEEP .001,(Z/BON)*60: NEXT
 Z
5555 PRINT AT 17,1; PAPER 7;"PRE
SS A KEY"
5560 IF INKEY$="" THEN GO TO 556
0
5590 GO TO 8000
5600 REM ■ CRASH ■
5610 PRINT AT 9,4; PAPER 7;"CRAS
H"
5620 LET BON=0
5625 BEEP 1,-20: FOR Z=10 TO 0 S
TEP -1: BEEP .1,Z: NEXT Z
5630 PRINT AT 4,14;"BONUS : 0
"
5640 GO TO 8000
6000 REM ■ TITLE ■
6010 PLOT 8,168: DRAW 20,0: DRAW
 0,-4: DRAW -16,0: DRAW 0,4: PLO
T 12,160: DRAW 0,4: DRAW 20,0: D
RAW 0,-4: DRAW -24,0
6020 PLOT 36,160: DRAW 0,8: DRAW
 24,0: DRAW 0,-8: DRAW 0,4: DRAW
 -24,0
6030 PLOT 64,168: DRAW 0,-8: DRA
W 24,0
6035 PLOT 92,168: DRAW 0,-8: DRA
W 24,0
6040 PLOT 120,160: DRAW 0,8: DRA
W 24,0: DRAW 0,-8: DRAW -24,0
6045 PLOT 148,160: DRAW 0,8: DRA
W 24,0: DRAW 0,-8: DRAW -24,0
6050 PLOT 176,160: DRAW 0,8: DRA
W 24,-8: DRAW 0,8
6060 PRINT AT 1,27;"© PS"
6090 RETURN
7000 REM ■ GRAPHIC UPDATE ■
7010 PRINT AT 7,15;"          ";AT 8
,15;"          ": PLOT 144,104: DRAW
 TH-24,15
7020 PRINT AT 7,23;"          ";AT 8
,23;"          ": PLOT 208,104: DRAW
 FU-24,15
7030 PRINT AT 4,23;INT HE;" "
7040 PRINT AT 11,25;ABS DI;" "
7090 RETURN
8000 REM ■ THE END ■
```

Listing continued next page

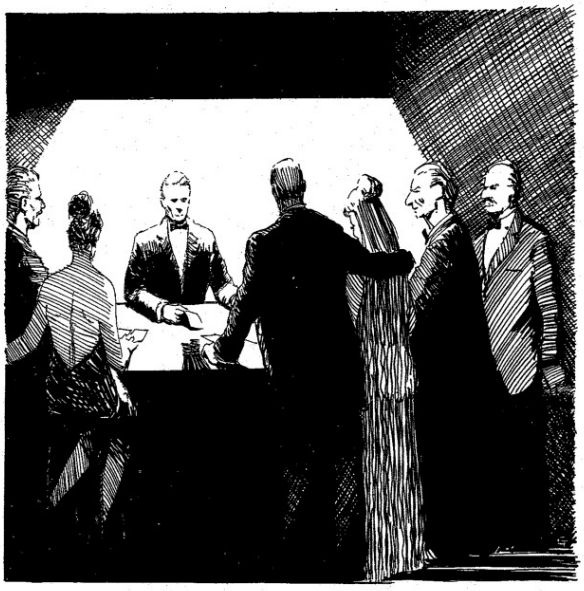
```
8005 BORDER 7: PAPER 7: INK 0
8008 FOR Z=0 TO 1: PRINT OVER 1;
AT Z,0;,,: NEXT Z
8009 INPUT 0,0: PRINT #0;"PLEASE
WAIT - CALCULATING SCORE."
8010 FOR Z=2 TO 21: PRINT AT Z,0
;,,: NEXT Z
8015 PLOT 5,153: DRAW 173,0: DRA
W 0,-139: DRAW -173,0: DRAW 0,13
9
8020 PLOT 23,143: DRAW 0,-112: D
RAW 152,0
8030 FOR Z=32 TO 144 STEP 16: PL
OT 16,Z: DRAW 7,0: NEXT Z
8040 FOR Z=40 TO 143 STEP 16: PL
OT 20,Z: DRAW 3,0: NEXT Z
8050 FOR Z=24 TO 183 STEP 16: PL
OT Z,24: DRAW 0,7: NEXT Z
8060 FOR Z=32 TO 184 STEP 16: PL
OT Z,28: DRAW 0,3: NEXT Z
8070 LET Z$="HEIGHT          0": FO
R Z=1 TO 14: PRINT AT Z+3,1; INK
 2;Z$(Z): NEXT Z
8080 PRINT AT 19,1; INK 2;"150
     DISTANCE  0"
8094 FOR Z=32 TO 178 STEP 10: PL
OT Z,53: PLOT Z,126: NEXT Z
8095 FOR Z=1 TO 151: LET FU=FU+(
J(Z)<30 AND J(Z)>0)-(J(Z)>95)/3:
 NEXT Z
8096 LET FU=INT FU: LET BON=INT
BON
8097 LET SC=FU+BON
8100 PRINT AT 3,23; PAPER 1; INK
 7;"SCORE:";AT 6,23;"BONUS:";AT
9,23;"FINAL";AT 10,25;"SCORE:"
8110 PRINT AT 4,25; PAPER 2; INK
 7;FU;AT 7,25;BON;AT 11,25;SC
8120 PRINT AT 13,23; PAPER 1; IN
K 7;"HI-SCORE"
8130 FOR Z=1 TO 6: PRINT PAPER Z
/2; INK 7;AT 14+Z,23;H$(Z, TO 4)
; INK Z/2; PAPER 7;H$(Z,5 TO ):
NEXT Z
8175 INK 2
8180 PLOT 108,33: DRAW 8,0
8185 PLOT 170,33: DRAW 8,0
8186 PLOT 24,33: DRAW 8,0
8190 PLOT 24,33
8195 INK 8: IF DI>-2 AND HE<2 TH
EN LET J(1)=0: IF DI>0 THEN LET
J(DI)=0
8200 FOR Z=2 TO 150
8205 IF J(151-Z)=-10.5 THEN GO T
O 8225
8210 DRAW 1,J(151-Z)-J(151-(Z-1)
)
8220 NEXT Z
8225 INPUT 0
8230 IF SC<VAL H$(6, TO 4) THEN
GO TO 8400
8240 FOR Z=6 TO 1 STEP -1
8250 IF SC>VAL H$(Z, TO 4) THEN
LET H$(Z+1)=H$(Z): LET H$(Z)="00
000"( TO 4-(LEN (STR$ SC)))+STR$
 SC+"-????": NEXT Z
```



```
8260 FOR Y=1 TO 6: PRINT PAPER Y
/2; INK 7;AT 14+Y,23;H$(Y, TO 4)
; INK Y/2; PAPER 7;H$(Y,5 TO ):
NEXT Y
8265 PRINT AT 21,0; PAPER 1; INK
 7;"PLEASE ENTER YOUR NAME"
8270 LET X=1: INK 0: LET X$="???
?"
8280 LET Z$=INKEY$
8290 IF Z$="" THEN GO TO 8280
8292 IF CODE Z$=13 THEN BEEP .1,
0: GO TO 8320
8295 LET X$(X)=Z$: LET X=X+1: IF
 X=5 THEN LET X=1
8296 BEEP .01,10
8300 PRINT AT 15+Z,28; FLASH 1;X
$
8305 IF INKEY$<>"" THEN GO TO 83
05
8310 GO TO 8280
8320 PRINT AT 15+Z,28;X$
8330 LET H$(Z+1,6 TO )=X$
8400 PRINT AT 21,0; PAPER 2; INK
 7;"(Y/N) FOR A HARD COPY?"
8410 IF INKEY$="Y" THEN PRINT AT
 21,0;,,: COPY : GO TO 8500
8420 IF INKEY$="N" THEN PRINT AT
 21,0;,,: GO TO 8500
8490 GO TO 8400
8500 INK 0: PRINT INVERSE 1;AT 2
1,0;"PRESS 1 FOR ANOTHER GO"
8510 IF INKEY$<>"1" THEN GO TO 8
510
8515 BEEP .2,30
8520 GO TO 400
9999 RUN
```

19

Blackjack



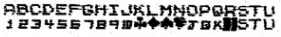
(48K)

This is the casino version of Blackjack (the rules are very similar to Pontoon, 21, or Vingt-et-un). The game allows up to nine players (plus a bank which is always played by the computer).

It is possible to let the computer play *everyone's* hands – including the bank's. However, although this is interesting to watch, it is not as exciting as playing yourself. But in order to play you may need some professional Blackjack terms explained.

Stay	: 'Stick' in Pontoon – in other words, you stay with the cards in your hand.
Hit me	: 'Twist' in Pontoon – in other words, give me another card.
Double down	: Similar to 'buy' in Pontoon – in other words, give me another card and I will double my stake. After this no further cards can be taken.
V (view hand)	: This feature allows you to see other players hands.
Split	: If you are dealt two identical cards, you can decide to 'split' them and play two separate hands. However, this will mean you have to increase your total stake to cover both hands, but of course you could end up winning twice.

Key to graphics characters



```
  5 REM
```

```
    © PAUL SMITH /
    ELLIS HORWOOD
```

```
  6 POKE 23658,8
 10 REM ■ UDG ■
 20 LET A$="000000008024000800800
28000000000065200206200320620000000
00006200201400206200000000003603
60620041004100000000006203206200200
62000000000065203206200340620000000
00006200200200200200000000065203
40620340620000000000006203406200200
02000000000045042042042045000025
02800810712710700800000802806212
70620280080000080280621271271070
08000054127127062062028003000000
00006200500504005600000000065203
40420380620000000000360400560360
34000"
 22 LET A$=A$+"24724724724724724
7247247"
 25 LET X=USR "A"
 30 FOR Z=1 TO LEN A$ STEP 3
 40 LET Z$=A$(Z)+A$(Z+1)+A$(Z+2
): POKE X,VAL Z$: LET X=X+1: NEX
T Z
200 REM ■ VARS ■
201 GO SUB 9700
205 RANDOMIZE
210 LET PL=1
220 LET MA=INT (RND*2)*100+900:
LET MI=INT (RND*2)*5+5
```

Listing continued next page

```
 230 DIM M(9): DIM S(9,2): DIM A
$(10,2,2,10)
 240 FOR Z=1 TO 9: LET M(Z)=1000
0: NEXT Z
 250 LET B$="23456789;;<=>?@ABCD
EFGHIJKLMNOPQRSTUVWXYZ[\]↑_£abcd
e"
 260 FOR Z=1 TO 100
 270 LET X=INT (RND*52+1): LET Y
=INT (RND*52+1)
 280 LET Z$=B$(X): LET B$(X)=B$(
Y): LET B$(Y)=Z$
 290 NEXT Z
 300 LET A=1
 310 DIM N$(9,8)
 320 LET C$="          "
 330 LET G$="12345678910JQK12345
678910JQK12345678910JQK": LET H$=
"♠♥♦♣"
 340 DIM N(9)
 350 DIM C(11)
 360 DIM I$(11,6): LET I$(1)=" A
CES ": LET I$(2)=" TWOS ": LET I
$(3)="THREES": LET I$(4)="FOURS
": LET I$(5)="FIVES ": LET I$(6)
="SIXES ": LET I$(7)="SEVENS": L
ET I$(8)="EIGHTS": LET I$(9)="NI
NES ": LET I$(10)=" TENS ": LET
I$(11)="ROYALS"
 370 FOR Z=1 TO 10: LET C(Z)=4:
NEXT Z: LET C(11)=12
 380 DIM O(10,2)
 400 PRINT AT 19,10; PAPER 1;"PR
ESS ENTER TO PLAY "
 410 BEEP .2,10: BEEP .2,10
 420 FOR Z=1 TO 400: IF CODE INK
EY$=13 THEN GO TO 450
 430 NEXT Z
 440 GO TO 410
 450 IF INKEY$<>"" THEN GO TO 45
0
 451 LET Z$="
            PRESS ANY KEY TO START
                                IN
..."
 THIS VERSION OF BLACKJACK,THE B
ANK(PLAYED BY THE COMPUTER) HAS
TO HIT UNTIL IT HAS REACHED 17 W
HERE IT MUST STAY... ALSO TH
IS VERSION ALLOWS PLAYERS TO USE
 ANY ACE CARD AS BEING EITHER 11
OR 1...
 460 FOR Z=1 TO 900
 465 PRINT AT 21,0; PAPER 1; INK
 7;Z$( TO 32)
 470 LET Z$=Z$(2 TO )+Z$(1)
 475 PAUSE 2
 480 IF INKEY$<>"" THEN BEEP .1,
0: GO TO 500
 490 NEXT Z
 500 REM ■ PICTURE ■
 510 PAPER 4: CLS
 515 PRINT #0;TAB 2; PAPER 2; IN
K 7;"© PAUL SMITH / ELLIS HORWOO
D"
 520 PAPER 2: INK 7
```



