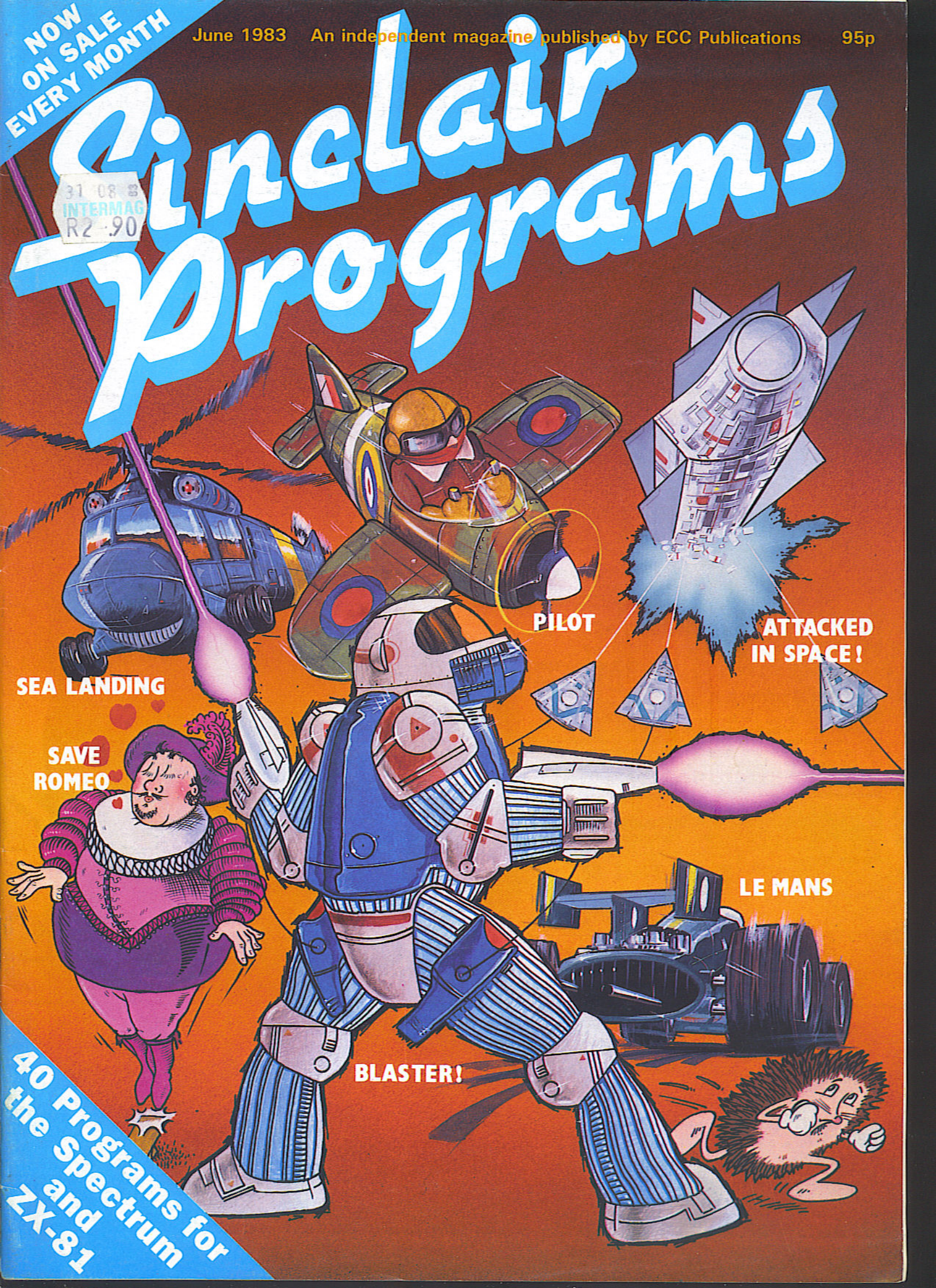
June 1983 An independent magazine published by ECC Publications 95p

NOW ON SALE EVERY MONTH

Sinclair Programs

31 08 83
INTERMAG
R2 .90



40 Programs for the Spectrum and ZX-81

WHO ON EARTH COULD HAVE CONCEIVED QUICKSILVA SOFTWARE?

TIME-GATE
by J. Hollis

THE UNBELIEVABLE SPACE/TIME ADVENTURE FROM QS!

High speed graphics combined with electrifying space adventure make TIME-GATE the game of all games.
Foil the ruling aliens by travelling back through time and blasting out their home planet. Fight 3D space battles on your journey, seeking the time gates that lead to year zero and the salvation of the human race.
Features: 4D — High speed graphics — versatile scanning — status and battle computers — land & take-off from many planets — time-travel — 5 skill levels — score & rating plus free training program.
SPECTRUM 48K

NEW!

TORNADO . . .
by Chartec

ONLY AVAILABLE FROM QS!

Your ship is a Tornado. A craft specially designed for use over the Red Planet able to manoeuvre fast and effectively in the thin atmosphere. Now the end of Colony Wars is in sight, a final pocket of seething hate has been located and is about to be eradicated, the last clan will shortly fall . . . If the mission is successful. . .
Features: Full Colour High Res Graphics — Sound — Scoring — Ships Attacking — 3 Types of Ground Base — 2 Player Option — Increasing Speed — High Score — Progressive Difficulty — Random Landscapes — Explosions.
VIC 20 + 3K RAM + JOYSTICK

NEW!

GALAXIAN & GLOOPS
by T. Beckwith

GALAXIAN

The battle rages on the distant planet. Only you can save the peaceful population under attack. Are you good enough?
Features: Full Attack Mode — High Score — 2 Types of Swooping Bomb Dropping Galaxian — 3 Bases — Full Scoring — Adjust Speed, Fire Rate, Number of Galaxians.

GLOOPS!

Quicksilva offer this special version of the famous pill-eater on this tape just for the hell of it!
ZX81 16K

NEW!

MAGIC WINDOW
by M. Walker

Character Generator supplied on tape.
Features: Define characters on 8x8 grid — Save to Tape — Load from Tape — Hex & Dec O/Ps.
Character Manipulation: Mirror — Rotate — Invert — Left — Right — Up — Down — Hold — Wipe — Cancel.
* Redefine Whole Character Set *
Also works in Colour Mode. Excellent examples supplied.
ATARI 400/800 + JOYSTICK

NEW!

MUNCHEES
by A. Laird

Outwit the Ghost in the creaking house. Keep taking the pills — Power Pills to keep you one step ahead of a sticky end!
Features: 1-4 Ghosts — 3 Munchees — Power Pills — Side Doors — Fruit — High Score — Bonus Munchy — Increasing Speed.
ZX81 16K

NEW!

MINED-OUT
by I. Andrews

Enter the minefield at your peril. However, you must save Bill the Worm at all costs. If you are very skilled you will be able to rescue the Damsels in Distress, also trapped in the minefield.
Features: 9 Levels of Play — High Score — Progressive Difficulty — Tricky Mines — Damsels in Distress — Mine Detector — Safe Area
SPECTRUM 48K

NEW!

CROAKA CRAWLA
by J. Field

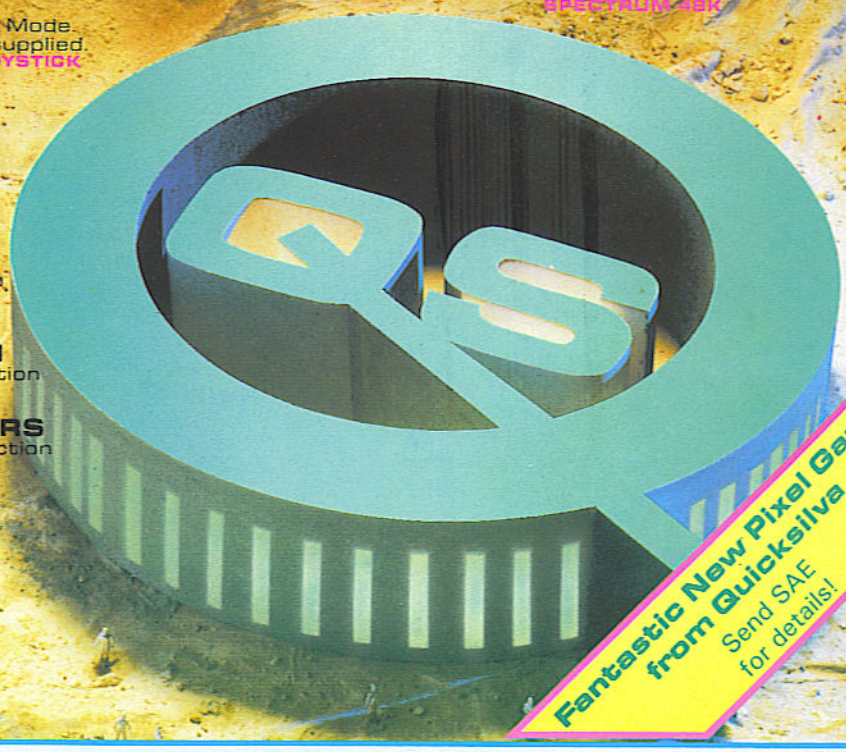
Save Clint Frog from a messy fate. Watch out for the relentlessly approaching trucks that are tired of hedgehogs. Look out for the Crocodiles, they are equally Frog-Hungry!
Features: Frogs — Lorries — Logs — Turtles — Different Levels of Play — Scoring — Frog Count — Flies — Crocodiles — Sinking Turtles — Progressive Difficulty — Attack Waves.
ZX81 16K

CHESS PLAYER
by M. Wren-Hilton
Speech & Personality
SPECTRUM 48K

SPEAKEASY
by J. Hollis
Add sound or speech to your program
SPECTRUM 48K

METEOR STORM
Speech and Arcade Action
SPECTRUM 16K

SPACE INTRUDERS
Mutants and Arcade Action
SPECTRUM 16K



Fantastic New Pixel Games from Quicksilva
Send SAE for details!

For the ZX81 & 16K Ram:
QS SCRAMBLE QS INVADERS
QS ASTEROIDS QS DEFENDA

TORNADO	NEW!	VIC 20	+ J/S	£5.95	☐
MAGIC WINDOW	NEW!	ATARI	400/800 + J/S	£8.95	☐
TIME-GATE		SPECTRUM	48K	£6.95*	☐
MINED-OUT	NEW!	SPECTRUM	48K	£4.95*	☐
CHESS PLAYER		SPECTRUM	48K	£6.95	☐
SPEAKEASY		SPECTRUM	48K	£4.95	☐
METEOR STORM		SPECTRUM	16K	£4.95*	☐
SPACE INVADERS		SPECTRUM	16K	£4.95*	☐
GALAXIAN & GLOOPS	NEW!	ZX81	16K	£4.95	☐
CROAKA CRAWLA	NEW!	ZX81	16K	£3.95	☐
MUNCHEES	NEW!	ZX81	16K	£3.95	☐
QS SCRAMBLE		ZX81	16K	£3.95	☐
QS INVADERS		ZX81	16K	£3.95	☐
QS ASTEROIDS		ZX81	16K	£3.95	☐
QS DEFENDA		ZX81	16K	£3.95	☐

* FREE KEYBOARD OVERLAY WITH THESE GAMES *

PLEASE SEND ME THE GAMES AS TICKED

NAME .....

ADDRESS .....

.....

.....

Access VISA

SEND ORDER TO:
QUICKSILVA, DEPT SU, 92 NORTHAM ROAD, SOUTHAMPTON SO2 0PB TEL: (0703) 20169

AVAILABLE FROM BOOTS, W.H. SMITHS, MENZIES AND ALL LEADING COMPUTER STORES.

Contents

30 PROGRAM OF THE MONTH

ZX-81

9 ATTACKED IN SPACE
11 ANAGRAMS
14 HEAVENS ABOVE BASE
19 PILOT CODES
22 CROSSWORD
23 LE MANS
25 KNIGHTS FOUR
27 DOORS
28 CASTLES
29 DELETE THE DOTS
32 LINE FOUR
34 DARTS
35 YAHTZEE
38 MEMORY PROGRAM PLANKS
40 MATRIX
47 DEPLOYMENT STRATEGY
48 JUMBLE WORDS SPACE SUPPLIES
49 SPEED TRAP
52 MOLE SEARCH
53 PARANOID

SPECTRUM

8 SIMON SAYS
10 DODGEM
13 ROMEO
15 BRICKY
20 BLASTER
24 ESP
26 BEETLE RUN
27 ROLLOVER
30 SPECTRAL PIANO
33 LETHAL LANDSCAPE
36 BEAT THE BARRAGE
37 SEA LANDING
39 MOONSHOT
50 INDEX PRINTER
51 GOLD
53 INVERTER

Editor
Nigel Clark

Production editor
Harold Mayes MBE

Design
Elaine Bishop and Bill Scolding

Program Reviews
Rebecca Ferguson

Editorial director
John Sterlicchi

Advertisement manager
John Ross

Sales executive
Frank Humphrey-Gaskin

Editorial/production assistants
Margaret Hawkins
Dezi Epaminondou

Managing director
Terry Cartwright

Chairman
Richard Hease

Sinclair Programs is published monthly by ECC Publications Ltd.

Telephone
All departments
01-359 7481

If you would like to contribute to any of the Sinclair User group of publications please send programs, articles or ideas for hardware projects to:
Sinclair User and Programs,
ECC Publications,
30-31 Islington Green,
London N1 8BJ

Programs should be on cassette and articles should be typed. We cannot undertake to return them unless a stamped-addressed envelope is included.
We pay £10 for the copyright of each program published and £50 per 1,000 words for each article used.

© Copyright 1983
Sinclair Programs

ISSN No 0263-0265

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

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

Cover Design/Illustrations
Ivan Hissey

To help with entering graphics characters we have adopted a system of writing the characters for the ZX-81. We indicate inverse characters by the letter i and graphics by g, so that an inverse letter W is shown as iW and the graphics character on key 6 is denoted by g6.

Spaces are shown by sp and inverse spaces are isp. If some occur together, for instance a row of six spaces, they are shown by 6*sp and where there is a combination of characters each one is divided by a colon, thus sp:isp:6*g6 means a space followed by an inverse space and then six characters on the 6 key.

Where whole words are written in inverse letters they appear in the listings as lower-case letters.

In the Spectrum listings the characters are shown as they appear in a game with instructions included in the accompanying text.

dk'tronics

ZX KEYBOARD FOR USE WITH/81 SPECTRUM

Our new cased keyboard has 52 keys, 12 of these are used for the numeric pad. The numeric pad offers some useful features, you can cursor with one hand and it will be a boon for anyone who enters a lot of numeric data. The pad is a repeat of the 1-9 keys plus it has a full stop and a shift key. The numeric pad keys are coloured in red, the normal keyboard keys are grey, with the case being black which makes the whole thing very attractive. The case measures 15 x 9 x 2½. The computer (either 80/81 or spectrum) fits neatly inside. You will have to remove the computer from its original case, it is then screwed to the base of the case. The case had all the bosses already fitted and the screw holes are marked. Also fitted inside the case is a mother board (81 model only) which allows 16K, 32K and 64K to be fitted in the case. All the connections are at the rear of the case i.e. Power, Mic, Ear, T.V. and the expansion port. The case is large enough for other add ons also to be fitted inside. One of these could be the power supply, then you could very quickly fit a mains switch, or a switch on the 9V line. This means you have a very smart self-contained unit. This case does not stop you from using any other add-ons that you may have e.g. Printer etc. We are convinced that this is the best keyboard available at present. It offers more keys and features than any other keyboard in its price range.

£45

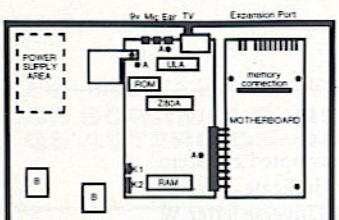
KEYBOARD (SPECTRUM/81)

NOTE

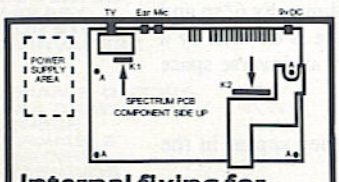
The case can be purchased separately with the keyboard aperture uncut, so if you have one of our early uncased keyboards, or in fact any other suppliers' keyboards, these could be fitted. The keyboard is connected to your computer by a ribbon cable and this has connectors fitted which simply push into the Sinclair connectors. It is a simple two minute job and requires no electronic skills. This keyboard does not need any soldering. Please specify on order whether you require the ZX 81 or Spectrum case.

SPECTRUM MODEL

This is supplied with spectrum legends, and a slightly different base for fitting the spectrum inside, again all the connectors are at the rear of the case and there is plenty of room for the power supply (and other add-ons). Should you want to change, we can supply both the Spectrum legends and details of updating your case which will enable modification from the ZX 81 to spectrum. PLEASE specify on your order whether you require the ZX 81 or spectrum case.



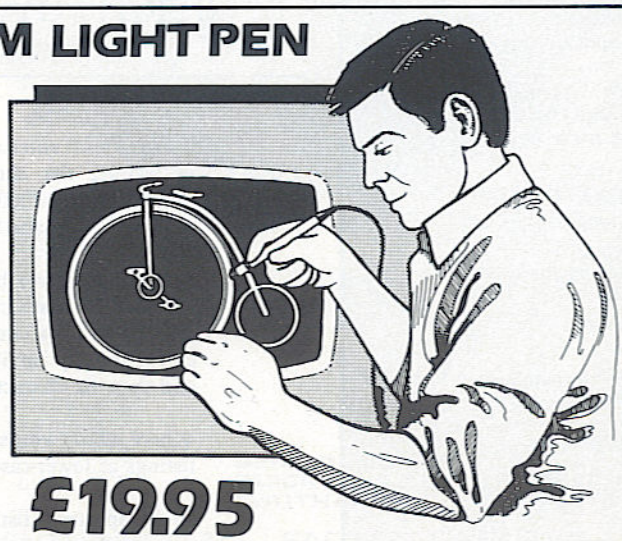
Internal fixing for ZX 81 keyboard case.



Internal fixing for spectrum keyboard case.

SPECTRUM LIGHT PEN

The pen enables you to produce high resolution drawings on your own television set, saving a vast amount of time over using basic programming statements, such as Plot, Draw etc. You can erase, modify and save drawings and it comes complete with software program. The superb light pen is available from D.K. tronics.



£19.95

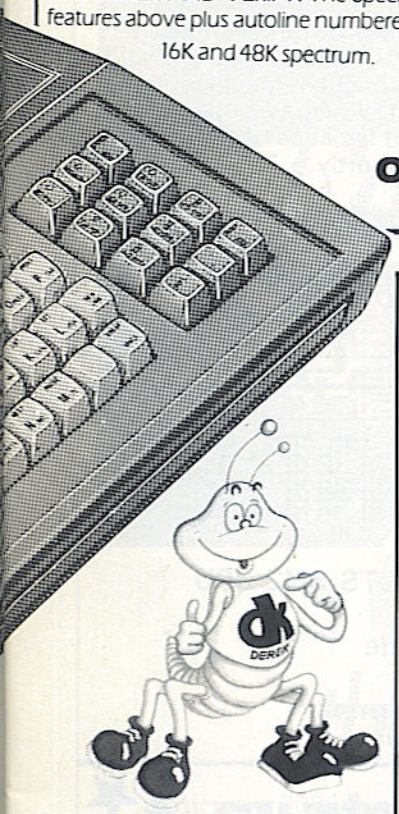
16K Memory Expansio
The 16K uses 4116 dynam Static Ram and occupy le using the Static Ram. The speed low power Rams. I the computer. All the co which comes to you fully where. Position in memo

64K Memory Expansio
All the above information advantage lies in the 64K 56K of usable memory. I the use of other add-ons 8192-65536. The Black Fr
Spectrum Memory Exp
Upgrade your Spectrum t it is simply slipped inside t are supplied, and the on time. The fitting requires same as Sinclair's upgrad

ZX 80~81 Spectrum HARDWARE

SPECTRUM/81 TOOLKIT

This is the toolkit which won acclaim in the feature in the August 1982 issue (pages 29 and 30) of Sinclair User, "It is the most impressive program, fast in execution with clear and full instructions...it stands out from the rest of the field." The ZXED is a powerful editor for use on the expanded ZX81. It is intended for use by the serious BASIC programmer and offers several useful and time saving features most helpful during all stages of program development. The facilities provided are as follows: ALTER, BYTES, COPY, DELETE, FIND, HELP, INSERT, KEEP, MOVE, RENUMBER AND VERIFY. The Spectrum Toolkit contains most of the features above plus autoline numberer and append, and will run in the 16K and 48K spectrum.



Both at only £6.95

4K GRAPHICS ROM £24.95

The DK Graphic module is our latest ZX 81 accessory. This module unlike most other accessories fits neatly inside your computer under the keyboard. The module comes ready built, fully tested and complete with a 4K graphic ROM. This will give you an unbelievable 448 extra pre-programmed graphics, your normal graphic set contains only 64. This means that you now have 512 graphics and with their inverse 1024. This now turns the 81 into a very powerful computer with a graphic set rarely found on larger more expensive machines. In the ROM are lower case letters, bombs, bullets, rockets, tanks, a complete set of invaders graphics and that only accounts for about 50 of them, there are still about 400 left (that may give you an idea as to the scope of the new ROM). However, the module does not finish there, it also has a spare holder on the board which will accept a further 4K of ROM/RAM. This holder can be fitted with a 1K/2K/RAM and can be used for user definable graphics so you can create your own custom character sets.

WHY WAIT?
ORDER TODAY FOR FAST DELIVERY

FLEXIBLE RIBBON CONNECTOR

If you have ever had whiteouts or system crashes this could be the answer. It stops the movement between the computer and the RAM expansion, it is supplied with a ribbon, 6 inches long, with a male connector at one end and a female at the other, at only

£10

16/64 MEMORY FOR ZX 81

16K Memory £22.95
16K (uncased) £19.95
64K Memory £52.95
64K (uncased) £49.95

The above illustration shows the casing for the 16K or massive 64K.

nsion £22.95
ynamic Ram Chips. We use the dynamic as they are much denser than by less space. They are also much cheaper than the equivalent product . The Ram is manufactured with high quality materials, and uses high ms. It is supplied ready-built and only needs to be plugged into the rear of e components are fitted into holders. This massive add-on memory fully assembled and tested is the cheapest 16K memory available any- emory from 16384 to 32768. (Same as the Sinclair memory.)

16K (UNCASED) £19.95

nsion £52.95
ation on the 16K also applies to the 64K Memory Expansion, but the 64K giving nearly FOUR times the memory. This advanced model has ry. In addition, the block from 8K to 16K can be switched out to enable ons. The graphics ROM is to be used in this area. Position in Memory: k From 8192-16384 is switchable.

64K (UNCASED) £49.95

Expansion MK1 £35.00, MKII £30.00.
um to 48K of user Ram. The Spectrum memory expansion is simple to fit, de the case, and then only requires plugging in. Full fitting instructions only tool you will need is a screwdriver and just two minutes of your res no electronic skills. Position in memory from 32768 to 65536. (The grade to 48K).

Please state type of machine, which Rom memory size, quantity and place when ordering.

Please send me . . . . . @ £ . . . . .

Please send me . . . . . @ £ . . . . .

Please send me . . . . . @ £ . . . . .

Please add on £1.25 for P/P

In enclose cheque/P.O. payable to DK Tronics total £ . . . . .

or debit my Access/Barclaycard

Signature . . . . .

Name . . . . .

Address . . . . .

. . . . .

Send to DK tronics, Unit 2, Shire Hill Ind Est, Saffron Walden, Essex CB11 3AQ. Tel: (0799) 26350 (24 hrs) 5 lines.

SP6

dk'tronics

New colour brochure now available, send SAE for quick return

THE TOMB OF DRACULA!

3D HORROR ADVENTURE GAME!

For the **16K ZX81** or with colour and sound for the **48K SPECTRUM,** a superb 3D graphics adventure game! **Enter** Dracula's tomb at 30 minutes to sunset . . . **wander** through the tomb's pre-mapped 300 vaults in search of the fabled Vampire's Treasure . . . **pick up** valuable silver stakes and use them to defend yourself against the lurking horrors . . . ghouls, zombies, pits of primaeval slime . . . **See** them all on the computer's plan of the tomb . . . when it will let you! **Take** a chance on a Mystery Vault . . . if you dare! And all the time the minutes are ticking by to sunset . . . when **Dracula** rises from his coffin and comes after **you!** Each of the infinite levels of the tomb has its own 300 vaults . . . go as deep as you like, the Prince of Darkness will seek you out in his blood-lust! **WARNING: people of an exceptionally nervous disposition should play this game only during the hours of daylight!** Special facility lets you save a game in progress onto tape so you can continue it whenever you choose.

For ZX81 with 16K RAM £3.95
For 48K SPECTRUM £4.95

Price includes ready-to-load cassette with library case and inlay, full instructions, postage and packing. **Order today!** Money refunded if not delighted!

Send cash, P.O. or cheque to:

FELIX SOFTWARE (DEPT. SP2)

19 Leighton Avenue, Pinner, HA5 3BW.

SPECTRUM COMPILER

For both 16K and 48K

Almost any BASIC program can be speeded up, by a factor of up to several hundred times. It will produce machine code which can be located at any address.

Handles nearly all BASIC commands. Some of the features unique to this compiler are:

1. Noise generator (explosions, gunshots)
2. Mini sprite graphics
3. Selected Screen Scrolling
4. Special BEEP commands
5. Special INPUT statement and normal INPUT statement
6. Fill the screen with current attributes, and many more, too numerous to mention

All this for only £7.99 both versions

We have a number of original machine code games under development, which will use the full HI RES graphics and sound facilities of the compiler. These will be coming shortly.

Send PO/Cheque payable to:
WYE VALLEY SOFTWARE,
PARTON HOUSE, KINNERSLEY,
HEREFORDSHIRE

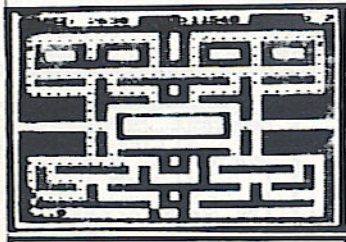
DJL SOFTWARE

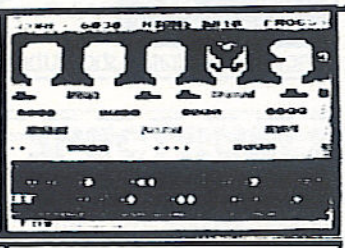
DJL

DEPT SP, 9 TWEED CLOSE, SWINDON, WILTS SN2 3PU

Tel: (0793) 724317 Trade enquiries welcome

Export Orders: **Please add £1.00 per tape airmail**





ZUCKMAN
ZX81 (16K)

*ALL MACHINE CODE (10K)
*FOUR INDEPENDENT GHOSTS
* HIGH-SCORE 'HALL OF FAME'
*AUTHENTIC ARCADE ACTION
*TITLE/DISPLAY MODE

ONLY £5.95 INC. P&P

FROGGY
ZX81 (16K)

*MOVING CARS, LOGS, TURTLES
*ALLIGATORS, DIVING TURTLES
*FOUR 'SCREENS' OF ACTION
*ALL ARCADE FEATURES
*ENTIRELY MACHINE CODE

ONLY £5.95 INC. P&P

★ NEW ★ **ZX Spectrum** ★ NEW ★

FROGGY 16K or 48K

SPECTRUM VERSION OF ARCADE GAME WITH FULL ARCADE FEATURES:

- ★ Fabulous Hi-Res Colour Graphics
- ★ Authentic Sound Effects + 3 Tunes
- ★ 3-D Logs, Swimming & Diving Turtles
- ★ 3 Lanes of Multi-coloured vehicles
- ★ On-screen Score, Hi-Score, Time-bar
- ★ Snake, Alligators and Baby Frog
- ★ 'Top 5' High-Score initials table
- ★ Demonstration Game routine

Your home-sick frog must leap across a busy main road, then onto logs and turtles in the river to reach safety of the river-bank frog-homes. THIS MACHINE-CODE GAME MUST BE SEEN TO BE BELIEVED!!

ONLY £5.95 INC. P & P

Dock your games software into Britain's largest home-user database...

... one cassette reaches thousands of enthusiasts.

Micronet 800 is a powerful new service that opens up a whole new world of opportunities for microcomputer users.

When this huge database was launched just a few months ago, it attracted thousands of enquiries from home computer enthusiasts who could see the huge new vistas when you link microcomputers with Micronet 800... an 'Aladdin's Cave' of hundreds of games programs which can be downloaded to individual machines... hundreds of thousands of pages of news, reviews, product data and prices from the computer world and from *Prestel*... and an electronic mail-box for exchanging messages and ideas with other users right across the country.

All this for around a modest 15p a day. Subscribers are linked by telephone through a modem, making it the fastest and most direct means of selling your games software downline to machines like the BBC Micro, ZX Spectrum, ZX81, Apple II, Tandy TRS80 and PET.

Make a name for yourself in games software. Send your disk or cassette, together with the coupon to Micronet 800 at the address below.* We will validate the program, and let you know what you stand to gain from Micronet 800.

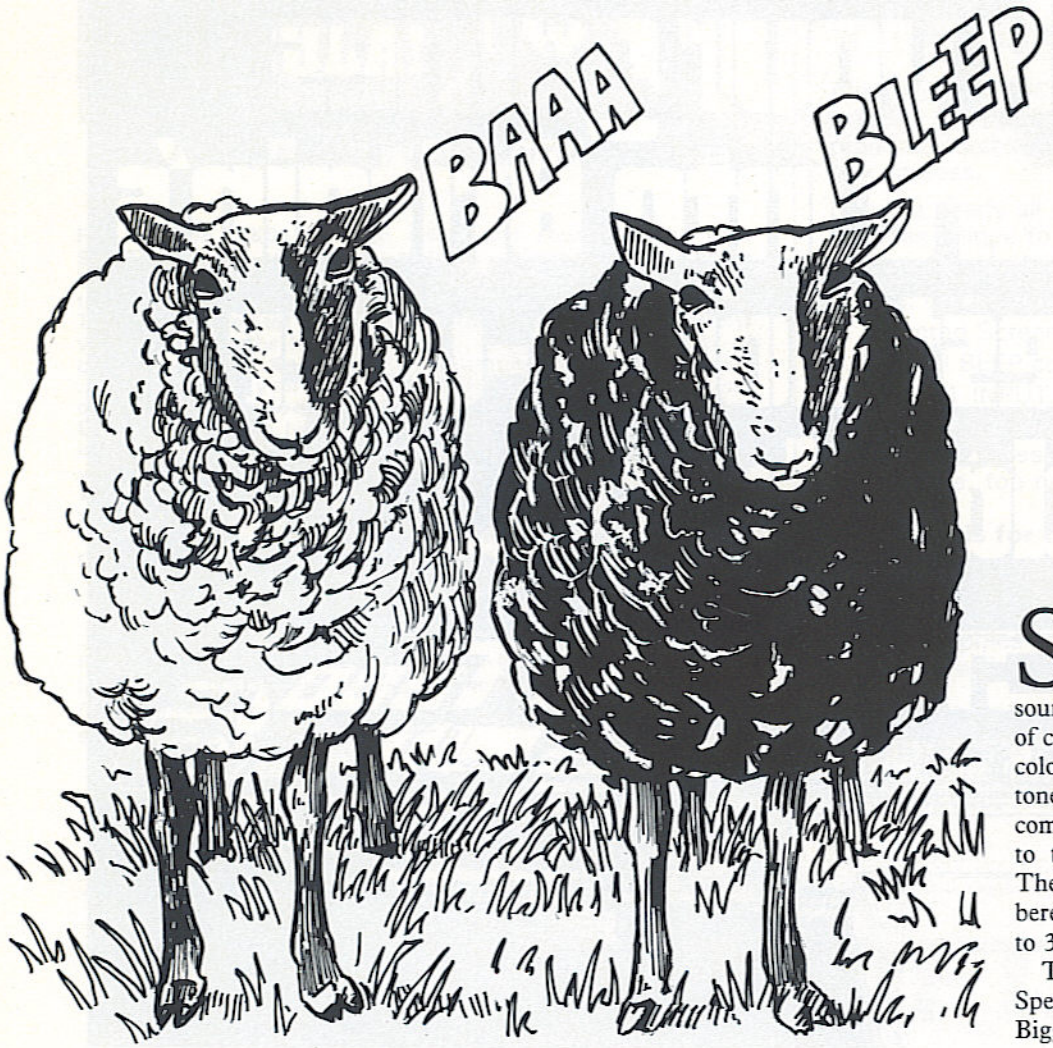
micronet 800

Micronet 800
Bushfield House
Orton Centre
Peterborough PE2 0UW

Name _____
Address _____
_____
_____ Tel: _____
Name of Program _____
Type of Program _____ Type of Micro _____
☐ Please tick box if you are interested in becoming a Micronet 800 subscriber.

SP6

*We cannot return cassettes or disks unless a stamped addressed envelope is enclosed.



SIMON is based on the popular electronic game. It produces random collections of colours and sounds for the player to repeat. A block of colour appears on the screen with the colour number and a corresponding tone. Type-in the numbers which the computer has produced, remembering to type 'ENTER' between each one. The amount of numbers to be remembered and repeated rises steadily from 1 to 30.

The program was written for the 16K Spectrum by D Rushton and J Jones of Biggin Hill, Kent.

SIMON SAYS

```
    2 PAPER 7: BORDER 5: INK 2:
    3 PRINT AT 1,1;" © Justin Jon
es Productions"
    5 PRINT AT 3,1;" © Darren Rus
hton Productions"
    6 PRINT AT 4,1;"
    7 PRINT AT 5,1;"
    8 PRINT AT 9,1;"***SIMON SIMO
N SIMON SIMON SIMON SIMON SIMON
SIMON SIMON SIMON SIMON SIMON SI
MON SIMON SIMON***": PAUSE 100
   10 DIM r(30): DIM a(30)
   15 PAPER 7: INK 0: BORDER 7: C
LS
   20 FOR i=1 TO 30: LET r(i)=INT
 (RND*8): NEXT i
   30 FOR n=1 TO 30
   40 INPUT "Press*ENTER*when*you
*are*ready"; LINE z$
   50 FOR c=1 TO n
   60 LET cn=r(c): GO SUB 300
   80 CLS : NEXT c
   90 FOR c=1 TO n
  100 INPUT ("What*was*colour*num
ber*";c;"?");a(c)
  110 IF a(c)<>INT a(c) OR a(c)<0
 THEN INPUT "Between*0*&*7.**Re-
enter:";a(c): GO TO 110
  120 LET cn=a(c): GO SUB 300
  130 IF a(c)<>r(c) THEN BEEP 2,-
20: GO TO 180
  140 NEXT c
  150 INPUT (" You've done*";n;"*
correctly*********(c)*to*continu
e*or*(s)*to*stop?(c/s)"); LINE z
$: IF z$="s" THEN STOP
  160 NEXT n
  170 PRINT AT 15,0;"Well*done**Y
ou've*beaten*me."
  180 PRINT AT 16,0;"The*sequence
*was:"
  187 PAUSE 150
  190 IF n>30 THEN LET n=30
  200 FOR i=1 TO n: PRINT BRIGHT
1; PAPER r(i); INK 9;r(i);: BEEP
 0.5,r(i)*5-20: NEXT i
  210 STOP
  300 FOR i=6 TO 9: PRINT AT i,11
; BRIGHT 1; PAPER cn;"****": NEX
T i
  305 PLOT 88,127: DRAW 0,-31: DR
AW 31,0: DRAW 0,31: DRAW -31,0
  310 PRINT AT 6,14; INK 9;cn: BE
EP 1,cn*5-20
  320 RETURN
```

ATTACKED IN SPACE

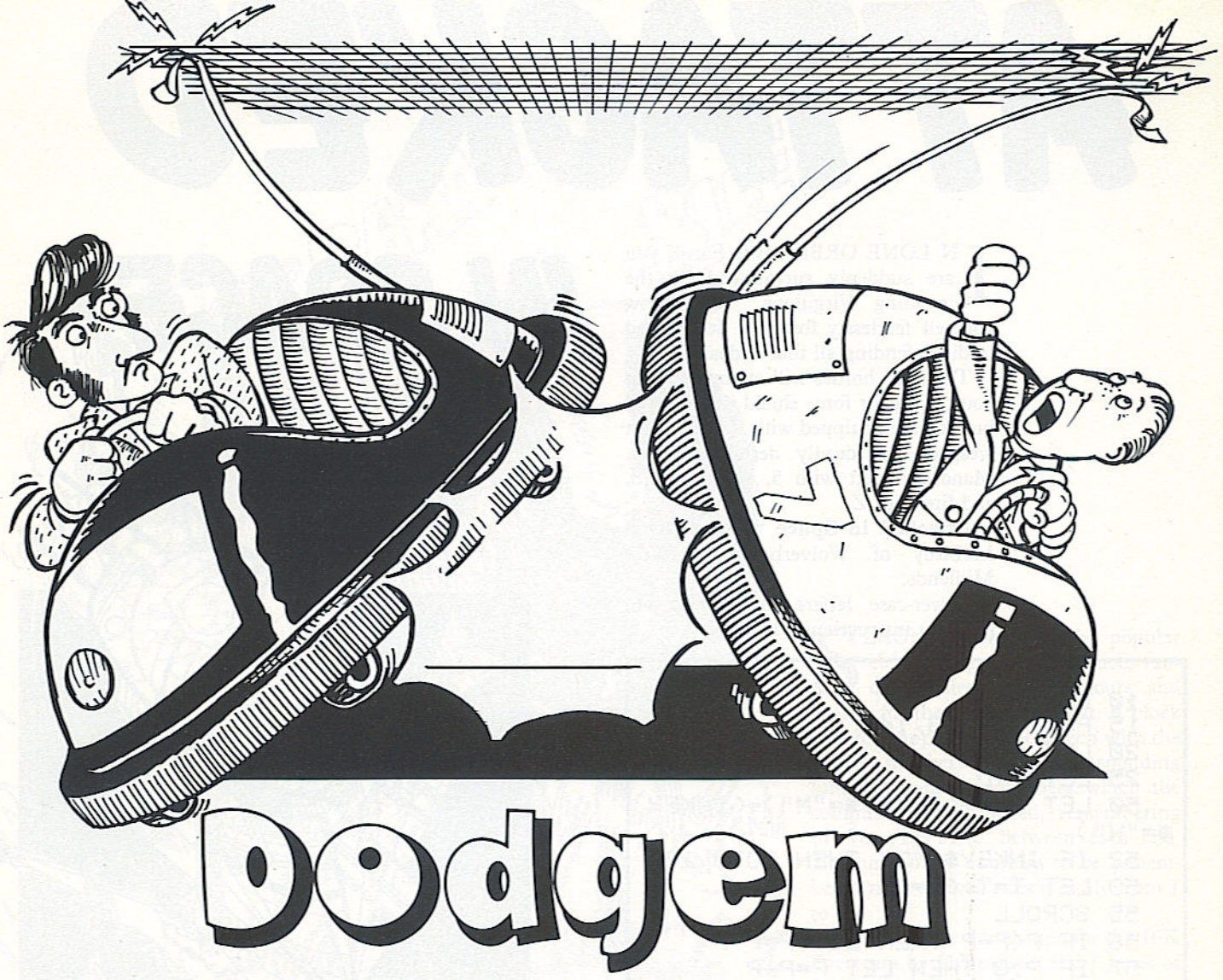
IN LONE ORBIT over Earth, you are suddenly surrounded by the invading Virgulons. You throw yourself fearlessly forward, determined to die defending all that is dearest.

