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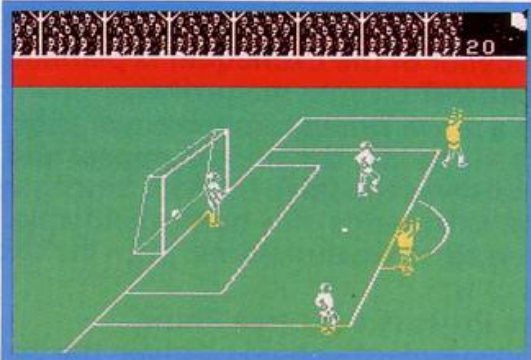
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**A** GREAT free poster, stickers and a badge. What more could you expect from a jamboree bag? Well, there is even more. We will be awarding a prize of all the software reviewed in *Soft Focus* this month, to the reader who finds the most unusual place to stick their *Sinclair Programs* stickers.

Stick them on cassettes, stick them on books, stick them in your room, but also try them in other places. Can you get your stickers air borne, send them under water without getting them wet, set them moving at a hundred miles an hour? The possibilities are endless.

For a chance at the prize, let us know before the end of February where you stuck your stickers. The best ideas will be published on our letters page and, if you enclose a clear black and white photograph, we may be able to publish that as well.

At the same time, why not enter our Chartline competition? Remember, the more votes we have, the more accurate the chart is, and every entrant is eligible to win the prize. Let us know your favourite game, and the game you hate the most. Do you agree with this month's chart? Does it

represent your views?

Let us know, we are waiting to hear from you.



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

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

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

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

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

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**Sinclair Programs is published monthly by EMAP Business and Computer Publications.**

Telephone 01-251 6222

If you would like your original programs to be published in Sinclair Programs, please send your contributions, which must not have appeared elsewhere, to:  
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EMAP,  
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ISSN No 0263-0265

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

Distributed by EMAP National  
Publications Ltd.

All subscription enquiries:  
Magazine Services,  
EMAP Business and Computer  
Publications,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1  
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## LETTERS

Send your thoughts to us at Letters, Sinclair Programs, 67 Clerkenwell Road, London EC1R 5BH. We pay £2 for every letter published.

I HAVE scored 232,399 on day one of **Daley Thompson's Decathlon**. I jumped the long jump five times. I managed to score 8.52 seconds on the 100m, 9.01m on the long jump, 26.51m on the shot putt, 4.04m on the high jump, and 30.6 seconds on the 400m.

On day two I have scored 397,300. I ran the 110m hurdles in 9.89 seconds, jumped 5.04m in the pole vault, threw the discus 76m, and ran the 1500m in 272.98 seconds.

Although my scores are not brilliant, during a different game I managed to throw the javelin 117 metres, but in the process broke my Quickshot II joystick.

I thought this was excellent, because nobody I know can throw more than 99m. If anybody can better my achievement, please write to *Sinclair Programs*.

Hurry, though, my fingers are getting faster all the time.

S Jay,  
Fildon, Bristol.

### First is second

AS SOON as I saw the advert for **Rocket Man** I rushed to the shops and bought it. After the shock of the astounding graphics, I gradually got the hang of it. After many weeks of desperation due to that cursed bub-

loid I managed to score a personal best of 919,859. I would like to know whether anyone has beaten my score.

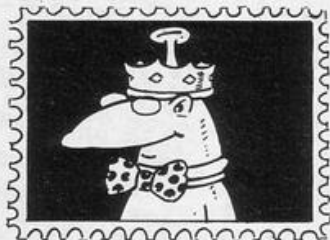
Nick Morgan,  
Edinburgh.

• No sooner said than done ...

### Second is first

WE ARE writing to tell you that we have been playing **Rocket Man** since it was released, and we have beaten Simon Kelly's score of 48,398. We scored 1,642,200. We could have scored a lot more but the program crashed. When we reached that score we have 17 men left. We take it in turns to play, playing alternate levels. We would like to know anyone who has beaten this score, as it is measly.

Frank & Tom,  
Levn, Fife.



IN reference to the letter published in the November issue of *Sinclair Programs* about the highest score on the program **Cash Accumulator**.

James Williamson claimed to have beaten the score of sixteen million. On my first go I scored 36,279,714.

I should like to hear from anyone who has beaten my score.

Gil Ben-Horing,  
Golders Green,  
London.

### Pen-pal required

I AM writing to say that your magazine is great, but it would be better if more ZX-81 games were published.

The main reason for this letter is that I would like a pen friend in the Stoke-on-Trent or Staffordshire area to exchange listings, information and ideas. If you are interested, you must own a ZX-81, and have a great interest in computers.

Write to:

Darren Lovatt,  
33 Neath Close,  
Weston Park,  
Longton,  
Staffordshire.

### Learnt from a book

I SHOULD like to find some pen-pals who own Spectrums. I own a Spectrum 48K. As I have never been taught to use a computer I have had to teach myself programming from a book. I should like to communicate with anyone of any

age to swap listings and hints. Very often what one person finds a problem can be quite simple to anyone else.

I enjoy playing commercial games, as well as writing my own programs, although I have so far had little success in this field.

If you are interested, please write to me.

David Duffill,  
30 Heston Avenue,  
Great Barr,  
Birmingham.



### Bugged invaders

I AM writing to tell you about a bug in a game called **Invasion Force**, produced by Artic Computing.

The game is good, with excellent graphics on a 16K ZX-81. The bug takes effect when you have scored more the 874,000. The game then ends straight away, even if you have several lives remaining. Your score decreases rapidly, the screen shows that you have been destroyed, and your name will no longer be accepted by the program.

Has any other player found this problem?

Garry Heather,  
Reading, Berkshire.

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

To: Sinclair Programs, 67 Clerkenwell Road, London EC1R 5BH.

I enclose .....Program(s) for the ..... computer.

I guarantee that each program submitted is my original work.

Signed .....

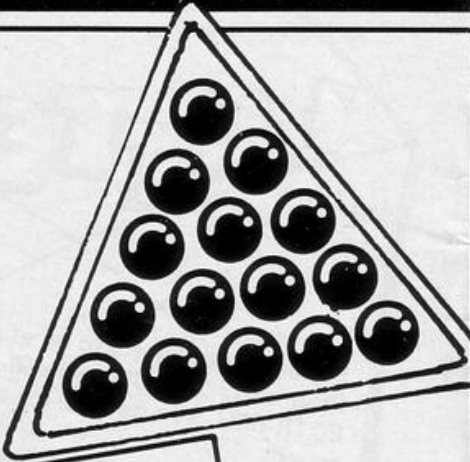
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**F**ANCY a game of Snooker on your 16K ZX-81? Then try Potaball, written by Dennis Wood of Kimmel Bay, Rhyl. Once the table has been displayed, you will be asked to choose your cue stroke and the obj ball angle. The cue stroke is based on the y co-ordinate of the object, and should be between 3 and 23, while

the obj ball angle is based on the x co-ordinate and should be between 3 and 11.

Pot a red and then a colour, repeating the process until only colours remain, when they can be potted in any order. Play your best, because the computer plays extremely well.



# POTABALL

```

1001 SLOW
1002 DIM A(22)
1003 DIM D(22)
1004 LET V=4
1005 FOR F=1 TO 7
1006 LET N=16
1007 LET A(F)=21
1008 LET D(F)=V
1009 LET V=V+1
1010 NEXT F
1011 LET V=5
1012 FOR F=8 TO 12
1013 LET A(F)=20
1014 LET D(F)=V
1015 LET V=V+1
1016 NEXT F
1017 LET V=6
1018 FOR F=13 TO 15
1019 LET D(F)=V
1020 LET A(F)=19
1021 LET V=V+1
1022 NEXT F
1023 LET RED=0
1024 FOR F=16 TO 19
1025 LET D(F)=7
1026 LET A(F)=18
1027 LET D(16)=7
1028 NEXT F
1029 GOSUB 7000
1030 DIM P(6)
1031 DIM O(6)
1032 GOSUB 8000
1033 LET S=16
1034 LET M=0
1035 LET J=73
1036 LET MO=1
1037 LET A$="Y"
1038 LET Z=0
1039 LET REDS=0
1040 LET MOVE=73
1041 LET WBD=6
1042 LET WBA=3
1043 GOSUB 1000
1044 GOSUB 5014
1045 LET D=WBD
1046 LET A=WBA
1047 PRINT AT 21,0;"
1048 CUE
1049 STROKE
1050 INPUT WBA
1051 IF WBA<3 OR WBA>23 THEN GOT
1052 OBJ BA
1053 PRINT AT 21,0;"
1054 LL ANGLE
1055 INPUT WBD
1056 LET MOVE=6020
1057 IF WBD<3 OR WBD>11 THEN GOT
1058 POCKET
1059 PRINT AT 21,0;"
1060 POCKET
1061 PRINT AT 21,0;"
1062 IF M=1 THEN PRINT AT D(F),A
1063 (F);"0"
1064 LET M=0
1065 GOSUB 8030
1066 IF S=0 THEN GOSUB 7000
1067 NEXT F
1068 FOR F=2 TO 24
1069 PRINT AT 2,F;"
1070 AT 12,F;"
1071 NEXT F

```

```

1015 FOR F=3 TO 11
1016 PRINT AT F,2;"
1017 NEXT F
1018 PRINT AT 0,10;"POTABALL"
1019 PRINT AT 2,2;"
1020 AT 12,2;"
1021 AT 1,13;"
1022 AT 2,24;"
1023 AT 1,2;"
1024 AT 13,2;"
1025 AT 1,13;"
1026 AT 1,24;"
1027 AT 13,24;"
1028 AT 7,5;"
1029 AT 13,5;"
1030 AT 7,13;"
1031 AT 7,16;"
1032 AT 9,5;"
1033 AT 7,22;"
1034 AT 15,3;"YOUR SCORE"
1035 AT 17,3;"231 SCORE";REDS
1036 RED;AT 17,3;"
1037 FOR F=1 TO 5
1038 PRINT AT D(F),A(F);"
1039 NEXT F
1040 PRINT AT D(17),A(17);"
1041 PRINT AT D(18),A(18);"
1042 PRINT AT D(19),A(19);"
1043 PRINT AT D(20),A(20);"
1044 PRINT AT D(21),A(21);"
1045 PRINT AT D(22),A(22);"
1046 PRINT AT WBD,WBA;"
1047 PRINT AT 1,27;"
1048 FOR F=3 TO 15
1049 PRINT AT F,27;"
1050 NEXT F
1051 RETURN
1052 FOR F=1 TO 5
1053 IF WBD=D(F) AND WBA=A(F) TH
1054 EN GOTO 3004
1055 NEXT F
1056 FOR F=17 TO 22
1057 IF WBD=D(F) AND WBA=A(F) TH
1058 EN GOTO 7005
1059 NEXT F
1060 RETURN
1061 PRINT AT 21,0;"
1062 GOT
1063 GOSUB 6050
1064 IF J=6020 THEN LET REDS=RED
1065 S+1
1066 IF J=73 THEN LET RED=RED+1
1067 IF J=6020 THEN LET Z=1
1068 IF J=73 THEN LET Z=1
1069 IF J=6020 THEN LET J=602
1070 IF MOVE=73 THEN LET J=73
1071 GOSUB 5000
1072 GOTO 90
1073 PRINT AT D,A;"
1074 AT WBD,WBA
1075 PRINT AT 21,0;"
1076 IF M=1 THEN PRINT AT D(F),A
1077 (F);"0"
1078 LET M=0
1079 GOSUB 8030
1080 IF S=0 THEN GOSUB 7000

```

```

5017 FOR F=17 TO 22
5018 IF S>0 THEN GOSUB 7050
5019 NEXT F
5020 FOR F=1 TO 22
5021 IF WBD=D(F) AND WBA=A(F) TH
5022 EN GOSUB 6000
5023 LET D=WBD
5024 LET A=WBA
5025 NEXT F
5026 RETURN (RND*21)+3
5027 LET WBA=INT (RND*9)+3
5028 LET WBD=INT (RND*9)+3
5029 RETURN
5030 PRINT AT 21,0;"DO YOU WANT
5031 TO BREAK?"
5032 INPUT A$
5033 IF A$="Y" THEN RETURN
5034 LET MOVE=73
5035 LET P=INT (RND*6)+1
5036 IF Z=1 OR S<=0 THEN GOTO 60
5037 IF Z=1 OR S<=0 THEN GOTO 60
5038 LET D=WBD
5039 LET A=WBA
5040 LET X=INT (RND*16)+1
5041 LET WBA=A(X)
5042 LET WBD=D(X)
5043 IF WBD<3 OR WBD>11 OR WBA<3
5044 OR WBA>23 THEN GOTO 9000
5045 GOSUB 9900
5046 GOTO 85
5047 LET X=INT (RND*5)+17
5048 LET WBA=A(X)
5049 LET WBD=D(X)
5050 IF WBD<3 OR WBD>11 OR WBA<3
5051 OR WBA>23 THEN GOTO 9000
5052 LET P=INT (RND*6)+1
5053 LET Z=0
5054 GOSUB 9900
5055 GOTO 85
5056 IF MOVE=6020 THEN LET J=73
5057 IF MOVE=73 THEN LET J=6020
5058 RETURN
5059 LET A(17)=22
5060 LET D(17)=7
5061 LET D(18)=7
5062 LET D(19)=13
5063 LET A(19)=5
5064 LET A(21)=5
5065 LET A(20)=5
5066 LET D(20)=5
5067 LET D(21)=9
5068 LET D(22)=9

```

```

AND WBA=A(22) AND WBD=D(22))
7092 IF S=-6 THEN PRINT AT 7,8;"
FRAME OVER" AT 8,8;"ZX81 WINS"
AND REDS>RED)+("YOU WIN" AND RED
>REDS)
7093 IF S=-6 THEN STOP
7094 LET M=1
7095 LET A(F)=0(P)
7096 LET A(F)=0(P)
7097 LET D(F)=P(P)
7098 GOSUB 5000
7099 GOTO 90
8002 FOR F=1 TO 3
8003 LET P(F)=2
8004 NEXT F
8005 FOR F=4 TO 6
8006 LET P(F)=12
8007 NEXT F
8008 LET O(1)=2
8009 LET O(2)=13
8010 LET O(3)=24
8011 LET O(4)=2
8012 LET O(5)=13
8013 LET O(6)=24
8017 RETURN
8020 FOR F=1 TO 3
8021 LET D(F)=INT (RND*9)+3
8022 LET A(F)=INT (RND*21)+3
8023 NEXT F
8024 LET MO=0
8025 RETURN
8026 LET A=INT (RND*22)+1
8027 IF R=1 THEN LET WBA=0(P)
8028 IF R=1 THEN LET WBD=P(P)
8029 IF R<>1 THEN RETURN
8030 LET FOUL=FOUL+4
8031 PRINT AT 21,0;"
8032 GOSUB 5050
8033 GOSUB 5000
8034 GOTO 9015
8035 PRINT AT 21,0;"
8036 FOR F=1 TO 25
8037 PRINT AT P(P),O(P);"0";AT D
8038 NEXT F
8039 IF MOVE=73 THEN LET J=73
8040 IF MOVE=73 THEN LET J=73

```

# POTABALLO

```

7010 LET D(19)=7
7011 LET A(22)=16
7012 LET D(22)=7
7013 RETURN
7014 LET A(F)=INT (RND*21)+3
7015 LET D(F)=INT (RND*9)+3
7016 RETURN
7017 FOR F=17 TO 22
7018 IF WBD=D(F) AND WBA=A(F) TH
7019 EN GOTO 7055
7020 NEXT F
7021 RETURN
7022 IF S<=0 THEN LET S=S-1
7023 PRINT AT 21,0;"
7024 GOSUB 6050
7025 IF J=6020 THEN LET REDS=RED
7026 IF J=6020 THEN LET WBD=D(17)
7027 IF J=6020 THEN LET WBD=D(18)
7028 IF J=6020 THEN LET WBD=D(19)
7029 IF J=6020 THEN LET WBD=D(20)
7030 IF J=6020 THEN LET WBD=D(21)
7031 IF J=6020 THEN LET WBD=D(22)
7032 IF J=6020 THEN LET RED=RED+(7
AND WBA=A(17) AND WBD=D(17))+6
AND WBA=A(18) AND WBD=D(18))+5
AND WBA=A(19) AND WBD=D(19))+4
AND WBA=A(20) AND WBD=D(20))+3
AND WBA=A(21) AND WBD=D(21))+2
AND WBA=A(22) AND WBD=D(22))+1

```

```

9030 IF MOVE=6020 THEN LET J=6020
9031 FOR F=1 TO 25
9032 PRINT AT P(P),O(P);" "
9033 NEXT F
9034 LET WBA=5
9035 LET WBD=6
9036 PRINT AT WBD,WBA;"0"
9037 GOTO 69
9038 LET B$=("PINK" AND X=22)+("
D X=20)+("BROWN" AND X=19)+("A
AND X=18)+("BLACK" AND X=1
7)+("BLUE" AND X=18)
9039 PRINT AT 21,0;"I WILL TRY F
OR B";B$;"
9040 FOR F=1 TO 25
9041 NEXT F
9042 RETURN
9043 SAVE "POTABALLO"

```

## Scuppered!

**S**oftware pirates are estimated to cost the software industry £150 million every year. A private member's bill designed to strike terror into pirates' hearts and put an end to this situation recently had its first reading in the House of Commons.

The bill was proposed by Conservative MP, William Powell and has the full support of the Federation Against Software Theft (FAST). FAST was formed in July last year to strengthen the copyright law, and its

members include Sinclair Research, Smiths, IBM, and major traders.

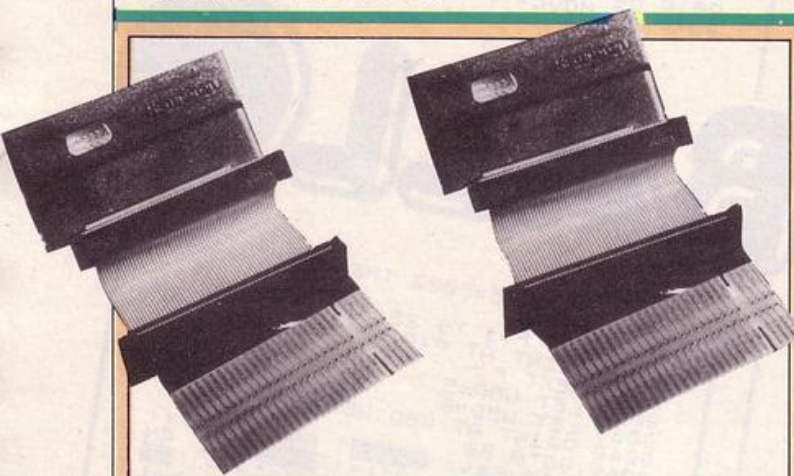
Powell, MP for Corby, feels that the bill should gain support from all parties as it "is non-contentious in its nature and has an excellent chance of becoming law". If the bill does gain support at its first, second and third readings, it will mean that the copyright laws are strengthened considerably, and there will be clear grounds on which offenders can be charged.



## Lots of monsters: even more insults

**S**WORDS and Sorcery was recently released by PSS for the Spectrum along with a range of accessories including t-shirts, badges and posters. Programmer Mike Simpson spent eighteen months on the program which numbers

Real Time, 86 monsters, 2,000 objects and four million ways to be insulted among its features. Packaged in a ring binder complete with explanatory booklet, **Swords and Sorcery** will retail at £9.95.



## Plus: more additions

**T**HE NEW Kempston Extender cable will prove a great help to Spectrum Plus owners. Sinclair Research earned themselves a black mark when it was found that the Kempston interface linking the Spectrum with the Kempston Joystick could not be attached to the supposedly fully compatible Spectrum Plus.

The new cable runs from interface to computer, and will be on sale in Boots, John Menzies and other retail outlets at a cost of £7.95. Said Keith Archer, Kempston's Technical Adviser, "We had thought of producing an extender cable and, after the arrival of the Spectrum+, we were prompted into action."

## Short on plus

**A**LTHOUGH Sinclair Research had predicted record Christmas computer sales it was not prepared and was faced with a shortage of Spectrum Pluses. The increased interest in the Spectrum+ following an extensive advertising campaign and the keyboard problems soon took its toll. This did not knock Sinclair's confidence and it was predicting that the shortages would soon be overcome.

The Spectrum+ may have been thin on the ground but the 48K Spectrum was still readily available. This was proved when Sinclair Research donated three computers as prizes to

winning entrants in a Save the Children Calendar competition.

## Dummies study Sinclair TV

**F**ANS of Sir Clive Sinclair will soon be able to see their hero on display at Madame Tussauds. A waxwork model of Sir Clive has already been completed but he cannot be unveiled until a model of Selina Scott has been finished. The pair will star together with Sir Clive holding a Sinclair pocket TV and Selina glancing over his shoulder at the screen.

## Frankie goes soft with Ocean

**I**SLAND Records, the recording company for **Frankie Goes to Hollywood**, has joined forces with Ocean Software and the Zang Tumb Tuum (ZTT) organisation. The results will be available for Spectrum and Commodore 64 owners to see in the spring when the first Frankie game is launched. The ZTT organisation are the band's creative producers and their contributions to the game should make it as individual as the band's music. Royalties from the sales will go to Frankie Goes to Hollywood and the three companies will share the revenue from the adventure game.



## Don't VAT the press

**T**HE PRICE of all your favourite magazines could rise by 15% next year. This would mean that *Sinclair Programs* could cost £1.10, and *Sinclair User* could cost over a pound. Even the price of the cheapest comics would rise by one or two pence.

The price rise would not be due to magazine publishers. It is because the government would like to impose Value Added Tax (VAT) on magazines and books at the next Budget.

The consequence of this would not only be that magazines would become more expen-

sive, but that there would be fewer magazines on sale. If a magazine's price rise were substantial, fewer people would buy the magazine. As publishers will make no money from the price rise, smaller magazines will lose money, and will be forced to close.

Younger people will pay more taxes, magazine prices will rise, and there will be fewer magazines on sale. Do you want this to happen? Write to your MP, or persuade your parents to do so, explaining what you think of this proposal.

## Wizard

**L**OOKING for the follow-ups to **Monty Mole** and **Potty Pigeon**? Check out the Quicksilver titles, then, rather than the Gremlin stocks, for Quicksilver have gained world-exclusive rights on the next two games from their author, Tony Crowther.

Wizard Development Company run by Tony and his partner, Roger Taylor, is pleased about the alliance because it

gives Wizard the experience and good name of one of the leading British software companies.

The two games, **Black Thunder** and **Gryphon**, have been written for the Commodore 64 but a spokeswoman for Quicksilver confirmed that their successful games are converted from Commodore to Spectrum and so conversion is likely to start early next year.

## New Generation magic

**L**IGHT MAGIC, a recent release from New Generation Software, is their first offering which has not been produced in-house. The graphics package was bought from a freelancer and New Generation feel that it will appeal to the more serious Sinclair users. The Light Magic program follows on from **Machine Code Tutor**

which New Generation launched in the middle of 1984.

James Day, the programmer who is adapting the Commodore version of **Cliff Hanger** has now left New Generation to go to university. Although he will still work on a freelance basis, New Generation are seeking full-time programmers.

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Depending on which entrance you select Zendos casts spells which change the locations of rooms within his castle to confuse you. The menacing creatures and challenging problems which confront you at every turn mean that only the brave and the clever will succeed.



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# DIE AGONISING DEATHS

## RETURN TO EDEN

**A**DVENTURE game enthusiasts are bound to have tales of dangerous and inescapable situations in which they have been caught. The plight of Kim Kimberley in **Return to Eden** must win some sort of prize for being absolutely the worst situation in which anybody could find themselves. Even if we forget that Kim has just emerged from the earlier Level 9 adventure **Snowball**, and if we take into account that if we were Kim we would be able to see around us and thus avoid trying eight directions and in, out, up and down in all locations, the situation does not improve.

There Kim is, unprotected, in the wreckage of a stratolider lifeboat.

In a limited amount of time a spaceship's rockets will be turned on Kim, and she has no hope of survival unless she can overcome two puzzles, untangle a maze and find one specific location before the rockets are switched on. If this game was for real, Kim would probably be fried while exploring the lifeboat.

Level Nine adventures are always outstanding, and **Return to Eden** is a joy to play. Quickly-drawn pictures are optional, and it is possible to change from text-only adventure to text and graphics at any point. All input receives a sensible answer, and it is by no means always the same answer. Even pressing every key, one after



another, while not producing the same useful results as this did in **Snowball**, will elicit a wide variety of responses.

Perhaps most user-friendly of all is the program's text acceptance. On most adventures the program will deal with one piece of text, ponder it at length, and then print a response. If you have already started typing your next move, only

half of it will appear and this must either be edited or entered. **Return to Eden** will deal with an enormous number of phrases at one time. Typing in eleven instructions in close succession will not confuse it at all.

An excellent, user-friendly, fiendishly difficult adventure, **Return to Eden** is produced by Level 9 computing.

**Game type: Adventure**  
**Rating: 90%**

## BEAM RIDER

**F**EELING mentally exhausted by a surfeit of adventure games? Fingers itching to kill something? Looking for a game which brings the electronic slaughter of the arcades into your home? You are? Strange.

**Beam rider** sets you flying through fifteen levels of grids, on each of which you have fifteen ships to blast into oblivion. This starts off fairly easy but, as the levels progress, the screens become littered with space debris, unassail-

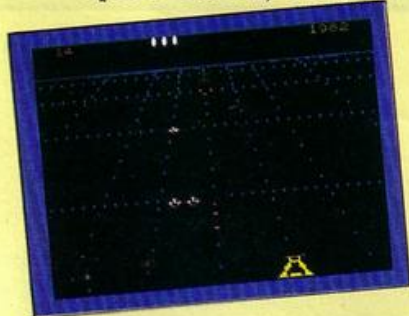
able ships and all sorts of dangerous objects.

The graphics are not amazing, in fact they are small and pathetic. The speed of everything is very fast, so fast that you are likely to leave the game after an hour or so with a severe case of eye strain, and twitching fingers.

It is fast, it is furious, but it is not original, and it does not even approach excitement. Arcade freaks may find it appealing, no one else will.

**Beam rider** is produced by Activision, 15 Harley House, Marylebone Road, London NW1.

**Price: £7.99**  
**Game type: Arcade**  
**Rating: 35**



## LAZY JONES

**W**HERE do old arcade games go to die? The answer is that they retire to **Lazy Jones** where they shrivel away to nothing and lose any charm that they ever possessed.

**Lazy Jones** is the eponymous hero of this game, and he finds himself in a three storey building full of doors, with lethal characters running up and down each floor, and slow-moving lifts connecting the storeys. The corridors, though, are an incidental part of the game. Behind the doors, always providing that you do not accidentally visit the broom cupboard or the toilet, are miniature versions of all the old favourite arcade games.

**Space invaders**, **Frogger** and **Breakout** can all be played on a miniature screen, against the clock, with no high score option, very limited sound and graphics and no replay option. If these games were not dying before, **Lazy Jones** kills them quickly and efficiently. By the time the third room is reached you will be keeping your finger on the fire button while you stare out of the window.

Given the nature of the program, it seems scarcely surprising that it is manufactured by a firm called Terminal Software, Derby House, Derby Street, Bury.

**Price: £6.95**  
**Game type: arcade**  
**Rating: 15%**

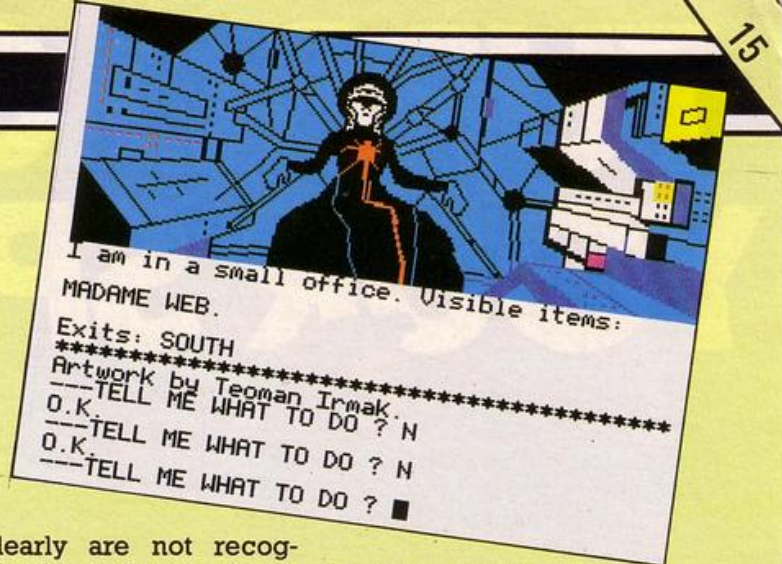
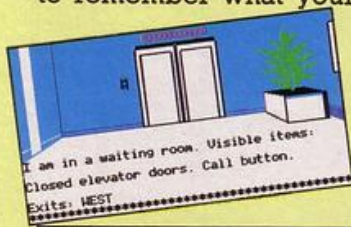
## QUESTPROBE

**S**UPER powers may be useful in many circumstances, but they certainly make adventure games no easier to solve. **Questprobe** stars the player in the role of Spiderman, continuing the adventure depicted in the Marvel comic supplied with the game. With super strength, the ability to climb walls and Spiderman's many other powers, things should be relatively easy but, in point of fact, it is difficult to remember what your

new-found powers are, let alone where and when to use them.

Spider strength soon comes in useful as you attempt to leave your start location by way of the lift. The ability to climb walls is less immediately useful, things seem to look just the same from the wall as from the floor.

The graphics of the adventure are superb, the Marvel comic characters such as the Sandman, Hydroman and the Ringmaster appear in full colour immediately you enter a location. Despite the quality of the graphics, they do not appear to be overly useful. Objects you can see quite



clearly are not recognised by the program, while objects which are described as soon as you examine a location are not visible in the pictures.

The adventure itself is excellent, with enough puzzles appearing immediately to keep any adventurer involved and intrigued. One slight problem lies with the instructions. Your object

in the game is described, but why is no mention made of the gems which can be collected, what they are, and what is to be done with them?

Questprobe is produced for the 48K Spectrum by Adventure International.

**Price: £9.95**

**Game type: Adventure**  
**Rating: 70%**

## PITFALL 2

**S**OMEHOW there is more disappointment in encountering a bad game with a misleadingly good write-up on the cassette sleeve than there is in simply encountering a bad game. **Pitfall 2** sounds very promising. Vampire bats, poisonous frogs

and deadly electric eels all sound exciting and challenging.

In point of fact, the game is not much fun. The frogs are OK, although they hardly move. The scorpions have all the convincingly animated reality of a picture being dragged

along the ground, and the bats are little more than shapeless blobs recognisable as bats only because they move around in the air rather than on the ground.

Your aim is to move around the underground caverns, collecting the gold bullion in order to gain points, and finally collecting the Raj dia-

mond. Some of the graphics are good, for example the underground rivers and waterfalls. Scrolling from screen to screen is not smooth, but performed in a series of jerky steps.

Pitfall 2 is produced for the 48K Spectrum by Activision.

**Game type: Arcade**  
**Rating: 35%**

## LODE RUNNER

**I**F YOU thought the days of itsy-bitsy characters in games were long gone, you were wrong. If you thought tiny characters were a sign of a bad game you were even further from the truth. **Lode Runner**, from Software Projects, features several tiny characters running across the screen or, rather, running across 150 screens.

Your aim is to collect all the gold on one screen and then escape to the next screen. Your

enemies, who chase you commando-style across the screen, aim to stop you. Their touch means instant death and, what is more, they have a nasty habit of picking up the gold you want to collect.

The basic idea behind the game is very familiar. Climb the ladders, collect the objects, avoid your enemies, and dig holes for them to fall into. Several points, though, differentiate it from a run-of-the-mill, seen-it-before game.

Firstly, there is the

sheer number and variety of the screens. 75 on one side of the cassette, and a further 75 on the next. Each contains an ingenious and challenging combination of ladders to climb, poles to slide along and different types of flooring.

Secondly, there is the edit facility. This allows you to change any of the screens, adding ladders, poles, gold, enemies, or whatever you want, to change the whole atmosphere of the game. You can also move the screens around, place all the easy ones at the beginning, or the difficult ones where you can

practise them.

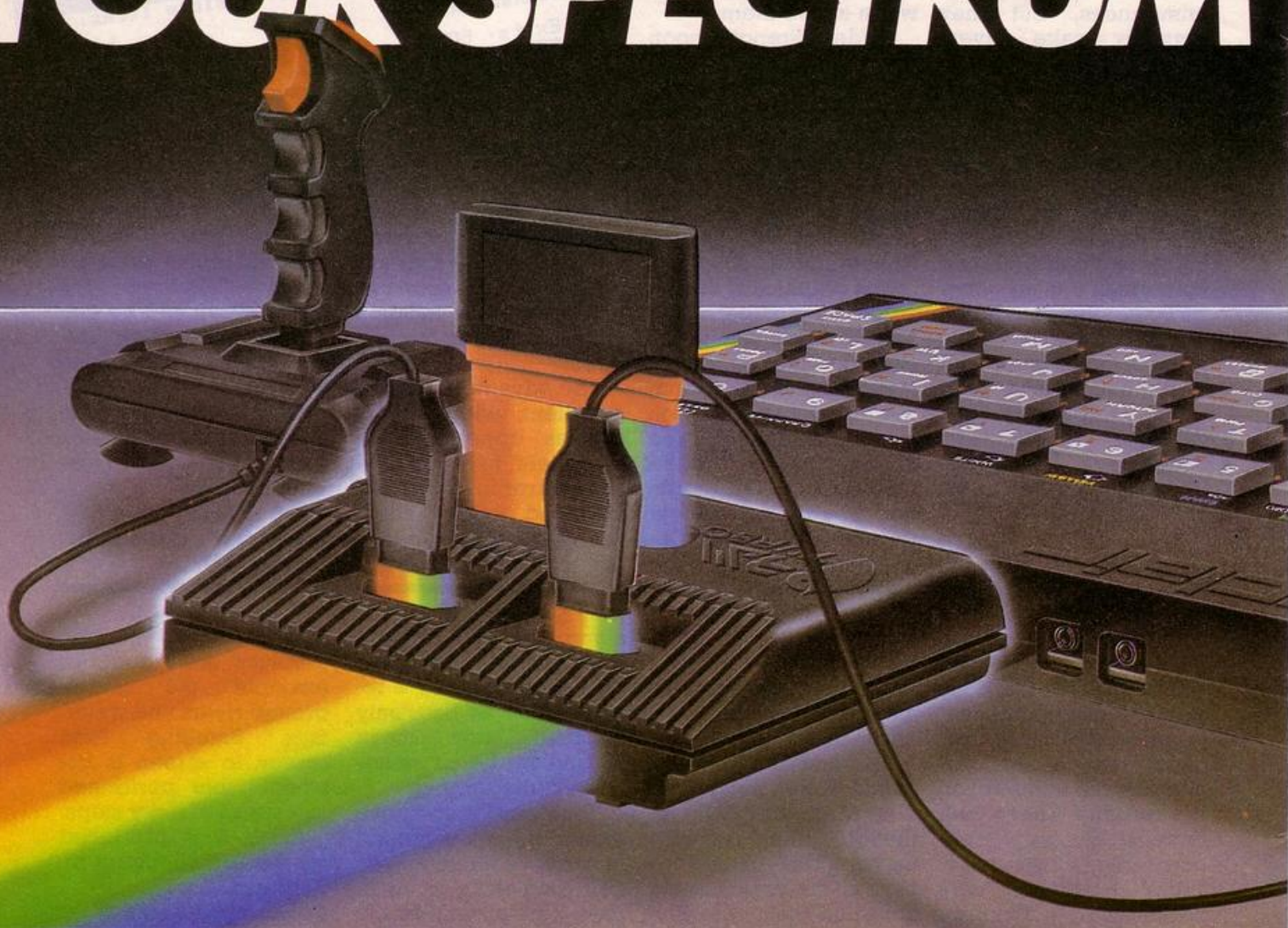
The screens are ingenious and the game is fun. However, with excellent graphics proving to be one of the chief selling points of this year's games, and with the Digger theme almost done to death, it does not have the strong attraction of similar games, such as **Chuckie Egg**, released a year ago.

