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Sinclair programs

July/August

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for the Spectrum,
ZX81 and ZX80

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GOLF
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CONSTELLATIONS
MEMORY TEST
ALIEN LURE
HAPPY FACE
TRAIN BLOCK
SHIP MISSILE
EXTERMINATE
KNIGHTS MOVE
PIGEON RACE
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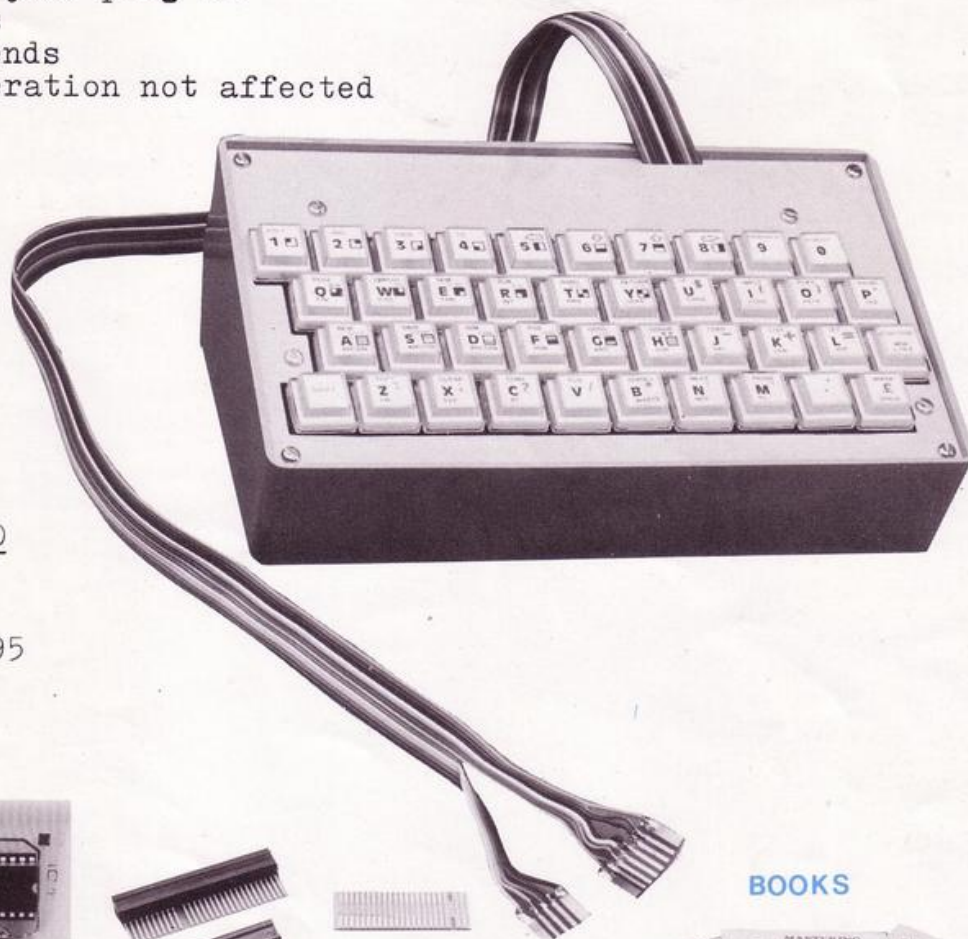
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KEYBOARD £25.70

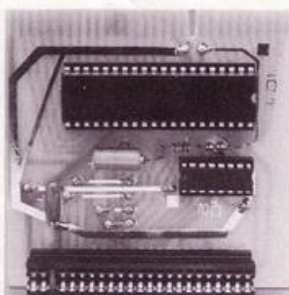
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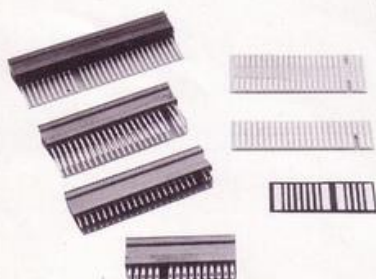
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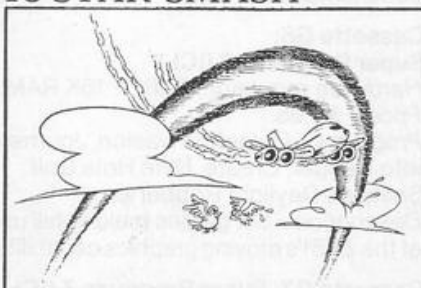
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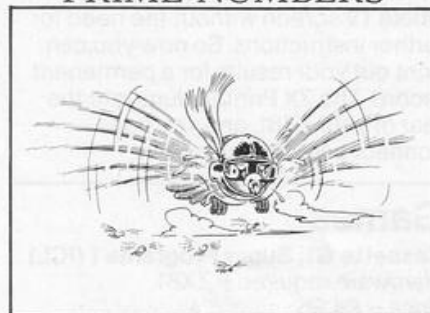


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New ZX81 Software from Sinclair.

A whole new range of software for the Sinclair ZX81 Personal Computer is now available – direct from Sinclair. Produced by ICL and Psion, these really excellent cassettes cover games, education, and business/household management.

Some of the more elaborate programs can only be run on a ZX81 augmented by the ZX 16K RAM pack. (The description of each cassette makes it clear what hardware is required.) The RAM pack provides 16-times more memory in one complete module, and simply plugs into the rear of a ZX81. And the price has just been dramatically reduced to only £29.95.

The Sinclair ZX Printer offer full alphanumerics and highly-sophisticated graphics. A special feature is COPY which prints out exactly what is on the whole TV screen without the need for further instructions. So now you can print out your results for a permanent record. The ZX Printer plugs into the rear of your ZX81, and you can connect a RAM pack as well.

Games

Cassette G1: Super Programs 1 (ICL)

Hardware required – ZX81.

Price – £4.95.

Programs – Invasion from Jupiter. Skittles. Magic Square. Doodle. Kim. Liquid Capacity.

Description – Five games programs plus easy conversion between pints/gallons and litres.

Cassette G2: Super Programs 2 (ICL)

Hardware required – ZX81.

Price – £4.95.

Programs – Rings around Saturn. Secret Code. Mindboggling. Silhouette. Memory Test. Metric conversion.

Description – Five games plus easy conversion between inches/feet/yards and centimetres/metres.

Cassette G3: Super Programs 3 (ICL)

Hardware required – ZX81.

Price – £4.95.

Programs – Train Race. Challenge. Secret Message. Mind that Meteor. CharacterDoodle. Currency Conversion.

Description – Fives games plus currency conversion at will – for example, dollars to pounds.

Cassette G4: Super Programs 4 (ICL)

Hardware required – ZX81.

Price – £4.95.

Programs – Down Under. Submarines. Doodling with Graphics. The Invisible Invader. Reaction. Petrol.

Description – Five games plus easy conversion between miles per gallon and European fuel consumption figures.

Cassette G5: Super Programs 5 (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £4.95.

Programs – Martian Knock Out. Graffiti. Find the Mate. Labyrinth. Drop a Brick. Continental.

Description – Five games plus easy conversion between English and continental dress sizes.

Cassette G6:

Super Programs 6 (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £4.95.

Programs – Galactic Invasion. Journey into Danger. Create. Nine Hole Golf. Solitaire. Daylight Robbery.

Description – Six games making full use of the ZX81's moving graphics capability.

Cassette G7: Super Programs 7 (ICL)

Hardware required – ZX81.

Price – £4.95.

Programs – Racetrack. Chase. NIM. Tower of Hanoi. Docking the Spaceship. Golf.

Description – Six games including the fascinating Tower of Hanoi problem.

Cassette G8: Super Programs 8 (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £4.95.

Programs – Star Trail (plus blank tape on side 2).

Description – Can you, as Captain Church of the UK spaceship Endeavour, rid the galaxy of the Klingon menace?

Cassette G9: Biorhythms (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £6.95.

Programs – What are Biorhythms? Your Biohythms.

Description – When will you be at your peak (and trough) physically, emotionally, and intellectually?

Cassette G10: Backgammon (Psion)

Hardware required – ZX81 + 16K RAM.

Price – £5.95.

Programs – Backgammon. Dice.

Description – A great program, using fast and efficient machine code, with graphics board, rolling dice, and doubling dice. The dice program can be used for any dice game.

Cassette G11: Chess (Psion)

Hardware required – ZX81 + 16K RAM.

Price – £6.95.

Programs – Chess. Chess Clock.

Description – Fast, efficient machine code, a graphic display of the board and pieces, plus six levels of ability, combine to make this one of the best chess programs available. The Chess Clock program can be used at any time.



Cassette G12:

Fantasy Games (Psion)

Hardware required – ZX81 (or ZX80 with 8K BASIC ROM) + 16K RAM.

Price – £4.75.

Programs – Perilous Swamp. Sorcerer's Island.

Description – Perilous Swamp: rescue a beautiful princess from the evil wizard Sorcerer's Island: you're marooned. To escape, you'll probably need the help of the Grand Sorcerer.

Cassette G13:

Space Raiders and Bomber (Psion)

Hardware required – ZX81 + 16K RAM.

Price – £3.95.

Programs – Space Raiders. Bomber.

Description – Space Raiders is the ZX81 version of the popular pub game. Bomber: destroy a city before you hit a sky-scraper.

Cassette G14: Flight Simulation (Psion)

Hardware required – ZX81 + 16K RAM.

Price – £5.95.

Program – Flight Simulation (plus blank tape on side 2).

Description – Simulates a highly manoeuvrable light aircraft with full controls, instrumentation, a view through the cockpit window, and navigational aids. Happy landings!

Education

Cassette E1: Fun to Learn series – English Literature 1 (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £6.95.

Programs – Novelists. Authors.

Description – Who wrote 'Robinson Crusoe'? Which novelist do you associate with Father Brown?

Cassette E2: Fun to Learn series – English Literature 2 (ICL)

Hardware required – ZX81 + 16K RAM.

Price – £6.95.

Programs – Poets. Playwrights. Modern Authors.

Description – Who wrote 'Song of the Shirt'? Which playwright also played cricket for England?



Cassette E3: Fun to Learn series - Geography 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Towns in England and Wales. Countries and Capitals of Europe. Description - The computer shows you a map and a list of towns. You locate the towns correctly. Or the computer challenges you to name a pinpointed location.

Cassette E4: Fun to Learn series - History 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Events in British History. British Monarchs.

Description - From 1066 to 1981, find out when important events occurred. Recognise monarchs in an identity parade.

Cassette E5: Fun to Learn series - Mathematics 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Addition/Subtraction. Multiplication/Division.

Description - Questions and answers on basic mathematics at different levels of difficulty.

Cassette E6: Fun to Learn series - Music 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Composers. Musicians.

Description - Which instrument does James Galway play? Who composed 'Peter Grimes'?