The alien hordes will attempt to ram you until your force shield is destroyed but you are equipped with Earth's latest weapon, the deadly destabiliser ray. Manoeuvre left with 5, right with 8, and fire with Z.

Attacked in Space was sent by S McElroy of Wolverhampton, West Midlands.

Lower-case letters in brackets are graphics instructions. (1KZX-81).

```
  10 LET P=5
  15 POKE 16418,14
  20 LET D=P-P
  25 LET T=D
  50 LET P=P+(INKEY$="M")-(INKEY
$="N")
  52 IF INKEY$="Z" THEN GOTO 200
  53 LET T=T+(P=P)
  55 SCROLL
  56 IF P<P-P THEN LET P=P-P
  57 IF P>8 THEN LET P=P-P
  60 PRINT AT P-P,P;
  70 IF T=100 OR PEEK (PEEK 1639
8+PEEK 16499*256)=CODE "(inverse
 QUOTATION MARK)" THEN GOTO 300
  80 PRINT "(inverse V)"
  85 PRINT AT 9,RND*8;"(inverse
QUOTATION MARK)"
  90 GOTO 50
 200 FOR X=1 TO 9
 210 PRINT AT X,P;
 220 LET N=PEEK (PEEK 16398+PEEK
 16399*256)
 230 PRINT "."
 240 IF N=CODE "(inverse QUOTATI
ON MARK)" THEN GOTO 270
 250 NEXT X
 255 LET D=D-X
 260 GOTO 50
 270 LET D=D+X
 280 GOTO 50
 300 PRINT AT 5,0;"(three INVERS
E SPACES)";D;"(three INVERSE SPA
CES)"
 305 PRINT
 310 PAUSE 4E4
 320 CLS
 330 RUN
```



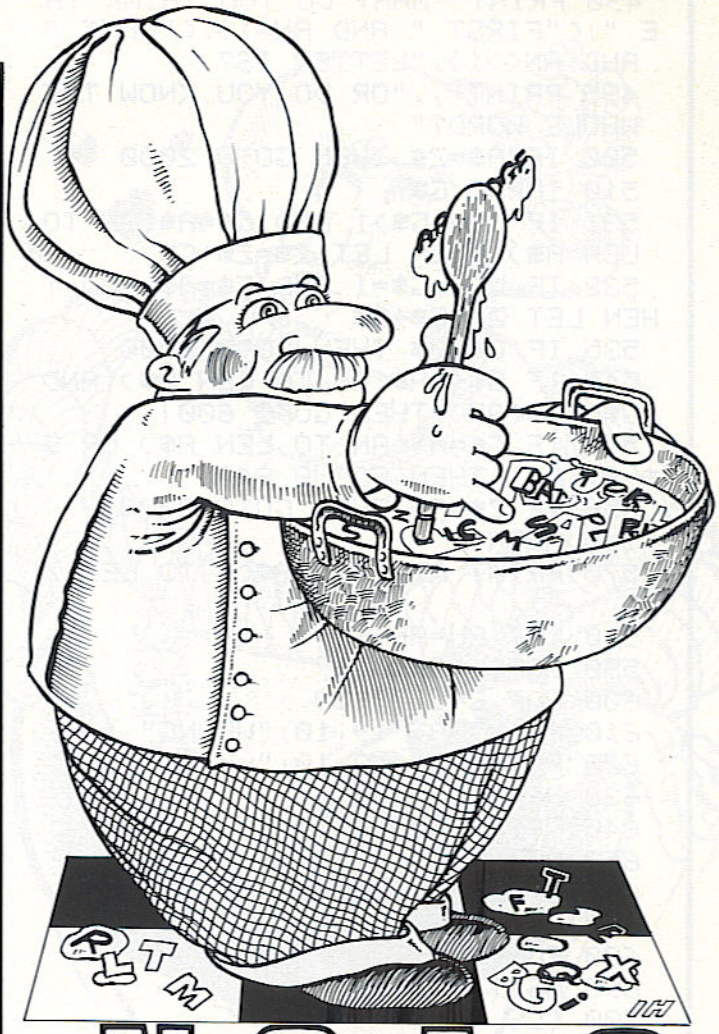
DODGEM

DODGE the coloured squares and avoid crossing your own trail. A familiar game but extremely well-written. Colourful graphics and fast-moving characters are all packed into around 2K of memory. The speed is so fast that on its highest level it defeated its author.

It is one of a batch of excellent programs for the 16K or 48K Spectrum which were written by P D Loach of Hadleigh, Suffolk. Try this program—it is very impressive.

```
  5 LET hs=365: GO SUB 2000
 10 INK 0: PAPER 6: BORDER 1: C
LS : INPUT "DIFFICULTY (1 TO 6-E
ASIEST)";d: IF d<1 OR d>6 OR d>I
NT d THEN BEEP 1,0: GO TO 10
 20 LET t=0: LET l=5: LET q=d+5
: LET d=d/100: FOR f=0 TO 31: PR
INT AT 0,f; INK 3;"■";AT 21,f;"■
": IF f<22 THEN PRINT INK 3;AT f
,0;"■";AT f,31;"■"
 30 NEXT f: FOR f=1 TO 45: PRIN
T PAPER RND*3+1;AT RND*19+1,RND*
29+1;" ": NEXT f: PRINT PAPER 3;
 INK 7;AT 0,16;"HIGH ";hs
 40 BEEP 1,0: LET a=1: LET b=0:
 LET x=15: LET y=10: FOR f=9 TO
13: PRINT AT f,14;"          ": NEXT f
 50 LET i$=INKEY$: IF i$>"4" AN
D i$<"9" THEN LET a=(i$="6")-(i$
="7"): LET b=(i$="8")-(i$="5"):
BEEP .005,x
 60 PRINT AT 0,0; INK 7; PAPER
3;"TIME ";t
 70 FOR f=1 TO q: NEXT f
 90 BEEP d,x: LET t=t+1: LET y=
y+a: LET x=x+b: LET c=ATTR (y,x)
: PRINT AT y,x;"■";AT y-a,x-b;"
": IF c=48 THEN GO TO 50
 100 LET dU=.005: FOR f=1 TO 20:
 BEEP dU,f: LET dU=dU+.003: NEXT
 f
 110 LET l=l-1: PRINT PAPER 3;AT
 y,x;" ";AT 21,0; PAPER 3; INK 7
;"LIVES ";l: IF L THEN GO TO 100
0
 120 PRINT #0; FLASH 1; INK 2; P
APER 6;"YOU ARE OUT OF LIVES": I
F t>hs THEN PRINT AT 21,0; FLASH
 1; PAPER 3; INK 7;"HIGH SCORE":
 LET hs=t
 130 IF INKEY$<>"" THEN GO TO 13
0
 140 IF INKEY$="" THEN GO TO 140
 150 GO TO 10
1000 PRINT AT 21,16; FLASH 1; IN
K 2; PAPER 6;"HA,HA !": FOR y=1
TO 20: PRINT AT Y,1; PAPER 8; IN
K 0;TAB 31;: NEXT Y: FOR Y=1 TO
15: PRINT AT RND*19+1,RND*29+1;
PAPER RND*5;" ": NEXT Y
1010 PRINT AT 21,16; PAPER 3;"
          ": GO TO 40
2000 RESTORE : FOR f=USR "p" TO
USR "p"+7: READ a: POKE f,VAL ("
BIN "+STR$ a): NEXT f: DATA 1100
0,a,111100,1011010,1011000,10010
0,a,0
2010 BORDER 0: PAPER 0: INK 6: C
LS
2020 PRINT TAB 9;"DODGEMS"''" Yo
u (■) must dodge your way     thr
ough the maze,avoiding all     obs
tacles & you mustn't cross     you
r path."''" Move using the curso
r keys."
2030 IF INKEY$<>"" THEN GO TO 20
30
2040 IF INKEY$="" THEN GO TO 204
0
2050 RETURN
```

```
  10 PRINT "ENTER THE LENGTH OF
THE LONGEST WORD"
  20 INPUT LEN
  30 PRINT "ENTER THE AMOUNT OF
WORDS"
  40 INPUT WORDS
  50 PRINT "NOW ENTER THE WORDS"
  55 PRINT "ENTER ""C"" IF THE W
ORD IS          INCORRECT"
  60 DIM B$(WORDS,LEN)
  70 FOR Q=1 TO WORDS
  75 PRINT AT 7,0;"WORD ";Q
  80 INPUT B$(Q)
  85 PRINT AT 8,15-(INT (LEN/2))
;B$(Q)
  90 IF B$(Q,1 TO 2)="C " THEN G
OTO 107
 100 NEXT Q
 101 PRINT "SET THE TAPE RECORDE
R READY TO  RECORD AND PRESS NEW
LINE."
 102 INPUT I$
 103 CLS
 104 SAVE "ANAGRAMs"
 105 GOTO 110
 107 LET Q=Q-1
 108 PRINT AT 7,5;Q
 109 GOTO 80
 110 LET COR=0
 111 FOR B=1 TO 10
 115 FAST
 120 RAND
 130 CLS
 140 LET W=INT (RND*WORDS)+1
 150 LET A$=B$(W)
 160 FOR M=1 TO LEN A$
 170 IF A$(M)=" " THEN GOTO 190
 180 NEXT M
 190 LET A$=A$(1 TO M-1)
 200 RAND
 210 LET F$=""
 220 DIM A(LEN A$)
 230 FOR N=1 TO LEN A$
 240 LET R=INT (RND*LEN A$)+1
 250 LET A(N)=R
 260 FOR C=1 TO N
 270 FOR D=1 TO N
 280 IF C=D THEN GOTO 300
 290 IF A(C)=A(D) THEN GOTO 240
 300 NEXT D
 310 NEXT C
 320 LET F$=F$+A$(R)
 330 IF A$=F$ THEN GOTO 230
 340 IF LEN A$=LEN F$ THEN GOTO
360
 350 NEXT N
 360 SLOW
 370 PRINT AT 0,11;"ANAGRAMS"
 380 PRINT TAB 11;""
 390 PRINT
 400 LET D$="HERE IS ANAGRAM NO.
 "+STR$ B
 405 PRINT TAB 15-INT (LEN D$/2)
;D$
 406 PRINT ,,TAB (15-INT (LEN F$
/2));F$
 410 LET GOES=INT (LEN F$/2)
 420 LET Z$=""
 430 PRINT
 450 LET AN=1
 460 PRINT AT 8,0;"YOU HAVE ";GO
ES;(" GOES" AND GOES<>1);(" GO"
AND GOES=1);" TO GUESS IT.  "
 470 FOR Q=1 TO 5
 480 PRINT AT 8,9;" ";AT 8,9;GOE
S
 485 NEXT Q
```



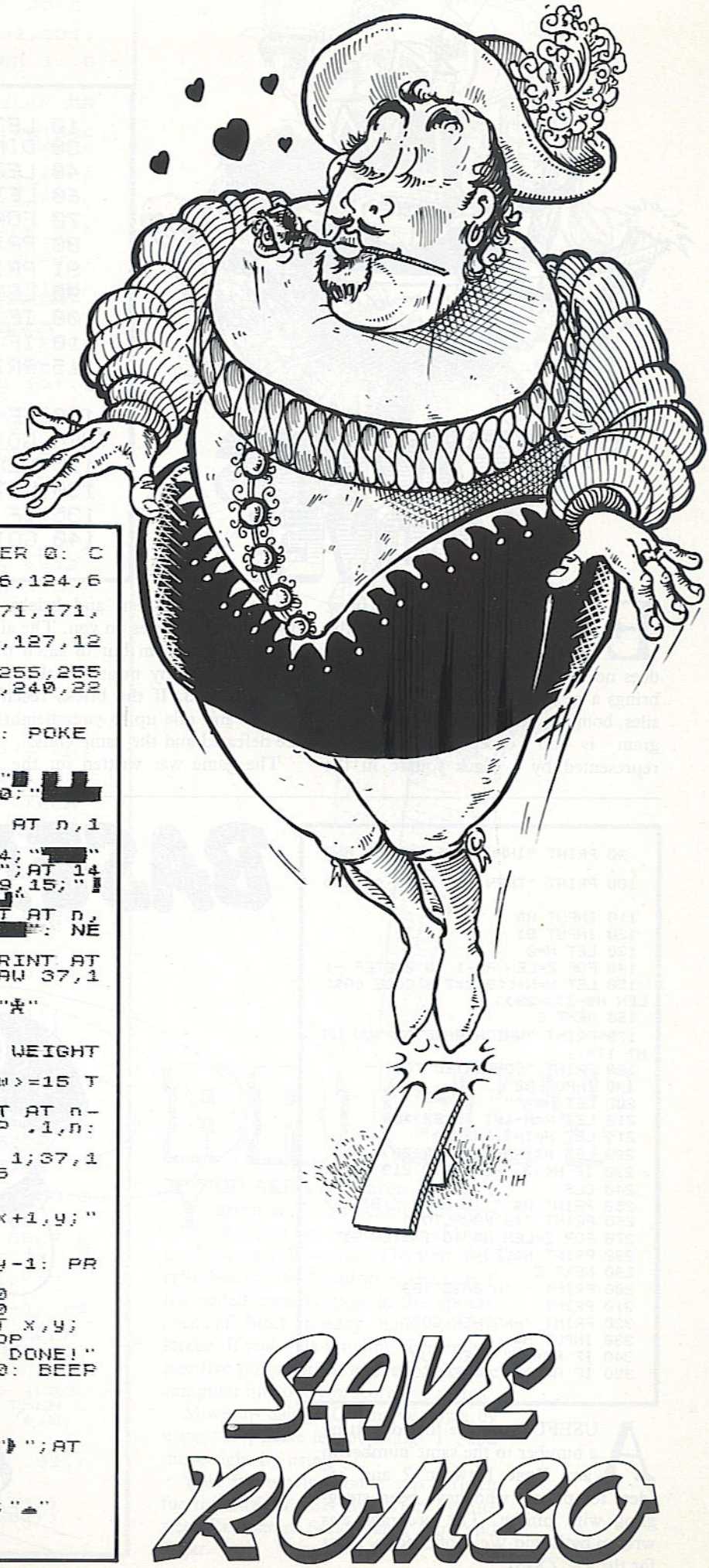
ANAGRAMS

CHALLENGE YOURSELF and challenge your friends with the scrambled words produced by **Anagram**. It will mix the letters in any words you enter and print them out in an unrecognisable form for you to guess the original word.

The program for the 16K ZX-81 was written by S R Woodward of Leigh-on-Sea, Essex.

```
 490 PRINT "WHAT DO YOU THINK TH
E ";("FIRST " AND AN=1);("NEXT "
 AND AN<>1),"LETTER IS?  "
 495 PRINT ,,"OR DO YOU KNOW THE
 WHOLE WORD?"
 500 IF A$=Z$ THEN GOTO 2000
 510 INPUT G$
 531 IF LEN G$>1 AND G$=A$(AN TO
 LEN A$) THEN LET Z$=Z$+G$
 532 IF LEN G$=1 AND G$=A$(AN) T
HEN LET Z$=Z$+G$
 535 IF G$=A$ THEN GOTO 2000
 540 IF G$<>A$(AN TO LEN A$) AND
 G$<>A$(AN) THEN GOTO 600
 550 IF G$=A$(AN TO LEN A$) OR G
$=A$(AN) THEN GOSUB 840
 556 IF Z$=A$ THEN GOTO 2000
 560 PRINT
 570 PRINT AT 16,3;A$(1 TO LEN Z
$)
 580 LET AN=AN+1
 590 GOTO 460
 600 FOR E=1 TO 10
 610 PRINT AT 19,10;"WRONG"
 620 PRINT AT 19,10;"wrong"
 630 NEXT E
 640 PRINT AT 19,10;"      "
 650 LET GOES=GOES-1
 660 IF GOES=0 THEN GOTO 680
 670 GOTO 460
 680 FOR E=1 TO 20
 690 NEXT E
 700 CLS
 710 PRINT "YOU HAVE FAILED IN G
UESSING",,TAB 11;"THE WORD."
 720 PRINT
 730 PRINT TAB 12;"IT WAS"
 740 PRINT
 750 LET Z$=""
 760 FOR E=1 TO LEN A$
 770 LET Z$=Z$+CHR$ (CODE A$(E)+
128)
 780 NEXT E
 790 FOR E=1 TO 10
 795 LET EN=16-(INT (LEN A$/2))-
1
 800 PRINT AT 7,EN;A$;AT 7,EN;Z$
 810 NEXT E
 820 PRINT AT 7,EN;A$
 821 FOR E=1 TO 20
 822 NEXT E
 830 GOTO 950
 840 FOR E=1 TO 10
 850 PRINT AT 14,9;"CORRECT";AT
14,9;"correct"
 860 NEXT E
 870 PRINT AT 14,9;"       "
 880 RETURN
 890 PRINT AT 16,3;A$
 895 FOR E=1 TO 30
 900 NEXT E
 910 CLS
 920 PRINT AT 0,4;"YOU GUESSED T
HE WORD IN"
 930 LET EN=(INT (LEN A$/2)-GOES
)+1
 940 PRINT ,TAB 12;EN;" ";("GOES
" AND EN<>1);("GO" AND EN=1)
 945 IF GOES<>0 THEN LET COR=COR
+1
 946 FOR E=1 TO 30
 947 NEXT E
 950 NEXT B
 954 PRINT AT 9,0;"      YOU GOT
";COR;(" ANAGRAM" AND COR=1);("
ANAGRAMS" AND COR<>1);TAB 5;" CO
RRECT OUT OF ";B-1
 955 PRINT AT 12,0;"DO YOU WANT
TO HAVE ANOTHER GO?"
 960 INPUT I$
 970 IF I$(1)="Y" THEN GOTO 110
 980 PRINT
 990 PRINT "DO YOU WANT TO CHANG
E THE WORDS?"
1000 INPUT I$
1010 IF I$(1)="N" THEN STOP
1020 CLS
1030 RUN
2000 LET K$="
                "
2010 PRINT AT 21,0;A$
2020 PRINT AT 21,0;K$
2030 PRINT AT 20,0;A$
2040 PRINT AT 20,0;K$
2050 PRINT AT 19,1;A$
2060 PRINT AT 19,1;K$
2070 PRINT AT 18,1;A$;AT 18,1;K$
2080 PRINT AT 17,2;A$;AT 17,2;K$
2090 PRINT AT 16,3;A$
2100 GOTO 890
5000 FOR N=1 TO WORDS
5010 SCROLL
5020 PRINT B$(N);TAB 16;N
5030 NEXT N
```

SAVE ROMEO

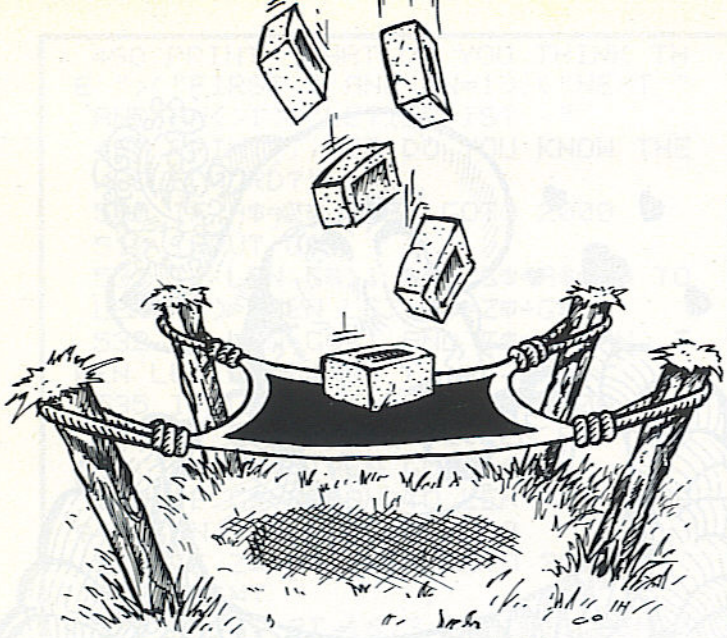


ROMEO stands on a see-saw, trying to leap to the balcony above. You stand on the opposite building and drop down a weight between 1 and 14 which will land at the other end of the see-saw and send him shooting up to the balcony. If you pick the wrong weight he will travel too far, or fall short, and be smashed to a pulp.

The program was written for the 16K Spectrum by M Green of Maidstone, Kent.

Use graphic 'A' in lines 15, 40 and 46; graphic 'B' in line 18; graphic 'C' in line 23; graphic 'D' in line 240 and graphic 'E' in lines 60 and 210.

```
   1 PAPER 0: INK 7: BORDER 0: C
LS
   2 DATA 56,56,146,254,16,124,6
8,198
   3 DATA 0,255,171,171,171,171,
255,255
   4 DATA 0,0,28,20,62,62,127,12
7
   5 DATA 0,0,0,0,24,126,255,255
   6 DATA 192,224,224,240,240,22
4,224,192
   7 FOR n=144 TO 148
   8 FOR f=0 TO 7: READ a: POKE
USR CHR$ n+f,a: NEXT f
   9 NEXT n
  10 PRINT AT 4,0; INK 6;"▗ ▗▙
▟▖";AT 5,0;"▜▛▜▛▜▛▜▛▜▛▜▛";AT 6,0;"▜▙▟▛
▜▛▜▛▜▛▜▛"
  11 FOR n=7 TO 21: PRINT AT n,1
; INK 6;"▜▛▜▛▜▛▜▛": NEXT n
  12 PRINT AT 11,13; INK 4;"▜▛▜▛"
;AT 12,15;"▜";AT 13,15;" ▌";AT 14
,15;"▀";AT 18,15;" ▐";AT 19,15;" ▌
";AT 20,15;" ▐";AT 21,15;"▟▙"
  13 FOR n=11 TO 21: PRINT AT n,
16; INK 4;"▜▛▜▛▜▛▜▛▜▛▜▛
```



HEAVENS ABOVE!

```
 10 LET H=11
 30 DIM A(4)
 40 LET P=INT (4*RND)+1
 60 LET J=5*P
 70 FOR I=8 TO 21-A(P)
 80 PRINT AT I,J;"(gh)"
 81 PRINT AT I-1,J;" "
 90 LET M$=INKEY$
100 IF M$="5" THEN LET H=H-1
110 IF M$="8" THEN LET H=H+1
115~PRINT AT 15,H;"(sp:2*isp:sp
)"
120 IF I=15 AND ABS (H+2-J)<=1
THEN GOTO 40
125 NEXT I
130 LET A(P)=A(P)+1
135 IF A(P)=7 THEN STOP
140 GOTO 40
```

EAGER USERS of ZX-81 must sometimes be overcome with the belief that someone up there does not like them. Each new program brings a new peril from the skies, missiles, bombers, alien invaders. This program is no exception. You are represented by a black square in the centre of the screen and bricks rain down from the skies on you. The aim is not to dodge them but to catch them, which you do by means of the cursor keys 5 and 8. If the bricks reach the ground and pile up to your height you are defeated and the game ends.

The game was written for the 16K ZX-81 by Richard Copper of Warley, West Midlands.

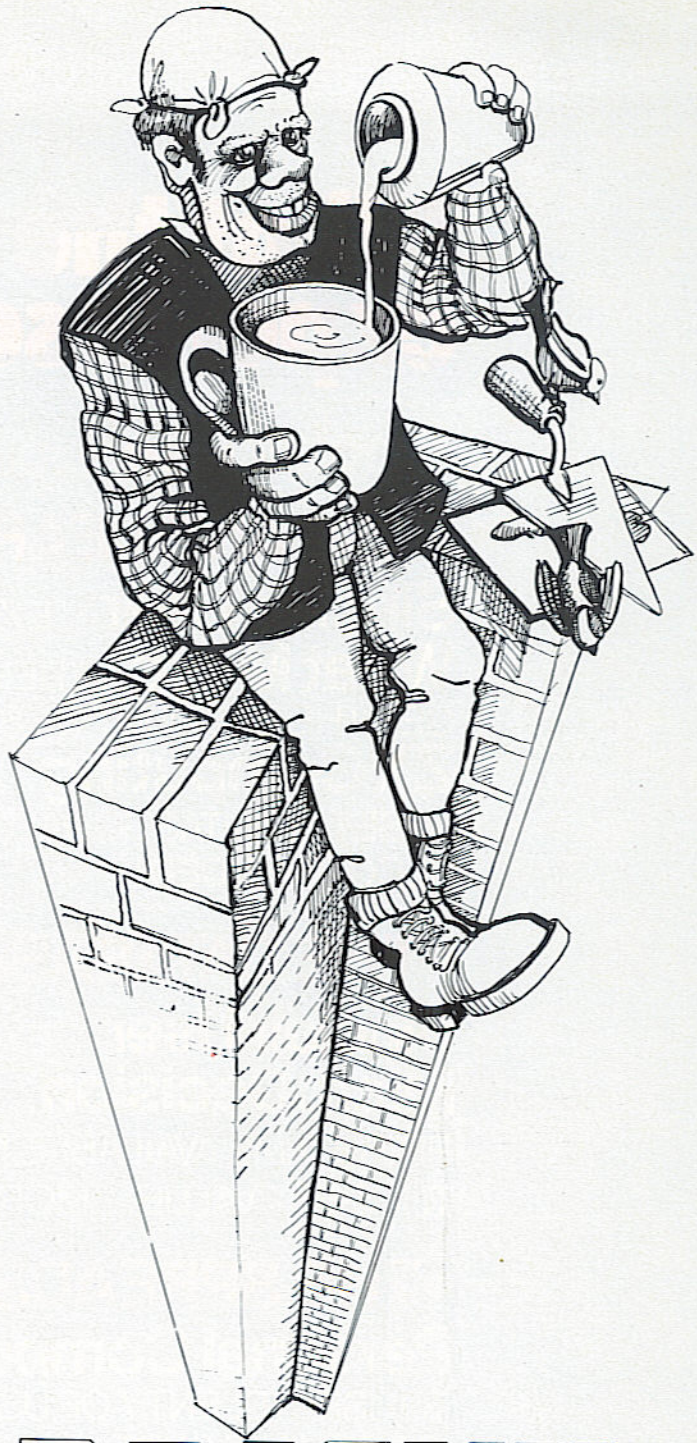
Graphics instructions are given in lower-case letters in brackets. A space is represented by 'sp', an inverse space by 'isp', and a graphic H by 'gh'.

```
 90 PRINT "INPUT THE NUMBER AND
",,,
100 PRINT "THEN ITS BASE:(2-35)
."
110 INPUT A$
120 INPUT B1
130 LET N=0
140 FOR Z=LEN A$-1 TO 0 STEP -1
150 LET N=N+((B1**Z)*(CODE (A$(
LEN A$-Z))-28))
160 NEXT Z
170~PRINT "WHICH BASE DO YOU WA
NT IT",,,
180 PRINT "CONVERTED TO?"
190 INPUT B2
200 LET N$=""
210 LET R=N-INT (N/B2)*B2
215 LET N=INT (N/B2)
220 LET N$=N$+CHR$ (R+28)
230 IF N<>0 THEN GOTO 210
240 CLS
250 PRINT A$;" IN BASE ";B1
260 PRINT "IS EQUALTO "
270 FOR Z=LEN N$ TO 1 STEP -1
280 PRINT N$(Z);
290 NEXT Z
300 PRINT " IN BASE";B2
310 PRINT
320 PRINT "ANOTHER GO?"
330 INPUT A$
340 IF A$="Y" THEN RUN
350 IF A$<>"N" THEN GOTO 330
```

BASE!

A USEFUL routine for converting a number to the same number in any **Base** between 2 and 35. Ideal for people who have been struggling with binary. The program was written by David Wells of Sidcup, Kent for the 1K ZX-81.

```
    1 REM BRICKY      S.J.REDMAN
    4 FOR e=0 TO 7: READ r: POKE
USR "a"+e,r: NEXT e
    5 DATA 126,126,126,0,231,231,
231,0
   10 INK 7: PAPER 1: BORDER 1: C
LS
   12 LET s=0: LET o=0
   20 PRINT AT 0,10;"▒▒ BRICKY ▒▒
"
   30 PRINT '"You are a bricklaye
r, building  a wall on the scree
n."
   40 PRINT '"A rival bricky is a
lso on site  building his wall."
   41 PRINT '"The first person to
 crash into awall will lose"
   50 PRINT '"You control the dir
ection that  you move in by:-"
   60 PRINT '"'Q' up","'Z' down",
"'I' left","'P' right"
   65 PRINT '"Your wall is colour
ed green      "; INK 4;"▒▒▒▒▒▒▒▒"
   66 PRINT "The SPECTRUM has a y
ellow wall. "; INK 6;"▒▒▒▒▒▒▒▒"
   68 PRINT TAB 20; FLASH 1;"PRES
S A KEY"
   70 PAUSE 0: CLS : PRINT "Beware
 deep black holes. If you fall
down one you lose 5 points."
   80 PRINT '"If you can force th
e Spectrum    down one you score
5 points"
   90 INPUT "PRESS ENTER FOR A GA
ME "; LINE u$
  100 PRINT AT 0,0;: FOR r=1 TO 2
2: PRINT "..................
..........": NEXT r
  120 LET a=8: LET b=8
  130 LET c=12: LET d=22
  140 LET p=INT (RND*20+1): LET q
=INT (RND*30+1): IF p=8 OR p=12
THEN GO TO 140
  150 PRINT AT p,q; PAPER 0;" "
  160 POKE 23560,112
  170 LET c3=SGN (RND-.5)
  180 LET d3=SGN (RND-.5)
  190 LET c1=c3*(RND<.5)
  200 LET d1=d3*(c1=0)
 2000 LET l=PEEK 23560
 2040 IF l=105 THEN LET b=b-1+32*
(b=0)
 2050 IF l=112 THEN LET b=b+1-32*
(b=31)
 2070 IF l=122 THEN LET a=a+1-22*
(a=21)
 2080 IF l=113 THEN LET a=a-1+22*
(a=0)
 2110 IF SCREEN$ (a,b)<>"." THEN
GO TO 5100
 2120 PRINT AT a,b; INK 4;"▒";AT
c,d; INK 6;"▒"
 2130 LET dd=d: LET cc=c
 2140 IF RND>.9 THEN GO TO 4000
 2150 LET c=c+c1: LET d=d+d1
 2160 GO SUB 8000
 2170 IF SCREEN$ (c,d)<>"." THEN
GO TO 4000
 2190 GO TO 2000
 4000 LET c2=c1: LET d2=d1
 4100 LET c1=c3*(c1=0): LET d1=d3
*(d1=0)
 4110 LET c=cc+c1: LET d=dd+d1
 4120 LET c=c+22*((c<0)-(c>21))
 4130 LET d=d+32*((d<0)-(d>31))
 4150 IF SCREEN$ (c,d)="." THEN G
O TO 2000
 4510 LET c=cc-c1: LET d=dd-d1
 4520 LET c=c+22*((c<0)-(c>21))
 4530 LET d=d+32*((d<0)-(d>31))
 4550 IF SCREEN$ (c,d)="." THEN L
ET c1=-c1: LET d1=-d1: LET c3=c1
+c2: LET d3=d1+d2: GO TO 2000
 5000 LET c1=c2: LET d1=d2
 5010 LET c=cc+c1: LET d=dd+d1
 5020 GO SUB 8000
 5050 IF SCREEN$ (c,d)="." THEN G
O TO 2000
 5060 GO TO 7000
 5100 IF ATTR (a,b)=7 THEN BEEP .
3,-10: BEEP .4,-20: LET s=s+4: G
O TO 5120
 5110 PRINT AT a,b; FLASH 1;"▒"
 5120 LET s=s+1
 5130 FOR r=20 TO -20 STEP -1: BE
EP .01,r: NEXT r
 6000 PRINT AT 0,0; INK 0; PAPER
7;"  YOU ";o;"     SPECTRUM ";s;"
 ": GO TO 90
 7000 LET o=o+1
 7010 IF (p=cc OR q=dd) AND (ABS
(dd-q)=1 OR ABS (cc-p)=1) THEN L
ET o=o+4: BEEP .3,0: BEEP .4,8:
GO TO 7040
 7020 PRINT AT c,d; FLASH 1;"▒"
 7040 FOR r=-20 TO 20: BEEP .01,r
: NEXT r
 7050 GO TO 6000
 8000 LET c=c+22*((c<0)-(c>21))
 8010 LET d=d+32*((d<0)-(d>31))
 8020 RETURN
```



BRICKY

YOU ARE a bricklayer, erecting a green wall. The computer plays the part of another bricklayer, producing a yellow wall. The first player to bump into a wall loses the round. An added complication is the appearance of black muddy holes on the screen. If you walk into one of them you lose five points but if you can force the computer into one you score five points.

Move up using "Q", move down by using "Z", move left by using "I", and move right by using "P".

This fast-moving game was written for the 16K or 48K Spectrum by Stephen Redman of Sunderland, Tyne and Wear.

What the experts say:

Sinclair User..."QUALITY"

•USE AND LEARN

Sinclair User..."EXCELLENT"

What Micro..."TREMENDOUSLY VALUABLE... GET THE BEST OUT OF SPECTRUM BASIC"

ZX Computing..."EXCELLENT...A GREAT ASSET...FANTASTIC VALUE...VERY HIGHLY RECOMMENDED"

•THE DATABASE

Sinclair User..."EXCELLENT"

MicroDecision..."OF ALL THE DATABASE-TYPE PROGRAMS AVAILABLE, MiCROL'S SEEMS THE BEST VALUE...MORE FOR YOUR MONEY"

•THE SPREADSHEET

Personal Computer News..."EASY TO USE...PLENTY OF USES...STREETS AHEAD" (OF GEMINI'S SPREADSHEET)

Sinclair User..."EXCELLENT...MUCH CLEARER" (THAN VU-CALC)

What Micro..."QUALITY"

MiCROL©

Order TODAY for fast convenient delivery

THE THOUGHT PROCESSOR

MiCROL©

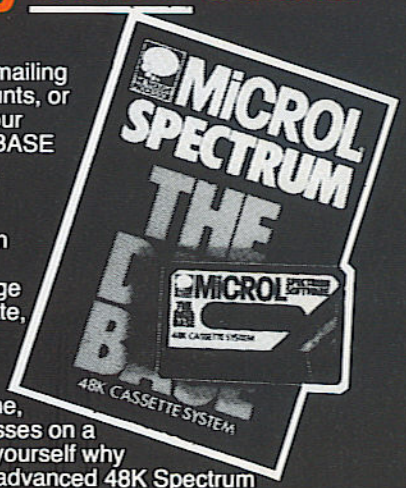
SERIOUS SPECTRUM SOFTWARE only £9.95 each!

USE AND LEARN

Your perfect Spectrum starter Kit. 25 original BASIC programs you can use immediately, PLUS 118 page manual to help you get the most from your 16 or 48K Spectrum. 25 programs include: Music Composer, World Atlas, Computer Term Glossary, Screen Designer, Star Maps – PLUS games and powerful routines to use in your own programs: graph-drawing, text-editing, sorting, searching and much more. 118 page manual includes detailed description of programming techniques, full listings of all programs, and articles to develop your own program-writing skills.

"Excellent" A.R. West, Surrey. "First-time loading, user-friendly, superb documentation" J.E. Mann, Leeds.

THE DATABASE



Whether you want to update mailing lists, manage customer accounts, or simply produce an index of your record collection, THE DATABASE makes it easy and enjoyable. A breakthrough in power *and* practicality, THE DATABASE allows you to store information on any subject in the way *you* want, and gives you a full range of commands to display, update, sort, search and print – even perform calculations. Massive storage capacity: 1,000 lines in memory at a time, over 7,000 names and addresses on a single C90 cassette. See for yourself why THE DATABASE is the most advanced 48K Spectrum database available – far more powerful *and* practical than Sinclair's VU-FILE and all other "competitors".

THE SPREADSHEET

Based closely on Visicalc, the world's best-selling program, THE SPREADSHEET turns your 48K Spectrum into a "super-Calculator" that helps you solve all kinds of number-based problems quickly and easily. Hundreds of applications in business, engineering and science – and just as versatile for home finance management. Invaluable in education too, helping develop maths ability and confidence. In power, flexibility and ease of use, THE SPREADSHEET outperforms all other Spectrum spreadsheets – including Sinclair's VU-CALC. See for yourself, with the security of MiCROL'S 14 day money-back Guarantee.

THE WORD PROCESSOR

The only full feature, professionally-written word processor for 48K Spectrums. Use it to produce memos, letters, reports – THE WORD PROCESSOR has the features you need, including flexible editing, justification, centering, and automatic "word wrap". Simplicity itself to use, THE WORD PROCESSOR uses the same "what you see is what you get" principle as word processors costing hundreds of pounds more. 20,000 character storage capability for real-work applications, and it's easily adapted to work with full size printers. Once again, MiCROL sets the standard in serious Spectrum software.

To order: (UK Orders Only). Simply complete the coupon, and FREEPOST with your cheque, made payable to MiCROL (UK Mail Order). All products normally available from stock and despatched by return. Credit Card Orders: By phone 9-5.30 Mon to Fri. stating name and address, Card No. and item(s) required.

MiCROL©

38 Burleigh Street, Cambridge CB1 1BR.

(0223)312453

Post to:– MiCROL (UK Mail Order) Freepost SP5
38 Burleigh Street, Cambridge CB1 1BR

Please send me.....copy/copies of USE AND LEARN
Please send me.....copy/copies of THE DATABASE
Please send me.....copy/copies of THE SPREADSHEET
Please send me.....copy/copies of THE WORD PROCESSOR

I enclose cheque/P.O. for.....(£9.95 + 50p p+p – £10.45 total each)

Or I wish to pay by Access/Barclaycard/Visa
Card Number .....