Produced for the 48K Spectrum by Software Projects, Bear Brand Complex, Allerton Road, Woolton, Liverpool.

**Price: £9.95**

**Game type: Arcade**  
**Rating: 60%**

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## MATCH DAY

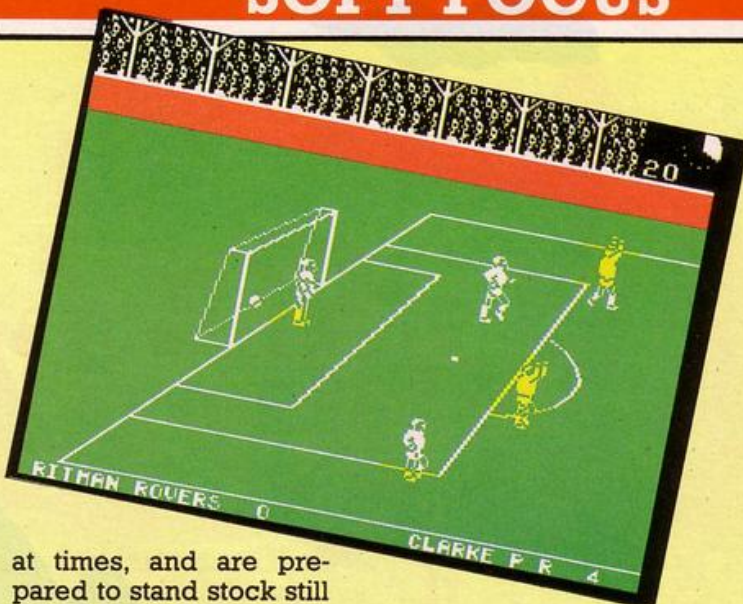
**M**AJOR advantages of football are that those playing it benefit from outdoor exercise, and those watching it have the chance to see skilful players in action. Both of these elements are missing from **Match Day**, a simulation of football on the 48K Spectrum.

The opposition have a clear advantage in that they always know who they are and that they usually know what they are doing. The player is likely to be overtaken by a major bout of schizophrenia as control shifts from one player to the next. The player to move is the one whose socks are white, rather than yellow. As control changes frequently from

one character to the next, there are around six players wearing yellow or white on the screen at any one time, and there is no certainty that your player is always on screen, this makes matters a trifle confusing.

A first attempt revealed a rather erratic scoring policy. The opposition were leading 1:0 when, presumably to give amateurs a sporting chance, they scored an own goal. Half time came, seeing the score standing at 4:1, and half time ended, leaving the score at 4:2. Something was definitely wrong somewhere.

The opposition mark your player wonderfully, even blending into him



at times, and are prepared to stand stock still for hours if your player chooses to do so. They are also uncomplaining, for repeated kicking of players will never result in a foul being declared.

Football is not, and will never be, intended to be played on the computer. Go outside if you want a good game of football,

look elsewhere if you want an enjoyable computer game.

Match Day is produced by Ocean Software, 6 Central Street, Manchester.

**Price: £5.90**

**Game type: simulation**

**Rating: 50%**

## COUNTRY COTTAGES

**T**OY MONEY is easily spent, and easily lost. Few games have the success of **Monopoly** in persuading each player to cling desperately to every fake pound. **Country Cottages** fails completely. The money you use in it, apart from being intangible and unreal, is also supposed to come from a bank loan. None of these points gives any incentive to spend the money sensibly, or to worry if it is all lost.

Starting with a bank loan, your aim is to buy, rent and sell cottages in order to make a certain amount of money before your opponent does so.

Cottages are portrayed so that you can choose whether or not to buy them, potential tenants—almost all of whom seem to be young and to have had children exceptionally quickly—are described for you to accept or decline.

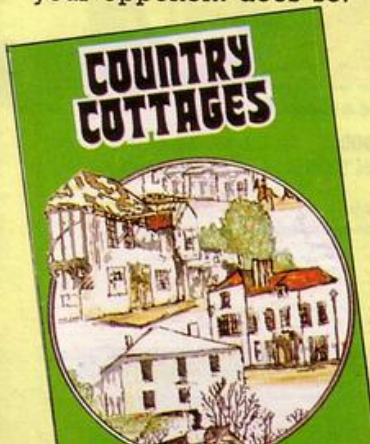
The risks of the game are not particularly great. Tenants may run off unexpectedly, leaving the house in a mess but, on the whole, they are content to remain in your cottages, suffering the odd minor burglary and paying exorbitantly high rents until you have made as much money as you wish. Houses burning down may be a risk, but it is not a great one.

A stolid and uninteresting game, **Country Cottages** is produced by Sterling Software, PO Box 839, 86-88 Edgware Road, London W2.

**Price: £5.95**

**Game type: simulation**

**Rating: 25%**



## SYSTEM 15000

**C**OMPUTER hacking, that is, using your computer to break into other computerised data bases for fun is a hobby of dubious morality and legality. It is, however, very popular, presenting opportunities, as it does, to break codes, find out secret information and baffle security systems. It is an occupation which you either love or hate, hackers will stay up all night once they have started, while observers if any, watch with puzzled surprise.

**System 15000** gives you all the fun and challenge of computer hacking within the confines of a game. It is so realistic that purchasers who always found hacking uninteresting will find the game about as exciting as ringing a number which is perpetually engaged and probably the wrong number anyway when you have the strong suspicion that

your telephone may have broken down three days ago.

In **System 15000** morality and the law are definitely on your side. You have to return a stolen \$1,500,000 to the account of Comdata's bank, Midminster. The police admit the money has been stolen, you are responsible for recovering it.

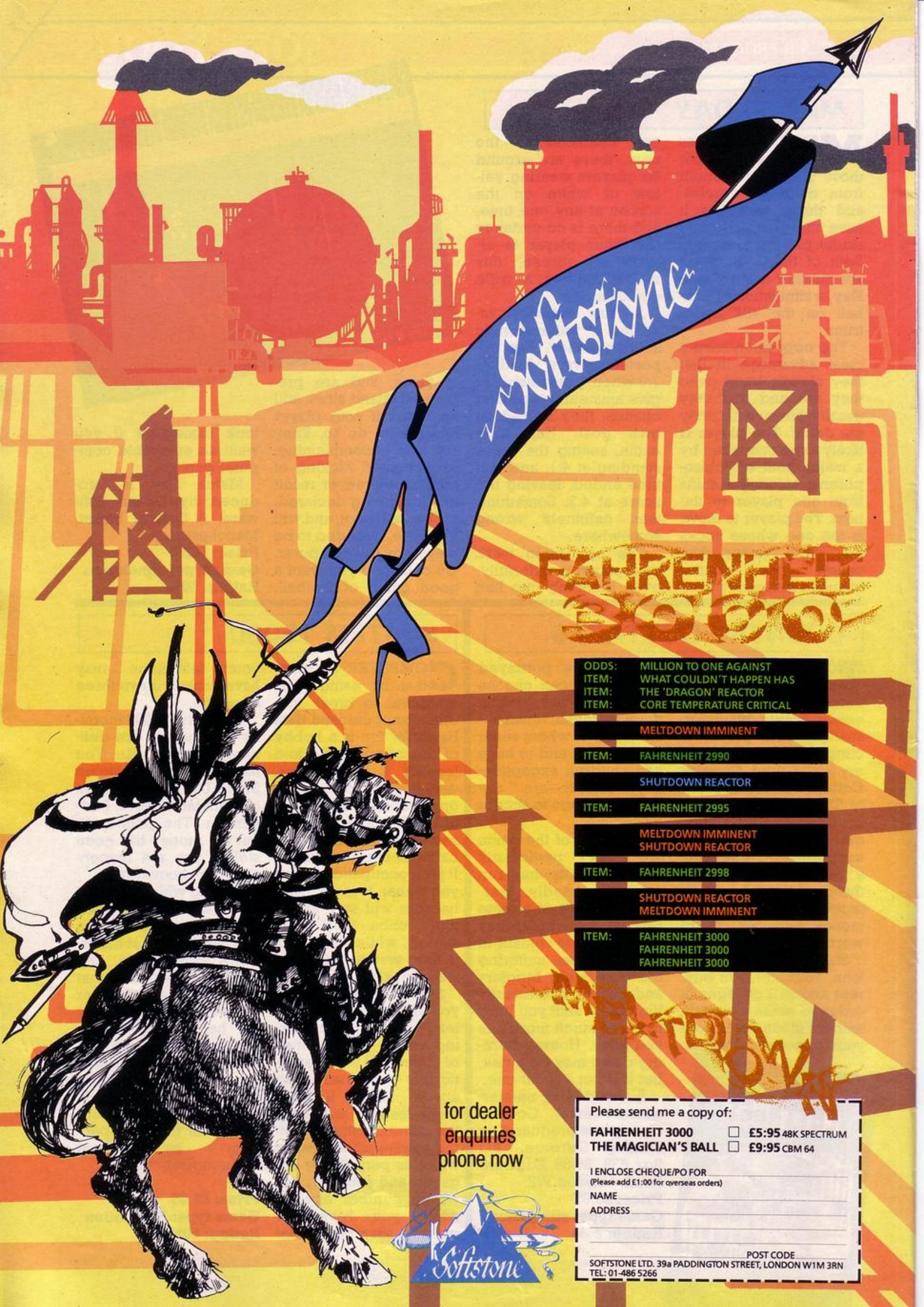
Starting with very limited information, which will allow you access to a few facts stored at Kingsdown Polytechnic, and with the knowledge that a scientific researcher named Geoff may or may not help you, you are thrown in the deep end and left to hack your way through as many databases as possible.

**System 15000** is produced for the 48K Spectrum by Craig Communications Ltd.

**Price: £9.95**

**Game type: Simulation**

**Rating: 60%**



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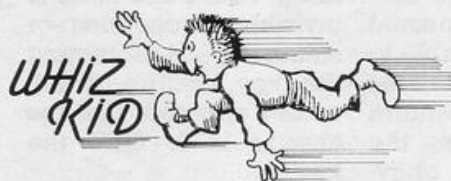


# PRACTICAL PROGRAMMING USING MACHINE CODE



**T**HIS is the first of a series of articles/tutorials on machine code programming, the object of which is to lead you as painlessly as possible into the whiz-kid world of super-fast graphics and animation.

Hopefully this opening statement will encourage any cynics who complacently feel that their command of Basic is good enough to do everything they may ever want to do on their Spectrums. Anyone who enjoys playing games as well as programming them cannot avoid being convinced of the rewards to be gained from m/c programming: speed of execution, high quality graphics, animation and sound effects which cannot be matched by Basic programs; these are fulfilling rewards in themselves. Combine m/c skills with the kind of imagination and inventiveness of which you may well have found yourself capable in high-level programming such as Basic, and you could find even more tangible rewards in your bank account!



A much more realistic reason for not wanting to get involved might be that you feel that you have not yet fully explored programming in Basic. Very sensible. I have previously said that it is always best to walk before you can run and, in any case, I must assume that you are a reasonably proficient high-level programmer who wants to break new ground. It is only when you reach this stage that the need to get deeper into your machine with m/c programming becomes irresistible.

Admittedly, there are a number

of books around on this subject. In my opinion, though, none of them really inspire the newcomer with much confidence. Usually far too much weight is given to theory and not enough to practice. Those which do emphasize the practical side seem to throw you in the deep end or assume that all you want is a collection of m/c routines which you can build up as a dedicated toolkit.

I have deliberately emphasized the word PRACTICAL in the title



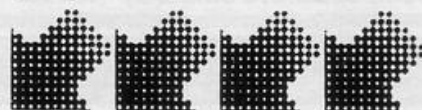
of this opening article because the aim is that you should become increasingly confident in using m/c for practical applications. That means learning from worked examples, starting small in the next article (because we have some background to cover in this one first) and becoming progressively more advanced as the series unfolds. Each routine will be fully explained, together with the actual format of each new Z80 (the name given to the Spectrum Central Processing unit) instruction as it is met. Another drawback of reading books is the boring way most of them have of classifying and categorising the many Z80 mnemonics. You will still learn all you need to know about the format of these instructions, with the all-important difference that you are more likely to understand and remember them in the context of a practical application.

To make it possible for us to start getting down to the nuts and bolts of m/c programming in the next article, I must also assume that you are familiar with the way a computer counts and the way

numbers are represented. For the latter aspect, I would strongly recommend you to re-read my October 1984 "Program Tutor" on numbers. For the rest, there are many good general purpose computing books on your library shelves. Binary and hexadecimal representation and arithmetic (including 2's complement arithmetic) may seem a bit alien at first but you should soon pick it up.

## MAKING A START

First then, we must understand what is meant by Machine Code. The term "low level" used earlier gives the best definition. The lower the level of the language being used to communicate with a computer, the more closely we approach the machine's native dialect. The Z80 microprocessor at the heart of your Spectrum (or Central Processing Unit) really only understands the 0s and 1s which tell it whether a bit is switched OFF or ON. Therefore only binary numbers can properly be called machine code.



Immediately you switch on your Spectrum the Z80 starts working through a pre-programmed set of such machine code instructions. This is the monitor program which is part of the operating system designed by Sinclair Research. It is comfortable to assume that the machine is just sitting there waiting for you to do things to it when, in fact, it has already executed a number of m/c instructions in ROM to initialise the system and await keyboard entry. It is even more comforting to be able to enter Basic or Spectrum based commands and have them automatically converted to m/c by the Basic Interpreter which is also part of the operating system. The fact that these commands have to be interpreted while a Basic program is running explains why such programs run relatively

slowly.

Exactly how the Z80 interprets such binary numbers would mean getting into the electronic wizardry of the microprocessor itself. The m/c programmer need only understand that the Z80 is designed to interpret the binary representations of a set of codes which are instructions for it to do something, usually (but not always) with a number. To make such codes more intelligible to the programmer, mnemonics are



mnemonic which means "load register A with the number, n". This needs to be converted to pre-assigned binary codes to be intelligible to the Z80.

So how can this be m/c programming if such mnemonics have to be converted into m/c? Strictly speaking, the language used by the m/c programmer is not really m/c at all, but a higher level language called assembler. However, as a utility program which is quite independent of the operating system (unlike the Basic interpreter) is used to do the conversion, the name m/c programming is now universally accepted.

The utility program which does this conversion from assembler language (Z80 mnemonics or



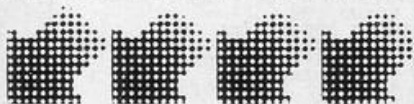
source code) to m/c (object code) is also called an assembler. There are now a number of such programs commercially available for the Spectrum. There are also programs to reverse the process called disassemblers. These take m/c from memory and convert it to assembler code. So, whereas an assembler will convert your Z80 assembler code into m/c, a disassembler can provide the key to understanding m/c written by someone else. Such a program can be a very useful tool when probing the mysteries of the Spectrum ROM, especially if it is equipped with a monitor (not to

be confused with the Spectrum monitor mentioned earlier). This will tell you what is happening to the various flags and registers as the code is being executed. More about these in a moment as they are at the very heart of the subject.

Having extolled the benefits of a good assembler and disassembler, do not feel that you must immediately run out and buy them. All the m/c routines I will be presenting will be accompanied by a Basic program to enter and run, so wait until you get a feel for what is happening. You will then be better able to judge what to buy.

### ADDRESSES AND REGISTERS

Most numbers which your Spectrum has to handle need somewhere to live, besides being present in your program. This

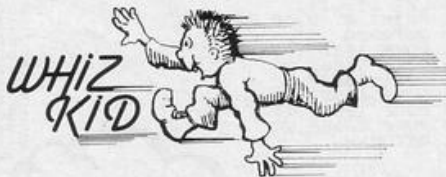


is as true for m/c as it is for Basic. In Basic, we know they are sent off somewhere when we assign a variable name. In m/c, we have to start thinking of these homes for numbers as addresses, so that addressing is the process of taking a number out of its home (or giving it a home!)

It is the Z80 which has to move numbers about in this way. In common with the CPU of the largest mainframe computer, it simply does not have the capacity to communicate directly with every possible address in the outside world of either ROM or RAM so, instead, it gives a number a temporary home inside itself, called a register. A register, then, is a place in the CPU where a number can be operated on, usually (although not always) in between being taken from and passed back to memory.

The Z80 has a number of these registers. The most commonly used of these are labelled A (for Accumulator) and F (for Flags). The A register is favoured by the Z80 to hold the result of an eight bit arithmetic or logical operation. The F register is used to hold important information about the nature of the number held in the A register or the outcome of the execution of the last instruc-

These flags are very important as they are the key to the way the Z80 makes decisions as to which instruction to execute next. A flag



is the result of the CPU's own test of each of six bits in the eight bit F register, to indicate whether a condition is true or false (bit = 1 or 0). The flags themselves must first be set up (again, this is done automatically by the CPU). Which flags are affected depends on the type of operation last executed, so keep this in mind when reading the following list:

**Zero Flag.** This is straightforward enough, as the zero flag is



set if the result is zero.

**Sign Flag.** If you have done your homework on 2's complement arithmetic, you will know that the most significant bit of an eight bit byte indicates a negative number if a "1". So this flag depends on what is held in bit seven (the leftmost bit) of the register.

**Carry Flag.** The single byte registers mentioned can only deal with numbers in the range 0-255. The carry flag is set if the Z80 has to add to numbers in order to exceed this limit (called "binary overflow") or subtract a number from a smaller number ("binary underflow"). This flag is frequently used to make a decision on the comparison of 2 numbers.

The other, less commonly



used, flags which I will explain when we meet them are **Negate**, **Overflow/Parity** and **Half Carry**.

Other registers for general purposes (also eight bit) are labelled B, C, D, E, H and L. These can be paired for 16 bit arithmetic (to handle numbers in the range 0-6553) and take the form AF, BC, DE and HL. There are other register pairs dedicated to certain functions.

```

5 POKE 16418,0
6 LET H$="000000"
7 LET LI=5
8 GOSUB 390
9 GOSUB 70
10 GOSUB 150
11 PRINT AT 1,8;"PRESS P TO PL"
12 IF INKEY$<>"P" THEN GOTO 31
13 PRINT AT 1,8;" "
14 GOTO (USR 16781)+50
15 PRINT AT 1,5;"PRESS N FOR N"
16 IF INKEY$<>"N" THEN GOTO 51
17 GOSUB 70
18 GOSUB 170
19 LET LI=LI+1
20 PRINT AT 0,20;LI
21 GOTO 30
22 POKE 16507,63
23 POKE 16508,0
24 POKE 16517,0
25 POKE 16521,0
26 POKE 16522,0
27 POKE 16523,0
28 RETURN

```

```

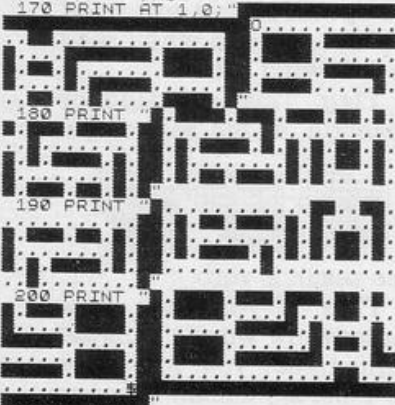
440 PRINT TAB 10;"DOWN=";CHR$ P
441 PRINT TAB 10;"LEFT=";CHR$ P
442 PRINT TAB 10;"RIGHT=";CHR$
443 POKE 16565
444 PRINT "ENTER DIFFICULTY L"
445 PRINT "LEVEL (1-5)"
446 PRINT "OR PRESS R TO RED"
447 PRINT "FINE KEYS"
448 LET A$=INKEY$
449 IF A$="R" THEN GOTO 590
450 IF A$="5" OR A$="1" THEN GO
451 TO 470
452 LET A=(2 AND A$="1")+ (3 AND
453 A$="2")+ (4 AND A$="3")+ (5 AND A
454 A$="4")+ (255 AND A$="5")
455 POKE 17038,A
456 IF INKEY$<>" " THEN GOTO 511
457 PRINT "ENTER SPEED (1-7)"
458 LET A$=INKEY$
459 IF A$="7" OR A$="1" THEN GO
460 TO 530
461 LET A=VAL A$-1
462 POKE 16825,A
463 POKE 16794,A
464 RETURN

```

```

150 CLS
160 PRINT "SCORE:000000 LIVES:"
170 PRINT "HI:";H$
180 PRINT AT 1,0;" "

```



```

190 PRINT " "
200 PRINT " "
210 RETURN
220 LET S$=""
230 LET D=(PEEK 16396+256*PEEK
16397)+8
240 IF LI=1 THEN GOTO 310
250 PRINT AT 1,5;"PRESS N FOR N"
260 IF INKEY$<>"N" THEN GOTO 27
271 PRINT AT 1,5;" "
280 PRINT AT PEEK 16519,PEEK 16

```

```

590 CLS
600 PRINT "ENTER THE NEW KEY FO"
610 PRINT "TAB 10;"UP";
620 GOSUB 790
630 POKE 16569,CODE A$
640 PRINT TAB 10;"DOWN";
650 GOSUB 790
660 POKE 16573,CODE A$
670 PRINT TAB 10;"LEFT";
680 GOSUB 790
690 POKE 16561,CODE A$
700 PRINT TAB 10;"RIGHT";
710 GOSUB 790
720 POKE 16565,CODE A$
730 GOTO 390
740 IF INKEY$<>" " THEN GOTO 790
750 LET A$=INKEY$
760 IF A$=" " THEN GOTO 800
770 PRINT " ";A$
780 RETURN
790 SAVE "BYTEMAN"
800 RUN
810 LET A$="76767400C8000201020
100000000003418ED487B402A0C40097
EFE0DC8641E5CDBB0244051143E002
803CDBD077EFE3F282F2E282849FE2E2
863FE32E1C011"
820 LET A$=A$+"2100197EFE80C8FE
1BCC4941FE0DC8641C600ED52360019
36342A7B4019227B40C9E1287FEFE30C8
FE1BCC4941FE0DC86412336002B3634
2A7B402B227B40C9"
830 LET A$=A$+"E1237FEFE30C8FE1B
CC4941FE0DC86412B36002336342A7B
4023227B40C9E1112100C600ED527FEFE
30C8FE1BCC4941FE0DC8641193600C6
00ED5236342A7B40"
840 LET A$=A$+"C600ED52227B40C9
C5D5E5F5180A402B2283407CFE002820
16012A0C40010D00097EFE2528073C77
F1E1D1C1C9361C2B147AFE0728F218E9

```

Written in a mixture of Basic and machine code is Byteman, a version of the arcade game Pac-man for the 16K ZX-81.

When entering the program first enter as line one REM followed by 130 full stops. Edit line one to make three new lines, so that lines one, two, three and four all consist of a REM statement followed by 130 full stops. Then enter the rest of the Basic program, checking very carefully the data contained in lines 860 onwards. Then type CLEAR. Save

# BYTEMAN

```

520;" ";AT PEEK 16521,PEEK 16522
530 PRINT AT 2,1;"0"
540 LET LI=LI-1
550 GOTO 380
560 FOR A=D TO D+5
570 LET S$=S$+CHR$ PEEK A
580 NEXT A
590 IF VAL S$>VAL H$ THEN LET H
$=S$
600 CLS
610 PRINT AT 5,1;" YOU HAD A 5"
620 OF "VAL S$," WHEN YOU
WERE EATEN."
630 PRINT " " ANOTHER GAME
640 IF INKEY$=" " THEN GOTO 353
650 IF INKEY$="N" THEN STOP
660 GOTO 7
670 PRINT AT 0,20;LI
680 GOSUB 70
690 GOTO 40
700 CLS
710 PRINT TAB 7;"B Y T E M A N"
720 TAB 7;" "
730 PRINT " "
740 PRINT " " A MAGROBYTE PRODU
TION "
750 PRINT " "
760 PRINT "EAT ALL THE PELLET
S (.) AND "
770 PRINT "AVOID THE TERRIBLE
BYTEMAN ($)"
780 PRINT " " KEYS:"
790 PRINT TAB 10;"UP=";CHR$ PEE
K 16569

```

```

7DFE0020DB216400"
800 LET A$=A$+"22854018E121C800
2285400C9CD9240ED48854079FE00C001
01000B78FE0020FA2A0C400118030BC3
7A4200237FEFE1B20F50000CD86420101
000B78FE0020FA18"
810 LET A$=A$+"CB2A0C4011210019
190616160023147EFE762811FE3420F5
3E18905287407A3D328840180210E411
2100200C40233A8940FE002804193D18
F3ED4B8A4006009"
820 LET A$=A$+"360D3A8940ED4B87
40912835381FA7ED527E19FE30282A3A
904077A7ED523A89403D3288407E3290
40360D1814197EA7ED52FE8028083A90
4077193A89403C18"
830 LET A$=A$+"E13A8A40ED4B8840
91C800381A2B7E23FE80C8003A904077
2B3A8A403D3288407E3290403600C923
7E2BF80C803A904077233A8A403C18E5
C978FE00C2AB4179"
840 LET A$=A$+"FE00C818F73A8640
3D3286400602903805FE00C818F8C0C2
41C9"
850 FAST
860 POKE 16510,0
870 POKE 16512,2
880 POKE 16511,28
890 LET A=16543
900 FOR F=1 TO LEN A$ STEP 2
910 POKE A,16+CODE A$+CODE A$(2
)-476
920 LET A$=A$(3 TO )
930 LET A=A+1
940 NEXT F
950 POKE 16520,10
960 SLOW
970 LIST 2000

```

the program and type RUN 860.

After waiting for a few minutes, LIST the program. You should see 0 at the top left hand corner of the screen. Enter one REM followed by POKE 16419,1 and then LIST 1. This procedure should be repeated every time line zero is listed. Now type RUN to play.

Do your best to avoid the greedy byteman while you eat the pellets scattered around the maze. The easiest difficulty level is level one, and the fastest speed is speed one. Once you are certain that the game is functioning correctly, delete lines 860 onwards, save the program, then type RUN 840. The program will then save itself in its finished form and autorun.

# LITTERBUGS

```

10 RESTORE : PAPER 0: BORDER 0
: INK 7: OVER 0: CLS
12 LET a$="CA": LET b$="DB": L
ET s=0: LET h=0
15 GO TO 6000
200 IF ATTR (x1,y1) <> 6 THEN
PRINT INK 5: AT x1+1,y1;"L": G
O SUB 300: LET e=e+1: IF t=0 THE
N FOR j=20 TO 40 STEP 5: BEEP .
01,j: NEXT j
210 IF x1=1 AND y1=31 AND e=9 T
HEN LET z=z+1: LET s=s+100: GO
TO 8000
299 RETURN
300 LET s=s+45: PRINT #0: OVER
0: AT 0,15- LEN STR$ s: INK 6:
PAPER 1:s: RETURN
2000 FOR k=1 TO 2
2005 IF t=0 THEN GO TO 2012
2010 READ n: IF n=7 THEN RESTOR
E 9570: GO TO 2010
2011 BEEP .03,n+12
2030 IF INKEY$ ="2" AND ATTR (
x-1,y)=4 THEN LET x1=x-3: IF t=
0 THEN FOR j=0 TO 30 STEP 5: BE
EP .01,j: NEXT j
2060 IF ATTR (x+2,y)=7 THEN LE
T x1=x+3: IF t=0 THEN FOR j=30
TO 0 STEP -5: BEEP .01,j: NEXT j

2070 LET y1=y+( INKEY$ ="0" AND
y<31)-( INKEY$ ="9" AND y>0)
2080 IF ATTR (x1+1,y1)=6 THEN
GO SUB 200
2090 PRINT AT x,y;a$(i): AT x+1
,y;b$(i): LET i=i+1: IF i=3 THEN
LET i=1
2095 PRINT AT x1,y1;a$(i): AT x
1+1,y1;b$(i): LET x=x1: LET y=y1

2100 IF INKEY$ ="w" THEN IF A
TTR (x+1,y) <> 7 THEN PRINT IN
K 7: AT x+1,y;"N": IF t=0 THEN
FOR j=40 TO 20 STEP -5: BEEP .01
,j: NEXT j
2199 IF k=2 THEN GO TO 2262
2200 LET b1=b+(y>b)-(y<b)
2230 LET a1=a+3*((x+1)>a AND A
TTR (a+1,b)=4)-((x+1)<a AND ATT
R (a-2,b)=4))
2240 IF ATTR (a1+1,b)=7 THEN L
ET a1=a1+3
2242 IF y=b1 THEN IF x+1=a1 THE
N GO TO 4000
2245 IF ATTR (a1,b1)=7 THEN PR
INT AT a,b;"K": INK 5: AT a1,b1
;"N": FOR j=-12 TO 48 STEP 12: B
EEP .01,n+j-12: PRINT AT a1,b1:
"K": BEEP .01,n+j: NEXT j: GO SU
B 300: LET a1=2: LET b1= INT ( R

```

The Litterbugs have been at work, and it is your job to clear up after them. Two of the litterbugs are still present and will chase you as you pick up the rubbish. You can protect yourself by dropping litter baskets in their path. When you have picked up all the litter you can move on to the next screen.

Written for the 48K Spectrum by  
T. Sherwood of West Bromwich,  
West Midlands.

```

ND *32): PRINT AT a,b;"K"
2250 PRINT AT a,b;"K": AT a1,b1
;"K"
2260 LET a=a1: LET b=b1
2261 GO TO 2361
2300 LET d1=d+(y>d)-(y<d)
2330 LET c1=c+3*((x+1)>c AND A
TTR (c+1,d)=4)-((x+1)<c AND ATT
R (c-2,d)=4))
2340 IF ATTR (c1+1,d)=7 THEN L
ET c1=c1+3
2342 IF y=d1 THEN IF x+1=c1 THE
N GO TO 4000
2345 IF ATTR (c1,d1)=7 THEN PR
INT AT c,d;"K": INK 5: AT c1,d1
;"N": FOR j=48 TO -12 STEP -12:
BEEP .01,n+j: PRINT AT c1,d1;"K
": BEEP .01,n+j-12: NEXT j: GO S
UB 300: LET c1=3*(2+( INT ( RND
*6))) -1: LET d1=31: PRINT AT c,
d;"K"
2350 PRINT AT c,d;"K": AT c1,d1
;"K"
2360 LET c=c1: LET d=d1
2999 NEXT k: GO TO 2000
4005 PRINT AT a,b;"K": AT c,d;"
K"
4010 FOR j=1 TO 21: PRINT AT x,
y;a$(i): AT x+1,y;b$(i): BEEP .0
05,j: BEEP .005,j+10: BEEP .005,
j+20: NEXT j
4030 FOR j=x TO 0 STEP -1: PRINT
AT j,y;"A": AT j+1,y;"B": BEEP
.03,40-j*2: BEEP .02,50-j*2: BE
EP .02,60-j*2: PRINT AT j,y;"A"
: AT j+1,y;"B": NEXT j
4060 LET l=1-1: IF l=0 THEN GO
TO 4400
4399 GO TO 8500
4400 PRINT OVER 0: PAPER 2: INK
7: AT 7,5;"
": AT 8,5;" GAME OVER
": AT 9,5;"
": AT 10,5;" PRESS KEY 0 TO
START ": AT 11,5;"
"
4410 PRINT #0: AT 0,26: PAPER 1:
" ": AT 1,26: PAPER 1:" "
4450 IF INKEY$ <> "0" THEN GO
TO 4450
4452 CLS : GO TO 7700
6000 FOR i=USR "a" TO USR "n"+
7
6001 READ j: POKE i,j: NEXT i
6002 GO SUB 9000
6005 DATA 112,154,159,61,93,117,
124,56,8,62,93,157,21,116,119,7,
14,89,249,188,186,174,62,28,16,1
24,186,185,168,46,238,224
6010 DATA 239,239,239,0,254,254,

```



254,0,126,66,126,66,126,66,126,6  
6,255,255,255,252,240,240,224,22  
4  
6015 DATA 255,231,255,0,0,0,0,0,  
255,255,255,63,15,15,7,7,255,255  
183,221,107,170,84,0  
6020 DATA 60,126,219,255,195,195  
126,60  
6025 DATA 0,100,40,20,126,44,88,  
0  
6026 DATA 60,126,255,255,255,255  
255,159,0,0,195,36,66,36,66,60

7700 LET z=1: IF s>h THEN LET h  
=s  
7710 LET l=3: LET s=0  
7720 PRINT INK 5; AT 11,0;"Pres  
s key "; INK 6;"T"; INK 5;" for  
continuous tune,"; AT 13,3;"or k  
ey "; INK 6;"S"; INK 5;" for sou  
nd effects."  
7721 PRINT AT 19,21;"C A A"; IN  
K 5; AT 20,21;"D B B"  
7724 IF INKEY\$="t" THEN LET t  
=1: GO TO 7730  
7725 IF INKEY\$="s" THEN LET t  
=0: GO TO 7730  
7729 GO TO 7724  
7730 IF INKEY\$ <> "" THEN GO  
TO 7730  
8003 FOR i=-24 TO 48 STEP 12: BE  
EP .05,i: NEXT i  
8005 IF z>5 THEN LET z=1  
8010 OVER 0: INK 7: PAPER 0: CLS

8011 PRINT AT 0,0;" LITTERBUGS  
SCREEN ";z  
8012 PRINT AT 0,0: INK 3: OVER  
1;"(22\*ig3)"; INK 5;"(8\*ig3)"; I  
NK 3;"(2\*ig3)"  
8013 FOR i=2 TO 20 STEP 3: PRINT  
INK 5; AT i,0;"

" : NEXT i  
8015 RESTORE 8000+100\*z  
8017 PRINT INK 6; AT 1,31;"M";  
AT 2,31;"(ig8)"  
8020 READ x,y: IF x=99 THEN GO  
TO 8050  
8025 PRINT INK 2: PAPER 6; AT x  
y;"EEEEEE": GO TO 8020  
8050 READ x,y: IF x=99 THEN GO  
TO 8061  
8060 PRINT INK 3: PAPER 6; AT x  
y;"EEEEEE": GO TO 8050  
8062 READ x,y: IF x=99 THEN GO  
TO 8065  
8064 PRINT INK 4: PAPER 1; AT x  
y;"JJJJJJ": GO TO 8062  
8070 READ x,y: IF x=99 THEN GO  
TO 8072  
8071 PRINT INK 5; AT x,y;"GHHHI  
": GO TO 8070  
8072 READ x,y: IF x=99 THEN GO  
TO 8074  
8073 PRINT INK 4; AT x,y;"F"; A  
T x+1,y;"F"; AT x+2,y;"F": GO TO  
8072  
8075 FOR i=1 TO 9: READ x,y: PRI  
NT INK 6; AT x,y;"L": NEXT i  
8080 LET e=0  
8090 PRINT AT 21,0: INK 2; PAPE

R 6;"EEEEEEEEEE"; INK 3;"EEEEEEE  
EEE"; INK 2;"EEEEEEEEEEEEE"  
8100 DATA 3,8,3,14,3,26,6,1,9,6,  
9,12,9,20,15,2,15,6,15,12,99,0

8105 DATA 6,20,6,26,12,0,12,6,12  
9,12,20,12,26,15,23,15,26,18,0,  
18,6,18,10,18,18,18,26,99,0  
8110 DATA 3,20,3,22,6,7,15,9,99,  
0  
8115 DATA 9,15,18,9,18,21,99,0