Cassette E7: Fun to Learn series - Inventions 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Inventions before 1850. Inventions since 1850.

Description - Who invented television? What was the 'dangerous Lucifer'?

Cassette E8: Fun to Learn series - Spelling 1 (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £6.95.

Programs - Series A1-A15. Series B1-B15.

Description - Listen to the word spoken on your tape recorder, then spell it out on your ZX81. 300 words in total suitable for 6-11 year olds.

Business/household

Cassette B1: The Collector's Pack (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £9.95.

Program - Collector's Pack, plus blank tape or side 2 for program/data storage.

Description - This comprehensive program should allow collectors (of stamps, coins etc.) to hold up to 400 records of up to 6 different items on one cassette. Keep your records up to date and sorted into order.

Cassette B2: The Club Record Controller (ICL)

Hardware required - ZX81 + 16K RAM.

Price - £9.95.

Program - Club Record Controller plus blank tape on side 2 for program/data storage.

Description - Enables clubs to hold records of up to 100 members on one cassette. Allows for names, addresses, 'phone numbers plus five lots of additional information - eg type of membership.

Cassette B3: VU-CALC (Psion)

Hardware required - ZX81 + 16K RAM.

Price - £7.95.

Program - VU-CALC.

Description - Turns your ZX81 into an immensely powerful analysis chart. VU-CALC constructs, generates and calculates large tables for applications such as financial analysis, budget sheets, and projections. Complete with full instructions.

Cassette B4: VU-FILE (Psion)

Hardware required - ZX81 + 16K RAM.

Price - £7.95.

Programs - VU-FILE. Examples.

Description - A general-purpose information storage and retrieval program with emphasis on user-friendliness and visual display. Use it to catalogue your collection, maintain records or club memberships, keep track of your accounts, or as a telephone directory.

How to order

Simply use the FREEPOST order form below and either enclose a cheque or give us your credit card number. Credit card holders can order by phone - simply call Camberley (0276) 66104 or 21282 during office hours. Either way, please allow up to 28 days for delivery, and there's a 14-day money-back option, of course.

sinclair ZX81 SOFTWARE

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	G2: Super Programs 2	31	£4.95	
	G3: Super Programs 3	32	£4.95	
	G4: Super Programs 4	33	£4.95	
	G5: Super Programs 5	34	£4.95	
	G6: Super Programs 6	35	£4.95	
	G7: Super Programs 7	36	£4.95	
	G8: Super Programs 8	37	£4.95	
	G9: Biorhythms	38	£6.95	
	G10: Backgammon	39	£5.95	
	G11: Chess	40	£6.95	
	G12: Fantasy Games	41	£4.75	
	G13: Space Raiders & Bomber	42	£3.95	
	G14: Flight Simulation	43	£5.95	
	E1: English Literature 1	44	£6.95	

Qty	Cassette	Code	Item price	Total
	E2: English Literature 2	45	£6.95	
	E3: Geography 1	46	£6.95	
	E4: History 1	47	£6.95	
	E5: Mathematics 1	48	£6.95	
	E6: Music 1	49	£6.95	
	E7: Inventions 1	50	£6.95	
	E8: Spelling 1	51	£6.95	
	B1: Collector's Pack	52	£9.95	
	B2: Club Record Controller	53	£9.95	
	B3: VU-CALC	54	£7.95	
	B4: VU-FILE	55	£7.95	
	ZX 16K RAM pack	18	£29.95	
	ZX Printer	27	£59.95	
	Post & packing - only if ordering hardware		£2.95	

TOTAL £

I enclose a cheque/postal order to Sinclair Research Ltd for £

Please charge my *Access/Barclaycard/Trustcard no.

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Address

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Sinclair Programs

Say hello to the magazine that no Sinclair User can do without

We are proud to announce **Sinclair Programs** which, with its unique formula, is going to prove a great companion publication to **Sinclair User**. The first edition of **Sinclair Programs** is on sale now and contains 40 programs covering the whole spectrum of ZX usage ... all listed for you to key in. To guarantee you receive the magazine that guarantees you hours of enjoyment fill in the order form below.

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THE ZX BOOK CLUB

The ZX81 is the world's biggest selling computer and, just announced, is its big brother, the ZX SPECTRUM.

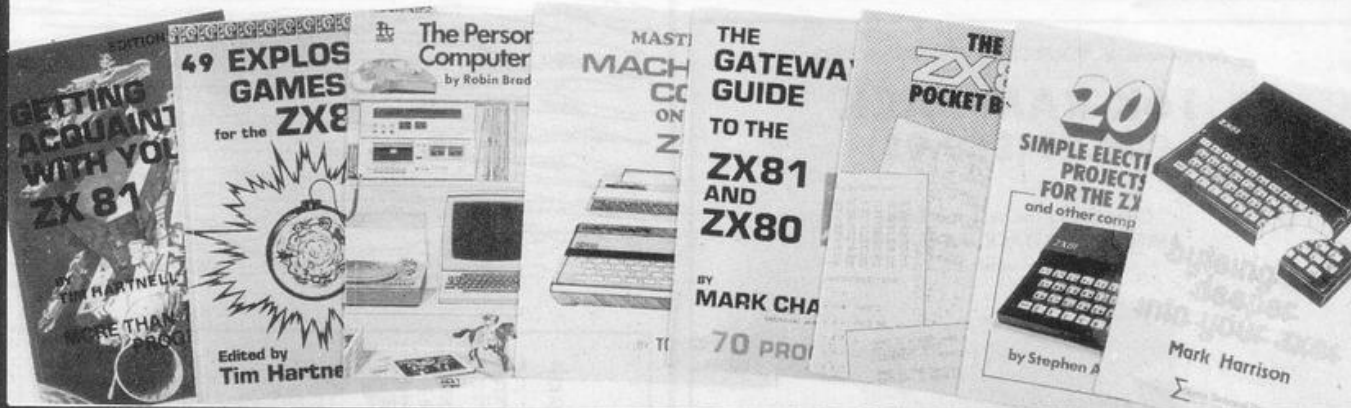
For value for money, these two computers must be the best "computer" buys on the market – but – to get the most from them, every owner, and prospective owner, needs a library of books for programs and operations.

Read-Out has selected the following bestselling books and can supply from stock.

For the Beginner: – **Getting Acquainted with your ZX81** by Tim Hartnell, containing over 80 programs. **34 Amazing Games for the ZX81** by Alistair Gourlay, which shows you what you can do with only 1K of memory. **49 Explosive Games for the ZX81** by Tim Hartnell which describes games listings for the memory sizes 1K – 8K. **Coming Soon! Learning to Use the ZX81** by Robin Bradbeer and **Learning to Use the ZX Spectrum** by Robin Bradbeer – two new books in a new series designed to help the first-time user (both due August/September 1982). **The Personal Computer Book 2nd edition** by Robin Bradbeer – an introduction to the world of microcomputing which is generally regarded as the best available.

For the Enthusiast: – **Mastering Machine Code on your ZX81** by Toni Baker will help you develop your

programming skills to a point where you can really use machine code easily. **The Gateway Guide to the ZX81 and ZX80** by Mark Charlton is a "doing" book describing each function and statement in turn, illustrates it in a demonstration routine or program and then combines it with previously discussed material. **The ZX81 Pocket Book** by Trevor Toms covers the use of the ZX81 in detail and leads the reader into a clear understanding of programming. A brand new book is **20 Simple Electronic Projects for the ZX81** by Stephen Adams which can really put your ZX81 to practical use in a number of interesting electronic projects – thermometer, burglar alarm, voltmeter etc. **Byteing Deeper into your ZX81** by David Johnson-Davies – the bestseller which tells you how to get to grips with your ZX81 and with 39 programs to match!



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- ☐ The Personal Computer Book @ £7.55
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- ☐ The ZX81 Pocket Book @ £6.95
- ☐ 20 Simple Electronic Games for the ZX81 @ £7.45
- ☐ Byteing Deeper into your ZX81 @ £6.45

ZX/1

THERE ARE memories of Captain Nemo and the Nautilus in the game of **Octopus**. A submarine is being chased by the octopus—which unfortunately looks more like a crab—and it is only a question of time before it is caught.

As the game progresses, the speed of the submarine falls but that of the octopus does not. The aim is to stay

out of the grips of the octopus for as long as possible. The submarine is manoeuvred using the normal cursor keys.

After several attempts, the *Sinclair Programs* reviewer managed a score of 109.

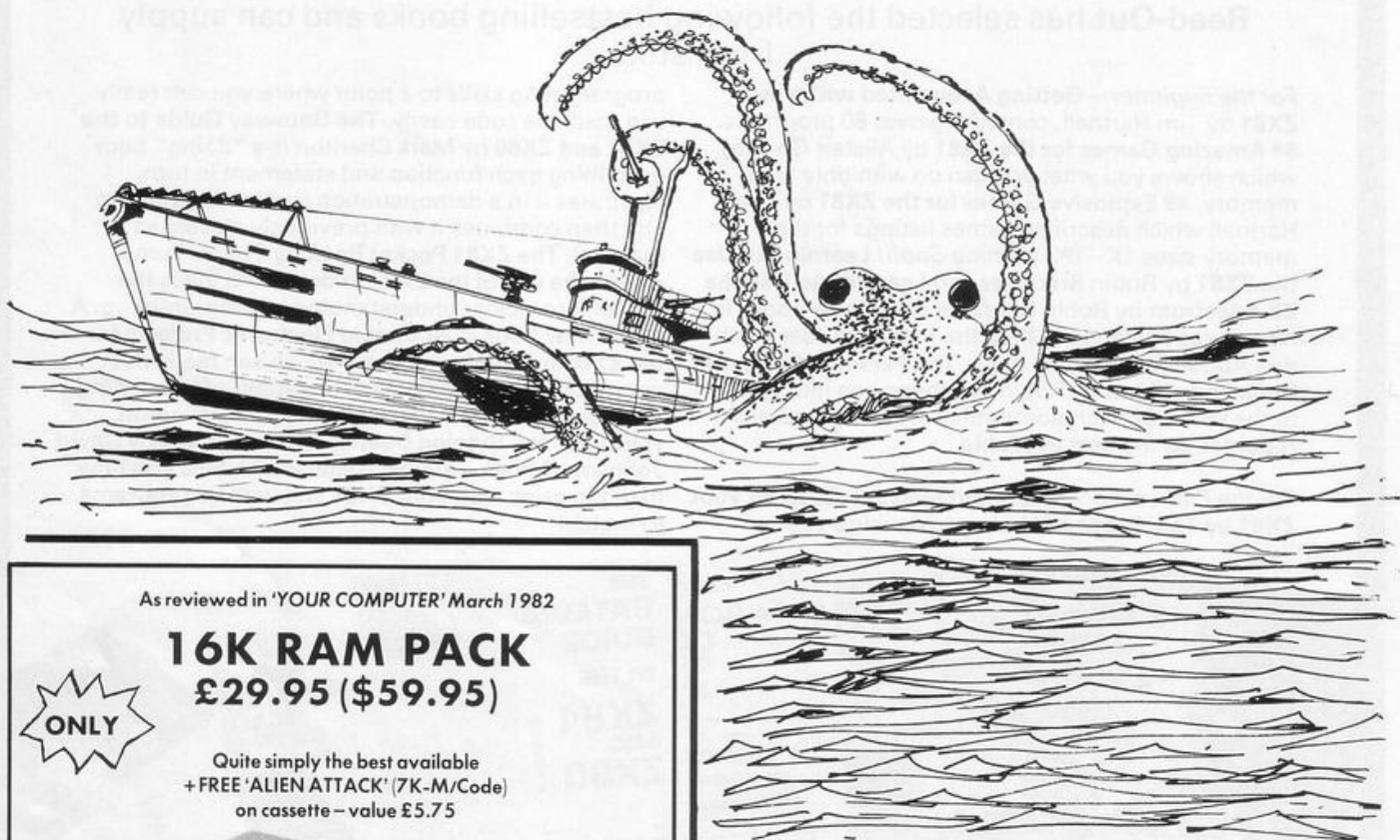
As an added interest, when the octopus hits the top of the screen the lines comprising it

are reversed, giving the impression that it is standing on its hands.