Please print name and address

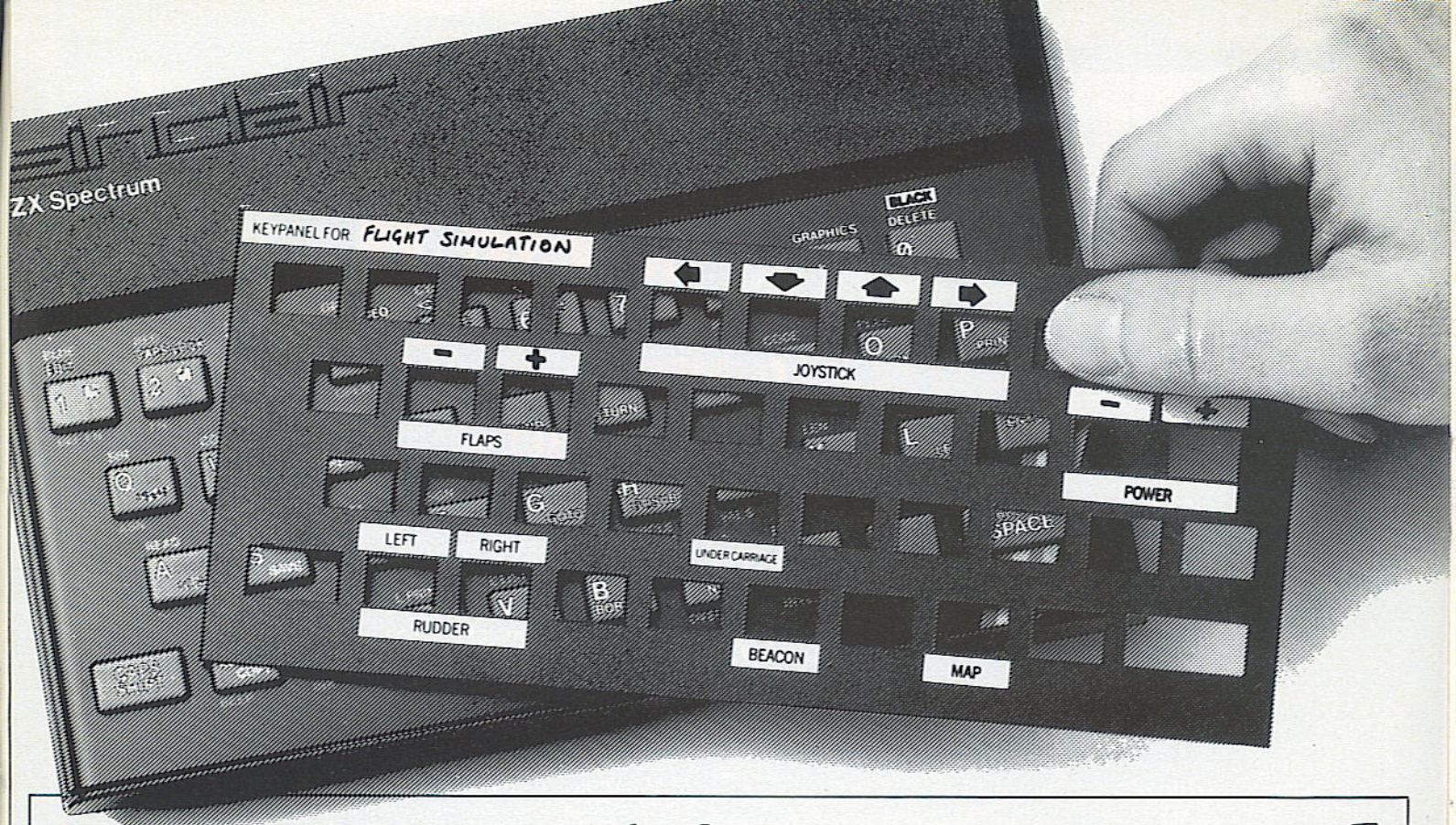
Name .....

Address.....

.....

.....

Credit Card holder's signature .....

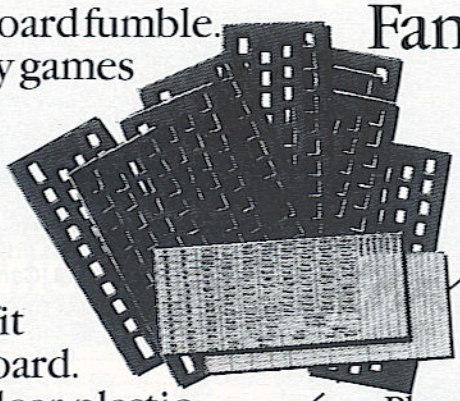


Put everything you need on the keyboard with a Custom Keypanel Kit.

At last! An end to keyboard fumble.

A must for all multikey games and a revolution for flight simulation, VU-CALC, VU-FILE and other sophisticated software.

Instantly changeable precision die-cut panels fit over your Spectrum keyboard.



Each kit comes in a clear plastic wallet and contains: 10 matt black Keypanels plus a sheet containing over 140 bright red self adhesive command labels, pre-printed with words and symbols – arrows, left, right, FIRE!, POWER!, etc, plus a sheet of blanks for your own designs.

The FIRST add-on for your Spectrum.

Fantastic value at only £2.95 plus p&p. for 10 Keypanels.

Post today to **Softeach Limited**, 25 College Road, Reading, Berkshire, RG6 1QE.

Please send me:

..... Custom Keypanel Kits at £2.95 + 25p p&p each (overseas should add 25% for additional surface mail)

I enclose a total remittance of £ ..... cheques/postal orders payable to **Softeach Limited**.

NAME .....

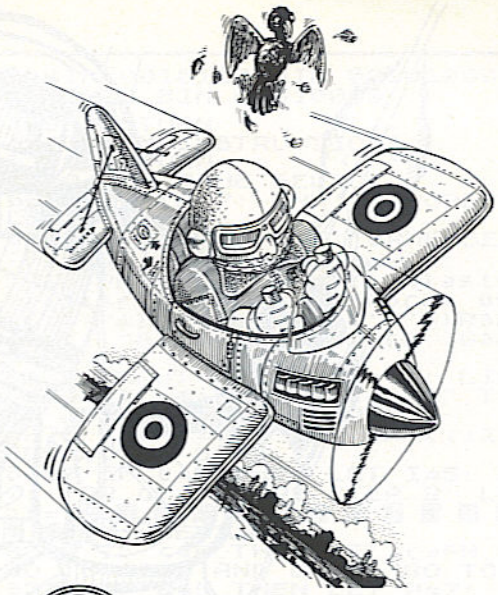
ADDRESS .....

.....

Softeach Limited have no connection with any other software product mentioned in this advertisement.

```
   1 LET A=CODE ""
   2 LET B=CODE "-"
   3 LET D=B
   4 LET C=D
   5 INPUT H
  50 LET D=D+(CODE "(92)" AND D<
CODE "C" AND INKEY$="5")-(CODE "
(92)" AND D>CODE "" AND INKEY$="
8")
  51 LET D=D+(INKEY$="7")-(INKEY
$="6")
  52 LET B=B+(INKEY$="7")-(INKEY
$="6")

  60 LET B=B+(CODE "(92)" AND B<
CODE "C" AND INKEY$="8")-(CODE "
(92)" AND B>CODE "" AND INKEY$="
5")
  70 LET H=H-(B AND B>D)-(D AND
D>B)-(B AND B=D)+CODE "-"
  71 PRINT AT CODE "",CODE "";"(
95:isP)altEft";H;"(98)"
  72 IF H<=CODE "2" THEN PRINT "
(95)at runway(98)"
  73 IF H=CODE "" AND B=CODE "-"
 AND B=D THEN PRINT AT CODE "(91
)",0;"(G5) landed (98) ";0
  74 IF H<CODE "" THEN PRINT "(9
5:isP)c
  74 IF H<CODE "" THEN PRINT "(9
5:isP)crashed(15:98)";Q
 100 LET X=C-A
 110 LET Y=D-B
 120 IF ABS Y>=ABS X THEN GOTO C
ODE "e"
 130 FOR N=A TO C STEP SGN X
 140 PLOT N,B+Y/X*(N-A)
 141 PRINT AT CODE "(9S)",4;"-+-
"
 150 NEXT N
 160 GOTO CODE "ABS "
 170 FOR N=B TO D STEP SGN Y
 180 PLOT A+X/Y*(N-B),N
 181 PRINT AT CODE "(9s)",4;"-+-
"
 190 NEXT N
 210 CLS
 220 GOTO CODE ">"
```



pilot

PILOT is an aircraft simulation program for the unexpanded ZX-81, written by Mark Powell of Thurmaston, Leicestershire. Before the game begins you must key-in your height in feet above the ground. By using cursor keys 5, 6, 7 and 8 you can change your position in relation to the horizon.

When you fall to 30 feet or below, you will be warned that you are above the runway and you must level your flight to land, as you cannot land while banking. When a height of 0 is shown use key 6 so that you stall and land on the runway. If you land too quickly or at an angle you will crash.

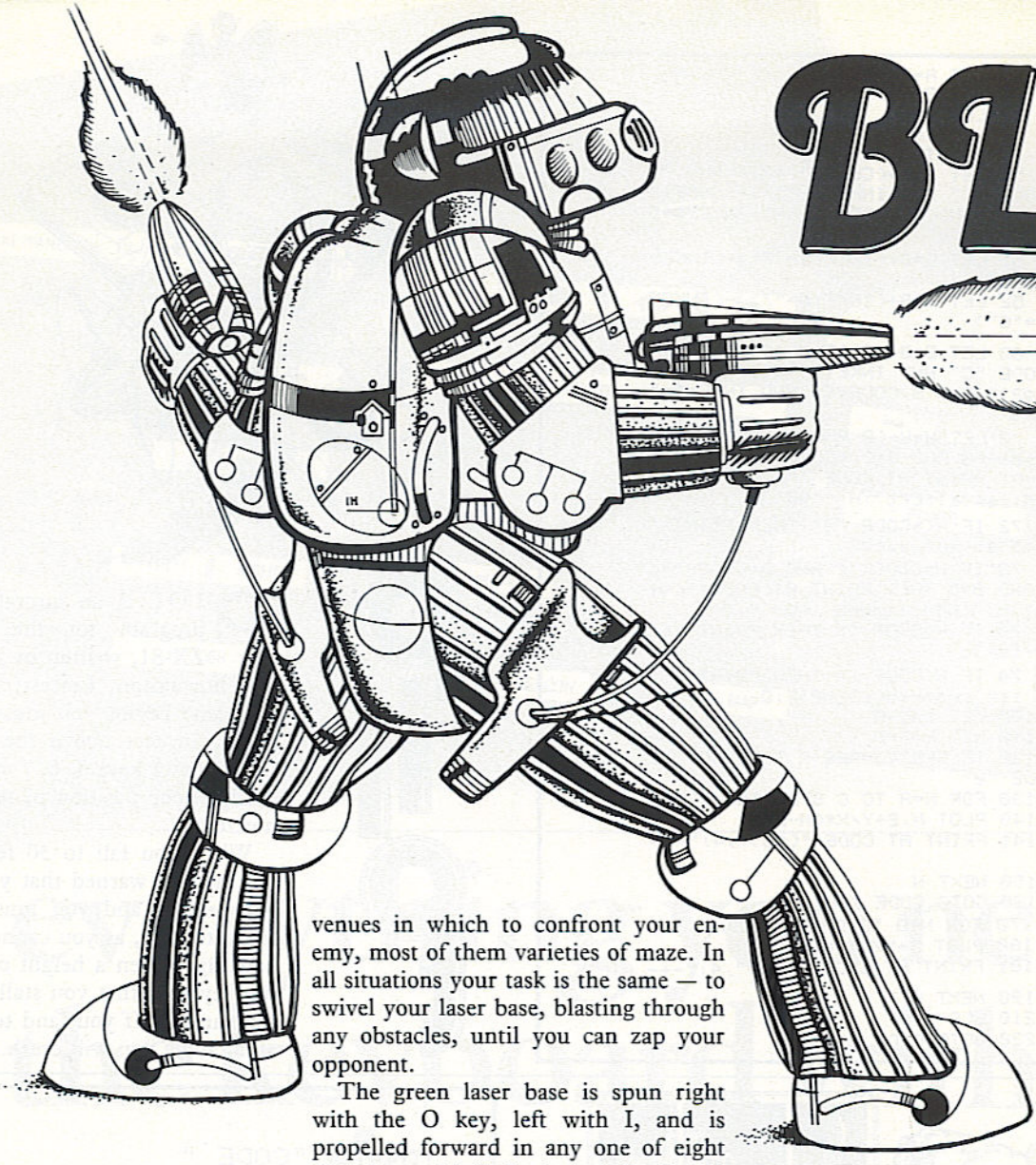
CODES

CODES may be used to code any message comprising the characters with codes from 0 to 63. To input the program, two pre-arranged numbers are used. The first, INPUT A, takes any value from 2 to 27 and the second, INPUT B, any value from 1 to 65535.

The program should prove invaluable to any international spy network equipped with ZX-81 computers. It was written for the 16K ZX-81 by R Hopley of Liverpool.

```
  10 REM "CODE "
  20 FAST
  30 LET D=CODE "(91)"
  40 PRINT " INPUT A(2 TO 27)"
  50 INPUT A
  60 PRINT " INPUT B(1 TO 65535)
"
  70 INPUT B
  80 PRINT " INPUT C(1 TO CODE O
R 2 TO DECODE)"
  90 INPUT C
 100 LET C$=""
 110 PRINT "TYPE IN YOUR MESSAGE
"
 120 INPUT A$
 130 CLS
 140 RAND B
 150 FOR Q=D TO LEN A$ STEP C
 160 IF C=D THEN LET B$=STR$ (CO
DE "(9s)"+INT (RND*A)+CODE A$(Q)
)
 170 IF C=CODE "(92)" THEN LET B
$=CHR$ (VAL A$(Q TO Q+D)-INT (RN
D*A)-CODE "(9s)")
 180 LET C$=C$+B$
 190 NEXT Q
 200 PRINT C$
```

BLAS



TWO PLAYERS are required for **Blaster,** an unusual, fight-to-the-death maze game from Stephen Culley of Lowdham, Nottinghamshire.

At the beginning of the program you are presented with a choice of six venues in which to confront your enemy, most of them varieties of maze. In all situations your task is the same — to swivel your laser base, blasting through any obstacles, until you can zap your opponent.

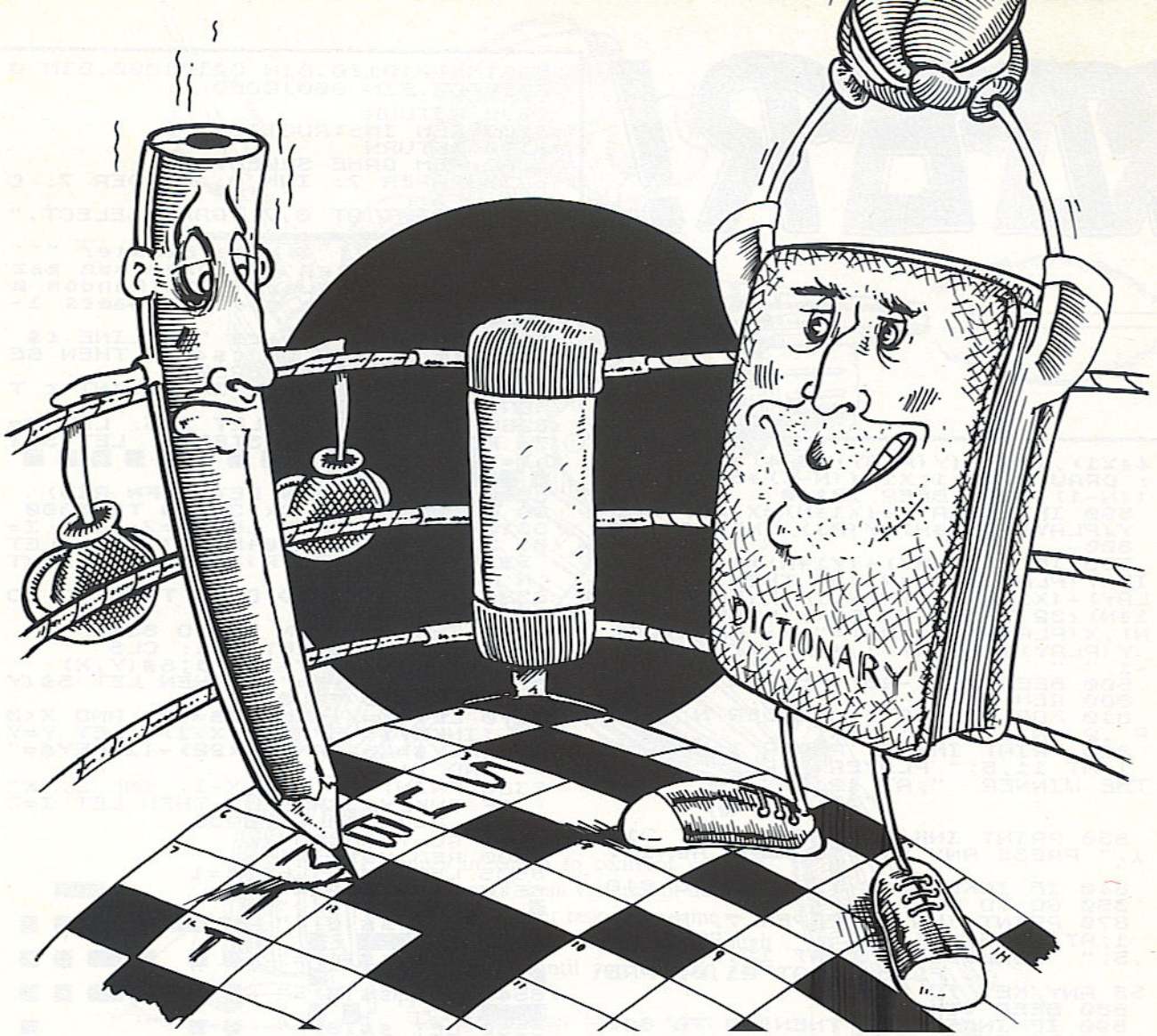
The green laser base is spun right with the O key, left with I, and is propelled forward in any one of eight directions with P. Its laser is fired with U. Player red goes forward with A, spins right with S, left with D and fires with F. The various positions of the two characters, bearing an uncanny resemblance to the Clockman figure in our November/December issue, are shown in line 30 where they should be entered by graphic A to H.

Maze choice number three, incidentally, gives the user the opportunity to create his own maze. To exercise that option, manoeuvre the flashing cross with the cursor keys and input 0 to leave a block. Press ENTER when the maze is complete. (48K Spectrum).

```
  10 GO SUB 8000: GO SUB 8100
  20 DEF FN R(R)=INT (RND*R)+1:
  30 DIM x(4): DIM y(4): DIM p(2
): DIM S$(22,32): LET a$="AB
CDEFGH"
  35 GO SUB 8200
  40 FOR N=1 TO 2: LET P(N)=FN R
(8)
  41 LET X(N)=FN R(30)+1: LET Y(
N)=FN R(20)+1: IF S$(Y(N),X(N))<
>" " THEN GO TO 41
  42 NEXT N
  45 LET PLAY=1: LET X1=0: LET Y
1=0
  50 LET P1=(NOT (PLAY-1))+1
  60 LET KEY=IN 65022: IF PLAY=2
 THEN LET KEY=IN 57342
  70 GO SUB 500: PRINT AT Y(PLAY
)-1,X(PLAY)-1; INK (PLAY*2);A$(P
(PLAY))
  80 BEEP .01,(p(ay*10)
  85 IF X(PLAY)=X(P1) AND Y(PLAY
)=Y(P1) THEN GO TO 860
  90 LET PLAY=(NOT (PLAY-1))+1
 100 GO TO 50
 300 REM THRUST
 310 IF S$(Y(PLAY)+Y1,X(PLAY)+X1
)<>" " THEN RETURN
 320 PRINT AT Y(PLAY)-1,X(PLAY)-
1;" "
 330 LET X(PLAY)=X(PLAY)+X1: LET
 Y(PLAY)=Y(PLAY)+Y1: PRINT AT Y(
PLAY)-1,X(PLAY)-1; INK 5;A$(P(PL
AY)): BEEP .01,50: RETURN
 500 REM CHECK KEY'S
 510 IF KEY=255 THEN RETURN
 520 IF KEY=254 THEN GO SUB 900:
 GO SUB 300: RETURN
 530 IF KEY=253 THEN LET P(PLAY)
=P(PLAY)+1: IF P(PLAY)>8 THEN LE
T P(PLAY)=1: RETURN
 540 IF KEY=251 THEN LET P(PLAY)
=P(PLAY)-1: IF P(PLAY)<1 THEN LE
T P(PLAY)=8: RETURN
 550 IF KEY<>247 THEN RETURN
 560 REM FIRE
 570 GO SUB 900
 580 FOR N=1 TO 10: IF S$(Y(PLAY
)+(Y1*N),X(PLAY)+(X1*N))=" " THE
N IF Y(PLAY)+(Y1*N)<>Y(P1) OR X(
PLAY)+(X1*N)<>X(P1) THEN NEXT N
 581 PLOT INK PLAY*2;(X(PLAY)*8-
4)+(4*X1),175-((Y(PLAY)*8-4)+(4*
Y1)): DRAW INK PLAY*2;X1*((N-1)*
8),-(Y1*((N-1)*8)): BEEP .01,0
 582 PLOT OVER 1;(X(PLAY)*8-4)+(
```

STER!

```
4*X1),175-((Y(PLAY)*8-4)+(4*Y1))
: DRAW OVER 1;X1*((N-1)*8),-(Y1*
((N-1)*8)): BEEP .01,0
 590 IF X(PLAY)+(X1*N)=X(P1) AND
 Y(PLAY)+(Y1*N)=Y(P1) THEN GO TO
 800
 595 IF (Y(PLAY)+(Y1*N))>1 THEN
IF Y(PLAY)+(Y1*N)<22 THEN IF X(P
LAY)+(X1*N)>1 THEN IF X(PLAY)+(X
1*N)<32 THEN LET S$(Y(PLAY)+(Y1*
N),X(PLAY)+(X1*N))=" ": PRINT AT
 Y(PLAY)+(Y1*N)-1,X(PLAY)+(X1*N)
-1;" "
 600 BEEP .01,-20: RETURN
 800 REM HIT
 810 FOR N=0 TO 7: BORDER N: BEE
P .2,(N*10)-10: NEXT N
 820 PRINT INK 0; PAPER 7; FLASH
 1;AT 11,5;" PLAYER ";PLAY;" IS
THE WINNER  ";AT 12,5;"
                    ";AT 10,5;"
                              "
 830 PRINT INK I; PAPER P;AT 21,
1;" PRESS ANY KEY TO PLAY AGAIN.
"
 840 IF INKEY$="" THEN GO TO 840
 850 GO TO 20
 870 PRINT INK 0; PAPER 7; FLASH
 1;AT 10,5;"                ";AT 11
,5;"  COLLISION  ";AT 12,5;"
            "; FLASH 0;AT 21,0;"PRE
SS ANY KEY TO PLAY "
 880 BEEP .5,-10
 890 IF INKEY$="" THEN GO TO 890
 895 GO TO 20
 900 REM FIND DIRECTION
 905 LET Y1=0: LET X1=0
 910 IF P(PLAY)=1 OR P(PLAY)=2 O
R P(PLAY)=8 THEN LET Y1=-1
 920 IF P(PLAY)=2 OR P(PLAY)=3 O
R P(PLAY)=4 THEN LET X1=1
 930 IF P(PLAY)=4 OR P(PLAY)=5 O
R P(PLAY)=6 THEN LET Y1=+1
 940 IF P(PLAY)=6 OR P(PLAY)=7 O
R P(PLAY)=8 THEN LET X1=-1
 950 BEEP .001,0
 960 IF X(PLAY)+X1>32 OR X(PLAY)
+X1<1 THEN LET X1=0
 970 IF Y(PLAY)+Y1>22 OR Y(PLAY)
+Y1<1 THEN LET Y1=0
 980 RETURN
8000 REM CHARACTERS
8010 FOR N=1 TO 8: READ A$: FOR
M=0 TO 7: READ A: POKE USR A$+M,
A: NEXT M: NEXT N
8020 DATA "A",BIN 00011000,BIN 0
0011000,BIN 00100100,BIN 0010010
0,BIN 01000010,BIN 01011010,BIN
10100101,BIN 11000011
8030 DATA "B",3,BIN 00001101,BIN
 00110010,BIN 11000010,BIN 00110
100,BIN 00010100,8,8
8040 DATA "C",BIN 11000000,BIN 1
0110000,BIN 01001100,BIN 0010001
1,BIN 00100011,BIN 01001100,BIN
10110000,BIN 11000000
8050 DATA "D",8,8,BIN 00010100,B
IN 00110100,BIN 11000010,BIN 001
10010,BIN 00001101,3
8060 DATA "E",BIN 11000011,BIN 1
0100101,BIN 01011010,BIN 0100001
0,BIN 00100100,BIN 00100100,BIN
00011000,BIN 00011000
8070 DATA "F",BIN 00010000,BIN 0
0010000,BIN 00101000,BIN 0010110
0,BIN 01000011,BIN 01001100,BIN
10110000,BIN 11000000
8080 DATA "G",3,BIN 00001101,BIN
 00110010,BIN 11000100,BIN 11000
100,BIN 00110010,BIN 00001101,3
8090 DATA "H",BIN 11000000,BIN 1
0110000,BIN 01001100,BIN 0100001
1,BIN 00100011,BIN 01001100,BIN
10110000,BIN 11000000
8095 RETURN
8100 REM INSTRUCTIONS
8190 RETURN
8200 REM GAME SELECT
8210 PAPER 7: INK 0: BORDER 7: C
LS
8220 PRINT AT 0,7;"GAME SELECT."
;AT 1,7;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀"
8240 PRINT '''"1)Maze Blaster "''
"2)Star Strike"''"3)Draw own maz
e."''"4)Space Wars"''"5)Random m
aze"''"6)Random choice (Games 1-
5)"
8250 INPUT ("Choice "); LINE c$
8260 IF c$>"6" OR c$<"1" THEN BE
EP .5,-40: GO TO 8250
8270 LET c=VAL c$: IF c<>INT c T
HEN GO TO 8250
8280 IF c=2 THEN LET I=5: LET P=
7: FOR n=1 TO 22 STEP 2: LET S$(
n)="▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀ ▀
▀ ▀": NEXT n
8300 IF c=6 THEN LET c=FN R(5)
GO TO 8280 AND C<>3: GO TO 8300
8310 IF C=5 THEN LET P=7: LET I=
0: FOR N=1 TO 100+FN R(100): LET
 S$(FN R(22),FN R(32))="▀": NEXT
 N
8320 IF C<>1 AND C<>3 THEN GO TO
 8900
8330 IF C=1 THEN GO TO 8500
8340 LET X=1: LET Y=1: CLS
8350 PRINT AT Y-1,X-1;S$(Y,X)
8360 IF INKEY$="0" THEN LET S$(Y
,X)="▀": GO TO 8380
8370 LET X=X+(INKEY$="8" AND X<3
2)-(INKEY$="5" AND X>1): LET Y=Y
+(INKEY$="6" AND Y<22)-(INKEY$="
7" AND Y>1)
8380 PRINT AT Y-1,X-1; INK 2;"X"
: IF INKEY$=CHR$ 13 THEN LET I=3
: LET P=0: GO TO 8900
8390 GO TO 8350
8500 REM Haze #1
8505 LET P=7: LET I=1
8510 LET s$(2)="  ▀        ▀▀▀
▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀
```



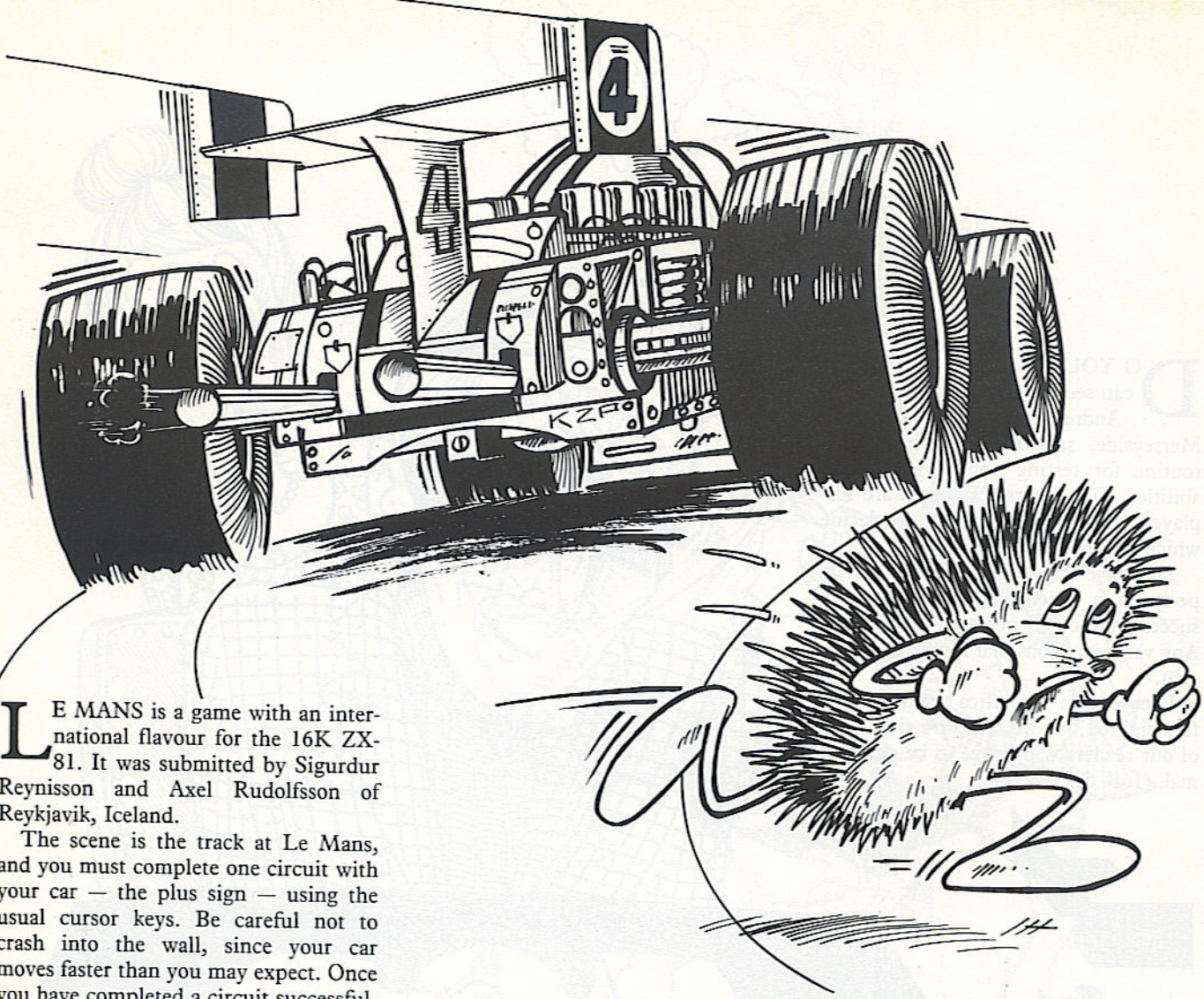
CROSSWORD

ROISIN MULLAN of Newry, County Down has written **Crossword** for those owners of a 16K ZX-81 who take time away from their computers to solve puzzles.

Enter the known letters of a word in their respective places and then either the alphabet or the vowels can be rotated through the blank spaces. When the correct letter has been found, 'H' will hold that letter in place and you can go to the next space.

The author says that her family has already saved a fortune in paper by using the program.

```
  1 PRINT AT 10,10;"**********"
 20 PRINT AT 12,10;"1234567890"
 30 PRINT AT 16,10;"crossword"
 40 PRINT AT 17,13;"aid"
 50 PRINT AT 0,0;"DO YOU KNOW A
NY LETTERS?"
 60 PRINT
 70 PRINT "IF YOU DO "
 75 PRINT "PUT IN EACH LETTER A
ND THEN      ENTER ITS POSITION"
 80 PRINT
 90 PRINT "E.G. E1 PUTS E FIRST
 IN THE WORDTHERE IS NO LIMIT TO
 THE NO OF  WORDS YOU CAN PUT IN
"
100 INPUT C$
110 LET B=LEN C$
120 FOR I=2 TO B STEP 2
130 LET E=VAL C$(I)
140 LET E$=C$(I-1)
145 IF E=0 THEN LET E=10
150 PRINT AT 10,(E+9);E$
155 NEXT I
187 GOSUB 1600
190 PRINT AT 0,0;"1:ENTER MORE
LETTERS."
200 PRINT
210 PRINT "2:ROTATE VOWELS"
220 PRINT
230 PRINT "3:ROTATE WHOLE ALPHA
BET"
240 PRINT
250 PRINT "ENTER THE NUMBER OF
YOUR CHOICE"
260 INPUT A$
265 LET A=VAL A$
270 IF A=1 THEN PRINT AT 0,0;"
";
274 IF A=2 THEN GOTO 300
277 IF A=3 THEN GOTO 400
280 GOSUB 1600
290 GOTO 75
300 GOSUB 1600
310 PRINT "WHAT PLACE SHALL I R
OTATE?"
320 INPUT D$
330 LET D=(VAL D$+9)
340 LET A$="AEIOU*"
350 FOR N=1 TO 6
353 FOR I=1 TO 25
354 IF INKEY$="H" THEN GOTO 187
357 NEXT I
360 PRINT AT 10,D;A$(N)
370 NEXT N
380 GOTO 187
400 LET M$="ABCDEFGHIJKLMNOPQRS
TUVWXYZ*"
401 GOSUB 1600
402 PRINT "WHICH PLACE SHALL I
ROTATE?"
403 INPUT A$
404 LET A=VAL A$
405 GOSUB 1600
410 FOR I=1 TO LEN M$
420 FOR K=1 TO 15
425 LET D=9+A
430 PRINT AT 10,D;M$(I)
440 IF INKEY$="H" THEN GOTO 187
450 NEXT K
460 NEXT I
470 GOTO 187
1600 FOR V=0 TO 9
1700 PRINT AT V,0;"
                  "
1800 NEXT V
1850 PRINT AT 0,0;""
1900 RETURN
```



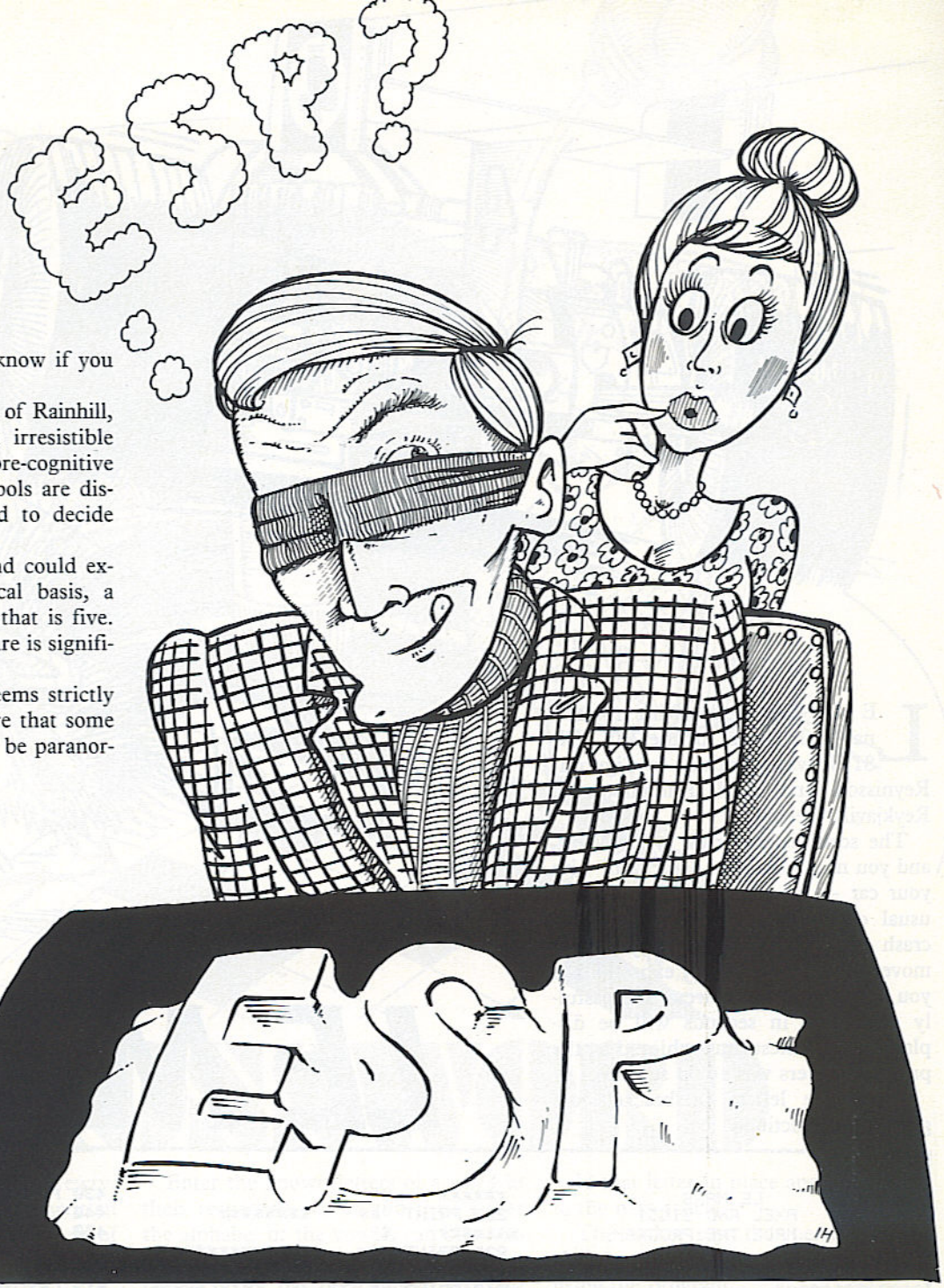
LE MANS

LE MANS is a game with an international flavour for the 16K ZX-81. It was submitted by Sigurdur Reynisson and Axel Rudolfsson of Reykjavik, Iceland.

The scene is the track at Le Mans, and you must complete one circuit with your car — the plus sign — using the usual cursor keys. Be careful not to crash into the wall, since your car moves faster than you may expect. Once you have completed a circuit successfully your time in seconds will be displayed. The fastest time achieved by the program writers was 16.31 seconds.