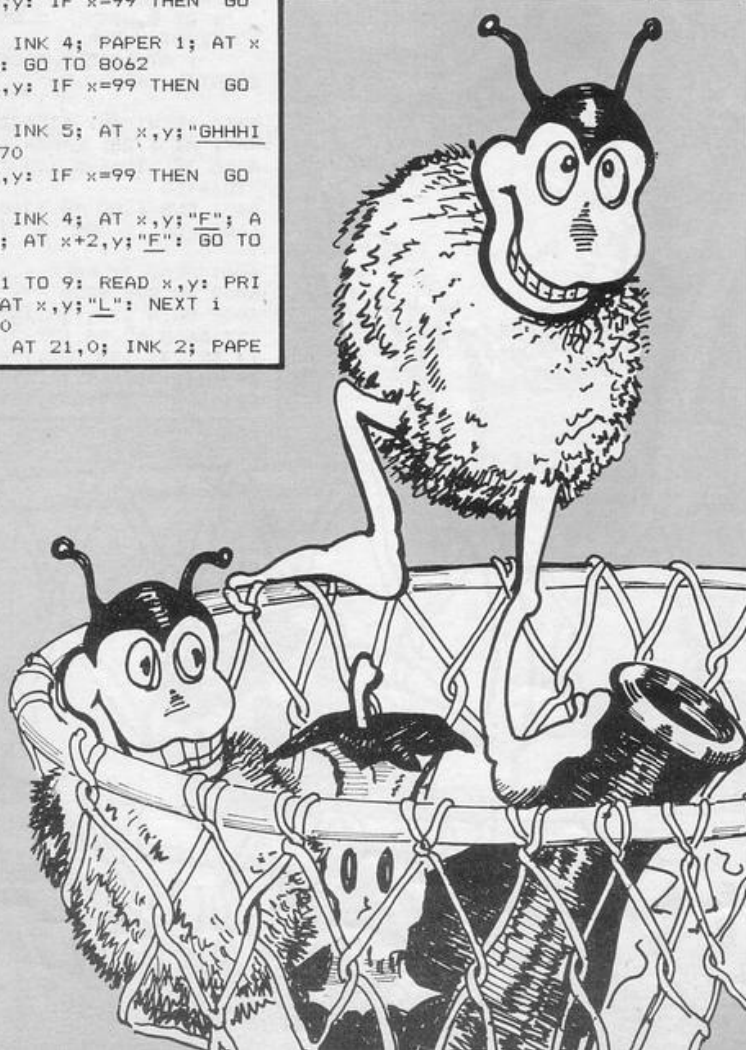
8120 DATA 3,27,6,10,6,23,9,7,12,  
12,12,24,15,4,15,29,18,8,18,20,9  
9,0  
8121 DATA 14,2,20,6,2,9,5,30,8,1  
2,11,21,17,6,17,18,20,19  
8200 DATA 3,2,3,14,12,16,12,22,1  
5,7,15,26,99,0  
8201 DATA 3,8,9,6,9,17,9,23,9,25  
12,5,12,7,15,23,99,0  
8202 DATA 3,20,3,26,9,11,15,1,99  
0  
8203 DATA 6,11,6,16,15,13,18,7,1  
8,13,18,19,99,0  
8204 DATA 3,6,6,6,6,21,9,27,12,1  
5,15,12,15,18,18,6,18,12,18,18,1  
8,24,99,0,5,12,8,18,8,29,11,10,1  
4,2,14,30,20,22,2,4,17,8  
8300 DATA 6,12,6,14,9,9,9,15,15,  
12,15,14,18,5,18,23,18,26,99,0

8301 DATA 6,2,6,5,6,20,12,16,12,  
21,15,19,15,26,99,0  
8302 DATA 9,26,12,1,12,8,15,6,99  
0  
8303 DATA 3,8,3,22,3,27,18,0,18,  
11,99,0  
8304 DATA 3,7,3,13,3,21,6,10,9,1  
8,12,23,15,8,15,30,18,16,99,0  
8305 DATA 5,5,14,30,2,11,8,30,11  
10,14,6,17,0,17,24,20,21  
8400 DATA 3,26,9,0,9,13,12,4,12,  
8,12,17,12,20,18,19,18,21,99,0,3  
9,3,15,6,1,6,4,9,10,9,19,15,26,  
99,0,6,20,6,26,18,0,18,6,99,0  
8401 DATA 12,26,15,8,15,13,15,18  
18,27,99,0,3,21,3,28,6,23,9,11,  
9,21,12,9,15,7,15,23,18,25,99,0  
8402 DATA 2,26,5,9,5,31,8,4,11,1  
3,11,17,14,28,17,1,17,28  
8500 DATA 3,6,3,8,6,1,6,18,6,19,  
6,25,9,6,9,21,15,16,15,23,15,26,  
18,8,99,0,3,22,3,26,6,4,12,0,12,

22,12,24,18,0,18,12,99,0  
8501 DATA 3,0,3,14,9,26,12,16,99  
0,9,13,15,3,15,11,18,23,18,27,9  
9,0,3,8,3,23,6,2,9,2,9,12,12,12,  
15,20,18,20,18,27,99,0  
8503 DATA 2,6,8,22,11,0,11,16,14  
4,14,27,17,0,17,14,17,31  
8509 LET c=3\*(2+(INT (RND \*6)))  
) -1: LET d=31: LET x=19: LET y=0  
: LET x1=x: LET y1=y: LET a=2: L  
ET b=INT (RND \*32)  
8510 PRINT #0: PAPER 1; AT 0,0;"

"  
8515 PRINT #0: INK 6: PAPER 1; A  
T 0,4;"SCORE 00000"; INK 5; AT 1  
1;"HI SCORE 00000"; INK 4; AT 1  
20;"LIVES"  
8516 PRINT #0: AT 0,15- LEN STR  
\$ s; INK 6; PAPER 1;s; AT 1,15-  
LEN STR\$ h; INK 5; PAPER 1;h  
8590 OVER 1: INK 8: PAPER 8  
8700 LET i=1: PRINT AT x,y;a\$(i  
); AT x+1,y;b\$(i); AT a,b;"K"; A  
T c,d;"K"  
8703 RESTORE 9540  
8705 FOR k=1 TO 2: PRINT #0; AT  
0,26; FOR j=1 TO 1: PRINT #0; P  
APER 1;a\$(k); " "; NEXT j  
8710 PRINT #0; AT 1,26; FOR j=1  
TO 1: PRINT #0; INK 5; PAPER 1;  
b\$(k); " "; NEXT j  
8720 READ n: IF n=0 THEN RESTOR  
E 9540: GO TO 8720  
8725 BEEP .01,n: BEEP .01,n+12:  
BEEP .01,n+12: BEEP .01,n+24: BE  
EP .01,n+36: NEXT k  
8730 IF INKEY\$ <> "0" THEN GO  
TO 8705  
8799 RESTORE 9570: GO TO 2000  
9003 PRINT INK 4; AT 4,2;"The 1  
litterbugs have left litte  
r all around. Help me to co  
llect all the rubbish."  
9004 PRINT INK 5; " The angry  
litterbugs usually chase me b  
ut I can protect myself by  
leaving litter baskets in  
their path for them to cr  
ash into."

9005 GO SUB 9006: GO TO 9110  
9006 PRINT INK 6; AT 0,11;"LITT  
ERBUGS": PLOT 42,19: RESTORE 911  
3: FOR i=1 TO 12: READ x,y: DRAW  
x,y: NEXT i: PRINT INK 6; AT 1  
4,2;"Press key 0 to continue....  
"; INK 5; AT 21,4;"D"; INK 6;"  
L LL LN L";#0; AT 0,1: INK 2  
; PAPER 6;"EEEEEEEEEEEEEEEEEE"  
9007 FOR i=30 TO 60: IF INKEY\$  
<> "0" THEN PRINT AT 20,4;a\$(  
i/30): NEXT i: GO TO 9007  
9035 IF INKEY\$ <> "" THEN GO  
TO 9035  
9039 CLS : RETURN  
9110 PRINT INK 6; AT 4,2;"If I  
pick up all the litter then  
I can pass through the door  
at the top which takes me to  
the next screen."  
9111 PRINT INK 5; "" Th  
ere are 5 diffe  
rent screens."  
9113 DATA 14,22,-44,3,-12,8,6,88  
4,8,116,8,116,-4,8,-8,5,-88,-12  
-4,-176,-10,-25,-23  
9114 GO SUB 9006  
9118 PRINT INK 2: PAPER 6; AT 4  
6;" CONTROL KEYS "  
9120 PRINT INK 4; AT 6,6;"LEFT  
9"; AT 8,6;"RIGHT  
0"; AT 10,6;"CLIMB  
2"; AT 12,6;"PUT DO  
UP LADDER  
WN A BASKET W"  
9125 GO SUB 9006: RETURN  
9540 DATA 2,2,4,4,5,5,4,4,2,2,5,  
5,9,9,9,9,2,2,4,4,5,5,4,4,2,9,7,  
4,2,2,2,0  
9570 DATA 1,1,3,3,6,8,10,10,6,6,  
8,8,10,8,6,6,10,10,8,8,3,3,3,8  
8,6,6,1,1,1,7  
9581 DATA 2,1,2,1,2,1,2,3,2,3,2,  
3,3,6,3,8,6,10,2,6,2,6,2,6,2,8,2  
8,2,8,3,10,3,8,6,6  
9582 DATA 2,10,2,10,2,10,2,8,2,8  
2,8,3,3,3,3,6,3,2,8,2,8,2,8,2,6  
2,6,2,6,3,1,3,1,6,1,7,0





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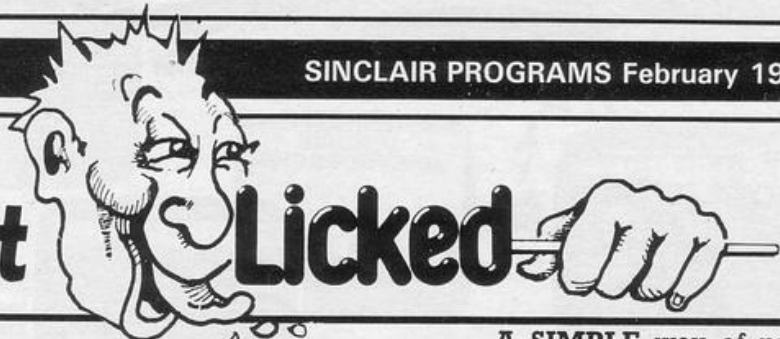
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## You've got it Licked



Do you have any helpful suggestions for Sinclair programmers? Send them to Got it Licked, Sinclair Programs, 67 Clerkenwell Road, London EC1R 5BH. We pay £2 for every suggestion published.



AS I sat down to read my November issue of *Sinclair Programs*, I read a letter from A Horrocks which said that he wanted to know a program which would produce high-resolution graphics on our old friend, the ZX-81. I have found that a nine line program made up of POKE statements can achieve this.

```
10 REM.....
20 POKE 16514,62
30 POKE 16516,237
40 POKE 16517,71
50 POKE 16518,201
60 FOR N=0 TO 30
70 POKE 16515,N
90 RAND USR 16514
100 NEXT N
```

The program produces high resolution graphics on the screen, but you cannot control them.

**Anthony Empson,**  
aged 15,  
Plymouth, Devon.



ON THE subject of hi-res display on the ZX-81. I should like to share the following information with readers. The following routine sets the ZX-81's I register to 0. As the start of the Z80's dot pattern table is determined by the I register, any CHR\$ PRINTed, followed by RAND USR 16514 will be turned into a meaningless pattern. POKEing 16515,30 will return the characters to normal.

```
HEX
3E 00 LDA 0
ED 47 LD I A
C9 RET
MAIN PROGRAM
PRINT CHR$ 255
RAND USR 16514
PAUSE 4E4
POKE 16515,30
RAND USR 16514
```

**Philip Parker,**  
Whitnash,  
Leamington Spa.



I AM writing in reply to A Horrocks letter in the November issue of *Sinclair Programs*. In all my magazines which contain high resolution graphics the main principles are:

```
28 FAST
29 FOR I=0 TO 112
30 POKE 31744+I,PEEK(2161+I)
31 NEXT I
32 POKE 31800,63
33 POKE 31857,201
36 SLOW
```

Before you enter this program you must enter POKE 16389,124 NEWLINE followed by NEWLINE. Then dimension an array: DIM A\$(32,256). After you have done this do not use RUN or you will have to start again.

**G Bayliss,**  
Headington, Oxford.

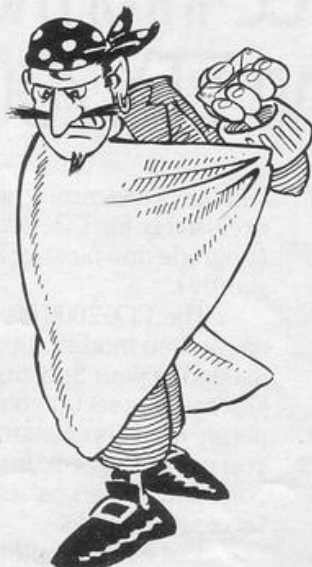
A USEFUL memory-saving statement which I use in my ZX-81 program is PAUSE 4E4. This enables you to PAUSE the program in which it appears for as long as you like, until you press any key on the keyboard. It will then continue the program. This statement saves the two or three lines normally needed to achieve this.

**William Turner,**  
Staunton, Glos.



I WONDER if your readers are aware of the fact that, if they are having trouble using colour TVs as monitors, they can have their TV modified to make it compatible with the computer. I had my TV modified by a local TV shop for £15. I have now found a new life. Games are far more enjoyable, and programming easier when the colours are so clear.

**R M Foss,**  
Manchester.



A SIMPLE way of protecting your secret programs and games from local pirates is to begin an auto-running Spectrum program with the command RAND USR 2000.

This will produce the report TAPE LOADING ERROR on screen. No matter how many times they try to load your secret program, they will always think that it has not loaded correctly.

**June Cameron,**  
Salisbury,  
Wiltshire.



I BELIEVE that I have conquered loading problems on the ZX-81. I have written down my tips.

It is best to use a cassette recorder which has only a volume control and not a tone control.

Leave the volume control at maximum, and do not use the cassette recorder for any other purpose.

Check that the leads are secure.

I believe that this system will successfully LOAD and SAVE programs all the time.

Secondly, although your magazine is one of the better ones on the market, you should have more serious programs.

**Julian Wadden, aged 13,**  
Birchington, Kent.

# EASY GRAPHICS

**W**ORKING steadily through the Sinclair manual provides a sound introduction to Basic but it does mean that readers have to work through user-definable functions and simple trigonometry before reaching the section concerning graphics. This is a pity, for it means encountering some of the more difficult elements of Basic before learning to use the more enjoyable parts.

Graphics on the Spectrum can be divided into two types. There are the graphic symbols which appear on keys one to seven and the user-defined graphics.

Initially, the graphic symbols appear to be the easiest to use. Change to graphics mode by pressing CAPS SHIFT and key nine, then press any of the keys one to seven, and a graphics character will appear on screen immediately. Simple but, unfortunately, not very useful.

Not even the most artistic programmer could hope to produce a good picture on the Spectrum by pressing the graphics keys in various combinations. The only way of producing a good picture is to sit down with some graph paper and design a picture, square by square.

A further problem is that not all combinations of squares can be obtained by simply entering graphics mode.

Take key five, for example; pressing this whilst in graphics mode will produce a square, the right hand side of which is black, and the left hand side of which is white. To produce a square which is the reverse of this, with black on the left and white on the right, it is necessary to hold down the CAPS SHIFT key while you press key five. The resulting character is known as an inverse graphic.

Working out a picture without squared paper can prove very difficult, even when you know it can be done. This is why *Sinclair Programs* sometimes employs graphics instructions when pic-

tures are to be entered. These graphics instructions tell you which keys to press instead of telling you which characters will appear on screen. Each month these graphics instructions are explained on page five.

Combinations of graphics, inverse graphics and the normal character set can be very effective. It is, however, very difficult to move large pictures created in this way, whether you want to move them in one direction or animate them in any way. The best way of using such graphics is as the background for a game.

User-defined graphics allow you to work with the smallest characters on the screen, pixels. These are so small that graphics made up of them appear very clear and precise. The alphabet which the Spectrum prints on screen, for example, consists of twenty-six graphic characters.

To define a graphic it is, once again, necessary to find some graph paper. Characters consist of eight rows of eight pixels, so you will need a square made of 64 smaller squares.

To work out the data you will need to store in the computer's memory, take the horizontal rows one at a time. Write down an eight digit number correspond-

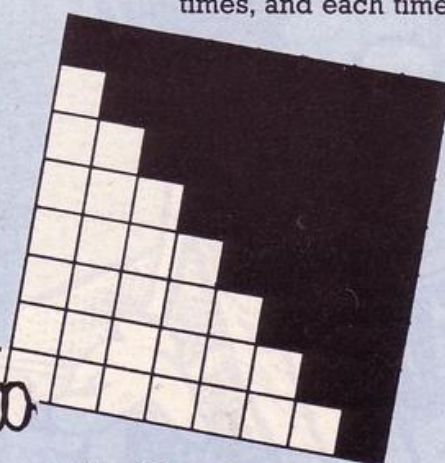
ing to each row, with a figure one corresponding to each filled in square, and a zero corresponding to each blank square. The character in figure one for example, would require the eight numbers 11111111, 01111111, 00111111, 00011111, 00001111, 00000111, 00000011 and 00000001.

These eight numbers can then be treated as binary numbers. They could be given to the computer as such but that would require a lot of space in the listing, and it is very easy to make a mistake when entering long strings of ones and zeros. Instead, convert them from binary to decimal. The eight numbers corresponding to figure one now become 255, 131, 63, 31, 15, 7, 3 and 1.

To use these numbers to form a graphics character, select the character you want to use; graphic A, for example. The following three lines will enter the information for you.

```
10 FOR n=0 TO 7
10 INPUT b: POKE USR "A"+n, b
30 NEXT n
```

The program will pause eight times, and each time



you should type in one of your eight numbers. Changing to graphics mode and pressing A will now produce your user-defined graphic.

To prevent your having to type in figures every time you define a character, these figures are usually stored within data statements.

# Programming - Slow and easy with Computer Sloth



**M**atchstick puzzle is a version of the well known puzzle in which you have to force your opponent to take the last match. Your opponent in this case is the computer. The puzzle starts with thirty matches on the table. Remove either one, two or three matches in your bid to leave one remaining.

Written for the 16K Spectrum by Kwok Hung Tang, aged 12 of Coalville, Leicestershire.

This game uses special graphics characters and you should turn to Page 3 to find out how to enter them. Take care, particularly with the underlined letters a and b. These are not ordinary letters, as they must be entered by pressing a and b in graphics mode.

## VARIABLES

A variable is a name given to a location in memory used by a program to store information. As

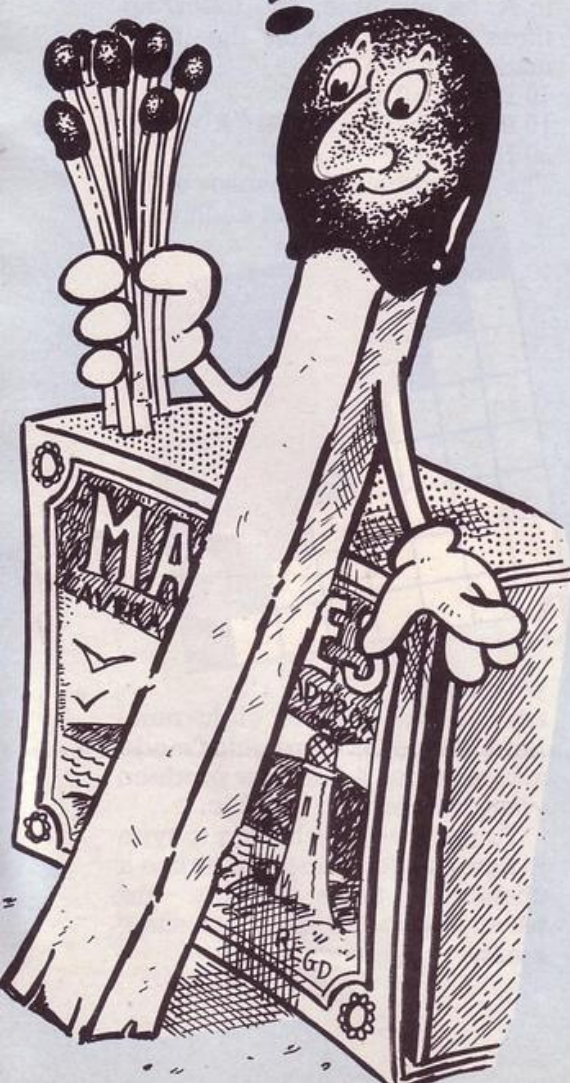
computer an equal chance of taking the first turn by testing a random number d (this may be 1 or 2).

200-350

This is the main loop in which the player and computer take turns at taking matches. Lines 200-220 control the player's turn with line

# MATCHSTICK PUZZLE

??



the value of a variable changes, so the contents of this location are altered. A list of the important variables follows and will help you to understand how "MATCHSTICKS" works:

graphic "a" is the matchstick head

graphic "b" is the matchstick stalk

ms is the number of matchsticks

t is the number of matchsticks taken

## HOW IT WORKS

### Line

### Numbers What they Do

10 Sets up screen colours.

30-50 Read data for User Defined Graphics. Data, for graphic "a" is in line 40 and "b" in line 50.

60-90 Ask whether instructions are wanted. The program then either prints instructions or starts to play.

100-126 Print instructions.

130-180 Set initial number of matchsticks (ms) to 30. The computer is then sent to the subroutine at Line 1000. At the start of the game this will show 30 matches (with ms=30 and t=0).

190 Gives either player or

200 giving the "LOSE" message if the player ends up with the last match (when ms equals 1). Line 215 ensures that the number of matches taken can only be 1, 2 or 3. Line 220 calls the subroutine at Line 1000 to show matches remaining. Lines 295-350 are for the computer's turns. Line 300, 310 and 320 simply make sure that the computer takes the right number of matches to leave the player with the last. Line 330 means that the computer has been left with the last match and gives the player a "WIN" message. Line 335 is a "dummy" FOR/NEXT loop which simply slows the program down between turns, and creates an illusion of the computer having to think a bit. Line 340 is the big let down because here we discover that the computer has no strategy at all (except for the last few matches —

lines 300-320).

1000-1040 This is the subroutine for printing the number of remaining matches after the screen is cleared. This is done graphically, numerically and on a BEEP count. Yet another delay is put in at line 1035.

You might like to try improving the game by giving the computer a strategy to work with. You need to start with 29 matches (instead of 30) and replace line 340 where the computer starts second.

The idea is quite simple: A player may take 1, 2 or 3 matches at a time. All the computer has to do is to make this up to 4. Then, after 7 turns,  $7 \times 4 = 28$  matches are gone so that it is left to the player (being first to start) to take the last.

```
10 BORDER 7: PAPER 7: INK 0: C
LS
30 RESTORE : FOR f=USR "a" TO
USR "b"+7: READ a: POKE f,a: N
EXT f
40 DATA 0,24,60,126,126,126,60
,24
50 DATA 24,24,24,24,24,24,24,2
4
60 PRINT AT 21,0:"Do you want
instructions (y/n)? "
```

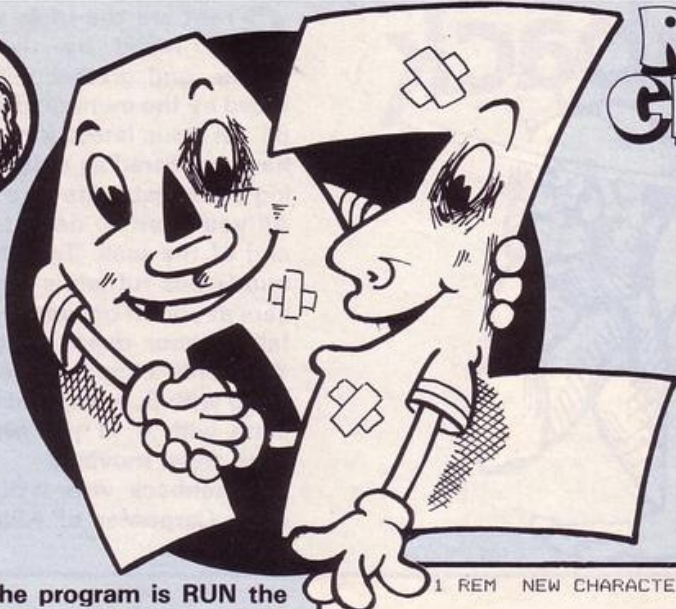
```
70 IF INKEY$="n" OR INKEY$
="N" THEN BEEP .5,20: GO TO 130
```

```
80 IF INKEY$="y" OR INKEY$
="Y" THEN BEEP .5,10: GO TO 100
```

```
90 GO TO 70
100 BORDER 3: PAPER 7: INK 0: C
LS
110 PRINT FLASH 1: AT 0,7:"MAT
CHSTICK PUZZLE!"
120 PRINT AT 2,0:" The object
of the game is to force the co
mputer to take the last match.T
he most amount of matchsticks y
ou can take at one time is 3,th
e least is 1."
125 PRINT #1:" Press any ke
y to play": FOR m=0 TO 60: BEEP
.01,m: NEXT m: PAUSE 0
126 FOR m=0 TO 10: BEEP .01,m:
NEXT m
130 LET ms=30: LET t=0: BORDER
4: PAPER 5: CLS
180 GO SUB 1000
190 LET d=INT ( RND *2+1): IF
d=2 THEN GO TO 295
200 IF ms=1 THEN CLS : PRINT
AT 10,8:"You lose (HA HA)": AT 1
1,1:"Press any key for another g
ame": PAUSE 0: RUN
205 PRINT AT 19,11: FLASH 1:"Y
OUR TURN"
210 INPUT "How many matches do
you want to take?":t
215 IF t<1 OR t>3 THEN GO TO 2
10
216 FOR m=1 TO t: BEEP .3,m: NE
XT m
220 GO SUB 1000
295 PRINT FLASH 1: AT 21,12:"M
y turn"
300 IF ms=4 THEN LET t=3: GO S
UB 1000: GO TO 200
310 IF ms=3 THEN LET t=2: GO S
UB 1000: GO TO 200
320 IF ms=2 THEN LET t=1: GO S
UB 1000: GO TO 200
330 IF ms=1 THEN CLS : PRINT
```



```
AT 10,8:"You win (Huh)": AT 11,1
:"Press any key for another game
": PAUSE 0: RUN
335 FOR w=0 TO 500: NEXT w
340 LET t=INT ( RND *3+1): PRI
NT AT 20,8:"I take ";t;" matche
s": FOR m=1 TO t: BEEP .3,m: NEX
T m: FOR h=0 TO 300: NEXT h: GO
SUB 1000
350 GO TO 200
1000 LET ms=ms-t: CLS : FOR g=1
TO ms: PRINT AT 5,g: INK 2;"A":
BEEP .01,g
1020 PRINT AT 6,g: INK 0;"B": A
T 7,g: INK 0;"B": AT 8,g: INK 0;
"B"
1030 NEXT g: PRINT AT 0,7: INK
0:"MATCHSTICK PUZZLE!": AT 1,0:"
Matchsticks=";ms
1035 FOR w=0 TO 200: NEXT w
1040 RETURN
```



## REFORMED CHARACTERS

When the program is RUN the alphabet is displayed in the new style. Once this has finished press NEW and ENTER. Then POKE 23606,88: POKE 23607,251 and ENTER. A basic program can now be LOADED or typed in and any capital letters within the program will appear in the new design.

Reformed Characters was written for the 48K Spectrum by T. Sherwood of West Bromwich, West Midlands.

1 REM NEW CHARACTER SET.

2 REM INSTRUCTIONS :-  
LOAD this program from tape then RUN.

When display says "FINISHED", press NEW [ENTER]

Then POKE 23606,88 :

POKE 23607,251 [ENTER]

3 REM Now type in or LOAD any BASIC program. Any capital letters will be to a different design.

9400 CLEAR 64599

9405 PRINT AT 5,9: FLASH 1:" PL EASE WAIT "

9410 FOR i=15616 TO 16384

9411 LET j=i+48984

9415 POKE j, PEEK i: NEXT i  
9420 POKE 23606,88: POKE 23607,251

9500 FOR i=64865 TO 65072: READ j: POKE i,j: NEXT i

9501 DATA 60,126,102,126,126,102,102,0,124,126,102,124,102,126,124,0,60,126,96,96,96,126,60,0,120,124,102,102,102,124,120,0,126

9502 DATA 126,96,124,96,126,126,0,126,126,96,124,124,96,96,0,60,126,96,110,98,126,60,0,102,102,102,126,102,102,0,126,126,24

9503 DATA 24,24,126,126,0,6,6,6,6,102,126,60,0,100,108,104,112,120,108,102,0,96,96,96,96,96,126,126,0,102,126,126,102,102

9504 DATA 102,0,102,118,118,126,110,110,102,0,60,126,102,102,102,126,60,0,124,126,102,124,120,96,96,0,60,126,102,102,118,110

9505 DATA 60,0,124,126,102,124,108,102,102,0,60,126,96,126,6,126,60,0

9506 DATA 126,126,24,24,24,24,24,0,102,102,102,102,102,126,60,0,102,102,102,102,102,60,24,0,102,102,102,126,126,102,0,102

9507 DATA 102,60,24,60,102,102,0,102,102,102,60,24,24,24,0,126,126,14,24,112,126,126,0

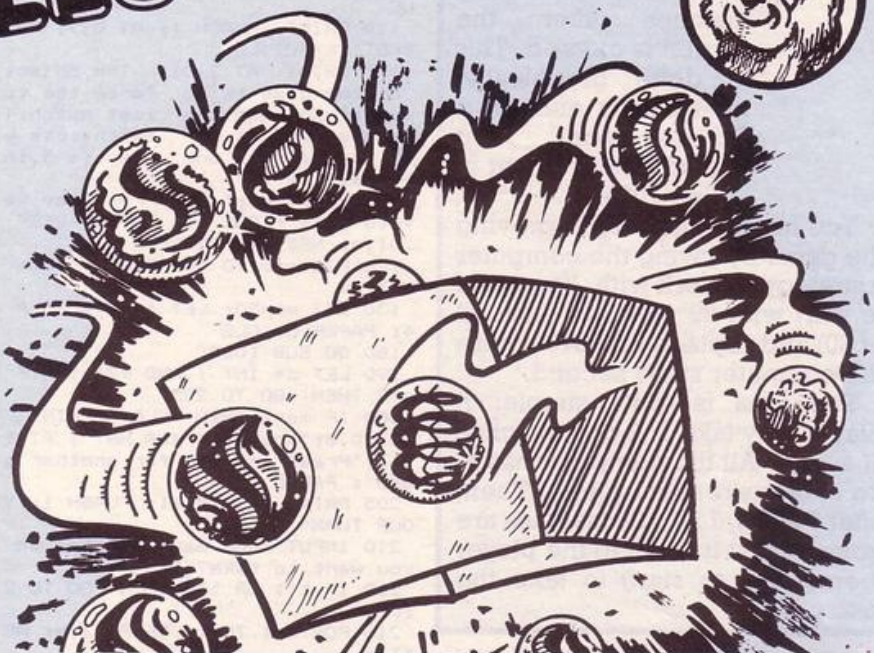
9600 PRINT AT 5,9: " FINISHED "

9610 PRINT AT 15,2:"ABCDEFGHIJK LMNOPQRSTUVWXYZ"

# MARBLES



```
1 LET SC=PI-PI
2 LET R=SC
3 LET F=E
100 CLS
110 FOR A=1 TO 9
120 PRINT AT A,1;"0"
130 NEXT A
140 IF SC>9 THEN GOTO 400
150 LET B=INT (RND*9)+1
160 PRINT AT B,22;">"
170 PAUSE 100
180 IF INKEY$="" THEN GOTO 500
190 LET C=CODE INKEY$-28
200 FOR D=1 TO 20
210 PRINT AT C,D;"0"
220 NEXT D
230 IF C<>B THEN LET E=E+1
240 IF E=3 THEN GOTO 500
250 IF E>0 AND E<3 THEN GOTO 30
260 IF C=B THEN LET SC=SC+1
270 GOTO 100
300 CLS
310 PRINT "MISSED"
315 PAUSE 100
320 GOTO 100
400 CLS
410 PRINT "YOU WIN"
415 PAUSE 100
420 STOP
500 CLS
510 PRINT "TOO SLOW"
515 PAUSE 100
517 LET E=E+1
518 LET F=F+1
519 IF F=3 THEN GOTO 500
520 GOTO 100
600 CLS
610 PRINT "BANG"
615 PAUSE 100
620 STOP
```



**I**T SEEMED like a simple game of marbles. Nine marbles on the left, as soon as a box appeared on the right you pressed the number of the corresponding marble. Ten marbles into the boxes and you had won.

All appeared easy, until you discovered that missing a box primed a bomb, and that your third miss would cause it to explode. Can you win before you die?

Written for the 1K ZX-81 by Katy Cameron, from Fife, Scotland.



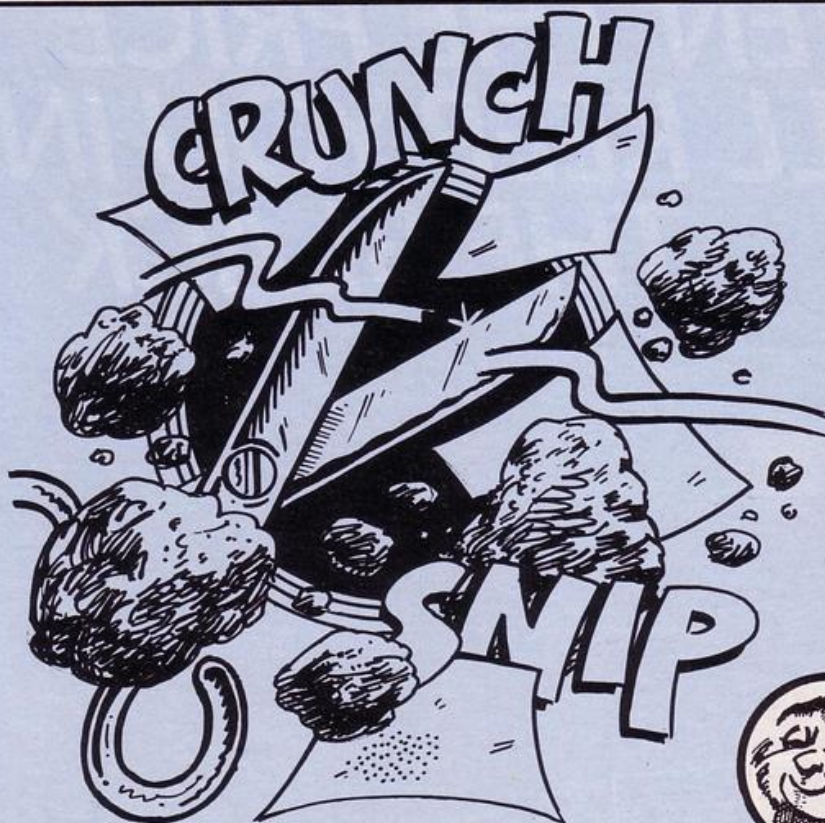
# Hunchback



**G**reat are the trials which must be faced by the computer owner, and greater still are those faced by the owners of the 16K ZX-81. In your latest incarnation you have appeared as a Hunchback, living a peaceable life on a castle wall. All you want to do is to reach the end of the wall. Trouble is, that a murderous ruffian is throwing saucers at you. If one hits you, you will fall to your death from the wall. Your only chance is to move forward with 8, backward with 5, and jump with 0. If you want to stay alive, keep moving.