The graphics in lines 1 and 2 for the octopus are shifted T, P and Y and shifted Y, space and shifted T.

Octopus was sent by Colin Macdonald, of Gourrock, Renfrewshire.

OCTOPUS

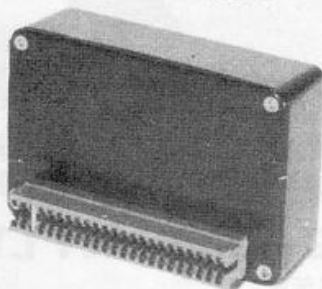


As reviewed in 'YOUR COMPUTER' March 1982

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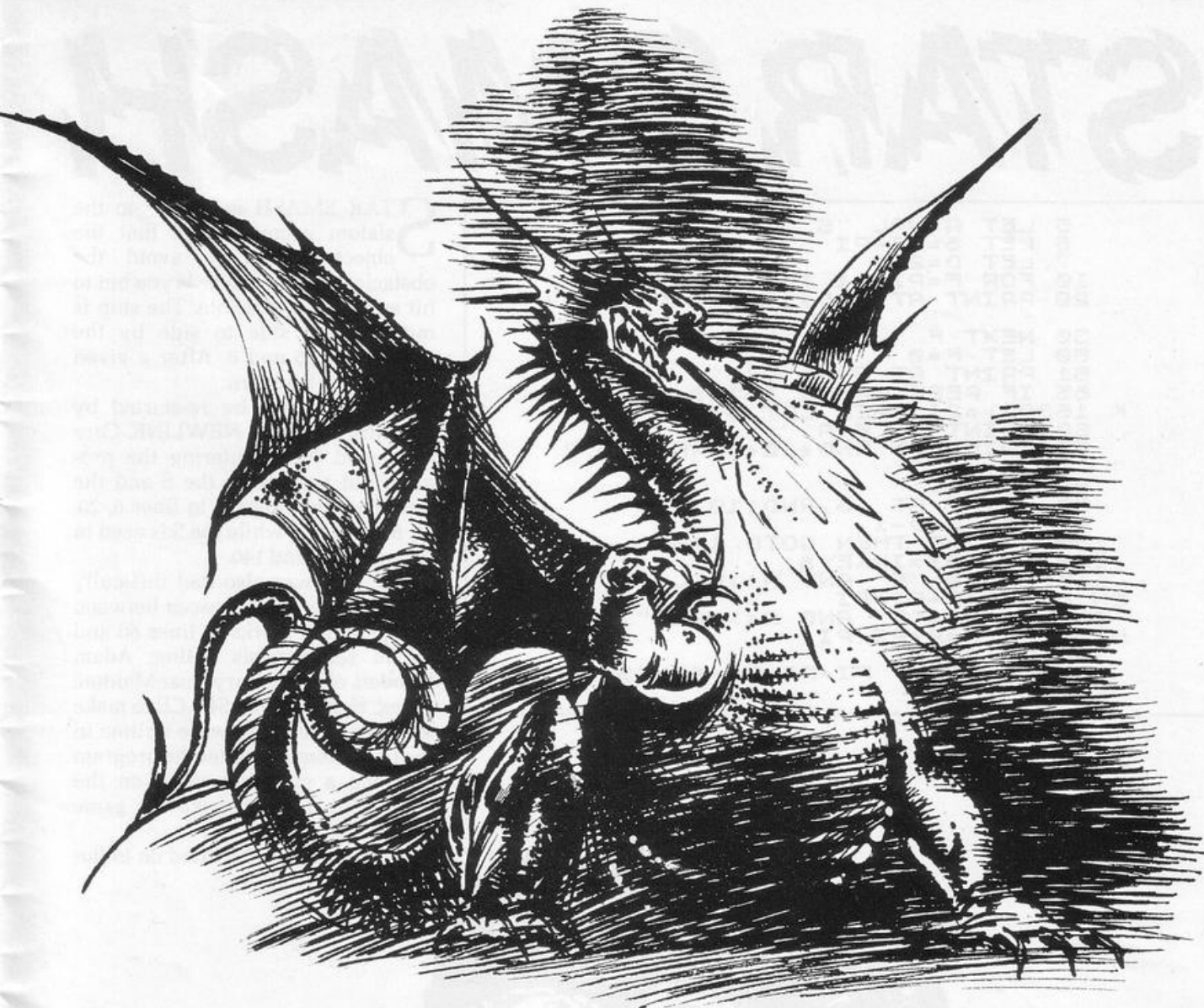
JRS SOFTWARE

18 Wayside Avenue, Worthing, Sussex BN13 3JU
Telephone: Worthing 65691
(evenings and weekends only)

```

1 LET A$=" "
2 LET B$=" "
3 LET K=INT (RND*10)+1
4 LET L=INT (RND*10)+1
5 LET C$=" "
6 LET G=INT (RND*10)+12
7 LET H=INT (RND*10)+1
8 GOTO 50
9 PRINT AT G,H;C$;AT K,L;A$
10 PRINT AT K+1,L;B$
11 IF K=G AND L=H THEN PRINT A
12 IF K=G AND L=H THEN STOP
13 IF G>K THEN LET K=K+1
14 IF L>H THEN LET L=L+1
15 IF K>G THEN LET K=K-1
16 IF H>L THEN LET L=L-1
17 IF INKEY$="5" THEN LET H=H-
DD 18 IF INKEY$="8" THEN LET H=H+
DD 19 IF INKEY$="6" THEN LET G=G+
DD 20 IF INKEY$="7" THEN LET G=G-
22 CLS
23 LET SCORE=SCORE+1
24 IF SCORE>=30 THEN LET DD=1
25 GOTO 9
26 LET SCORE=0
27 LET DD=2
28 GOTO 9

```

Dragon Crunch

```

2 CLS
4 LET H=SIN PI
6 LET Q=VAL "2"
8 LET C$="" *****
10 PRINT "INPUT N0;S0;0E;0N;N0
;NE;SE;SW"
15 FOR K=H TO VAL "9"
25 PRINT C$
30 NEXT K
40 LET E=INT (RND*K)
50 LET Y=INT (RND*K)
60 LET G=INT (RND*K)
70 LET X=INT (RND*K)
75 IF NOT H THEN GOTO CODE "■"
AND E*G*Y*X
80 INPUT B$
85 IF LEN B$<0 THEN GOTO VAL "
80"
90 LET Y=Q+(B$(SGN Q)="S" AND
Q<K)-(B$(SGN Q)="N" AND Q>SGN Q)
100 LET X=P-(B$(Q)="W" AND P>SG
N O)+(B$(Q)="E" AND P<K)
110 LET E=E+SGN (Y-E)*(RND>Q/K)
120 LET G=G+SGN (X-G)*(RND>Q/K)
130 IF H THEN PRINT AT Q,P;"■";
AT A,I;"■"
140 PRINT AT Y,X;"■";AT E,G;"■"
150 LET P=X
160 LET Q=Y
170 LET H=H+SGN K
180 LET A=E
190 LET I=G
210 GOTO VAL "80"+CODE "Q"*(Y=E
AND X=G)
270 CLS
280 PRINT "<> NOT FAST ENOUGH <
> SCORE=";H;"NEXT RUN? 1 OR 0"
290 INPUT H
300 IF H THEN RUN

```

DESPITE the short history of Sinclair Programs and its companion publication, *Sinclair User*, we are already spawning new ideas. The inspiration for **Dragon Crunch** from D G Hockey of London, E18 was Tim Hartnell's **Monster Munch**, which appeared in the May edition of *Sinclair User*.

Hockey thinks that this version is better, because it lasts longer and fits into the 1K ZX-81 by using a number of memory-saving devices.

To move the figure which is being chased by the dragon, it is necessary to enter two letters, such as W for west and NE for north-east but that is not too much of a problem.

When the dragon eventually catches you the number of moves taken is shown. Hockey says that the maximum achieved by his family was 48.