```
 560 PRINT "
K  PLAYER    BLACKJAC
 565 PRINT "
 580 PRINT AT 5,21; PAPER 1;"YOU
R  HAND"; PAPER 2;AT 7,21;"MNY:£
10000";AT 8,21;"STK:£     ";AT 9
,21;"SPLIT 0   "
 590 PRINT AT 11,0; PAPER 7; INK
 4;"                              
";,,;"
 600 PRINT AT 15,21; PAPER 1;"BA
NK$ HAND"; PAPER 2;AT 17,21;"DIS
CARD:   ";AT 18,21;"MAX:£     ";A
T 19,21;"MIN:£     "
 610 PRINT AT 21,0; PAPER 4;"
                                "
 620 PRINT AT 18,26;MA;AT 19,27;
MI
 700 PRINT AT 5,2;"THIS TABLE CA
N";AT 7,2;"PLAY UP TO NINE";AT 9
,1;"HOW MANY PLAYERS ?"
 705 LET Z$=INKEY$
 710 IF Z$>"9" OR Z$<"1" THEN GO
 TO 705
 715 BEEP .05,0
 720 LET MPL=VAL Z$
 730 PRINT AT 9,1; PAPER 1;"NUMB
ER OF PLAYERS:";MPL
 740 FOR Z=1 TO MPL
 741 PRINT PAPER 4;AT 15,10;"
                "
 742 FOR Y=17 TO 19: PRINT PAPER
 4;AT Y,1;"                  ":
NEXT Y
 745 PRINT AT 15,2; PAPER 1;"PLA
YER ";Z
 750 PRINT AT 17,1;"ENTER YOUR N
AME"
 760 PRINT AT 19,2;">--------"
 765 LET X=1
 770 LET Z$=INKEY$
 775 IF Z$="" THEN GO TO 770
 780 IF CODE Z$=13 THEN GO TO 82
0
 790 LET N$(Z,X)=Z$
 800 PRINT AT 19,2+X;Z$
 801 LET X=X+1: IF X=9 THEN LET
X=1
 802 BEEP .02,40
 805 IF INKEY$<>"" THEN GO TO 80
5
 810 GO TO 770
 820 IF N$(Z)="          " THEN LE
T N$(Z)="PLAYER "+STR$ Z
 822 BEEP .05,0
 823 LET T=0: FOR Y=1 TO 8: IF N
$(Z,Y)<>" " THEN LET T=T+1
 824 NEXT Y: LET N(Z)=T: FOR Y=1
 TO T: LET N(Z)=N(Z)+(N$(Z,Y)="
```

Listing continued next page

```
"): NEXT Y
 825 IF INKEY$<>"" THEN GO TO 82
5
 826 PRINT AT 1,30;Z;AT 2,23;N$(
Z)
 850 PRINT AT 15,2; PAPER 1;"PLA
YER ";Z;"-";N$(Z, TO N(Z))
 855 PRINT AT 17,1; PAPER 4;" "
 860 PRINT AT 17,2;"DO YOU WANT
THE";AT 18,2;"COMPUTER TO PLAY";
AT 19,2;"THIS HAND (Y/N) ?"
 880 IF INKEY$="N" THEN LET C$(Z
)="N": GO TO 900
 885 IF INKEY$="Y" THEN LET C$(Z
)="Y": GO TO 900
 890 GO TO 880
 900 BEEP .05,10: NEXT Z
 905 GO SUB 8000
 910 FOR Z=5 TO 9: PRINT PAPER 4
;AT Z,0;"                      ":
NEXT Z
 920 FOR Z=15 TO 19: PRINT PAPER
 4;AT Z,0;"                      "
: NEXT Z
1000 REM ■ PLAY ■
1005 LET SP=1: GO SUB 6000
1010 LET A1=1: LET B1=1
1015 FOR W=1 TO 2
1020 FOR Y=1 TO MPL
1030 GO SUB 5000
1040 LET A$(Y,1,1,A1)=E$
1050 LET A$(Y,1,2,A1)=F$
1060 NEXT Y
1070 LET PL=1: LET SP=1: GO SUB
5100
1080 GO SUB 5000
1090 LET A$(10,1,1,B1)=E$
1100 LET A$(10,1,2,B1)=F$
1110 IF B1=1 THEN GO SUB 5200
1120 LET A1=A1+1: LET B1=B1+1
1130 NEXT W
1140 FOR Z=15 TO 19: PRINT AT Z,
5; INK 0; PAPER 7;"■"; PAPER 4;"
■ ": NEXT Z
1150 LET PL=10: GO SUB 5300: IF
T<>21 THEN GO TO 1190
1155 BEEP 1,-10
1160 FOR Z=5 TO 9: PRINT AT Z,0;
 PAPER 4;"                      "
: NEXT Z: PRINT AT 12,0; PAPER 7
;,,
1162 LET B1=2: GO SUB 5200: FOR
Z=1 TO 50: NEXT Z: PRINT AT 17,1
0;"NATURAL !": PRINT AT 5,1;"DRA
WING NATURALS !";AT 7,1;"PLAYERS
 -";AT 9,1;"HARD LUCK OTHERS"
1165 FOR P=1 TO MPL
1170 LET PL=P: GO SUB 5300: IF T
=21 THEN BEEP .1,20: PRINT AT 7,
10+P; PAPER 1;P: LET O(P,1)=100
1175 NEXT P: LET O(10,1)=100
1176 FOR Z=1 TO 300: IF INKEY$="
" THEN NEXT Z
1177 FOR Z=5 TO 9 STEP 2: PRINT
AT Z,0; PAPER 4;"
        ": NEXT Z
```



```
1180 GO TO 2000
1190 LET PL=1
1200 LET SP=1
1205 IF M(PL)=0 THEN LET O(PL,1)
=-200: GO TO 1500
1210 PRINT AT 1,30;PL
1220 PRINT AT 2,23;N$(PL)
1230 PRINT AT 7,26;"      ";AT 7,
26;M(PL)-S(PL,1)-S(PL,2)
1240 PRINT AT 8,26;"      ";AT 8,
26;S(PL,SP)
1250 PRINT AT 9,27;SP
1255 PRINT AT 12,2;"ARE YOU READ
Y ";N$(PL, TO N(PL));" ?"
1256 IF C$(PL)="Y" THEN GO TO 12
58
1257 IF INKEY$="" THEN GO TO 125
6
1260 GO SUB 5300
1270 IF T=21 THEN GO TO 7300
1280 IF A$(PL,2,1,1)=" " AND A$(
PL,SP,1,1)=A$(PL,SP,1,2) THEN GO
 TO 6500
1290 PRINT AT 12,0; PAPER 7;,,
1300 PRINT AT 12,0;N$(PL, TO N(P
L));"-";T;"-STAY,HIT,DOUBLE DOWN
"
1310 LET Z$=INKEY$
1311 IF C$(PL)="Y" THEN GO SUB 5
500
1315 IF Z$<>"" AND Z$<>"C" THEN
PRINT AT 12,0; PAPER 7;,,
1320 IF (Z$>="1" AND Z$<="9") OR
 Z$="T" OR Z$="R" THEN BEEP .03,
40: GO TO 5400
1340 IF Z$="S" THEN BEEP .02,20:
 GO TO 1400
1350 IF Z$="D" THEN BEEP .02,50:
 GO TO 7100
1360 IF Z$="H" THEN LET Z$="": B
EEP .02,10: GO TO 7000
1370 IF Z$="C" THEN GO SUB 9500
1380 IF Z$="V" THEN BEEP .02,30:
 GO SUB 5600
1390 GO TO 1300
1400 REM ■ STAY ■
1405 PRINT AT 12,0; PAPER 7;,,
1410 GO SUB 5300: LET O(PL,SP)=T
1420 PRINT AT 12,3;"STAY": FOR Z
=1 TO 50: NEXT Z
1430 BEEP .1,10: BEEP .1,10
1500 REM ■ NEXT TURN ■
1510 IF A$(PL,2,1,1)=" " THEN GO
 TO 1550
1520 IF SP=2 THEN GO TO 1550
1530 LET SP=2
1540 GO TO 1600
1550 IF PL=MPL THEN GO TO 1700
1560 LET PL=PL+1
1570 LET SP=1
1600 FOR Z=5 TO 9: PRINT AT Z,0;
 PAPER 4;"                      ":
 NEXT Z
1610 LET A1=1
```

Listing continued next page

```
1620 GO SUB 5100
1630 LET A1=A1+1
1640 IF A$(PL,SP,1,A1)=" " THEN
GO TO 1660
1650 GO TO 1620
1680 IF SP=2 THEN GO TO 1210
1690 GO TO 1200
1700 REM ■ PLAYERS OVER ■
1710 FOR Z=5 TO 9: PRINT AT Z,0;
 PAPER 4;"                ":
 NEXT Z
1720 PRINT AT 12,0;"BANKER IS PL
AYING - PLEASE WAIT."
1730 PRINT AT 1,30;"B";AT 2,23;"
 BANKER "
1740 PRINT AT 7,26;"▗▄▄▄▄▖";AT 8,
26;"▐    ▌";AT 9,26;"▝▀▀▀▀▘"
1750 LET B1=2: GO SUB 5200: LET
B1=3: LET PL=10: LET SP=1
1760 GO SUB 5300
1770 IF T>16 THEN GO TO 1800
1780 GO SUB 5000: LET A$(10,1,1,
B1)=E$: LET A$(10,1,2,B1)=F$: GO
 SUB 5200: LET B1=B1+1
1785 BEEP .02,10
1790 GO TO 1760
1800 IF T>21 THEN LET O(10,1)=-9
0: PRINT AT 17,5;"BUST": BEEP .4
,0: GO TO 2000
1810 LET O(10,1)=T
1820 PRINT AT 17,5;"STAY"
1830 BEEP .2,20
2000 REM ■ SETTLEMENT ■
2010 PRINT AT 12,0;"CALCULATING
WINNINGS AND LOSSES."
2020 FOR Z=1 TO MPL
2025 LET SP=1
2030 PRINT AT 5,1; PAPER 1;"PLAY
ER ";Z;":"; PAPER 2;N$(Z, TO N(Z
)); PAPER 4;"                "( TO 9-N(
Z))
2031 IF O(Z,SP)>O(10,1) THEN LET
 M(Z)=M(Z)+S(Z,SP): LET Y$="WIN!
"
2032 IF O(Z,SP)<O(10,1) THEN LET
 M(Z)=M(Z)-S(Z,SP): LET Y$="LOSE
"
2033 IF O(Z,SP)=O(10,1) THEN LET
 Y$="DRAW"
2040 PRINT AT 7,1; PAPER 1;"STAK
E:"; PAPER 4;"          ";AT 7,7; PA
PER 2;"£";S(Z,SP)
2050 PRINT AT 9,1; PAPER 1;"MONE
Y:"; PAPER 4;"          ";AT 9,7; PA
PER 2;"£";M(Z);AT 9,14;"SPT:";SP
2060 PRINT AT 7,15;Y$
2065 PRINT AT 12,0; PAPER 7;,,;A
T 12,3; PAPER 2;"PRESS ANY KEY T
O CONTINUE"
2070 FOR X=1 TO 300
2080 IF INKEY$="" THEN NEXT X
2090 PRINT AT 12,0; PAPER 7;,,
2094 BEEP .1,10
2095 IF INKEY$<>"" THEN GO TO 20
95
2100 IF O(Z,2)<>0 THEN LET SP=SP
```