Hunchback was written by Andrew Carpenter of Abingdon, Oxfordshire.

```
1 LET SC=0
2 LET F=0
3 LET E=0
4 LET G=0
5 LET H=0
6 LET I=0
7 LET J=0
8 LET K=0
9 LET L=0
10 LET M=0
11 LET N=0
12 LET O=0
13 LET P=0
14 LET Q=0
15 LET R=0
16 LET S=0
17 LET T=0
18 LET U=0
19 LET V=0
20 LET W=0
21 LET X=0
22 LET Y=0
23 LET Z=0
24 LET A=0
25 LET B=0
26 LET C=0
27 LET D=0
28 LET E=0
29 LET F=0
30 LET G=0
31 LET H=0
32 LET I=0
33 LET J=0
34 LET K=0
35 LET L=0
36 LET M=0
37 LET N=0
38 LET O=0
39 LET P=0
40 LET Q=0
41 LET R=0
42 LET S=0
43 LET T=0
44 LET U=0
45 LET V=0
46 LET W=0
47 LET X=0
48 LET Y=0
49 LET Z=0
50 LET A=0
51 LET B=0
52 LET C=0
53 LET D=0
54 LET E=0
55 LET F=0
56 LET G=0
57 LET H=0
58 LET I=0
59 LET J=0
60 LET K=0
61 LET L=0
62 LET M=0
63 LET N=0
64 LET O=0
65 LET P=0
66 LET Q=0
67 LET R=0
68 LET S=0
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1200 LET G=0
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1210 LET Q=0
1211 LET R=0
1212 LET S=0
1213 LET T=0
1214 LET U=0
1215 LET V=0
1216 LET W=0
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1343 LET T=0
1344 LET U=0
```



## SCISSORS PAPER ROCK

**C**HALLENGE your 1K ZX-81 to a game of Scissors, Paper, Rock. Select one of these three objects by pressing S, P or R. The computer will also make a choice. Scissors

```

1 LET S=PI-PI
2 LET C=S
3 IF C>9 THEN GOTO 34
4 IF S>9 THEN GOTO 31
5 PAUSE 90
6 CLS
7 PRINT "S,P OR R"
8 PRINT "YOU ";S
9 PRINT "ME ";C
10 INPUT A$
11 CLS
12 LET B=INT (RND*3)+1
13 IF B=1 AND A$<>"S" THEN GOT
14 IF B=2 AND A$<>"P" THEN GOT
15 IF B=3 AND A$<>"R" THEN GOT
16 CLS
17 PRINT "SAME"
18 GOTO 3
19 PRINT "SCISSORS"
20 IF A$="P" THEN LET C=C+1
21 IF A$="R" THEN LET S=S+1
22 GOTO 3
23 PRINT "PAPER"
24 IF A$="S" THEN LET S=S+1
25 IF A$="R" THEN LET C=C+1
26 GOTO 3
27 PRINT "ROCK"
28 IF A$="S" THEN LET C=C+1
29 IF A$="P" THEN LET S=S+1
30 GOTO 3
31 CLS
32 PRINT "YOU WIN"
33 STOP
34 PRINT "I WIN"

```

cut paper, paper wraps rock, and rock blunts scissors. The chooser of the victorious object gains one point. If you both choose the same object no points will be allocated. The winner is the first player with ten points.

To save memory, the value of PI has been used in the first line. Do not enter this letter by letter but select PI on the M key of your computer.

## GUNSLINGER

**Y**OUR '12' shooter gun moves down the right hand side of the screen at speed. A green bottle is placed in a random position at the left of the screen. To break the bottle, press "0" when you think the gun is opposite it. After 12 shots have been taken you will be told how many bottles you broke.

Gunslinga was written for the 16K Spectrum by Paul Williams of Tamworth, Staffs.



```

5 LET s=0
10 BORDER 1: PAPER 1: CLS
20 FOR a=0 TO 7: READ b: POKE
USR "b"+a,b: NEXT a: DATA 24,24
,24,60,60,60,60,60
30 FOR a=0 TO 7: READ b: POKE
USR "a"+a,b: NEXT a: DATA 16,48
,255,255,4,7,0,0
40 FOR a=0 TO 7: READ b: POKE
USR "c"+a,b: NEXT a: DATA 16,48
,240,224,224,224,224,64
50 FOR g=1 TO 12
55 LET b=INT (RND*18)+2
60 INK 4: PRINT AT b,2;"B"
70 LET c=0
80 INK 5: PRINT AT c,28;"AC"

85 INK 1: PRINT AT c-1,28;"
"; AT 21,28;" "
87 BEEP .01,0
90 IF c>20 THEN LET c=0

```

```

100 LET c=c+1
120 IF INKEY$="0" THEN GO TO
200
130 GO TO 80
200 BEEP .08,-25
210 FOR m=26 TO 2 STEP -1
220 INK 7: PRINT AT c-1,m;"."
230 INK 1: PRINT AT c-1,m+1;" "
230 IF c-1=b THEN LET a$="HIT"
235 IF c-1=b THEN LET s=s+1
240 IF c-1 <> b THEN LET a$="MISS"
250 NEXT m
260 FLASH 1: INK 2: PAPER 6: PR
INT AT c-1,0;a$: PAPER 1: FLASH
0
265 BEEP .2,-30
270 FOR t=1 TO 125: NEXT t
290 CLS: NEXT g
300 PAPER 6: BORDER 6: INK 0: C
LS: PRINT "      Okay Gunslin

```

```

ger"
310 INK 2: PRINT : PRINT : PRIN
T : PRINT : PRINT "You managed t
o shoot ya self a score of ";
INK 1: FLASH 1: PRINT ;s/25;: FL
ASH 0: INK 2: PRINT " out of 12
of them": INK 4: PRINT "GREEN ";
: INK 2: PRINT "bottles."
320 PRINT : PRINT : INK 3: PRIN
T "Press ""0"" to go shooting ag
ain."
324 LET p=29
325 INK 0: PRINT AT 19,p;"AC "
: PRINT AT 19,0;" ": LET p=p-1
: BEEP .005,0: FOR t=1 TO 8: NEX
T t: IF p<0 THEN LET p=29
330 IF INKEY$="0" THEN BORDE
R 1: PAPER 1: LET s=0: CLS: GO
TO 50
340 GO TO 325
999 SAVE "Gun" LINE 5

```

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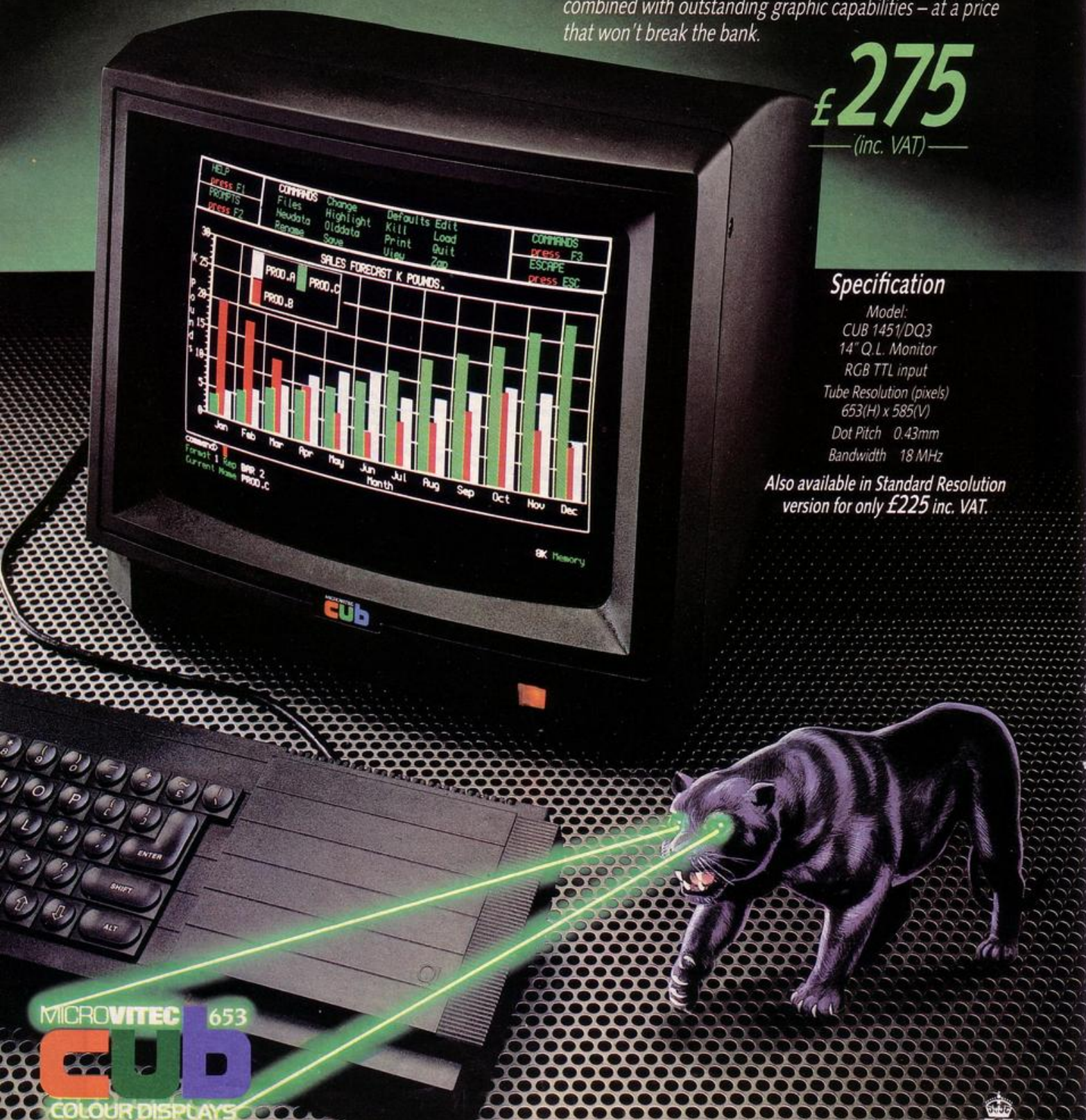
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# LOOK!

## NOW THERE ARE HI-RES PROGRAMS FOR THE 16K ZX-81

# 3



1. Nuggets
2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

## FORTY NINER

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!

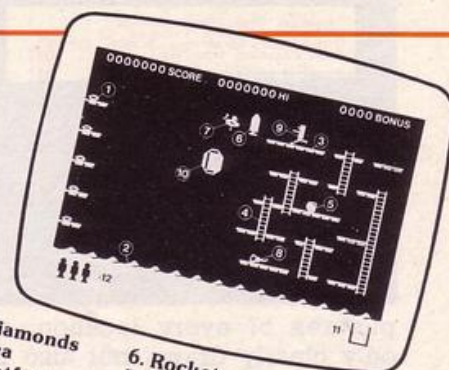
## ROCKET MAN

Get rich quick by collecting Diamonds that are simply lying there waiting for you! Oh ... I forgot to mention that there are one or two problems!

There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it ....

You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

Oh ... but don't run out of fuel on the way – otherwise it's ... SPLASH!



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



## Z-XTRICATOR

A long time ago, in a galaxy far, far, away a terrible war took place between two hostile races. Any prisoners taken could not expect to live very long in the hands of their captors. Their only hope lay with a group of valiant warriors – the XTRICATORS – whose task it was to rescue fellow beings from the alien planet's surface. You are about to take on the role of such a warrior ....

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Z-XTRICATOR £5.95		
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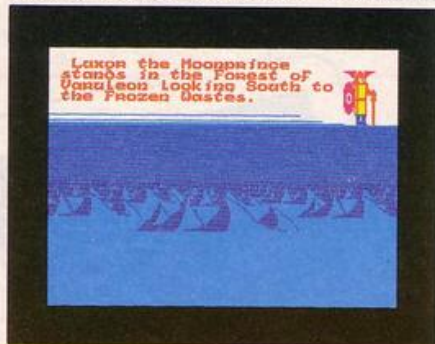
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# DOOMDARK'S REVENGE

**L**AST year, adventure enthusiasts reeled when they encountered the **Lords of Midnight**. A combination of adventure, quest and wargame, the game was remarkable in that it featured 4000 locations from which a total of 32 000 different views could be seen. Detailed



pictures of every location, not only clearly drawn but also extremely helpful; such a thing had not been seen on the Spectrum before.

Within a matter of months Beyond software had brought out the sequel, **Doomdark's Revenge**. Incredibly, they have managed to surpass their first success, producing a program with 48 000 screens, 123 different characters and 128 treasures to be found. Despite the fact that beyond Software, and the publishers of *Sinclair Programs* are sister companies it is easy to declare without fear of being accused of bias, that **Doomdark's Revenge** is the best new program on the market at the moment, and one of the best Spectrum programs ever produced.

The story starts where the **Lords of Midnight** finished. The land of Midnight is left far behind, and your characters move into the hostile land of the Icemark where, although there are many lords and many armies, none are your natural allies, and all must

be won over by your skill and prowess.

There is no one aim to the game which can be described in detail. The situation is that Morkin, hero of the **Lords of Midnight**, has been captured by the evil Shareth, Queen of the Icemark. His lover, Tarithel, has ridden into the Icemark to save him and behind her follow Luxor the Moonprince, Morkin's father; his trusted adviser Rorthron the Wise and Luxor's army. The most basic victory which can be won is the saving of Morkin. To win this victory, both Luxor and Morkin must return to the Gate of Varenorn, where Luxor began the game.

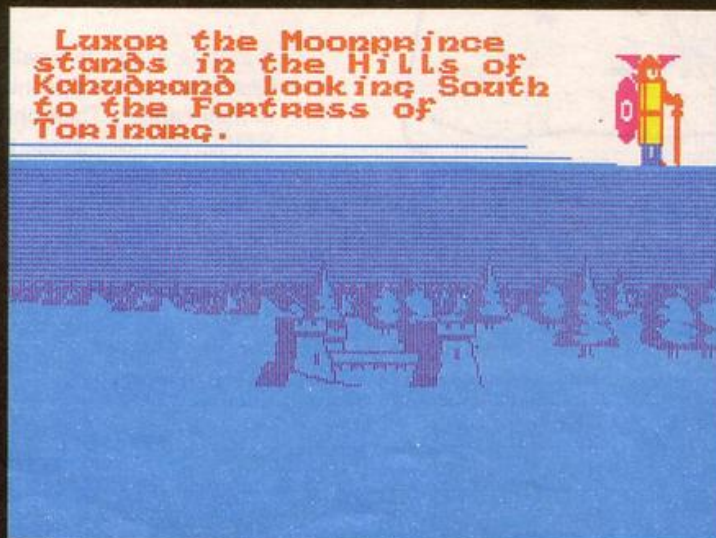
More major victories can be won by returning other major characters, spoils of war, or any of the arcane objects on which Shareth's power depends to the gate. If, by any chance, Morkin is killed, the only way in which the game can be won is to defeat Shareth in battle.

Those used to the views in the **Lords of Midnight** will be impressed by the even greater

range provided in **Doomdark's Revenge**. Features have been extended to include huts and fountains, palaces, gates and underground passages. These last, although initially appearing interesting are probably the least successful of the new features. Underground passages wind for miles across the Icemark, the view within them is unchanging, and the flickering torches, although initially striking, become boring after a week or so spent underground.

Another feature of the game is the mist which spreads across the countryside, obscuring the view. Although features can be made out through the mist it is possible, for example, to stand one move away from a major fortress without being able to see it. Other changes in the landscape are the continually moving characters and armies, all of which appear clearly on screen.

The range of characters is much broader than it was in the **Lords of Midnight**, and the strangeness of the surroundings



Tanithel the Fey stands  
in the Forest of Fangrin  
Looking North.



means that none can be identified from the first as definitely good or definitely bad. Luxor enters the Icemark in the land of the Barbarians, which means that three or four Barbarian chiefs and their armies can be found within one or two day's ride. Luxor will find it relatively easy early in the game to recruit Barbarians, but this can only be done at a certain cost, for making alliances with one group means making enemies of their enemies. It may prove better to ride out of Barbarian country and recruit Ice Lords or dwarves, or giants.

As the game progresses, recruitment patterns change. In all cases, whenever you approach a commander you may not be able to win him to your side. Approaching commanders must therefore be done with care, for finding yourself in the camp of a strong hostile army after nightfall will often prove fatal.

Characters' feelings about you will change depending on whom you befriend, and which armies you fight. It is well to be aware of exactly where your allies' loyalties lie. Some characters, even though they have been recruited by you, will still remain loyal to another commander. Others will judge you by your prowess in battle, and will ignore you if your army is small, or if you have engaged in no battles.

Most worrying of all, once you have recruited a character there is no reason to believe that he will henceforth prove unswervingly loyal. If your side is doing badly,

and another commander approaches with a better offer, you have every reason to suspect that your allies will leave in the night, or even turn on their friends and kill you during the night.

The options open to players

Luxor the Moopprince  
stands on the Plains of  
Gloathin Looking South to  
the Hills of Kabaanano.



have, like every other aspect of adventure, been extended in Doomdark's Revenge. Decisions are still made by single key entry, but the range of choices is much wider than it was in the past. There is the possibility of changing persona from that of one loyal commander to the next. Once a persona has been adopted, that character's army can be reviewed, as can the armies of allies and of those occupying the same area. The area in which the character is standing can be checked, as can the outcome of any battle fought the previous night. It is also interesting to check your persona's own character. Unlike in the Lords of Midnight, where Luxor's allies tended to be utterly brave, noble and strong, in Doomdark's Revenge you often find yourself fighting alongside commanders who are cowardly, mean and

greedy.

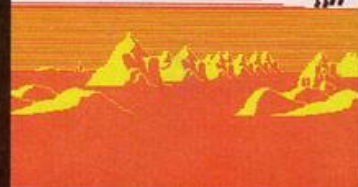
When each of your characters has completed their moves for the day the NIGHT key is pressed, and it is at this time that events controlled by the computer program take place. This results in the strange circumstance that all battles are fought by night, and that everyone, except the characters controlled by the player, moves around at night. It seems hardly surprising that troops seem almost invariably to be slightly tired.

The complexity of the game is, strangely enough, its only stumbling point. The map which accompanies the game is pitifully inaccurate, giving you the impression of leading thousands of troops round in circles unless you keep very careful notes concerning your movements. Careful notes are, in fact, essential to every section of this game. Notes of the characters you control, who they are, who they like, to whom they are loyal. Notes on where you last saw characters, notes on where you are, notes on where your allies are, notes on the advice you have been given.

Keep your paperwork in order, sharpen up your memory and, ideally, invite all your friends around for a few days. Then you will feel you have the land of Icemark mastered. Until you can do all these things, the quest for Morkin should loom large, and you may have to relegate Shar-eth's ultimate defeat to some time early in 1986.

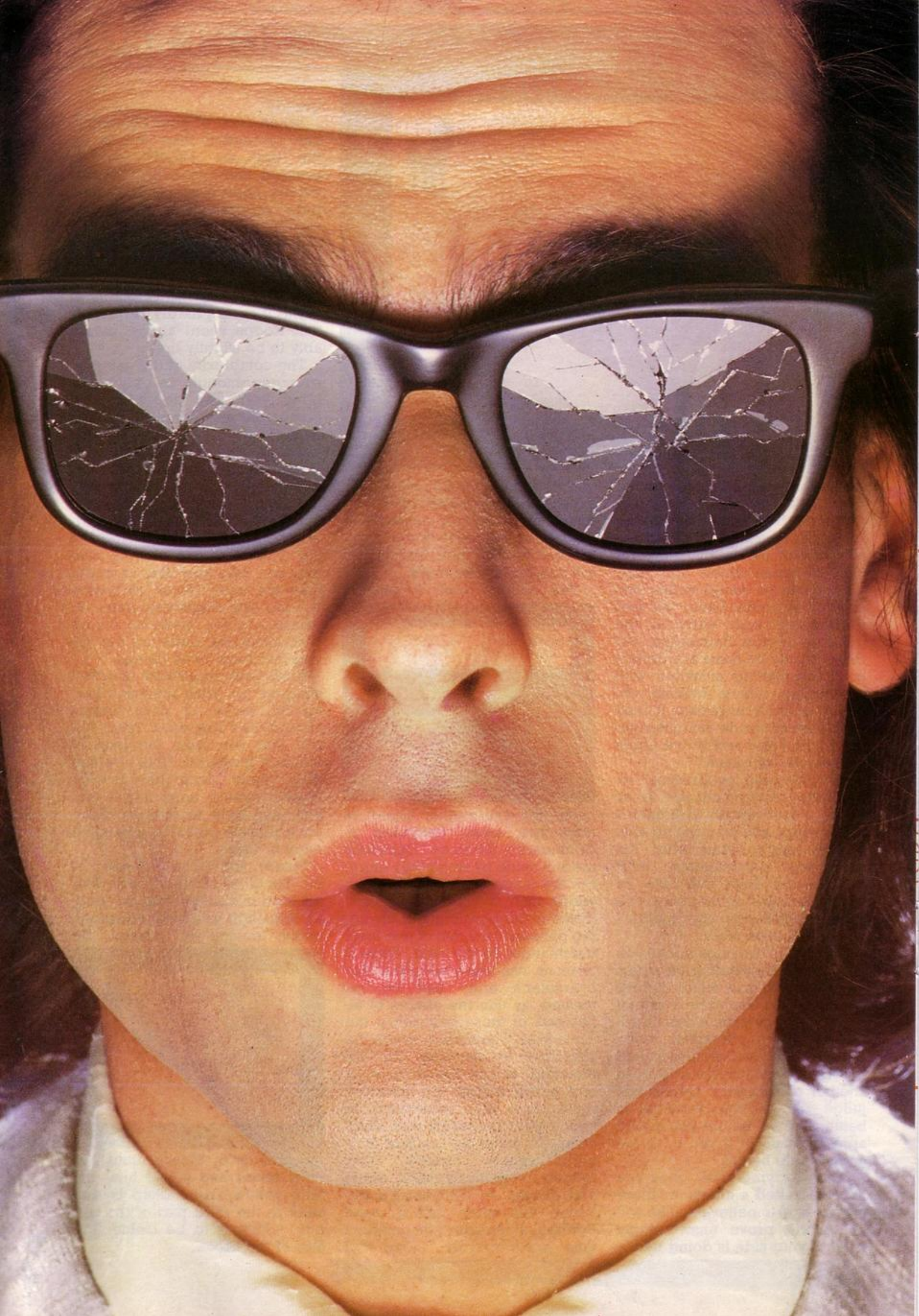
Finally, for those devotees of the Lords of Midnight who fear for Morkin's safety, fear no longer. Although you have no opportunity to see or control the

Ronethan the Wise stands  
in the Hills of Thomash  
Looking Northeast to the  
Mountains of Canabak.



movements of Morkin until you have found and saved him, the little yellow-haired chap is due back in the third part of the trilogy, which is to be called **The Eye of the Moon**.





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**Southampton.** Tyrrell & Green, Above Bar. Tel: 0703 27711.

## HERTFORD

**Hitchin.** County Computers, 13 Bucklebury. Tel: 0462 36757.  
**Hitchin.** GK Photographic & Computers, 68 Hermitage Road. Tel: 0462 59285.  
**Potters Bar.** The Computer Shop, 197 High Street. Tel: 0707 44417.  
**Stevenage.** DJ Computers, 11 Town Square. Tel: 0438 65501.  
**Watford.** Laskys, 18 Charter Place. Tel: 0923 31905.  
**Watford.** SRS Microsystems, 94 The Parade, High Street. Tel: 0923 26602.  
**Watford.** Trewns, Queens Road. Tel: 0923 44266.  
**Welwyn Garden City.** DJ Computers, 40 Fretherne Road. Tel: 96 28444.  
**Welwyn Garden City.** Welwyn Department Store. Tel: 0707 323456.

## HUMBERSIDE

**Beverley.** Computing World, 10 Swabys Yard, Dyer Lane. Tel: 0482 881831.

## KENT

**Beckenham.** Supa Computers, 425 Croydon Road. Tel: 01-650 3569.

**Bexleyheath.** Laskys, 15-16 Broadway Shopping Centre. Tel: 01-301 3478.  
**Bromley.** Boots, 148-154 High Street. Tel: 01-460 6688.  
**Bromley.** Computers Today, 31 Market Square. Tel: 01-290 5652.  
**Bromley.** Laskys, 22 Market Square. Tel: 01-464 7829.  
**Bromley.** Walters Computers, Army & Navy, 64 High Street. Tel: 01-460 9991.  
**Chatham.** Boots, 30-34 Wilmutt Square, Pentagon Centre. Tel: 0634 405471.  
**Sevenoaks.** Ernest Fielder Computers, Dorset Street. Tel: 0732 456800.  
**Sittingbourne.** Computer Plus, 65 High Street. Tel: 0795 25677.  
**Tunbridge Wells.** Modata Computer Centre, 28-30 St Johns Road. Tel: 0892 41555.

## LANCASHIRE

**Blackburn.** Tempo Computers, 9 Railway Road. Tel: 0254 691333.  
**Blackpool.** Blackpool Computer Store, 179 Church Street. Tel: 0253 20239.  
**Burnley.** IMO Business Systems, 39-43 Standish Street. Tel: 0282 54299.  
**Preston.** 4Mat Computing, 67 Friargate. Tel: 0772 561952.  
**Preston.** Laskys, 1-4 Guildhall Arcade. Tel: 0772 24558.  
**Wigan.** Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 44382.

## LEICESTERSHIRE

**Leicester.** Boots, 30-36 Gallowtree Gate. Tel: 0533 21641.  
**Market Harborough.** Harborough Home Computers, 7 Church Street. Tel: 0858 63056.

## LONDON

**W1.** Computers of Wigmore Street, 104 Wigmore Street. Tel: 01-486 0373.  
**W1.** HMV, 363 Oxford Street. Tel: 01-629 1240.  
**W1.** John Lewis, Oxford Street. Tel: 01-629 7711.  
**W1.** Laskys, 42 Tottenham Court Road. Tel: 01-636 0845.  
**W1.** Lion House, 227 Tottenham Court Road. Tel: 01-637 1601.  
**W1.** Rother Cameras, 256 Tottenham Court Road. Tel: 01-580 5826.  
**W1.** The Video Shop, 18 Tottenham Court Road. Tel: 01-580 5380.  
**W1.** Walters Computers, DH Evans, Oxford Street. Tel: 01-629 8800.  
**WC1.** Transam Micro Systems, 59-61 Theobalds Road. Tel: 01-405 5240.  
**W5.** Laskys, 18-19 Ealing Broadway Shopping Centre. Tel: 01-567 4717.  
**W8.** Walters Computers, Barkers, Kensington High Street. Tel: 01-937 5432.  
**SW1.** Peter Jones, Sloane Square. Tel: 01-730 3434.  
**SE9.** Square Deal, 373-375 Footscray Road, New Eltham. Tel: 01-859 1516.  
**Lewisham.** Laskys, 164 High Street. Tel: 01-852 1375.  
**SE13.** Walters Computers, Army & Navy, 33 and 63 High Street, Lewisham. Tel: 01-852 4321.  
**SE15.** Castlehurst Ltd, 152 Rye Lane, Peckham. Tel: 01-639 2205.  
**EC2.** Devron Computer Centre, 155 Moorgate. Tel: 01-638 3339.  
**N7.** Jones Brothers, Holloway Road. Tel: 01-607 2727.  
**N14.** Logic Sales, 19 The Bourne, The Broadway, Southgate. Tel: 01-882 4942.  
**NW3.** Maycraft Micros, 58 Rosslyn Hill, Hampstead. Tel: 01-431 1300.  
**NW4.** Davinci Computer Store, 112 Brent Street, Hendon. Tel: 01-202 2272.  
**NW7.** Computers Inc, 86 Golders Green. Tel: 01-209 0401.  
**NW10.** Technomatic, 17 Burnley Road, Wembley. Tel: 01-208 1177.

## MANCHESTER

**Manchester.** Boots, 32 Market Street. Tel: 061-832 6533.  
**Manchester.** Laskys, 61 Arndale Centre. Tel: 061-833 9149.  
**Manchester.** Laskys, 12-14 St Marys Gate. Tel: 061-833 0268.  
**Manchester.** Mighty Micro, Sherwood Centre, 268 Wilmslow Road, Fallowfield. Tel: 061-224 8117.

**Manchester.** NSC Computer Shops, 29 Hanging Ditch. Tel: 061-832 2269.  
**Oldham.** Home & Business Computers, 54 Yorkshire Street. Tel: 061-633 1608.  
**Swinton.** Mr Micro, 69 Partington Lane. Tel: 061-728 2282.

## MERSEYSIDE

**Heswall.** Thornguard Computer Systems, 46 Pensby Road. Tel: 051-342 7516.  
**Liverpool.** George Henry Lee, Basnett Street. Tel: 051-709 7070.  
**Liverpool.** Hargreaves, 31-37 Warbreck Moor, Walton. Tel: 051-525 1782.  
**Liverpool.** Laskys, Dale Street. Tel: 051-236 3298.  
**Liverpool.** Laskys, St Johns Precinct. Tel: 051-708 5871.  
**St Helens.** Microman Computers, Rainford Industrial Estate, Mill Lane, Rainford. Tel: 0744 885242.  
**Southport.** Central Studios, 38 Eastbank Street. Tel: 0704 31881.

## MIDDLESEX

**Enfield.** Laskys, 44-48 Palace Garden Shopping Centre. Tel: 01-363 6627.  
**Harrow.** Camera Arts, 42 St Anns Road. Tel: 01-427 5469.  
**Hounslow.** Boots, 193-199 High Street. Tel: 01-570 0156.  
**Teddington.** Andrews, Broad Street. Tel: 01-977 4716.  
**Twickenham.** Twickenham Computer Centre, 72 Heath Road. Tel: 01-892 7896.  
**Uxbridge.** JKL Computers, 7 Windsor Street. Tel: 0895 51815.

## NORFOLK

**Norwich.** Bonds, All Saints Green. Tel: 0603 24617.

## NOTTINGHAMSHIRE

**Sutton in Ashfield.** HN & L Fisher, 87 Outram Street. Tel: 0623 54734.  
**Nottingham.** Jessops, Victoria Centre. Tel: 0602 418282.  
**Nottingham.** Laskys, 1-4 Smithy Row. Tel: 0602 413049.

## OXFORDSHIRE

**Abingdon.** Ivor Fields Computers, 21 Sturt Street. Tel: 0235 21207.  
**Banbury.** Computer Plus, 2 Church Lane. Tel: 0295 55890.  
**Oxford.** Science Studio, 7 Little Clarendon Street. Tel: 0865 54022.

## SCOTLAND

**Edinburgh.** Boots, 101-103 Princes Street. Tel: 031-225 8331.  
**Edinburgh.** John Lewis, St James Centre. Tel: 031-556 9121.  
**Edinburgh.** Laskys, 4 St James Centre. Tel: 031-556 1864.  
**Glasgow.** Boots, 200 Sauchiehall Street. Tel: 041-332 1925.  
**Glasgow.** Boots, Union Street and Argyle Street. Tel: 041-248 7387.

## SHROPSHIRE

**Telford.** Telford Electronics, 38 Mall A. Tel: 0952 504911.

## STAFFORDSHIRE

**Newcastle-under-Lyme.** Computer Cabin, 24 The Parade, Silverdale. Tel: 0782 636911.  
**Stafford.** Computerama, 59 Foregate Street. Tel: 0785 41899.  
**Stoke-on-Trent.** Computerama 11 Market Square Arcade, Hanley. Tel: 0782 268524.

## SUFFOLK

**Bury St Edmunds.** Boots, 11-13 Cornhill. Tel: 0284 701516.  
**Ipswich.** Brainwave Micros, 24 Crown Street. Tel: 047 350965.

## SURREY

**Croydon.** Laskys 77-81 North End. Tel: 01-681 8443.  
**Croydon.** The Vision Store, 96-98 North End. Tel: 01-681 7539.  
**South Croydon.** Concise Computer Consultants, 1 Carlton Road. Tel: 01-681 6842.  
**Epsom.** The Micro Workshop, 12 Station Approach. Tel: 0732 721533.  
**Guildford.** Walters Computers, Army & Navy, 105-111 High Street. Tel: 0483 68171.  
**Haslemere.** Haslemere Computers, 17 Lower Street. Tel: 0428 54428.  
**Wallington.** Surrey Micro Systems, 53 Woodcote Road. Tel: 01-647 5636.  
**Woking.** Harpers, 71-73 Commercial Way. Tel: 0486 225657.

## SUSSEX

**Bexhill-on-Sea.** Computerware, 22 St Leonards Road. Tel: 0424 223340.  
**Brighton.** Boots, 129 North Street. Tel: 0273 27088.  
**Brighton.** Gamers, 71 East Street. Tel: 0273 726881.  
**Brighton.** Laskys, 151-152 Western Road. Tel: 0273 725625.  
**Crawley.** Gatwick Computers, 62 The Boulevard. Tel: 0293 37842.  
**Crawley.** Laskys, 6-8 Queensway. Tel: 0293 544622.

## TYNE & WEAR

**Newcastle-upon-Tyne.** Bainbridge, Eldon Square. Tel: 0632 325000.  
**Newcastle-upon-Tyne.** Boots, Eldon Square. Tel: 0632 329844.  
**Newcastle-upon-Tyne.** Laskys, 6 Northumberland Street. Tel: 0632 617224.  
**Newcastle-upon-Tyne.** RE Computing, 12 Jesmond Road. Tel: 0632 815580.

## WALES

**Aberdare.** Inkey Computer Services, 70 Mill Street, The Square, Treycynon. Tel: 0685 881828.  
**Aberystwyth.** Aberdata at Galloways, 23 Pier Street. Tel: 0970 615522.  
**Cardiff.** Boots, 26 Queens Street & 105 Frederick Street. Tel: 0222 31291.  
**Cardiff.** P & P Computers, 41 The Hayes. Tel: 0222 26666.  
**Swansea.** Boots, 17 St Marys Arcade, The Quadrant Shopping Centre. Tel: 0792 43461.

## WARWICKSHIRE

**Coventry.** Coventry Micro Centre, 33 Far Gosford Street. Tel: 0203 58942.  
**Coventry.** JBC Micro Services, 200 Earlsdon Avenue, North Earlsdon. Tel: 0203 73813.  
**Coventry.** Laskys, Lower Precinct. Tel: 0203 27712.  
**Leamington Spa.** IC Computers, 43 Russell Street. Tel: 0926 36244.  
**Leamington Spa.** Leamington Hobby Centre, 121 Regent Street. Tel: 0926 29211.  
**Nuneaton.** Micro City, 1a Queens Road. Tel: 0203 382049.  
**Rugby.** OEM Computer Systems, 9-11 Regent Street. Tel: 0788 70522.

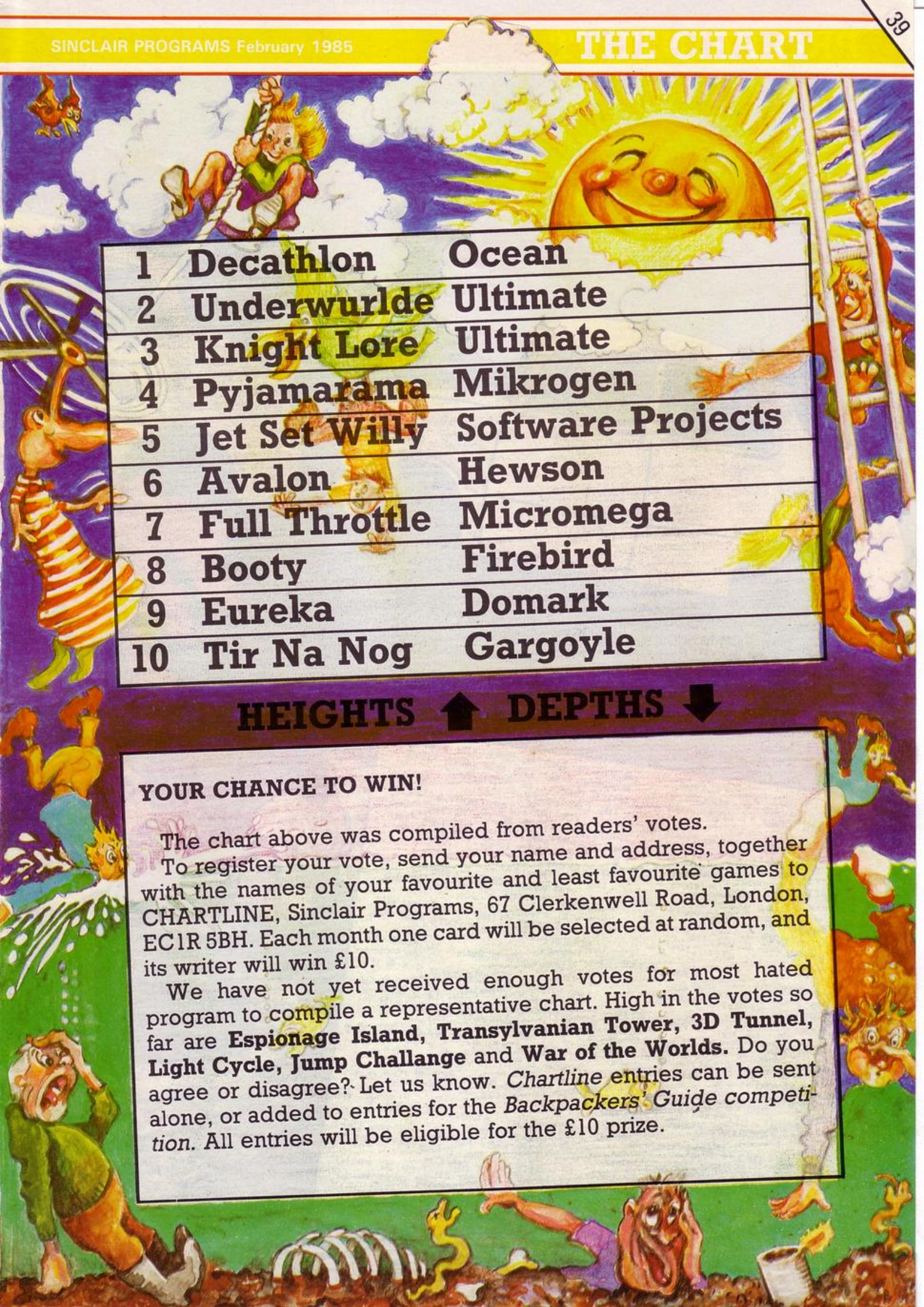
## WEST MIDLANDS

**Birmingham.** Boots, City Centre House, 16-17 New Street. Tel: 021-643 7582.  
**Birmingham.** Laskys, 19-21 Corporation Street. Tel: 021-632 6303.  
**Dudley.** Central Computers, 35 Churchill Precinct. Tel: 0384 238169.  
**Stourbridge.** Walters Computer Systems, 12 Hagley Road. Tel: 0384 370811.  
**Walsall.** New Horizon, 1 Goodall Street. Tel: 0922 24821.  
**West Bromwich.** D S Peakman, 7 Queens Square. Tel: 021-525 7910.  
**Wolverhampton.** Laskys, 2 Wulfrum Square. Tel: 0902 714568.