STAR SMASH

```

5 LET A=VAL "5"
6 LET S=PI-PI
7 LET D=200
10 FOR F=PI/PI TO VAL "5"
20 PRINT AT RND*10+5,RND*10;"+"
..
30 NEXT F
50 LET F=0
51 PRINT AT F,A;"U"
65 IF PEEK (PEEK 16398+256*PEE
K 16399)=21 THEN LET S=S+1
80 PRINT AT F,A;" "
81 PRINT AT RND*10+5,RND*10;" "
..
86 SCROLL
88 PRINT AT 15,RND*10;"+"
90 LET D=D-1
100 IF D=0 THEN GOTO 140
105 LET A#=INKEY$
110 IF A#="5" AND A<>VAL "0" TH
EN LET A=A-PI/PI
120 IF A#="8" AND A<>VAL "11" T
HEN LET A=A+PI/PI
130 GOTO 50
140 PRINT AT PI-PI,PI-PI;"SCORE
=" ;S

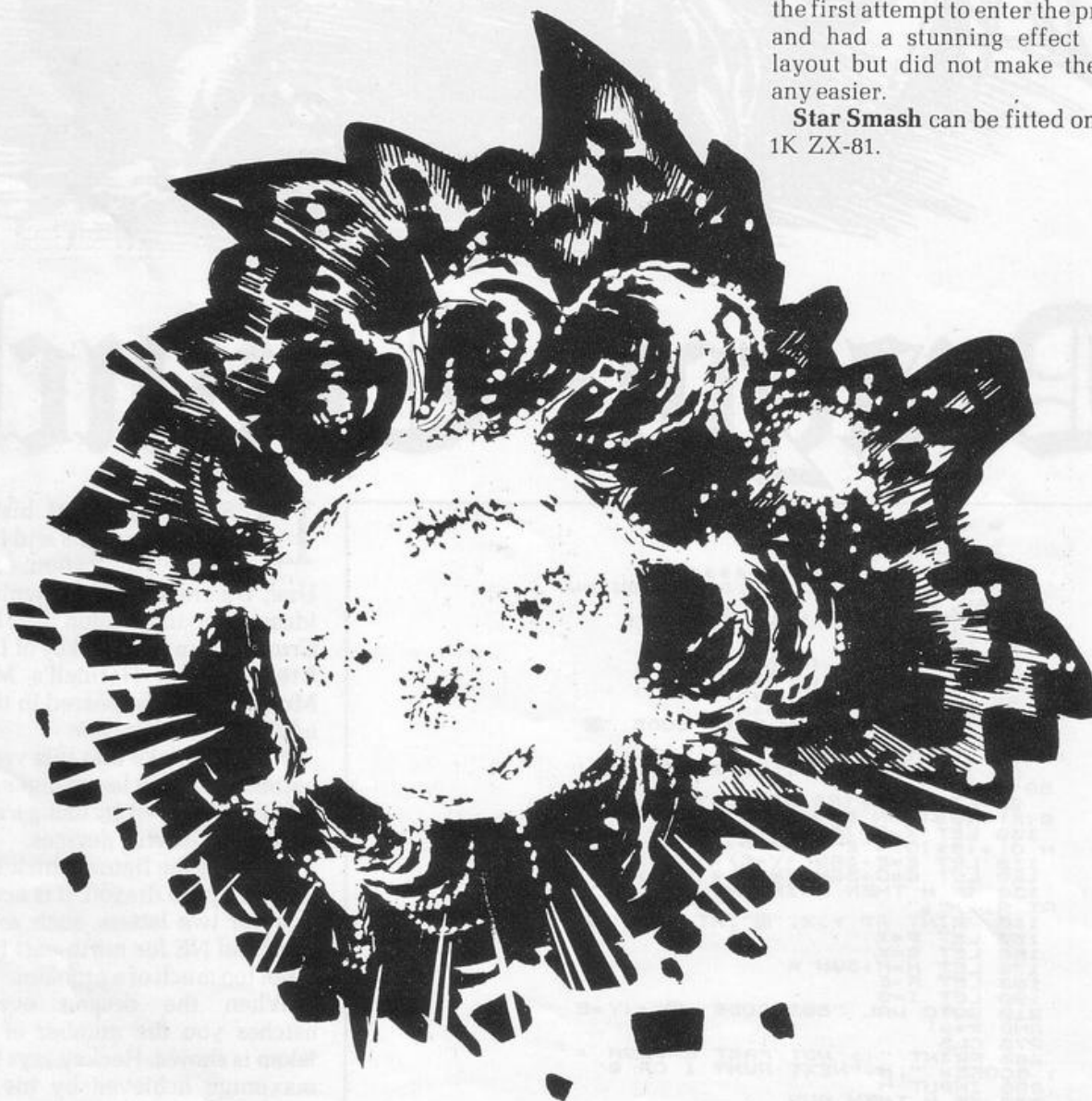
```

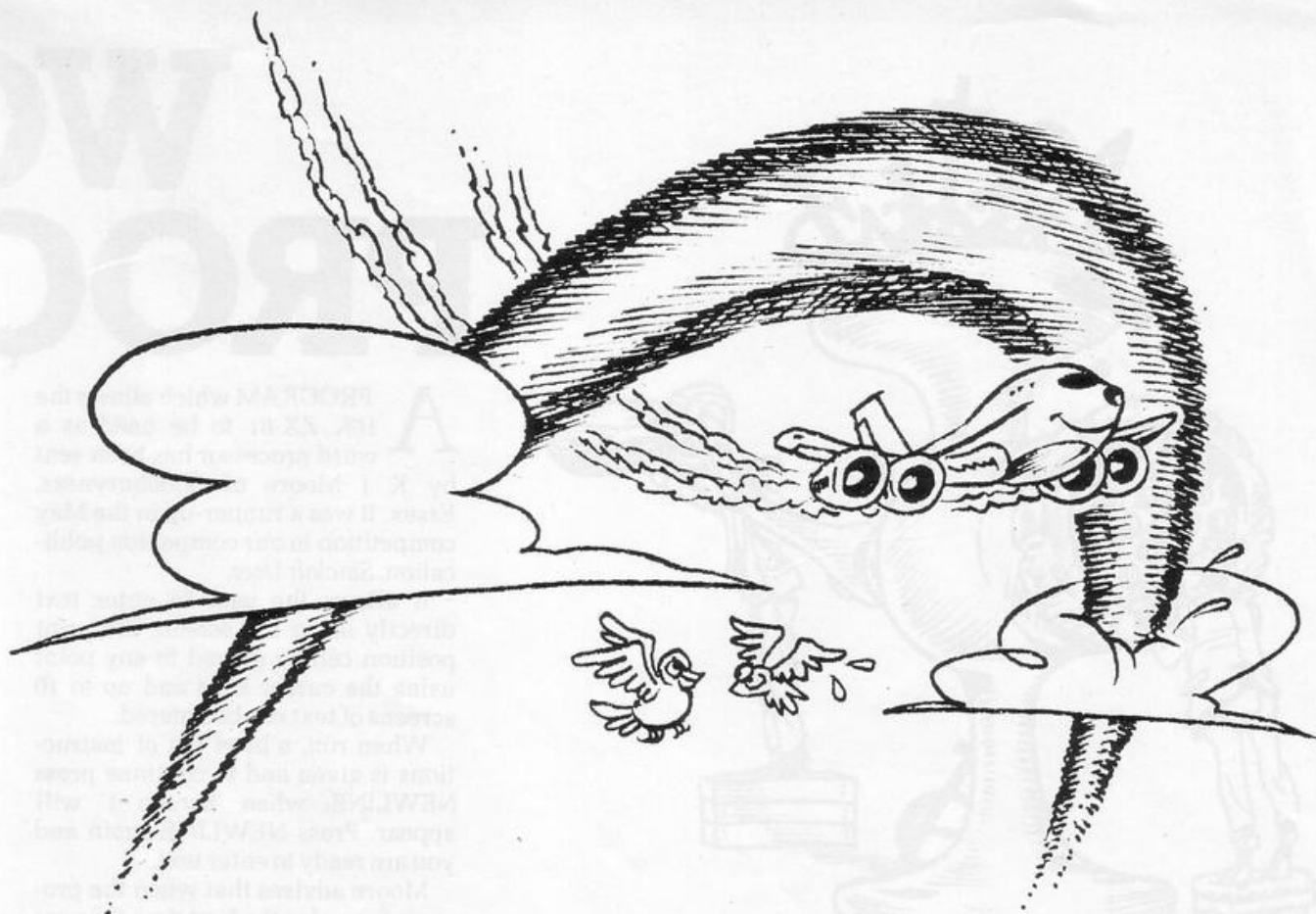
STAR SMASH is similar to the slalom games except that the object is not to avoid the obstacles moving towards you but to hit as many as possible. The ship is moved from side to side by the cursor keys 5 and 8. After a given time a score is shown.

The game can be re-started by pressing RUN and NEWLINE. Care is needed when entering the program not to confuse the S and the figure 5. Fives appear in lines 5, 20, 81, 88, and 110, while the S is used in lines 6, 10, 65 and 140.

Our reviewer also had difficulty entering the single spaces between the quotation marks in lines 80 and 81. In sending his listing, Adam Hobden, of Tollesbury, near Maldon, Essex, rightly wrote SPACE to make the lines clear. They were written in the first attempt to enter the program and had a stunning effect on the layout but did not make the game any easier.

Star Smash can be fitted on to the 1K ZX-81.





RAINBOW

SPECTRUM

FOR THOSE fortunate enough to have managed to obtain Spectrums, here are two simple programs you can try on your new machine.

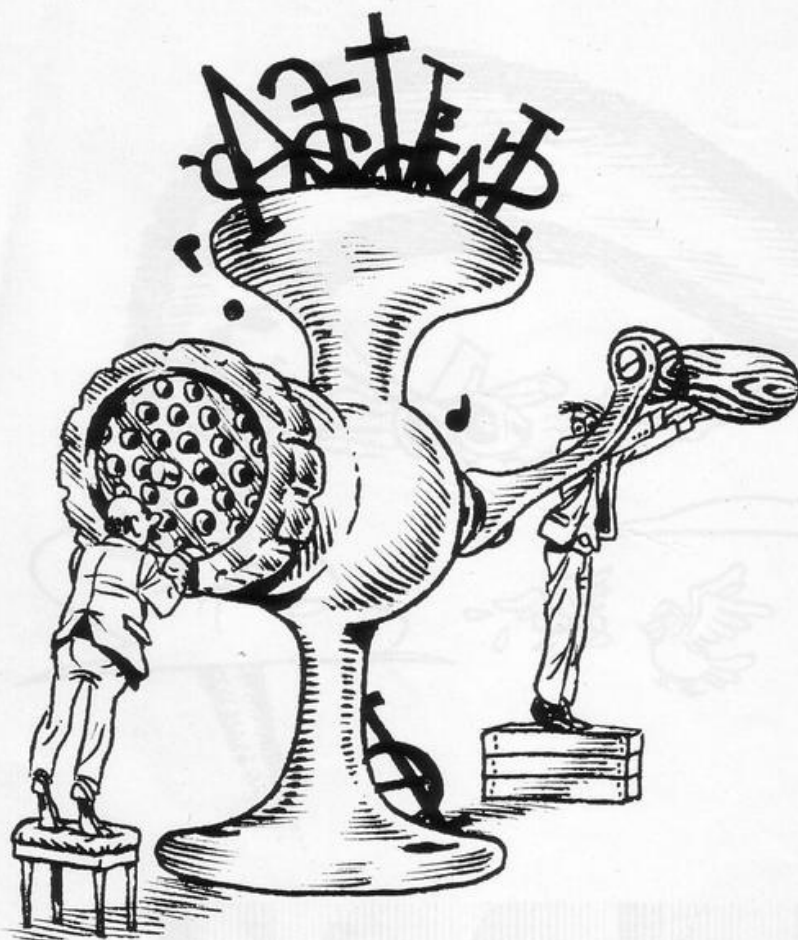
The first **Rainbow**, which as you might expect draws a rainbow, makes use of the Spectrum colour capabilities. The other, **Interfere**, requires the addition of the printer on which it produces some very attractive interference patterns.