```
+1: IF SP=2 THEN GO TO 2030
2110 NEXT Z
2111 IF (MPL+1)*6+A<52 THEN GO T
O 2120
2112 PRINT AT 12,0; PAPER 7;,,;
PRINT AT 12,2;"PLEASE WAIT WHILE
 I SHUFFLE"
2114 LET U$=STR$ A+"  ": PRINT A
T 17,29; FLASH 1;U$(1); INVERSE
1;U$(2): FOR P=1 TO 20: BEEP .01
,20: NEXT P
2115 FOR P=1 TO 100: LET U=INT (
RND*52+1): LET V=INT (RND*52+1):
 LET U$=B$(U): LET B$(U)=B$(V):
LET B$(V)=U$: NEXT P: PRINT AT 1
7,29;"1 ": LET A=1: BEEP .2,0
2116 FOR Z=1 TO 10: LET C(Z)=4:
NEXT Z: LET C(11)=12
2117 LET B$=B$(20 TO )+B$( TO 19
)
2120 DIM A$(10,2,2,10): DIM O(10
,2): LET PL=1: LET SP=1
2125 FOR Z=1 TO 9
2126 IF M(Z)<1 THEN LET M(Z)=0
2127 NEXT Z
2130 FOR Z=5 TO 9: PRINT AT Z,0;
 PAPER 4;"                ":
 NEXT Z
2140 FOR Z=15 TO 19: PRINT AT Z,
0; PAPER 4;"
": NEXT Z
2150 FOR Z=1 TO MPL
2160 IF Z<6 THEN PRINT PAPER Z/3
;AT Z+4,2;N$(Z);"-£      ";AT Z+4
,12;M(Z)
2170 IF Z>5 THEN PRINT PAPER Z/3
;AT Z+9,2;N$(Z);"-£      ";AT Z+9
,12;M(Z)
2180 NEXT Z: LET H=H+1: PRINT AT
 12,0; PAPER 7;,,: PRINT AT 12,2
;"1 HAND TO GO !": IF MH-H<>1 TH
EN PRINT PAPER 2;AT 12,2;MH-H;"
HANDS TO GO !"
2185 IF H=MH THEN GO TO 9000
2186 FOR Z=1 TO 50*MPL+50: BEEP
.001,-30: IF INKEY$="" THEN NEXT
 Z
2187 FOR Z=5 TO 9: PRINT AT Z,0;
 PAPER 4;"                ":
 NEXT Z
2188 FOR Z=15 TO 19: PRINT AT Z,
0; PAPER 4;"
": NEXT Z
2189 PRINT AT 12,0; PAPER 7;,,
2190 GO TO 1000
2999 STOP
5000 REM ■ PICK A CARD ■
5005 LET X=CODE (B$(A))-49
5010 LET E$=G$(X): LET F$=H$(INT
 ((X-1)/13)+1)
5020 PRINT AT 17,29;A
5030 LET A=A+1
5040 IF E$>"■" THEN LET C(11)=C(
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```
11)-1: GO TO 5060
5050 LET C(CODE E$-143)=C(CODE E
$-143)-1
5090 RETURN
5100 REM ■ PRINT CARD ■
5110 IF A1=1 THEN FOR Z=5 TO 9:
PRINT INK 7; PAPER 4;AT Z,1;"■■■
■■ ": NEXT Z: PRINT PAPER 7; INK
 (A$(PL,SP,2,A1)="♥" OR A$(PL,SP
2,A1)="♦")*2;AT 5,4;A$(PL,SP,2,A
1);AT 6,4;A$(PL,SP,1,A1);AT 8,2;
A$(PL,SP,2,A1);AT 9,2;A$(PL,SP,1
,A1)
5120 IF A1>1 THEN FOR Z=5 TO 9:
PRINT INK 7; PAPER 4;AT Z,2*A1+1
;"■■■ ": NEXT Z: PRINT PAPER 7; I
NK (A$(PL,SP,2,A1)="♥" OR A$(PL,
SP,2,A1)="♦")*2;AT 5,2*A1+2;A$(P
L,SP,2,A1);AT 6,2*A1+2;A$(PL,SP,
1,A1)
5190 RETURN
5200 REM ■ PRINT BANK ■
5210 IF B1=1 THEN FOR Z=15 TO 19
: PRINT INK 7; PAPER 4;AT Z,1;"■
■■■ ": NEXT Z: PRINT PAPER 7; IN
K (A$(10,1,2,B1)="♥" OR A$(10,1,
2,B1)="♦")*2;AT 15,4;A$(10,1,2,B
1);AT 16,4;A$(10,1,1,B1);AT 18,2
;A$(10,1,2,B1);AT 19,2;A$(10,1,1
,B1)
5220 IF B1>1 THEN FOR Z=15 TO 19
: PRINT INK 7; PAPER 4;AT Z,2*B1
+1;"■■■ ": NEXT Z: PRINT PAPER 7;
 INK (A$(10,1,2,B1)="♥" OR A$(10
,1,2,B1)="♦")*2;AT 15,2*B1+2;A$(
10,1,2,B1);AT 16,2*B1+2;A$(10,1,
1,B1)
5290 RETURN
5300 REM ■ TOTAL ■
5310 LET T=0: LET Z=1
5320 IF A$(PL,SP,1,Z)=" " THEN G
O TO 5350
5330 IF A$(PL,SP,1,Z)>"9" THEN L
ET T=T+10: GO TO 5350
5340 LET T=T+CODE A$(PL,SP,1,Z)-
143
5350 LET Z=Z+1: GO TO 5320
5360 FOR Z=1 TO 10
5370 IF A$(PL,SP,1,Z)="1" AND T<
12 THEN LET T=T+10
5380 NEXT Z
5390 RETURN
5400 REM ■ MEMORY ■
5410 IF Z$>="1" AND Z$<="9" THEN
 PRINT AT 12,2;I$(CODE Z$-48);":
";C(CODE Z$-48)
5420 IF Z$="T" THEN PRINT AT 12,
2;I$(10);":";C(10)
5430 IF Z$="A" THEN PRINT AT 12,
2;I$(11);":";C(11)
5440 IF INKEY$<>"" THEN GO TO 54
40
5450 PRINT AT 12,0; PAPER 7;,,
5490 GO TO 1300
5500 REM ■ COMPUTERS GO ■
5510 GO SUB 5300
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```
5530 IF T<10 THEN LET Z$="H": RE
TURN
5540 IF T>9 AND CODE G$(CODE B$(
A)-49)-143+T>17 AND CODE G$(CODE
 B$(A)-49)-143+T<22 AND T<14 THE
N LET Z$="D": RETURN
5545 LET TA=0: FOR Z=1 TO 10: IF
 A$(PL,SP,1,Z)="1" THEN LET TA=T
A+1
5546 NEXT Z
5547 IF CODE G$(CODE B$(A)-49)-1
43+T<18 AND TA>0 THEN LET Z$="H"
: RETURN
5548 IF T>19 THEN LET Z$="S": RE
TURN
5549 IF T<13 THEN LET Z$="H": RE
TURN
5550 IF CODE G$(CODE B$(A)-49)-1
43<22-T THEN LET Z$="H": RETURN
5555 IF T=10 THEN LET Z$="D": RE
TURN
5560 LET Z$="S": RETURN
5600 REM ■ VIEW ■
5605 LET Y$="1"
5610 PRINT AT 12,3;"PRESS PLAYER
S NUMBER (1-";MPL;")"
5620 LET X$=INKEY$
5630 IF X$>STR$ MPL OR X$<"1" TH
EN GO TO 5620
5631 IF A$(PL,2,1,1)=" " THEN GO
 TO 5640
5632 IF INKEY$<>"" THEN GO TO 56
32
5633 PRINT AT 12,3; PAPER 1;"PRE
SS SPLIT NUMBER (1-2)"; PAPER 7;
" "
5634 LET Y$=INKEY$
5635 IF Y$>"2" OR Y$<"1" THEN GO
 TO 5634
5640 PRINT AT 12,0; PAPER 7;,,
5650 LET A2=A1: LET A1=1: LET PL
1=PL: LET PL=VAL X$: LET SP1=SP:
 LET SP=VAL Y$
5655 FOR Z=5 TO 9: PRINT PAPER 4
;AT Z,0;"                    ":
NEXT Z
5660 IF A$(PL,SP,1,A1)=" " THEN
GO TO 5660
5670 GO SUB 5100: LET A1=A1+1: G
O TO 5660
5680 GO SUB 5300: PRINT AT 12,0;
,,;AT 12,0;N$(PL, TO N(PL));" S
HAND-TOTAL:";T;"-SPLIT:";SP
5690 FOR Z=1 TO 100: IF CODE INK
EY$<>13 THEN NEXT Z
5700 PRINT PAPER 1;AT 12,0;"   P
RESS ENTER TO RETURN    "
5705 FOR Z=1 TO 50: IF CODE INKE
Y$<>13 THEN NEXT Z
5710 IF CODE INKEY$<>13 THEN GO
TO 5680
5720 LET A1=1: LET PL=PL1: LET S
P=SP1
```

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5725 FOR Z=5 TO 9: PRINT PAPER 4
;AT Z,0;"                    ":
NEXT Z
5730 GO SUB 5100: LET A1=A1+1: I
F A$(PL,SP,1,A1)<>" " THEN GO TO
 5730
5770 GO SUB 5300
5780 PRINT AT 12,0; PAPER 7;,,
5790 RETURN
6000 REM ■ STAKES ■
6005 PRINT AT 7,26;"     ";AT 7,
26;M(PL);AT 9,26;"0    "
6010 FOR Z=1 TO MPL
6011 IF M(Z)=0 THEN LET S(Z,1)=0
: LET S(Z,2)=0: NEXT Z
6015 PRINT AT 7,26;"     ";AT 7,
26;M(Z)
6020 PRINT AT 1,30;Z;AT 2,23;N$(
Z)
6030 PRINT AT 12,0;N$(Z, TO N(Z)
);"-PLEASE ENTER YOUR STAKE"
6040 PRINT AT 8,26;S(Z,SP);"----
-"( TO 5-LEN (STR$ S(Z,SP)))
6045 LET X=1: LET X$=STR$ S(Z,SP
)+"      "( TO 5-LEN (STR$ S(Z,SP
)))
6050 IF C$(Z)="Y" THEN PRINT AT
8,26;"  ": GO SUB 9600: LET X
$=STR$ TB: PRINT AT 8,25;X$: GO
TO 6100
6060 LET Z$=INKEY$
6065 IF CODE Z$=13 THEN GO TO 61
00
6070 IF Z$<"0" OR Z$>"9" THEN GO
 TO 6060
6080 LET X$(X)=Z$: PRINT AT 8,25
+X;Z$
6085 LET X=X+1: IF X=6 THEN LET
X=1
6088 BEEP .05,40
6089 IF INKEY$<>"" THEN GO TO 60
89
6090 GO TO 6060
6100 BEEP .1,10
6101 IF VAL X$>MA THEN LET X$=ST
R$ MA
6102 IF VAL X$<MI THEN LET X$=ST
R$ MI
6103 IF VAL X$>M(Z) THEN LET X$=
STR$ M(Z)
6105 LET S(Z,SP)=VAL X$
6106 PRINT AT 12,0; PAPER 7;,,
6110 NEXT Z
6120 PRINT AT 1,30;"1";AT 2,23;N
$(1)
6190 RETURN
6500 REM ■ SPLIT ■
6510 PRINT AT 12,2; PAPER 1;"DO
YOU WANT TO SPLIT (Y/N) ?"
6520 LET Y$=INKEY$
6521 IF C$(PL)="Y" THEN LET Y$="
N": IF (A$(PL,SP,1,1)<"8" AND A$
(PL,SP,1,1)>"5") OR A$(PL,SP,1,1
)="1" THEN LET Y$="Y"
6525 IF Y$="Y" THEN BEEP .02,0:
GO TO 6550
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6530 IF Y$="N" THEN GO TO 1290
6540 GO TO 6520
6570 LET A$(PL,2,1,1)=A$(PL,1,1,
2)
6580 LET A$(PL,2,2,1)=A$(PL,1,2,
2)
6590 LET A1=2: GO SUB 5000
6600 LET A$(PL,1,1,2)=E$
6610 LET A$(PL,1,2,2)=F$
6620 GO SUB 5000
6630 LET A$(PL,2,1,2)=E$
6640 LET A$(PL,2,2,2)=F$
6650 LET SP=1: PRINT AT 9,27;SP;
 GO SUB 5100: LET S(PL,2)=S(PL,1
)
6660 LET A1=3
6670 GO SUB 5300
6680 PRINT AT 12,0; PAPER 7;,,
6690 GO TO 1210
7000 REM ■ HIT PLAYER ■
7010 GO SUB 5000
7020 LET A$(PL,SP,1,A1)=E$
7030 LET A$(PL,SP,2,A1)=F$
7040 GO SUB 5100
7045 LET A1=A1+1
7050 GO SUB 5300
7060 IF T>21 THEN GO TO 7200
7090 GO TO 1315
7100 REM ■ DOUBLE DOWN ■
7102 PRINT AT 12,3;"DOUBLE DOWN"
7105 IF M(PL)-(S(PL,1)*2)<0 THEN
 PRINT AT 12,2; PAPER 1;"YOU HAV
EN'T GOT ENOUGH MONEY": BEEP 2,-
10: FOR Z=1 TO 60: NEXT Z: PRINT
 AT 12,0; PAPER 7;,,: GO TO 1300
7110 LET S(PL,SP)=S(PL,SP)*2
7120 PRINT AT 7,26;"     ";AT 7,
26;M(PL)-S(PL,1)-S(PL,2);AT 8,26
;S(PL,SP)
7130 LET Z$="S": GO TO 7000
7200 REM ■ PLAYER BUST ■
7210 LET O(PL,SP)=-100
7220 PRINT AT 12,4;"BUST": FOR Z
=1 TO 50: NEXT Z
7230 FOR Z=10 TO 1 STEP -1: BEEP
 .01,Z: NEXT Z
7290 GO TO 1500
7300 REM ■ PLAYER BJ ■
7305 PRINT AT 12,0; PAPER 7;,,
7310 LET O(PL,SP)=100
7320 PRINT AT 12,4;"NATURAL !"
7330 FOR Y=1 TO 2: FOR Z=1 TO 10
: BEEP .01,Z: NEXT Z: NEXT Y
7340 LET S(PL,SP)=S(PL,SP)*1.5
7350 LET S(PL,SP)=INT S(PL,SP)
7390 GO TO 1500
8000 REM ■ MAX HANDS ■
8010 PRINT AT 12,0; PAPER 7;,,,
8020 PRINT AT 12,1;"END OF GAME
AT ----- HANDS"
8030 LET X$="0    ": LET X=1
8040 LET Z$=INKEY$
8045 IF CODE Z$=13 THEN GO TO 81
00
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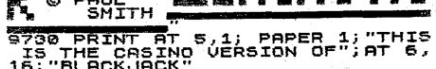
8050 IF Z$<"0" OR Z$>"9" THEN GO
 TO 8040
8060 BEEP .02,40: LET X$(X)=Z$
8070 PRINT AT 12,15+X;Z$
8080 LET X=X+1: IF X=6 THEN LET
X=1
8090 IF INKEY$<>"" THEN GO TO 80
90
8095 GO TO 8040
8100 IF VAL X$<2 THEN BEEP 1,0:
GO TO 8040
8110 LET MH=VAL X$
8120 LET H=0
8125 BEEP .1,20
8130 IF MH>20 THEN LET MH=20: PR
INT AT 12,0; PAPER 7;,,: PRINT A
T 12,3;"MAXIMUM IS 20 !": FOR P=
1 TO 50: NEXT P
8190 RETURN
9000 REM ■ THE END ■
9001 LET MA=0: LET X$="          "
: FOR Z=1 TO 9
9002 IF M(Z)>MA THEN LET MA=M(Z)
: LET X$=N$(Z, TO N(Z))
9003 NEXT Z
9004 PRINT AT 20,5; FLASH 1; PAP
ER 0;X$;" WINS"
9010 PRINT AT 12,0; PAPER 1;"PRE
SS ENTER TO PLAY ANOTHER GAME"
9020 IF CODE INKEY$<>13 THEN GO
TO 9020
9030 BEEP .1,20: RUN 200
9500 REM ■ CHEET ■
9510 LET X=CODE (B$(A))-49: PRIN
T AT 12,30; PAPER 0;G$(X);H$(INT
 ((X-1)/13)+1)
9520 BEEP .1,0
9530 IF INKEY$<>"" THEN GO TO 95
30
9580 PRINT AT 12,30; PAPER 7;"
"
9590 RETURN
9600 REM ■ COMPUTER STAKE ■
9605 LET TB=100
9610 FOR P=1 TO MPL
9620 IF P<>Z THEN IF M(P)>TB THE
N LET TB=M(P)
9630 NEXT P
9640 LET TB=TB-M(Z)
9645 IF TB<0 THEN LET TB=0
9650 LET TB=TB+50
9690 RETURN
9700 REM ■ HELP ■
9710 BORDER 7: INK 7: PAPER 4: C
LS : PAPER 2
9720 PRINT "
```