Lower-case letters in brackets are graphics instructions.

```
  10 REM      LE MANS
  20 REM   AXEL AND SIGGI
  30 REM   MADE THE PROGRAM
  50 CLS
  70 PRINT "*******************
************"
  80 PRINT "***       *****LE****
*        ***"
  90 PRINT "**         ***MANS***
          **"
 100 PRINT "**   **   *********
 *****    *"
 110 PRINT "**   ***  *********
 ******    *"
 120 PRINT "*   ****   ********
 *****     *"
 130 PRINT "*   *****    *****
 *****    **"
 140 PRINT "*   ******    ****
 ****   ***"
 150 PRINT "**      ****   *****
 ****  ****"
 160 PRINT "***       ***   ****
 ***   ****"
 170 PRINT "****       **   ****
 ***    ***"
 180 PRINT "*******   **   ****
 ***    ***"
 190 PRINT "*****      **   ****
 ***     **"
 200 PRINT "****      ****   ***
 ****     *"
 210 PRINT "***    ******
 ******    *"
 220 PRINT "**    ********
******    *"
 230 PRINT "**   ***************
******     *"
 240 PRINT "*          <<<<<graph
ic a)                **"
 250 PRINT "**              (graph
ic a)               ***"
 260 PRINT "***        <<<<<graph
ic a)             *****"
 270 PRINT "*******************
************"
 274 PRINT "            HIT ANY KE
Y"
 280 IF INKEY$=""  THEN GOTO 280
 285 PRINT AT 21,0;"
                    "
 290 LET A=18954
 300 LET T=0
 310 LET A1=A
 350 IF INKEY$=CHR$ (33) THEN LE
T A=A-1
 360 IF INKEY$=CHR$ (34) THEN LE
T A=A+33
 370 IF INKEY$=CHR$ (35) THEN LE
T A=A-33
 380 IF INKEY$=CHR$ (36) THEN LE
T A=A+1
 390 IF PEEK A=23 THEN GOTO 600
 400 IF PEEK A=136 THEN GOTO 500
 410 POKE A1,0
 420 LET A1=A
 430 POKE A,21
 440 LET T=T+.151
 450 GOTO 350
 500 CLS
 505 IF T<15 THEN GOTO 1000
 512 LET T=INT (T*100+.5)/100
 515 PRINT AT 12,4;"YOUR TIME :
";T;" SEC."
 520 GOTO 800
 600 POKE A1,0
 610 FOR F=0 TO 10
 620 POKE A,21
 630 POKE A,149
 640 NEXT F
 650 FOR F=1 TO 10
 670 POKE A,1
 680 POKE A,2
 690 POKE A,135
 700 POKE A,4
 710 NEXT F
 720 POKE A,149
 800 PRINT AT 18,6;"(write in in
verse letters WANT TO TRY AGAIN?
)"
 810 IF INKEY$="Y" THEN GOTO 50
 820 IF INKEY$="N" THEN GOTO 150
0
 830 GOTO 810
1000 PRINT AT 16,2;"WHO ARE YOU
TRYING TO CHEAT"
1010 GOTO 800
1500 CLS
1510 STOP
```



DO YOU WANT to know if you can see the future?

Andrew Macgregor of Rainhill, Merseyside, sent **ESP,** an irresistible routine for testing your pre-cognitive abilities. Five abstract symbols are displayed and you are invited to decide which will be selected.

You have 25 attempts and could expect, on a strictly statistical basis, a success rate of 20 percent, that is five. Any variation from that figure is significant.

Everyone in the office seems strictly first-sighted but we feel sure that some of our readers will prove to be paranormal. (16K Spectrum).

ESP

```
   8 INVERSE 1: INK 4: PRINT AT
1,0;" THE E.S.P TEST WAS INVENTE
D BY PROF. J.B.RHINE IN 1934": I
NK 0: INVERSE 0
  10 LET z=0
  20 FOR t=1 TO 25
  30 LET rp=INT (6*RND): IF rp=0
 THEN GO TO 30
  32 PRINT AT 6,6;CHR$ 144;AT 6,
10;CHR$ 145;AT 6,14;CHR$ 146;AT
6,18;CHR$ 147;AT 6,22;CHR$ 148
  34 PRINT AT 7,6;"1";AT 7,10;"2
";AT 7,14;"3";AT 7,18;"4";AT 7,2
2;"5"
  35 BEEP .2,14: BEEP .4,11
  40 INPUT "Guess which symbol:E
nter its No. ";a
  50 IF a<0 OR a>5 THEN GO TO 40
  60 PRINT AT 10,10;CHR$ (143+a)
: PRINT AT 12,10;"YOU"
  70 PRINT AT 10,25;CHR$ (143+rp
): PRINT AT 12,24;"COMPUTER"
  80 IF a=rp THEN LET z=z+1: FOR
 n=1 TO 25: BEEP .1,a+n: NEXT n:
 INVERSE 1: PRINT AT 13,6;"CORR
ECT= ";z: INVERSE 0
  81 IF a<>rp THEN BEEP .3,(-5-a
)
  86 PRINT AT 20,10;"GUESSES LEF
T=  ";25-t;" " : PAUSE 25: NEXT
 t
  90 LET p=z/25*100: PRINT AT 12
,5;"Your score is ";p;"% .Normal
 is 20%"
 100 IF p>20 THEN PRINT AT 17,5;
"Your ESP ability is ";(p-20);"
% above normal"
 105 IF t<=0 THEN STOP
 110 FOR n=144 TO 148
 120 FOR f=0 TO 7
 125 READ x
 130 POKE USR CHR$ (n)+f,x
 140 NEXT f
 150 NEXT n
 160 DATA 24,36,66,129,129,66,36
,24
 170 DATA 82,137,82,137,82,137,8
2,137
 180 DATA 24,24,24,255,255,24,24
,24
 190 DATA 153,90,60,255,60,90,15
3,0
 200 DATA 255,129,129,129,129,12
9,129,255
 210 STOP
```

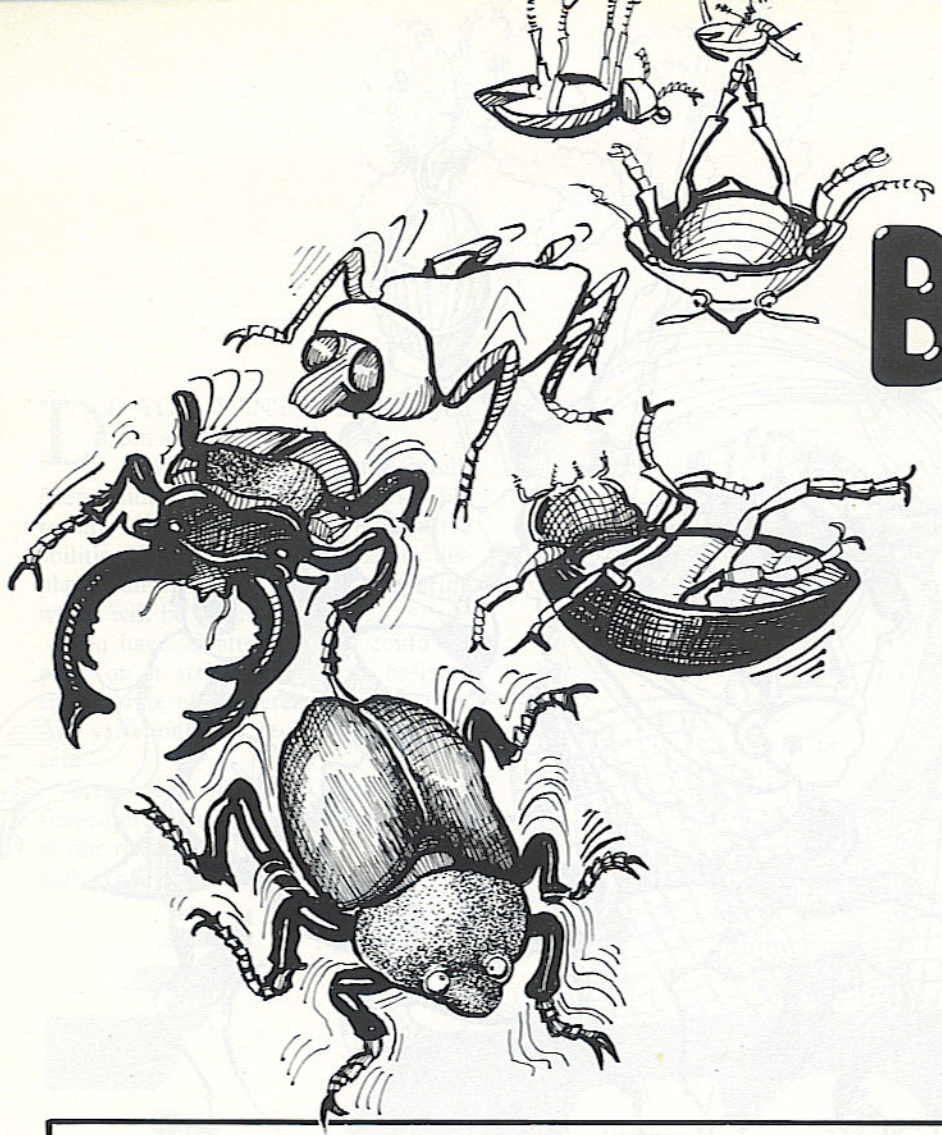
THE KNIGHT'S TOUR

THE PURPOSE of **The Knight's Tour** is for the knight to start from any square on the chess board and, using his usual 'L'-shaped moves, to visit each square of the chess board in turn, without landing on any of them more than once.

Input the number of your knight's starting square—any number from 1 to 64—and press NEWLINE after every move to see the computer move your knight around the board. Graphics are entered using standard graphic notation.

The program was written for the 1K ZX-81 by Denis McCarthy of Todmorden, Lancashire.

```
   2 LET M=VAL "2"
   3 LET A$="01111702122742575136210616314661554030130724395662456050334337476454486353382308142944594934190410253552584126090320051532222818"
   4 INPUT L
   5 FOR A=M TO LEN A$ STEP M
   6 IF VAL A$(A-SGN PI TO A)<>L THEN NEXT A
   7 LET A$=A$(A-SGN PI TO )+A$(TO A-M)
   8 FOR A=M TO LEN A$ STEP M
   9 FOR B=0 TO 3
  10~PRINT "(sP:isP:sP:isP:sP:isP:sP:isP)",,"(isP:sP:isP:sP:isP:sP:isP:sP)"
  11 NEXT B
  12 LET C=VAL A$(A-SGN PI TO A)-1
  13 PRINT AT INT (C/VAL "8"),C-VAL "8"*INT (C/VAL "8");"N"
  14 INPUT B$
  15 CLS
  16 NEXT A
```



BEETLE RUN

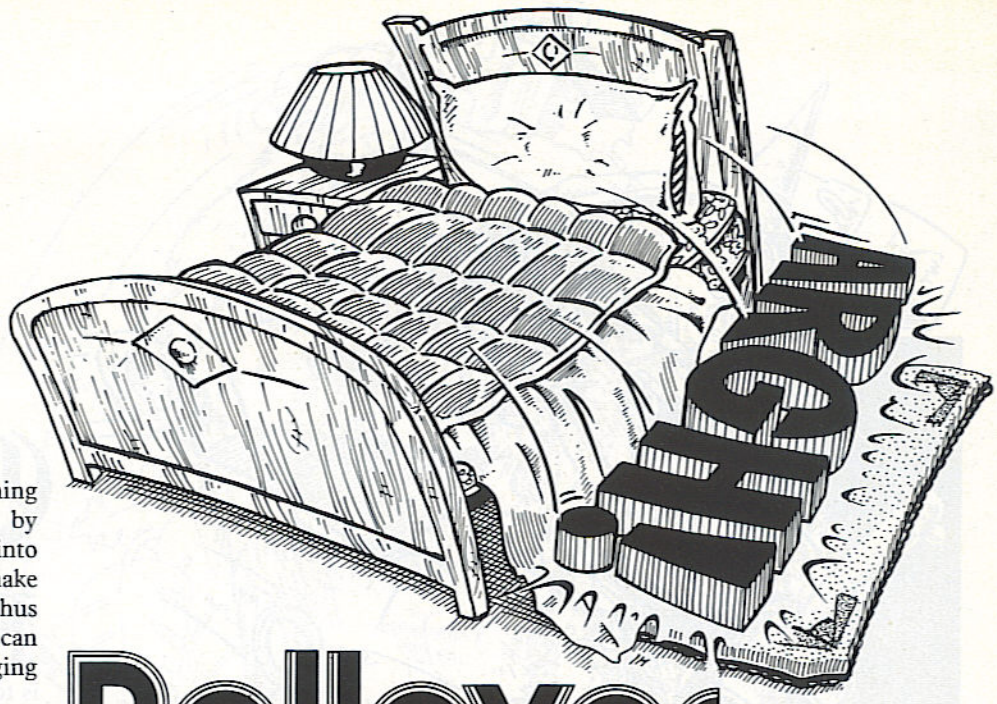
YOU ARE a beetle, scurrying around the screen of your Spectrum. Your aim is to move as many times as possible before you die. You must avoid the blocks which keep appearing around you. If you are surrounded by blocks, or walk into one, the Death March will play and your score will be displayed. Move using the normal cursor keys.

The program was written for the 16K Spectrum by G Lyons of Porton, Wiltshire.

Use graphic 'A' in lines 160 and 3000, and graphic 'B' in lines 105, 106, 108 and 100.

```
   4 DATA 0,24,165,126,60,60,126
,153
   5 FOR t=0 TO 7
   6 READ x
   7 POKE USR "A"+t,x
   8 NEXT t
  10 DATA 255,129,189,165,165,18
9,129,255
  20 FOR t=0 TO 7
  30 READ x
  40 POKE USR "B"+t,x
  50 NEXT t
  58 BORDER 0
  59 LET hs=0
  60 CLS
  70 LET x=10
  75 LET y=15
  80 LET s=0: PRINT AT 21,0;"Sco
re=";s
  90 PRINT AT 21,12;"Hi-score=";
hs
 100 PRINT INK 0; PAPER 2;AT 1,1
;"BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
"
 105 PRINT INK 0; PAPER 2;AT 20,
1;"BBBBBBBBBBBBBBBBBBBBBBBBBBBBB
B"
 106 FOR f=1 TO 20: PRINT INK 0;
 PAPER 2;AT f,1;"B": NEXT f
 108 FOR f=1 TO 20: PRINT INK 0;
 PAPER 2;AT f,30;"B": NEXT f
 160 PRINT INK 0;AT x,y;"A": FOR
 f=1 TO 5: BEEP .005,f: NEXT f
 165 LET s=s+1: PRINT AT 21,6;s
 167 IF hs<s THEN LET hs=s: PRIN
T AT 21,21;hs
 170 LET a=y+INT (RND*-3)+2
 180 LET b=x+INT (RND*-3)+2
 185 IF b=x AND a=y THEN GO TO 1
70
 190 PRINT INK 0; PAPER 2;AT b,a
;"B": BEEP .2,-20: BEEP .3,-21
 191 IF SCREEN$ (x-1,y)<>" " THE
N GO TO 193
 192 GO TO 200
 193 IF SCREEN$ (x+1,y)<>" " THE
N GO TO 196
 195 GO TO 200
 196 IF SCREEN$ (x,y+1)<>" " THE
N GO TO 198
 197 GO TO 200
 198 IF SCREEN$ (x,y-1)<>" " THE
N GO TO 3000
 200 LET d=1
 210 IF INKEY$="5" AND y>2 THEN
GO TO 1000
 220 IF INKEY$="8" AND y<29 THEN
 GO TO 1100
 230 IF INKEY$="7" AND x>2 THEN
GO TO 1200
 240 IF INKEY$="6" AND x<19 THEN
 GO TO 1300
 250 LET d=d+1: IF d=10 THEN GO
TO 170
 260 GO TO 210
1000 PRINT AT x,y;" ": LET y=y-1
: IF SCREEN$ (x,y)<>" " THEN GO
TO 2000
1001 GO TO 160
1100 PRINT AT x,y;" ": LET y=y+1
: IF SCREEN$ (x,y)<>" " THEN GO
TO 2000
1101 GO TO 160
1200 PRINT AT x,y;" ": LET x=x-1
: IF SCREEN$ (x,y)<>" " THEN GO
TO 2000
1201 GO TO 160
1300 PRINT AT x,y;" ": LET x=x+1
: IF SCREEN$ (x,y)<>" " THEN GO
TO 2000
1301 GO TO 160
3000 PRINT ; FLASH 1;AT x,y;"A":
 FOR f=1 TO 100: NEXT f
3001 BEEP 1,-12: BEEP .6,-12: BE
EP .3,-12: BEEP .9,-12: BEEP .6,
-9: BEEP .3,-10: BEEP .57,-10: B
EEP .3,-12: BEEP .6,-12
3002 BEEP .4,-13: BEEP 1,-12
3004 PRINT INK 0; PAPER 2;AT x,y
;"B"
3005 IF s>hs THEN LET hs=s
3010 PRINT FLASH 1;AT 0,10;"Anot
her go?"
3015 IF INKEY$<>"" THEN GO TO 60

3020 GO TO 3015
```

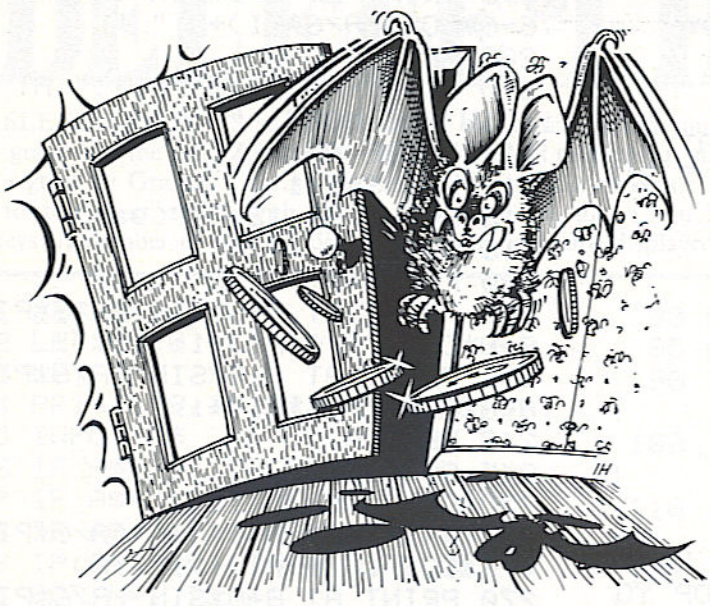


Rollover

ROLLOVER is an eye-catching program which can be run by itself or incorporated into another program. It is designed to make a word, name or title roll over, thus drawing attention to it. Any word can be inserted in the program, by changing the values of x$.

The program was written for the 16K or 48K Spectrum by Judy and Alastair Watt of Stowbridge, West Midlands.

```
  10 LET x$="Roll Over": GO SUB
9000
  20 LET x$="Try Again": GO SUB
9000
  30 STOP
9000 LET gr=PEEK 23675+256*PEEK
23676
9010 LET ch=PEEK 23606+256*PEEK
23607
9020 FOR z=0 TO (LEN x$-1): LET
a=CODE x$(z+1)
9030 FOR n=0 TO 7: LET v=PEEK (c
n+(a*8)+n)
9040 POKE (gr+(16*z)+n),v
9050 POKE (gr+(16*z)+8+n),v
9060 NEXT n: NEXT z
9070 FOR r=1 TO 10
9080 POKE 23675,88+8
9090 FOR n=7 TO 0 STEP -1: POKE
23675,(n+88)
9100 FOR z=1 TO LEN x$: LET x$(z
)=CHR$ (142+2*z): NEXT z
9110 PRINT AT 10,10;x$: NEXT n:
NEXT r
9120 POKE 23675,88: RETURN
```

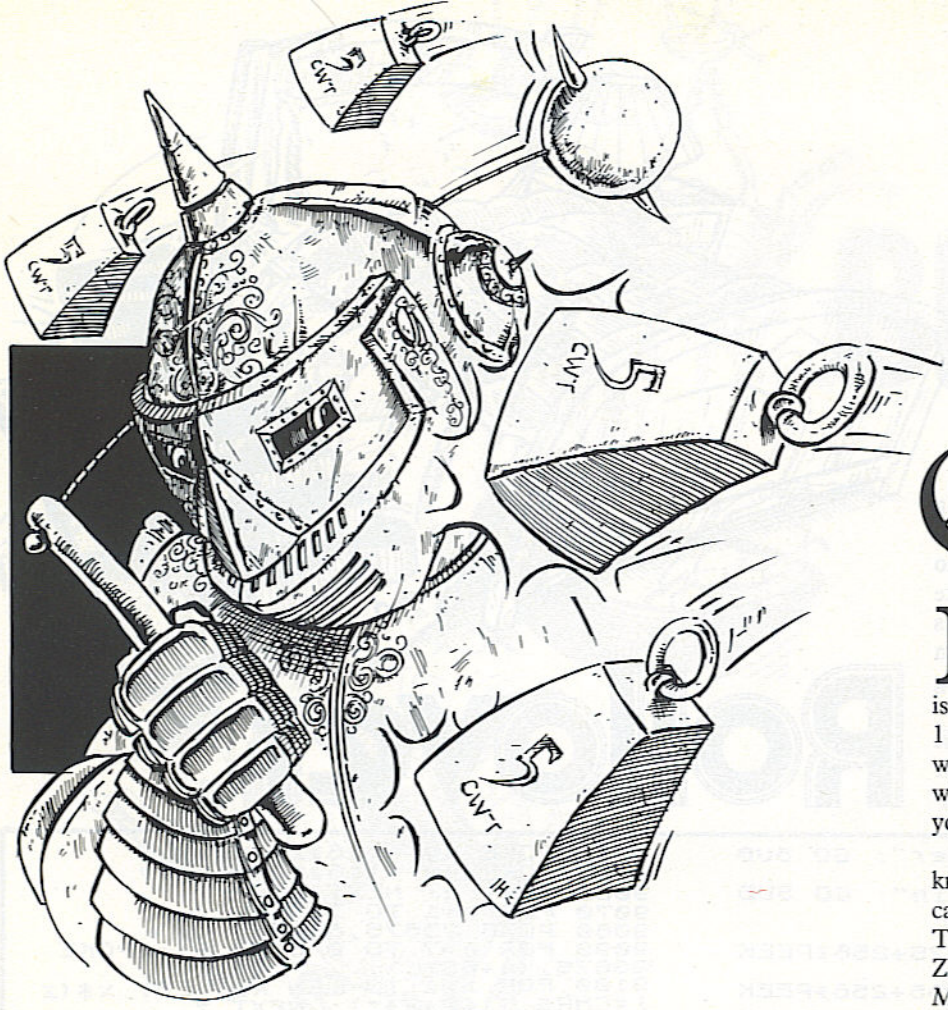


DOORS

A PROGRAM for the 1K ZX-81 by Darren Wombwell of Sutton-in-Ashfield, Nottinghamshire faces you with four doors. Choose the correct door and you will proceed to the next group of four doors, collecting one gold piece as you go. You could be lucky and find a hoard of treasure, or you could be unlucky and meet a bat, which will steal 10 of your gold pieces.

The game ends when you open a door with a ghost behind it, for the ghost will scare you to death.

```
   1 REM "DOOR"
   2 LET D=1
   3 LET S=0
   4 LET F=11
   5 LET H=16
   6 CLS
   7 PRINT "(sP:99:i1:9w:sP:99:i
2:9w:sP:99:i3:9w:sP:99:i4:9w:sP)
";S
   8 FOR N=1 TO 4
   9 PRINT AT N,1;"(98:9h:95:sP:
98:9h:95:sP:98:9h:95:sP:98:9h:95
)"
  10 NEXT N
  12 INPUT X
  13 LET T=INT (RND*4)
  14 LET B=INT (RND*4)
  15 LET G=INT (RND*4)
  16 IF X=B THEN GOTO 25
  17 IF X=T THEN GOTO 35
  18 IF X=G THEN GOTO 45
  19 LET S=S+1
  20 GOTO 6
  25 PRINT AT F,H;"(9y:9t)"
  26 LET S=S-10
  27 PAUSE 50
  28 GOTO 6
  35 PRINT AT F,H;"t"
  36 LET M=INT (RND*50)
  37 LET S=S+M
  38 PAUSE 50
  39 GOTO 6
  45 PRINT AT F,H;"i ";AT F+2,H;
"gold";S
  46 IF S>100 THEN PRINT AT F+4
0;"champion"
```

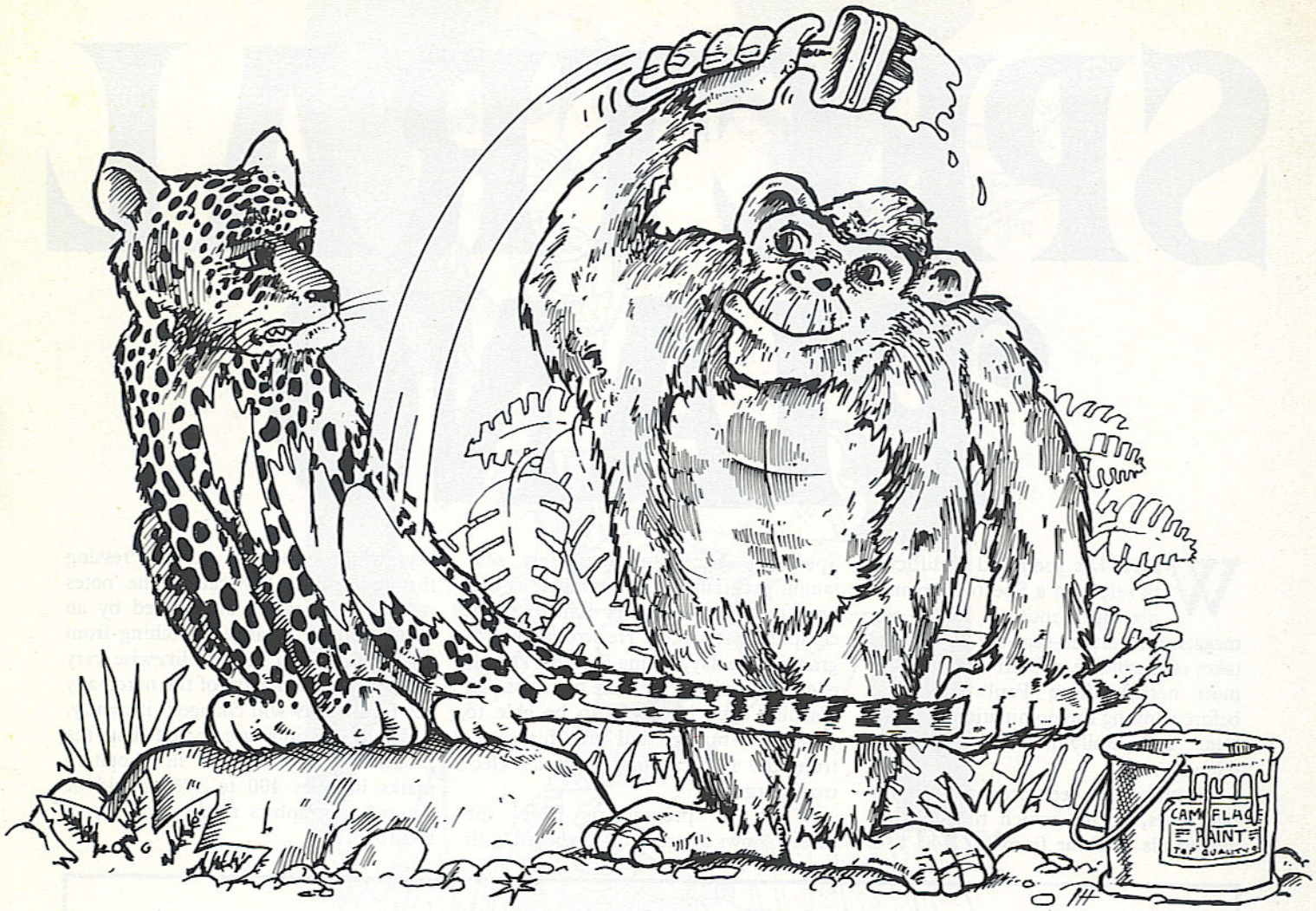


Castles

BEWARE, there is a fearsome black knight about to storm your castle. The only way to stop him is to take one of your weights, numbers 1 to 9, and throw it at him. If your weight is the same as his body weight he will be catapulted into the moat and your score will increase.

You have three chances to sink your knight. If you fail, he will invade the castle and your score will be displayed. The program was written for the 16K ZX-81 by V Reidy of South Harrow, Middlesex.

```
  10 REM "CASTLE"
  20 PRINT AT 12,0;"(4*isp:9f:9a
:9f:25*isp)";AT 4,19;"(5*isp)";A
T 3,19;"(9w:99:96:9w:99)"
  30 FOR A=5 TO 11
  40 PRINT AT A,20;"(3*isp)"
  50 NEXT A
  60 PRINT AT 11,21;"(9a)";AT 9,
20;"(i+)";AT 7,22;"(i+)";AT 5,21
;"(i+)"
  70 LET S=0
  73 LET L=0
  80 LET I=INT (RND*9)+1
  82 LET K=1
  83 LET L=L+1
  85 PRINT AT 11,18;" "
  90 FOR A=K TO 16
 100 PRINT AT 11,A;"(sp:i*)"
 110 NEXT A
 115 IF L=4 THEN GOTO 300
 120 PRINT AT 16,1;"A BLACK KNIG
HT IS APPROACHING          DROP YO
UR WEIGHT NOW "
 130 INPUT W
 140 PRINT AT 16,1;"
 150 FOR A=4 TO 11
 160 PRINT AT A,18;CHR$ (156+W)
 165 PRINT AT A-1,18;" "
 168 NEXT A
 170 IF W>I THEN GOTO 220
 180 IF W<I THEN GOTO 250
 185 FOR A=6 TO 12
 190 PRINT AT 8+8*SIN (A/6*PI)+3
,6-6*COS (A/6*PI)+5;"(i*)"
 195 PRINT AT 8+8*SIN (A/6*PI)+3
,6-6*COS (A/6*PI)+5;" "
 200 NEXT A
 210 PRINT AT 12,5;"(i*)";AT 16,
1;"IN THE MOAT   "
 211 PAUSE 60
 212 LET S=S+1
 213 PRINT AT 12,5;"(9a)"
 215 GOTO 73
 220 FOR A=6 TO 12
 230 PRINT AT 8+8*SIN (A/6*PI)+3
,8-8*COS (A/6*PI)+1;"(i*)"
 235 PRINT AT 8+8*SIN (A/6*PI)+3
,8-8*COS (A/6*PI)+1;" "
 240 NEXT A
 245 GOTO 82
 250 FOR A=6 TO 12
 260 PRINT AT 8+8*SIN (A/6*PI)+3
,4-4*COS (A/6*PI)+9;"(i*)"
 270 PRINT AT 8+8*SIN (A/6*PI)+3
,4-4*COS (A/6*PI)+9;" "
 280 NEXT A
 285 LET K=9
 290 GOTO 83
 300 PRINT AT 16,0;"THE BLACK KN
IGHT HAS INVADED    NUMBER OF KN
IGHTS REPELLED ";S
 310 FOR A=16 TO 18
 320 PRINT AT 11,A;"(sp:i*)"
 330 NEXT A
```



DELETE THE DOTS

DELETE THE DOTS is a program for the 1K ZX-81 designed by Graham Deering of Surrey to test your speed with the cursor keys. A number of dots are displayed on the screen and your flashing spot is required to wipe out all of them, using the usual cursor keys.

The program allows you to choose how many dots are displayed and, by pressing 0 when you have deleted your dots, you can have the time which you have taken displayed on the screen.

```
 1 LET A=10
 2 LET B=10
 3 LET T=0
 4 PRINT "9,18,27 OR 36 DOTS?"
 5 INPUT A$
 6 IF A$="9" THEN GOTO 14
 7 IF A$="18" THEN GOTO 16
 8 IF A$="27" THEN GOTO 16
 9 IF A$="36" THEN GOTO 20
14 FOR N=1 TO 9
15 GOTO 40
16 FOR N=1 TO 18
17 GOTO 40
18 FOR N=1 TO 27
19 GOTO 40
20 FOR N=1 TO 36
40 LET C=INT (RND*40)+1
50 LET D=INT (RND*40)+1
60 PLOT C,D
70 NEXT N
 80 UNPLOT A,B
 85 LET T=T+1
 90 IF INKEY$="5" THEN LET A=A-
1
 100 IF INKEY$="8" THEN LET A=A-
1
 110 IF INKEY$="6" THEN LET B=B-
1
 120 IF INKEY$="7" THEN LET B=B+
1
 130 PLOT A,B
 140 IF INKEY$="0" THEN GOTO 160
 150 GOTO 80
 160 PRINT T/5
 161 IF T<40 THEN PRINT "WELL DO
NE"
 165 PAUSE 500
 170 CLS
 180 RUN
```

SPECTRAL PIANO

WE HAD a good deal of difficulty selecting a Spectrum piano-playing routine for the magazine. Fourteen-year-old Tim Whittaker of Cardiff faced stiff competition, most notably from Paul Matthews, before winning the nomination with his clear and easily-mastered **Spectral Piano.**

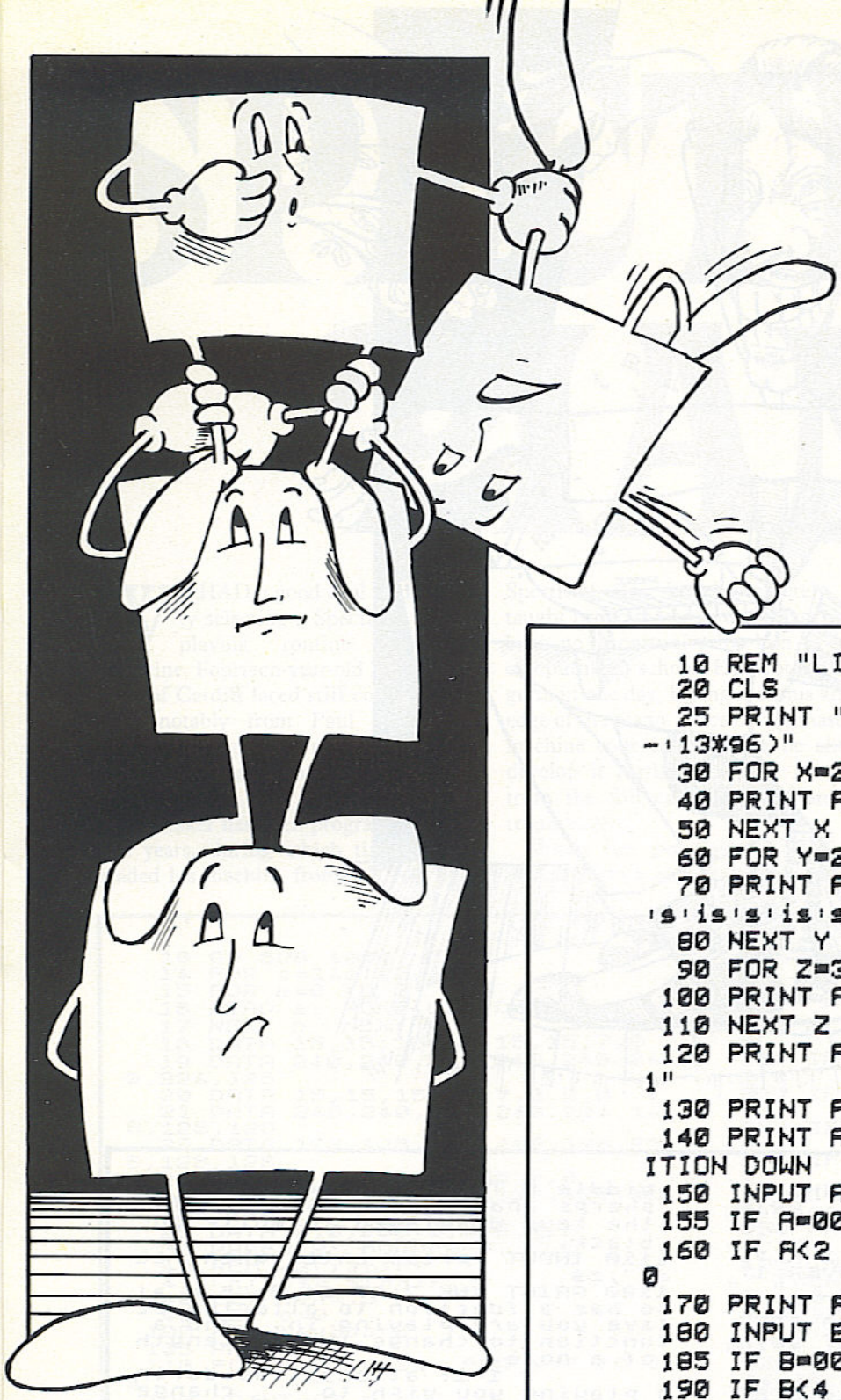
Whittaker has been programming for two years, during which time he upgraded his machine from a ZX-81 to a Spectrum. He is a completely self-taught programmer as there has, as yet, been no opportunity for him to study computing at school. He wrote the program in one day, basing it on his knowledge of the piano. Once he has mastered machine code he hopes to be able to develop it further and give his Spectrum the full capabilities of an electronic organ.

When the program is RUN the screen shows a section of keyboard with keys which appear to move. Pressing the appropriate key causes the notes played to be raised or lowered by an octave, giving a range stretching from bottom C to top B. It is likewise very easy to vary the length of the note—any key from 1 to 9 will change it instantly.