Both are the work of Richard Altwasser, who designed the hardware for the Spectrum. Both are featured in a book which will be available soon. It is called the *Cambridge Colour Collection*, costs £6.95, and can be obtained from Altwasser at 22 Foxhollow, Bar Hill, Cambridge.

```
50 REM Rainbow
100 BORDER 0: INK 7: PAPER 0: R
ESTORE 1000: FOR m=0 TO 7
110 READ a,b,c: FOR n=0 TO 11*(
m<7): PLOT PAPER b: INK c: INVER
SE a;0,n+12*m: DRAW PAPER b: INK
c: INVERSE a;255,0,-1.5: IF ABS
((m/2)-INT (m/2))>.1 THEN LET n
=n+7
120 BEEP .01,30: NEXT n: NEXT m
130 PAPER 0: INK 7: INVERSE 0
140 STOP
1000 DATA 0,0,2,1,6,2,0,6,4,1,5,
4,0,5,1,1,3,1,0,3,0,1,0,0
```

```
1700 REM interfere
1705 BORDER 0: INK 7: PAPER 0: B
RIGHT 1: CLS : OVER 1
1710 LET DX=8*2+(1+INT (RND*3)):
LET X1=256/DX: LET C=5+INT (RND
*2): FOR G=0 TO 1: INK C: IF G T
HEN INK 8-C
1720 FOR K=0 TO X1-1: FOR N=0 TO
1: FOR X=0 TO DX-1: PLOT DX*K,1
75*N: DRAW X,175-350*N: PLOT DX*
(K+1)-1,175*N: DRAW -X,175-350*N
: NEXT X: NEXT N: NEXT K
1730 NEXT G: GO TO 1700
1740 GO TO 1700
```


WO PROCI



A PROGRAM which allows the 16K ZX-81 to be used as a word processor has been sent by K J Moore of Shoeburyness, Essex. It was a runner-up in the May competition in our companion publication, *Sinclair User*.

It allows the user to enter text directly on to the screen; the print position can be moved to any point using the cursor keys and up to 10 screens of text can be entered.

When run, a brief list of instructions is given and to continue press NEWLINE, when 'Screen 1' will appear. Press NEWLINE again and you are ready to enter text.

Moore advises that when the program is run for the first time the user becomes used to entering text on the screen before proceeding to press

LISTING OF ZX WORD PROCESSOR

```
10 PRINT AT 2,0;" WORD-PROC"
15 PRINT AT 4,0;"USE THE KEY-B"
20 PRINT AT 6,0;"PRESS ""NEW-L"
25 PRINT "PRESS ""FUNCTION"" F"
30 PRINT "PRESS ""GRAPHICS"" F"
35 PRINT "PRESS ""EDIT"" FOR P"
40 PRINT "DO NOT PRESS THE ""S"
50 PRINT "THIS WILL STOP THE P"
60 INPUT U$
70 CLS
100 LET DFA=PEEK 16396+256*PEEK
110 LET G=0
120 LET OP1=0
130 LET OP2=0
140 LET G=1
150 DIM A$(10,22,32)
200 FOR N=1 TO 10
205 LET OP1=0
206 LET G=0
210 PRINT AT 10,5;"SCREEN ";N
220 INPUT U$
230 CLS
240 FOR L=0 TO 31
250 FOR C=0 TO 31
260 LET CI=0
265 IF INKEY$="" THEN GOTO 280
270 LET A=CODE INKEY$
280 IF A>63 AND A<112 THEN GOTO
290 IF A<11 THEN GOTO 280
295 IF A=116 AND G=0 THEN LET A
300 IF A=116 THEN GOSUB 5000
310 IF A>111 AND A<116 THEN GOS
US 1000
350 IF A=121 AND OP1=0 THEN GOT
G 415
352 IF A>116 THEN GOTO 260
355 IF A=117 THEN GOSUB 6000
360 IF A=117 THEN GOTO 240
370 IF A=116 THEN GOTO 260
375 IF G=1 THEN GOSUB 5500
380 IF CI=1 THEN GOTO 260
```

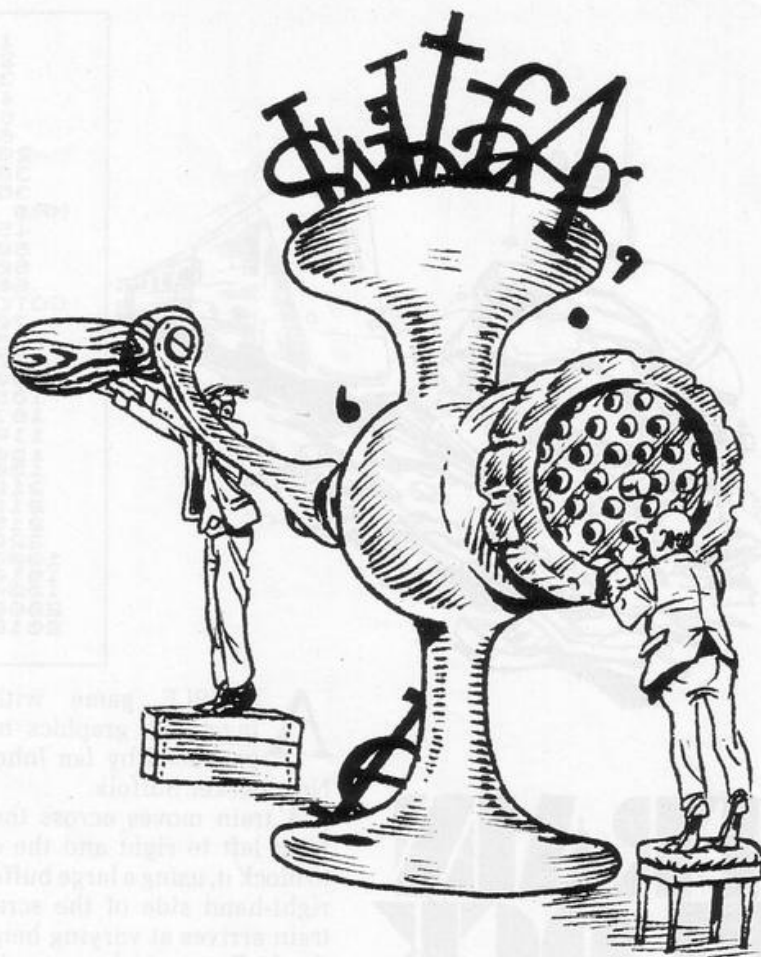
```
385 LET OP1=0
390 LET A$(N,L+1,C+1)=CHR$ A
400 PRINT AT L,C;CHR$ A
405 IF INKEY$<>"" THEN GOTO 405
410 NEXT C
415 IF INKEY$<>"" THEN GOTO 415
420 NEXT L
430 NEXT N
435 GOSUB 6000
440 GOTO 240
1000 IF A=112 THEN LET L=L-1
1010 IF A=113 THEN LET L=L+1
1020 IF A=114 THEN LET C=C-1
1030 IF A=115 THEN LET C=C+1
1035 IF C<0 THEN LET C=0
1040 IF C>31 THEN LET C=31
1045 IF L<0 THEN LET L=0
1047 IF L>21 THEN LET L=21
1050 IF OP1<>0 THEN POKE OP1,OP2
1060 LET OP1=DFA+(L*33)+C+1
1070 LET OP2=PEEK OP1
1080 PRINT AT L,C;""
1090 LET CI=1
1100 RETURN
5000 IF INKEY$<>"" THEN GOTO 500
G
5005 IF G=1 THEN GOTO 5040
5010 LET G=1
5020 PRINT AT L,C;"5"
5030 RETURN
5040 LET G=0
5050 PRINT AT L,C;"2"
5060 RETURN
5500 IF A=116 THEN LET A=126
5505 IF A<11 OR A>64 AND A<>126
THEN GOTO 5000
5510 IF A<>126 THEN LET A=A+126
5520 RETURN
6000 LET P=0
6005 LET S$=""
6010 CLS
6020 PRINT AT 2,0;"1. LIST SCREE
N N"
6030 PRINT "2. LIST SCREEN N UNT
IL Z"
6040 PRINT "3. LIST SCREEN X THR
U Y"
6050 PRINT "4. LIST SCREEN X THR
U Y UNTIL Z"
6060 PRINT "5.PRINT SCREEN N"
6070 PRINT "6.PRINT SCREEN N UNT
IL Z"
6080 PRINT "7.PRINT SCREEN X THR
U Y"
6090 PRINT "8.PRINT SCREEN X THR
U Y UNTIL Z"
```


RD ESSOR

EDIT, which brings up a list of print options. A further warning is that once an option has been chosen there is no chance to change it until listing or printing has finished.

One problem when entering text is that the space key doubles as the BREAK, which will stop the program running. Within that system the space key is NEWLINE. It is also worth noting that the typing must be done at the normal speed for acceptance by the ZX-81, which can seem slow. While it is possible to correct letters, ones which have been missed cannot be inserted without repeating a good deal of text.

To make the listing clearer, in lines 1080, 5020 and 5050 are inverse K, G and K again.



```

5100 PRINT AT 14,0;"SECRET PROG"
5110 INPUT D
5120 IF D<1 OR D>6 THEN GOTO 601
5125 IF D>4 THEN LET P=1
5130 CLS
5135 IF D>4 THEN LET D=D-4
5140 LET PR=5200+(100*D)
5150 GOTO PR
5300 IF P=0 THEN PRINT AT 2,0;"1
. LIST SCREEN N"
5305 IF P=1 THEN PRINT AT 2,0;"5
.PRINT SCREEN N"
5310 PRINT AT 4,0;"ENTER N"
5340 INPUT X
5345 IF X<1 OR X>10 THEN GOTO 63
40
5350 LET Y=X
5355 LET Z=1
5360 GOTO 8000
5400 IF P=0 THEN PRINT AT 2,0;"2
. LIST SCREEN N UNTIL Z"
5405 IF P=1 THEN PRINT AT 2,0;"6
.PRINT SCREEN N UNTIL Z"
5410 PRINT AT 4,0;"ENTER N"
5415 INPUT X
5417 IF X<1 OR X>10 THEN GOTO 64
15
5420 LET Y=X
5425 PRINT AT 4,0;"ENTER Z"
5430 INPUT Z
5440 IF Z<1 THEN GOTO 6430
5450 GOTO 8000
5500 IF P=0 THEN PRINT AT 2,0;"3
. LIST SCREEN X THRU Y"
5505 IF P=1 THEN PRINT AT 2,0;"7
.PRINT SCREEN X THRU Y"
5510 PRINT AT 4,0;"ENTER X"
5512 INPUT X
5515 IF X<1 OR X>9 THEN GOTO 651
20
5520 PRINT AT 4,0;"ENTER Y"
5522 INPUT Y
5523 IF Y>10 THEN GOTO 6520
5525 IF Y<=X THEN GOTO 6520
5530 LET Z=1
5540 GOTO 8000
5500 IF P=0 THEN PRINT AT 2,0;"4
. LIST SCREEN X THRU Y UNTIL Z"
5505 IF P=1 THEN PRINT AT 2,0;"6
.PRINT SCREEN X THRU Y UNTIL Z"
5510 PRINT AT 4,0;"ENTER X"
5512 INPUT X
5515 IF X<1 OR X>9 THEN GOTO 651
30
5520 PRINT AT 4,0;"ENTER Y"