## YORKSHIRE

**Bradford.** Boots, 11 Darley Street. Tel: 0274 390891.  
**Leeds.** Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  
**Sheffield.** Cole Brothers, Barkers Pool. Tel: 0742 78511.  
**Sheffield.** Laskys, 58 Leopold Street. Tel: 0742 750971.  
**York.** York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.





1	<b>Decathlon</b>	<b>Ocean</b>
2	<b>Underwurlde</b>	<b>Ultimate</b>
3	<b>Knight Lore</b>	<b>Ultimate</b>
4	<b>Pyjamarama</b>	<b>Mikrogen</b>
5	<b>Jet Set Willy</b>	<b>Software Projects</b>
6	<b>Avalon</b>	<b>Hewson</b>
7	<b>Full Throttle</b>	<b>Micromega</b>
8	<b>Booty</b>	<b>Firebird</b>
9	<b>Eureka</b>	<b>Domark</b>
10	<b>Tir Na Nog</b>	<b>Gargoyle</b>

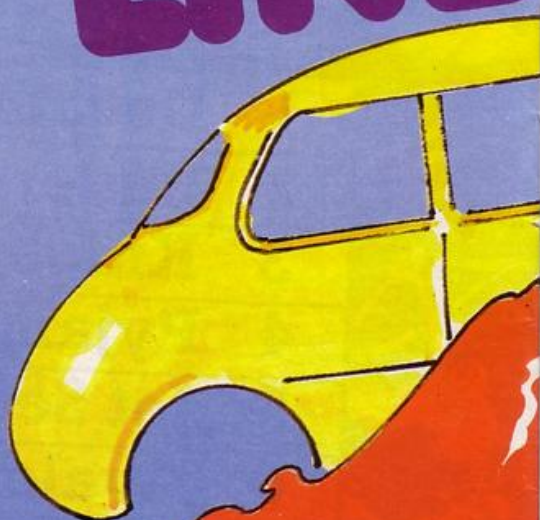
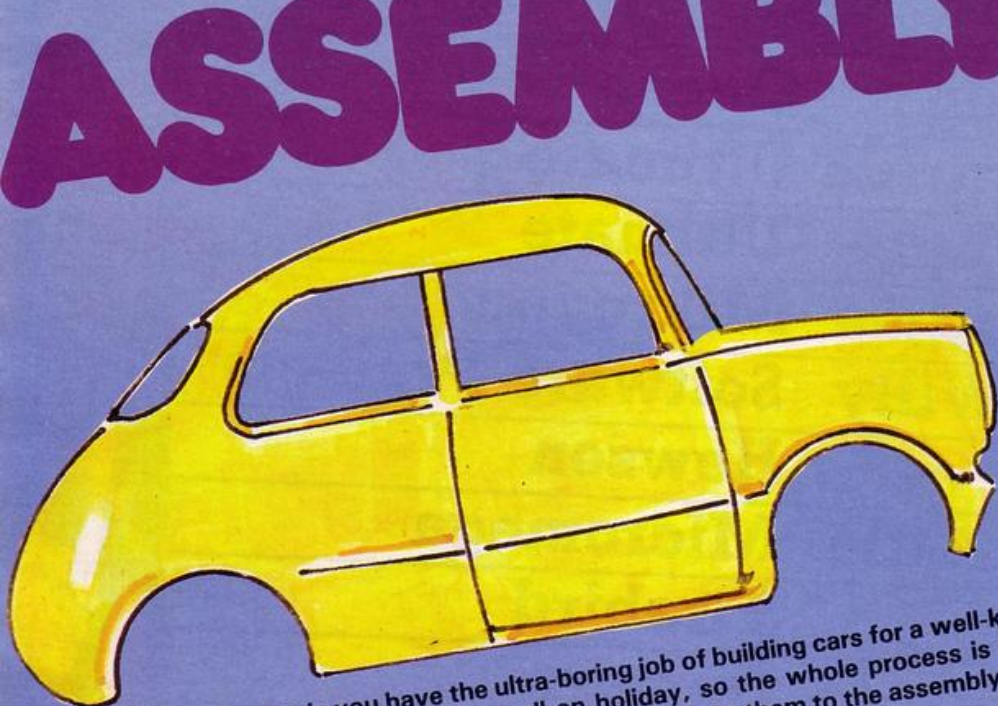
**HEIGHTS** ↑ **DEPTHS** ↓

### YOUR CHANCE TO WIN!

The chart above was compiled from readers' votes. To register your vote, send your name and address, together with the names of your favourite and least favourite games to **CHARTLINE**, Sinclair Programs, 67 Clerkenwell Road, London, EC1R 5BH. Each month one card will be selected at random, and its writer will win £10.

We have not yet received enough votes for most hated program to compile a representative chart. High in the votes so far are **Espionage Island**, **Transylvanian Tower**, **3D Tunnel**, **Light Cycle**, **Jump Challenge** and **War of the Worlds**. Do you agree or disagree? Let us know. *Chartline* entries can be sent alone, or added to entries for the *Backpackers' Guide* competition. All entries will be eligible for the £10 prize.

# ASSEMBLY LINE



As Bert the mechanic you have the ultra-boring job of building cars for a well-known manufacturer. Your colleagues are all on holiday, so the whole process is left to you. Collect the body panels from the store below and take them to the assembly ramp, taking care to avoid the runaway tyres.

Type in the BASIC program and SAVE using line 9999, then type RANDOMIZE USR 0. Enter the second listing, which will redefine the character set and produce the code for the UDGs. SAVE the second listing directly after first, rewind the tape and type LOAD "".

Assembly Line was written for the 48K Spectrum by Ian Howlett of Portsmouth.

```

5 REM BY IAN HOWLETT 1984
10 PAPER 0: INK 0: BORDER 0: C
LEAR 60000: LOAD "" CODE: GO SU
B 9000
20 POKE 23658,8: POKE 23606,88
: POKE 23607,251: INK 7: BRIGHT
1: CLS: PRINT #1: AT 1,4: BRIGHT
T 1:"PRESS ENTER TO CONTINUE": L
ET CO=0: PRINT AT 0,3:"A S S E
M B L Y   L I N E"
30 PRINT AT 4,10: INK 1: BRIG
HT 1:">-*": AT 5,10:"/?"
40 PRINT AT 8,10: INK 2:" % "
: AT 9,10:" _ (" : AT 10,10:") _ "<
50 PRINT AT 5,16: FLASH 1:"KE
YBOARD": AT 5,5: FLASH 0:"1"
60 PRINT AT 9,16:"KEMPSTON":
AT 9,5:"2"
70 PRINT AT 13,12:"INSTRUCTIO
NS": AT 13,5:"3"
80 IF INKEY$="1" THEN LET C
O=0: PRINT AT 5,16: FLASH 1:"KE
YBOARD": PRINT AT 9,16: FLASH 0
:"KEMPSTON"
90 IF INKEY$="2" THEN LET C
O=1: PRINT AT 9,16: FLASH 1:"KE
MPSTON": AT 5,16: FLASH 0:"KEYBO
ARD"
100 IF INKEY$="3" THEN GO TO
160
110 IF CODE INKEY$=13 THEN
GO TO 300
120 GO TO 80
160 GO SUB 5500: CLS
170 LET I$=" YOUR NAME IS BERT
AND YOU HAVE THE ULTRA BORING JO
B OF BUILDINGBRITISH LEYLAND MIN
IS. ALL THE OTHER WORKERS ARE O

```

```

N STRIKE AND TO MAKE THE JOB EVE
N WORSE ARE THE RUN AWAY TYRES
WHICH MUST BE AVOIDED."
180 LET I$=I$+"
YOU MUST TAKE BODY PANELS
FROM THE STORE BELOW TO THE ASSE
MBLY RAMP AND BUILD THE CAR THER
E. YOU ONLY HAVE THREE LIVES
SO BE CAREFUL!!!"
185 LET I$=I$+"
YOU WILL LOSE A LIFE IF YOU
RUNDUT OF TIME OR IF THE TYRES
HIT YOU.
ON COMPLETING A CAR YOU WILL
L BE REWARDED WITH POINTS AND MOR
E TIME:
USE KEYS Q,A,O,P TO MOVE MA
N!!!"
190 PRINT AT 0,4:"I N S T R U
C T I O N S": PRINT
200 FOR N=1 TO LEN I$-2 STEP 6
: PRINT INK ( RND *4)+3;I$(N TO
N+5): NEXT N
210 PRINT #1: AT 1,4: BRIGHT 1:
"P R E S S   A N Y   K E Y"
220 PAUSE 0
230 GO SUB 5500: GO TO 20
300 BRIGHT 1: GO SUB 5500: CLS
310 PRINT AT 0,2:"T A B L E   O
F   H O N O U R"
320 LET X=3: FOR N=1 TO 10: PRI
NT AT X,5: INK ( RND *4)+3;A$(N
): LET X=X+2: NEXT N
330 FOR N=3 TO 21 STEP 2: PRINT
AT N,18:"00000000": NEXT N: LE
T X=3: FOR N=1 TO 10: PRINT AT
X,26- LEN STR$ S(N):S(N): LET X
=X+2: NEXT N

```





02 PRINT #1; AT  
PARTS STORE"  
05 FOR N=10 TO 11: PRINT AT N  
; INK 2; PAPER 6; "wwwwwwwwww":

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there are 32,000!



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Access/Visa (Delete as necessary)

NAME

ADDRESS

POST CODE

SIGNATURE

SP/2/85

Please rush me details of the "ENTER the BEYOND"  
Software Club . . .





```

NEXT N
3006 FOR N=9 TO 10: PRINT AT N,
20; " ": NEXT N
3010 FOR N=4 TO 21: PRINT AT N,
0; INK 2; PAPER 6;"ww"; AT N,30;
"ww": NEXT N
3020 FOR N=4 TO 19: PRINT AT N,
6; INK 4;"xy": NEXT N
3030 FOR N=20 TO 21: PRINT AT N
,0; INK 2; PAPER 6;"xxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxx": NEXT N
3040 PRINT AT 14,14; INK 2; PAP
ER 6;"xxxxxxxx"; AT 14,24;"xxxxxxxx
"; AT 15,14;"xxxxxxxx"; AT 15,24;"
xxxxxxxx": FOR N=11 TO 19: PRINT
AT N,16; INK 4;"xy"; AT N,26;"x
y"; AT N-6,26;"xy": NEXT N
3045 FOR N=8 TO 9: PRINT AT N,2
1; INK 2; PAPER 6;"xxxxxx": NEXT
N
3050 IF P1=1 THEN PRINT AT 18,
2; INK 5;"ra"; AT 19,2;"f(ig3)"
3051 IF P2=1 THEN PRINT AT 8,8
; INK 5;"bc"; AT 9,8;"gh"
3052 IF P3=1 THEN PRINT AT 6,2
2; INK 5;"de"; AT 7,22;"(ig3)!"
3053 IF P4=1 THEN PRINT AT 11,
28; INK 5;"jk"; AT 12,28;"pq"; A
T 13,28;"v"
3054 IF P5=1 THEN PRINT AT 12,
18; INK 5;"(igB)o"; AT 13,19;"u"
3055 IF P6=1 THEN PRINT AT 18,
20; INK 5;"lmn(ig8)"; AT 19,21;"
st"
3099 BRIGHT 1: GO SUB 9500
3100 GO SUB 1000
3500 IF CR=0 THEN IF P1=1 THEN
IF A=17 AND B=2 THEN PRINT AT
A+1,B;" "; AT A+2,B;" ": LET
CR=1: LET SC=SC+20: GO SUB 4500
3510 IF CR=0 THEN IF P2=1 THEN

```

```

2nd Listing
5 CLEAR 64000: PRINT "THIS PR
OGRAM WILL POKE IN ALL THE MAC
HINE CODE USED IN THE GAME...
...."
10 PRINT "POKING IN CLS DATA"
20 RESTORE 20: LET T=0: FOR N=
64000 TO 64016: READ A: POKE N,A
: LET T=T+A: NEXT N: IF T <> 149
0 THEN GO TO 9000: DATA 33,0,64
1,1,0,24,203,6,203,134,35,11,120,
: 177,32,246,201
30 PRINT "POKING IN COLOUR DAT
S A"
40 RESTORE 40: LET T=0: FOR N=
64100 TO 64125: READ A: POKE N,A
: LET T=T+A: NEXT N: IF T <> 242
6=1 4 THEN GO TO 9000: DATA 33,0,88
1,3,0,126,198,1,230,7,95,126,19
ET 8,8,230,56,131,119,35,16,240,13,
32,237,201
ME 50 PRINT "POKING IN SOUND DATA
"
T 60 RESTORE 60: LET T=0: FOR N=
O 64200 TO 64229: READ A: POKE N,A
: LET T=T+A: NEXT N: IF T <> 314
2 THEN GO TO 9000: DATA 243,17,
A 16,208,38,10,58,72,92,31,31,31,1
Y 4,254,238,16,237,121,67,16,254,3

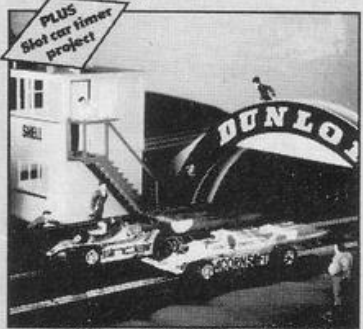
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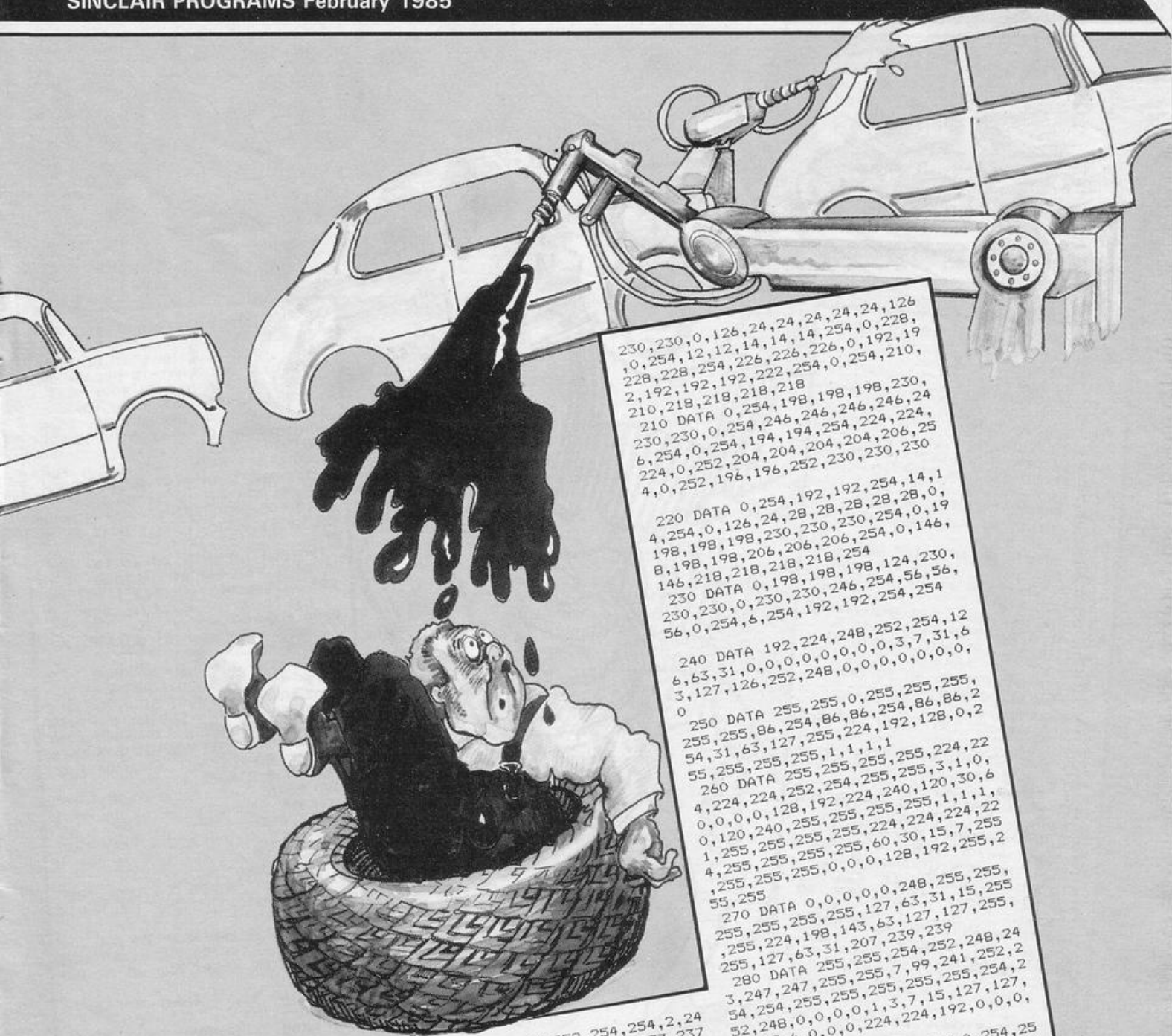
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```

230,230,0,126,24,24,24,24,126
,0,254,12,12,14,14,14,254,0,228,
228,228,254,226,226,226,0,192,19
2,192,192,192,222,254,0,254,210,
210,218,218,218,218
210 DATA 0,254,198,198,198,230,
230,230,0,254,246,246,246,24
6,254,0,254,194,194,254,224,224,
224,0,252,204,204,204,204,206,25
4,0,252,196,196,252,230,230,230

```

```

220 DATA 0,254,192,192,254,14,1
4,254,0,126,24,28,28,28,0,19
198,198,198,230,230,230,254,0,19
8,198,198,206,206,206,254,0,146,
146,218,218,218,218,254
230 DATA 0,198,198,198,124,230,
230,230,0,230,230,246,254,56,56,
56,0,254,6,254,192,192,254,254

```

```

240 DATA 192,224,248,252,254,12
6,63,31,0,0,0,0,0,0,0,0,0,0,0,0,
3,127,126,252,248,0,0,0,0,0,0,0,
0

```

```

250 DATA 255,255,0,255,255,255,
255,255,86,254,86,86,254,86,86,2
54,31,63,127,255,224,192,128,0,2
55,255,255,255,1,1,1,1
260 DATA 255,255,255,255,3,1,0,
4,224,224,252,254,240,120,30,6
0,0,0,0,128,192,224,240,1,1,1,
0,120,240,255,255,255,224,224,22
1,255,255,255,255,60,30,15,7,255
4,255,255,255,255,60,30,15,7,255
,255,255,255,0,0,0,128,192,255,2
55,255

```

```

270 DATA 0,0,0,0,0,0,248,255,255,
255,255,255,127,63,31,15,255
255,224,198,143,63,127,127,255,
255,127,63,31,207,239,239
280 DATA 255,255,254,252,248,24
3,247,247,255,255,255,255,254,2
54,254,255,255,255,0,1,3,7,15,127,127,
52,248,0,0,0,0,1,3,7,15,127,127,
63,15,6,0,0,0,224,224,192,0,0,0,
0,0

```

```

290 DATA 7,7,3,0,0,0,0,0,0,254,25
4,252,240,96,0,0,0,254,254,0
,239,239,239,0,192,192,192,255,2
55,192,192,192,3,3,3,255,255,3,3
,3,255,127,63,31,15,7,3,1,248,25
2,126,127,63,31,7,3,0,8,8,8,8,8,
8,8

```

```

300 DATA 31,63,126,254,252,248,
224,192,0,20,40,0,0,0,0,56,56,
16,124,84,56,40,40
8999 GO TO 9500
9000 CLS : PRINT "ERROR IN DATA:
PLEASE RE-CHECK AND THEN RUN A
GAIN": STOP
9500 PRINT "DATA PERFECT": PRINT
T "NOW SAVE THE CODE DIRECTLY AF
TERTHE BASIC"

```

```

9510 LET S$="ASSEMBLY": LET S$=S
$+ CHR$ 202: LET S$=S$+ CHR$ 175
: SAVE S$ CODE 64000,1535
9600 PRINT "NOW VERIFY THE CODE"
: VERIFY "" CODE
9610 PRINT "NOW, JUST TO BE SAFE
SAVE THIS PROGRAM": SAVE "M/C"

```

```

9620 PRINT "NOW VERIFY": VERIFY
""

```

```

9900 PRINT "NOW TYPE RANDOMIZE U
SR 0, REWIND CASSETTE, TYPE LOAD
"" AND PLAY TAPE"

```

```

7,32,244,28,21,32,232,251,201,20
1

```

```

70 PRINT "POKING IN UDGS"
80 LET T=0: RESTORE 80: FOR C=
144 TO 155: FOR N=0 TO 7: READ A
: POKE USR CHR$(C)+N,A: LET T
=T+A: NEXT N: NEXT C: IF T < 96
05 THEN GO TO 9000: DATA 31,63,
63,0,63,60,63,63,192,224,252,0,1
28,224,224,128,63,0,63,96,236,23
6,230,227,128,0,128,224,112,120,
120,120,224,127,59,59,59,61,6
2,112,192,0,0,0,128,192,224
90 DATA 3,7,63,0,1,7,7,1,248,2
52,252,0,252,60,252,252,1,0,1,7,
14,30,30,30,252,0,252,6,55,55,10
3,199,14,3,0,0,0,0,1,3,7,254,220
,220,220,220,188,124
100 PRINT "POKING IN CHARACTER
SET"

```

```

110 LET T=0: RESTORE 110: FOR N
=64600 TO 65367: READ A: POKE N,
A: LET T=T+A: NEXT N: IF T < 10
4094 THEN GO TO 9000
120 DATA 0,0,0,0,0,0,0,0,0,24,2
4,24,24,0,24,24,0,36,36,0,0,0,0,
0,1,3,7,15,31,63,127,255,128,192
,224,240,248,252,254,255
130 DATA 24,60,126,126,126,60,2
4,24,24,24,255,255,255,255,25
5,0,0,0,0,0,7,15,31,0,0,0,0,22
4,240,248,63,127,0,127,63,31,15,

```

```

140 DATA 0,248,252,254,254,2,24
8,86,237,237,237,237,237,237
,237,0,0,0,0,8,8,16,0,255,255,
255,255,0,255,85,0,0,0,0,24,24
0

```

```

150 DATA 213,255,213,213,255,21
3,213,255,0,254,198,198,230,230,
230,254,0,48,48,48,56,56,56,0
,254,6,6,254,224,224,254,0,254,6
,6,254,14,14,254,0,198,198,198,2
54,14,14,14,0,254,192,192,254,14
,14,254,0,254,192,192,254,230,23
0,254
160 DATA 0,254,6,6,14,14,14,14,
0,254,206,206,254,198,198,254,0,
254,198,198,254,14,14,254,0,0,24
,24,0,0,24,24,204,204,204,204,20
4,204,204,204,252,254,0,254,252,
248,240,224
170 DATA 0,0,126,126,0,126,126,
0,0,63,127,255,255,0,63,213,85,2
55,85,85,255,85,85,255,255,254,2
52,248,240,224,192,128,0,254,198
,198,254,230,230,0,252,204,2
04,254,198,198,254
180 DATA 0,254,192,192,224,224,
224,254,0,254,226,226,226,226,22
6,254,0,254,192,192,254,224,224,
254,0,254,192,192,238,230,230,254
4,0,254,198,198,198,254,230,
200 DATA 0,198,198,198,254,230,

```

# Sausage Server



```

5 POKE 23658,8: INK 6: PAPER
0: BORDER 0: CLS
6 LET L=2000
10 GO SUB 8000
50 LET Y=16: LET T=0: LET S=0

60 GO SUB 7990
70 GO SUB 3000
150 LET D=INT ( RND *16)+5
200 FOR N=5 TO 18 STEP .5
210 LET T=T+1
220 IF T>L THEN GO TO 6000
250 PRINT AT N,D;"AB": AT N-1,
D;" "
270 PRINT AT 18,Y-1;" CDE "
300 LET Y=Y+( INKEY$ ="P" AND Y
<27)-( INKEY$ ="D" AND Y>3)
400 NEXT N
410 IF D=Y THEN LET S=S+1: PRI
NT AT 0,10;"SAUSAGES:";S
415 IF D<>Y THEN PRINT AT 1
8,D;" "
450 IF S<20 THEN GO TO 130
500 GO SUB 7990
505 GO SUB 3000
510 LET H=20: LET Y=16: LET S=0

520 PLOT 20,20: DRAW 6,0,4,5: D
RAW 0,150: DRAW -6,0,1: DRAW 0,-
150
540 PRINT AT 14,10: INK 4;"FFF
FFFFFFF"
550 LET D=INT ( RND *10)+10
600 LET Y=Y+( INKEY$ ="P" AND Y
<27)-( INKEY$ ="D" AND Y>5)
610 PRINT AT 12,Y-1;" CDE "
630 LET T=T+1: IF T>L THEN GO
TO 6000
640 IF H=165 THEN GO TO 900
650 IF INT ( RND *15)<1 THEN
PRINT AT 14,D: INK 4;"FF": GO T
O 550
670 PRINT AT 14,D: INK 2;"FF"

680 IF D=Y THEN LET H=H+1: BEE
P .003,H/5: PLOT 23,H
700 GO TO 570
900 GO SUB 7990
905 GO SUB 3000
910 LET X=4: LET C=10: LET D=1:
LET R=0
1000 LET C=C+D
1001 IF D=1 AND C>24 THEN LET D
=-1
1002 IF D=-1 AND C<7 THEN LET D
=1
1010 PRINT AT 14,C-1;" CD "
1100 IF INKEY$ ="Z" AND R=0 THE
N LET R=1: LET X=4
1110 IF R=1 THEN LET X=X+1: IF
X=14 AND C=15 OR X=14 AND C+1=15
OR X=14 AND C-1=15 THEN LET S=
S+1: PRINT AT X-1,15;" ": LET
R=0: BEEP .01,30: LET X=4: PRINT
AT 2,10;"SAUSAGES:";S
1120 PRINT AT X,15;"AB": AT X-1
,15;" "
1130 IF X>19 THEN LET R=0: PRIN
T AT X,15;" ": LET X=4
1150 IF S=20 THEN GO TO 2000
1170 LET T=T+1: IF T>L THEN GO
TO 6000
1200 GO TO 950
2000 FOR N=1 TO 10: BEEP .2,N-3:
BEEP .2,N-10: BEEP .2,N-6: NEXT
N: CLS : PRINT "THAT'S ONE SATI
SFIED CUSTOMER OUT OF THE WAY

```

**Y**ou have just opened a snack bar and your first customer has ordered twenty sausages. There are three cooking stages to complete before the sausages are ready. The three stages involve catching the sausages in a frying pan, heating them up and dropping them onto the moving plate. Remember, if you take too long your customer will leave.

Sausage Server was written for the 16K Spectrum by John Lonsdale of West Ferry, Dundee.

```

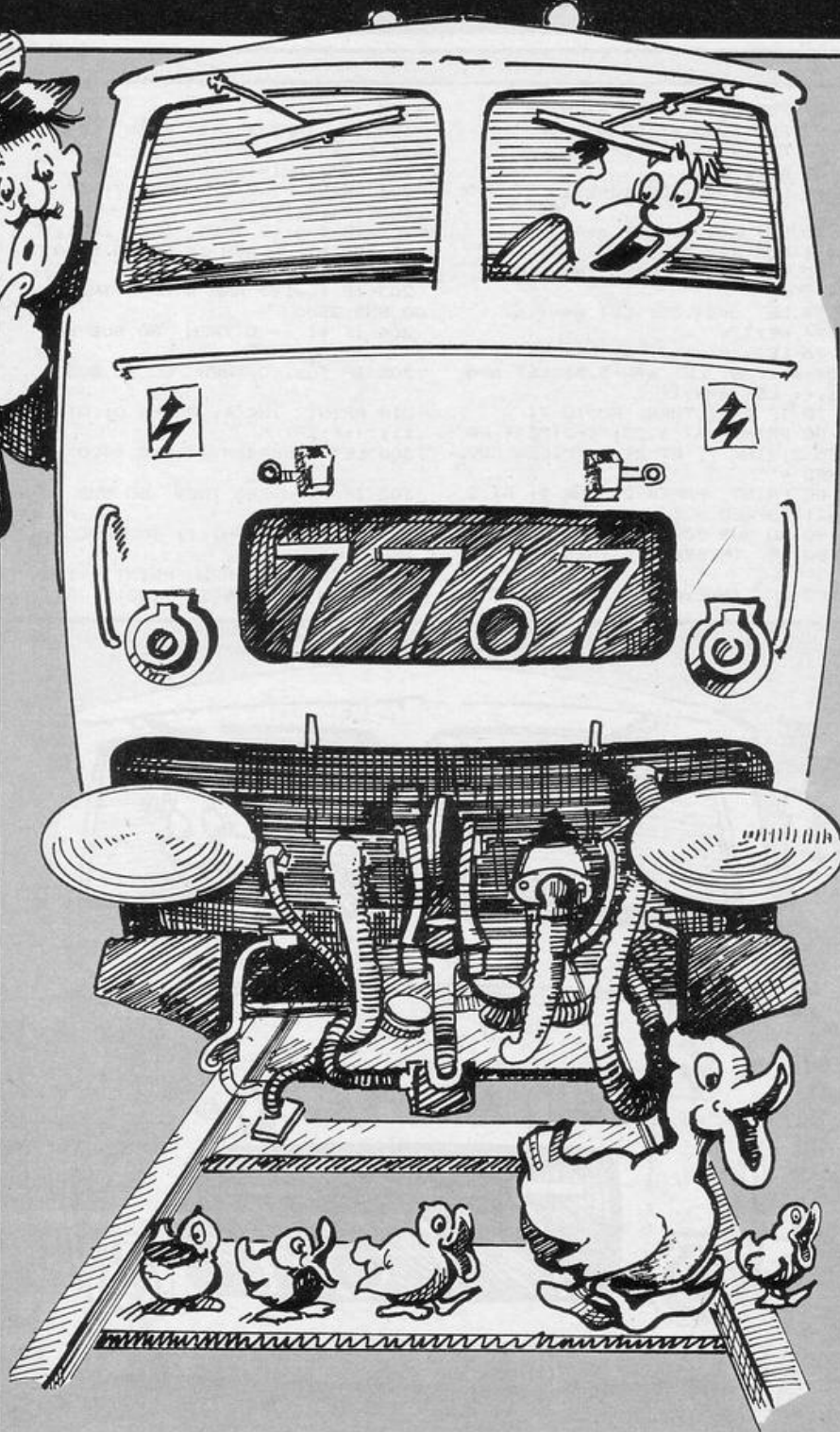
... "BUT ANOTHER HAS JUST COME
IN AND HAS ALSO ORDERED 20 SAUSA
GES ! YOU WILL HAVE TO GO MORE
QUICKLY IF YOU WANT TO PLEASE TH
S ONE!!": FOR N=1 TO 400: NEXT N
: LET L=L-100: CLS : GO TO 50
3000 PLOT 0,0: DRAW 0,175: DRAW
255,0: DRAW 0,-175: DRAW -255,0:
RETURN
6000 CLS : PRINT AT 10,10: FLAS
H 1;"GAME OVER": AT 20,6: FLASH
8;"YOU RAN OUT OF TIME"
6010 FOR N=30 TO -20 STEP -3: BE
EP .1,N: BEEP .1,N+1: NEXT N: RU
N
7990 CLS : PRINT AT 10,10;"GET
READY": FOR N=1 TO 3: PAUSE 5: B
EEP .3,30: NEXT N: CLS : RETURN

8000 FOR n=USR "a" TO USR "F"+
7: READ a: POKE n,a: NEXT n: RES
TORE 9100
8100 PRINT AT 0,8;"SAUSAGE SER
VER": AT 2,9;"BY J.LONSDALE"
8110 PRINT AT 4,0;"YOU HAVE JUS
T OPENED A SNACK BAR AND YOU FIRS
T CUSTOMER HAS ORDERED 20 S
AUSAGES. TO PREPARE HIS DINNER Y
OU MUST COMPLETE EACH OF THE
3 COOKING STAGES:"
8120 PRINT AT 10,0;"STAGE 1 : C
ATCH THE SAUSAGES
N YOU FRYING PAN"
8130 PRINT "STAGE 2 : HEAT THE
SAUSAGES ON THE RED H
EATING BLOCKS"
8140 PRINT "STAGE 3 : DROP THE
SAUSAGES ONTO THE MOVIN
G PLATE !"
8150 PRINT "REMEMBER THAT IF YO
U ARE NOT QUICK YOUR CUSTOMER
WILL BECOME ANGRY AND GO TO AND
THER BAR!"
8160 PRINT #1:" RIGHT~P~ LEFT~
~O~ DROP~Z~"
8300 READ a: IF a=99 THEN RESTO
RE 9100: PAUSE 500: GO TO 8300

8305 IF INKEY$ = CHR$ 13 THEN
RESTORE 9100: CLS : RETURN
8310 IF a>100 THEN LET a=a-100:
BEEP .2,a: GO TO 8300
8320 IF a>50 AND a<100 THEN LET
a=a-50: BEEP .4,a: GO TO 8300

8330 BEEP .1,a
8350 GO TO 8300
9000 DATA 0,64,224,206,63,63,31,
15
9005 DATA 0,0,6,63,255,254,252,2
48
9010 DATA 0,0,0,128,192,127,63,0
9015 DATA 0,0,0,1,3,254,252,0
9020 DATA 0,0,3,62,240,128,0,0
9030 DATA 0,0,0,255,255,255,0,0
9100 DATA 104,104,104,104,104,4,
5,57,105,105,102,102,57,57
9110 DATA 104,104,104,104,104,4,
5,57,105,105,104,104,50,99
9999 SAVE "SOS SERVER" LINE 1: P
RINT "REWIND TAPE:SWAP LEADS""P
RESS PLAY TO VERIFY": VERIFY ""
PRINT FLASH 1;"OK": PAUSE 100:
RUN

```



```

1 GO SUB 9050: LET high=0
4 PAPER 4: CLS : PRINT PAPER
1; INK 7; "      TRAIN DRIVER
"
5 PRINT "YOU HAVE TO COVER
AS MANY MILES AS POSSIBLE - REME
MBER TO STOP FOR FUEL "
6 PRINT "SPEED LIMITS :- TH
ESE ARE DISPLAYED ON SIGNAL AND
MUST BE OBYED - IF YOU DISREGAR
D LIMITS MILE REDUCTION OR A DER
AILMENT COULD RESULT"
7 PRINT "      PRESS ANY KEY
TO START": PRINT "      USE KEY 0
TO ACCELERATE ": PRINT "      US
E KEY 1 TO DECELERATE "
10 LET fuel=20: LET s=5: LET w
=0: LET miles=0: INK 0: LET ti=2
0: LET b=4
25 IF INKEY$="" THEN GO TO
25
26 CLS : PRINT INK 7; PAPER 2
; AT 1,0;"AAAAAAAAAAAAAAAAAAAA"

27 PRINT AT 0,23;"<-FUEL"; AT
1,23;"<-TIME"
28 PRINT INK 7; PAPER 1; AT 0
,0;"AAAAAAAAAAAAAAAAAAAA"
30 FOR g=9 TO 16: PRINT AT g,
1;"(ig8)": NEXT g
31 PRINT AT 8,0;"(g5:ig8:ig5)
"; AT 9,0;"(g5)": AT 9,2;"(ig5)"

32 PRINT AT 6,0;"(g5:ig8:ig5)
"; AT 7,0;"(g5)": AT 7,2;"(ig5)"

33 PRINT INK 0; PAPER 2; AT 2
,0;"(32*g3)"
34 PRINT INK 2; PAPER 0; AT 3
,0;"(g3:ig3:g3:ig3:g3:ig3:ig8:4*
sp:ig8:g3:ig3:g3:ig3:g3:ig3:g3:1
g3:g3:ig3:g3:ig3:g3:ig3:g3:ig3:g
3:ig3:g3:ig3)"
35 PRINT INK 2; PAPER 0; AT 4
,0;"(g3:ig3:g3:ig3:g3:ig3:ig8:4*
sp:ig8:g3:ig3:g3:ig3:g3:ig3:g3:1
g3:g3:ig3:g3:ig3:g3:ig3:g3:ig3:g
3:ig3:g3:ig3)"
36 INK 0: PLOT 117,115: DRAW 0
,-50: PLOT 107,110: DRAW 20,0: P
LOT 107,100: DRAW 20,0
37 FOR x=0 TO 6: PLOT 15-x,0:
DRAW INK 5;55+x,140: PLOT 73,14
0: DRAW INK 5;37+x,-140: NEXT x

39 PLOT 30,140: DRAW 0,-55: PL
OT 20,130: DRAW 20,0: PLOT 20,12
0: DRAW 20,0
40 DIM z(4)
41 LET z(1)=120
42 LET z(2)=125
43 LET z(3)=130
44 LET z(4)=140
50 LET j=68
51 FOR x=135 TO 0 STEP -2
52 PLOT 0,x: DRAW j,0
53 LET j=j-.8
54 NEXT x
55 LET j=182

```

# TRAIN SIMULATION

**C**over as many miles of track as possible, stopping for fuel when instructed to do so. The speed limits are displayed by signals and should be obeyed. If you disregard the limits you could be faced with mile reduction or a derailment. Use 0 to accelerate and 1 to slow down.