All instructions are included in the program. Capital letters in quotation marks in lines 400 to 500 should be entered in graphics mode. (16K Spectrum).

```
  10 GO SUB 1000
  14 FOR c=144 TO 151
  15 FOR n=0 TO 7
  16 READ a: POKE USR CHR$ c+n,a
  17 NEXT n: NEXT c
  18 DATA 15,15,15,15,15,15,7,0
  19 DATA 240,240,240,240,240,24
0,224,128
  20 DATA 15,15,15,15,7,0,0,0
  21 DATA 240,240,240,240,224,12
8,128,128
  22 DATA 128,128,128,128,128,25
5,128,128
  23 DATA 0,0,0,0,0,255,0,0
  24 DATA 128,128,255,128,128,12
8,128,128
  25 DATA 0,0,255,0,0,0,0,0
  30 PAPER 2: BORDER 0: CLS
  40 REM variables
  41 LET a$="middle"
  42 LET len=.3
  43 LET o=0
 100 REM keyboard
 105 PAPER 7
 110 FOR n=8 TO 21: FOR m=7 TO 1
4
 120 PRINT AT m,n;" "
 130 NEXT m: NEXT n
 140 INK 0: PLOT 64,61: DRAW 111
,0
 150 FOR n=64 TO 162 STEP 16: PL
OT n,56: DRAW 0,63: NEXT n
 160 FOR n=9 TO 20 STEP 2: FOR m
=7 TO 10
 170 IF n=13 THEN NEXT n
 180 PRINT AT m,n;"▒": REM ▒ 5+
shifted 5
 190 NEXT m: PRINT AT m,n;"CD":
REM ▒ CD
 200 NEXT n
 300 REM notes
 310 IF INKEY$="i" THEN LET o=-1
2: LET a$="bottom"
 315 IF INKEY$="o" THEN LET o=0:
LET a$="middle"
 320 IF INKEY$="p" THEN LET o=12
: LET a$="    top"
 321 IF INKEY$="1" THEN LET len=
.1
 322 IF INKEY$="2" THEN LET len=
.2
 323 IF INKEY$="3" THEN LET len=
.3
 324 IF INKEY$="4" THEN LET len=
.4
 325 IF INKEY$="5" THEN LET len=
.5
 326 IF INKEY$="6" THEN LET len=
.6
 327 IF INKEY$="7" THEN LET len=
.7
 328 IF INKEY$="8" THEN LET len=
.8
 329 IF INKEY$="9" THEN LET len=
.9
 340 INK 7: PAPER 2: PRINT AT 0,
20;"Length ";len;" "
 350 PRINT AT 16,9;"↑";AT 17,7;a
$;" C"
 400 INK 0: PAPER 7: IF INKEY$="
a" THEN PRINT AT 14,8;"EF": BEEP
 len,0+o: PRINT AT 14,8;"GH"
 410 IF INKEY$="w" THEN PRINT AT
 11,9;"AB": BEEP len,1+o: PRINT
AT 11,9;"CD"
 420 IF INKEY$="s" THEN PRINT AT
 14,10;"EF": BEEP len,2+o: PRINT
 AT 14,10;"GH"
 430 IF INKEY$="e" THEN PRINT AT
 11,11;"AB": BEEP len,3+o: PRINT
 AT 11,11;"CD"
 440 IF INKEY$="d" THEN PRINT AT
 14,12;"EF": BEEP len,4+o: PRINT
 AT 14,12;"GH"
 450 IF INKEY$="f" THEN PRINT AT
 14,14;"EF": BEEP len,5+o: PRINT
 AT 14,14;"GH"
 460 IF INKEY$="t" THEN PRINT AT
 11,15;"AB": BEEP len,6+o: PRINT
 AT 11,15;"CD"
 470 IF INKEY$="g" THEN PRINT AT
 14,16;"EF": BEEP len,7+o: PRINT
 AT 14,16;"GH"
 480 IF INKEY$="y" THEN PRINT AT
 11,17;"AB": BEEP len,8+o: PRINT
 AT 11,17;"CD"
 485 IF INKEY$="h" THEN PRINT AT
 14,18;"EF": BEEP len,9+o: PRINT
 AT 14,18;"GH"
 490 IF INKEY$="u" THEN PRINT AT
 11,19;"AB": BEEP len,10+o: PRIN
T AT 11,19;"CD"
```

```
 500 IF INKEY$="j" THEN PRINT AT
 14,20;"EF": BEEP len,11+o: PRIN
T AT 14,20;"GH"
 600 GO TO 300
1000 PAPER 2: CLS : PRINT INK 7;
AT 0,7;"Spectral piano"; OVER 1;
 INK 7;AT 0,7;"_____"
1005 LET n$="ASDFGHJ"
1010 LET l=1: FOR n=7 TO 20 STEP
 2: PRINT PAPER 7; INK 0;AT 10,n
;n$(l): LET l=l+1: NEXT n
1020 LET n$="WETYU"
1030 LET l=1: FOR n=8 TO 18 STEP
 2: IF n=12 THEN NEXT n
1040 PRINT PAPER 0; INK 7;AT 8,n
;n$(l): LET l=l+1: NEXT n
1050 PRINT AT 6,0;"USE THESE KEY
S";AT 11,7;"↑";AT 12,3;"MIDDLE C
"
1060 PRINT AT 4,20;"octave keys"
: PRINT AT 6,22;"■  ■  ■"
1070 PRINT AT 2,2;"Length of not
e in fractions";AT 3,4;"of a seco
nd";AT 4,1;"■ ■ ■ ■ ■ ■ ■ ■ ■"
1080 PRINT INK 7;AT 14,0;"Spectr
al Piano is a computer  versio
n of a piano.Once you knowhow it
 works you will soon be  trying
 to play your own tunes."
1090 INPUT "When ready press ent
er";z$
1100 PRINT OVER 1; FLASH 1; PAPE
R 7;AT 12,3;"              "; FLASH 0;
 OVER 0; PAPER 2; INK 7;AT 14,0;
"The keyboard is set out like
 that of a real piano.By pressin
gthe keys A TO J on the second
 row up)you will get a note from
 middle C TO B.To obtain the
 sharps and flats press any of
 the keys displayed in white on
 black."
1110 INPUT "press enter when rea
dy";z$
1120 PRINT INK 7;AT 14,0;"S.p al
so has a function to alterthe oc
tave you are playing in,  and a
function to change the   length
 of a note.
                1-If at any time durin
g playing you wish to      change
 octaves just press key ■ to get
 the octave starting at   bottom
 C,key ■ to get the middle C oct
ave and ■ to get the top C octav
e"
1130 INPUT "Press enter when rea
dy";z$
1140 PRINT INK 7;AT 9,0;"2.-if a
t any time during playing you wi
sh to change the duration of the
 notes you are pressing  press a
ny key from 1 TO 9.The   higher
the number the longer    the not
e                "
1150 FOR n=15 TO 21: PRINT AT n,
0;"
                ": NEXT n: REM 32
1190 INPUT "Have you understood?
(y/n)";z$: IF z$<>"y" THEN GO TO
 1000
1200 RETURN
9998 PAUSE 0
9999 PAPER 7: INK 0: BORDER 7: F
LASH 0: CLS
```



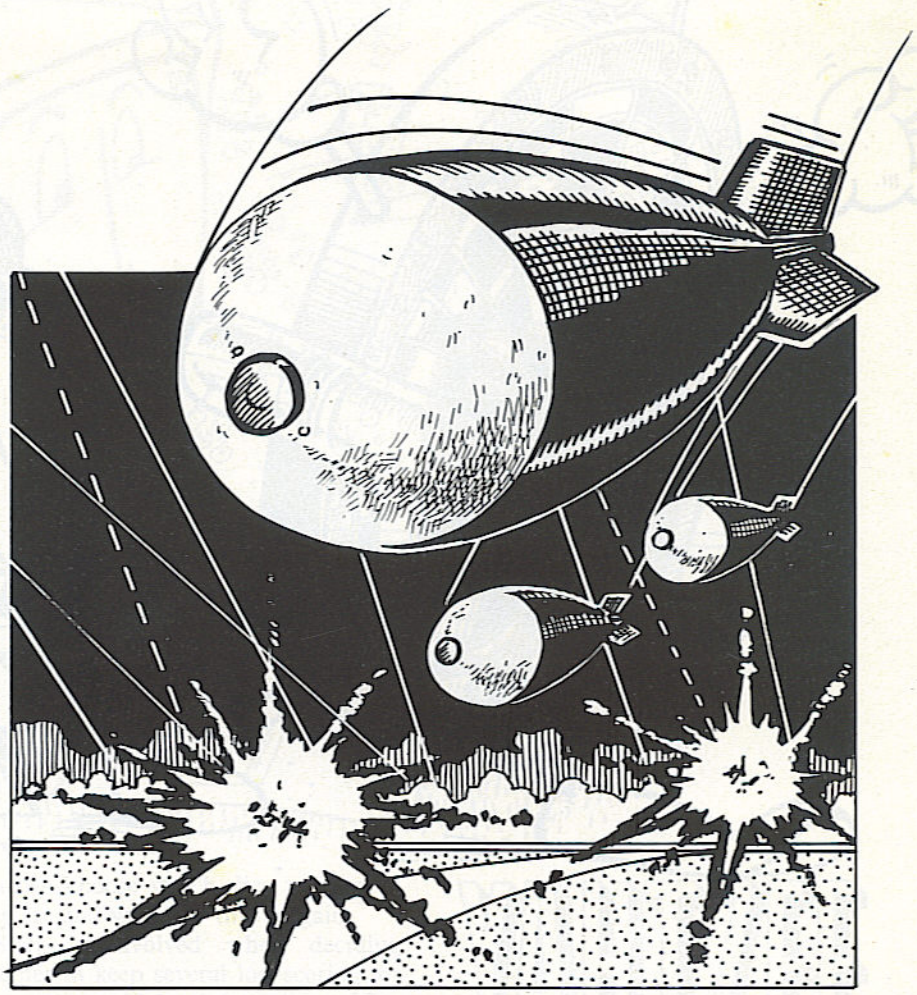
LINE FOUR

```
  10 REM "LINE"
  20 CLS
  25 PRINT "(12*g6:il:ii:in:ie:i
-:13*g6)"
  30 FOR X=2 TO 13 STEP 2
  40 PRINT AT X,1;X
  50 NEXT X
  60 FOR Y=2 TO 13
  70 PRINT AT Y,3;"(is:s:is:s:is
:s:is:s:is:s:is:s:is:s:is)"
  80 NEXT Y
  90 FOR Z=3 TO 14 STEP 2
 100 PRINT AT Z,3;"(14*is)"
 110 NEXT Z
 120 PRINT AT 14,4;"4 6 8 1 1 1
1"
 130 PRINT AT 15,10;"0 2 4 6"
 140 PRINT AT 20,0;"PLAYER 1 POS
ITION DOWN   "
 150 INPUT A
 155 IF A=00 THEN RUN
 160 IF A<2 OR A>12 THEN GOTO 14
0
 170 PRINT AT 20,18;"ACROSS"
 180 INPUT B
 185 IF B=00 THEN RUN
 190 IF B<4 OR B>16 THEN GOTO 18
0
 200 PRINT AT A,B;"(i1)"
 210 PRINT AT 20,7;"2";AT 20,18;
"DOWN   "
 220 INPUT C
 225 IF C=00 THEN RUN
 230 IF C<2 OR C>12 THEN GOTO 20
0
 240 PRINT AT 20,18;"ACROSS"
 260 INPUT D
 265 IF D=00 THEN RUN
 270 IF D<4 OR D>16 THEN GOTO 23
0
 280 PRINT AT C,D;"(i2)"
 290 GOTO 140
```

VALERIE JAMIESON of Glasgow sent this computerised version of a traditional game, which can be played on the 16K ZX-81. You and your rival attempt to complete a line of four squares, while each tries to prevent the other completing a line.

Graphics instructions are given in an abbreviated form in lower-case letters in brackets. Lower-case 'g' stands for 'graphic' and lower-case 'i' stands for 'inverse'. Thus 'is' stands for 'inverse space', 'il' for 'inverse 1', and 'g6' for 'graphic 6'.

LETHAL LANDSCAPE

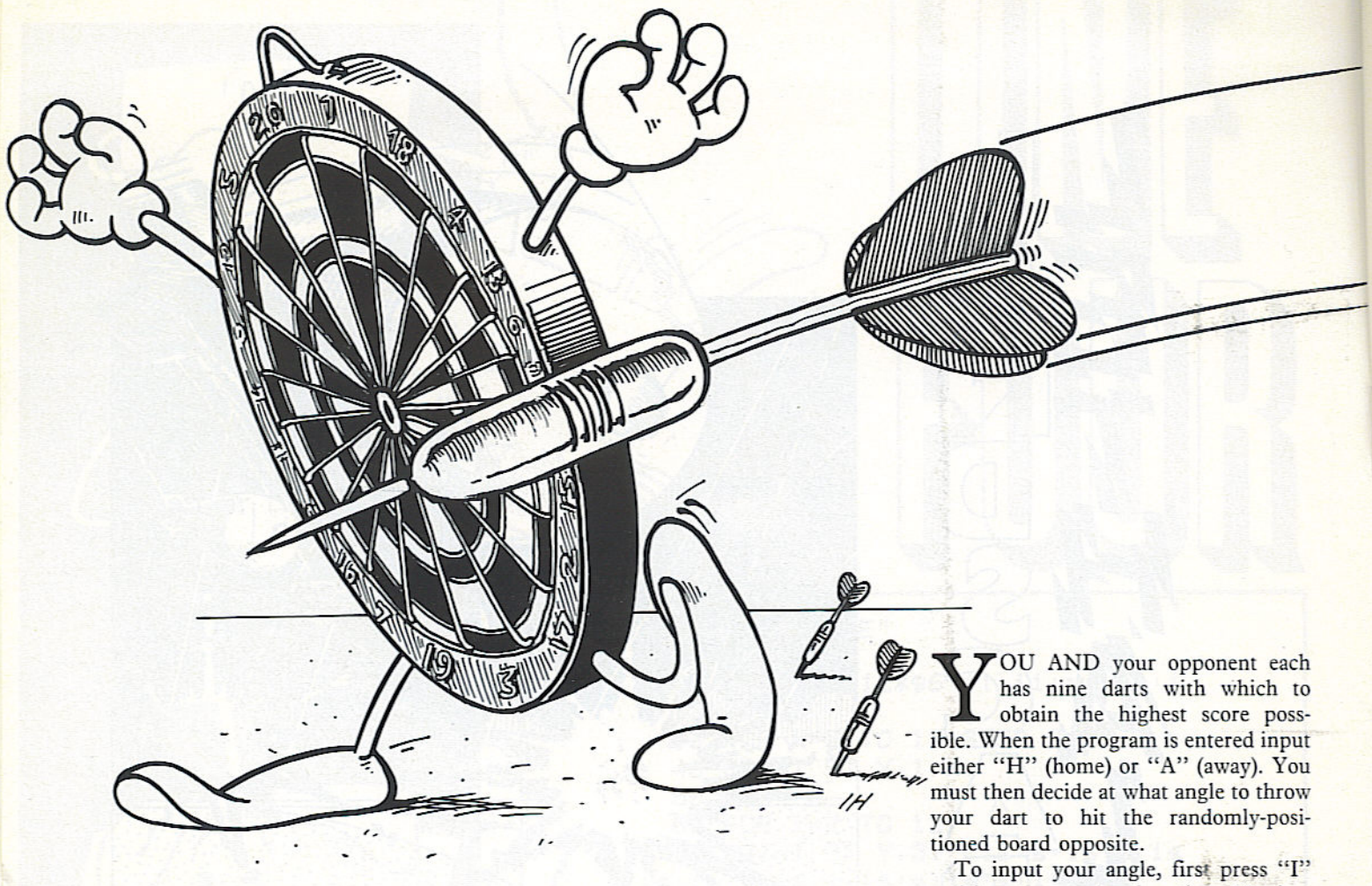


YOU FLY through the air, using keys 6 and 7 to move up and down. You must shoot as many flying bombs as possible, using any other key.

Avoid crashing into the landscape or the game will end.

The game was written for the 16K Spectrum by John Hopper of Solihull, West Midlands.

```
   1 REM ..................
.........
   5 LET a=5+PEEK 23635+256*PEEK
 23636
  10 FOR n=a TO a+24: READ a$
  15 LET x=CODE a$-48-(39*(a$>"£
"))): LET y=CODE a$(2)-48-(39*(a$
(2)>"£"))
  20 POKE n,x*16+y: NEXT n
  30 DATA "06","c0","11","00","4
0","d5","e1","23","c5","01","1f"
,"00","1a","ed","b0","2b","77","
00","23","23","13","c1","10","f0
","c9"
 100 GO SUB 1000
 110 LET sc=0: LET a=10: LET b1=
0: LET c1=175
 120 POKE 23760+16,54
 180 PLOT 240,0
 190 BORDER 1: PAPER 1: INK 6: C
LS
 200 LET b=INT (RND*100)-50
 210 IF b1+b>140 OR b1+b<7 THEN
LET b=0
 220 PLOT 240,b1: DRAW 8,b
 230 LET b1=b1+b
 240 LET l=USR 23760
 250 PRINT AT a,12;"  "
 260 IF SCREEN$ (a,14)<>" " THEN
 GO SUB 2000
 270 IF INKEY$="6" AND a<20 THEN
 LET a=a+1
 280 IF INKEY$="7" AND a>0 THEN
LET a=a-1
 290 PRINT INK 6; BRIGHT 1; PAPE
R 1;AT a,12;"►"
 300 IF INKEY$<>"" AND INKEY$<>"
6" AND INKEY$<>"7" THEN GO TO 70
00
 331 PAUSE 5
 340 IF RND*50>=15 THEN GO SUB 3
500
 350 BEEP .001,50
 360 GO TO 200
1000 RESTORE 1005
1005 DATA 0,0,240,100,127,252,12
0,0
1010 FOR f=0 TO 7: READ a: POKE
USR "a"+f,a: NEXT f
1020 DATA 0,0,0,0,170,0,0,0
1030 FOR f=0 TO 7: READ a: POKE
USR "d"+f,a: NEXT f
1100 RETURN
2000 PRINT AT 3,0; BRIGHT 1; PAP
ER 2; INK 7;"SCORE="; FLASH 1;sc
: PRINT AT a,14; INK 7; FLASH 1;
"►": BORDER INT (RND*8): PRINT I
NK 2; BRIGHT 1; FLASH 1; PAPER 5
;AT 12,10;"-HIT-HIT-HIT-": BEEP
.01,RND*50: GO TO 2000
3500 LET x2=INT (21-(b1/8))-1
3510 LET x=INT (RND*x2)
3520 PRINT AT INT x,29;"£"
3530 IF RND*60<2 THEN PRINT AT x
,29;"*"
3540 RETURN
7000 FOR f=14 TO 20
7010 PRINT INK 5;AT a,f;"…"
7020 IF SCREEN$ (a,f+1)<>" " THE
N GO TO 7040
7030 NEXT f
7040 IF SCREEN$ (a,f+1)="£" THEN
 BEEP .01,10: LET sc=sc+1: FOR h
=14 TO f+1: PRINT AT a,h;" ": NE
XT h: GO TO 322
7045 IF SCREEN$ (a,f+1)="*" THEN
 BEEP .01,30: LET sc=sc+10: FOR
h=14 TO f+1: PRINT AT a,h;" ": N
EXT h: GO TO 322
7050 FOR h=14 TO f: PRINT AT a,h
;" ": NEXT h: GO TO 322
```



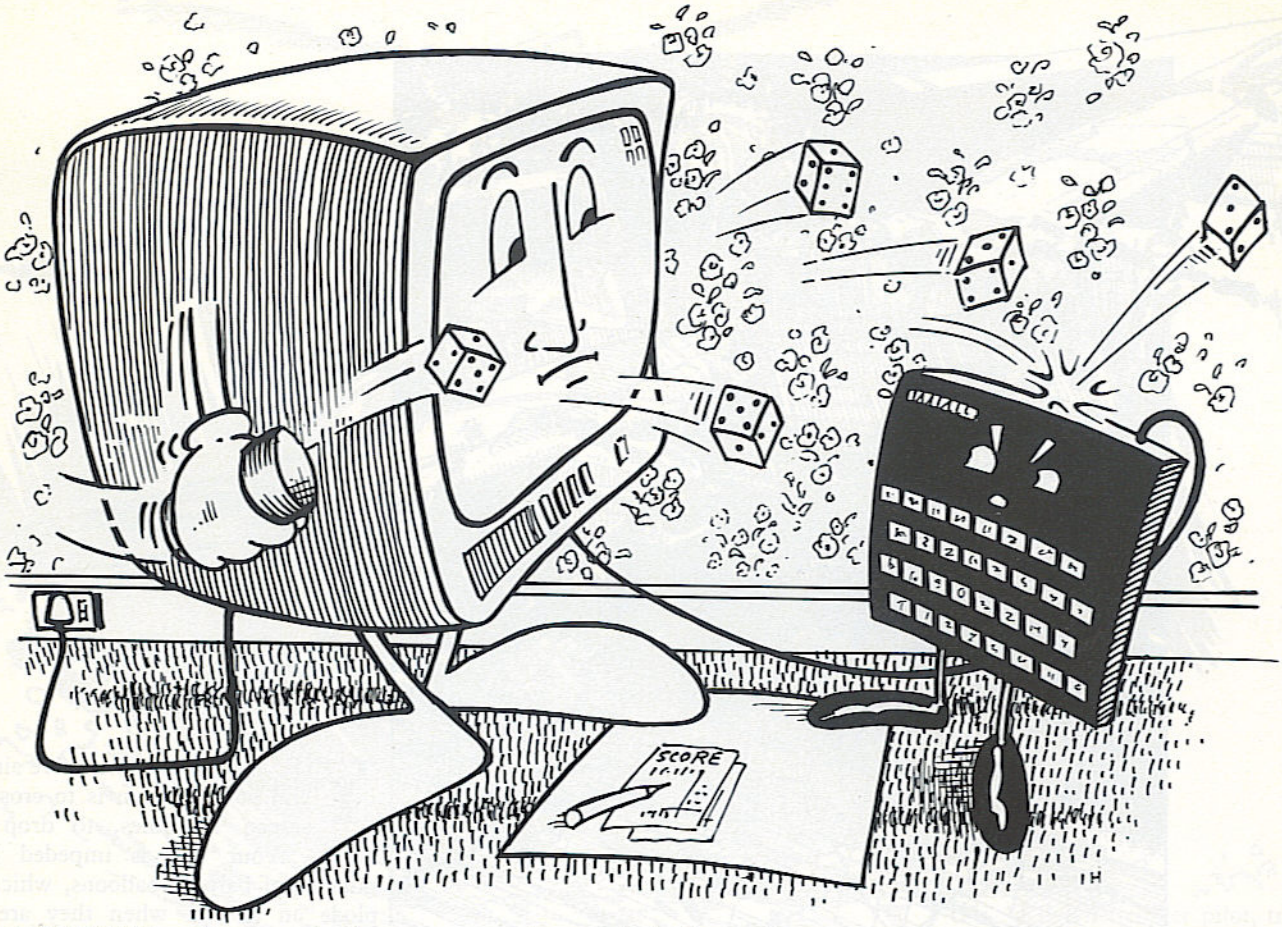
DARTS

YOU AND your opponent each has nine darts with which to obtain the highest score possible. When the program is entered input either "H" (home) or "A" (away). You must then decide at what angle to throw your dart to hit the randomly-positioned board opposite.

To input your angle, first press "I" and input a number less than 35 when the prompt appears. Once you have thrown three darts your opponent will be given the opportunity to input "H" or "A" and to have three throws.

The program was written for the 16K ZX-81 by Kevin Snowdon of Gateshead, Tyne-and-Wear.

```
  1 REM "150"
  2 FAST
  3 LET T=0
  4 LET T1=0
  5 LET SH=0
  6 LET A=0
  7 LET S=0
  8 LET F=3
  9 LET I=0
 10 LET H=3
 11 PRINT AT 0,13;"H LEG ";AT 0
,21;"SCORE ";AT 1,13;"A LEG ";AT
 1,21;"SCORE "
 12 FOR N=0 TO 11
 13 PLOT 60,N
 14 NEXT N
 16 FOR N=5 TO 14
 18 PLOT 59,N
 19 PLOT 58,N
 20 NEXT N
 21 FOR N=5 TO 11
 22 PLOT 57,N
 23 NEXT N
 30 PLOT 56,11
 35 PLOT 55,9
 40 PLOT 55,10
 45 PLOT 54,8
 50 PLOT 53,8
 55 PLOT 56,4
 60 PLOT 56,5
 65 PLOT 55,2
 70 PLOT 55,3
 75 PLOT 54,0
 80 PLOT 54,1
 82 PLOT 53,0
 83 INPUT A$
 84 IF A$="H" THEN LET T=T+1
 85 IF A$="A" THEN LET T1=T1+1
 89 IF T>3 AND T1=3 THEN STOP
 90 IF T>=3 AND T1>3 THEN STOP
 91 GOSUB 500
 92 SLOW
 93 PRINT AT 15,25;"  ";AT 15,2
6;"<="
 95 LET R=0
100 FOR N=11 TO 8 STEP -1
110 UNPLOT 51+(R/2),N
120 PLOT 53,N
125 LET R=R+1
130 NEXT N
132 PRINT AT 15,26;"  ";AT 15,2
5;"<="
135 LET R=0
140 FOR N=11 TO 8 STEP -1
150 PLOT 51+(R/2),N
152 UNPLOT 53,N
155 LET R=R+1
160 NEXT N
165 IF INKEY$="I" THEN GOTO 180
170 GOTO 93
180 INPUT R
182 IF R>35 THEN GOTO 180
185 LET C=0
186 LET D=0
190 FOR N=25 TO 3 STEP -1
200 LET D=15-(INT ((TAN (R/180*
PI))*C))
202 IF D<=0 THEN GOTO 90
205 PRINT AT D,N;"<="
210 FOR W=1 TO 2
215 NEXT W
220 PRINT AT D,N;"  "
225 LET C=C+1
230 NEXT N
240 IF D>=A AND D<=A+4 THEN GOT
O 300
245 IF F<0 THEN GOTO 8
246 IF H<0 THEN GOTO 8
250 GOTO 90
300 IF D=A THEN LET I=I+50
305 IF D=A+1 THEN LET I=I+40
310 IF D=A+2 THEN LET I=I+30
315 IF D=A+3 THEN LET I=I+20
320 IF D=A+4 THEN LET I=I+10
321 IF A$="H" THEN LET S=S+I
322 IF A$="A" THEN LET SH=SH+I
330 PRINT AT 0,19;T;AT 0,27;S;A
T 1,19;T1;AT 1,27;SH
340 GOTO 245
500 FAST
502 LET I=0
505 FOR N=0 TO 4
510 PRINT AT A+N,0;"    "
515 NEXT N
518 LET A=INT (15*RND)
520 PRINT AT A,0;"50(9h)";AT A+
1,0;"40(9a)";AT A+2,0;"30(9h)";A
T A+3,0;"20(9a)";AT A+4,0;"10(9h
)"
530 IF A$="H" THEN LET F=F-1
531 IF A$="A" THEN LET H=H-1
535 IF F<0 THEN GOTO 8
536 IF H<0 THEN GOTO 8
540 RETURN
```

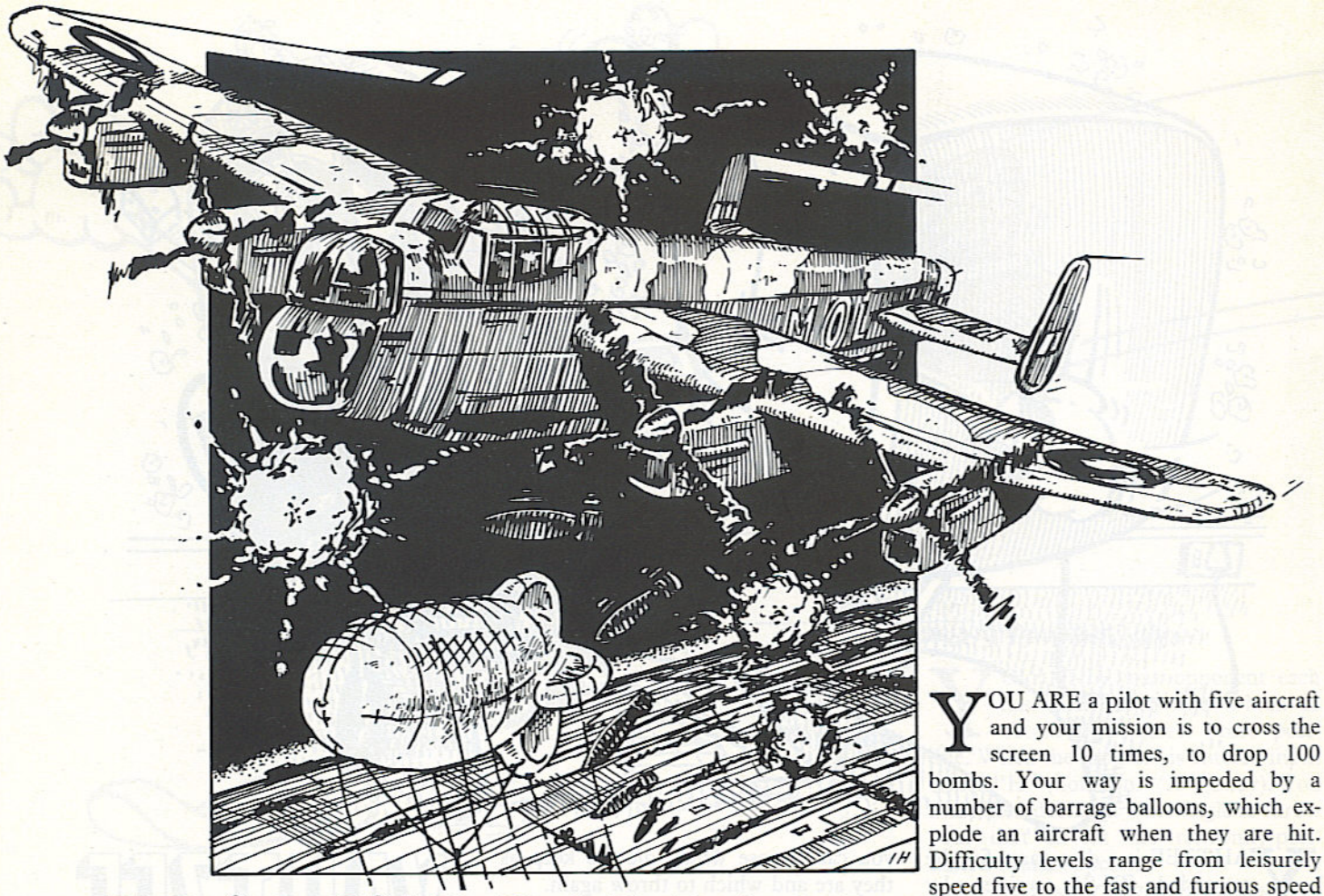


YAHTZEE

YAHTZEE is a dice game for the expanded ZX-81, written by Richard Smith of Luton, Bedfordshire. Your aim is to collect as many dice showing the same number as possible with three throws. After each throw you can choose which dice to keep as they are and which to throw again.

Skill is involved when deciding whether to keep several low-scoring, or one or two high-scoring dice. After every six rounds your score, and the high score, are shown.

```
  2 REM R.SMITH 1983
  5 SLOW
  7 REM instructions
 10 PRINT TAB 7;"COMPUTER YAHTZ
EE","(7*sp:16*97)"
 20 PRINT
 25 PRINT "COLLECT A SET OF DIC
E TOGETHER  EITHER ALL ONES,TWOS
 OR THREES  ETC.";
 30 PRINT "YOU DO THIS BY","INP
UTING A NO. (THE AMOUNT OF  DIC
E YOU WISH TO KEEP)";
 35 PRINT "E.G. 3 IF YOUR SET I
S"
 40 PRINT "     5  4  1  5  5"
 45 PRINT "THEN INPUT THE POSIT
IONS OF THE FIVES(IF 5 IS YOUR C
HOICE)"
 47 PRINT "E.G 1 (N/L) 4 (N/L)
5 (N/L)"
 52 PRINT "THIS WILL RETURN THE
 SET OF DICE"
 54 PRINT ,,"     5  5  5  ?  ?
"
 56 PRINT ,,"WHERE THE TWO ""?"
"S ARE NEWLY    RANDOMLY GENERAT
ED NO""S.PERHAPS"
 58 PRINT "THE NEW SET IS:",,"
   5  5  5  1  5"
 60 PRINT "Press n\l for next p
ara9raPh"
 61 IF INKEY$="" THEN GOTO 61
 62 CLS
 64 PRINT "THE NEW SET IS:",,"
   5  5  5  1  5"
 66 PRINT "IN WHICH CASE YOUR N
EXT INPUT   WOULD BE:4 FOLLOWED
BY 1,2,3,5"
 68 PRINT
 70 PRINT "YOU HAVE 3 ATTEMPTS
TO COLLECT   THE DICE TOGETHER.A
FTER THIS:"
 72 PRINT "    ""CHOICE""WILL A
PPEAR"
 74 PRINT "AS YOU ARE COLLECTIN
G FIVES YOU INPUT 5.THIS THEN CO
LLECTS AND  ADDS ALL THE FIVES"
 80 PRINT ,,"A SCORE IS GIVEN"
 82 PRINT ,,"THERE ARE 6 ROUNDS
.THE SCORE IS INCREASED ACCORDIN
GLY."
 84 PRINT ,,"THERE IS A HI-SCOR
E AND NAME    FACILITY(9 LETTERS
 MAX.)"
 86 PRINT AT 21,0;"PRESS ANY KE
Y TO START THE GAME"
 90 IF INKEY$="" THEN GOTO 90
 95 REM Game
100 CLS
150 FAST
160 LET A$="????????"
170 LET Q=0
180 LET I=0
190 DIM D(5)
195 FOR V=1 TO 6
197 PRINT AT 6,0;"ROUND:";V
200 LET B=1
202 PRINT AT 0,7;"COMPUTER YAHT
ZEE"
203 PRINT AT 1,0;"(32*9H)"
205 PRINT AT 2,0;"(9h)SCORE=";I
,TAB 31;"(2*9h)HI SCORE=";Q,"BY
";A$;TAB 31;"(9h)"
207 PRINT AT 4,0;"(32*9h)"
210 FOR A=1 TO 3
220 FOR C=B TO 5
230 LET D(C)=INT (6*RND)+1
240 NEXT C
241 FOR J=1 TO 5
242 PRINT AT 8,J*4;D(J)
243 NEXT J
250 PRINT AT 10,6;"HOW MANY ? "
260 INPUT E
270 FOR F=1 TO E
275 PRINT AT 10,6;"POSITION"+("
S" AND E>1);" ?"
280 INPUT G
290 LET D(F)=D(G)
300 NEXT F
310 LET B=E+1
320 NEXT A
325 PRINT "CHOICE ?(1-6)"
330 INPUT E
340 FOR A=1 TO 5
350 IF D(A)=E THEN LET I=I+D(A)
360 NEXT A
365 CLS
370 NEXT V
380 IF I>Q THEN GOTO 400
390 GOTO 190
400 SLOW
410 FOR G=0 TO 21
415 PRINT AT G,0;"(32*isP)"
420 NEXT G
430 FOR G=0 TO 21
440 PRINT AT G,0;"
                  "
450 NEXT G
460 PRINT AT 5,0;"YOU HAVE ATTA
INED THE HIGH SCORE"
470 PRINT
480 PRINT "PLEASE ENTER YOUR NA
ME                (9 LETTERS LIMIT)"
490 INPUT A$
500 LET Q=I
510 CLS
515 FAST
520 GOTO 180
600 SAVE "YAHTZEe"
610 RUN
```

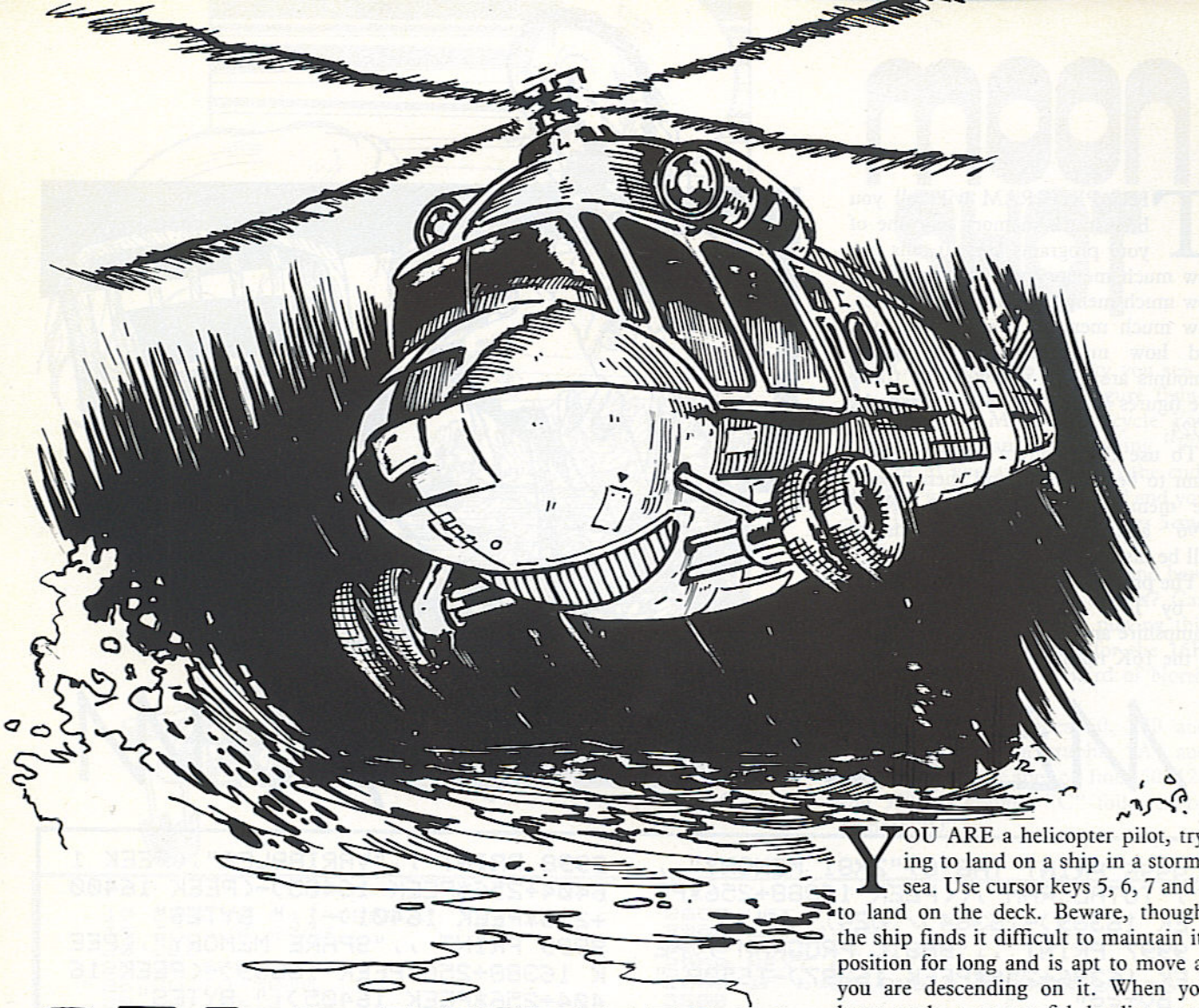


BEAT THE BARRAGE

YOU ARE a pilot with five aircraft and your mission is to cross the screen 10 times, to drop 100 bombs. Your way is impeded by a number of barrage balloons, which explode an aircraft when they are hit. Difficulty levels range from leisurely speed five to the fast and furious speed one.