```

```

5522 INPUT Y
5525 IF Y<=X THEN GOTO 6520
5526 IF Y>10 THEN GOTO 6520
5530 PRINT AT 4,0;"ENTER Z"
5535 INPUT Z
5540 IF Z<1 THEN GOTO 6530
5545 GOTO 8000
5500 CLS
5505 IF P=1 THEN GOTO 8100
5510 PRINT AT 2,0;"DO YOU WANT:"
5520 PRINT AT 4,0;"1. A CONTINUO
US LISTING
OR,
5530 IF P=0 THEN PRINT "2. A PAG
E BY PAGE LISTING?"
5540 PRINT AT 9,0;"ENTER CHOICE"
5550 INPUT Q
5560 IF Q<1 OR Q>2 THEN GOTO 804
0
5570 GOTO 8200
5600 PRINT AT 2,0;"DO YOU WANT P
AGE SEPARATORS?"
5610 PRINT AT 6,0;"ENTER Y OR"
5620 INPUT S$
5630 IF S$<>"N" AND S$<>"Y" THEN
GOTO 8120
5600 FOR R=1 TO Z
5610 FOR S=X TO Y
5620 CLS
5630 IF Q=2 AND P=0 THEN PRINT A
T 10,5;"SCREEN";S
5640 CLS
5650 IF P=1 AND S$="Y" THEN LPRI
NT
5660 IF P=1 AND S$="Y" THEN LPRI
NT
-----
5670 IF P=1 AND S$="Y" THEN LPRI
NT
5680 FOR T=1 TO 32
5690 PRINT A$(S,T)
5700 NEXT T
5710 IF Q=2 AND P=0 THEN INPUT U
$
5720 IF P=1 THEN COPY
5730 NEXT S
5740 NEXT R
5750 LET N=Y
5760 IF P=1 AND S$="Y" THEN LPRI
NT
5770 IF P=1 AND S$="Y" THEN LPRI
NT
-----
5780 IF P=1 AND S$="Y" THEN LPRI
NT
5790 RETURN

```




TRAIN BLOCK

```

1 LET K=155
2 LET C=0
3 LET D=0
4 LET Q=K
5 LET P=4
6 LET S=4
20 FOR T=D TO 23
30 PRINT AT 3,T;" "
35 PRINT AT P,27;"K=";CHR$ Q;C
HR$ K
45 LET V=0
50 IF INKEY$="Q" THEN LET V=-4
60 IF INKEY$="A" THEN LET V=4
65 IF INKEY$="P" AND P=S THEN
GOTO 200
70 IF P+V<=3 THEN LET V=0
85 CLS
90 LET P=P+V
100 NEXT T
105 LET C=C+1
107 IF C=3 THEN GOTO 2000
110 LET S=INT (AND#4)*4+4
120 IF S>=16 THEN LET S=4
130 GOTO 200
140 LET K=K+1
150 IF K=166 THEN GOSUB 1000
160 LET D=D+.5
200 GOTO 110
1000 LET K=155
1100 LET D=D+1
1200 RETURN
2000 PRINT CHR$ Q;CHR$ K
2010 STOP

```

A SIMPLE game with some ingenious graphics has been produced by Ian Johnston, of Newmarket, Suffolk.

A train moves across the screen from left to right and the object is to block it, using a large buffer on the right-hand side of the screen. The train arrives at varying heights and the buffer must be moved up and down to stop it, using the Q for up

and the A for down. When the train nears the buffer it is necessary to press P to stop it.

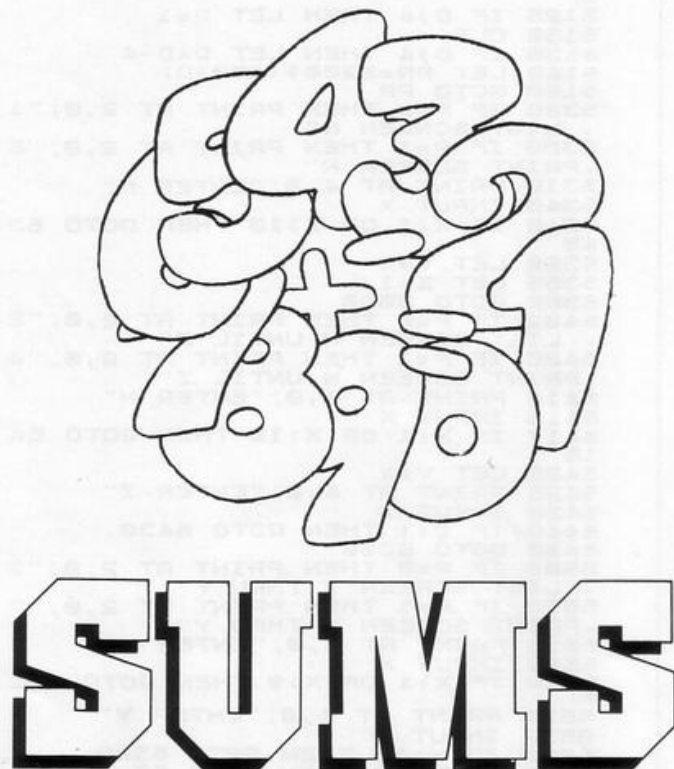
Each time a train is blocked, one is added to the score, which is shown on the buffer. The game ends when three trains have passed the buffer.

The graphics shown in line 30 of the printout are from left to right, shifted E,H,M,G and in 40, again both shifted, N and L.

```

10 CLS
20 PRINT "WHAT SORT OF SUMS DO
YOU WANT TO DO?"
30 PRINT
40 PRINT "ADDING? (=+)",,, "TAKI
NG AWAY? (= -)"
50 PRINT "TIMES? (=*)",,, "SHARI
NG? (= /)"
60 INPUT N$
70 CLS
80 PRINT "ENTER YOUR FIRST NUM
BER"
90 INPUT P
100 PRINT P
110 PRINT "ENTER YOUR SECOND NU
MBER"
120 INPUT T
130 PRINT T
140 PAUSE 100
150 CLS
160 IF N$="+" THEN LET Z=P+T
170 IF N$="-" THEN LET Z=P-T
180 IF N$="*" THEN LET Z=P*T
190 IF N$="/" THEN LET Z=P/T
200 PRINT P;N$;T;"=";Z
210 PRINT
220 PRINT "DO YOU WANT ANY MORE
?"
230 INPUT B$
240 IF B$="YES" OR B$="Y" THEN
GOTO 10
250 CLS
260 IF B$<>"YES" AND B$<>"Y" TH
EN PRINT "GOODBYE"
270 STOP

```



WE RECEIVED a letter from R G Searle of Salisbury, Wiltshire, complimenting us on our first edition but complaining that few programs catered for those under the age of eight. "Yet

that age group is fascinated by the ZX-81," he wrote.

To help to remedy that he included a simple program which we print.

As he said: "It does not really do

anything but I think it does what it does nicely."

It is called **Simple Sums** because that is what it does, taking young children through the steps of simple arithmetic in a friendly way.



PONTOON

THIS VERSION of the card game **Pontoon** requires a minimum of 4K RAM on the ZX-81. The program is a very good simulation of the game which is played with the computer as the dealer.

S is pressed for stick and T for twist, with the answer as to whether you wish to play again after the end of a game being a Y or N. No betting is involved—only the satisfaction of having beaten the computer.

To help with the graphics for the card designs, on lines 30 to 100 there are five spaces between the quotes.

Pontoon was sent by Paul Mapstone, of London N7.

```

1  REM  **ZX81  PONTOON**
2  REM  **BY  P.MAPSTONE**
3
4  RAND
5
10 DIM A$(8,5)
20 DIM T$(11,5)
30 LET A$(1) = " "
40 LET A$(2) = " "
50 LET A$(3) = " "
60 LET A$(4) = " "
70 LET A$(5) = " "
80 LET A$(6) = " "
90 LET A$(7) = " "
100 LET A$(8) = " "
110 LET T$(1) = "1688882"
120 LET T$(2) = "1686882"
130 LET T$(3) = "1768702"
140 LET T$(4) = "1488422"
150 LET T$(5) = "1488422"

```




```

160 LET T$(6)="145842"
170 LET T$(7)="135842"
180 LET T$(8)="144442"
190 LET T$(9)="143442"
200 LET T$(10)="134342"
210 LET T$(11)="166862"
220 PRINT AT 21,20;"CREDITS:10"
230 LET CR=10
300 DIM P(6)
310 DIM D(6)
320 FOR N=1 TO 6
330 LET P(N)=0
340 LET D(N)=0
350 NEXT N
360 LET L=0
370 LET C=1
380 LET NP=2
400 GOSUB 2000
410 LET DS=N
420 LET D(1)=N
430 PRINT AT 7,1;"DEALERS SCORE"
440 LET L=L+1
450 GOSUB 2000
460 LET P(1)=N
470 LET L=L+1
480 LET C=C+1
490 LET N=1
500 GOSUB 2000
510 LET L=L+1
520 GOSUB 2000
530 LET P(2)=N
540 PRINT AT 15,1;"PLAYERS SCORE"
570 PRINT AT 17,1;"STICK OR TWI
ST?"
600 LET PT=P(1)+P(2)+P(3)+P(4)+
P(5)+P(6)
610 IF PT=21 AND NP=2 THEN GOTO
2100
620 IF PT<22 THEN GOTO 665
629 REM SETS ACE=1
630 LET N=1
640 IF P(N)<>11 THEN GOTO 670
650 LET P(N)=1
660 GOTO 600
670 LET N=N+1
675 IF N=7 THEN GOTO 2200
680 GOTO 640
685 PRINT AT 15,15;PT
690 IF NP=6 THEN GOTO 2300
700 IF INKEY$="" THEN GOTO 700
710 IF INKEY$="S" THEN GOTO 100
0
720 LET C=C+5
730 LET NP=NP+1
740 GOSUB 2000
750 LET P(NP)=N
760 GOTO 600
1000 IF NP=5 THEN GOTO 2400
1009 REM ***DEALERS TURN
1010 LET N=1
1020 LET L=0
1030 LET C=1
1040 LET DT=D(1)+D(2)+D(3)+D(4)+
D(5)
1050 IF DT=21 AND ND=2 THEN GOTO
3000
1060 IF DT<22 THEN GOTO 1135
1070 LET N=1