Train Simulation was written for the 16K Spectrum by Steve and Marc Sherratt of Newquay, Cornwall.

```

56 FOR x=135 TO 0 STEP -2
57 PLOT 255,x: DRAW -j,0
58 LET j=j-.55
59 NEXT x
69 LET z=15: LET d=25: LET e=0

70 LET w=120: LET q=4
71 FOR x=z TO d
72 PLOT q,x: DRAW INK 1;w,0

73 LET q=q+.35: LET w=w-.67
74 NEXT x
76 LET z=(z+16)-e: LET d=(d+15)
  .5)-e*1.08: LET w=w-5.5: LET q=q
  +3.4: LET e=e+1
78 IF e<11 THEN GO TO 71
80 PRINT AT 1,23;"<-TIME"; PA
  PER 2; INK 7; AT 21,0;"MILES COV
  ERD = "
82 PRINT PAPER 2; INK 7; AT 2
  1,21;"SPEED = "
90 GO SUB 7000
100 IF INKEY$="" THEN LET a=
  -.3
102 IF INKEY$="0" THEN LET a

```

```

=3.5
104 IF INKEY$="1" THEN LET a
  =-1.6
200 LET fuel=fuel-.1
201 PRINT INK 2; PAPER 7; AT 0
  ,fuel;"(i<i-)"
202 IF fuel<7 THEN BEEP .001,f
  uel: PRINT FLASH 1; PAPER 5; AT
  0,19;"STOP FOR FUEL"
203 IF fuel<7 AND s <= 0 THEN
  GO SUB 2500
204 IF ti <= 0 THEN GO SUB 805
  0
205 IF fuel<0 THEN GO TO 8050

210 PRINT INK 4; PAPER 0; AT 1
  ,ti;"(i<i-)"
300 LET rand= INT ( RND *400)

302 IF rand>385 THEN GO SUB 70
  00
389 PRINT BRIGHT 1; INVERSE 1;
  AT 10,0;z(n)
395 IF s>z(n) THEN PRINT ; INK
  6; FLASH 1; AT 9,1;"(ig8)"; AT

```

```

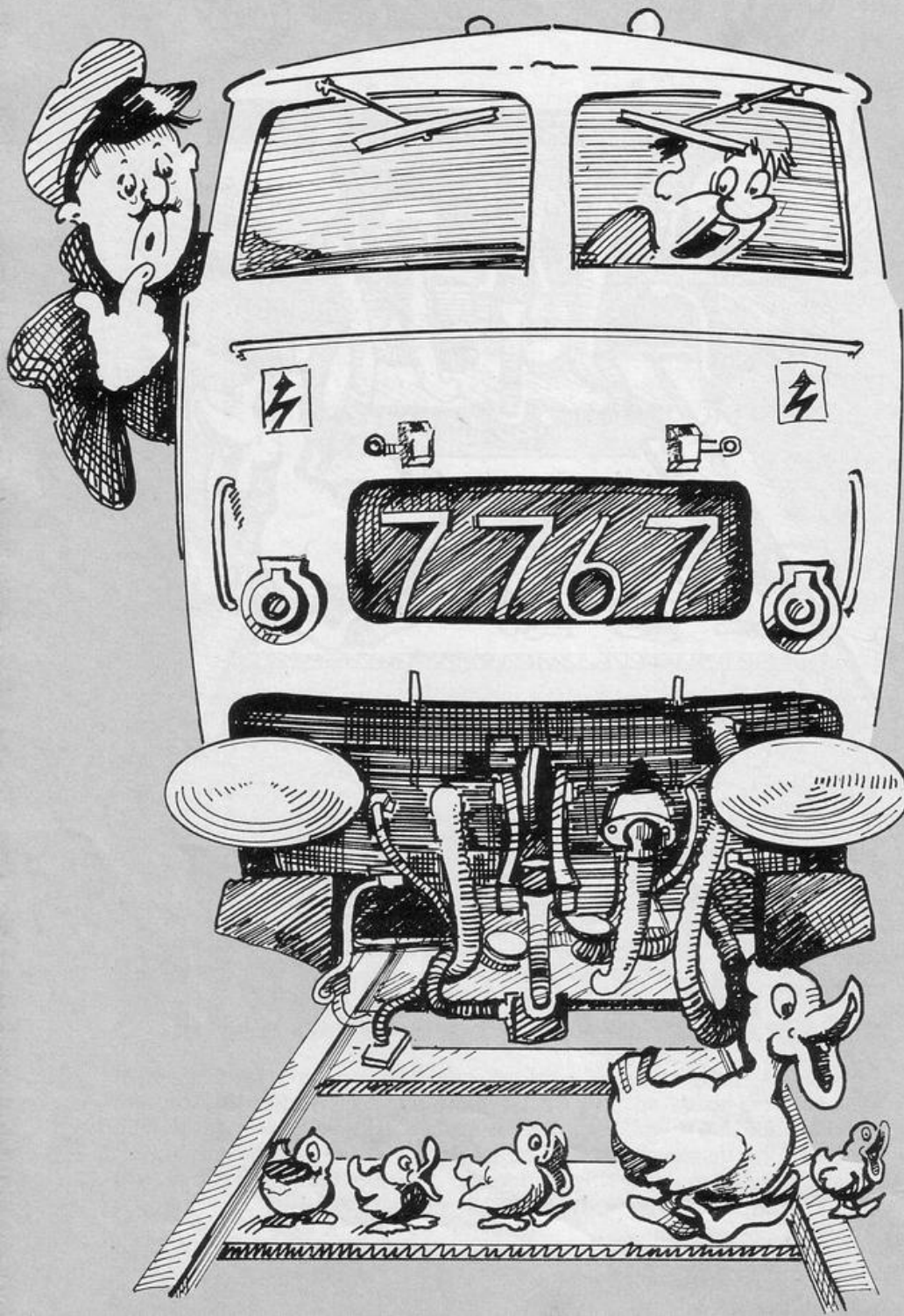
7,1; PAPER 0;" ": LET w=w+1: BEE
  P .006,50
396 IF s<z(n) THEN PRINT BRIG
  HT 1; INK 4; AT 7,1;"(ig8)"; AT
  9,1; PAPER 0;" "
397 IF fuel<7 THEN PRINT INK
  2; FLASH 1; AT 9,1;"(ig8)"
399 IF s>z(n) THEN LET miles=m
  iles-2
400 PRINT PAPER 2; INK 7; AT 2
  1,16; INT miles
401 LET miles=miles+.002+s/100

403 IF w>10 THEN GO SUB 7045

1000 LET ti=ti-.05: LET s=s+.2+a

1010 IF s<0 THEN LET s=0
1050 PRINT PAPER 2; INK 7; AT 2
  1,29; INT s
1051 IF s<100 THEN PRINT PAPER
  2; AT 21,31;" "
1052 IF s<10 THEN PRINT PAPER
  2; AT 21,30;" "
1060 BEEP .01,s/3
2000 GO TO 100
2500 PRINT PAPER 7; AT 0,19;"
  "; OVER 0; AT 15,15;"
  REFUELING": LET fuel=20-b: FOR t
  =0 TO fuel: PRINT AT 0,t; INK 7
  ; PAPER 1;"A": BEEP .2,8: NEXT t
  : PRINT AT 15,15;" "
  : L
  ET b=b+3: PRINT PAPER 4; AT 0,2
  5;"FUEL": LET s=4: RETURN
7000 LET n= INT ( RND *4)+1
7010 BEEP .7,10: BEEP .7,5: LET
  w=0
7020 RETURN
7045 LET penalty=miles/10
7050 LET miles=miles-penalty
7053 IF s<10 THEN PRINT INK 2;
  AT 21,30;"(ig8)"
7054 IF s<100 THEN PRINT INK 2
  ; AT 21,31;"(ig8)"
7055 PRINT INK 2; FLASH 1; AT 9
  ,1;"(ig8)": PRINT AT 15,15;"DER
  AILED": BEEP .1,s/10: PRINT AT
  15,15;" "
  : PAPER 2; INK 7
  ; AT 21,29; INT s: BEEP .05,s/10
  : LET s=s-3
7056 IF s>0 THEN GO TO 7053
7057 PRINT INK 2; AT 21,29;"(3*
  ig8)"
7060 LET w=0
7063 BEEP 1.5,43
7065 GO TO 100
8050 CLS : PRINT AT 10,7;"YOU C
  OVERED "; INT miles;" miles "
8052 PRINT AT 0,9;"TRAIN DRIVER
  "
8053 IF miles >= high THEN LET
  high=miles: BEEP 2,7
8056 PRINT AT 12,3;"TODAYS FURT
  HEST "; INT high;" miles"
8060 PRINT FLASH 1; AT 16,9;"PR
  ESS S TO PLAY"
8070 IF INKEY$="s" THEN CLS :
  GO TO 4
8080 GO TO 8070
9100 FOR a=USR "A" TO USR "A"+
  7
9110 READ b
9120 POKE a,b
9121 NEXT a
9125 RETURN
9130 DATA 255,255,0,0,0,0,255,25
  5

```



# Dear Diary

I suppose that the likeliest person to read this Diary is some scholar of the future engaged in writing my Life Story. Sometimes it occurs to me that you (if I may address you directly, sir) might somehow have the idea that I don't know much about programming.



THIS IS NOT TRUE.

To prove it, I decided to start a week early and write this month's problem page for Sinclair Programs without any interference from my obnoxious little sister Eustacia. In fact, it was the sight of Eustacia walking home across the park which gave me my subject — I decided to write a minefield program.

It was easy, sir. I hid 20 mines at random X, Y co-ordinates across the screen, holding the values of X and Y in the two arrays XM(20) and YM(20). Eustacia, under control of the cursor keys, had to wander across the screen and be blown up. The routine for checking her position against the position of the mines was

```
10 FOR N=1 TO 20
20 IF (X=XM(N) AND Y=YM(N)) THEN GOSUB 100
30 NEXT N
```



The GOSUB 100 bit, of course, takes you to the explosion routine. In fact, I was just starting to tackle the difficult problem (for most people, sir) of getting a really satisfying sound for this explosion when I noticed that Eustacia was remarkably slow at deciding whether or not she'd stood on a mine.

I thought about this for several days. Today I decided that the solution was to tackle my sister in person; it was sort of her fault, after all.

Leaning against the posser-infested walls of her bedroom, I got my ears bent with the usual Eustacia jargon. By complete accident, she managed to remind me of a couple of tricks I'd decided were too boring to use.

For example, if the character at location X, Y has a code between 32 and 127 (see Appendix A in the Spectrum manual), then SCREEN\$ will identify it. So if your mines are represented by M, then.

```
10 IF SCREEN$ (Y, X) = "M" THEN GOSUB 100
```

can replace lines 10 to 30.

ATTR, she happened to mention, is even better — because a programmer of my skills would usually represent the mines with some fancy user-defined graphic which SCREEN\$ wouldn't recognise.

If, for example, this UDG (as we professionals say, sir) is red, flashing, bright and on a black background, then ATTR (X, Y) will be evaluated as 128 (FLASH) + 64 (BRIGHT) + 8\*0 (BLACK PAPER) + 2 (RED INK) = 194.

So

```
10 IF ATTR (Y, X) = 194 THEN GOSUB 100
```

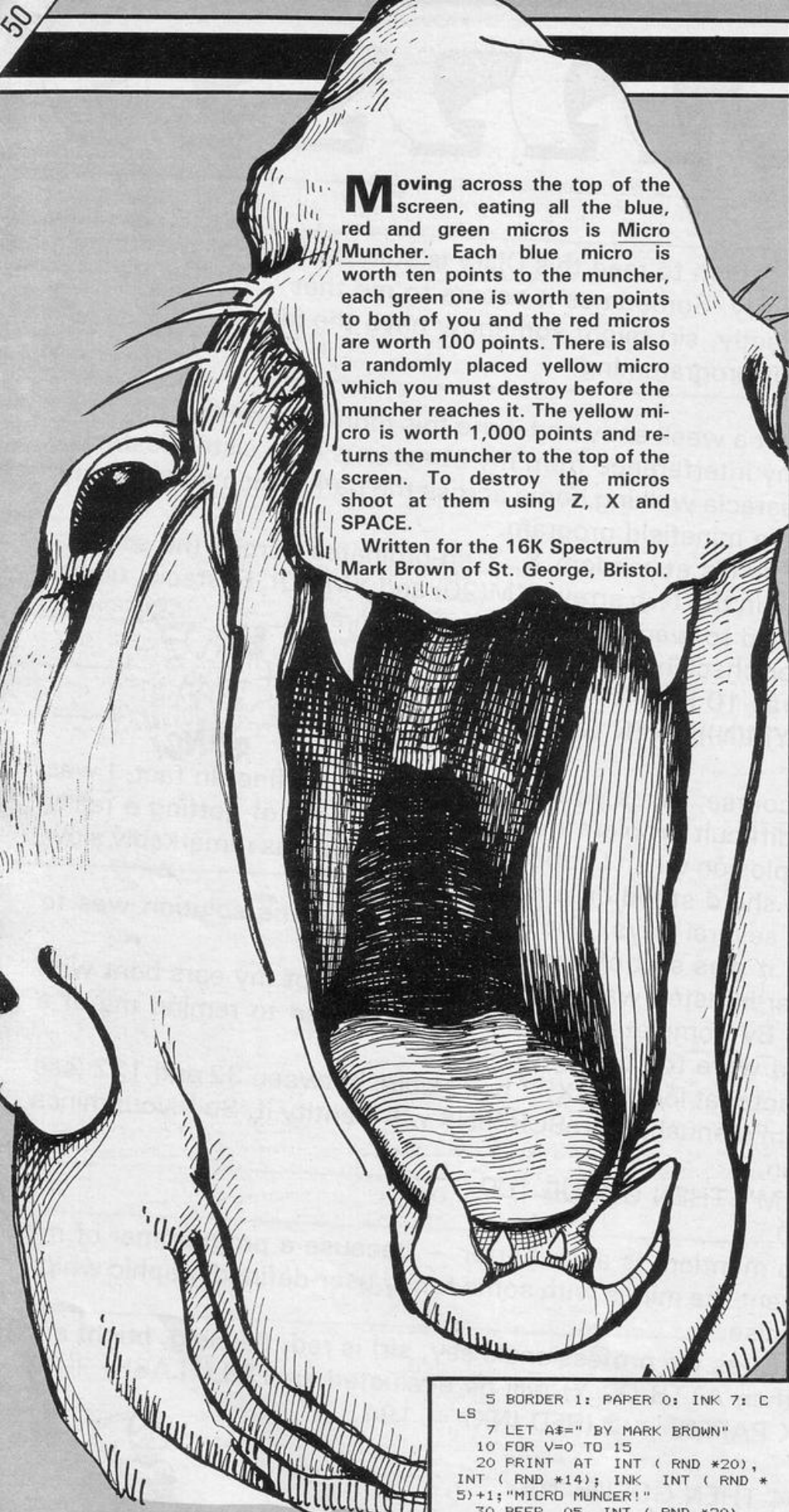
will do the trick.

You will hardly believe it, but Eustacia then demanded to be paid for her contributions.

Tell me, sir. Do they have such things as sisters in your advanced society?



Sid.



**M**oving across the top of the screen, eating all the blue, red and green micros is Micro Muncher. Each blue micro is worth ten points to the muncher, each green one is worth ten points to both of you and the red micros are worth 100 points. There is also a randomly placed yellow micro which you must destroy before the muncher reaches it. The yellow micro is worth 1,000 points and returns the muncher to the top of the screen. To destroy the micros shoot at them using Z, X and SPACE.

Written for the 16K Spectrum by  
Mark Brown of St. George, Bristol.

# MICRO MUNCHER

```

5 BORDER 1: PAPER 0: INK 7: D
LS
7 LET A$=" BY MARK BROWN"
10 FOR V=0 TO 15
20 PRINT AT INT ( RND *20),
INT ( RND *14); INK INT ( RND *
5)+1;"MICRO MUNCHER!"
30 BEEP .05, INT ( RND *20)
40 NEXT V
50 PRINT BRIGHT 1; AT 10,7; I
NK INT ( RND *3)+1; INVERSE 1;"
MICRO INVADERS!"
60 PRINT BRIGHT 1; AT 12,7; I
NK INT ( RND *3)+1; INVERSE 1;A
$
70 IF NOT LEN A$=14 THEN NE
W

```

```

80 FOR N=0 TO 57
90 LET J=64401
100 READ A
110 POKE J+N,A
120 NEXT N
130 DATA 6,1,197,33,15,0,17,1,0
,229,205,181,3,225,17,4,0,167,23
7,90,125,254,255,32,237,193,16,2
30,201
131 DATA 6,1,197,33,15,1,17,2,0
,229,205,181,3,225,17,4,0,167,23
7,90,125,254,255,32,237,193,16,2
30,201
133 FOR V=0 TO 31: READ S: POKE
USR "A"+V,S: NEXT V
134 DATA 0,63,63,63,42,42,42,42
,0,255,255,255,170,170,170,170,0
,248,248,248,168,168,168,168
135 DATA 16,16,56, BIN 01010100
, BIN 10010010, BIN 10010010, BI
N 10101010, BIN 01000100
140 LET C=14
141 LET SC=0: LET SSC=0
142 LET MEN=0
143 LET F=20
145 LET LL=0
146 CLS
147 FOR V=0 TO 30: PRINT AT I
NT ( RND *18),V; INK 4;"(ig8)"
148 PRINT AT INT ( RND *18),V
; INK 2;"(ig8)"; AT INT ( RND *
18),V; INK 1;"(ig8)"; AT INT (
RND *18),V; INK 1;"(ig8)"
149 NEXT V: PRINT AT INT ( RN
D *15)+2, INT ( RND *29)+2; INK
6; FLASH 1;"(ig8)"
150 FOR L=2 TO 17: FOR K=0 TO 3
1
160 PRINT AT L,K; INK 5;" ABC"
161 PRINT AT L,K-1; INK 0;" "
170 PRINT AT 20,C;" D "
180 IF INKEY$=" " THEN LET L
L=1: LET CC=C
190 IF LL=1 THEN : PRINT AT F,
Cc+1; INK 6;"I": PRINT AT F+1,C
c+1;" ": LET F=F-1
200 IF F=0 THEN LET F=19: LET
LL=0
220 IF ATTR (L,K+4)=4 THEN LE
T SSC=SSC+10: LET DUMMY= USR 644
30
225 IF ATTR (L,K+4)=2 THEN LE
T SSC=SSC+100: LET DUMMY= USR 64
430
226 IF ATTR (L,K+4)=134 THEN
LET SSC=SSC+1000: LET DUMMY= USR
64430: BORDER 6: BORDER 1: BORD
ER 6: BORDER 2: BORDER 0
227 IF ATTR (L,K+4)=1 THEN LE
T SSC=SSC+10: LET DUMMY= USR 644
30
230 PRINT AT 0,0; INK 6;"SCORE
=";SC;" CHIP SCORE=";SSC
240 IF ATTR (F,C+1)=4 THEN LE
T dummy= USR 64401: LET sc=sc+10
:
241 IF ATTR (F,C+1)=5 THEN LE
T dummy= USR 64401: LET sc=sc+10
0:
242 IF ATTR (F,C+1)=2 THEN LE
T dummy= USR 64401: LET sc=sc+10
0:
243 IF ATTR (F,C+1)=134 THEN
LET sc=sc+1000: FOR V=0 TO 7: FO
R b=0 TO 7: LET dummy= USR 64401
: BORDER b: BORDER b: NEXT b: NE
XT V: BORDER 0: GO TO 147
250 IF INKEY$="Z" THEN LET c
=c-1
260 IF INKEY$="X" THEN LET c
=c+1
280 IF INKEY$="X" THEN LET c
=c+2
290 IF INKEY$="Z" THEN LET c
=c-2
500 NEXT K: NEXT L
510 IF SC>SSC THEN PRINT AT 0
,0;"YOU WON THE MICRO INVADER"
520 IF SC<SSC THEN PRINT AT 0
,0;"I WON DO DAH"
550 PRINT AT 20,0;"WANT ANOTHE
R GO Y/N?"
560 IF INKEY$="Y" OR INKEY$
="y" THEN RUN
570 IF INKEY$="N" OR INKEY$
="n" THEN LOAD ""
580 GO TO 560

```

# COUNTING RABBITS

50 BORDER 7: PAPER 7: INK 0: B  
RIGHT 1: CLS  
60 DIM a(4): DIM c(4)  
70 FOR i=2 TO 6  
80 IF i <> 3 THEN PRINT AT i  
-1\*(i>3),8; INK i;"COUNTING RABB  
ITS"

90 NEXT i  
100 PRINT AT 12,10: PAPER 2: I  
NK 7: FLASH 1;"INITIALISING"  
110 GO SUB 2000  
120 PRINT AT 7,0:"Teaches the  
numbers: 0 to 8 by asking the  
child to count the number of ra  
bbits of a certain colour."  
130 PRINT "The colour in each  
question is shown as a long ban  
d enabling children to use the  
program before they can rea  
d."

140 PRINT "To answer a questio  
n just press the number keys 0 t  
o 8."

170 PRINT -AT 21,0:"Press the E  
NTER key to continue"

180 INPUT LINE z\$

190 REM

200 REM Start

210 REM

220 CLS

230 LET xmin=0: LET xmax=30: LE  
T sa=0: LET sm=0

250 FOR d=1 TO 2: RESTORE 280

260 FOR i=1 TO 4: READ a(i)

270 NEXT i

280 DATA 2,4,5,6

290 REM

300 REM Reset number of each co  
lour to 0

310 REM

320 FOR i=1 TO 4: LET c(i)=0: N  
EXT i

330 LET n=0

340 FOR y=0 TO 12 STEP 4

350 FOR x=1 TO 25 STEP 6

390 REM

400 REM Choose colour of each R  
abbit at random (max of 8)

410 REM

420 LET colour=INT ( RND \*4)+1:

430 LET c(colour)=c(colour)+1:

IF c(colour)>8 THEN LET c(colou  
r)=c(colour)-1: GO TO 420

440 INK a(colour): PRINT AT y,  
x;"GHJ"

450 PRINT AT y+1,x;"KLMN"

460 PRINT AT y+2,x;"OPQR"

470 NEXT x: NEXT y

480 INK 0: FOR i=1 TO 100: NEXT  
i

490 REM

500 REM Pick random colour

510 REM

520 LET p=INT ( RND \*4)+1: IF

a(p)=0 THEN GO TO 520

600 PRINT AT 19,2;"How many ";

PAPER a(p); " "; PAPER 7;

"Rabbits "; FLASH 1;"?"

610 LET a(p)=0

620 IF CODE INKEY# <48 OR CO

DE INKEY# >56 THEN GO TO 620

630 LET guess=CODE INKEY# -48

640 LET answer=c(p): IF guess=a

nswer THEN GO TO 800

690 REM

700 REM Guess wrong

710 REM

720 PRINT AT 19,0:"No you got

it wrong there are ";answer;" "

730 REM

740 REM Print a sad face

750 REM

760 PRINT AT 16,xmax;"AB": AT

17,xmax;"EF"

770 LET xmax=xmax-3: LET sa=sa+

1

780 LET w=.1: BEEP 1.5\*w,7: BEE

P w,4: BEEP 1.5\*w,0: BEEP w,4: B

E EEP .8\*w,2: BEEP 2\*w,2: GO TO 90

0

790 REM

800 REM Guess right

810 REM

820 PRINT AT 19,2;"Thats right

there are ";answer;" "

830 REM

840 REM Print a smiling face

850 REM

860 PRINT AT 16,xmin;"AB": AT

17,xmin;"CD"

870 LET xmin=xmin+3: LET sm=sm+

1

880 LET w=.07: BEEP 3\*w,12: BEE

P w,16: BEEP 2\*w,14: BEEP w,17:

BEEP 3\*w,16: BEEP 5\*w,12

900 FOR u=1 TO 250: NEXT u

920 PRINT AT 19,0:" "

930 LET n=n+1: IF n=4 THEN GO

TO 1000

950 GO TO 500

1000 NEXT d

1010 PRINT AT 19,2:"You got ";s

m;" right and ";sa;" wrong "

1020 PRINT AT 21,2:"Press the E

NTER key to repeat"

1030 INPUT LINE z\$: GO TO 200

This is an educational program for children aged two to five. Twenty rabbits appear on the screen and at the bottom a coloured band is shown. The child is asked how many rabbits are the same colour as the band at the bottom of the screen. As the child can see the colour without having to be able to read and there are never more than eight rabbits of one particular colour the program is suitable for the younger child.

Counting Rabbits was written for the 16K Spectrum by Alan Pratt of Chelmsford, Essex.

1040 STOP  
1990 REM  
2000 REM Set graphic characters

2010 REM  
2020 RESTORE 2040  
2030 FOR i=USR "a" TO USR "r"+  
7  
2040 READ j: POKE i,j  
2050 NEXT i: RETURN  
2060 DATA 7,31,48,96,76,204,192,  
193,224,248,12,6,50,51,3,131  
2070 DATA 193,192,216,79,99,48,3  
1,7,131,3,27,242,198,12,248,224

2080 DATA 193,192,195,71,108,48,  
31,7,131,3,195,226,54,12,248,224

2090 DATA 1,3,3,7,7,31,63,115,15  
2,152,184,48,112,243,255,255  
2100 DATA 0,0,0,0,0,224,248,254,  
0,0,0,0,0,0,0  
2110 DATA 243,255,251,119,15,0,0  
0,255,223,223,191,127,127,2  
55  
2120 DATA 255,255,255,255,255,25  
1,247,239,0,128,192,192,236,254,  
255,255  
2130 DATA 1,15,15,0,0,0,0,0,255,  
199,131,0,0,1,7,7  
2140 DATA 223,223,239,239,7,251,  
255,255,254,236,224,192,192,192,  
128,128



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# SPROGS

THE SPROGS ARE AT THE RACETRACK



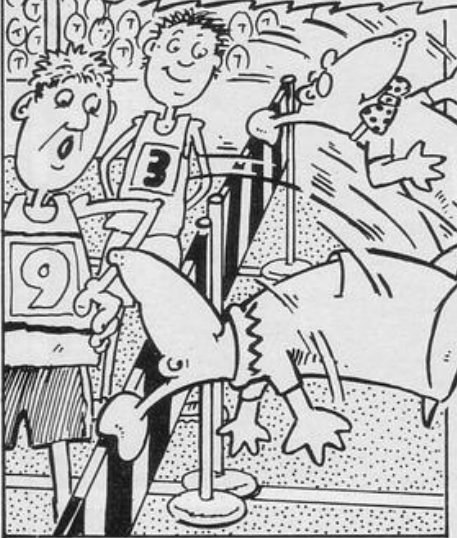
OH NO! - THE SOFTWARE PIRATE



THE SPROGS LEAP INTO ACTION



"AND HERE WE SEE A LATE ENTRY FROM THE SPROGS"



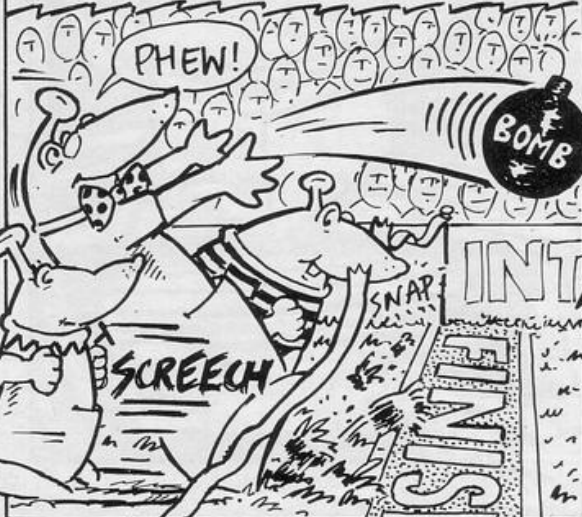
"A RECORD BREAKING HEIGHT ACHIEVED WITHOUT THE USE OF ANY POLE"



"AND WHAT A THROW!! - TEN..... TWENTY."



FIFTY..... SIXTY.....



JUST IN TIME THE SPROGS REACH THE BOMB

SEVENTY.....



EIGHTY... NINETY... ONE HUNDRED.



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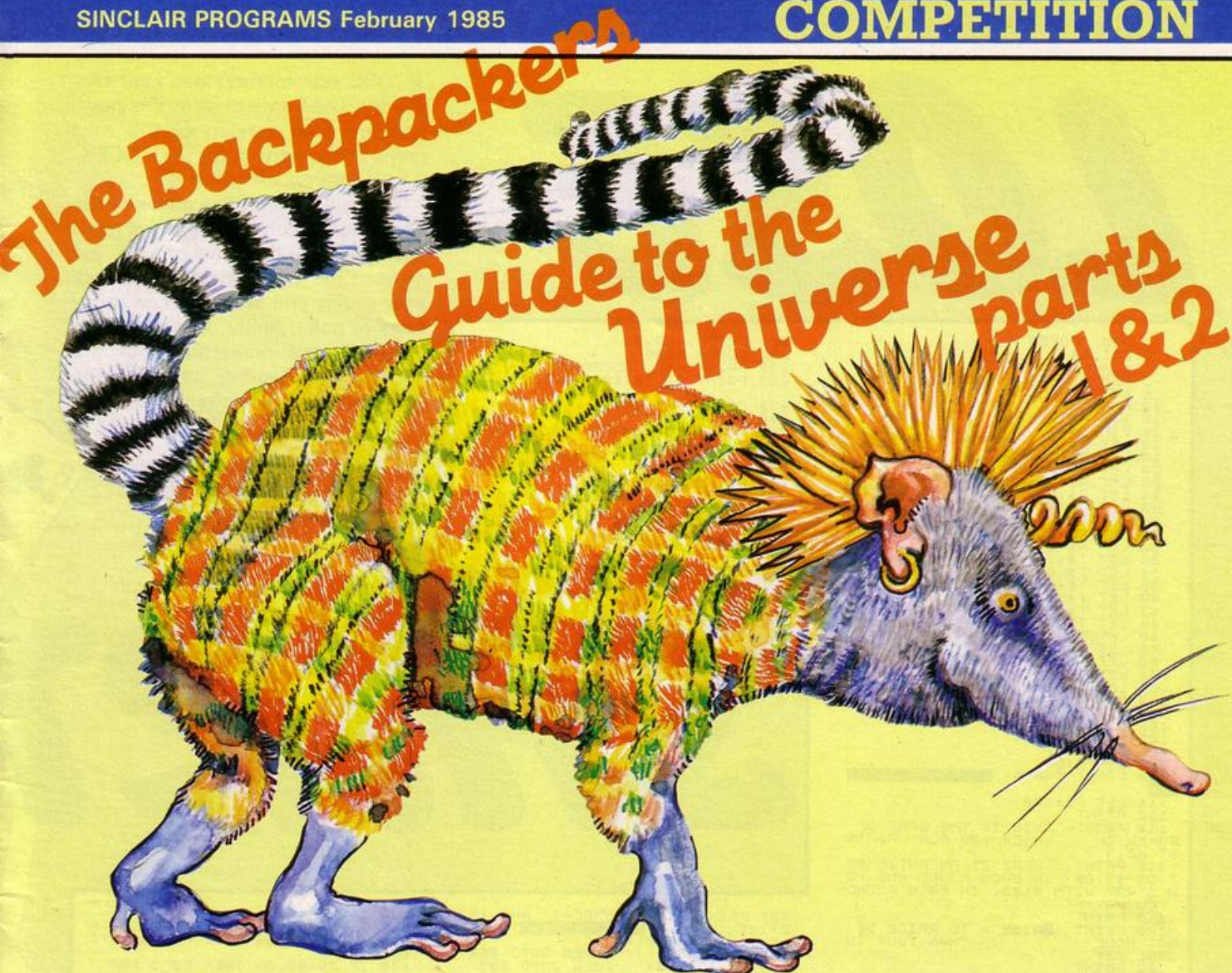
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SP/2/85





## 50 COPIES MUST BE WON

Ziggy, super-hero of Fantasy's games, reappears in the massive, two part game, **The Backpacker's Guide to the universe**. Ziggy has only half a terrestrial day in which to scour the labyrinthine caverns of the planet of Thalís, collect the twelve exotic animals to be found there and return them, unharmed, to the spaceship. Of course, with creatures such as the Fluffelump, which licks other creatures to death, and the Googly bird, which needs regular doses of tranquillisers in order to stave off a terminal nervous breakdown, to collect, Ziggy needs to invest a lot of thought and planning in his quest before actually moving any of the animals.

**How to enter:** First, answer the questions below. Then study the animal above. As Ziggy was returning to his space ship for the last time, he found this animal curled up behind the door. Despite extensive searches in the Encyclopedia Galactica, Ziggy has been unable to name it. What do you think the creature is called?

Fill in the competition entry form and post it off to us to arrive before the first of March. The best suggestions included with the correct answers will win.

Employees of EMAP and of Fantasy Software are not eligible to enter. The editor's decision in all matters concerning the competition is final.

1. Name the hero of the Backpacker's Guide.
2. How many creatures must the hero collect?
3. How many hours has the hero in which to complete his quest?
4. What is a 'Backpacker'?
5. Name one other game which Fantasy have produced for the Spectrum.

NAME .....	I THINK THE CREATURE IS A .....
ADDRESS .....	MY FAVOURITE PROGRAM IS .....
1 .....	FROM .....
2 .....	MY MOST HATED PROGRAM IS .....
3 .....	
4 .....	
5 .....	

# LOSE

**L**OSE your money, lose your sanity, Lose your shirt in this new, computerised version of the card game Poker written for the 16K ZX-81 by Steven Weston.