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"
9730 PRINT AT 5,1; PAPER 1;"THIS
 IS THE CASINO VERSION OF";AT 6,
16;"BLACKJACK"
9740 PRINT AT 8,1;"THE COMPUTER
WILL ACT AS BANK";AT 9,3;"AND CA
N ALSO PLAY UP TO NINE";AT 10,22
;"PLAYERS."
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9750 PRINT AT 12,1;"YOU AND UP T
O EIGHT OTHER";AT 13,6;"PEOPLE C
OULD ALSO PLAY."
9760 PRINT PAPER 1;AT 15,1;"THE
OBJECT OF THE GAME IS TO";AT 16,
2;"MAKE AS MUCH MONEY AS YOU CAN
";AT 17,3;"IN THE DESIGNATED NUM
BER OF";AT 18,4;"HANDS OR ROUNDS
."
9770 PRINT AT 20,2; PAPER 3;"PRE
SS ENTER TO SEE THE KEYS "; FLAS
H 1;">"
9780 IF CODE INKEY$<>13 THEN GO
TO 9780
9790 FOR Z=4 TO 21: PRINT AT Z,0
; PAPER 4;,,: NEXT Z
9800 PRINT AT 5,1; PAPER 1;"THE
KEY'S FUNCTIONS -";AT 7,1;"S";AT
 7,16;"H";AT 9,1;"D";AT 9,18;"U"
;AT 11,1;"KEYS 1 TO 9,T & R"
9810 PAINT PAPER 4;AT 7,3;"-";AT
 7,18;"-";AT 9,3;"-";AT 9,20;"-"
;AT 11,19;"-"
9820 PRINT AT 7,5;"STAY";AT 7,20
;"HIT ME";AT 9,5;"DOUBLE DOWN";A
T 9,22;"VIEW HAND"
9830 PRINT AT 11,21;"SHOW HOW";A
T 12,19;"MANY OF THAT";AT 13,6;"
PARTICULAR CARD ARE STILL";AT 14
,8;"LEFT IN THE PACK."
9840 PRINT PAPER 3;AT 16,1;"PLEA
SE WAIT WHILE I SHUFFLE";AT 17,3
;"THEN AFTER THE TONE "; FLASH 1
;"-"
9890 RETURN
9999 RUN
```

20
Adjudicator

(48K)

This is the longest game in the book, but it is well worth typing in. The wide range of graphics which are used make the game a fascinating one to play, and instructive for those who want to design their own games.

The object of the game is to keep the enemy out of your base. But, because the game is played over a long time scale (from the 15th to the 21st centuries) the enemies' weapons change from cannons to aircraft and tanks: your base also changes form, transforming itself from a medieval castle to a nuclear reactor.

There are two basic game types which can be chosen: four or eight 'lives' may be selected by the player.

When playing the game you can increase your final score by guessing how many vehicles or objects you have destroyed. The computer will ask you to select from a list the number of vehicles or objects destroyed. Just to make things difficult, there is a time limit on your choice.

The graphics character set available in the ZX Spectrum is limited to twenty-one characters, whereas this program requires a total of forty. As you will have realized, you do not need to limit yourself to the character set available in the computer hardware, as long as you can be sufficiently inventive in how you define graphics characters.

Key to graphics characters: (half of total number of characters only; the rest are re-defined automatically in the game)

ABCDEFGHIJKLMNOPQRSTU

```
    1 REM ** PAUL SMITH **
          ELLIS HORWOOD
    5 BEEP .001,65
    6 OVER 0
   10 FOR A=USR "A" TO USR "E"+7
   20 READ B: POKE A,B: NEXT A
   30 DATA 255,68,68,255,17,17,25
5,0,0,0,0,0,7,31,63,127,0,0,0,0,
192,240,248,252,127,66,66,70,78,
84,127,0,252,68,212,196,220,92,2
52,0
   90 GO SUB 100: GO TO 200
  100 REM HI SCORE VARIABLES
  110 DIM K$(2,6,16)
  120 FOR Z=1 TO 2
  130 LET K$(Z,1)="00000-ADJUDICA
TE":: LET K$(Z,2)="00000-
    :: LET K$(Z,3)="00000-COPYRIGH
T  :: LET K$(Z,4)="00000-© P.SMIT
H  :: LET K$(Z,5)="00000- E.HORWO
OD"
  135 LET K$(Z,6)=K$(Z,2)
  140 NEXT Z
  190 RETURN
  200 REM VARIABLES
  205 GO SUB 9400
  210 LET YEAR=INT (RND*60+1411)
  220 LET SCR=0: LET SHE=1
  230 LET SKI=100
  240 LET DE=0: LET G$="
":: LET F$="                "
  250 LET TOT=0
  260 LET SIZE=8
  300 REM INITIALISE
  310 BORDER 7: PAPER 7: INK 0: C
LS
  320 GO SUB 9000
  330 PLOT 4,148: DRAW 104,0: DRA
W 0,-128: DRAW -104,0: DRAW 0,12
8
  340 GO SUB 9700
```

Listing continued next page

```
 350 PRINT AT 4,1; INVERSE 1;"©
PAUL SMITH";AT 6,1;"KEYS";AT 13,
1;"PRESS"
 360 PRINT AT 5,6;"-";AT 13,7;"-
"
 370 PRINT AT 8,1; PAPER 1; INK
7;"1-5 DRAW";AT 9,7;"BRIDGE";AT
10,1;"6-0 TOWER";AT 11,6;"DEFENC
E"; PAPER 2;AT 15,1;"4 LIFE GAME
";AT 17,1;"8 LIFE GAME"
 390 INK 7: PAPER 0
 391>LET Z$="
                COPYRIGHT © PAUL SM
ITH / ELLIS HORWOOD
                        PRESS ANY KEY
 TO START...      WELCOME TO ADJU
DICATOR...      THE OBJECT OF THE
 GAME IS TO KEEP THE ENEMY OUT A
ND LET YOUR FRIENDS IN YOUR BASE
...        WATCH OUT ! -THE ENEMIE
S' WEAPONS CHANGE FROM CANNONS T
O AIRCRAFT AND TANKS...          YOU
CAN INCREASE YOUR FINAL SCORE BY
 GUESSING HOW MANY VEHICLES OR O
BJECTS YOU HAVE DESTROYED.YOU HA
VE TO SELECT FROM A LIST OF SIX,
AND JUST TO MAKE THINGS DIFFICUL
T THERE IS A TIME LIMIT ON YOUR
CHOICE...                "
 392 PRINT PAPER RND*2+1;AT 20,1
;Z$( TO 30)
 393 PAUSE 2: LET Z$=Z$(2 TO )+Z
$(1)
 394 IF INKEY$<>"" THEN BEEP .1,
0: GO TO 400
 395 GO TO 392
 400 OVER 1: FOR Z=1 TO 8
 410 PLOT Z+7,46: DRAW 0,7
 420 PLOT 8,Z+31: DRAW 7,0
 430 IF INKEY$="4" THEN LET SIZE
=4: GO TO 460
 440 IF INKEY$="8" THEN LET SIZE
=8: GO TO 460
 450 NEXT Z: GO TO 400
 460 OVER 0: PAPER 7: INK 0
 470 BEEP .1,0
 980 BORDER 0: PAPER 0: INK 7: C
LS
1000 REM SETUP
1020 GO SUB 9000
1021 GO SUB 7000
1022 GO SUB 9400
1023 PRINT #0;"ENEMY:▝▀ & ▘▜   R
EADY ?"
1024 IF INKEY$="" THEN GO TO 102
4
1025 BEEP .1,20: INPUT 0
1030 LET A$="                    ":
LET B$="      "
1050 LET A=0: LET B=0: LET F=111
: PLOT 138,111: DRAW 8,4: DRAW -
8,4
1060 PRINT AT 20,14; INK 5;"SCOR
E:";AT 21,14;"YEAR:";AT 20,20; I
NK 6;SCR;AT 21,19;YEAR
1070 LET E$=" ▗▄▖▗▄▖▗▄▖▗▄▖
```