```

```

1080 IF D(N)<>11 THEN GOTO 1110
1090 LET D(N)=1
1100 GOTO 1040
1110 LET N=N+1
1120 IF N=6 THEN GOTO 1080
1130 GOTO 3100
1135 PRINT AT 7,15;DT
1140 IF ND=5 THEN GOTO 3200
1150 IF DT>PT THEN GOTO 3500
1160 LET C=C+5
1170 LET ND=ND+1
1180 GOSUB 2000
1190 LET D(ND)=N
1200 GOTO 1040
1999 REM PICK RANDOM CARD
2000 LET N=INT (RND*13)+2
2010 IF N>11 THEN LET N=10
2019 REM PLOT RANDOM CARD AT L,C
2020 FOR W=1 TO 6
2030 PRINT AT L+W,C;A$(VAL T$(N,
W))
2040 NEXT W
2050 RETURN
2100 PRINT AT 15,15;"***PONTOON*
**"
2110 LET N=2
2120 GOTO 3600
2200 PRINT AT 15,15;"BUST"
2210 GOTO 3500
2300 PRINT AT 15,15;"SIX CARD TR
ICK"
2310 LET N=4
2320 GOTO 3600
2400 PRINT AT 15,15;"FIVE CARD T
RICK"
2410 LET N=2
2420 GOTO 3600
2500 PRINT AT 7,15;"***PONTOON**
*"
2610 GOTO 3500
2700 PRINT AT 7,15;"BUST"
2810 LET N=1
2820 GOTO 3600
2900 PRINT AT 7,15;"FIVE CARD TR
ICK"
3500 LET CR=CR-1
3510 PRINT AT 19,5;"YOU LOSE 1 C
REDIT"
3530 IF CR>0 THEN GOTO 3700
3540 PRINT AT 21,28;"0"
3550 PRINT AT 17,1;"YOU HAVE RUN
OUT OF CREDITS,
WOULD YOU LI
KE TO TRY AGAIN?"
3560 IF INKEY$="" THEN GOTO 3550
3570 IF INKEY$="N" THEN STOP
3580 CLS
3590 RUN
3600 LET CR=CR+N
3610 IF N>1 THEN PRINT AT 19,5;"
YOU WIN ";N;" CREDITS"
3620 IF N=1 THEN PRINT AT 19,5;"
YOU WIN 1 CREDIT"
3700 PRINT AT 21,28;CR;" "
3710 PRINT AT 17,1;"(16 SPACES)"
3720 PRINT AT 21,1;"DEAL?"
3730 IF INKEY$="" THEN GOTO 3720
3740 IF INKEY$="N" THEN STOP
3750 CLS
3760 PRINT AT 21,20;"CREDITS: ";C
R
3770 GOTO 320

```


HANGMAN

GILL of Westerham, Kent has produced a game of **Hangman** which can be played on the ZX-80. The program, as written, contains a set of 12 six-letter words which it chooses at random and the player has to guess it, losing one life out of 10 each time an incorrect guess is made.

If the player guesses correctly, the screen shows: "Well done, that is it". If you run out of lives it says. "You are dead".

The line of words can include a total of about 70 letters, so that other combinations, such as 14 words of five letters each, can be used. If other groups are used it is necessary to change line 5. If the case of 14 words of five letters it would read

5 LET A=RND ((14)-1)*5.



```

5 LET A=RND ((12)-1)*6
10 DIM L(6)
15 LET AS="LETTER NORMAL BATTLE
VISION MUTINY BARREL VOYAGE
RETURN DEVOID MUTTON BOTTOM
REFORM"
20 IF A=0 THEN GO TO 30
25 GOSUB 200
30 FOR G=1 TO 10
35 PRINT "INPUT YOUR GUESS"
40 PRINT
45 INPUT GS$
50 CLS
55 LET T=0
60 PRINT "YOU,VE GOT ";10-G;" LIVES
LEFT"
65 PRINT
70 FOR B=1 TO 6
75 IF CODE(B$)=CODE(G$) THEN LET L(B)
=CODE(G$)
80 IF L(B) > 0 THEN PRINT CHR$(L(B)); " ";
(space)
85 IF L(B)=0 THEN PRINT "-"; " ";
90 IF L(B) > 0 THEN LET T=T+1
95 LET BS=TL$(BS)
100 NEXT B
105 GOSUB 200
110 IF T=6 THEN GOTO 400
115 PRINT
120 NEXT G
130 GOSUB 200
135 CLS
140 PRINT "YOU'RE DEAD"
145 PRINT
150 PRINT "IT WAS";
155 FOR B=1 TO 6
160 PRINT CHR$(CODE(B$));
165 LET BS=TL$(BS)
170 NEXT B
175 GOTO 420
200 LET BS=AS
205 FOR B=1 TO A
210 LET BS=TL$(BS)
215 NEXT B
220 RETURN
400 PRINT
410 PRINT "WELL DONE, THAT,SIT"
420 POKE 16421,24

```

AS contains 12 words each six letters long. Any words can be substituted so long as they are all the same length. Words of, say, five letters long can be used, when AS can be 14 words long—AS can contain about 70 letters. Line 5 should then be changed to:

5 LET A=RND ((14)-1)*5

CHORDS



FOR ALL who are trying to master a musical instrument, **Chords** is a good learning aid. By entering the name of a chord, the notes which comprise it are displayed on a piano keyboard shown at the top of the screen.

Despite some chords having complicated titles, the program can deal with them by using a code for the different elements, such as the note, whether in major or minor and whether diminished or not. The code is shown on the screen beneath the keyboard.

To help in printing, the keyboard line 1030 contains a shifted 8 then a

shifted 7 and a shifted space followed by alternate shifted 7s and spaces.

Line 1070 is made up of a shifted 8, 30 shifted 6s and a shifted 5, and in lines 1100 to 1200 there are six spaces for letters in the second set of doubles and 32 shifted 7s in line 1210.

In line 1110 there are two sets of double quotes, shifted Q, after TAB 26.

Chords was sent by Paul Hopgood, of Wantage, Oxfordshire. It was one of the runners-up in the May competition in our companion publication, *Sinclair User*, and needs the 16K RAM pack.

```

10 DIM C$(7,3)
20 DIM N(4)
30 REM
40 GOSUB 1000.....DISPLAY
50 REM .....SET UP NOTE TABLE
60 GOSUB 1500
70 PRINT AT 21,0;"CHORD NAME ?"

80 INPUT A$
90 IF A$(1)="0" THEN STOP
100 LET N$=A$(1)
110 LET A$=A$(2 TO )
120 REM .....ROOT POSITION

130 GOSUB 2000
140 REM .....ACCIDENTALS
150 IF N$="" THEN LET N(1)=N(
1)+1
160 IF N$="." THEN LET N(1)=N(1)
-1
170 REM .....CHORDS
180 FOR I=1 TO 7
190 IF N$=S$(I) THEN GOSUB I*50
0+2000
200 NEXT I
300 IF A$<>" " THEN GOTO 100
310 REM .....PRINT CHORD
320 PRINT AT 5,1;"(31 SPACES)"
330 FOR I=1 TO 4
340 IF N(I)<>0 THEN PRINT AT 5,
N(I);" "
350 NEXT I
360 FOR I=1 TO 4
370 LET N(I)=0
380 NEXT I
390 GOTO 80
1000 REM ***CREATE DISPLAY***
1010 PRINT "CHORD FORMATION C
ALCULATOR
1020 PRINT
1030 PRINT
1040 PRINT
1050 PRINT
1060 PRINT
1070 PRINT
1080 PRINT
1090 PRINT "INSTRUCTION
CODE
1100 PRINT "NOTE";TAB 26;"A-G
1110 PRINT "SHARP";TAB 26;"#"
1120 PRINT "FLAT";TAB 26;"b"
1130 PRINT "INVERSION";TAB 26;
1140 PRINT "MAJOR";TAB 26;"M
1150 PRINT "MINOR";TAB 26;"m

```

```

1160 PRINT "AUGMENTED";TAB 26;
1170 PRINT "DIMINISHED";TAB 26
1180 PRINT "SIXTH";TAB 26;"6
1190 PRINT "SEVENTH";TAB 26;"7
1200 PRINT "QUIT";TAB 26;"Q
1210 PRINT "
1220 RETURN
1500 REM ***SET UP NOTE TABLE***
1510 LET C$(1)="C01"
1520 LET C$(2)="D03"
1530 LET C$(3)="E05"
1540 LET C$(4)="F06"
1550 LET C$(5)="G08"
1560 LET C$(6)="A10"
1570 LET C$(7)="B12"
1580 LET S$="MN67I+-"
1590 RETURN
2000 REM ***FIND PRINT POSITION***
2010 FOR I=1 TO 7
2020 IF N$=C$(I,1) THEN LET N(1)
=VAL C$(I,2 TO )
2030 NEXT I
2040 RETURN
2500 REM *****MAJOR CHORD*****
2510 LET N(2)=N(1)+4
2520 LET N(3)=N(1)+7
2530 LET N(4)=0
2540 RETURN
3000 REM *****MINOR CHORD*****
3010 LET N(2)=N(1)+3
3020 LET N(3)=N(1)+7
3030 LET N(4)=0
3040 RETURN
3500 REM *****ADD SIXTH*****
3510 LET N(4)=N(1)+9
3520 RETURN
4000 REM *****ADD SEVENTH*****
4010 LET N(4)=N(1)+10
4020 RETURN
4500 REM ***INVERSION ROUTINE***
4510 LET T=N(1)
4520 LET N(1)=N(2)
4530 LET N(2)=N(3)
4540 LET N(3)=N(4)
4550 IF T<>0 THEN LET N(4)=T+12
4560 RETURN
5000 REM ***AUGMENTED CHORD***
5010 LET N(2)=N(1)+4
5020 LET N(3)=N(1)+8
5030 LET N(4)=0
5040 RETURN
5500 REM ***DIMINISHED CHORD***
5510 LET N(2)=N(1)+3
5520 LET N(3)=N(1)+6
5530 LET N(4)=N(1)+9
5540 RETURN

```


Treasure Island

Lat. 5° 34' 52" N
Long. 82° 24' 11" W



TREASURE HUNTER

TREASURE HUNTER is a clever little game in which a hunter, denoted by an asterisk, has to find treasure which is hidden at a random position on the screen. The only assistance given to the hunter is that he is told when he is getting warmer.

It can be very annoying when, whichever way you move, you seem to be getting warmer but cannot find the exact location of the treasure. When the correct spot is found, the number of steps taken is shown on the screen, along with the program's idea of the optimum number.

The first attempt by the Sinclair Programs reviewer resulted in 453 steps taken against an optimum of five. That later improved to 84 against an optimum of 30.

The hunter is moved by using the cursor keys but an added difficulty is that if you go to the edge of the screen you bounce back so that the left and right keys and the up and down keys can become reversed.