You will be dealt five cards by the computer which will also deal itself five cards. On the basis of your first sight of the cards you must choose how much you will bet. The usual rules of poker apply. Winning combinations are numerous, but are based on collecting cards of the same face value or the same suite.

*Your*

# SHIRT

6♣

9♠

```

1 REM "POKER"
2 LET S$="
3 REM BY STEVEN WESTON 1984
4 BORROW=0
5 RAND
6 DIM A$(9,5)
7 DIM T$(11,5)
8 LET A$(0,0)=" "
9 LET A$(0,1)=" "
10 LET A$(0,2)=" "
11 LET A$(0,3)=" "
12 LET A$(0,4)=" "
13 LET A$(0,5)=" "
14 LET A$(1,0)=" "
15 LET A$(1,1)=" "
16 LET A$(1,2)=" "
17 LET A$(1,3)=" "
18 LET A$(1,4)=" "
19 LET A$(1,5)=" "
20 LET A$(2,0)=" "
21 LET A$(2,1)=" "
22 LET A$(2,2)=" "
23 LET A$(2,3)=" "
24 LET A$(2,4)=" "
25 LET A$(2,5)=" "
26 LET A$(3,0)=" "
27 LET A$(3,1)=" "
28 LET A$(3,2)=" "
29 LET A$(3,3)=" "
30 LET A$(3,4)=" "
31 LET A$(3,5)=" "
32 LET A$(4,0)=" "
33 LET A$(4,1)=" "
34 LET A$(4,2)=" "
35 LET A$(4,3)=" "
36 LET A$(4,4)=" "
37 LET A$(4,5)=" "
38 LET A$(5,0)=" "
39 LET A$(5,1)=" "
40 LET A$(5,2)=" "
41 LET A$(5,3)=" "
42 LET A$(5,4)=" "
43 LET A$(5,5)=" "
44 LET A$(6,0)=" "
45 LET A$(6,1)=" "
46 LET A$(6,2)=" "
47 LET A$(6,3)=" "
48 LET A$(6,4)=" "
49 LET A$(6,5)=" "
50 LET A$(7,0)=" "
51 LET A$(7,1)=" "
52 LET A$(7,2)=" "
53 LET A$(7,3)=" "
54 LET A$(7,4)=" "
55 LET A$(7,5)=" "
56 LET A$(8,0)=" "
57 LET A$(8,1)=" "
58 LET A$(8,2)=" "
59 LET A$(8,3)=" "
60 LET A$(8,4)=" "
61 LET A$(8,5)=" "
62 LET A$(9,0)=" "
63 LET A$(9,1)=" "
64 LET A$(9,2)=" "
65 LET A$(9,3)=" "
66 LET A$(9,4)=" "
67 LET A$(9,5)=" "
68 DIM T$(13)
69 DIM K(4)
70 DIM M(5)
71 DIM N(5)
72 DIM O(5)
73 DIM D(5)
74 PRINT TAB 8;" POKER GAME."
75
76 LET P9=100
77 PRINT
78 PRINT "THIS IS THE GAME OF"
79 PRINT "POKER IN WHICH YOU PLAY AGAIN"
80 PRINT "ST ME."
81 PRINT "THERE IS AN ANTE BE"
82 PRINT "T OF $5.00 IN EACH ROUND AND YO"
83 PRINT "U START WITH $100. IN EACH ROUND"
84 PRINT "YOU MAY:-"
85 PRINT "1 RAISE - TO RAISE BY"
86 PRINT "NOT MORE THAN YOUR IN"
87 PRINT "ITAL BET."
88 PRINT "2 CALL - TO SEE THE CO"
89 PRINT "MPUTERS HAND"
90 PRINT "3 GO OUT - TO THROW YO"
91 PRINT "UR HAND IN."
92 PRINT "PRESS ANY KEY TO PLA"
93 PRINT "Y."
94 PRINT
95 PRINT TAB 10;"GOOD LUCK."
96 IF INKEY$="" THEN GOTO 136
97 IF INKEY$="1" THEN GOTO 137
98 CLS
99 DIM S(4,13)
100 PRINT AT 9,0;"THE CARDS HAV"
101 PRINT "E BEEN RESHUFFLED."
102 LET A9=5
103 PRINT AT 11,9;"ANTE OF $5.0"
104 PRINT
105 PRINT AT 13,9;"YOU HAVE $";
106 P9
107 IF P9<=0 THEN GOTO 7000
108 FOR X=1 TO 5
109 GOSUB 920
110 LET C(X)=C
111 LET N(X)=S
112 NEXT X
113 GOSUB 1040
114 PRINT
115 PRINT "ILL DEAL MY HAND...."
116
117 FOR X=1 TO 5
118 PRINT "XXXX XXXX XXXX XX"
119 GOSUB 920
120 LET C(X)=C
121 LET D(X)=S
122 NEXT X
123 PRINT "XXXX XXXX XXXX XX"
124 PRINT
125 PRINT AT 19,0;"YOU HAVE $";
126 P9-5
127 GOSUB 1080
128 LET C1=T
129 LET C2=H9
130 LET P1=-5
131 PRINT AT 21,0;"OPEN WITH A"
132 PRINT "BET. (0-"P9-5;"")"
133 INPUT BET
134 IF BET<0 OR BET>P9-5 THEN G
135 OTO 210
136 LET B=BET
137 IF RAND<.5 THEN GOTO 230
138 IF INT (((T*RAND)+1)+(H9*RN
139 D)+1)+(I*10)<(BET-(BET/10)) THEN
140 GOTO 440

```

```

230 LET A9=A9+B
231 GOSUB 5025
232 PRINT "ILL ACCEPT."
233 PRINT AT 19,10;"P9-5-BET;"
234 LET STAKE=BET
235 GOSUB 5000
236 PRINT "HOW MANY CARDS TO RE"
237 PLACE?"
238 IF INKEY$="" THEN GOTO 242
239 IF INKEY$="1" THEN GOTO 242
240 LET E$=INKEY$
241 IF E$="0" OR E$="3" THEN GO
242 TO 240
243 LET K9=VAL E$
244 FOR X=1 TO K9
245 GOSUB 5025
246
247 PRINT "CARD NUMBER?" AND (X
248 /2=INT (X/2));"CARD NUMBER?" AND
249 (X/2<>INT (X/2));"
250 IF INKEY$="" THEN GOTO 262
251 IF INKEY$="1" THEN GOTO 262
252 LET E$=INKEY$
253 IF E$="0" OR E$="9" THEN GO
254 TO 262
255 LET T9=VAL E$
256 PRINT T9
257 GOSUB 520
258 IF T9<6 THEN GOTO 280
259 GOSUB 5000
260 PRINT "ENTER CARD NO. (1-5"
261 ONLY)."
262 GOTO 260
263 LET M(T9)=C
264 LET N(T9)=S
265 NEXT X
266 GOSUB 1044
267 GOSUB 1070
268 FOR X=1 TO 5
269 LET T(M(X))=T(M(X))+1
270 LET K(N(X))=K(N(X))+1
271 NEXT X
272 GOSUB 5025
273 PRINT "I AM THINKING....."
274 GOSUB 540
275 LET P1=T
276 GOSUB 800
277 LET P2=H9
278 GOSUB 1080
279 LET H9=0
280 IF T3 THEN GOTO 350
281 FOR Z=1 TO 5
282 IF H9=3 THEN GOTO 340
283 IF T(C(Z))>1 THEN GOTO 340
284 LET H9=H9+1
285 GOSUB 920
286 LET C(Z)=C
287 LET D(Z)=S
288 NEXT Z
289 GOSUB 5025
290 PRINT "ILL TAKE ";H9;" CARD"
291 AND H9>1;"."
292 LET H8=H9
293 GOSUB 1080
294 LET C1=T
295 GOSUB 800
296 LET C2=H9
297 LET B9=INT (((C1*RAND)+(C2*RN
298 D)+(C1*10))+INT (A9/3)+(K9-H8)*
299 2)+7
300 LET B1=0
301 IF RAND<C1+.5 THEN GOTO 390
302 LET B9=99.99
303 GOSUB 5000
304 GOSUB 5000
305 IF B9<0 THEN GOTO 570
306 LET A9=A9+B1
307 IF B9<0 THEN GOTO 420
308 GOSUB 480
309
310 GOTO 540
311 IF A9+B9 THEN GOTO 460
312 IF A9+B9+(B9/2) THEN GOTO
313 450
314 IF B9=99.99 THEN GOTO 450
315 GOSUB 5000
316 GOSUB 480
317 GOTO 580
318 GOSUB 5000
319 PRINT "I CALL."
320 LET A9=A9+B
321 GOSUB 480
322 GOTO 540
323 LET B1=INT (((B9-A9)/3)*RAND
324 +2
325 LET A9=A9+B
326 GOSUB 5000
327 PRINT "I RAISE $";B1
328 GOTO 390
329 GOSUB 4000
330 GOSUB 1044
331 GOSUB 5000
332 PRINT "I HAD ";
333 LET T=C1
334 GOSUB 820
335 GOSUB 5000
336 PRINT "WITH A HIGH CARD OF"
337
338 LET C=C2
339 GOSUB 940
340 PRINT " "
341 IF P1=-5 THEN GOTO 530
342 GOSUB 5000
343 PRINT "YOU HAD ";
344 LET T=P1
345 GOSUB 820
346 GOSUB 5000
347 PRINT "WITH A HIGH CARD OF"
348
349 LET C=P2
350 GOSUB 940
351 PRINT " "
352 RETURN
353 IF C1=P1 THEN GOTO 550
354 IF C1<P1 THEN GOTO 580
355 GOTO 570
356 IF C2=P2 THEN GOTO 560
357 IF C2<P2 THEN GOTO 580
358 GOTO 570
359 GOSUB 5000
360 PRINT "IT WAS A TIE...."
361 GOTO 590
362 GOSUB 5000
363 PRINT "MONO";A9
364 LET P9=P9-A9
365 GOTO 590
366 GOSUB 5000
367 PRINT "YOU WON $";A9
368 LET P9=P9+A9
369 GOSUB 5000
370 PRINT "ANOTHER GO? (YES OR

```

```

412 GOTO 540
413 IF A9+B9 THEN GOTO 460
414 IF A9+B9+(B9/2) THEN GOTO
415 450
416 IF B9=99.99 THEN GOTO 450
417 GOSUB 5000
418 GOSUB 480
419 GOTO 580
420 GOSUB 5000
421 PRINT "I CALL."
422 LET A9=A9+B
423 GOSUB 480
424 GOTO 540
425 LET B1=INT (((B9-A9)/3)*RAND
426 +2
427 LET A9=A9+B
428 GOSUB 5000
429 PRINT "I RAISE $";B1
430 GOTO 390
431 GOSUB 4000
432 GOSUB 1044
433 GOSUB 5000
434 PRINT "I HAD ";
435 LET T=C1
436 GOSUB 820
437 GOSUB 5000
438 PRINT "WITH A HIGH CARD OF"
439
440 LET C=C2
441 GOSUB 940
442 PRINT " "
443 IF P1=-5 THEN GOTO 530
444 GOSUB 5000
445 PRINT "YOU HAD ";
446 LET T=P1
447 GOSUB 820
448 GOSUB 5000
449 PRINT "WITH A HIGH CARD OF"
450
451 LET C=P2
452 GOSUB 940
453 PRINT " "
454 RETURN
455 IF C1=P1 THEN GOTO 550
456 IF C1<P1 THEN GOTO 580
457 GOTO 570
458 IF C2=P2 THEN GOTO 560
459 IF C2<P2 THEN GOTO 580
460 GOTO 570
461 GOSUB 5000
462 PRINT "IT WAS A TIE...."
463 GOTO 590
464 GOSUB 5000
465 PRINT "MONO";A9
466 LET P9=P9-A9
467 GOTO 590
468 GOSUB 5000
469 PRINT "YOU WON $";A9
470 LET P9=P9+A9
471 GOSUB 5000
472 PRINT "ANOTHER GO? (YES OR

```



```

801 LET H9=14
802 RETURN
803 IF T<>0 THEN GOTO 830
804 PRINT "NOTHING"
805 RETURN
806 IF T<>1 THEN GOTO 840
807 PRINT "ONE PAIR"
808 RETURN
809 IF T<>2 THEN GOTO 850
810 PRINT "TWO PAIRS"
811 RETURN
812 IF T<>3 THEN GOTO 860
813 PRINT "THREE OF A KIND"
814 RETURN
815 IF T<>4 THEN GOTO 870
816 PRINT "A STRAIGHT"
817 RETURN
818 IF T<>5 THEN GOTO 880
819 PRINT "A FLUSH"
820 RETURN
821 IF T<>6 THEN GOTO 890
822 PRINT "A FULL HOUSE"
823 RETURN
824 IF T<>7 THEN GOTO 900
825 PRINT "FOUR OF A KIND"
826 RETURN
827 IF T<>8 THEN GOTO 910
828 PRINT "A STRAIGHT FLUSH"
829 RETURN
830 PRINT "A ROYAL FLUSH..."
831 RETURN
832 LET S=INT (RND*4+1)
833 LET C=INT (RND*13+1)
834 IF S(5,C)=1 THEN GOTO 920
835 LET S(5,C)=1
836 RETURN
837 PRINT "A" AND (C=1 OR C=14)
838 "T" AND C=10; "J" AND C=11; "Q" AND
ND C=12; "K" AND C=13;
841 IF C>1 AND C<10 THEN PRINT
C
842 IF C=1 THEN LET C=14
843 IF C>10 AND C<14 THEN LET C
=1
844 IF C=14 THEN LET C=11
845 RETURN
1000 PRINT "H" AND S=1; "S" AND S
=2; "D" AND S=3; "C" AND S=4;
1001 PRINT " "
1002 RETURN
1003 CLS
1004 LET LINE=0
1005 PRINT TAB 7; "HERE IS YOUR "
1006 PRINT " "
1007 PRINT " 1 2 3
4
5"
1008 FOR X=1 TO 5
1009 PRINT AT 2+LINE,0;
1010 PRINT TAB (X-1)*6; " ";T
AB (X-1)*6; " ";
1011 LET C=M(X)
1012 LET S=N(X)
1013 GOSUB 940
1014 GOSUB 1000
1015 FOR Y=1 TO 5
1016 PRINT TAB (X-1)*6;A$(VAL T$(
C,Y))
1017 NEXT Y
1018 NEXT X
1019 RETURN
1020 DIM K(4)
1021 DIM T(13)
1022 RETURN
1023 GOSUB 1070
1024 FOR X=1 TO 5
1025 LET T(C(X))=T(C(X))+1
1026 LET K(D(X))=K(D(X))+1
1027 NEXT X
1028 GOSUB 640
1029 RETURN
1100 STOP
4000 FOR Q=1 TO 5
4001 LET M(Q)=C(Q)
4002 LET N(Q)=D(Q)
4003 NEXT Q
4004 LET LINE=9
4005 RETURN
5010 FOR Q=1 TO 25
5020 NEXT Q
5025 PRINT AT 21,0;S$;AT 21,0;
5030 RETURN
6000 GOSUB 5000
6005 PRINT "RAISE, CALL OR GO OU
T?"
6010 IF INKEY$<>" " THEN GOTO 601
0
6020 IF INKEY$=" " THEN GOTO 6020
6030 LET E$=INKEY$
6040 IF E$<>"R" AND E$<>"C" AND
E$<>"G" THEN GOTO 6010
6050 IF E$="C" THEN LET B=0
6060 IF E$="G" THEN LET B=-1
6065 IF E$="C" OR E$="G" THEN GO
TO 6120
6070 GOSUB 5025
6080 PRINT "HOW MUCH DO YOU RAIS
E BY?"
6090 INPUT B
6100 IF B>BET OR B+STAKE>P9 THEN
GOTO 6090
6110 IF B<=0 THEN GOTO 6000
6114 LET STAKE=STAKE+B
6115 PRINT AT 19,10;P9-STAKE-5;"
6120 RETURN
7000 PRINT
7010 PRINT "YOU HAVE NO MONEY DO
YOU WISH TO BORROW $100? (YES
OR NO)?"
7020 IF INKEY$<>" " THEN GOTO 702
0
7030 IF INKEY$=" " THEN GOTO 7030
7040 LET E$=INKEY$
7050 IF E$<>"Y" THEN GOTO 595
7060 LET P9=100
7065 LET BORROW=BORROW+1
7070 GOTO 138

```

```

590?"
593 IF INKEY$<>" " THEN GOTO 593
594 IF INKEY$=" " THEN GOTO 594
595 IF INKEY$="Y" THEN GOTO 138
596 CLS
597 LET P9=P9-(BORROW*100)
598 GOSUB 138
599 PRINT " "
601 IF P9<0 THEN GOTO 630
610 IF P9=100 THEN GOTO 620
611 SCROLL
612 PRINT "YOU LEFT LOSING $";1
00-P9
613 SCROLL
614 SCROLL
615 PRINT " "
616 GOTO 635
620 SCROLL
621 PRINT "YOU LEFT WINNING $";
P9
622 SCROLL
623 SCROLL
624 PRINT " "
625 GOTO 635
630 SCROLL
631 PRINT "YOU OWE ME $";-P9
632 SCROLL
633 SCROLL
634 PRINT " "
635 SCROLL
636 SCROLL
637 SCROLL
638 STOP
640 LET T=0
641 FOR I=1 TO 4
642 IF K(I)<>5 THEN GOTO 650
643 LET T=5
650 NEXT I

```

```

651 LET I=2
652 LET H9=0
653 LET I=I-1
654 IF I<0 THEN GOTO 670
655 LET I=13
656 IF T(I)<1 THEN GOTO 660
657 LET H9=I
658 IF I<>1 THEN GOTO 680
659 LET I=14
660 LET Z=I-4
661 LET I=I-1
662 IF T(I)<1 THEN GOTO 720
663 IF Z<>1 THEN GOTO 690
664 LET T=Z+1
665 IF I=13 THEN GOTO 660
666 IF T<5 THEN GOTO 730
667 IF T(1)<1 THEN GOTO 730
668 LET H9=1
669 IF T=0 THEN GOTO 740
670 RETURN
671 FOR I=1 TO 13
672 IF T(I)<4 THEN GOTO 750
673 LET T=7
674 IF T(I)<3 THEN GOTO 760
675 LET T=T+5
676 LET H9=I
677 IF T(I)<2 THEN GOTO 790
678 IF T=5 THEN GOTO 780
679 IF T<0 THEN GOTO 770
680 LET H9=0
681 IF H9=1 THEN GOTO 780
682 IF H9=I THEN GOTO 780
683 LET H9=I
684 LET T=T+1
685 NEXT I
686 IF T<5 THEN GOTO 810
687 LET T=3
688 RETURN
689 IF H9<>1 THEN GOTO 810

```

# Questline

## Cathy Foot faces The Wrath of Magra

**S**TILL exhausted by climbing my way laboriously up the social scale towards **Hampstead** last month it came as something of a shock to be thrust into a world of spells and monsters as I began **The Wrath of Magra** from Mastervision. Having compiled a list of does and don'ts for players last month, I felt no compunction in producing some for games writers this month.

1) Will **SOMEONE** out there bring out a grammar for games program writers — and a dictionary for the players!

2) Will firms at least allow us to "save" to microdrive — I **WOULD** like to copy the whole program to microdrive, but I suppose that would increase games pirating. Saving to microdrive would speed up my games no end.

If you like this sort of thing, you **DO** get good value for money — for instance, there are hieroglyphics on the inner walls of the Wizard's tomb. All I got from investigating the tomb was to be buried in six unmarked graves! This was one area I had not explored with the graphics on — you can translate the hieroglyphics with the aid of the Enchanted Warrior spell in the Book of Shadows. Thanks, MasterVision, both for the various hints you gave me as we discussed Magra and for taking a lot of time and

effort yourselves so as to get me into Episode Three.

Since I used to be a Gamer (when I had time) I like the Dungeons and Dragons touch, where not everything is revealed if you "look". Along with many other people, though, I would have preferred an "examine" command, so many games of this type have such that one feels disoriented when told that "examine" is not understood. While it is a good idea to be able to go to a likely spot and look for herbs etc., this program is too slow overall for such frills to be suitably appreciated. Similarly, we are not given any clues as to native habitat of the herbs in this universe. Neither dill nor wolfsbane are mentioned in any of my plant books, and stinging nettles are not to be found in many of their more normal Earth environments.

Yes, the machine will accept multiple instructions but remember to leave a space between commands. "N space N" will move you two map squares North if you can take them. (Having plugged in a programmable joystick my son discovered that NESWNESWNESWNESW ...

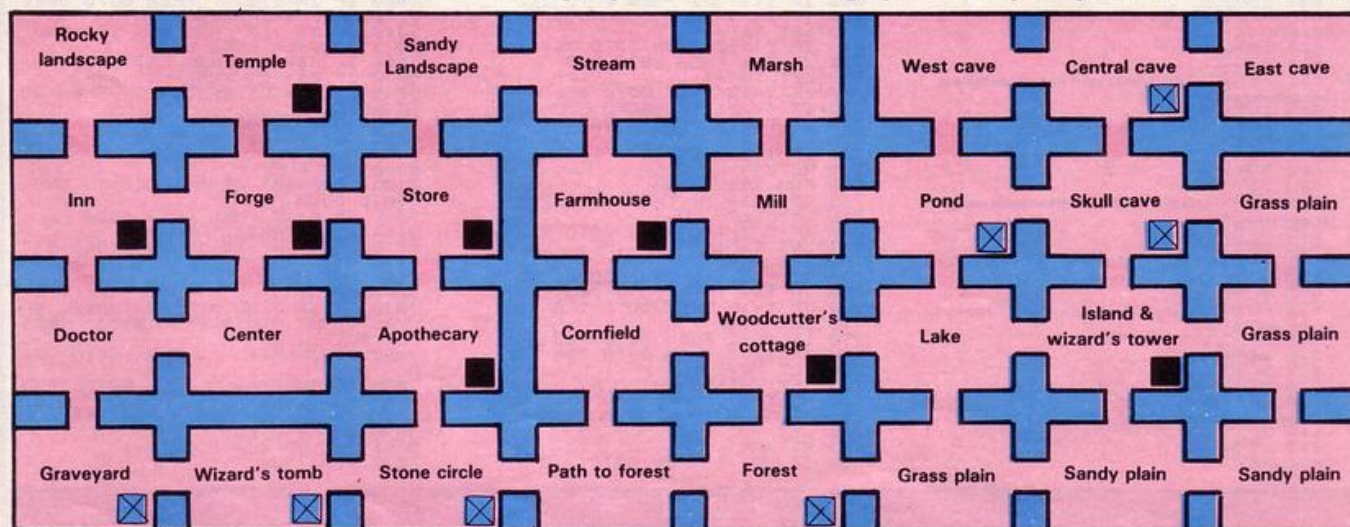
paused the machine as if it were awaiting a tape input and, since there was none available, the whole program crashed — a pity,

since we were just about to risk a trip into Skull Cavern loaded for bear — now does one buy aspirin for a computer?)

Spelling mistakes are bad enough in written work, but when you have to use them because they are stored in the program they become frustrating in the extreme — Vipers **TOUNGE**, for instance, or Death **CUP** mushrooms, although Mastervision told me that the last is so that even crazier players might not try the "spells" outside the program. Since it takes the machine so long to check for sure that "you can't get that there 'ere" each time, my level of frustration rises as my spelling ability plummets.

Continuing to look at this as computerised Dungeons and Dragons. I see Episode One as the preparation of my character and Episode Two as a first level adventure preparing you to face Magra herself in Episode Three. Yes, it can be improved — there must be some way to speed up the action, for instance — but, even as it stands, you still get a lot for your money. **IMPORTANT:** Take your first games slowly if you are new to Magra and find a source of food and water; your character seems to have been through some hard times before reaching the Valley.

They only sell mead and meat



Key

☒ = object located in the area

■ = object stored in the building



at the inn, and everything for sale costs at least one gold bit. You will find that villagers will not buy things they sell for one gold bit, since they seem keen on making a profit out of you.

If you need a hint, then move the letters in the next lines back by one in the alphabet — tfmm Tjsfot lbjs up jodsfbtf zpvs wealth in Episode One. vtf uif HspX Xjoht tqfmm up jodsfbtf zpvs faith in Episode Two).

My first venture into Episode Three lasted exactly three caverns. There I was confronted by a large fire-spitting, furry monster with a long scaly tail — not at all cuddly!

At that point, the gremlins struck again, NEWing out the program, much to my relief, since I was thirsty and backed into a corner.

The message which appears on the screen if your character dies in Episode One is not accurate, continue reloading from the beginning UNTIL THAT MESSAGE LEAVES THE SCREEN — about 100 turns of the counter.

Dislikes:- a) the slow graphics. After the initial mapping run, I would suggest taking advantage

of the “no graphics” facility, which speeds things up a lot (just you wait until you reach Episode Two, where every letter calls forth a “beep” from your Spectrum and slows you down no end. Even my son can type in instructions faster than they can be handled and he is still at the “prod” stage of typing). “No Graphics” in Episode Two continues to show you which room you are in, it only fails to draw in any monster there.

b) The need to type in everything in full each time. I KNOW there is a huge vocabulary, but there must be some short cuts for us SOMEWHERE.

I AM impressed by the amount of work and loving care that has gone into episode three. The monsters the machine comes up with have been the sort of thing that any sensible adventurer would tiptoe past, hoping not to be seen. None of them have been other than magnificently offensive. My only hope has been to get in first with a lucky blow.

After my first monster, I met, in quick succession, a bipedal creature with a body covered in green slime which spat out lightning bolts, a giant slithering monster with fiery breath, extending steel jaws and coarse hair, which turned out to be surprisingly vulnerable to my silver sword — on my first meeting I killed it with one lucky blow; on the second it took three rounds before it lay dead at my feet.

In my opinion, however, the moment AFTER you have killed your first monster is where the most delicious terror strikes. As you stand there, thanking your Gods that you have overcome one of the beastly guards of Magra, the computer informs you that Magra is making a new monster.

You have only just penetrated her fortress and already she knows you are there! Can you still win through? As one already stricken in the fray, my best wishes go with you, adventurer, and may you succeed where I failed!

To: Questline, Sinclair Programs,  
67 Clerkenwell Road, London EC1R 5BH

From:.....

HELP OFFERED .....

HELP WANTED .....

# UFO ATTACK

**A** Martian attack fleet is approaching your city. Shoot the fighters down from your position in the defence tower. The controls for your cannon are 2, W, 9, 0 and M. The game features good graphics, sound effects and explosion routines. Damage to the city is shown on the screen as a percentage and the affected buildings are set alight.

**UFO Attack** was written for the 48K Spectrum by Anthony Sherwood of West Bromwich, West Midlands.

```

5 LET z=59000: OVER 0: PAPER
0: INK 7: BORDER 1: CLS
8 RESTORE : GO TO 6000
200 IF RND >.5 THEN LET q=a4:
LET d=a3: POKE (z+36),90: GO TO
202
201 LET d=a1: LET q=a2
208 LET e2=q*8+6: LET e1=(21-d)
*8: OVER 1
213 IF ATTR (16,q)<128 THEN P
RINT INK 6: PAPER 2: AT 16,q: F
LASH 1:"H"
220 INK 8: PLOT e2,e1: DRAW -3,
(d-15)*8: FOR i=1 TO 6: RANDO
MIZE USR (z+25): NEXT i: PLOT e2,e
1: DRAW -3,(d-15)*8: INK 7
225 IF RND >.35 THEN PRINT A
T 16,q:"H"
230 OVER 0: LET x=x+5: POKE (z+
36),60: RETURN
400 LET ht=0: IF ATTR (m1,m2)=
6 THEN LET ht=1
405 IF ATTR (m1,m2)=5 THEN LE
T ht=2
410 OVER 1: LET g1=(21-m1)*8+4:
LET g2=m2*8+4: PLOT 24,17: DRAW
g2-24,g1-17: PLOT 231,17: DRAW
g2-231,g1-17
425 RANDOMIZE USR (z+4): RANDO
MIZE USR (z+4): PLOT 24,17: DRA
W g2-24,g1-17: PLOT 231,17: DRAW
g2-231,g1-17
450 OVER 0: IF ht>0 THEN LET s
=s+1: LET i=20-LEN STR$ s: PRI
NT INK 0: PAPER 5: AT 19,i:s: G
O TO 600
499 RETURN
601 OVER 1: IF ht=1 THEN PRINT
AT a1,a2:a$: GO TO 603
602 PRINT AT a3,a4:b$
605 POKE (z+36),128
610 BRIGHT 1: FOR i=1 TO 8: PRI
NT AT m1,m2-1:"RHR": RANDOMIZE
USR (z+25): PRINT AT m1,m2-1:"
HRH": RANDOMIZE USR (z+25)
613 NEXT i: BRIGHT 0: POKE (z+3
6),60
620 LET t=1: LET y1=m2-1: LET y
2=m1-1: LET y3=m2+1: LET y4=m1+1
625 PRINT AT m1,y1:"H": AT y2,
m2:"D": AT m1,y3:"H": AT y4,m2:"
H"
650 FOR i=1 TO 10: IF y1>0 THEN
PRINT AT m1,y1:"H": LET y1=y1
-1: PRINT AT m1,y1:"H"
660 PRINT AT y2,m2:"D": LET y2
=y2-t: PRINT AT y2,m2:"D"
665 IF y2=3 THEN LET t=-t
670 IF y3<30 THEN PRINT AT m1
,y3:"H": LET y3=y3+1: PRINT AT
m1,y3:"H"
680 IF y4<15 THEN PRINT AT y4
,m2:"H": LET y4=y4+1: PRINT AT
y4,m2:"H"
690 NEXT i
694 PRINT AT m1,y1:"H": AT y2,
m2:"D": AT m1,y3:"H": AT y4,m2:"
H"
695 OVER 0
700 IF ht=2 THEN GO TO 926
910 LET a2=0: LET a1=2+INT (R
ND *10): LET a$="B"
924 PRINT OVER 1: AT a1,a2:a$
925 GO TO 950
940 LET a4=30: LET a3=2+INT (

```

```

RND *10): LET b$="P": PRINT INK
5: OVER 1: AT a3,a4:b$
980 LET u=u+1: PRINT #0: INK 0:
PAPER 5: AT 1,15:x:"%": AT 1,27
;u
983 IF x>79 THEN FOR i=1 TO 42
: PRINT INK i/6: AT 4,2:"CITY I
S IRREPARABLY DAMAGED": AT 7,10:
"MISSION OVER": RANDOMIZE USR (
z+25): NEXT i: GO TO 7382
1030 PRINT AT a1,a2: OVER 1:a$
1034 LET a$="B"
1035 IF a2>8 THEN LET a$="CD"
1036 IF a2>18 THEN LET a$="EF"
1040 LET r=RND: LET a1=a1+(r>
.65 AND a1<11)-(r<.35 AND a1>2)
1060 LET a2=a2+1: IF a2=30 THEN
GO TO 904
1070 PRINT INK 6: AT a1,a2: OVE
R 1:a$
1075 IF INKEY$="m" THEN GO SU
B 400
1080 IF RND <.13 THEN GO SUB 2
00
1090 GO SUB 1110: GO TO 1181
1110 LET m4=m2+(INKEY$="0" AND
m2<30)-(INKEY$="9" AND m2>1)
1130 LET m3=m1+(INKEY$="w" AND
m1<11)-(INKEY$="2" AND m1>2)
1165 PRINT INK 8: OVER 1: AT m1
,m2:"A": LET m1=m3: LET m2=m4: P
RINT INK 8: OVER 1: AT m1,m2:"A
": RETURN
1330 PRINT AT a3,a4: OVER 1:b$

```



```

1334 LET b$="P"
1335 IF a4<22 THEN LET b$="QR"
1336 IF a4<12 THEN LET b$="IJ"

```

```

1340 LET r= RND : LET a3=a3+(r>
.65 AND a3<11)-(r<.35 AND a3>2)

```

```

1360 LET a4=a4-1: IF a4=0 THEN
GO TO 940
1370 PRINT INK 5; AT a3,a4; OVE
R 1;b$
1380 IF INKEY$="m" THEN GO SU
B 400
1999 GO SUB 1100: GO TO 1000
6010 INK 0: PRINT PAPER 5; AT 3
,0;" UFO ATTACK
"

```

```

6020 PAPER 3: PRINT " A MARTIA
N ATTACK FLEET IS APPROACHING
YOUR CITY. SHOOT THE FIGHTERS DO
WN FROM YOUR POSITION IN THE
DEFENSIVE TOWER. "
6900 FOR i= USR "a" TO USR "s"+
7
6901 READ j: POKE i,j: NEXT i
6903 DATA 231,129,129,0,0,129,12
9,231,0,0,0,14,31,0,0,0,0,15,4
8,96,31,0,0,0,0,192,96,128,0,0

```

```

,0,15,16,32,64,192,63,0,0,224,16
8,4,6,248,0
6905 DATA 1,3,7,15,31,63,127,255

```

```

6907 DATA 5,133,220,127,116,68,7
6,12,0,1,3,7,15,60,224,128,0,128
,192,224,240,60,7,1
6908 DATA 18,60,126,191,92,16,16
,16,24,44,223,122,44,8,8,8
6920 FOR i=z TO (z+72): READ j:
POKE i,j: NEXT i
6945 PRINT PAPER 5;" LASER
CANNON CONTROLS "
6950 PRINT " RAISE 2 LOW
ER W "
6960 PRINT " LEFT 9 RIGHT 0
FIRE M ": PAPER 0: INK 7
7000 LET i=216: LET j=60
7002 PLOT 255,(j-3): DRAW -40,0

```

```

7003 PLOT 255,(j-5): DRAW -42,0:
DRAW 2,2
7005 FOR p=1 TO 3: PLOT i,j: DRA
W 0,16: DRAW 8,0: DRAW 0,-16: DR
AW -8,0: PLOT i,j+16: DRAW 3,3:
DRAW 8,0: DRAW 0,-16: DRAW -3,-3
: PLOT i+8,j+16: DRAW 3,3: LET a
cr=3: LET up=7: GO SUB 7065: LET
i=i+14: NEXT p: GO TO 7110
7065 LET k=i+2: LET l=j: FOR m=1
TO acr: FOR n=1 TO up: LET l=l+
2: PLOT k,l: NEXT n: LET l=j: LE
T k=k+2: NEXT m: RETURN

```

```

7111 LET i=80: LET j=40
7112 FOR p=1 TO 4
7115 PLOT i,j
7120 DRAW 0,24: DRAW 16,0: DRAW
0,-24: DRAW -16,0
7125 PLOT i,j+24
7130 DRAW 5,5: DRAW 16,0: DRAW 0
,-24: DRAW -5,-5
7140 PLOT (i+16),(j+24): DRAW 5,
5: PLOT i,j+6: DRAW -10,-10: DRA
W 8,0: DRAW -2,-2: DRAW -11,0: D
RAW 14,14: PLOT i+11,j-4: DRAW 6
,0: DRAW 12,12: DRAW -7,0: DRAW
0,2: DRAW 12,0: DRAW -16,-16: DR

```

```

AW -10,0: DRAW 2,2
7200 LET acr=7: LET up=11: GO SU
B 7065
7210 LET i=i+37: NEXT p
7250 PLOT 0,j-6: DRAW 58,0
7255 DRAW 2,2: DRAW -60,0
7260 PLOT 0,j-10: DRAW 73,0: DRA
W -4,-4: DRAW -69,0
7261 PLOT 20,45: DRAW 0,6: DRAW
-1,0: DRAW 4,4: DRAW 36,0: DRAW
-4,-4: DRAW -36,0: DRAW 36,0: DR
AW 1,1: DRAW 0,-7: DRAW -36,0
7262 DRAW 36,0: DRAW 2,2: DRAW 0
,6
7263 PLOT 230,40: DRAW 0,6: DRAW
-1,0: DRAW 4,4: DRAW 18,0: DRAW
-4,-4: DRAW -18,0: DRAW 18,0: D
RAW 1,1: DRAW 0,-7: DRAW -18,0