This program was written for the 16K Spectrum by David Rands of Harlington, Bedfordshire.

```
  5 REM ***BEAT THE BARRAGE***
 10 GO SUB 700
100 REM INSTRUCTIONS/DIFFICULTY
105 BORDER 6
110 PRINT AT 0,2;"BEAT THE BARR
AGE"
120 PRINT AT 2,2;"You have to d
rop 100 BOMBS";AT 3,2;"to comple
te the mission";AT 4,2;"YOU have
 5 PLANES"
125 PRINT AT 6,2;"Use z key to
move downwards";AT 8,2;"Use m ke
y to move upwards"
130 PRINT AT 10,2;"ENTER LEVELS
 OF DIFFICULTY"
140 PRINT AT 12,2;"First enter
speed of planes";AT 13,2;"(1-5,
5 is slowest)"
150 INPUT sp: IF sp<1 OR sp>5 T
HEN GO TO 150
150 PRINT AT 15,2;"Now enter am
ount of";AT 16,2;"Barrage Balloo
ns";AT 17,2;"(20-60, 20 is easie
st)"
170 INPUT ba: IF ba<20 OR ba>60
 THEN GO TO 170
180 LET cr=0: LET sc=0
190 CLS
200 REM INITIATE BALLOONS
210 FOR n=1 TO ba
220 LET v=INT (RND*18)+3
230 LET h=INT (RND*32): IF h<3
THEN LET h=3
240 PRINT AT v,h; INK 4;CHR$ 14
8
250 NEXT n
260 PRINT AT 21,0;"BOMBS AWAY=
";sc: BEEP .2,20
270 IF sc=100 THEN GO TO 500
280 PRINT AT 21,16,"PLANES LOST
= ";cr
290 IF cr=5 THEN GO TO 530
295 PAUSE 100
300 REM PLANES
310 LET v=INT (RND*18)+3
320 FOR h=0 TO 31
330 LET c$=INKEY$
340 IF c$="" THEN PRINT AT v,h-
1;" "
350 IF c$="z" THEN PRINT AT v,h
-1;" ": LET v=v+1: IF v>20 THEN
LET v=20
360 IF c$="m" THEN PRINT AT v,h
-1;" ": LET v=v-1: IF v<0 THEN L
ET v=0
370 IF h=31 THEN GO TO 600
380 IF ATTR (v,h)=60 THEN PRINT
 AT v,h; INK 2; FLASH 1; BRIGHT
1;CHR$ 147: FOR n=1 TO 25: BEEP
.06,-15: BEEP .1,15: NEXT n: PRI
NT AT v,h;" ": LET cr=cr+1: GO T
O 280
390 PRINT AT v,h;CHR$ 144
400 PAUSE sp
410 NEXT h
500 REM END GAME
510 PRINT AT 10,10; INK 3; FLAS
H 1;"MISSION COMPLETED"
520 STOP
530 PRINT AT 10,10; INK 3; FLAS
H 1;"SQUADRON DESTROYED"
540 STOP
600 REM BOMBING SOUND
610 FOR n=50 TO 29 STEP -.5
620 BEEP .05,n
630 NEXT n
640 FOR x=1 TO 15
650 BEEP .05,-25: BEEP .05,-35:
BEEP .05,-60
660 NEXT x
670 LET sc=sc+10
680 GO TO 260
700 REM GRAPHICS
710 DATA "a",16,24,156,255,156,
24,16,0,"d",145,0,36,0,145,0,36,
145,"e",0,0,120,253,255,253,120,
0
720 FOR n=a TO d
730 READ a$
740 FOR a=0 TO 7
750 READ b: POKE USR a$+a,b
760 NEXT a
770 NEXT n
780 RETURN
```

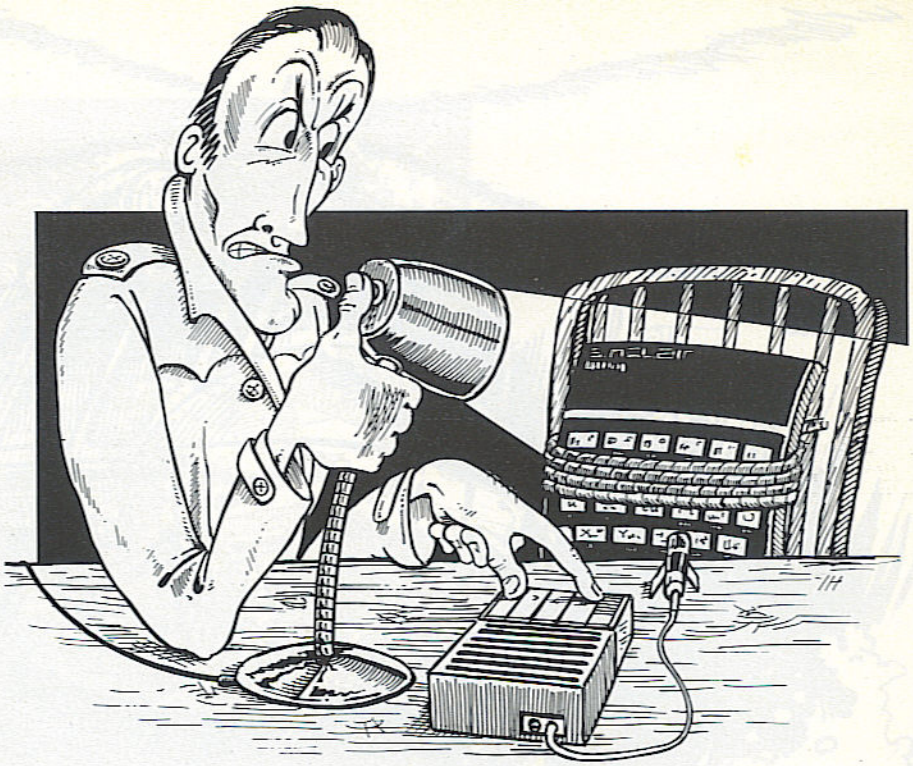


SEA LANDING

YOU ARE a helicopter pilot, trying to land on a ship in a stormy sea. Use cursor keys 5, 6, 7 and 8 to land on the deck. Beware, though, the ship finds it difficult to maintain its position for long and is apt to move as you are descending on it. When you have made a successful landing your time will be displayed.

Sea Landing was written for the 16K Spectrum by Georgea Saunders of Stockport, Cheshire.

```
    1 REM By Georgea Saunders
    5 BORDER 7: INK 0: PAPER 5: C
LS
    6 GO SUB 6000
   10 BORDER 0: PAPER 5: INK 0: C
LS : FOR n=11 TO 21: PRINT INK 1
;AT n,0;"                ": NEXT n
1000 LET s=0: LET h$=" ▲ ": LET
x=1: LET sub=20: LET y=10
1010 LET b=10
1020 PRINT  PAPER 1; INK 7;AT 14
,0;"USE THE ARROW KEYS 5,6,7,8 T
O LAND THE HELICOPTER ON THE DEC
K"
1100 PRINT AT x,y;h$
1101 LET s=s+1
1105 IF x=9 THEN GO SUB 5000
1110 BEEP .125,-30: PRINT AT x,y
;"  "
1120 IF INKEY$="5" THEN LET y=y-
1
1130 IF INKEY$="8" THEN LET y=y+
1
1140 IF INKEY$="6" THEN LET x=x+
1
1150 IF INKEY$="7" THEN LET x=x-
1
1155 IF sub=20 THEN GO SUB 2000
1160 IF y<=1 THEN LET y=1
1165 IF y<=1 THEN LET y=1
1170 IF x>=9 THEN LET x=9
1180 IF y>=28 THEN LET y=28
1195 LET sub=sub+1
1200 GO TO 1100
2000 REM boat
2005 LET sub=0
2010 PRINT AT 10,b;"        "
2019 PRINT AT 9,b;"         "
2020 LET b=INT (RND*20)+5
2045 PRINT INK 7;AT 9,b;"
2050 PRINT INK 2;AT 10,b;"
"
2060 RETURN
5000 IF ATTR (x+1,y+1)=42 THEN G
O TO 5100
5005 RETURN
5100 PRINT AT 19,1;"Time=";s
5110 PRINT AT 21,1;"Press 0 to r
un again"
5120 IF INKEY$<>"0" THEN GO TO 5
120
5130 GO TO 10
6000 REM udg
6015 POKE USR "a"+0,BIN 11111111
6020 POKE USR "a"+1,BIN 01111111
6025 POKE USR "a"+2,BIN 00111111
6030 POKE USR "a"+3,BIN 00011111
6035 POKE USR "a"+4,BIN 00001111
6040 POKE USR "a"+5,BIN 00000111
6050 POKE USR "a"+6,BIN 00000011
6115 POKE USR "b"+0,BIN 11111111
6120 POKE USR "b"+1,BIN 11111110
6125 POKE USR "b"+2,BIN 11111100
6130 POKE USR "b"+3,BIN 11111000
6135 POKE USR "b"+4,BIN 11110000
6140 POKE USR "b"+5,BIN 11100000
6145 POKE USR "b"+6,BIN 11000000
6150 POKE USR "b"+7,BIN 10000000
6210 POKE USR "c"+0,BIN 11111111
6215 POKE USR "c"+1,BIN 00011000
6220 POKE USR "c"+2,BIN 00111100
6225 POKE USR "c"+3,BIN 01111110
6230 POKE USR "c"+4,BIN 11111111
6235 POKE USR "c"+5,BIN 11111111
6240 POKE USR "c"+6,BIN 00011000
6245 POKE USR "c"+7,BIN 00011000
5900 RETURN
```



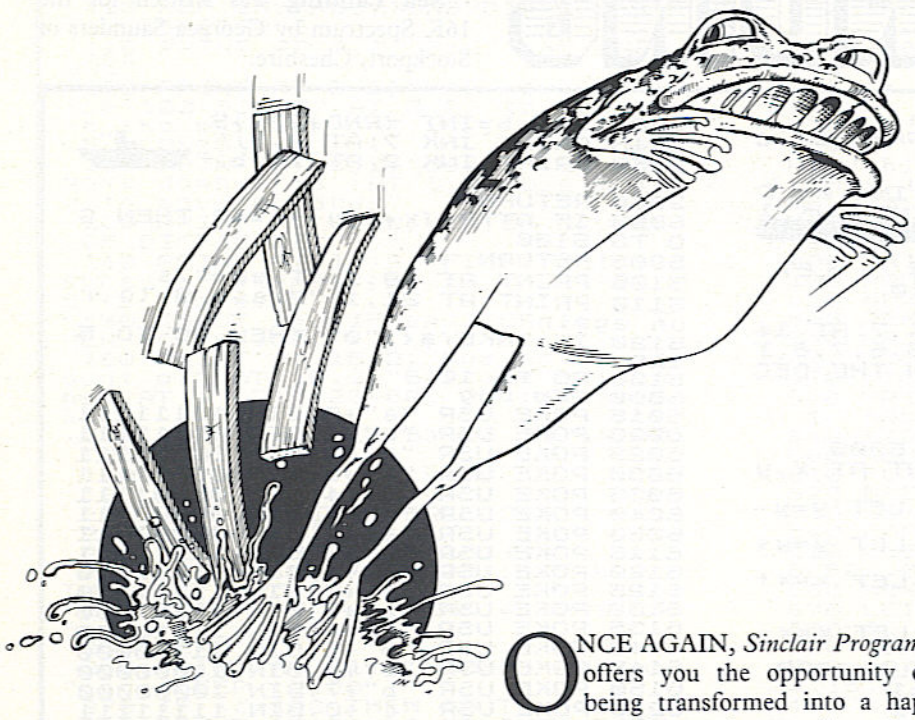
THIS PROGRAM will tell you how much memory any one of your programs uses. It tells you how much memory your machine has, how much memory your program uses, how much memory the variables use, and how much memory is spare. Amounts are given in bytes. To translate figures from bytes to Ks, divide by 1,024.

To use the program enter the program to be measured and then type-in the memory program. Type "RUN 9996" and the necessary information will be displayed.

The program was written for the ZX-81 by T R Carey of Southampton, Hampshire and is most suitable for use on the 16K machine.

MEMORY PROGRAM

```
9996 PRINT TAB 8;"ZX81 MEMORY",,
,"TOTAL RAM",((PEEK 16388+256*PE
EK 16389)-16384)/1024;" K"
9997 PRINT ,,"BASIC PROGRAM",(PE
EK 16396+256*PEEK 16397)-16509;"
 BYTES"
9998 PRINT ,,"VARIABLES",(PEEK 1
6404+256*PEEK 16405)-(PEEK 16400
+256*PEEK 16401)-1;" BYTES"
9999 PRINT ,,"SPARE MEMORY",(PEE
K 16388+256*PEEK 16389)-(PEEK 16
404+256*PEEK 16405);" BYTES"
```



PLANKS

```
  1 LET Z=10
  2 LET A=20
  5 LET X=INT (RND*14)+1
 10 FOR N=1 TO A
 15 PRINT AT A,Z-1;"(£P:i":£P)"
 20 PRINT AT N,0;"(15*£f)"
 25 PRINT AT N-1,0;"
    "
 40 PRINT AT N,X;" "
 50 LET Z=Z+(INKEY$="8" AND Z<1
4)-(INKEY$="5")
 60 NEXT N
 70 IF Z<>X THEN GOTO 500
 90 IF A=7 THEN PRINT "YOU WON"
 95 LET A=A-1
100 GOTO 5
500 PRINT AT A,Z-2;"SPLAT"
510 PRINT AT 10,15;A
```

ONCE AGAIN, *Sinclair Programs* offers you the opportunity of being transformed into a hapless frog with no chance of survival. You, the inverse quotation mark, stand at the bottom of the screen while your malevolent computer throws planks at you.

Your only chance of prolonging your life is to use the cursor keys 5 and 8 to dodge left and right, so that when the plank reaches the ground you are situated safely under a knot-hole. How long can you survive?

The program was written for the 1K ZX-81 by Simon Knight of Hemel Hempstead, Herts.

moon SHOT

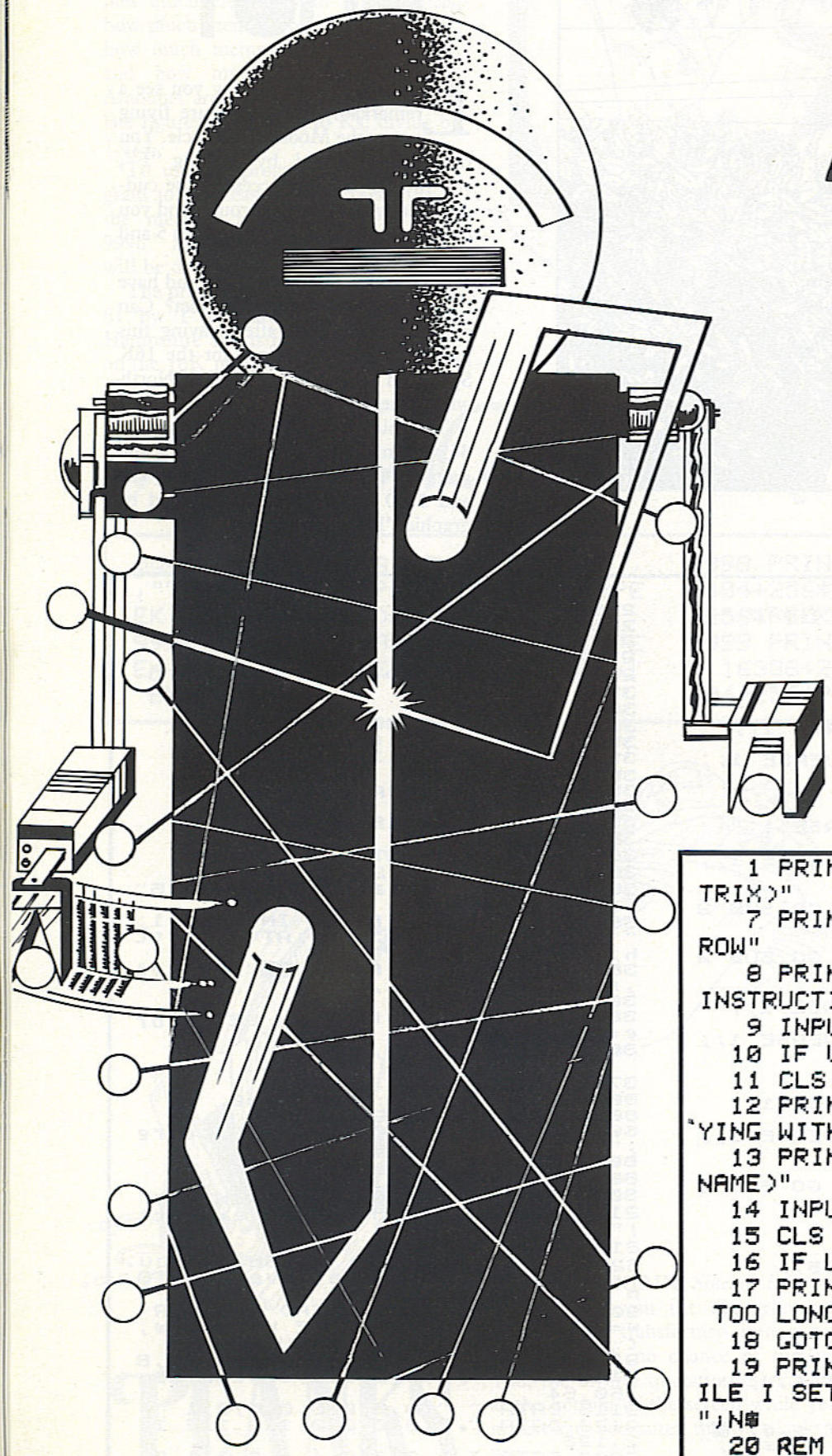
LOOKING into the sky you see a remarkably familiar figure flying across the Moon on a bicycle. You raise your gun and, by pressing "F", you fire. If you are successful the cuddly alien will fall to the ground and you catch it in your basket, using keys 5 and 8.

Can you catch all the aliens and have the Moon men declared extinct? Can you eat your dinner after playing this game, which was devised for the 16K Spectrum by Jonathon Baird of Northwich, Cheshire?

The bicycle on lines 60, 130 and 3630 is made up of graphic "A" and graphic "B". The spot on lines 50, 120 and 3630 is graphic "C" followed by graphic "D".

```
  10 BORDER 0: PAPER 0: INK 7
  15 GO SUB 9000
  20 CLS
  25 GO SUB 1000
  26 GO TO 8000
  30 LET z=12
  40 FOR b=8 TO 15
  50 PRINT AT z,b; INVERSE 1;;"
"
  60 PRINT AT z+1,b; INVERSE 1;;
"A"
  70 FOR x=1 TO 50
  75 NEXT x
  80 PRINT AT z,b; INVERSE 1;"
"
  90 PRINT AT z+1,b; INVERSE 1;;
"  "
  95 LET z=z-1
  96 IF INKEY$="f" THEN GO SUB 2
000
 100 NEXT b
 105 IF INKEY$="f" THEN GO SUB 2
000
 110 FOR b=15 TO 22
 120 PRINT AT z,b; INVERSE 1;;"
"
 130 PRINT AT z+1,b; INVERSE 1;;
"A"
 140 FOR x=1 TO 50
 145 NEXT x
 150 PRINT AT z,b; INVERSE 1;"
"
 160 PRINT AT z+1,b; INVERSE 1;;
"  "
 170 LET z=z+1
 180 IF INKEY$="f" THEN GO SUB 2
000
 200 NEXT b
 210 RETURN
1000 FOR a=1 TO 80
1010 INK 7: CIRCLE 128,88,a
1020 NEXT a
1030 RETURN
2000 LET r=1
2010 LET d=30
2030 FOR s=16 TO 4 STEP -1
2035 INVERSE 1
2040 PRINT AT s,r;"/";AT s,d;"\"
2045 PAUSE 2
2049 INVERSE 0
2050 PRINT AT s,r;"■";AT s,d;"■"
2051 IF s>13 THEN PRINT AT s,r;"
 ";AT s,d;" "
2055 LET r=r+1
2060 LET d=d-1
2070 BEEP .1,s
2080 NEXT s
2090 IF b=15 AND z=4 THEN GO TO
3500
3000 RETURN
3500 RESTORE 9900
3510 LET score=score+1
3520 FOR k=1 TO 11
3530 READ beep
3540 BEEP .2,beep+16
3550 NEXT k
3560 LET catch=16
3590 NEXT k
3600 LET fall=INT (RND*3)+13
3610 FOR g=4 TO 20
3620 LET catch=catch-(INKEY$="5"
)+(INKEY$="8")
3630 PRINT AT g,fall; INVERSE 1;
"B";AT g+1,fall;"A";AT 21,catc
h; INVERSE 0;"▄▄"
3640 PRINT AT g,fall;"■■";AT g+1
,fall;"■■";AT 21,catch;"  "
3650 NEXT g
3660 IF catch=fall THEN LET scor
e=score+10
3670 PRINT AT 21,0;"
                    "
3700 RETURN
8000 LET score=0: LET et=0
8020 FOR e=1 TO 25
8030 PRINT AT 0,0;"Score=";score
;" No. of Moon Men=";et
8040 GO SUB 30
8050 LET et=et+1
8070 IF score>=90 THEN PRINT AT
21,0; FLASH 1 ;"Moon Men extinct
!": STOP
8100 NEXT e
8200 PRINT AT 21,0; FLASH 1;"You
 failed.The Moon Men live!": STO
P
9000 FOR v=1 TO 4: READ a$: FOR
w=0 TO 7: READ c: POKE USR a$+w,
c: NEXT w: NEXT v: RETURN
9100 DATA "A",3,3,7,8,20,35,20,8
9110 DATA "B",0,0,192,64,160,16,
160,64
9115 DATA "C",0,0,0,0,0,0,0,1
9120 DATA "D",0,0,0,0,112,112,11
2,128
9900 DATA 3,3,3,3,5,4,4,3,3,1,3
```

MA



MATRIX is one of those rare but excellent routines in which the computer answers back. It is a game of strategy requiring you to move a flashing cursor across a matrix of numbers, collecting the highest available values by hitting the 0 key.

The restrictions are that you can move only horizontally and that you must avoid giving the computer, which moves vertically, any access to the high numbers. The winner is the player with the highest score when more moves are impossible. Instructions and prompts are contained within the game and a running score is kept.

The computer plays very well, obviously in its element with the requisite number-crunching, and in our tests it managed to win more often than not.

An interesting and original listing from T J Marrow of Wirral, Merseyside.

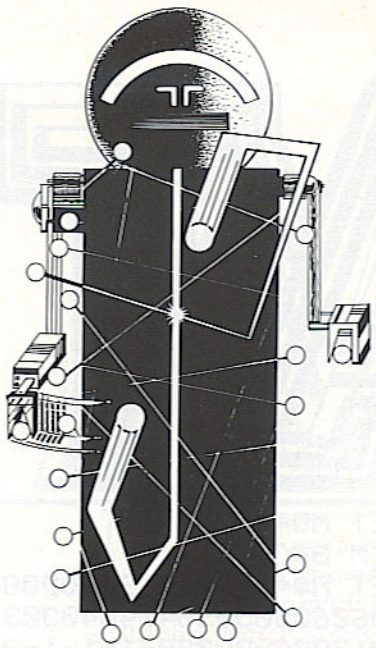
In our listing, lower-case letters signify inverse video except when inside brackets, when they are graphic instructions. (16K ZX-81)

```
   1 PRINT AT 10,10;"(inverse MA
TRIX)"     '
   7 PRINT AT 17,8;"BY JAMES MAR
ROW"
   8 PRINT AT 20,4;"DO YOU WANT
INSTRUCTIONS?"
   9 INPUT U$
  10 IF U$(1)="Y" THEN GOTO 2000
  11 CLS
  12 PRINT AT 10,5;"WHO AM I PLA
YING WITH?"
  13 PRINT AT 13,7;"(INPUT YOUR
NAME)"
  14 INPUT N$
  15 CLS
  16 IF LEN N$<9 THEN GOTO 19
  17 PRINT AT 13,3;"YOUR NAME IS
 TOO LONG."
  18 GOTO 14
  19 PRINT AT 10,2;"EXCUSE ME WH
ILE I SET UP";TAB 6;"THE BOARD,
";N$
  20 REM  shuffle board pieces
  21 LET LP=0
```

ATRIX

```
  22 LET MO=2
  25 DIM B$(8,16)
  30 LET A$="%151009090908080807
07070606060505050404040303030202
02010101000000000-1-1-1-2-2-2-3
-3-3-4-4-4-5-5-5-6-6-6-7-7-7-8-8
-8-9-9-9-900  "
  40 FOR N=1 TO 8
  50 FOR M=1 TO 8
  60 LET A=INT ((RND%((LEN A$-1)
/2))+1)%2
  70 LET B$(N,M%2-1 TO M%2)=A$(A
 TO A+1)
  80 IF A$(A TO A+1)="  " THEN G
OSUB 1500
  90 LET A$=A$(1 TO A-1)+A$(A+2
TO LEN A$)
 100 NEXT M
 110 NEXT N
 120 REM   score variables
 130 LET S=0
 140 LET T=0
 160 GOSUB 700
 170 REM   Players move
 175 GOSUB 3000
 180 PRINT AT 2%Y,1+(X-1)%3;"(tw
o inverse 'ASTERISKs)"
 190 PRINT AT 2%Y,1+(X-1)%3;B$(Y
,2%X-1 TO 2%X)
 200 IF INKEY$="" THEN GOTO 180
 210 LET A$=INKEY$
 213 IF A$="U" THEN GOTO 920
 215 IF A$<>"8" AND A$<>"5" AND
A$<>"0" THEN GOTO 180
 219 IF A$="0" AND B$(Y,2%X-1 TO
 2%X)="  " THEN GOTO 180
 220 IF A$="0" THEN GOTO 270
 230 LET X=X+(A$="8")-(A$="5")
 240 IF X>8 THEN LET X=1
 250 IF X<1 THEN LET X=8
 260 IF B$(Y,2%X-1)=" " THEN GOT
O 230
 265 GOTO 180
 270 LET LP=VAL B$(Y,2%X-1 TO 2%
X)
 275 PRINT AT 2%Y,1+(X-1)%3;"  "
 280 LET S=S+LP
 290 LET MO=1
 295 LET B$(Y,2%X-1 TO 2%X)="  "
 297 GOSUB 765
 300 REM   computers move
 301 GOSUB 4000
 305 DIM R(8)
 310 FOR N=1 TO 8
 315 LET V=-100
 325 IF N=Y THEN GOTO 430
 330 IF B$(N,2%X-1 TO 2%X)<>"  "
 THEN GOTO 360
 340 LET W=-100
 345 IF N=Y THEN GOTO 420
 350 GOTO 370
 360 LET W=VAL B$(N,2%X-1 TO 2%X
)
 370 FOR M=1 TO 8
 370 FOR M=1 TO 8
 380 IF M=X THEN GOTO 410
 390 IF B$(N,M%2-1 TO M%2)="  "
THEN GOTO 410
 395 IF VAL B$(N,M%2-1 TO M%2)<V
 THEN GOTO 410
 400 LET V=VAL B$(N,M%2-1 TO M%2
)
 410 NEXT M
 420 LET R(N)=W-V
 430 NEXT N
 440 LET V=-100
 450 FOR N=1 TO 8
 460 IF B$(N,2%X-1 TO 2%X)="  "
THEN GOTO 489
 470 IF R(N)<V THEN GOTO 489
 475 LET V=R(N)
 480 LET Y=N
 489 NEXT N
 490 LET LP=VAL B$(Y,2%X-1 TO 2%
X)
 500 LET T=T+LP
 505 PRINT AT Y%2,1+(X-1)%3;"  "
 510 LET B$(Y,2%X-1 TO 2%X)="  "
 520 LET MO=2
 530 GOSUB 765
 540 GOTO 170
 699 REM   draw board
 700 CLS
 701 PRINT AT 0,0;"(nine inverse
 SPACEs;inverse MATRIX;ten inver
se SPACEs)"
 706 FOR N=1 TO 8
 710 PRINT AT (2%N)-1,0;"(twenty
```

```
 five inverse SPACEs)"
 720 FOR M=1 TO 8
 730 PRINT AT 2*N,(M-1)*3;"(inve
rse SPACE)";B$(N,2*M-1 TO 2*M)
 740 NEXT M
 745 PRINT AT 2*N,24;"(inverse S
PACE)"
 750 NEXT N
 760 PRINT AT 17,0;"(twenty five
 inverse SPACEs)"
 770 PRINT AT 19,2;N$;" : ";S;"
"
 780 PRINT AT 21,2;"ZX81 : ";T;"
 "
 790 PRINT AT 19,15;"LAST PIECE
 : ";LP;" "
 795 PRINT AT 21,14;"
      "
 800 IF MO=1 THEN PRINT AT 21,14
;"MY TURN"
 810 IF MO=2 THEN PRINT AT 21,14
;"YOUR TURN,";N$
 820 RETURN
 910 REM   game over
 920 CLS
 925 PRINT AT 4,8;"(thirteen inv
erse ASTERISKs)"
 930 PRINT AT 5,8;"(inverse ASTE
RISK SPACE GAME OVER SPACE ASTER
ISK)"
 935 PRINT AT 6,8;"(thirteen inv
erse ASTERISKs)"
 940 PRINT AT 9,7;"MY SCORE IS "
;T
 950 PRINT AT 11,2;"YOUR SCORE,"
;N$;",IS ";S
 955 PRINT AT 13,7;"PRESS ANY KE
Y"
 960 IF S<>T THEN GOTO 1000
 970 PRINT AT 17,6;"(inverse DRA
W)"
 990 IF INKEY$="" THEN GOTO 990
 995 GOTO 1200
1000 IF S>T THEN GOTO 1050
1010 PRINT AT 17,9;"(inverse I W
ON)"
1020 IF INKEY$="" THEN GOTO 1020
1030 GOTO 1200
1055 PRINT AT 17,6;"(inverse YOU
 WON)"
1070 IF INKEY$="" THEN GOTO 1070
1200 CLS
1210 PRINT AT 10,3;"DO YOU WANT
ANOTHER GAME?"
1220 INPUT U$
1230 CLS
1240 IF U$(1)="Y" THEN RUN
1250 PRINT AT 10,11;"THANK YOU"
1260 STOP
1500 LET Y=N
1510 LET X=M
1520 RETURN
2000 CLS
2001 PRINT AT 1,12;"(inverse MAT
RIX)";TAB 11;"--------"
```

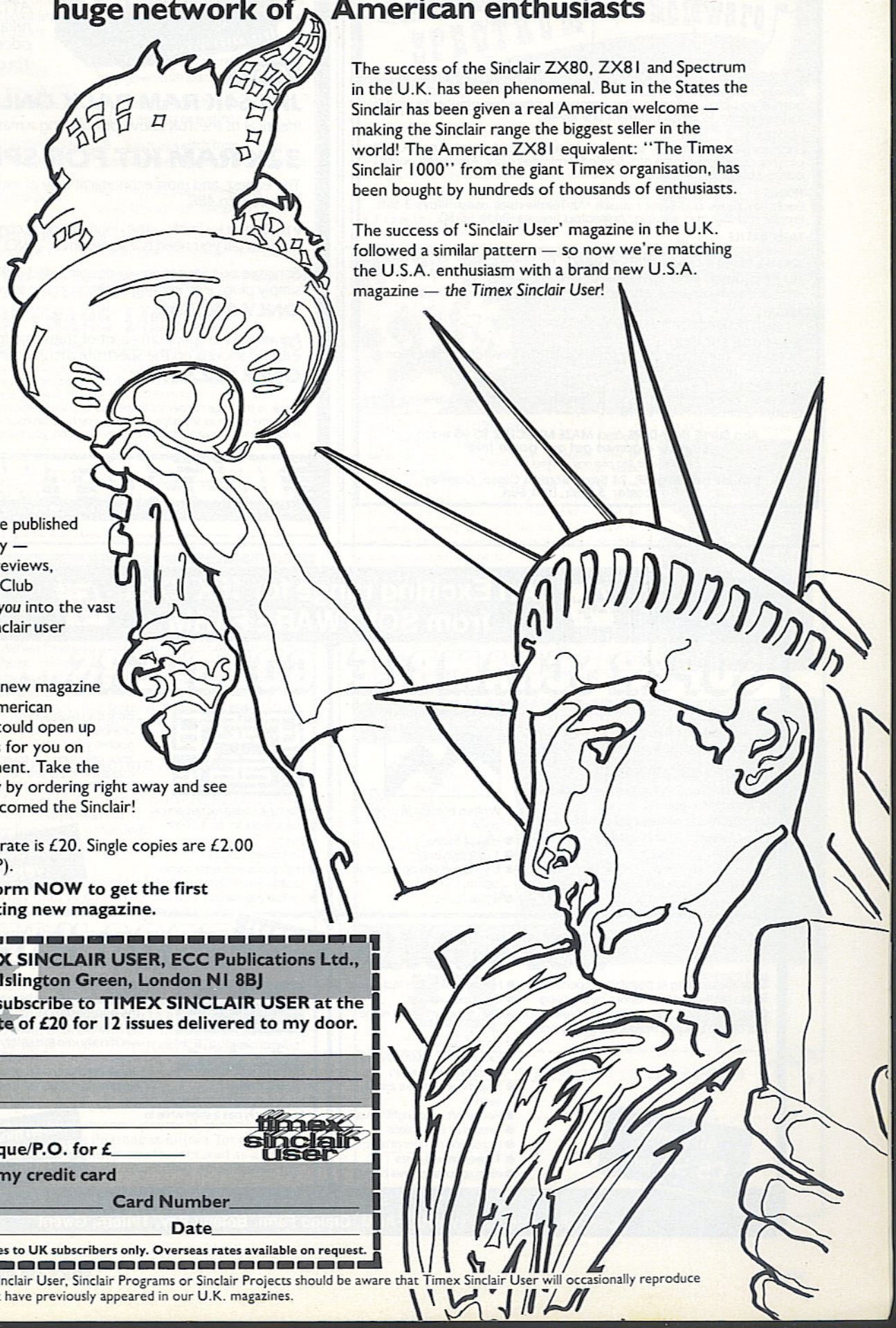


```
2005 PRINT AT 4,1;"YOUR AIM IS T
O GAIN MORE POINTS"
2010 PRINT "THAN THE COMPUTER. W
HEN IT IS"
2015 PRINT AT 6,0;"YOUR TURN, YO
U MOVE THE ""(two inverse ASTERI
SKS)"" WITH"
2020 PRINT "THE ""8"" AND ""5""
KEYS UNTIL IT IS"
2025 PRINT "OVER THE PIECE YOU W
ANT, THEN"
2030 PRINT AT 9,0;"YOU PRESS ""0
"" TO TAKE IT."
2035 PRINT "PRESS ""U"" TO STOP
THE GAME."
2040 PRINT AT 12,1;"THE COMPUTER
 MOVES VERTICALLY,"
2050 PRINT "  AND YOU MOVE HORIZ
ONTALLY."
2055 PRINT AT 18,5;"WHO AM I PLA
YING WITH?"
2060 PRINT AT 20,7;"(INPUT YOUR
NAME)"
2070 INPUT N$
2075 CLS
2080 IF LEN N$<9 THEN GOTO 19
2090 PRINT AT 13,7;"YOUR NAME IS
 TOO LONG"
2100 GOTO 2070
2999 REM is game over!
3000 IF B$(Y)="(sixteen SPACEs)"
 THEN GOTO 920
3010 RETURN
4000 LET C$=""
4005 FOR N=1 TO 8
4010 LET C$=C$+B$(N,X*2-1 TO X*2
)
4020 NEXT N
4030 IF C$="(sixteen SPACEs)" TH
EN GOTO 920
4040 RETURN
5000 REM MATRIX
5010 SAVE "MATRIX"
5020 RUN
```

Now you can take a new

AMERICAN look at your Sinclair!

With the new Timex Sinclair User magazine to link YOU into a huge network of American enthusiasts



The success of the Sinclair ZX80, ZX81 and Spectrum in the U.K. has been phenomenal. But in the States the Sinclair has been given a real American welcome — making the Sinclair range the biggest seller in the world! The American ZX81 equivalent: "The Timex Sinclair 1000" from the giant Timex organisation, has been bought by hundreds of thousands of enthusiasts.

The success of 'Sinclair User' magazine in the U.K. followed a similar pattern — so now we're matching the U.S.A. enthusiasm with a brand new U.S.A. magazine — *the Timex Sinclair User*!

The first issue will be published in the U.S.A. in May — packed with news, reviews, programs and User Club information to link *you* into the vast American Timex Sinclair user network.

Remember, this is a new magazine written from the American viewpoint — but it could open up whole new horizons for you on your Sinclair enjoyment. Take the new, American view by ordering right away and see how the U.S.A. welcomed the Sinclair!

Annual subscription rate is £20. Single copies are £2.00 each (including P & P).

Fill in the order form NOW to get the first issues of this exciting new magazine.

Send to: TIMEX SINCLAIR USER, ECC Publications Ltd., 30-31 Islington Green, London N1 8BJ

Yes, I want to subscribe to TIMEX SINCLAIR USER at the special U.K. rate of £20 for 12 issues delivered to my door.

Name _____

Address _____

_____

_____

timex sinclair user

I enclose a cheque/P.O. for £_____

Please charge my credit card

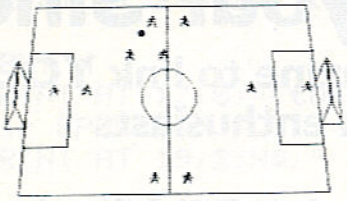
Card Name_____ **Card Number**_____

Signature_____ **Date**_____

N.B. This offer applies to UK subscribers only. Overseas rates available on request.

N.B. Subscribers to Sinclair User, Sinclair Programs or Sinclair Projects should be aware that Timex Sinclair User will occasionally reproduce top articles that have previously appeared in our U.K. magazines.

ZX SPECTRUM
16K and 48K
NEW FOOTBALL AND TENNIS



Picture from the Football Game

New action sports games feature a 3D view of the game. In both games you play one side. The computer plays the other side and is fast and hard to beat. Different skill levels.

FOOTBALL
Each player can move, shoot etc independently, includes fouls (if players collide), corners etc. Scale 90 minutes play. Any team names can be used. Price £5.50.

TENNIS
Each key plays a different stroke. All Tennis rules used. Plays 3 sets. Proper scoring and serving. Animated figures. Price £5.50.

TANK BATTLE
3D view from tank turret of woods, villages, attacking tanks etc. 360 degree turrett movement. Price £4.50.

SPACE FIGHTER
Pilots eye view of space, attack aliens, refuel in flight etc. Price £4.50.

PINBALL
Flippers, flashing lights etc. Price £3.95.

BIG MATCH SOCCER
As football game but for 2 players, with full control of both teams. Computer referees. Price £5.50.

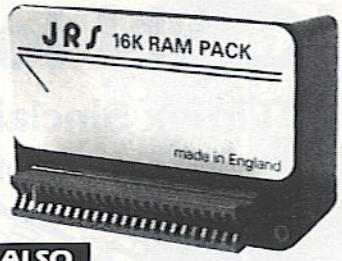
CAR RACE
You drive one car, the computer the other, control with steering and brakes. 2 circuits. Price £3.95.

Also **SUPER INVADERS** and **MAZE MUNCHER** £3.95 each
Buy any 4 games get any game free

Please add 35p post and packing per order

Winters Ltd, Dept SP, 24 Swannington Close, Cantley, Doncaster, S York, DN4 6UA

JRS 16K RAM PACK



ONLY £26.50!

Inc. **free** ALIEN ATTACK. Proven reliability at a budget price, as reviewed by *Your Computer*.

ALSO

JRS 64K RAM PACK ONLY £62.95!

Identical to the 16K above but offering a massive 64K of RAM.

32K RAM KIT FOR SPECTRUM

The easiest, and most economical way of increasing your 16K Spectrum to 48K.

Installation is simple – the entire fitting is completed in a few minutes (all you need is a screwdriver – NO SOLDERING!)

For issue one Spectrum – a double sided 32K RAM Board that simply plugs into existing sockets on the Spectrum circuit board.

ONLY £42.50!

For issue two Spectrum - a kit of chips that individually plug into existing sockets on the Spectrum circuit board.

ONLY £32.50!

(Look at the edge connector at the rear of your Spectrum – if the solder bands are the same width as the gaps between, you have an issue one computer. If the solder bands are wider than the gaps between, you have an issue two computer).

JRS SOFTWARE

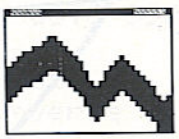
19 WAYSIDE AVENUE, WORTHING, SUSSEX. BN13 3JU Telephone: (0903) 65691

An Exciting range for 16K ZX81 from SOFTWARE FARM

SUPER SCRAMBLE

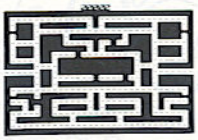
YOUR MISSION
To penetrate the witches defences, enter her cavern and destroy her wicked heart.