```
←←←"              ": LET D$="'''''←←←←←
1075 LET C$="                "
1080 LET G=0
1090 LET H=20: LET I=2: LET J=4
1095 IF SHE>1 THEN LET I=1
1096 IF SHE>2 THEN LET J=3
1100 REM PLOT
1105 LET G=G+1
1110 IF A=0 AND IN 63486<>255 TH
EN BEEP .005,50: LET A=1: PRINT
AT 17,12;" ";AT 18,12;" ";AT 19,
10; INK 6;"▄▄▄▄"
1120 IF B=0 AND IN 61438<>255 TH
EN BEEP .005,40: LET B=1: PRINT
AT 12,19; INK 6;"▀"
1150 LET A$=C$(1)+A$( TO 15)
1155 LET C$=C$(2 TO )+" "
1156 IF G/J=INT (G/J) THEN LET E
=INT (RND*30+1)*2: LET C$(9 TO )
=E$(E TO E+1)
1159 IF G/I<>INT (G/I) THEN GO T
O 1170
1160 LET B$=B$(2 TO )+" "
1165 IF G/H=INT (G/H) THEN LET B
$=B$(2 TO )+D$(INT (RND*10+1))
1170 PRINT AT 18,0;A$(3 TO 14+A)
1180 PRINT AT 12,20;B$(2 TO 5)
1200 IF A$(14)="▝" AND A=1 THEN
LET SCR=SCR+1
1210 IF A$(14)="▀" AND A=0 THEN
LET SCR=SCR+1: LET TOT=TOT+1: LE
T A$(13 TO 14)="  ": PRINT AT 18
,10; INK 2;"▄▄": BEEP .005,30
1220 IF A$(14)="▜" AND A=0 THEN
LET A$(13 TO 14)="  ": BEEP .2,0
: PRINT AT 18,10;"  "; INK 2;AT
19,10;"▄▄": BEEP .2,-10: PRINT A
T 19,10;"  ": FOR Z=1 TO 30: NEX
T Z: LET DE=DE+1: GO TO 2000
1230 IF A$(14)="▀" AND A=1 THEN
FOR Z=1 TO 10: PRINT AT 18,10;"▄
▀": BEEP .2,0: PRINT AT 18,10;"
  ": BEEP .2,0: NEXT Z: LET A$(13
 TO 14)="  ": LET DE=DE+1: GO TO
 2000
1240 IF B$(2)="▘" AND B=1 THEN L
ET SCR=SCR+1: LET TOT=TOT+1: LET
 B$(2)=" ": BEEP .005,30: PRINT
AT 12,20; INK 2;"▘"
1250 IF B$(2)="▖" AND B=0 THEN L
ET SCR=SCR+1: LET B$(2)=" "
1260 IF B$(2)="▀" AND B=1 THEN L
ET B$(2)=" ": FOR Z=1 TO 10: PRI
NT AT 12,20;"▀": BEEP .2,0: PRIN
T AT 12,20;" ": BEEP .2,0: NEXT
Z: LET DE=DE+1: GO TO 2000
1270 IF B$(2)="▝" AND B=0 THEN L
ET B$(2)=" ": PRINT AT 12,19; IN
K 2;"▝": BEEP .2,0: BEEP .2,-10
: PRINT AT 12,19;" ": FOR Z=1 TO
 10: NEXT Z: LET DE=DE+1: GO TO
2000
```

Listing continued next page

```
1500 IF IN 63486=255 THEN PRINT
AT 19,10;"  ";AT 17,12; INK 6;"▐
";AT 18,12;"▐ ": LET A=0: PRINT A
T 18,11;" "
1510 IF IN 61438=255 THEN PRINT
AT 12,19;" ": LET B=0
1520 PRINT AT 20,20; INK 6;SCR
1600 IF G<SKI THEN GO TO 1100
1601 BEEP .01,0: BEEP .09,5
1610 LET H=H-4
1620 LET E$=" ▀▀▀▀▀▀": LET
 D$="''''''←←←←←←"
1630 FOR Z=H TO 20 STEP 4
1640 LET E$=E$+"▀▀▀▀"
1650 NEXT Z: LET E$=E$+"

                    "
1660 LET F1=F: LET F=F+4
1670 IF H/8=INT (H/8) THEN PLOT
OVER 1;138,F1: DRAW OVER 1;8,4:
DRAW OVER 1;-8,4: PLOT 136,F: DR
AW -8,4: DRAW 8,4
1680 IF H/8<>INT (H/8) THEN PLOT
 138,F: DRAW 8,4: DRAW -8,4: PLO
T OVER 1;136,F1: DRAW OVER 1;-8,
4: DRAW OVER 1;8,4
1685 LET G=0
1686 IF H=4 THEN LET H=20: OVER
1: PLOT 138,F: DRAW 8,4: DRAW -8
,4: OVER 0: LET F=111: LET SHE=S
HE+1
1687 IF H=20 THEN GO SUB 9400: G
O TO 1030
1690 GO TO 1100
2000 REM [illegible]
2001 IF DE=1 OR DE=5 THEN GO SUB
 9300: GO SUB 9200: GO TO 1500
2005 FOR Z=1 TO 30: NEXT Z: GO S
UB 9300
2010 PRINT AT 18,0;"
";AT 19,10; INK 6;"▀▀▀";AT 17,12;
" ";AT 18,12;" "
2015 FOR Z=1 TO 30: NEXT Z
2020 FOR Z=10 TO 4 STEP -1
2030 PRINT AT 18,Z;"▞ ": BEEP .
1,Z*2: NEXT Z
2040 FOR Z=11 TO 6 STEP -1: PRIN
T AT 18,Z;"← ": FOR X=1 TO 5: NE
XT X: NEXT Z: PRINT AT 18,6;" "
2050 FOR Z=7 TO 0 STEP -.25: BEE
P .04,Z: PRINT AT 18,4; INK Z;"[illegible]
": NEXT Z
2060 GO SUB 9200
2070 FOR Z=3 TO 19: PRINT AT Z,0
;,,: NEXT Z: PRINT AT 20,9;"
";AT 21,9;"     "
2110 LET G=0: LET J=4: LET H=1
2115 LET SHE=0
2120 LET YE=INT (RND*100+1980)
2130 LET Z$=STR$ YEAR+":CASTLE
 REACTOR:"+STR$ YE
2140 GO SUB 9500
2160 LET YEAR=YE: PRINT AT 21,19
; INK 6;YEAR
2170 FOR Z=3 TO 19: PRINT AT Z,0
;,,: NEXT Z: PRINT AT 20,9;"
```



```
";AT 21,9;"     "
2175 GO SUB 7500: GO SUB 9400
2177 PRINT #0;"ENEMY:▀ & ▐ /
READY ?"
2178 IF INKEY$="" THEN GO TO 217
8
2180 INPUT 0: BEEP .1,20
2181 LET C$="                ": LET D$
="              ": LET H$=" ▀▀▀▀▀
▀▀