```

```

7264 DRAW 18,0: DRAW 2,2: DRAW 0
,6
7287 PRINT AT 18,27;"L K L"
7288 PRINT AT 17,28;"L K"
7289 PRINT AT 15,1;"L": AT 16,0
;"L": AT 16,4;"KL"
7290 PLOT 0,0: DRAW 255,0: PLOT
0,175: DRAW 255,0
7291 PRINT AT 12,0;"SSNSMMSNNSS
SSSSSSNMSSSSSSSSSS": AT 13,3;"M M
MM"
7300 PLOT 0,0: FOR i=1 TO 26: RE
AD j,k: DRAW j,k: NEXT i
7340 PLOT 255,0: DRAW -16,16: DR
AW -32,0: DRAW 0,-8: DRAW 0,8: D
RAW 8,-8: DRAW -16,0: DRAW -8,8:
DRAW -23,0
7360 PLOT 0,175: FOR i=1 TO 27:
READ j,k: DRAW j,k: NEXT i
7380 LET s=0: LET h=0: LET m1=11
: LET m2=16: LET m3=m1: LET m4=m
2
7382 LET a1=8: LET a2=0: LET a3=
3: LET a4=30: LET b$="P": LET a$
="B"
7400 IF s>h THEN LET h=s
7401 PRINT #0: INK 3: AT 0,2;"G"
: AT 0,29;"D": PAPER 3: AT 0,3;"
"

```

```

7402 DATA 0,0,0,0,0,56,40,56,0,0
,7,5,5,5,5,7
7404 PRINT AT 11,6: FLASH 1;"PR
ESS KEY 1 TO START"
7405 IF INKEY$ "<" "1" THEN GO
TO 7405
7406 FOR i=31 TO 0 STEP -1: POKE
(z+11),i*8: RANDOMIZE USR (z+4
): IF ATTR (16,i)>127 THEN PRI
NT AT 16,i: OVER 1;"H"
7407 NEXT i
7408 LET s=0: LET x=0: LET u=1

```

```

7410 PRINT INK 0: PAPER 5; AT 1
9,12;"HITS 000": AT 20,12;"HIGH
000"
7415 PRINT #0: AT 1,2: INK 0: PA
PER 5;" CITY DAMAGE UFO NO.
": AT 1,15;x;"%": AT 1,27;u

```

```

7420 LET i=20- LEN STR$ h: PRIN
T INK 0: PAPER 5; AT 20,i;h
7430 FOR i=2 TO 11: PRINT AT i,
0;"

```

```

": RANDOMIZE USR (z+25): RAN
DOMIZE USR (z+25): NEXT i
7440 FOR i=1 TO 25: PLOT INT (
RND *250), INT (RND *67+88): NE
XT i

```

```

7680 PRINT OVER 1: AT m1,m2;"A"
: AT a1,a2;a$: AT a3,a4;b$: GO T
O 950
9001 DATA 128,192,224,240,248,25
2,254,255,0,0,0,4,14,17,0,0,0,0
,6,15,31,112,64,0,0,0,0,128,224
,32,0,0,0,0,180,75,0,0
9004 DATA 11,167,67,237,58,72,92
,15,15,15,30,251,243,211,254,238
,16,67,16,254,28,32,246,251,201

```

```

9006 DATA 243,58,72,92,15,15,15,
8,38,0,1,60,0,8,211,254,238,16,8
,46,0,85,92,167,237,82,237,82,17
,254,0,25,125,148,56,1,61,103,61
,32,253,11,120,177,32,223,251,20
1

```

```

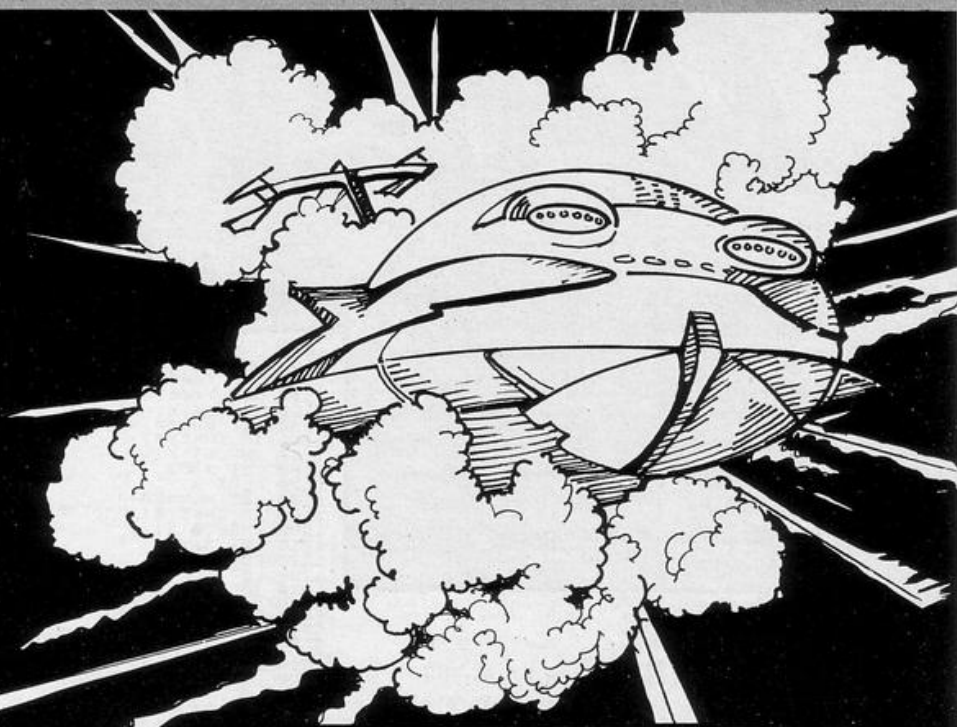
9050 DATA 16,16,32,0,0,-8,0,8,-8
,-8,16,0,8,8,24,0,0,-6,0,21,80,0
,0,-31,-80,0,0,9,0,-9,6,6,0,19,-
6,6,6,-6,68,0,6,6,-6,-6,0,-19,6,
-6,-6,6,-68,0

```

```

9055 DATA 15,-15,32,0,0,8,0,-8,-
8,8,16,0,8,-8,32,0,-15,15,15,-15
,0,15,9,0,8,-8,32,0,8,8,9,0,0,-1
5,15,15,-15,-15,32,0,8,8,16,0,-8
,-8,0,8,0,-8,32,0,14,14

```



# DARTS

One or two people can play and may choose to have a 501 or a 301 start. The dartboard is shown and the cursor moves round the board. Press any key when you wish the cursor to stop. You will then be shown a bar with STDO. on it. Pressing any key as the cursor flashes over these characters will determine whether you score a single, double, treble, 25 or bullseye.

Darts is an excellent program written for the 16K ZX-81 by Gary Brauntton of Redruth, Cornwall.

```

10 GOSUB 9000
20 GOTO 5500
30 GOTO 1000
40 GOSUB 1500
1000 FOR L=1 TO 3
1005 IF PL=1 THEN PRINT AT 0,0;"
1010 IF PL=2 THEN PRINT AT 0,29;"
1015 "PL"
1020 LET AS="4133184628044724134
72006471510451015410502350417320
4032070419222060718101615150815191
118204141822909223312"
1030 FOR I=1 TO 102 STEP 6
1040 LET X=VAL AS(I TO I+1)
1050 LET Y=VAL AS(I+2 TO I+3)
1060 PLOT X,Y
1065 LET NUM=VAL AS(I+4 TO I+5)
1070 IF INKEY$="" THEN GOTO 40

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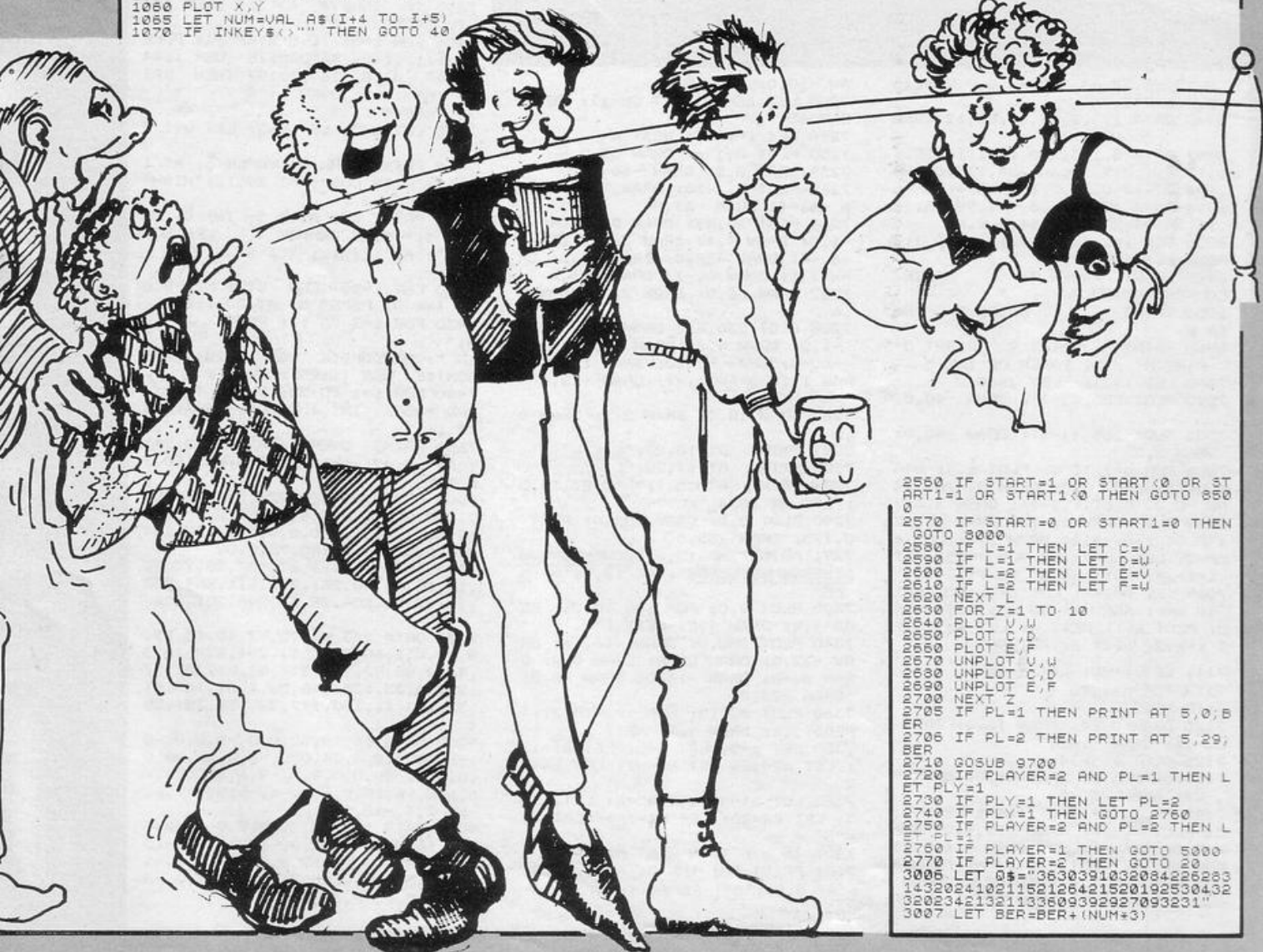
1080 UNPLOT X,Y
1090 NEXT I
1100 LET X=25
1110 LET Y=35
1120 PLOT X,Y
1130 LET NUM=5
1140 IF INKEY$="" THEN GOTO 40
1150 UNPLOT X,Y
1160 LET X=32
1170 PLOT X,Y
1180 LET NUM=20
1190 IF INKEY$="" THEN GOTO 40
1200 UNPLOT X,Y
1210 LET X=Y
1220 PLOT X,Y
1230 LET NUM=1
1240 IF INKEY$="" THEN GOTO 40
1250 UNPLOT X,Y
1260 GOTO 1020
1265 IF INKEY$="" THEN GOTO 150
1510 DIM TS(5,5)
1520 LET TS(1,1)="GOTO"
1530 LET TS(2,1)="GOTO"
1540 LET TS(3,1)="GOTO"
1550 LET TS(4,1)="GOTO"
1560 LET TS(5,1)="GOTO"
1570 FOR T=1 TO 5
1580 PRINT AT 23,25;TS(T)
1590 IF INKEY$="" THEN GOTO 200
1600 IF L=4 THEN RETURN

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1610 NEXT T
1620 GOTO 1570
2005 GOTO 1506+(T*500)
2007 LET BER=BER+NUM
2008 IF PL=1 THEN LET START=STAR
T=NUM
2009 IF PL=2 THEN LET START1=STA
RT1=NUM
2010 IF START<=1 OR START1<=1 TH
EN GOTO 8500
2040 IF L=1 THEN LET C=X
2050 IF L=1 THEN LET D=Y
2060 IF L=2 THEN LET E=X
2070 IF L=2 THEN LET F=Y
2080 NEXT L
2100 FOR Z=1 TO 10
2110 PLOT X,Y
2120 PLOT C,D
2130 PLOT E,F
2140 UNPLOT X,Y
2150 UNPLOT C,D
2160 UNPLOT E,F
2170 NEXT Z
IF PL=1 THEN PRINT AT 5,0;B
IF PL=2 THEN PRINT AT 5,29;
BER
2180 GOSUB 9700
2190 IF PLAYER=2 AND PL=1 THEN L
ET PLY=1
2200 IF PLY=1 THEN LET PL=2
2210 IF PLY=1 THEN GOTO 2300
2220 IF PLAYER=2 AND PL=2 THEN L
ET PL=1
2230 IF PLAYER=2 THEN GOTO 20
2240 IF PLAYER=1 THEN GOTO 5000
2250 LET Z$="3839430232004832253
0222020021231431511411192037512
01226480715073800433725003240"
2260 LET BER=BER+(NUM*2)
2270 IF PL=1 THEN LET START=STAR
T=(NUM*2)
2280 IF PL=2 THEN LET START1=STA
RT1=(NUM*2)
2290 LET M=NUM-3
2300 UNPLOT X,Y
2310 LET NUM=(NUM*3)+M
2320 LET U=VAL Z$(NUM TO NUM+1)
2340 LET W=VAL Z$(NUM+2 TO NUM+3)
2350 PLOT U,W
2360 IF NUM=9 THEN UNPLOT U,W
2365 LET NUM=NUM-M
2366 LET NUM=NUM/3

```



```

2550 IF START=1 OR START<0 OR ST
RT1=1 OR START1<0 THEN GOTO 850
0
2570 IF START=0 OR START1=0 THEN
GOTO 8000
2580 IF L=1 THEN LET C=U
2590 IF L=1 THEN LET D=W
2600 IF L=2 THEN LET E=U
2610 IF L=2 THEN LET F=W
2620 NEXT L
2630 FOR Z=1 TO 10
2640 PLOT U,W
2650 PLOT C,D
2660 PLOT E,F
2670 UNPLOT U,W
2680 UNPLOT C,D
2690 UNPLOT E,F
2700 NEXT Z
2705 IF PL=1 THEN PRINT AT 5,0;B
2706 IF PL=2 THEN PRINT AT 5,29;
BER
2710 GOSUB 9700
2720 IF PLAYER=2 AND PL=1 THEN L
ET PLY=1
2730 IF PLY=1 THEN LET PL=2
2740 IF PLY=1 THEN GOTO 2760
2750 IF PLAYER=2 AND PL=2 THEN L
ET PL=1
2760 IF PLAYER=1 THEN GOTO 5000
2770 IF PLAYER=2 THEN GOTO 20
3005 LET Q$="3630391032084226283
14320241021152126421520192530432
02023421321133609392927093231"
3007 LET BER=BER+(NUM*3)

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```

36530 UNPLOT 32,18
36540 UNPLOT C,D
36550 UNPLOT E,F
36560 NEXT Z
36565 IF PL=1 THEN PRINT AT 5,0;B
ER
36565 IF PL=2 THEN PRINT AT 5,29;
BER
36570 GOSUB 9700
36580 IF PLAYER=2 AND PL=1 THEN L
ET PLY=1
36590 IF PLY=1 THEN LET PL=2
37000 IF PLY=1 THEN GOTO 3720
3710 IF PLAYER=2 AND PL=2 THEN L
ET PL=1
37300 IF PLAYER=2 THEN GOTO 5000
4005 UNPLOT 32,20
4007 LET BER=BER+50
4010 IF PL=1 THEN LET START=STAR
T-50
4020 IF PL=2 THEN LET START1=STA
RT1-50
4025 UNPLOT X,Y
4030 IF START=1 OR START<0 OR ST
ART1=1 OR START1<0 THEN GOTO 850
0
4040 IF START=0 OR START1=0 THEN
GOTO 8000
4050 IF L=1 THEN LET C=32
4060 IF L=1 THEN LET D=20
4070 IF L=2 THEN LET E=32
4080 IF L=2 THEN LET F=20
4090 NEXT L
4100 FOR Z=1 TO 10
4110 PLOT 32,20
4120 PLOT C,D
4130 PLOT E,F

```

[illegible]

**I**ncrease your speed and power by pressing the P and U keys in sequence. The table at the top of the screen shows your speed, power and condition. After a limited amount of time the bike will accelerate towards the ramp. There are three cones to jump initially, but this number is increased by two following each successful jump. Make sure the Spectrum is in CAPS mode before you play.

Motorbike Rider was written for the 16K Spectrum by M. R. Hughes of Colchester, Essex.

# MOTORBIKE RIDER



```

5 GO SUB 1000
10 BORDER 4: PAPER 4: INK 0: B
RIGHT 1: CLS
20 BEEP .1,20
30 PRINT AT 10,5: "PRESS A KEY
TO START"
40 PAUSE 0
45 CLS
50 LET X=18: LET Y=0
60 LET SP=0
65 LET POINTS=0
70 LET A$="BC": LET B$="ED"
80 LET P=0: LET H=2
90 LET CO=5: LET AC=0: LET M=0
95 LET C$="F GGGGGGGGGGGGGGGGG
GGGGGGGG"
100 BEEP .2,15
110 FOR T=0 TO 5: PRINT INK 5;
INVERSE 1: "
      ": NEXT T
120 PRINT AT 0,1: INK 7; PAPER
0: "SPEED "; SP
125 PRINT AT 21,10: PAPER 0; I
NK 6: "POINTS "; INT POINTS
130 PRINT AT 1,1: INK 7; PAPER
0: "POWER "; P
140 PRINT AT 3,0: "CONDITION":
PRINT AT 3,10: INK H; "(igB)"
150 PRINT AT X-1,Y: INK 7; "A";
AT X,Y: INK 2; A$: AT X+1,Y: INK
0; B$
160 IF AC=0 THEN PRINT AT 12,
12: "START": FOR J=1 TO 70: BEEP
.005,-5: BEEP .005,-10: NEXT J:
PRINT AT 12,12: " "
170 LET I$=INKEY$
175 LET AC=1
180 IF I$="P" AND P<100 THEN G
O SUB 200
190 LET M=M+1
192 IF M>100 THEN GO TO 500
195 GO TO 120
200 IF INKEY$="D" THEN GO TO
205
202 GO TO 200
205 LET P=P+1
210 LET SP=SP+2

```

```

215 IF P>25 THEN LET H=6
220 IF P>50 THEN LET H=3
230 IF P>75 THEN LET H=7
240 RETURN
510 FOR N=0 TO 30
515 PRINT AT X-1,N: INK 7; "A";
AT X,N: INK 2; A$: AT X+1,N: INK
0; B$
520 BEEP .005,-10: BEEP .002,-1
5
530 PRINT AT X-1,N: " "; AT X,
N: " "; AT X+1,N: " "
540 NEXT N
550 LET Y=0: LET X=18
560 PRINT AT 19,5: C$ ( TO CO)

570 FOR I=0 TO 3
575 PRINT AT X-1,I: INK 7; "A";
AT X,I: INK 2; A$: AT X+1,I: INK
0; B$
580 BEEP .002,-5: BEEP .003,0

590 PRINT AT X-1,I: " "; AT X,I
: " "; AT X+1,I: " "
600 NEXT I
610 LET HE=INT ( RND *2)+1
620 LET DI=HE+(P/3-4)-INT ( R
ND *5+(1))
625 LET Y=3
630 FOR W=18 TO 18-HE STEP -1

640 PRINT AT W-1,Y: INK 7; "A";
AT W,Y: INK 2; A$: AT W+1,Y: INK
0; B$
650 BEEP .001,2
660 PRINT AT W-1,Y: " "; AT W,Y
: " "; AT W+1,Y: " "
665 IF Y>30 THEN GO TO 900
667 LET Y=Y+1
670 NEXT W
680 FOR P=Y TO DI
690 PRINT AT W-1,P: INK 7; "A";
AT W,P: INK 2; A$: AT W+1,P: INK
0; B$
700 BEEP .002,-4
710 PRINT AT W-1,P: " "; AT W,P
: " "; AT W+1,P: " "

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715 IF P>30 THEN GO TO 730
720 NEXT P
725 LET Y=P
730 FOR L=W TO 18
740 PRINT AT L-1,Y: INK 7; "A";
AT L,Y: INK 2; A$: AT L+1,Y: INK
0; B$
750 BEEP .002,0: BEEP .001,-10

760 PRINT AT L-1,Y: " "; AT L,Y
: " "; AT L+1,Y: " "
765 IF Y>30 THEN GO TO 900
766 LET Y=Y+1
770 NEXT L
775 IF SCREEN$ (L,Y+1) <> " "
THEN GO TO 900
779 PAUSE 20
780 PRINT AT 10,2: "WELL DONE!
TRY AGAIN ": PAUSE 0: LET CO=CO+
2: LET AC=1
785 LET POINTS=POINTS+SP+CO/2

790 LET SP=0: LET P=0: LET X=18
: LET Y=0: LET H=2: LET M=0: CLS
: GO TO 110
AD LUCK! GAME OVER": PAUSE 0: GO
TO 10
1000 DATA 0,0,0,56,125,96,96,60
1010 DATA 56,126,127,125,125,62,
122,255
1011 DATA 0,0,208,48,16,208,176,
252
1015 DATA 243,180,91,169,165,37,
19,12
1020 DATA 255,56,121,222,238,204
,248,48
1030 DATA 0,0,6,14,30,62,126,254
1040 DATA 0,0,0,0,24,24,60,126

1045 FOR C=144 TO 150
1050 FOR M=0 TO 7
1055 READ A
1060 POKE USR CHR$ C+M,A: NEXT
M: NEXT C
2000 RETURN

```

# WASHING LINE

Each player takes a turn at placing an item of washing on the line. Choose a number and you will be told whether you have hung up a sheet, t-shirt, pair of socks or trousers. As the items are added the washing line will be weighed down. Occasionally a sparrow will sit on the line, thus making it more likely to snap. The person who adds the last item before the line breaks is the loser.

Washing Line was written for the 16K ZX-81 by Simon Williams of Bradford, W. Yorks.

```
1 REM WASHING LINE
2 GOSUB 1500
3 FAST
4 CLS
5 FOR F=6 TO 20
6 PRINT AT F,0;"",AT F,31;"|
7
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12
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20
21
22
23
24
25
26
27
28
29
30 NEXT F
31 PRINT AT 6,1;"|
32
33
34
35
36
37
38
39
40 PRINT AT 21,0;"|
41
42
43
44
45
46
47
48
49
50 PRINT AT 19,2;"|
51
52
53
54
55 PRINT AT 20,2;"|
56
57
58
59
60 PRINT AT 19,2;"|
61
62
63
64
65
66
67
68
69
70 LET P=1
71 LET ST=0
72 LET RST=INT (RND*25)+25
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90 LET ST=ST+1
91
92
93
94
95 SLOW
96 PRINT AT 15,2;"PLAYER ";P;"|
97
98
99
100 PRINT AT 15,2;"CHOOSE NOW."
101
102
103
104
105 INPUT U
106 IF U>4 OR U<1 THEN PRINT AT
107 17,2;"DAFT."
108
109
110
111
112
113
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ONES (E.G. SOCKS) SO IT IS BETTER TO HAVE CHOSEN".  
1555 PRINT "THE SMALLER OBJECTS."

1560 PRINT "THE LOSER IS THE PERSON WHO WAS THE LAST TO PLACE AN ITEM ON THE LINE."  
1570 PRINT AT 15,0;"HOW MANY ARE PLAYING?"

1580 INPUT PL  
1590 FAST  
1600 DIM A\$(5,6)  
1605 DIM B\$(5,6)  
1610 DIM C\$(5,6)  
1615 DIM D\$(5,6)  
1620 LET A\$(1)=""  
1625 LET A\$(2)=""  
1630 LET A\$(3)=""

1640 REM  
1650 LET B\$(1)=""  
1655 LET B\$(2)=""  
1660 LET B\$(3)=""  
1665 LET B\$(4)=""  
1670 LET B\$(5)=""  
1675 LET B\$(6)=""

1680 LET C\$(1)=""  
1685 LET C\$(2)=""  
1690 LET C\$(3)=""  
1695 LET C\$(4)=""  
1700 LET C\$(5)=""  
1705 LET C\$(6)=""

1710 LET D\$(1)=""  
1715 LET D\$(2)=""  
1720 LET D\$(3)=""  
1725 LET D\$(4)=""  
1730 LET D\$(5)=""  
1735 LET D\$(6)=""

1740 LET D\$(7)=""  
1745 LET D\$(8)=""  
1750 LET D\$(9)=""  
1755 LET D\$(10)=""  
1760 LET D\$(11)=""  
1765 LET D\$(12)=""

1770 LET D\$(13)=""  
1775 LET D\$(14)=""  
1780 LET D\$(15)=""  
1785 LET D\$(16)=""  
1790 LET D\$(17)=""  
1795 LET D\$(18)=""

1800 RETURN  
2000 FOR F=1 TO 8  
2005 PRINT AT 8,1;"|"  
2010 NEXT F  
2020 FOR F=4 TO 20  
2030 PRINT AT F,0;"|"

2040 PRINT  
2050 NEXT F  
2055 FOR F=1 TO 10  
2060 PRINT AT 9,9;"PLAYER ";P;"|"  
2065 IF INKEY="" THEN NEXT F  
2070 FOR F=1 TO 22 STEP 2  
2075 SCROLL  
2080 SCROLL  
2090 NEXT F  
2100 PRINT AT 9,0;"ANOTHER GAME"

2110 INPUT Z\$  
2120 IF Z\$(1)="Y" THEN RUN  
2130 IF Z\$(1)<>"N" THEN GOTO 211  
0  
2140 PRINT "OK.THEN."

2150 STOP  
2155 SAVE "WASHING LINE"  
9900 PRINT "LOAD CHECK: PASSED"  
9910 PRINT AT 7,8;"WASHING LINE"  
9920 PRINT AT 7,8;"|"  
9930 FOR F=1 TO 60  
9940 IF INKEY="" THEN NEXT F  
9955 PRINT AT 0,0;"|"

9960 RUN



**S**plat the red hot sword as it whizzes round the screen, slicing through the ice cubes. To splat the sword you have to squash it using the right of the cube and depress either the "I" or the "P" key. If you are successful you will receive a bonus before moving onto the next level. There is a time limit in which you must squash the sword.

Ice Cube Ivan was written for the 16K Spectrum by John Lonsdale of West Ferry, Dundee.

```
AT 0,F;"(ig8)": BEEP .01,F: NE
XT F: FOR F=1 TO 19: PRINT AT F
,31;"(ig8)": BEEP .01,F: NEXT F
```

```
510 FOR F=30 TO 0 STEP -1: PRIN
T AT 19,F;"(ig8)": BEEP .01,F:
NEXT F: FOR F=19 TO 1 STEP -1: P
RINT AT F,0;"(ig8)": BEEP .01,F
: NEXT F: INK 7: RETURN
550 FOR N=1 TO 50: PRINT AT I
NT ( RND *18)+1, INT ( RND *28)+
1: INK 5;"A": BEEP .01,N/2: NEXT
N: RETURN
1000 FOR F=1 TO 10: FOR N=4 TO 1
STEP -1: BEEP .1,N: PRINT AT X
,Y: INK RND *7;"J": NEXT N: NEX
T F
```

```
1010 LET L=L-1: IF L=0 THEN PRI
NT AT 10,11;"GAME OVER": FOR N=
1 TO 500: NEXT N: RUN
1020 FOR N=1 TO 300: NEXT N: GO
TO 15
5000 IF TI-200<1 THEN GO TO 502
0
```

```
5010 FOR N=1 TO (TI-200)/5: PRIN
T AT 21,0;"SCORE:";S: LET S=S+1
: BEEP .009,35: NEXT N: FOR N=1
TO 200: NEXT N: GO TO 15
5020 PRINT AT 10,11: FLASH 1;"N
O BONUS!": FOR N=1 TO 200: BEEP
.005,N/6: NEXT N: CLS : GO TO 15
```

```
8000 RESTORE : FOR n= USR "a" TO
USR "k"+7: READ a: POKE n,a: N
EXT n
8020 LET S=0: LET M$="JK": LET W
=1
```

```
8030 LET LE=1: LET L=3
8040 LET J=13: LET K=13
8400 RESTORE 9100
8500 PRINT AT 5,10;"ICE CUBE IV
AN": AT 8,10;"BY J.LONSDALE": AT
15,12;"Q~ UP": AT 16,12;"Z~ D
OWN": AT 17,12;"I~ LEFT": AT 18
```

# ICE CUBE IVAN

```
10 PAPER 0: INK 7: BORDER 0: C
LS : POKE 23658,8: GO SUB 8000
```

```
15 CLS : GO SUB 500
20 GO SUB 550
21 LET TI=450: FOR N=1 TO LE:
LET TI=TI-50: NEXT N
25 PRINT AT 21,0;"SCORE:";S;"
LEVEL:";LE;" LIVES:";L
30 LET X=11: LET Y=16
35 LET T=10: LET E=30: LET C=0
```

```
45 PRINT AT T,E: INK 7;" "
50 LET T=T+(T<K)-(T>K): LET E=
E+(E<J)-(E>J): IF INT T=K AND
INT E=J THEN LET K= INT ( RND *
18)+1: LET J= INT ( RND *28)+1
```

```
55 PRINT AT T,E: INK 2;"I"
70 IF X=T AND Y=E THEN GO TO
1000
```

```
100 IF INKEY$="Q" AND ATTR (
X-1,Y)=7 THEN PRINT AT X,Y;" "
: LET X=X-1
110 IF INKEY$="Z" AND ATTR (
X+1,Y)=7 THEN PRINT AT X,Y;" "
: LET X=X+1
```

```
120 IF INKEY$="P" AND ATTR (
X,Y+1)=5 THEN GO SUB 200
130 IF INKEY$="I" AND ATTR (
X,Y-1)=5 THEN GO SUB 300
140 IF INKEY$="I" AND ATTR (
X,Y-1) <> 5 THEN PRINT AT X,Y;
" ": LET Y=Y-1
145 IF INKEY$="P" AND ATTR (
X,Y+1) <> 5 THEN PRINT AT X,Y;
" ": LET Y=Y+1
```

```
150 PRINT AT X,Y;M$(W)
155 LET W=W+1: IF W=3 THEN LET
W=1
170 LET TI=TI-1: IF TI <= 0 THE
N GO TO 1000
```

```
190 GO TO 40
200 IF ATTR (X,Y+2) <> 7 THEN
RETURN
202 LET C$=" ABCDEFGH ": LET d
=1: FOR n=Y+1 TO 30: FOR f=1 TO
4
```

```
205 PRINT AT X,Y;"J"
210 LET d=d+2: IF d>8 THEN LET
d=1
215 IF ATTR (X,N+2)=2 THEN LE
T C=1
220 PRINT AT X,n-1: INK 7;" "
: INK 5;c$(d);c$(d+1)
230 NEXT f: IF ATTR (X,n+2)=7
OR ATTR (X,N+2)=2 THEN NEXT n
```

```
235 PRINT AT X,N+1: INK 5;"A";
AT X,N: INK 7;" "
237 IF C=1 THEN LET C=0: LET L
E=LE+1: LET S=S+450: GO TO 5000
```

```
240 RETURN
300 IF ATTR (X,Y-2) <> 7 THEN
RETURN
302 LET C$=" HGFE DCBA": LET d=
1: FOR n=Y-1 TO 1 STEP -1: FOR f
=4 TO 1 STEP -1
305 PRINT AT X,Y;"J"
310 LET d=d+2: IF d>8 THEN LET
d=1
315 IF ATTR (X,N-2)=2 THEN LE
T C=1
```

```
320 PRINT AT X,n: INK 5;c$(d+1
);c$(d): INK 7;" "
330 NEXT f: IF ATTR (X,n-1)=7
OR ATTR (X,N-1)=2 THEN NEXT n
335 PRINT AT X,N: INK 5;"A": A
T X,N+1: INK 7;" "
337 IF C=1 THEN LET C=0: LET L
E=LE+1: LET S=S+450: GO TO 5000
340 RETURN
500 INK 5: FOR F=0 TO 31: PRINT
```

```
,12;"P~ RIGHT"
8510 READ A: IF A=99 THEN RESTO
RE 9100: PAUSE 1000: GO TO 8510
```

```
8515 IF INKEY$ <> " " THEN GO
TO 8600
8520 IF A >= 100 THEN LET A=A-1
00: BEEP .4,A: GO TO 8510
8530 BEEP .2,A
8550 GO TO 8510
```

```
8600 FOR N=1 TO 21: POKE 23692,2
55: PRINT : NEXT N
8700 RETURN
9000 DATA 126,129,159,159,159,15
9,159,126
```

```
9005 DATA 0,0,0,0,0,0,0,0
9010 DATA 31,32,39,39,39,39,39,3
1
```

```
9015 DATA 128,64,192,192,192,192
,192,128
9020 DATA 7,8,9,9,9,9,9,7
9025 DATA 224,16,240,240,240,240
,240,224
```

```
9030 DATA 1,2,2,2,2,2,2,1
9035 DATA 248,4,124,124,124,124,
124,248
9040 DATA 1,2,4,8,144,96,96,144
```

```
9045 DATA 0,60,126,201,235,255,1
26,60
9050 DATA 0,60,126,147,219,255,1
26,60
```

```
9100 DATA 109,116,16,14,12,11,9,
11,12,14,116,116,107,114,14,12,1
1,9,7,9,11,12,114,114
9110 DATA 109,116,16,14,12,11,9,
11,12,14,116,12,14,16,14,112,14,
12,111,112,109,109,99
9999 SAVE "ICE CUBES" LINE 1: PR
INT "SWAP LEADS:REWIND TAPE""PR
ESSPLAY TO VERIFY": VERIFY "" : P
RINT "OK": PAUSE 200: RUN
```

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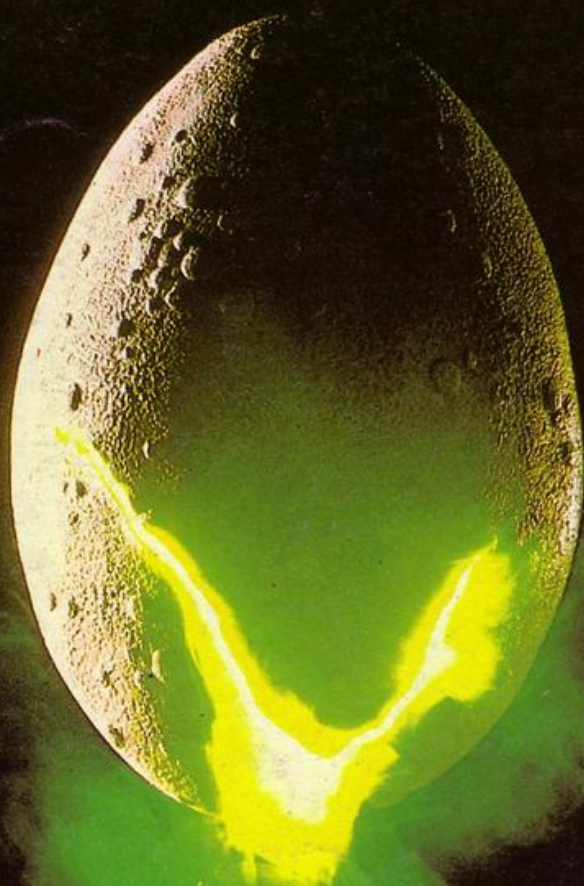
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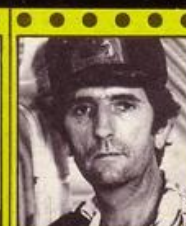
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