THE WITCHES DEFENCES
Stalagmites and stalactites - which grow across your path.
Volcanoes - to get past alive - if you can!
Vampire Bats - that cling to your ship and make controls sluggish
Cave-ins - should you hit the side of the cave with your Laser Cannon or Bomb, part of the roof will cave in on you



- Written entirely in machine code
- Hall of Fame
- 1 or 2 players
- Mystery score positions to bomb
- 5 skill levels

GOBBLERS Mk 2



Beat that high score!
Gobble those dots before those meanies gobble you!
Your only aids are four 'Power Pills' which make the meanies edible. But not for long!

- Machine coded for fast action
- Extra 'Gobbler' for 10.000 points
- On screen scoring
- High score with enter name facility
- Up to 4 players

Improved Mk 2 version!

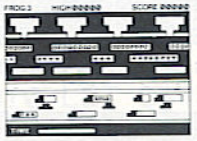
ASTEROIDS

Stay alive as long as possible in open space filled with flying rocks. Score by shooting them - which also causes them to break into lots of little bits and makes life even worse!

- Machine coded for fast action
- On screen scoring
- High score with enter name facility
- Up to 4 players
- Extra ship for 1,000 points (not as easy as it sounds!)
- Ship moves just like arcade version
- Rotate left/rotate right/thrust
- Fires in all 8 directions
- Increasing number of asteroids
- Three asteroid sizes
- alien spaceship (fires back!)

All games £5.95 each

NEW! FROG HOPPER



Jump your frog over the lanes in the road - preferably without being turned into jam by the approaching traffic! Then cross the river by hitching a few rides on some passing logs and finally into the safety of your hole on the opposite bank. Once all 'Frog Holes' have been filled you start again with a different pattern and a bonus frog.

- 50 Skill levels!
- Played against the clock - froggie only has a short while to live!

when more than one game purchased deduct £1.00 from each tape!

Send your order to:
Dept SP1, THE SOFTWARE FARM, Craigo Farm, Botany Bay, Tintern, Gwent

HIRE ZX81/SPECTRUM PROGRAM TAPES

Make the most of your computer by hiring from the original and still the only software library offering all these features:

- Over 900 tapes stocked, offering more than 120 different programs from 39 suppliers (all with their permission)
- Includes arcade, adventure and simulation games, business and home utilities, graphics, education and much more
- Up to 40 maker's original copies of very popular tapes enable us to maintain good service
- Descriptive catalogue helps you choose
- **FREE** quarterly, illustrated magazine posted to all members
- Full-time staff of three offer you a friendly, efficient welcome & service
- Fortnight's hire for £1.40 inc p/p
- All tapes guaranteed loadable; help given with associated problems
- Overseas branches being set up (Malta already operating)
- You may switch from ZX81 to Spectrum membership if you upgrade
- Free member-to-member advertising in our magazine
- Send SAE for details, or join on money-back no-risk approval today

S-L

The SINCLAIR OWNERS' SOFTWARE LIBRARY
Warren Road, Liss, Hants GU33 7DD.

Please send me on money-back approval my magazine, descriptive library catalogue and order form, on the understanding that if I'm not delighted with your service within 28 days you will refund my money in full.

NAME.....

ADDRESS.....

.....

Please enclose cheque/P.O. for £8.50 (year's ZX81 membership)/ £9.50 (Spectrum). Overseas £2 extra in each case. SP6

MAIL ORDER ADVERTISING
British Code of Advertising Practice

Advertisements in this publication are required to conform to the British Code of Advertising Practice. In respect of mail order advertisements where money is paid in advance, the code requires advertisers to fulfil orders within 28 days, unless a longer delivery period is stated. Where goods are returned undamaged within seven days, the purchaser's money must be refunded. Please retain proof of postage/despatch, as this may be needed.

Mail Order Protection Scheme

If you order goods from Mail Order advertisements in this magazine and pay by post in advance of delivery, *Sinclair User* will consider you for compensation if the Advertiser should become insolvent or bankrupt, provided:

(1) You have not received the goods or had your money returned; and

(2) You write to the Publisher of *Sinclair User* summarizing the situation not earlier than 28 days from the day you sent your order and not later than two months from that day.

Please do not wait until the last moment to inform us. When you do write, we will tell you how to make your claim and what evidence of payment is required.

We guarantee to meet claims from readers in accordance with the above procedure as soon as possible after the Advertiser has been declared bankrupt or insolvent (up to a limit of £4,250 per annum for any one Advertiser so affected and up to £10,000 per annum in respect of all insolvent Advertisers. Claims may be paid for higher amounts, or when the above procedure has not been complied with at the discretion of *Sinclair User*, but we do not guarantee to do so in view of the need to set some limit to this commitment and to learn quickly of readers' difficulties).

This guarantee covers only advance payment sent in direct response to an advertisement in this magazine (not, for example, payment made in response to catalogues etc, received as a result of answering such advertisements). Classified advertisements are excluded.

New from . . .

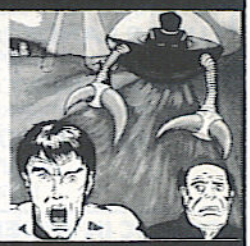
MIKROGEN

SPECTRUM Software

COSMIC RAIDERS (16K) £5,95

You — the only remaining pilot of the "Earth Defence Fleet" — have the daunting task of defending the Earth from attack by alien beings that have already set up a base of their own on earth.

*** Radar Scanner display in hi-res ***
*** Full colour and sound effects ***
*** From the author of Spectrum 'Scramble' ***
*** 100% machine code ***



SPACE ZOMBIES (16K) £5,95

Shooting through space you are ambushed by a fleet of Space Zombies flying at you in formation, swooping and diving at you. Destroy them, if you can! But in destroying them, you attract more to the area, and the game gets progressively harder.

*** Full screen hi-res graphics ***
*** 1 or 2 players * Joystick option ***
***Full sound and colour ***
***Three playing speeds ***

MINES OF SATURN and RETURN TO EARTH £5,95 (16K) Text Adventure

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

Return to Earth Having escaped from your previous dilemmas, you reach Earth Station 1, but fail to make radio contact. You effect a safe if harrowing manual ducking. On entry you find it deserted, and the control room destroyed. You must explore the station and find some way to alert Earth of your predicament, but beware, many of the rooms are identical, there is extensive damage, and signs of alien intruders.

Graphic Adventure (48K)

MAD MARTHA £6,95

Poor little Henry is the hen-pecked hero of this domestic tale. One night he can take no more. He steals his wages from his wife's purse, sneaks out of the house being careful not to wake the baby or trip over the cat, and heads for the bright lights to have some fun. Trouble is he runs out of money. His only way to raise some cash is to gamble his few remaining pounds on the spinning wheel of the roulette table. Just as Henry is getting into his evening his wife — Mad Martha — has noticed his absence. Realising Henry has absconded with the housekeeping she sets out after him with an axe. Guess what part you play in this happy tale? That's right, you're Henry. Watch out for that axe!

Access or Visa Card holders please telephone (0344) 27317 (9am-6pm)

Please add 40p per order for post & packing

Name_____ Address_____

—	Cosmic Raiders	—	Space Zombies
—	Mines of Saturn/Return to Earth	—	Mad Martha

MIKROGEN, Dept SP, 24 Agar Crescent, Bracknell, Berkshire, RG12 2BK

☆FANTASTIC VALUE☆

SKETCHPAD: DRAW from point to point easily. OFFSET cursor any distance or direction. CIRCLE reproduced any size or location. INSERT any character to screen 'User Defined' or 'Standard'. FRAME your creation and copy onto printer. SAVE & LOAD screens. LOCATION given on request for scale graphics. Many more features to discover.

DISASSEMBLER: 'Very compact and user friendly' hails Sinclair User. Full Z80 mneumonics plus RST28 and RTS08 data identified. List as characters or HEX block. HEX loader.

CHARACTER GENERATOR: Not just 21 characters. More than 210 sets of 21 characters on a 48K machine and over 20 sets of 21 characters on a 16K, plus room for your own program. All easily constructed on screen. Menu driven.

LUNAR LANDER: Four levels of complexity. Contains M/C. A favourite with everyone.

MASTERMIND: Crack the six digit colour code. Choice of five levels of complexity. Black & White pegs etc.

ANY TWO PROGRAMS FOR £4.95
ALL FIVE ONLY £7.95
(recorded on one cassette)

COSMIC INVADERS: The classic arcade game in super fast M/C. Six bases, on screen scoring and superb graphics.

SPIDER: A fast, quick thinking maze game. You'll need to be alert, cunning and respond almost immediately. Includes M/C.

VOYAGER: Land at each base and collect plutonium for the mother ship. Three screens and nine levels of play. Excellent graphics and sound etc. Includes M/C.

ONLY £3.95 each.

Send your written order, together with a cheque/postal order payable to **'SPECTRUM SOFTWARE'.**

Address: Spectrum Software, Britannia House, 45-53 Prince of Wales Road, Norwich, NR1 1BL.

Allow 28 days for delivery.

SPECTRUM BOOKS

AVAILABLE THROUGH COMPUTER BOOKSHOPS AND W H SMITH

40 BEST MACHINE CODE ROUTINES FOR THE ZX SPECTRUM £5·95

By Andrew Hewson and John Hardman. This book teaches the beginner all he needs to know in a simple, easy-to-learn form and its an invaluable reference work for the expert too! SECTION A: Three chapters explaining what you need to know about Z80 machine code on the Spectrum. • How to load and save machine code. • How to use the system variables. • How memory is organised. • How program lines are stored. • How to use the stack, the display, the attribute files. • How to call ROM Routines – where they are and what they do. • The structure of Z80 code – plus a valuable glossary. SECTION B: 40 routines including, • Scroll – up, down, side to side by pixel or by character. • Search and replace, token swap, string search. • Rotate character, invert character – horizontally and vertically. • Line renumber – including GOSUBs, GOTOs, RUN etc.

20 BEST PROGRAMS FOR THE ZX SPECTRUM £5·95

By Andrew Hewson. Program titles include: MACHINE CODE EDITOR – Write, modify, extend and load machine code using this all-basic program. No need to use an Assembler when you have this program. INDEX FILE – Learn about fixed length records, save numeric and string information, add to, sort, modify, delete and print your records. Ideal as a computer based filing system. DUCKSHOOT – Learn how to manipulate the attributes file *and* have fun at the same time. GRAPHIX – Construct up to 210 graphics characters with the full on-screen editing facilities, enhance and modify them and recall them later to build a detailed display to save on cassette. SPIROMANIA – A program to stretch your artistic talents, imagination and ingenuity. Draws a limitless variety of curves and spirals. Plus: FOOTBALL, DIGITISER, DIARY and many more.

Ⓗ Hewson Consultants

Please send me: (tick box)
☐ 40 Best Machine Code Routines £5·95 ☐ 20 Best Programmes £5·95

Please debit my Access/Visa Account No _____

Signature _____

Name _____

Address _____

Please make cheques/postal orders payable to Hewson Consultants. Allow up to 14 days for delivery.

Ⓗ **Post to: Hewson Consultants, 60A St Mary's Street, Wallingford, Oxon OX10 0EL Tel (0491) 36307**

DON'T MISS THIS INCREDIBLE OFFER!

50 GAMES £9·95!

CASSETTE 50 FOR YOUR MICRO

GALACTIC ATTACK
SPACE MISSION
LUNAR LANDER
PLASMA BOLT
STARTREK
RADAR LANDING
ATTACKER
GALACTIC DOGFIGHT
ZION ATTACK
IVASIVE ACTION
OXO
BOGGLES
PONTOON
SKI JUMP
HANGMAN
OLD BONES
THIN ICE

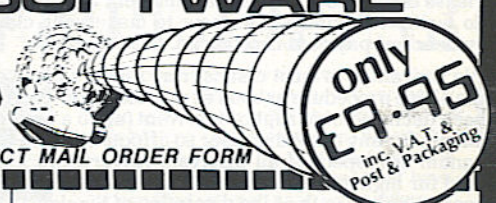
MAZE EATER
ORBITTER
MOTORWAY
FORCE FIELD
NIM
TUNNEL ESCAPE
BARREL JUMP
CANNONBALL BATTLE
OVERTAKE
SITTING TARGET
SMASH THE WINDOWS
SPACE SHIP
JET FLIGHT
PHASER
INTRUDER
INFERNO
GHOSTS

SUBMARINES
ROCKET LAUNCH
PLANETS
BLACK HOLE
DYNAMITE
DO YOUR SUMS
DERBY DASH
SPACE SEARCH
UNIVERSE
RATS
TANKER
PARACHUTE
JETMOBILE
HIGH RISE
THE FORCE
EXCHANGE

CASCADE SOFTWARE

NOW AVAILABLE FOR

sinclair ZX SPECTRUM
ZX81
LYNX
DRAGON
ATARI
apple (ON DISC & CASSETTE)
VIC 20
ORIC-1
BBC A/B



DIRECT MAIL ORDER FORM

CASCADE SOFTWARE
CASCADES HOUSE
BARGAN'S LANE
LLANDOGO
GWENT
S.WALES NP54PA

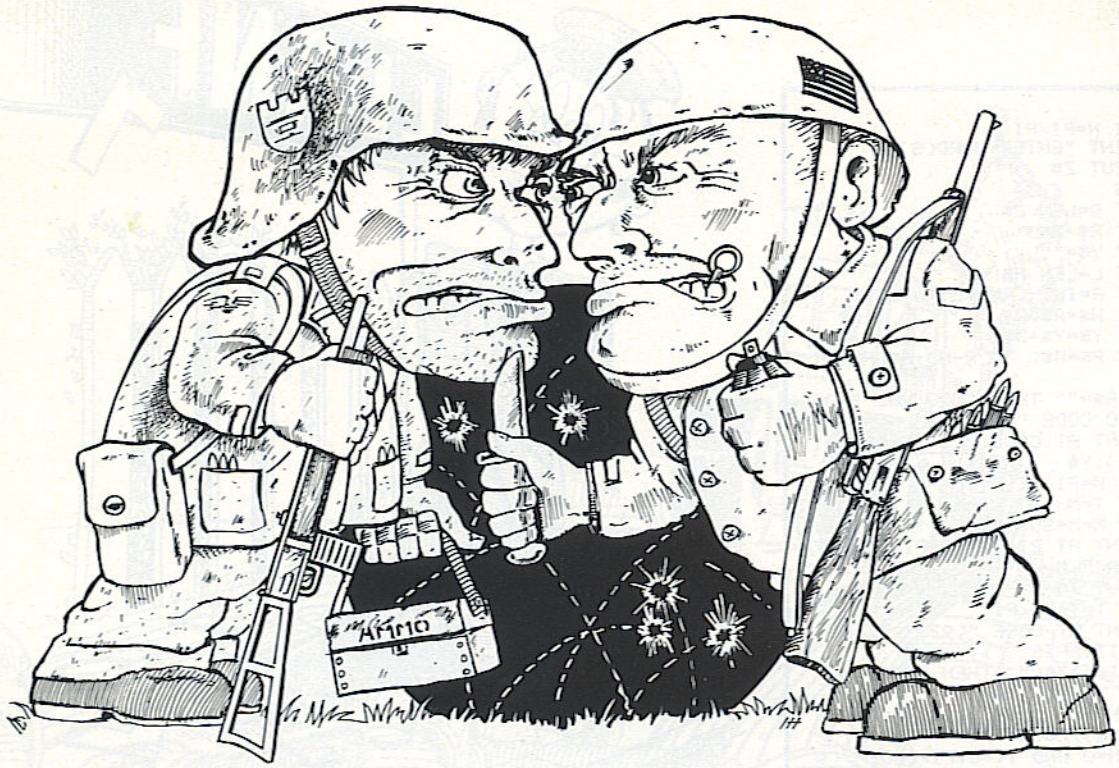
SUPPLY CASSETTE 50 FOR _____ COMPUTER

I enclose cheque/P.O.

Name _____

Address _____

SP 1/5



DEPLOYMENT STRATEGY

DEPLOYMENT STRATEGY is a game of tactics and cunning which was sent by Jerome Laskowski of London SE6 for use on the 16K ZX-81.

The enemy's regiments are lined-up on the battlefield at the left of the screen. Your less-willing soldiers arrive, a regiment at a time and, by keying-in a letter between A and J, you position them on the front line where they fight against the equivalent enemy force and the stronger wins a point.

The victorious regiment then moves to the right of the screen, where it takes position for the next battle.

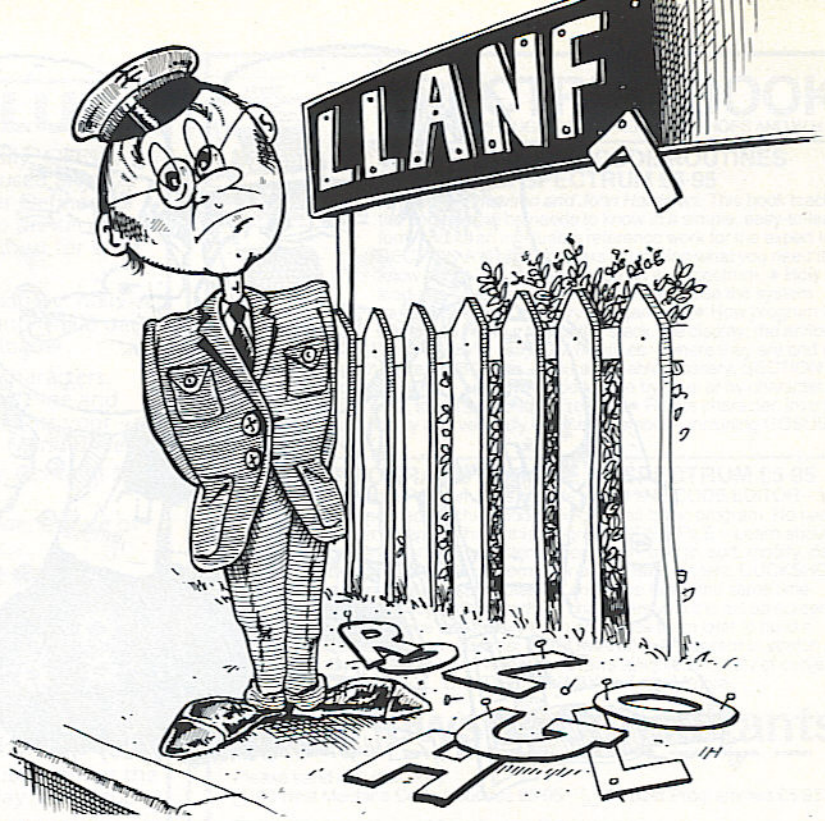
As a further test of your skill you must estimate before each battle how many fights your troops will win. A correct answer earns three bonus points, an incorrect one means you lose three points.

The war ends when either you or your enemy has a lead of 10 or more points at the end of a battle.

Lower-case letters in brackets are graphics instructions.

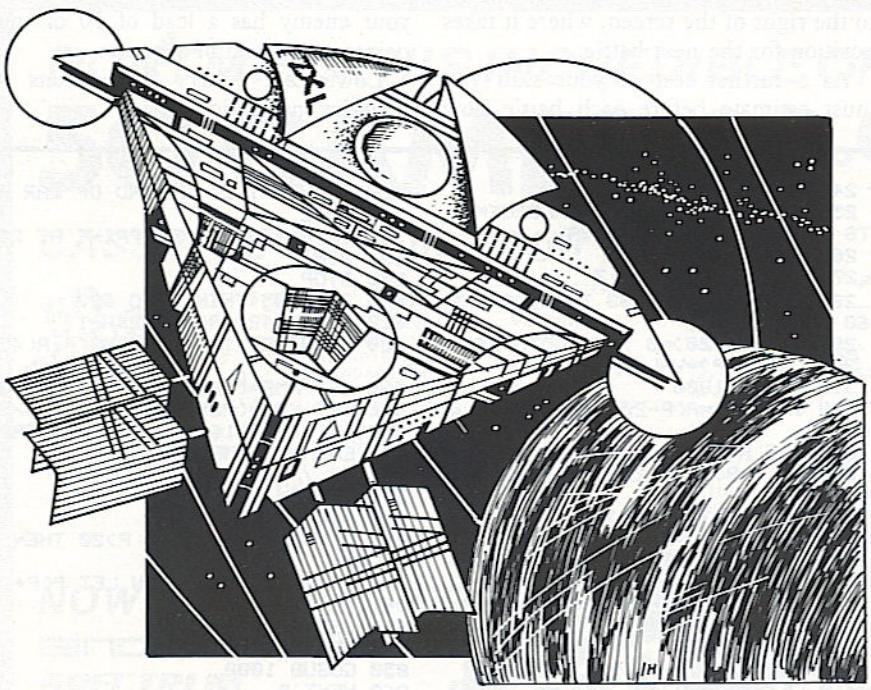
```
  5 DIM A(44)
 10 DIM A$(2,9)
 15 LET A$(1)="(nine graphic Hs
)"
 20 LET A$(2)="(ten inverse SPA
CEs)"
 25 RAND 0
 30 FAST
 40 CLS
 50 LET A(41)=A(41)+1
 60 PRINT AT 0,6;"DEPLOYMENT ST
RATEGY";,,TAB 27;"NEXT";TAB 9;"B
ATTLE ";A(41);TAB 26;"BATTLE"
 70 LET B$=" THE ENEMY"
 80 LET A(43)=0
 90 LET A(44)=0
 95 FOR P=9 TO 40
100 PRINT AT 15,P-9;".";AT 19,P
-9;"."
105 NEXT P
110 GOSUB 600
120 LET I=1
130 GOSUB 800
140 LET I=21
150 GOSUB 800
155 SLOW
160 PRINT AT 21,2;"YOUR ESTIMAT
E PLEASE, GENERAL"
170 INPUT EST
180 IF EST<0 OR EST>10 THEN GOT
O 170
190 PRINT AT 17,4;"ESTIM ";EST
200 FOR J=21 TO 30
210 PRINT AT 21,2;"
                  "
220 LET P=J
230 IF A(P)<>0 THEN GOTO 320
240 LET VAL=INT (RND*10)
250 PRINT AT 21,2;"REINFORCEMEN
TS: ";A$(1,1 TO VAL);VAL
260 INPUT P$
270 LET P=CODE P$-17
280 IF P<21 OR P>30 THEN GOTO 2
60
290 IF A(P-20)=0 THEN GOTO 260
300 LET A(P)=VAL
310 GOSUB 1000
320 IF A(P)=A(P-20) THEN GOTO 4
00
330 LET H=0
340 IF A(P)>A(P-20) THEN LET H=
1
350 LET A(43)=A(43)+H
360 LET A(44)=A(44)+1-H
370 PRINT AT 4+A(44-H),27+4*H;C
HR$ (A(P+(H-1)*20)+28-128*(H-1))
380 LET A(A(44-H)+10+H*20)=A(P+
(H-1)*20)
390 GOSUB 600
400 PRINT AT P-16,13;" "
410 LET A(P-20)=0
420 LET A(P)=0
430 NEXT J
440 LET H=-1
450 IF A(43)=EST THEN LET H=2
460 PRINT AT 21,2;"LOSE 3 POINT
S FOR ESTIMATE"
470 IF A(43)=EST THEN PRINT AT
21,2;"GAIN"
480 FOR J=1 TO 40
490 NEXT J
500 GOSUB 600
510 IF ABS A(42)<10 THEN GOTO 3
0
520 PRINT AT 21,2;"END OF WAR -
YOU LOSE      "
530 IF A(42)>0 THEN PRINT AT 21
,19;"WIN "
540 STOP
600 IF P>35 THEN GOTO 630
610 LET A(42)=A(42)+2*H-1
620 PRINT AT 18,4;"GAINS ";A(43
)
630 LET NME=(ABS A(42)-A(42))/2
640 LET YOU=(ABS A(42)+A(42))/2
650 PRINT AT 16,18;"SCORE:";TAB
 20;"ENEMY ";NME,TAB 20;"YOU    "
;YOU,
660 RETURN
800 FOR P=I TO I+9
810 IF A(P+10)=0 AND P>20 THEN
RETURN
820 IF A(P+10)=0 THEN LET A(P+1
0)=INT (RND*8+2)
830 LET A(P)=A(P+10)
840 LET A(P+10)=0
850 GOSUB 1000
860 NEXT P
870 RETURN
1000 IF I=1 THEN PRINT AT P+4,0;
B$(P);".";TAB 13;CHR$ (P+37);TAB
 25;".";TAB 29;CHR$ (P+37)
1010 PRINT AT P-I+5,13+SGN (I-5)
*(A(P)+2);A(P);
1020 IF I=21 THEN PRINT AT P-16,
14;" ";
1030 PRINT A$(1+(21-P)/20,1 TO A
(P))
1040 RETURN
```

```
  10 LET N=PI/PI
  20 PRINT "ENTER WORD(S)"
  21 INPUT Z$
  22 CLS
  28 LET Q=LEN Z$
  45 LET A$=Z$
  50 LET Y$=""
  55 LET L=LEN A$
  60 LET R=INT (RND*L)+N
  65 LET W$=A$(R)
  70 LET Y$=Y$+W$
  75 LET A$=A$( TO R-N)+A$(R+N T
O )
  80 IF A$="" THEN GOTO VAL "90"
  85 GOTO CODE "R"
  90 PRINT AT CODE "(9a)",(CODE
":"-.5*Q);Y$
  95 LET M=PI-PI
  96 LET T=M
  97 LET M=M+SGN PI
 100 PRINT AT PI-PI,PI-PI;"TRY F
OR LETTER ";M
 110 INPUT T$
 111 LET T=T+PI/PI
 112 PRINT AT CODE "(92)",PI-PI;
"NO.OF ATTEMPTS  ";T
 120 IF T$(>Z$(M) THEN GOTO VAL
"100"
 125 PRINT AT CODE "(9s)",(CODE
"$"+M-.5*Q);Z$(M)
 126 IF M=Q AND T<=Q*PI/CODE "(9
2)" THEN PRINT AT CODE "(",PI-PI
;"WELL DONE,ONLY ";T;"  ATTEMPTS
"
 127 IF M=Q AND T>Q*PI/CODE "(92
)" THEN PRINT AT CODE "(",PI-PI;
"OH WELL,YOU GOT THERE EVENTUALL
Y"
 128 IF M=Q THEN STOP
 130 IF T$=Z$(M) THEN GOTO VAL "
97"
```



JUMBLE WORD

JUMBLE WORD is a 1K ZX-81 program which was written for two players by R G Forster of Barkingside, Essex. Player one enters a word which the computer will scramble and present to the second player. Player two must discover the original word by determining one letter at a time.



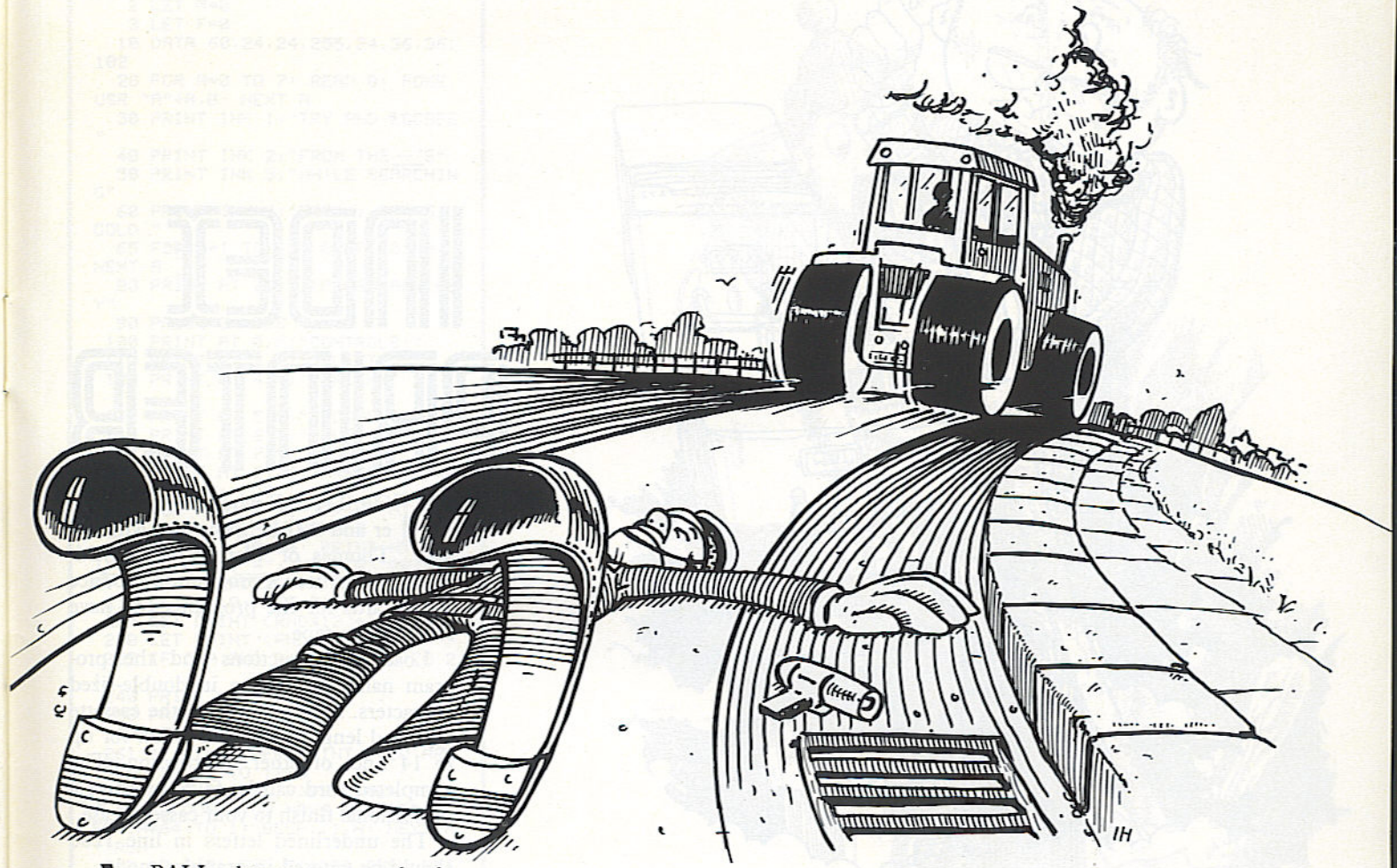

```
  10 LET S=0
  20 LET L=11
  30 LET X=INT (RND*10)+1
  35 CLS
  40 PRINT AT 21,0;"(14*9f)"
  50 FOR H=0 TO 20
  60 PRINT AT H,X;"(9t:i";9y)"
  65 PRINT AT H,X;"(9y:i";9t)"
  70 IF INKEY$="O" THEN GOTO 200
  80 LET L=L+(INKEY$="P")-(INKEY
$="Q")
  90 PRINT AT 20,L-1;"(sP:9t:9f:
9y:sP)"
 100 PRINT AT H,X;"   "
 130 NEXT H
 140 PRINT AT 10,12;"score; ";S
 150 RUN
 200 FOR N=20 TO H STEP -1
 210 PRINT AT N,L+1;"x"
 220 PRINT AT N,L+1;" "
 230 NEXT N
 240 IF L(>X THEN GOTO 80
 250 LET S=S+50
 260 GOTO 30
```

SPACE SUPPLIES

YOUR SPACE station is plummeting towards the earth without the necessary equipment to repair itself. The only chance to save it is for ground control to line-up a launch pad beneath it, using keys "Q" and "P", and to fire up the spare parts in a tiny rocket using key "O".

Unfortunately your entire fleet of space stations was launched with the same defect, so as fast as you save one another begins to fall. How many space stations can you save?

Space Supplies was written for the 16K ZX-81 by Anthony Rushworth of Huddersfield, West Yorkshire.



SPEED TRAP

A BALL bounces around the screen and you must trap it using as few blocks as possible. Pressing any letter will place a block behind the ball. Once one ball has been trapped another will appear.

This program was written for the 16K ZX-81 by Roland Waddilove of Widnes, Cheshire.

```
  100 REM       instructions
  110 POKE 16418,0
  120 PRINT TAB 10;"SPEED-TRAP";T
AB 9;"(12*97)"
  130 PRINT ,," THE IDEA OF THE G
AME IS TO TRAPTHE BALL. PRESSING
 ANY LETTER   WILL PLACE A BLOCK
 JUST BEHIND  THE  BALL."
  140 PRINT ,," THERE ARE 20 BALL
S ALTOGETHER, USE AS FEW BLOCKS
AS POSSIBLE."
  150 PRINT AT 21,7;"Press a lett
er"
  160 IF INKEY$="" THEN GOTO 160
  170 CLS
  200 REM START
  210 LET BEST=100
  220 LET BALL=1
  230 LET BLOCKS=0
  240 LET X=1
  250 GOSUB 700
  260 LET P=INT (RND*700)+PEEK 16
396+256*PEEK 16397
  270 IF PEEK P OR PEEK (P+X) THE
N GOTO 260
  300 REM GAME
  310 POKE P,0
  320 IF INKEY$<>"" THEN LET BLOC
KS=BLOCKS+1
  330 IF INKEY$<>"" THEN POKE P,8
  340 LET P=P+X
  350 POKE P,23
  360 IF NOT PEEK (P+X) THEN GOTO
 310
  370 IF RND>.5 THEN GOTO 425
  400 REM CHANGE DIRECTION
  405 LET X=33
  410 IF NOT PEEK (P+X) THEN GOTO
 310
  415 LET X=1
  420 IF NOT PEEK (P+X) THEN GOTO
 310
  425 LET X=-33
  430 IF NOT PEEK (P+X) THEN GOTO
 310
  435 LET X=-1
  440 IF NOT PEEK (P+X) THEN GOTO
 310
  445 LET X=33
  450 IF NOT PEEK (P+X) THEN GOTO
 310
  455 LET X=1
  460 IF NOT PEEK (P+X) THEN GOTO
 310
  500 REM NEW BALL
  510 LET BALL=BALL+1
  520 PRINT AT 0,8;BLOCKS;AT 0,28
;(BALL AND BALL<21)
  530 IF BALL<=20 THEN GOTO 260
  600 REM GAME OVER
  610 IF BEST>BLOCKS THEN LET BES
T=BLOCKS
  620 PRINT AT 23,6;BEST
  630 FOR N=0 TO 100
  640 NEXT N
  650 PRINT AT 23,10;"Press P to
play a9ain"
  660 IF INKEY$="" THEN GOTO 660
  670 IF INKEY$="P" THEN GOTO 220
  680 CLS
  690 STOP
  700 REM BORDER
  710 CLS
  720 PRINT " blocks=
    ball=     "
  730 FOR N=1 TO 22
  740 PRINT "(isp)";TAB 31;"(isp)
"
  750 NEXT N
  760 PRINT " best=
           "
  770 PRINT AT 0,8;BLOCKS;AT 0,28
;BALL;AT 23,6;BEST
  780 RETURN
  800 REM save
  810 SAVE "SPEED-TRAP"
  820 RUN
```

INDEX PRINTER

FOR THOSE who possess a printer and a 16K Spectrum, Michael Thomas of Warley, West Midlands, has written a program to produce index cards for the programs you have recorded on tape.

Loading instructions and the program name are shown in double-sized characters. Also printed are the cassette type and length and space is left for up to 14 lines of other information. The completed card can be folded to give a professional finish to your cassette case.

The underlined letters in line 1200 should be entered in graphics mode.

```
1000 DATA "a",120,132,124,3,3,12
4,132,120
1010 DATA "b",3,12,48,192,192,48
,12,3
1020 DATA "c",192,48,12,3,3,12,4
8,192
1030 DATA "d",30,33,62,192,192,6
2,33,30
1040 DATA "f",255,0,0,0,0,0,0,0
1050 FOR i=1 TO 5
1060 READ a$
1070 FOR j=0 TO 7
1080 READ b
1090 POKE USR a$+j,b
1100 NEXT j: NEXT i
1200 LET a$="AB          Cut Her
e        CD"
1210 DIM b$(18,32)
4999 REM **************
5000 REM **IMFORMATION**
5001 REM **************
5010 CLS : PRINT AT 10,6;"ENTER
THE TAPE TITLE"
5020 INPUT "Maximum 16 Character
s ";t$: IF t$="" THEN GO TO 5020
5030 IF LEN t$>16 THEN GO TO 501
0
5040 CLS : PRINT AT 10,3;"ENTER
LOADING INSTRUCTIONS"
5050 INPUT "Maximum 12 Character
s ";l$: IF l$="" THEN GO TO 5050
5060 IF LEN l$>12 THEN LET l$=l$
(1 TO 12)
5070 CLS : PRINT AT 10,5;"ENTER
TYPE OF CASSETTE"
5080 INPUT "Maximum 20 Character
s ";u$: IF u$="" THEN GO TO 5080
5090 IF LEN u$>20 THEN GO TO 507
0
5100 CLS : PRINT AT 10,5;"ENTER
LENGTH OF CASSETTE"
5110 INPUT v
5120 FOR i=4 TO 17
5130 CLS : PRINT AT 10,6;"ENTER
TEXT FOR LINE ";i
5140 INPUT "
             ";i$
5150 IF LEN i$<=32 THEN LET b$(i
)(16-LEN i$/2 TO )=i$: GO TO 521
0
5160 LET c=0
5165 IF c=32 THEN GO TO 5195
5170 LET j$=i$(33-c)
5175 IF i$(33-c)=" " THEN GO TO
5200
5180 LET c=c+1
5185 GO TO 5165
5195 LET c=0
5200 LET b$(i)=i$( TO 32-c)
5205 LET b$(i+1)(16-LEN i$(33-c
TO )/2 TO )=i$(33-c TO )
5207 LET i=i+1
5210 NEXT i
5999 REM ************
6000 REM **PRINTING**
6001 REM ************
6010 LPRINT '''a$
6020 FOR i=0 TO 31
6030 LPRINT TAB i;"_";
6040 NEXT i
6050 CLS
6060 LET x=128: LET y=157: LET y
$=t$
6070 GO SUB 9000
6080 FOR i=4 TO 18
6090 PRINT AT i,0;b$(i)
6100 NEXT i
6110 LET x=144: LET y=9: LET y$=
CHR$ 34+l$+CHR$ 34
6120 GO SUB 9000
6130 PRINT AT 20,14-LEN y$;"LOAD
"
6140 COPY
6150 CLS : FOR i=0 TO 31
6160 PRINT AT 0,i;"F"
6170 NEXT i

6180 LET x=128: LET y=157: LET y
$=t$
6190 GO SUB 9000
6200 FOR i=0 TO 31
6210 PRINT OVER 1;AT 2,i;"_"
6220 NEXT i: OVER 0
6230 PRINT ''TAB 3;u$+" Cassette
"
6240 PRINT ''TAB 3;"C";v;" (2*";
v/2;"mins)"
6250 FOR i=0 TO 31
6260 PRINT AT 10,i;"_"
6270 NEXT i
6280 PRINT a$
6290 COPY
6300 CLS : PRINT AT 10,6;"INDEX
CARD FINISHED"''TAB 2;"PRESS PAP
ER FEED & TEAR OFF"
8999 STOP
9000 PRINT AT 21,0;y$
9010 FOR a=7 TO 0 STEP -1
9020 FOR b=0 TO 8*LEN y$-1

9030 IF POINT (b,a)=0 THEN GO TO
 9090
9040 FOR c=0 TO 1
9050 FOR d=0 TO 1
9060 PLOT x-(8*LEN y$)+2*b+c,y+2
*a-d
9070 NEXT d
9080 NEXT c
9090 NEXT b
9100 NEXT a
9110 PRINT AT 21,0;"
                    "
9120 RETURN
```

GOLD

HURRY AROUND the cave picking-up the golden coins. The evil trolls are out to get you. Find as many coins as possible before they trap you or you run out of air.