                        ": LET I$
=" ▞ ▞ ▞\▐\▐\▐

   "
2182 LET A=0: LET B=0: LET F=9:
LET A$="                ": LET B
$="                "
2183 IF SHE>0 THEN LET J=3
2184 LET H=1
2185 IF SHE>1 THEN LET H=3
2186 PRINT AT 5,25;" "
2187 LET F=9: PRINT AT 9,25;"▞"
2200 REM PLAY
2210 IF A=0 AND IN 63486<>255 TH
EN BEEP .005,50: LET A=1: PRINT
AT 19,10; INK 6;"L←"
2220 IF B=0 AND IN 61438<>255 TH
EN BEEP .005,40: LET B=1: PRINT
AT 5,15; INK 6;"▀▀"
2230 LET A$=C$(1)+A$( TO 15)
2240 LET C$=C$(2 TO )+" "
2250 IF G/J=INT (G/J) THEN LET E
=INT (RND*30+1)*2: LET C$(9 TO )
=I$(E TO E+1)
2260 LET B$=D$(1)+B$( TO 18)
2270 LET D$=D$(2 TO )+" "
2280 IF (G+1)/J=INT ((G+1)/J) TH
EN LET E=INT (RND*30+1)*2: LET D
$(9 TO )=H$(E TO E+1)
2300 PRINT AT 18,0;A$(3 TO 14)
2310 PRINT AT 5,0;B$(3 TO 17+(1-
B))
2400 IF A$(14)="\ " AND A=1 THEN
LET SCR=SCR+1
2410 IF A$(14)=" /" AND A=0 THEN
BEEP .005,30: LET SCR=SCR+1: LET
 TOT=TOT+1: LET A$(13 TO 14)="
": PRINT AT 18,10; INK 2;"▐ /"
2420 IF A$(14)=" /" AND A=1 THEN
LET A$(13 TO 14)="  ": FOR Z=1 T
O 10: BEEP .2,0: PRINT AT 18,10;
"▐ /": BEEP .2,-10: PRINT AT 18,1
0;"  ": NEXT Z: LET DE=DE+1: GO
TO 3000
2430 IF A$(14)="\ " AND A=0 THEN
LET A$(13 TO 14)="  ": FOR Z=1 T
O 10: BEEP .2,0: PRINT AT 18,10;
"▐\": BEEP .2,-10: PRINT AT 18,1
0;"  ": NEXT Z: LET DE=DE+1: GO
TO 3000
2440 IF B$(17)="▀" AND B=0 THEN
LET SCR=SCR+1
```

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```
2450 IF B$(17)="F" AND B=1 THEN
LET SCR=SCR+1: LET TOT=TOT+1: BE
EP .005,30: PRINT AT 5,13; INK 2
;"■■": LET B$(16 TO 17)="  "
2460 IF B$(17)="F" AND B=0 THEN
LET B$(16 TO 17)="  ": FOR Z=1 T
O 10: BEEP .2,0: PRINT AT 5,13;"
■■": BEEP .2,-10: PRINT AT 5,13;
"  ": NEXT Z: LET DE=DE+1: GO TO
 3000
2470 IF B$(17)="3" AND B=1 THEN
LET B$(16 TO 17)="  ": FOR Z=1 T
O 10: BEEP .2,0: PRINT AT 5,13;"
■3": BEEP .2,-10: PRINT AT 5,13;
"  ": NEXT Z: LET DE=DE+1: GO TO
 3000
2490 PRINT AT 20,20; INK 6;SCR
2500 LET G=G+1
2505 IF IN 63486=255 THEN PRINT
AT 19,10; INK 6;"▌▻": LET A=0
2510 IF B=1 AND IN 61438=255 THE
N PRINT AT 5,15;"  ": LET B=0
2700 IF G<5KI THEN GO TO 2200
2710 BEEP .01,0: BEEP .09,5
2720 LET I$="▗▟▗▟▗▟▗▟▗▟▗▟": LET
 H$="■■■■■■■■■■■■"
2730 LET H=H+1
2740 FOR Z=1 TO H
2750 LET I$=I$+"▗▟▗▟▗▟▗▟▗▟▗▟": L
ET H$=H$+"■■■■■■■■■■■■"
2760 NEXT Z
2770 DIM Y$(64): LET I$=I$+Y$: L
ET H$=H$+Y$
2780 LET F1=F: LET F=F-1: PRINT
AT F1,25;"  ";AT F,25;"▟▙"
2785 LET G=0
2790 IF F=5 THEN GO SUB 9400: LE
T SHE=SHE+1: GO TO 2101
2795 GO TO 2200
3000 REM 1500 AGAIN OR THE END
3005 GO SUB 9300
3010 IF DE=3 OR DE=7 THEN GO SUB
 9200: GO TO 2490
3020 PRINT AT 5,0;"
  ";AT 18,0;"                ";INK
6;AT 19,10;"▌▸"
3030 LET Z$="                ▟▗
▀▀"
3040 FOR Z=1 TO 11: PRINT AT 18,
0;Z$( TO 12)
3045 FOR X=1 TO 20: NEXT X
3050 LET Z$=Z$(2 TO )+Z$(1): NEX
T Z
3060 BEEP .01,45: FOR Z=24 TO 71
 STEP 2: PLOT INK 2;Z,29: NEXT Z
: BEEP .01,0: FOR Z=24 TO 71 STE
P 2: PLOT OVER 1; INK 2;Z,29: NE
XT Z
3070 FOR Z=7 TO 0 STEP -.25: BEE
P .04,Z: PRINT AT 18,9; INK Z;"■
■": NEXT Z
3075 GO SUB 9200
3080 FOR Z=1 TO 5: PRINT AT 18,1
;"▟▗": FOR X=1 TO 20: NEXT X: PR
INT AT 18,1;"▟▗": FOR X=1 TO 20:
 NEXT X: BEEP .009,10-Z: NEXT Z
```



```
3090 FOR Z=3 TO 19: PRINT AT Z,0
;,,: NEXT Z: PRINT AT 20,9;"
;AT 21,9;"  "
3095 GO TO 3200
3200 PRINT AT 4,1; INVERSE 1;"WH
ICH OF THE FOLLOWING NUMBER";AT
5,1;"OF OBJECTS AND VEHICLES DES
T-";AT 6,1;"ROYED IS CORRECT ?"
3210 PRINT INVERSE 1;AT 8,1;"IF
CORRECT YOU WIN A BONUS OF";AT 9
,1;"THAT NUMBER DESTROYED + TIME

3211 PRINT #0;" ARE YOU READY ?"
3212 IF INKEY$="" THEN GO TO 321
2
3213 BEEP .1,10: INPUT 0
3220 DIM M(7): LET M(INT (RND*6+
1))=TOT
3230 FOR Z=1 TO 6
3240 IF M(Z)=0 THEN LET M(Z)=INT
 (RND*INT (RND*20+10))-9+TOT: IF
 M(Z)<0 THEN LET M(Z)=0
3250 NEXT Z
3255 INVERSE 1
3260 PRINT INK 5;AT 11,1;"1 - ";
M(1);AT 11,16;"2 - ";M(2)
3270 PRINT INK 3;AT 13,1;"3 - ";
M(3);AT 13,16;"4 - ";M(4)
3280 PRINT INK 4;AT 15,1;"5 - ";
M(5);AT 15,16;"6 - ";M(6)
3290 INVERSE 0
3300 PRINT INVERSE 1;AT 18,1;"PR
ESS:";AT 18,10; INK 5;"12"; INK
 3;"34"; INK 4;"56"; INK 7;AT 18
,22;"TIME"
3310 FOR Z=100 TO 0 STEP -1
3315 PRINT AT 18,28; INVERSE 1;
INK INT (RND*3)+3;Z; INVERSE 0;"
"
3330 LET Z$=INKEY$: IF Z$<>"" TH
EN GO TO 3360
3350 NEXT Z
3360 IF Z$<"1" OR Z$>"6" THEN LE
T Z$="7"
3365 LET X=SCR
3370 IF M(VAL Z$)=TOT THEN LET X
=SCR: LET SCR=SCR+TOT+Z
3380 FOR Z=X TO SCR: PRINT AT 20
,20; INK 5;Z: BEEP .005,(Z+1)/SC
R*60: NEXT Z
3400 FOR Z=3 TO 19: PRINT AT Z,0
;,,: NEXT Z: PRINT AT 20,9;"
;AT 21,9;"  "
3405 IF SIZE=4 OR DE=8 THEN GO T
O 8500
3410 LET YE=INT (RND*100+1400)
3420 LET Z$=STR$ YEAR+":REACTOR
 CASTLE:"+STR$ YE
3430 GO SUB 9500
3450 LET YEAR=YE: PRINT AT 21,19
; INK 6;YEAR
3460 FOR Z=3 TO 19: PRINT AT Z,0
;,,: NEXT Z: PRINT AT 20,9;"
";AT 21,9;"  "
```

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```
3490 GO TO 1000
6999 STOP
7000 REM CASTLE
7005 RESTORE 7000
7010 FOR Z=USR "F" TO USR "T"+7
7020 READ X: POKE Z,X: NEXT Z
7030 DATA 0,255,255,60,127,201,7
3,54,0,252,252,0,224,48,32,192,0
,252,252,0,0,128,0,0,0,255,255,3
,15,25,9,6,240,144,240,144,240,1
44,240,144,0,0,0,0,1,2,4,8,0,0,0
,0,128,64,32,16,255,170,170,255,
0,0,0,0,57,85,41,125,157,185,41,
109,15,9,15,9,15,0,0,0,48,48,0
,0,0,0,0,0,32,126,32,0,0,0,0
7040 DATA 8,8,8,8,8,8,8,15,16,16
,16,16,16,16,16,240
7045 DATA 0,192,48,192,0,0,0,0
7050 PRINT AT 19,0; INK 4;"▒▒▒▒▒
▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
7060 PRINT INK 5;AT 17,12;"▒";AT
 18,12;"▒"
7070 PLOT 104,24: DRAW 0,16: DRA
W -9,0: DRAW 0,40: DRAW 16,0: DR
AW 0,-16: DRAW 4,0: DRAW 0,4: DR
AW 4,0: DRAW 0,-4: DRAW 4,0: DRA
W 0,4: DRAW 4,0: DRAW 0,-4: DRAW
 4,0: DRAW 0,32
7080 DRAW -4,0: DRAW 0,12: DRAW
4,0: DRAW 0,-4: DRAW 4,0: DRAW 0
,4: DRAW 4,0: DRAW 0,-4: DRAW 4,
0: DRAW 0,4: DRAW 4,0: DRAW 0,-4
: DRAW 4,0: DRAW 0,4: DRAW 4,0:
DRAW 0,-4
7090 DRAW 4,0: DRAW 0,4: DRAW 4,
0: DRAW 0,-12: DRAW -4,0: DRAW 0
,-12: DRAW -8,-4: DRAW 0,-9: DRA
W 8,0: DRAW 0,-31
7100 DRAW 4,0: DRAW 0,4: DRAW 4,
0: DRAW 0,-4: DRAW 4,0: DRAW 0,4
: DRAW 4,0: DRAW 0,-4: DRAW 4,0:
 DRAW 0,4: DRAW 4,0: DRAW 0,-4:
DRAW 4,0: DRAW 0,4: DRAW 4,0: DR
AW 0,-4
7110 DRAW 4,0: DRAW 0,31: DRAW 8
,0: DRAW 0,9: DRAW -4,4: DRAW 0,
4: DRAW -4,0: DRAW 0,8: DRAW 4,0
: DRAW 0,-4: DRAW 4,0: DRAW 0,4:
 DRAW 16,0: DRAW 0,-4: DRAW 4,0:
 DRAW 0,4: DRAW 4,0: DRAW 0,-8:
DRAW -4,0: DRAW 0,-47
7120 DRAW 4,0: DRAW 0,4: DRAW 4,
0: DRAW 0,-4: DRAW 4,0: DRAW 0,4
: DRAW 4,0: DRAW 0,-4: DRAW 4,0:
 DRAW 0,4: DRAW 4,0: DRAW 0,-4:
DRAW 4,0: DRAW 0,4: DRAW 4,0: DR
AW 0,-4
7130 DRAW 3,0: DRAW 0,-17
7140 PLOT 92,77: DRAW 11,18: DRA
W 11,-18
7150 PLOT 200,96: DRAW 0,24: DRA
W 16,0: DRAW 0,-24
7160 PLOT 197,117: DRAW 11,18: D
RAW 11,-18
7170 OVER 1
7180 PRINT AT 7,25;"▲";AT 8,25;
"▙▟"
7190 PRINT AT 16,13;"▲ ▲ ▲
 ▲";AT 10,17;"▙ ▟ ▲ ▲";AT 11
,17;"▙ ▟ ▲ ▲";AT 12,12;"▲
▲ ▙ ▟ ▲";AT 13,12;"▙ ▟ ▛ ▜
 ▲ ▙ ▟";AT 14,13;"▲ ▲ ▲ ▙ ▟
";AT 15,13;"▙ ▙ ▙ ▙ ▙ ▟";AT 17
,13;"▙ ▙ ▙ ▙ ▙ ▟"
7195 OVER 0
7200 PLOT 137,108: DRAW 0,36: DR
AW -1,0: DRAW 2,0
7210 INK 2: PLOT 77,15: DRAW 0,-
6: DRAW 2,2: DRAW 2,-2: DRAW 2,2
: DRAW 2,-2: DRAW 2,2: DRAW 1,0:
 DRAW 2,-2: DRAW 2,2: DRAW 2,-2:
 DRAW 2,2: DRAW 2,-2: DRAW 0,8
7220 INK 6: PLOT 48,128: DRAW -4
,-24,-2: DRAW 4,24,3.4: INK 7
7230 PRINT AT 12,24; INK 2;"▛"
7490 RETURN
7500 REM RESTTOR
7505 RESTORE 7500
7510 FOR Z=USR "F" TO USR "T"+7
7520 READ X: POKE Z,X: NEXT Z
7530 DATA 224,64,64,64,64,0,0,0,
238,170,174,172,234,0,0,0,14,10,
14,8,8,0,0,0,0,0,46,40,170,106,4
6,0
7540 DATA 0,0,234,171,170,170,23
4,0,0,0,69,100,84,76,69,0,0,0,39
,37,39,37,53,0
7550 DATA 0,7,12,28,124,28,12,7,
255,17,87,17,125,113,255,0
7555 DATA 3,12,48,192,3,12,48,19
2,0,0,0,12,12,0,0,0
7560 DATA 255,1,1,1,1,1,1,0,255,
128,128,128,128,128,128,0,128,12
8,128,128,128,128,255,0,1,1,1,1,
1,1,255,0
7600 PRINT AT 19,0; INK 4;"▒▒▒▒▒
▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
7610 PLOT 96,24: DRAW 0,16: DRAW
 4,8: DRAW 0,8: DRAW -4,8: DRAW
0,16: DRAW 8,16: DRAW 8,0: DRAW
8,-16: DRAW 0,-16: DRAW -4,-8: D
RAW 0,-8: DRAW 16,0: DRAW 0,8: D
RAW -4,8: DRAW 0,47: DRAW -16,8:
 DRAW -16,0: DRAW -4,2: DRAW 0,4
: DRAW 4,2: DRAW 32,0: DRAW 0,9:
 DRAW -8,0: DRAW -4,2: DRAW 0,4:
 DRAW 4,2: DRAW 40,0
7620 DRAW 4,-4: DRAW -4,-4: DRAW
 4,-4: DRAW -4,-4
7625 DRAW 4,-4: DRAW -4,-4: DRAW
 4,-4: DRAW -4,-4
7630 DRAW 0,-8: DRAW 8,-4: DRAW
0,-4: DRAW 4,0: DRAW 0,16
7635 DRAW -4,4: DRAW 4,4: DRAW -
4,4: DRAW 4,4
7636 DRAW -4,4: DRAW 4,4: DRAW -
4,4: DRAW 4,4
7640 DRAW 4,0: DRAW 0,-48: DRAW
-16,-16: DRAW 0,-32: DRAW 16,-16
: DRAW 20,0: DRAW -4,4: DRAW 4,4
```

Listing continued next page

```
7650 DRAW -4,4: DRAW 4,4: DRAW -
4,4: DRAW 4,4
7655 DRAW -4,4: DRAW 4,4: DRAW -
4,4: DRAW 4,4
7660 DRAW -4,4: DRAW 4,4: DRAW -
4,4: DRAW 4,4: DRAW 16,0
7670 DRAW 4,-4: DRAW -4,-4: DRAW
 4,-4: DRAW -4,-4
7675 DRAW 4,-4: DRAW -4,-4: DRAW
 4,-4: DRAW -4,-4
7680 DRAW 4,-4: DRAW -4,-4: DRAW
 4,-4: DRAW -4,-4
7685 DRAW 4,-4: DRAW -4,-4: DRAW
 43,0: DRAW 0,-8
7690 FOR Z=40 TO 88 STEP 8
7700 PLOT 196,Z: DRAW 16,-8: PLO
T 203,Z-10: DRAW 0,3: DRAW 1,0:
DRAW 0,-3: NEXT Z
7710 PLOT 199,88: DRAW 0,50: DRA
W -1,0: DRAW 3,0
7720 PLOT 97,35: DRAW 0,-11: DRA
W 1,0: DRAW 0,10
7725 PLOT 120,40: DRAW 15,0: DRA
W 0,72: DRAW 17,0: DRAW 0,-81: D
RAW -33,0: DRAW 0,8
7730 OVER 1
7740 PRINT AT 4,15;"-----";AT 5,
15;"\ /";AT 6,12;"-------";AT
7750 PRINT INK 6;AT 11,13;"R";AT
 13,13;"A";AT 15,13;"T";AT 17,13
;"R";AT 12,13;"E";AT 14,13;"C";A
T 16,13;"O"
7760 PRINT AT 8,17;"*";AT 11,17
;"*";AT 14,17;"*";AT 17,16;"*
*"
7765 PRINT AT 16,24; INK 6;"
";AT 14,24;"          ";AT 12,24;"
"
7770 INK 2: PLOT 77,15: DRAW 0,-
8: DRAW 2,2: DRAW 2,-2: DRAW 2,2
: DRAW 2,-2: DRAW 2,2: DRAW 1,0:
 DRAW 2,-2: DRAW 2,2: DRAW 2,-2:
 DRAW 2,2: DRAW 2,-2: DRAW 0,8
7775 OVER 0: INK 7
7780 PRINT AT 19,10; INK 6;"L"
7900 RESTORE 7900
7910 FOR Z=USR "F" TO USR "L"+7
7920 READ X: POKE Z,X: NEXT Z
7930 DATA 128,192,224,255,248,48
,33,127,0,0,240,204,127,254,0,22
4,127,0,120,198,254,3,1,31,255,1
28,224,144,248,240,34,252
7940 DATA 28,14,15,30,63,100,36,
27,0,0,255,0,254,147,145,105,24,
96,128,0,264,147,145,108
7990 RETURN
8500 REM [redacted]
8510 BORDER 7: INK 0: PAPER 7: F
OR Z=0 TO 21: PRINT OVER 1;AT Z,
0;"  ": NEXT Z
8515 INPUT 0
8520 GO SUB 9700
8530 PLOT 4,148: DRAW 104,0: DRA
W 0,-128: DRAW -104,0: DRAW 0,12
8
8540 PRINT AT 4,1; INVERSE 1;"©
```



```
PAUL SMITH"; INK 2;AT 8,1;"1 - R
ESTART";AT 9,9;"GAME";AT 11,1;"2
 - CLEAR";AT 12,5;"HI-SCORE";AT
14,1;"3 - ENTER";AT 15,5;"HI-SCO
RE";AT 17,1;"4 - NEW THIS";AT 18
,5;"PROGRAM!"; INK 1;AT 6,1;"PRE
SS"; INVERSE 0;" -"
8545 LET A$="HI"
8550 IF INKEY$="1" THEN GO TO 20
0
8560 IF INKEY$="2" THEN BEEP .1,
10: GO SUB 100: GO SUB 9700
8570 IF INKEY$="3" THEN GO TO 86
00
8580 IF INKEY$="4" THEN NEW
8590 GO TO 8550
8600 IF A$<>"HI" THEN BEEP .5,-1
0: GO TO 8550
8610 IF SIZE=4 AND SCR<VAL K$(1,
5, TO 5) THEN BEEP .5,-10: GO TO
 8550
8611 IF SIZE=8 AND SCR<VAL K$(2,
5, TO 5) THEN BEEP .5,-10: GO TO
 8550
8612 GO SUB 9800
8615 LET X=1: IF SIZE=8 THEN LET
 X=2
8616 INPUT AT 0,0;"ENTER YOUR NA
ME:----------";AT 0,16; LINE A$
8617 IF LEN A$<1 OR LEN A$>10 TH
EN GO TO 8616
8618 LET Z$="00000"( TO 5-LEN (S
TR$ SCR))+STR$ SCR+"-"+A$+"
     "( TO 10-LEN A$)
8620 FOR Z=5 TO 1 STEP -1
8630 IF SCR>VAL K$(X,Z, TO 5) TH
EN LET K$(X,Z+1)=K$(X,Z): LET K$
(X,Z)=Z$
8640 NEXT Z
8650 GO SUB 9700: GO TO 8550
9000 REM [redacted]
9010 PLOT 4,171: DRAW 247,0: DRA
W 0,-15: DRAW -247,0: DRAW 0,15
9020 PLOT 8,160: DRAW 0,8: DRAW
16,0: DRAW 0,-8: DRAW 0,4: DRAW
-16,0
9030 PLOT 32,168: DRAW 16,0: DRA
W 0,-8: DRAW -16,0: DRAW 4,0: DR
AW 0,8
9040 PLOT 56,168: DRAW 16,0: DRA
W -8,0: DRAW 0,-8: DRAW -8,0
9050 PLOT 80,168: DRAW 0,-8: DRA
W 16,0: DRAW 0,8
9060 PLOT 104,168: DRAW 16,0: DR
AW 0,-8: DRAW -16,0: DRAW 4,0: D
RAW 0,8
9070 PLOT 128,160: DRAW 0,8
9080 PLOT 152,168: DRAW -16,0: D
RAW 0,-8: DRAW 16,0
9090 PLOT 160,168: DRAW 0,8: DRA
W 16,0: DRAW 0,-8: DRAW 0,4: DRA
W -16,0
9100 PLOT 192,160: DRAW 0,8: DRA
W -8,0: DRAW 16,0
```

Listing continued next page

```
9110 PLOT 208,160: DRAW 0,8: DRA
W 16,0: DRAW 0,-5: DRAW -16,0
9120 PLOT 232,160: DRAW 0,8: DRA
W 16,0: DRAW 0,-4: DRAW -16,0: D
RAW 16,-4
9190 RETURN
9200 REM LIVES
9220 FOR Z=1 TO 12
9225 PRINT AT 20,0;G$;AT 21,0;F$
9230 LET G$=G$(2 TO )+" "
9235 LET F$=F$(2 TO )+" "
9237 BEEP .01,Z*3
9240 NEXT Z
9245 IF DE=1 THEN LET G$="   "
   ": LET F$="      "
9246 IF DE=2 THEN LET G$="   "
   ": LET F$="      "
9247 IF DE=3 THEN LET G$="   "
   ": LET F$="      "
9248 IF DE>3 THEN LET G$="
   ": LET F$="  0"+STR$ DE+"
  "
9250 FOR Z=1 TO 10
9255 PRINT AT 20,0;G$(11-Z TO );
AT 21,0;F$(11-Z TO )
9260 NEXT Z
9290 RETURN
9300 REM MUSIC 1
9310 RESTORE 9300
9320 FOR Z=1 TO 4: BEEP .09,0: B
EEP .1,2: BEEP .11,4: READ X: BE
EP .12,X: NEXT Z
9330 DATA 11,9,7,5
9340 BEEP .05,0: BEEP .05,2: BEE
P .05,4: BEEP .1,2: BEEP .3,0
9390 RETURN
9400 REM MUSIC 2
9410 RESTORE 9400
9420 FOR Z=1 TO 3: BEEP .1,0: BE
EP .1,0: READ X: BEEP .2,X: NEXT
 Z
9430 DATA 5,7,9
9440 BEEP .1,7: BEEP .1,5: BEEP
.1,7: BEEP .1,5: BEEP .1,7: BEEP
 .3,9
9490 RETURN
9500 REM LINE TRAVEL
9510 PLOT 4,28: DRAW 0,104: DRAW
 248,0: DRAW 0,-104: DRAW -248,0
9520 PLOT 8,120: DRAW 16,0: DRAW
 8,0: DRAW 0,-16
9525 PLOT 32,120: DRAW 16,0: DRA
W -8,0: DRAW 0,-16: DRAW -8,0: D
RAW 16,0
9530 PLOT 56,104: DRAW 0,16: DRA
W 8,0: DRAW 0,-8: DRAW 0,8: DRAW
 8,0: DRAW 0,-16
9535 PLOT 96,104: DRAW -16,0: DR
AW 0,8: DRAW 8,0: DRAW -8,0: DRA
W 0,8: DRAW 16,0
9540 PLOT 112,120: DRAW 16,0: DR
AW -8,0: DRAW 0,-16
9545 PLOT 136,104: DRAW 0,16: DR
AW 16,0: DRAW 0,-8: DRAW -16,0:
DRAW 16,-8
9550 PLOT 160,104: DRAW 0,16: DR
```



```
AW 16,0: DRAW 0,-16: DRAW 0,8: D
RAW -16,0
9555 PLOT 184,120: DRAW 0,-8: DR
AW 8,-8: DRAW 8,8: DRAW 0,8
9560 PLOT 224,104: DRAW -16,0: D
RAW 0,8: DRAW 8,0: DRAW -8,0: DR
AW 0,8: DRAW 16,0
9565 PLOT 232,120: DRAW 0,-16: D
RAW 16,0
9570 PLOT 24,43: DRAW -8,0: DRAW
 -8,4: DRAW 0,8: DRAW 240,0: DRA
W 0,-8: DRAW -8,-4: DRAW -8,0
9575 PRINT AT 16,3;Z$
9580 FOR Z=12 TO 248 STEP 8: PLO
T Z,56: DRAW 0,2: NEXT Z
9585 FOR Z=16 TO 248 STEP 16: PL
OT Z,56: DRAW 0,4: NEXT Z
9590 FOR Z=8 TO 248 STEP 16: PLO
T Z,56: DRAW 0,7: NEXT Z
9595 INK 2
9600 FOR Z=8 TO 128
9610 PLOT Z,66: DRAW 0,7
9620 PRINT AT 21,13; INK 5;INT (
YEAR+((YE-YEAR)/240)*(Z-8));"
"
9625 BEEP .005,Z/2
9630 NEXT Z
9640 FOR Z=129 TO 247
9650 INK 4: PLOT Z,66: DRAW 0,7
9660 PRINT AT 21,13; INK 5;INT (
YEAR+((YE-YEAR)/240)*(Z-8));"
"
9665 BEEP .005,64-((Z-128)/2)
9670 NEXT Z
9675 INK 7
9677 FOR Z=1 TO 5
9680 PRINT AT 21,19;"    ";AT 16
,25;"
    "
9682 FOR X=1 TO 20: NEXT X
9685 PRINT AT 16,25;Z$(23 TO 26)
;AT 21,19; INK 5;Z$(23 TO 26)
9687 FOR X=1 TO 20: NEXT X
9690 NEXT Z: RETURN
9700 REM HI-SCORE
9710 PLOT 116,148: DRAW 136,0: D
RAW 0,-128: DRAW -136,0: DRAW 0,
128
9720 PRINT AT 4,15; INVERSE 1;"4
 LIFE HI-SCORE ";AT 12,15;"5 LIF
E HI-SCORE "
9730 FOR Z=1 TO 5
9735 INK 7: PAPER Z-1
9740 PRINT AT Z+5,15;K$(1,Z);AT
Z+13,15;K$(2,Z);AT 5+Z,20;  INVER
SE 1;"-";AT 13+Z,20;"-"
9750 NEXT Z
9760 INK 0: PAPER 7
9790 RETURN
9800 REM MUSIC 3
9810 RESTORE 9810
9815 LET U=0: DIM V(11): DIM M(1
1)
9820 FOR Z=1 TO 11
9830 READ X,Y: LET V(Z)=X: LET M
(Z)=Y
```

Listing continued next page