Underlined letters should be entered in graphics mode. Underlined minus signs should be entered as inverse minus signs.

Gold was written for the 16K Spectrum by Ryan Mills of Fulwood, Lancashire.

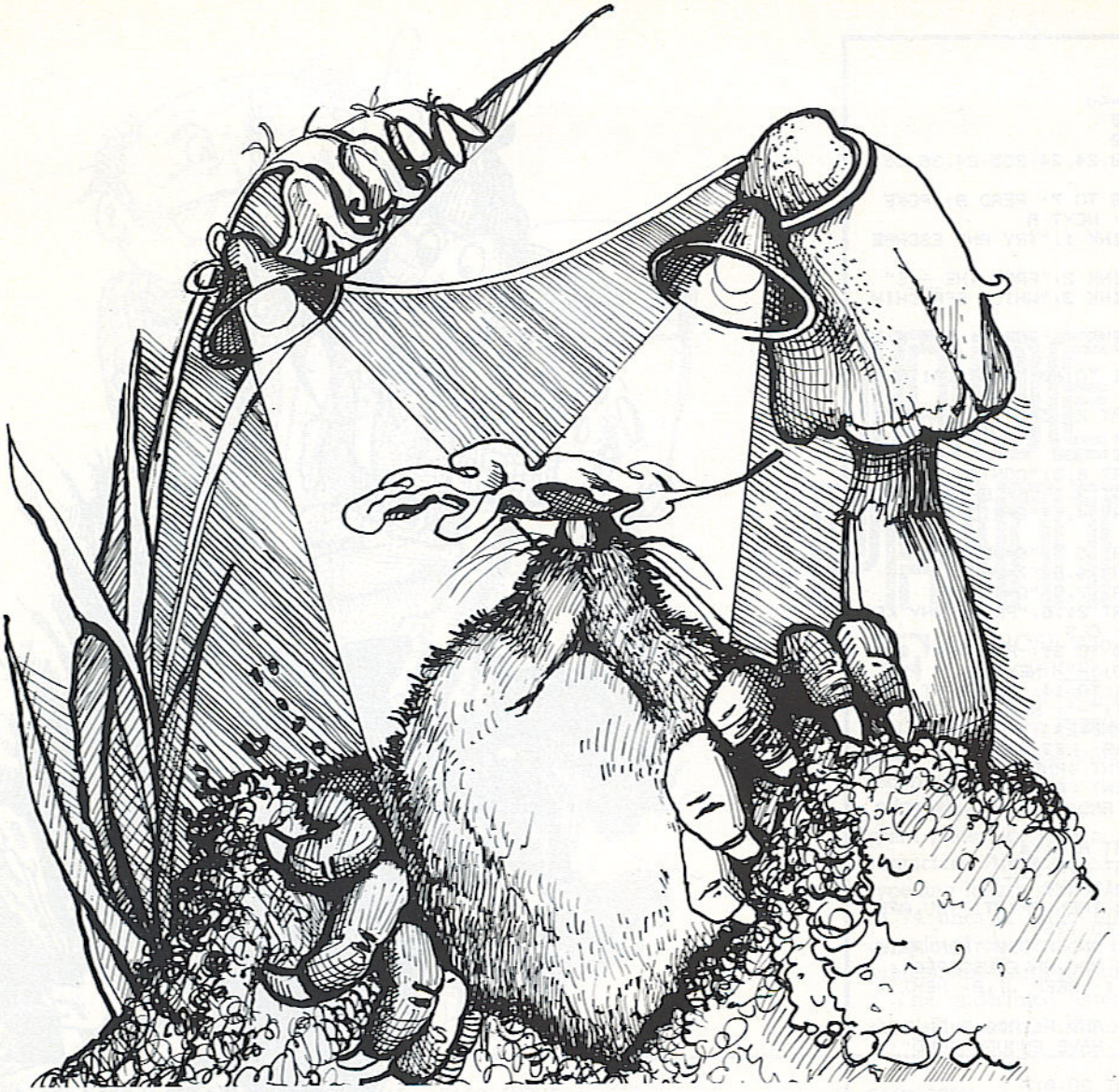
```
  1 LET st=40
  2 LET M=0
  3 LET F=0
 10 DATA 60,24,24,255,24,36,36,
102
 20 FOR A=0 TO 7: READ B: POKE
USR "A"+A,B: NEXT A
 30 PRINT INK 1;"TRY AND ESCAPE
"
 40 PRINT INK 2;"FROM THE -'S"
 50 PRINT INK 3;"WHILE SEARCHIN
G"
 60 PRINT INK 4;"FOR "; INK 6;"
GOLD "
 65 FOR A=1 TO 60: BEEP .01,A:
NEXT A
 80 PRINT AT 21,5;"PRESS ANY KE
Y"
 90 PAUSE 0: CLS
100 PRINT AT 0,5;"CONTROLS:"
110 PRINT AT 3,5;"5=LEFT"
120 PRINT AT 4,5;"8=RIGHT"

130 PRINT AT 5,5;"6=DOWN"
140 PRINT AT 6,5;"7=UP"
180 PRINT AT 7,5;"Q=QUIT"
190 PRINT AT 21,6;"PRESS ANY KE
Y": PAUSE 0: CLS
195 FOR A=0 TO 31: PRINT AT 0,A
;"-";AT 14,A;"-": NEXT A
200 FOR A=1 TO 14: PRINT AT A,0
;"-";AT A,31;"-": NEXT A: PRINT
AT 14,INT (RND*29);" "
211 LET A=10: LET B=10
220 LET C=INT (RND*13)+1
230 LET D=INT (RND*29)+1
235 IF C=A AND D=B THEN GO TO 2
11
240 PRINT AT A,B;"a"
250 PRINT AT C,D;"-"
260 LET A$=INKEY$
261 IF st=0 THEN PRINT "YOU ARE
DEAD ": GO TO 1230
262 IF A=21 AND F>999 THEN PRIN
T "WELL DONE YOU HAVE ESCAPED":
FOR A=64 TO 1: BEEP .1,A: NEXT A
: RUN
263 IF A=21 AND F<1000 THEN PRI
NT "YOU DONT HAVE ENOUGH GOLD":
STOP
264 PRINT AT 20,0;F
265 IF A$="Q" OR A$="q" THEN GO
TO 1200
270 IF A$="5" THEN GO TO 400
280 IF A$="8" THEN GO TO 500
290 IF A$="6" THEN GO TO 600
300 IF A$="7" THEN GO TO 700
350 GO TO 260
410 IF SCREEN$ (A,B-1)<>" " THE
N PRINT AT 21,0;"OUCH": BEEP .5,
-10: PRINT AT 21,0;"    ": LET s
t=st-1: GO TO 350
420 PRINT AT A,B;" "

430 LET B=B-1
440 PRINT AT A,B;"a"
450 LET X=INT (RND*10)
460 IF X=5 THEN PRINT AT 21,0;
INK 6;"GOLD": BEEP .5,-10: PRINT
AT 21,0;"    ": LET F=F+INT (RN
D*20)
470 LET M=M+1
480 GO TO 220
510 IF SCREEN$ (A,B+1)<>" " THE
N PRINT AT 21,0;"OUCH": BEEP .5,
-10: PRINT AT 21,0;"    ": LET s
t=st-1: GO TO 350
520 PRINT AT A,B;" "
530 LET B=B+1
540 PRINT AT A,B;"a"
550 LET X=INT (RND*10)
560 IF X=5 THEN PRINT AT 21,0;
INK 6;"GOLD": BEEP .5,-10: PRINT
AT 21,0;"    ": LET F=F+INT (RN
D*20)
570 LET M=M+1

580 GO TO 220
610 IF SCREEN$ (A+1,B)<>" " THE
N PRINT AT 21,0;"OUCH": BEEP .5,
-10: PRINT AT 21,0;"    ": LET s
t=st-1: GO TO 350
620 PRINT AT A,B;" "
630 LET A=A+1
640 PRINT AT A,B;"a"
650 LET X=INT (RND*10)
660 IF X=5 THEN PRINT AT 21,0;"
GOLD": BEEP .5,-10: PRINT AT 21,
0;"    ": LET F=F+INT (RND*20)
670 LET M=M+1
690 GO TO 220
710 IF SCREEN$ (A-1,B)<>" " THE
N PRINT AT 21,0;"OUCH": BEEP .5,
-10: PRINT AT 21,0;"    ": LET s
t=st-1: GO TO 350
720 PRINT AT A,B;" "
730 LET A=A-1
740 PRINT AT A,B;"a"
750 LET X=INT (RND*10)

760 IF X=5 THEN PRINT AT 21,0;"
GOLD": BEEP .5,-10: PRINT AT 21,
0;"    ": LET F=F+INT (RND*20)
770 LET M=M+1
780 GO TO 220
1200 INPUT "DO YOU REALLY WANT T
O QUIT?";B$
1210 IF B$="Y" OR B$="y" THEN GO
TO 1230
1220 PRINT AT 21,0;"THEN DONT SA
Y YOU DO": PAUSE 200: PRINT AT 2
1,0;"                    ": GO
TO 350
1230 POKE 23692,10: PRINT "YOU F
OUND ";F;" GOLD PIECES"
1240 PRINT "AND YOU LASTED ";M;"
MOVES"
1250 PAUSE 0
1260 RUN
1270 STOP
```

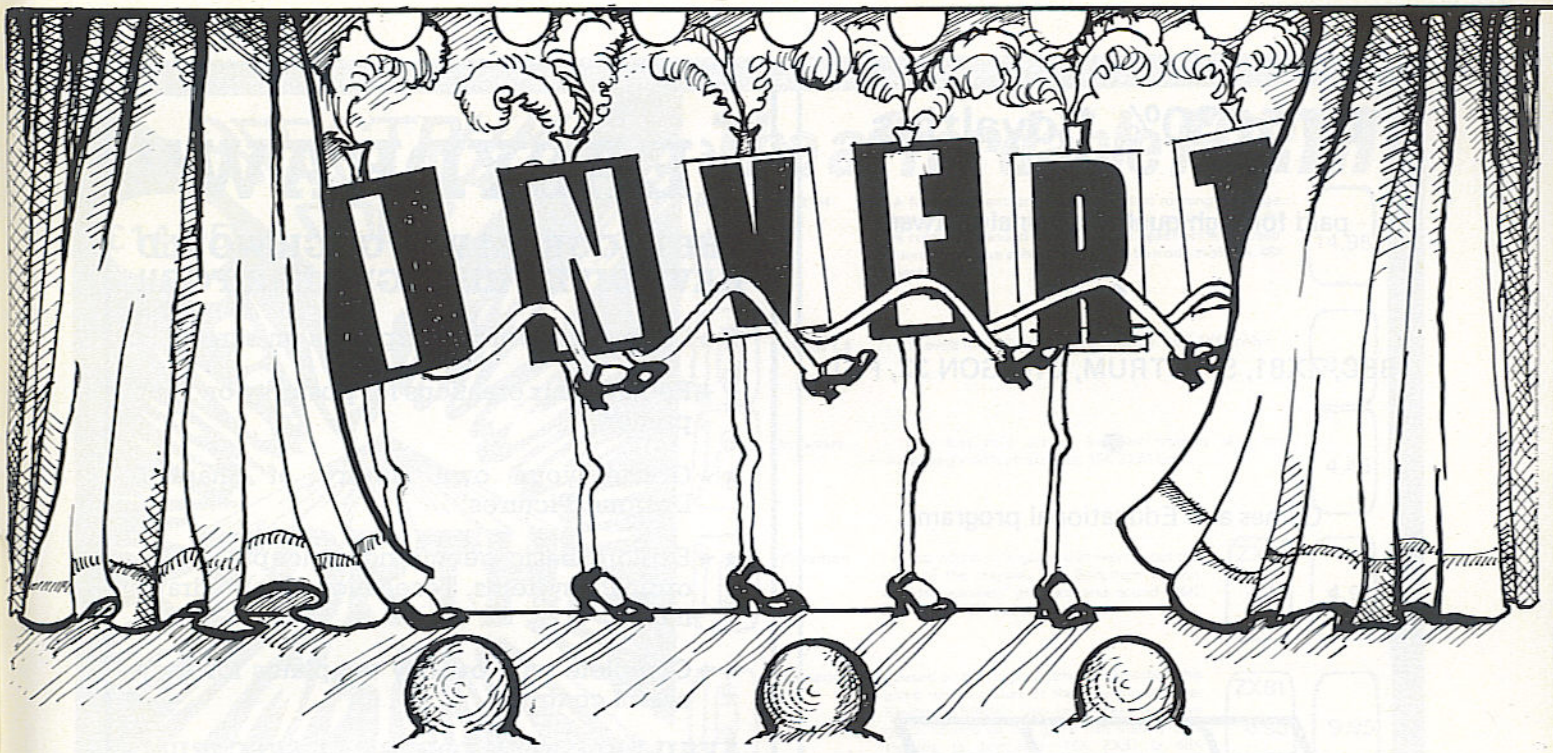


MOLE SEARCH

A MOLE will appear from one of the six molehills on your screen. Hit the number corresponding to that hole to gain 50 points. It is not so easy as it sounds, because the mole is wary and will disappear almost immediately.

The program was written by L Maynard of Crawley, Sussex for the 16K ZX-81.

```
  10 LET A$="(99:3*isP:9w:27*sP:
isP:i":isP:i":isP:27*sP:isP:9w:9
6:99:isP:27*sP:5*isP)"
  20 LET B$="(101*sP)"
  30 LET P=0
  40 FOR F=5 TO 24 STEP 8
  50 PRINT AT F,4;"(2*isP:9w:5*9
6:99:2*isP:4*sP:2*isP:9w:5*96:99
:2*isP)"
  60 NEXT F
  65 LET J$=A$
  70 LET A=INT (RND*6)+1
  75 PRINT AT 0,13;"SCORE=";P
  80 IF A=1 THEN PRINT AT 1,7;J$
  90 IF A=2 THEN PRINT AT 1,22;J
$
 100 IF A=3 THEN PRINT AT 9,7;J$
 110 IF A=4 THEN PRINT AT 9,22;J
$
 120 IF A=5 THEN PRINT AT 17,7;J
$
 130 IF A=6 THEN PRINT AT 17,22;
J$
 135 LET E$=CHR$ (A+28)
 140 IF J$=A$ THEN GOTO 160
 150 RETURN
 160 FOR D=0 TO 20
 170 IF INKEY$=E$ THEN GOTO 200
 180 NEXT D
 185 LET J$=B$
 190 GOSUB 80
 195 GOTO 65
 200 LET P=P+50
 210 GOTO 185
```



INVERTER ROUTINE

THIS short **Inverter Routine** will change A$ in normal video to S$ in inverse video. It was written by Martin Winch of St Austell, Cornwall to be added to longer programs for the 16K ZX-81.

Lines 2 and 45 have been added to demonstrate the function of the routine but if it were included in a longer program the definition of A$ and the PRINT command could be included elsewhere in the program.

```
 2 LET A$="SINCLAIR PROGRAMS"
 5 LET S$=""
10 FOR I=1 TO LEN A$
20 LET A=CODE A$(I)+128
30 LET S$=S$+CHR$ A
40 NEXT I
45 PRINT S$
```

```
  1 REM PARANOID
 10 LET Z=1
 15 LET P=1
 20 LET A=INT (RND*10)+10
 30 LET X=10
 40 PRINT AT Z,10;"(11*is P)"
 50 LET Y=13
 60 FOR F=Z+2 TO 10
 70 LET Y=Y+(INKEY$="8")-(INKEY
$="5")
 80 PRINT AT X,Y;"V"
 90 PRINT AT 1-F,A;"."
100 FOR L=1 TO 1.5
110 NEXT L
120 PRINT AT 1-F,A;" "
130 PRINT AT X,Y;" "
140 NEXT F
150 IF Z>=9 THEN GOTO 220
160 IF Y=A THEN GOSUB 230
170 FOR C=1 TO 9
180 NEXT C
190 IF Y<>A THEN LET Z=Z+2
200 CLS
210 GOTO 20
220 PRINT AT 10,15;"lost"
225 GOTO 260
230 LET P=P+1
240 PRINT AT X,Y;"(iv)"
250 RETURN
260 PRINT P
```

Paranoid

PHENRY of Newcastle-on-Tyne has devised **Paranoid** for the 16K ZX-81. You are described as paranoid by the program title with good reason, because somebody at the top of the screen does not like you and is throwing missiles. If you catch them you survive for a time, but if you miss, a large black line will descend slowly from the sky and crush you.

Up to 30% Royalties

paid for high quality original software

●

BBC, ZX81, SPECTRUM, DRAGON 32, PET

●

Games and Educational programs

Silverlind

156 Newton Road
Burton on Trent, Staffs, DE15 0TR

"EASYDRAW"

THE PROGRAM VAN GOGH WOULD HAVE GIVEN HIS RIGHT EAR FOR!!

★★Draw your own masterpieces on screen

★★Record your creations for posterity on your printer

★★Create your own library of Shapes/Designs/Pictures

★★Explore basic geometric concepts — Co-ordinate systems, Tesellation, Graph drawing

★★Complete with overlay templates for easy use of controls.

AVAILABLE NOW FOR 48K ZX SPECTRUM

Send £4.95 + 50p P&P to:—

Westbourne Business Systems Ltd,
18 Garway Road,
London W2

© Westbourne Business Systems Ltd 1983

If you're a *serious* Sinclair user — why don't you stop playing games?

If you need a new challenge that does'nt involve saving the universe from destruction, beating off green monsters or flying a spaceship — we can bring you down to earth with stimulating, practical projects for the ZX81 and Spectrum in **Sinclair Projects** magazine!

In recent issues we have shown how to use your Sinclair for controlling your central heating . . . improving the graphics . . . build a printer interface . . . and many more ideas that tax your ability and ingenuity.

Sinclair Projects is published every two months as a glossy, instruction-packed magazine that gives you all the encouragement you need to exercise your talent and take a serious look at what your Sinclair can do for you.

Each issue can contain as many as FIVE step-by-step projects — yet it's yours for JUST 95p. So if you want a break from playing games, make sure you order YOUR **Sinclair Projects** from your newsagent today — or fill in the form below and we will send it direct to you, six times per year.

Mail to: ECC Publications Limited: 30-31 Islington Green, London N1 8BJ Yes — I'd like to subscribe to Sinclair Projects (6 issues — price £6.60 including P&P) I enclose a cheque for £ _____
Please charge my credit card: Card name _____ Number _____
Name _____ Address _____
Signature _____ Date _____
NB This offer applies to UK subscribers only. Overseas rates available on request.

The affordable FORTH

FORTH	: A full implementation of this very fast running language. Ideal for writing fast moving arcade type games. Allows the full colour and sound facilities of the Spectrum to be used. Future Microdrive enhancements will be made available. 48K Spectrum only.		14.95
Chess 1.4	: 10 Levels m/c. Graphic screen display. 16K ZX81 only.		8.95
Invaders	: Very fast m/c action. Includes mystery ship and increasingly difficult screens. 16K ZX81 only.		4.45
Mazeman	: A fast action m/c game that reproduces the spirit of the original. The Spectrum version includes excellent graphics and sound. 16K ZX81 & 16/48K Spectrum.	ZX81 4.45	4.95
Adventure 1	: Based on the original game by Crowther, this game was the start of the Adventure craze. Reviewed Sinclair User.Iss.2. Features Save game routine as the game can literally take months to complete. 16K ZX81 & 48K Spectrum.	ZX81 8.95	9.95

ABERSOFT

7 MAES AFALLEN, BOW ST, DYFED, SY24 5BA

24-hour Ansafone for Access orders on (0970) 828851

BARGAIN-HUNTERS READ *THIS!*

Whatever your model of Sinclair computer—you can get HOURS of fun, intellectual satisfaction and education for just 95p per month!

A bargain?
That's **Sinclair Programs** magazine—the fat, glossy magazine that's PACKED with original, tested programs for you to load and run.

With **Sinclair Programs** every month you can build the library of programs that suits your mood: in recent issues we have challenged our readers with programs to test their skill at Sharpshooter or Laser Cannon . . . jolt their brain cells with Quadratic Equation or Monster Maths . . . or take a practical turn with their own word processor program or graphic generator.

That is just a fraction of what you get from **Sinclair Programs**. Each month we have 40 programs for owners of ZX80s, ZX81s and Spectrums. But make sure you don't have to hunt TOO far for your bargains—**Sinclair Programs** always sells out quickly, so order yours TODAY from your newsagent, or fill in the form below and we will send it direct to you, every month.

Mail to: ECC Publications Limited, 30-31 Islington Green, London N1 8BJ Yes — I'd like to subscribe to **Sinclair Programs** (12 issues — price £13.20) I enclose a cheque for £ ____ Please charge my credit card Card: name ____ Number ____ Address ____ Name ____ Date ____ Signature ____

NB This offer applies to UK subscribers only. Overseas rates available on request.

Play in the big league — with only the best, newest programs!

We've searched for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source!

Every month, we'll be adding to our catalogue to bring you the best of new games, new business, educational and household software. And the good news is — **we're specialising in programs for your Sinclair!**

With our special new deal — you just CAN'T GO WRONG.

* A free offer every month (this time it's a free blank C20 cassette with every two games ordered)
* A money-back guarantee if you're not entirely satisfied with your purchase — that's how confident we are about the quality and value!

All you have to do is look at our first HOT selection, then order quickly to be among the first to own these games of skill, intelligence and excitement (fast delivery is another of our specialities — so you could be using these new programs SOON).

FREE BLANK C20 COMPUTER CASSETTE WITH EVERY TWO CASSETTES YOU ORDER!

Remember there's no limit to the number of free cassettes you receive if your order justifies them — so why not get together with friends or user group members and share the freebies?

GUARANTEE

Order with complete confidence. If you are not entirely satisfied with the quality of your purchase return it to us within 7 days and we will provide a replacement.

GREAT VALUE! TREMENDOUS SELECTION! PLUS A FREE OFFER EVERY TIME!

Fill in the order form right away — we're guaranteeing fast delivery, quality and satisfaction (after all, we want you to come back for more!)

The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

Here's a whole NEW selection of the latest games, the best-value software for your ZX-81 or Spectrum.

ZX81 Software

1-01 **Stock Market** — £3.95
Buy and sell your way to millions! 16K RAM

1-02 **Football League** — £3.95
First division fun for the soccer enthusiast. 16K RAM

1-03 **Test Match** — £3.95
Match your wits alongside the superstars. 16K RAM

1-11 **Arcade Action** — £4.95
Overtaker/Missile Man/Space Fighter/ Pilot/Greedy Gobbler/Extra Terrestrial. 1K

1-12 **Avenger** — £4.95
Avoid missiles and bombs to become the ruler. 16K RAM

1-13 **Protector** — £4.95
Defend your own ship from oncoming attackers. 16K RAM

1-21 **Football Manager** — £5.95
Manage your team through a hectic league season! 16K RAM

1-31 **Comp-U-Share** — £9.95
Investment management program for unit trusts, shares and loan stocks. Complete documentation included. 16K RAM

1-32 **Comp-U-Tax** — £9.95
Accurate personal income tax calculator for 82/83 tax year. Full documentation included. 16K RAM

Spectrum Software

2-12 **Avenger** — £4.95
[See 1-12 under ZX81]. 48K RAM

2-13 **Sentinel** — £4.95
Guard your mother ship against alien attacks. 48K RAM

2-14 **Meteor Storm** — £4.95
Spectrum version of the ever-popular arcade game. 16K or 48K RAM

2-15 **Star Trek** — £4.95
Popular space program brought to life by excellent graphics. 48K RAM

2-21 **Frogger** — £5.95
Manoeuvre the frog across the road avoiding heavy traffic. 48K RAM

2-22 **Crazy Balloons** — £5.95
Guide the balloons round the maze without bursting. 48K RAM

2-23 **Arcadia** — £5.95
The expert's version of the popular 'Invaders' game. 16K or 48K RAM

2-24 **Golf** — £5.95
The finest of golf handicap games. 48K RAM

2-25 **Test Match** — £5.95
More exciting than the real thing! 48K RAM

2-26 **Derby Day** — £5.95
This favourite has to be a winner. 48K RAM

2-27 **Rescue** — £5.95
Rescue the Princess from marauding patrols. 48K RAM

2-28 **The Orb** — £5.95
Discover the Orb in the depths of the temple but watch the monsters. 48K RAM

2-29 **Jackpot** — £5.95
The harmless way to take on the one-armed bandit. 48K RAM

2-31 **Football Manager** — £6.95
See 1-21 under ZX81. 48K RAM

2-41 **Comp-U-Share** — £9.95
See 1-31 under ZX81. 48K RAM

2-42 **Comp-U-Tax** — £9.95
See 1-32 under ZX81. 48K RAM

To: The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

I wish to order the following programs. I understand that:

* I will receive a FREE blank cassette with every 2 programs ordered
* I can return products within seven days if not entirely satisfied and receive a full refund or replacement programs to the same value.

Ref No	Qty	Title	Price

Postage, packing and handling: add 45p for the first cassette, and 25p for each additional cassette. Non-UK orders add extra 50%

Total

I enclose a cheque/postal order for _____

Name _____

Address _____

_____

(Allow 28 days MAXIMUM FOR DELIVERY)

ZX81

- Stylish case fits neatly between ZX81 and Ram pack of 8K or more.
- 256 x 192 pixels.
- Hi res display file independent of old display file.
- Very fast and powerful graphics commands as extensions of Sinclair basic: SLOW / FAST CLS COPY PRINT PLOT all extended to hi res.
- **114 PLOT modes including:**

  Points and various line types
  Textured triangle fill
  Absolute and relative co-ordinates
  Line drawing to points off screen

- **Mixed text and graphics including PRINT at graphics cursor.**
- **User defined graphics for space invaders etc**
- **Screen COPY to printer**
- Extensive manual, excellent for school and home use, and full guarantee.
- Arcade games available soon!

Post to:– Notting Dale Technology Centre (Ltd)
T.F.L. (ZX 81)
189 Freston Road
London W10 6TH (01-969 8942)

Please send me ..... board(s) @ £32.00 each
+ £4 80 VAT plus 75p P&P

I enclose Cheque/P.O. for .....
Or I wish to pay by Access

Card Number .....

Name and Address (PRINT)

Name .....

Address .....

.....

Credit card holder's signature

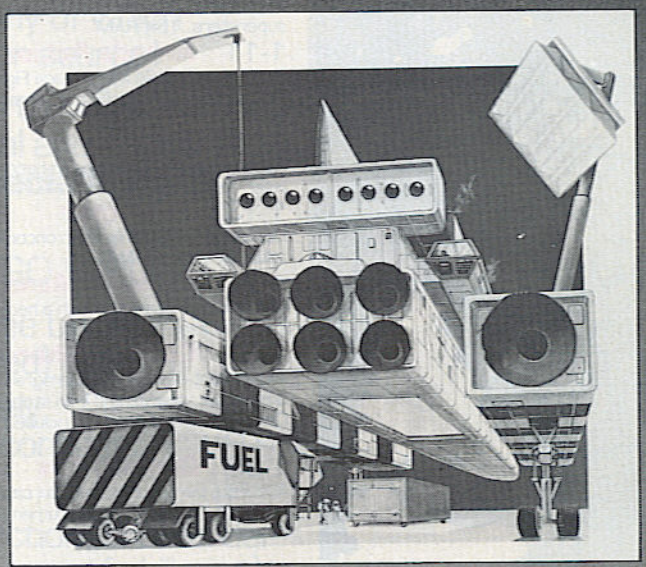
QUICKSILVA

are proud to announce they are now marketing

PIXEL GAMES

TRADER

A trilogy of 16K programmes that combine to give an epic 48K graphic adventure. As a galactic trader, you deal with some very bizarre customers indeed. Will you live to tell the tale?



SUBSPACE STRIKER

With your deadly Antimat torpedoes, you unleash havoc in the Federation spacelanes and try to dive back to the safety of subspace, fast.
+ **ZOR** — Battle of the robots. Fight for survival in this action-packed strategy game.

STARQUEST

With the help of your on-board computer, you seek a habitable planet amidst the perils of deep space.
+ **ENCOUNTER** — In this adventure, you are snatched off the Earth and the space invaders play YOU!

PIXEL POWER A graphics workshop packed with useful features like Create, Amend, Save, View Set.

HARVESTER A cut-throat strategy game for 2 to 4 players.
BRAINSTORM Can you get our three space explorers across a river of nasty goo without blowing their minds.

SUPPLIED ON CASSETTE

Send order to: QUICKSILVA, DEPT SPC, 92 NORTHAM ROAD, SOUTHAMPTON, SO2 0PB

ZX-81 GAMES			
Trader	ZX-81 + 16K RAM	£9.95	☐
Subspace Striker + Zor	ZX-81 + 16K RAM	£3.95	☐
Starquest + Encounter	ZX-81 + 16K RAM	£3.95	☐
VIC20 GAMES			
Trader	VIC20 + 16K RAM	£14.95	☐
Subspace Striker + Zor	VIC20 + 16K RAM	£7.95	☐
Starquest + Encounter	VIC20 + 16K RAM	£7.95	☐
Pixel Power	VIC20 + 16K RAM	£7.95	☐
Harvester + Brainstorm	VIC20 + 16K RAM	£7.95	☐

Please send me the games as ticked.

Total cheque/P.O. enclosed.....
Cheque payable to QUICKSILVA

Name.....

Address.....

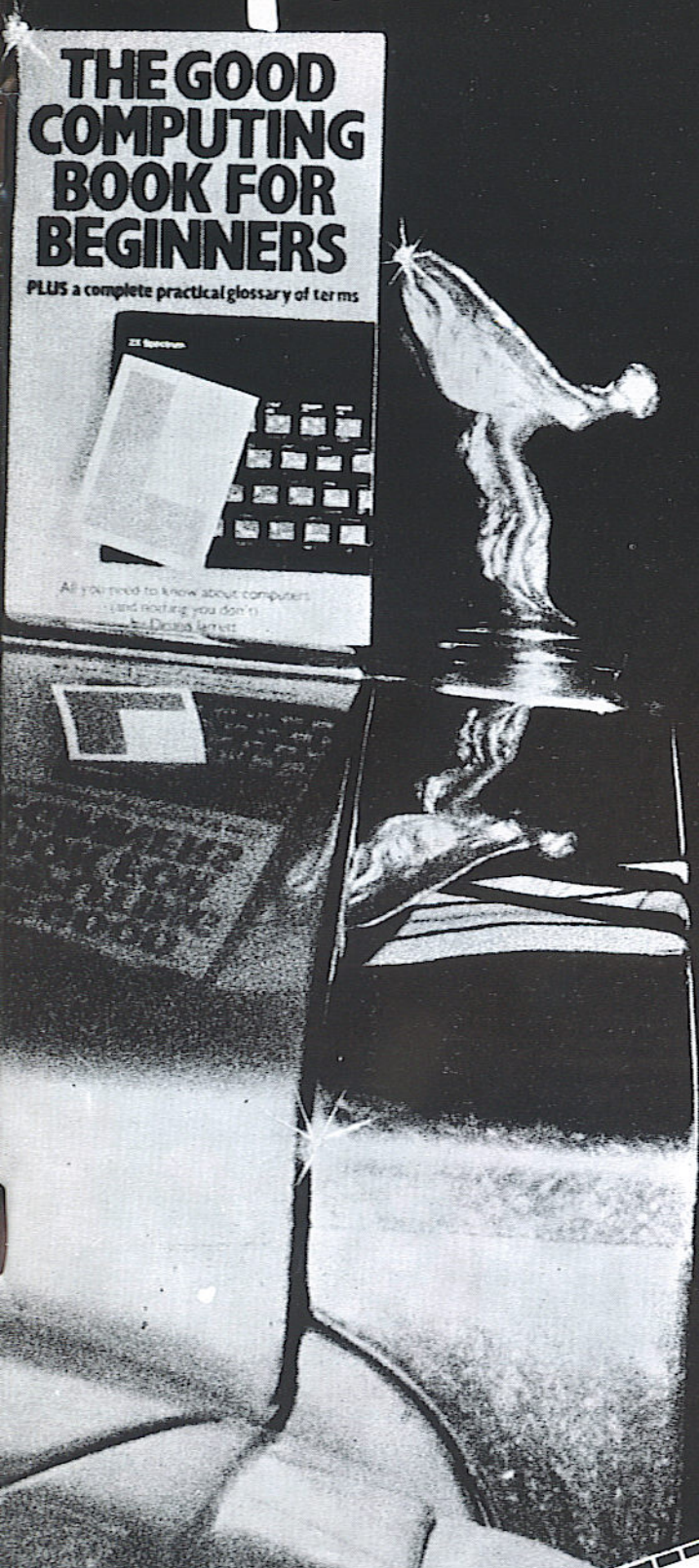
.....

.....

Second Edition Just Published

If you only buy ONE computing book

THIS IS THE CLASSIC!



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

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

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

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

Use the coupon below to get your copy right away — or buy it soon from your bookshop. It's the **one** book you'll turn to again and again.

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

Signature_____

Name_____(please print clearly)

Address_____

Send to: ECC PUBLICATIONS LIMITED
30-31 Islington Green
London N1 8BJ

Sensational Spectrum Games

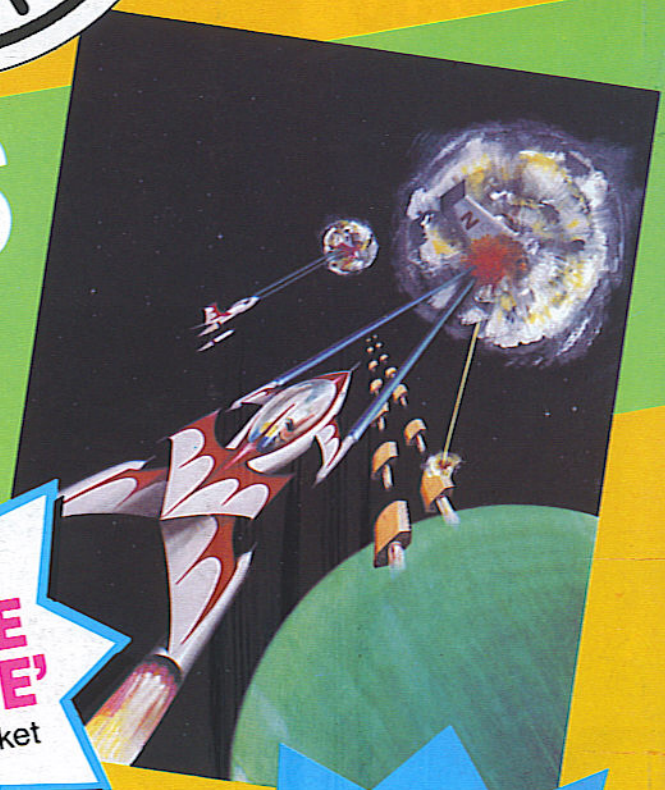
16K / 48K

ABBEX the games people

JOYSTICK COMPATIBLE

COSMOS

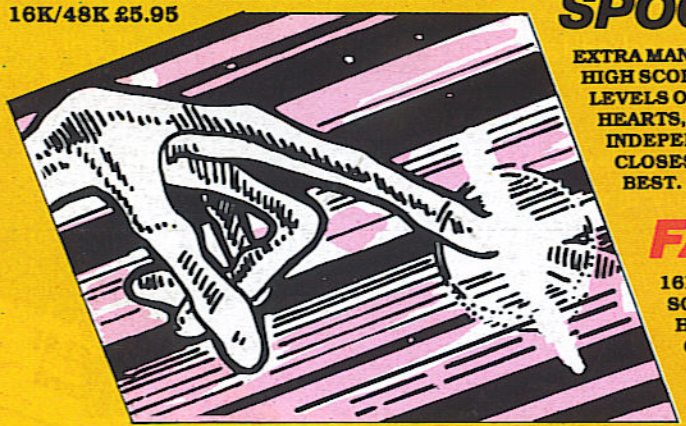
WAVE AFTER UNRELENTING WAVE OF ZENOPHOBIC ALIEN ATTACK, INTERSPERSED WITH EVER MORE FREQUENT ASTEROID + COSMIAD RAIDS. THE TWO COMBINE INTO AN UNENDING RAIN OF DEADLY DEBRIS. WITH RADAR, THERMOCLASTIC HEAT LANCES LET RIP IN THIS GRAPHIC MAELSTROM.
16K/48K £5.95



'OUR FAVOURITE NEW GAME'
Software Supermarket

ETX

SPEECH AND SPRITE/PIXEL GRAPHICS THE LITTLE MAN STILL ON HIS ENDLESS SEARCH HAS WANDERED INTO THIS SENSATIONAL GAME. IT'S OUR LATEST AND GREATEST. TRUE GRAPHICAL ELEGANCE.
16K/48K £5.95



SPOOKY MAN

EXTRA MAN, ONE OR TWO PLAYER OPTION, HIGH SCORE, JOYSTICK CONTROL, 255 LEVELS OF DIFFICULTY, DIAMONDS, HEARTS, CLUBS, MYSTERY SCORE, FOUR INDEPENDENT GHOSTS. IT'S THE CLOSEST TO THE ORIGINAL AND THE BEST. 16K/48K £5.95

'ONCE YOU'VE SEEN IT IN ACTION IT'S ALMOST A NECESSITY!'
Sinclair User

FAUST'S FOLLY

16K/48K £5.95. RECOVER FAUST'S LOST SOUL FROM THE GRASP OF SATAN AND HIS EVIL FIENDS. YOU'LL NEED A COMBINATION OF MACHIAVELLIAN MACHINATION AND SUBTLE WIT TO OUTWIT THE CRYPTIC POWERS OF THE DARK LORD HIMSELF.

GALAXIAN 5

THIS IS IDENTICAL TO THE ORIGINAL. SOUND PIXEL GRAPHICS. 255 LEVELS OF DIFFICULTY. 2 PLAYER FUNCTION. FAST AND FURIOUS. REQUIRED PLAYING FOR ANY SPECTRUM OWNER.
16K/48K £5.95

☐ COSMOS	Price £5.95
☐ FAUST'S FOLLY	Price £5.95
☐ ETX	Price £5.95
☐ SPOOKYMAN	Price £5.95
☐ GALAXIAN 5	Price £5.95

ABBEX ELECTRONICS LTD
20 ASHLEY COURT, GREAT NORTHWAY, LONDON NW4
Tel: 01-203 1465

PLEASE COMPLETE IN BLOCK CAPS
NAME (Mr/Mrs/Miss) .....
ADDRESS .....
(CARD HOLDERS) .....
POST CODE ..... PHONE NO .....

Make cheques payable to ABBEX
I enclose my cheque for £

I wish to pay by ☐ CHEQUE ☐ ACCESS
Please debit my creditcard a/c
Number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Signed .....
date .....