```
9840 NEXT Z
9850 DATA .05,0,.05,2,.05,5,.05,
3,.05,4,.05,2,.05,3,.05,4,.05,4,
.05,2,.3,0
9855 FOR Z=1 TO 11
9856 BEEP V(Z),M(Z)+W: PAUSE 1
9857 NEXT Z
9860 IF W=0 THEN LET W=8: PAUSE
4: GO TO 9855
9870 IF W=8 THEN LET W=4: PAUSE
4: GO TO 9855
9890 RETURN
9999 RUN
```

Sound effects on the ZX Spectrum

The sound facility provided in the Spectrum is a great help to the games programmer. You can make realistic vehicle, weapon and other sounds which add a lot to the fun of games playing.

Here are a few of the more interesting sounds that you can program with the computer: a 'machine gun', 'lazer', 'buzzer' and 'missile' which are simple to incorporate in any game. But you must always remember to *run* any sound subroutine which contains machine code, such as these programs, before typing the command:

Let L = USR USR "A"

This is because if you do not run the subroutine and call the machine code using the above BASIC command, the computer will 'crash' and all your hard work on the rest of the program will be lost.

The computer will also 'crash' if you try to redefine any of the graphics characters A to D. Do not worry too much about this: none of the programs listed in this book will cause the computer to 'crash' if you type them in accurately.

```
 10 REM ▌ MACHINE GUN  ▐
        ▌ © PAUL SMITH ▐
        ▌ / E. HORWOOD ▐
 20 FOR A=USR "A" TO USR "A"+29
 30 READ B: POKE A,B: NEXT A
 40 DATA 6,4,197,33,15,0,17,1,0
,229,205,181,3,225,17,255,0,167,
237,90,125,254,255,32,237,193,16
,230,201,0
 50 REM ▌ TO MAKE SOUND 'LET ▐
        ▌ L=USR USR "A".     ▐
```

```
10 REM ▌ LAZER          ▐
       ▌ © PAUL SMITH   ▐
       ▌ / E. HORWOOD   ▐
20 FOR A=USR "A" TO USR "A"+29
30 READ B: POKE A,B: NEXT A
40 DATA 6,1,197,33,15,0,17,15,
0,229,205,181,3,225,17,16,0,167,
237,90,125,254,255,32,237,193,16
,230,201,0
50 REM ▌ TO MAKE SOUND 'LET    ▐
       ▌ L=USR USR "A"'         ▐
```

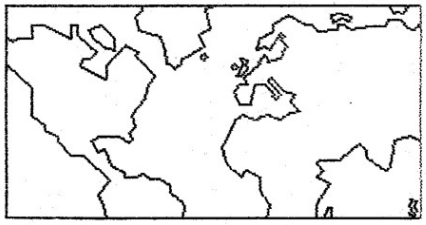
```
10 REM ▌ BUZZER         ▐
       ▌ © PAUL SMITH   ▐
       ▌ / E. HORWOOD   ▐
20 FOR A=USR "A" TO USR "A"+29
30 READ B: POKE A,B: NEXT A
40 DATA 6,255,197,33,3,0,17,1,
0,229,205,181,3,225,17,255,0,167
,237,90,125,254,255,32,237,193,1
6,230,201,0
50 REM ▌ TO MAKE SOUND 'LET    ▐
       ▌ L=USR USR "A"'         ▐
```

```
10 REM ▌ MISSILE        ▐
       ▌ © PAUL SMITH   ▐
       ▌ / E. HORWOOD   ▐
20 FOR A=USR "A" TO USR "A"+29
30 READ B: POKE A,B: NEXT A
40 DATA 6,1,197,33,15,0,17,20,
0,229,205,181,3,225,17,1,0,167,2
37,90,125,254,255,32,237,193,16,
230,201,0
50 REM ▌ TO MAKE SOUND 'LET    ▐
       ▌ L=USR USR "A"'         ▐
```

Quickscreen

It is often useful to be able to get rapid access to a screen at any point in a program. This is especially important in games programming, where you will often want to use complex screens which would otherwise be very slow and boring to display.

The following program allows you to load a predefined screen from tape and print it at any point in your own program. You might, for example, need to use a map screen like this:



In order to do this you would have to:

(1) draw the screen;
(2) save the screen on a blank tape using the command:

SAVE "<NAMES>" SCREEN$

(3) type in the Quickscreen program;

(4) run the Quickscreen program;
(5) load in the screen already saved.
(6) To access the screen quickly you can now use the command:

LET L = USR USR "A"

If you wish to incorporate the Quickscreen program in any of your own programs, you need only use lines 30 to 105.

```
 10 REM ▒▒ QUICK SCREEN ▒▒
        ▒▒ © PAUL SMITH ▒▒
        ▒▒ / E. HORWOOD ▒▒
 15 REM
 20 REM ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
        1 - DRAW THE SCREEN AND
            SAVE IT ON TAPE
            USING COMMAND 'SAVE
            "<NAME>"SCREEN$'
        2 - RUN THIS PROGRAM
        ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
 30 CLEAR 25600
 40 FOR A=USR "A" TO USR "A"+11
 50 READ B: POKE A,B: NEXT A
 60 DATA 1,0,27,33,0,100,17,0,6
4,237,176,201
 100 CLS : PRINT "LOAD YOUR SCRE
EN NOW": PRINT
 105 LOAD ""CODE 25600
 110 REM ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
        USE'LET L=USR USR"A"'TO
        PRINT THE SCREEN FAST !
        ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
 120 LET L=USR USR "A"
```

Multi-key inputs

As you may have noticed, in the game programs contained in this book, when using the command INKEY$ to read the keyboard, nothing happens when two keys are pressed simultaneously. To get around this problem the command IN can be used. The Spectrum's keyboard is divided into eight equal parts each with a different address: we call them *Areas*.

Area 1 – IN 65278 reads the half row CAP SHIFT to V
2 – IN 65022 reads the half row A to G
3 – IN 65410 reads the half row Q to T
4 – IN 63486 reads the half row 1 to 5
5 – IN 61438 reads the half row 6 to Ø
6 – IN 57342 reads the half row Y to P
7 – IN 49150 reads the half row H to ENTER
8 – IN 32766 reads the half row B to SPACE

To check if a key is pressed the following command is used: IF IN followed by the number corresponding to the section of the keyboard where they key is situated, followed by = and then the number corresponding to each particular key. For example, in place of:

IF INKEY$ = "A" THEN .....

you will find it better to use;

IF IN 65022 = 254 THEN .....

Use the following program to discover the number corresponding to each key:

```
   10 REM ▌MULTI-KEY INPUTS▐
          ▌© TOBY MATTHEWS ▐
          ▌& ELLIS HORWOOD.▐
   20 CLS
   30 PRINT AT 2,0;"AREA 1--KEYS
<CAP SHIFT> TO V"
   40 PRINT AT 3,0;"AREA 2--KEYS
A TO G"
   50 PRINT AT 4,0;"AREA 3--KEYS
Q TO T"
   60 PRINT AT 5,0;"AREA 4--KEYS
1 TO 5"
   70 PRINT AT 6,0;"AREA 5--KEYS
6 TO 0"
   80 PRINT AT 7,0;"AREA 6--KEYS
Y TO P"
   90 PRINT AT 8,0;"AREA 7--KEYS
<ENTER> TO H"
  100 PRINT AT 9,0;"AREA 8--KEYS
<SPACE> TO B"
  110 INPUT "PLEASE ENTER AREA:";
A
  120 IF A<1 OR A>8 OR A<>INT A T
HEN GO TO 110
  130 LET A=A-1
  140 LET B=254+256*(255-2↑A)
  145 CLS
  150 PRINT AT 10,15; INVERSE 1;I
N B
  160 IF IN B=224 THEN RUN
  170 GO TO 150
```

Input the area of keyboard to be used then press any key in that area and make a note of its number. For example, you may want to discover the number corresponding to key A. In which case, when the computer requests the area of the keyboard you require, type:

"2" then press ENTER.

The computer will now display a number in the middle of the screen. This will be 255, a number which indicates that no key in the area selected is being pressed. In order to find the number corresponding to Key 'A' simply hold down key A and the number will appear on the screen.

Hints on writing games and programs

In this section we will give you a few simple hints on how to set out good, well-structured programs.

Firstly, make sure that you use the ZX Spectrum Manual as a source of information. It may not be the clearest reference work ever written, but it does contain a lot of useful data. Rather more helpful in the design of your own programs is another book in this series – *Mastering the ZX Spectrum* by Lawrie Moore (Ellis Horwood, 1983), which is very clearly written and will be invaluable if you want to design the sort of programs contained in this book. Our book is a collection of games, whilst Lawrie Moore's book will give you the background information on how the ZX Spectrum allows you to design all sorts of programs, including games programs.

Careful study of the games programs we have listed in this book will tell you a lot about how to construct the sorts of games you are likely to want to play. Obviously, you can mix elements from several different games together but it is a good idea to have a clear idea of what sort of game you want to make before starting. Two things are essential to the sorts of games found in this book: the first is squared paper; and the second is a clear structure.

Squared paper is indispensable, because it allows you to work out where everything is going to go on the screen, and to define graphics characters more accurately. For example, in the 'Horse Race' program on pages 76–81 of this book, the horse characters look quite realistic. The horse was initially drawn, quite large, on squared paper by an artist friend of one of the authors. This drawing was then carefully scaled down to be defined as a graphics character. Using squared paper allows you to define the positions of items on complicated screens quite easily, and so allows you to design programs which look good when they are running on the screen.

The other thing which is essential to good programming is working with a *clear structure*. This is rather like using squared paper. Having a clear idea of where certain

elements of programs should go makes them easier to write. Although programmers' ideas about how to create a clear structure for their programs do tend to vary, a few guidelines can be suggested. Perhaps the best way to set out a structure is to reserve certain numbers of lines for certain parts of the program.

We suggest you try the following formula which we use in a number of our programs:

Lines 0–100	: Pokes to set-up the machine itself, i.e. capslock; colour specifications. Any machine code elements should be defined as quickly as possible.
Lines 100–200	: Graphics (alternatively, these can be left until the very end of the program, at line 9000 onward, as in some of our programs).
Lines 200–700	: Variables
Lines 700–1000	: Setting up screen; instructions on how to play the game.
Lines 1000–2000	: Main program loop.
Lines 2000–9000	: Subroutines.
Lines 9000–*n*	: End of game.

You do not have to follow the above structure to get a clearly structured program – the point is that you should have a clear idea of where each element of the program is in relation to the others. This helps you to think through the problems which writing the program will pose, and allows you to plan the work properly. The other advantage of a clear structure is that it allows you to work with a friend or friends on a program, dividing up responsibility for different elements of the game according to the structure plan.

The various subroutines which are listed in this book will help you to write games programs with effective sound, graphics, and action. We hope you find them useful when you come to write your own games. Good luck!

	Rückgabe bis			Rückgabe bis

Toby Matthews and **Paul Smith**, the authors of this book, are both students at Oxford School.

The full list of games in this book is:

BREAKTHROUGH
SPACE ATTACK
TREASURE HUNT
LIVING DEAD
HELICOPTER RESCUE
SKIING: Downhill Racer
LUNAR ROVER
MISSION IMPOSSIBLE
CODE BREAKER
DUEL
LAZERS
WORD SEARCH
HORSE RACE
MINEFIELD
JACKPOT
MUSICAL MEMORY
SPACE MERCHANT
BALLOON FLIGHT SIMULATION
BLACKJACK
ADJUDICATOR