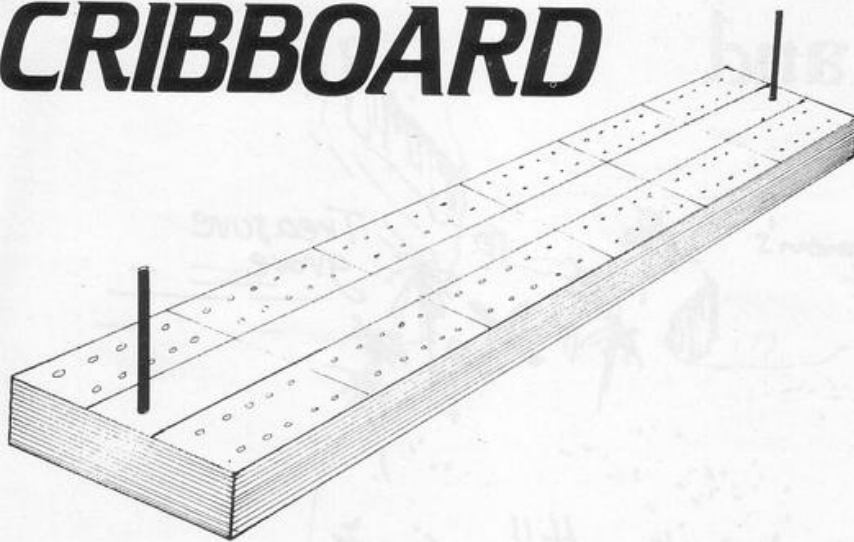
Treasure Hunter was sent by P Brown of Charlesworth, Derbyshire.

```

10 REM TREASURE HUNT BY P AND
A BROWN
20 LET P=PI/PI
30 LET Q=PI-PI
40 LET L=INT (RND*VAL "15")+VA
L "2"
50 LET C=INT (RND*VAL "27")+VA
L "2"
60 LET S=Q
70 LET OP=P
80 LET QQ=Q
90 LET P=P+(INKEY$="6")-(INKEY
$="7")
100 LET Q=Q+(INKEY$="8")-(INKEY
$="5")
110 CLS
120 PRINT AT P,Q;"*"
130 LET S=S+PI/PI
140 IF P=L AND Q=C THEN GOTO VA
L "210"
150 LET D=L-P
160 LET E=C-Q
170 LET F=L-OP
180 LET G=C-QQ
190 IF ABS D+ABS E<ABS F+ABS G
THEN PRINT AT Q,Q;"WARMER"
200 GOTO VAL "70"
210 PRINT AT L,C;"X"
220 PRINT "LOOT FOUND IN ";S;"
STEPS"
230 PRINT "OPTIMUM ";L+C-VAL "1

```


CRIBBOARD



CRIBBOARD, as the name suggests, is a scoring system to use while playing cribbage. A board is displayed on which the state of the game is shown by the blanked-out hole on the board and the numerical total is shown. The result in the number of games is also given.

When run, the players are asked if they are playing a bust or no-bust game and the game is recorded as required. A maximum score of 29 is allowed on each turn and the impossible figure of 19 cannot be entered. The score is entered by giving the letter of the player, followed by his score.

The program was sent by M J Bennett of Jeddah, Saudi Arabia. It requires the 16K RAM pack.

```

1 REM CRIBBOARD
2 REM EACH PLAYER ENTERS HIS
  LETTER (A OR B), FOLLOWED BY HIS
  SCORE, FOLLOWED BY NEWLINE.
3 REM AN ENTRY GREATER THAN
  29 WILL NOT BE ACCEPTED.
4 REM THE FIRST PLAYER TO
  SCORE 121 OR MORE IS THE WINNER.
5 PRINT "DO YOU WANT TO FINIS
  H ON EXACTLY 121? IF YES
  PRESS "Y" ELSE PRESS "NEWLI
  NE"
6 INPUT B$
7 IF B$="Y" THEN GOTO 4000
8 IF B$<>"Y" THEN CLS
9 LET C=0
10 LET D=0
11 GOSUB 9000
12 GOSUB 9500
13 INPUT A$
14 PRINT AT 15,4;" ";AT 1
  5,21;
15 IF VAL A$(2 TO )>29 OR VAL
  A$(2 TO )=19 THEN GOTO 40
16 IF A$(1)="A" THEN GOTO 1000
17 IF A$(1)="B" THEN GOTO 2000
18 IF A$(1)<>"A" AND A$(1)<>"B
  " THEN GOTO 40
19 IF (VAL A$(2 TO )+A)<=121 T
  HEN PLOT X,Y
20 LET A=A+VAL A$(2 TO )
21 IF A<31 THEN GOTO 1020
22 IF A>30 AND A<61 THEN LET X
  =2+(A-62)
23 IF A>60 AND A<91 THEN LET X
  =2+ABS (A-130)
24 IF A>90 AND A<121 THEN LET
  X=2+(A-132)
25 IF A>120 THEN GOTO 1100
26 IF A<31 OR (A>60 AND A<91)
  THEN LET Y=37
27 IF (A>30 AND A<61) OR A>90
  THEN LET Y=34
28 IF A<31 THEN LET X=62-(A*2)
29 UNPLOT X,Y
30 PRINT AT 13,5;A
31 GOTO 40
32 UNPLOT 62,35
33 UNPLOT 62,35
34 PLOT X,Y
35 PRINT AT 13,5;"121"
36 PRINT AT 15,4;"WINNER"
37 LET C=C+1
38 PRINT AT 17,5;C
39 GOTO 3000
40 LET A=A-VAL A$(2 TO )
41 PRINT AT 15,5;"BUST"
42 PRINT AT 13,5;A
43 GOTO 40
44 IF (VAL A$(2 TO )+B)<=121 T
  HEN PLOT U,V
45 LET B=B+VAL A$(2 TO )
46 IF B<31 THEN GOTO 2020
47 IF B>30 AND B<61 THEN LET U
  =2+(B-62)
48 IF B>60 AND B<91 THEN LET U
  =2+ABS (B-130)
49 IF B>90 AND B<121 THEN LET
  U=2+(B-132)
50 IF B>120 THEN GOTO 2100
51 IF B<31 OR (B>60 AND B<91)
  THEN LET V=27
52 IF (B>30 AND B<61) OR B>90
  THEN LET W=30
53 IF B<31 THEN LET V=62-(B*2)
54 UNPLOT U,V
55 PRINT AT 13,23;B
56 GOTO 40
57 UNPLOT 62,29
58 UNPLOT 62,26
59 PLOT U,V
60 PRINT AT 13,23;"121"
61 PRINT AT 15,21;"WINNER"
62 LET D=D+1
63 PRINT AT 17,23;D
64 GOTO 3000
65 LET B=B-VAL A$(2 TO )
66 PRINT AT 15,22;"BUST"
67 PRINT AT 13,23;B
68 GOTO 40
69 PRINT AT 20,0;"DO YOU WANT
  ANOTHER GAME? (Y/N)"
70 INPUT C$
71 IF C$="Y" THEN CLS
72 IF C$="Y" THEN GOTO 20
73 STOP
74 CLS
75 LET E=1
76 GOTO 10
77 FAST
78 FOR X=0 TO 63
79 PLOT X,39
80 NEXT X
81 FOR X=0 TO 63
82 PLOT X,25
83 NEXT X
84 FOR Y=26 TO 38
85 PLOT 0,Y
86 NEXT Y
87 FOR Y=26 TO 38
88 PLOT 63,Y
89 NEXT Y
90 FOR X=2 TO 60 STEP 2
91 PLOT X,37
92 NEXT X
93 FOR X=2 TO 60 STEP 2
94 PLOT X,34
95 NEXT X
96 FOR X=2 TO 60 STEP 2
97 PLOT X,30
98 NEXT X
99 FOR X=2 TO 60 STEP 2
100 PLOT X,27
101 NEXT X
102 PLOT 62,36
103 PLOT 62,35
104 PLOT 62,29
105 PLOT 62,28
106 PRINT AT 11,4;"A=TOP";AT 11
  20;"B=BOTTOM"
107 PRINT AT 13,12;"<SCORE>"
108 PRINT AT 17,12;"<GAMES>"
109 SLOW
110 RETURN
111 LET A=0
112 LET B=0
113 LET U=60
114 LET V=27
115 LET X=60
116 LET Y=37
117 PRINT AT 13,5;A;AT 13,23;B
118 PRINT AT 17,5;C;AT 17,23;D
119 RETURN
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```



ALIEN LURE

A GAME which links the bug-baiting type of program with a battle against alien invaders has been produced by Sanath Yogasundrum of Ashton, Preston, Lancashire.

When the game begins, the player is asked for a skill level, A or P, which stand for amateur or professional. It is advisable to start on the amateur level while the player begins to understand this complex game.

A small grid is shown in the bottom left-hand corner of the

screen in which there are four aliens, shown as X and S, with a soldier (*). The soldier has to dig a hole (O) and then lure the aliens into it, scoring 100 points for every X and 200 for every S.

The hole is dug by going into dig mode, pressing 2, and pressing the cursor key for which side of the soldier you wish to place the hole. The soldier can then be moved by pressing 01 to return to movement mode, and using the cursors in their normal directions.

A soldier can be killed either by

falling into his own hole or being eaten by an alien. The game lasts for the lives of three soldiers, although an extra soldier can be gained by scoring more than 3,000.

Two other limitations are that only one hole can be dug at a time and a hole cannot be dug beneath an alien. Once an alien has fallen into a hole it is filled immediately and the game continues.

Even after playing for more than an hour at the amateur level, no-one at Sinclair Programs managed to score more than 1,300.

```

1 LET BEST=0
2 PRINT "SKILL LEVEL?(A/P) "
3 INPUT A$
4 CLS
10 LET SO=2
15 LET S=0
20 PRINT "HOLE DUG"
21 PRINT AT 14,15;"LEVEL:";A$
22 PRINT AT 16,10;"HIGH SCORE:";BEST
23 PRINT AT 18,0;"■■■■■ YO
UR SCORE:";S
30 PRINT AT 20,0;"■■■■■ S
PARE MEN:";SO
40 LET X=17
50 LET Y=0
60 LET A=17

```

```

70 LET B=8
80 LET U=21
90 LET V=4
100 LET G=1
110 LET HX=15
120 LET HY=0
130 LET C=17
140 LET D=4
150 LET F=19
160 LET E=2
165 LET GG=19
170 LET HH=6
195 PRINT AT U,U;"*"
200 PRINT AT X,Y;"S"
210 PRINT AT A,B;"X"
220 PRINT AT C,D;"X"
230 PRINT AT E,F;"X"

```




```

240 PRINT AT GG,HH;"X"
300 LET Q=141
305 LET M=X
310 LET N=Y
320 GOSUB 2000
322 LET U=345
325 GOTO 6000
335 LET X=M
340 LET Y=N
345 PRINT AT X,Y;"$"
347 GOSUB 2430
350 LET M=A
360 LET N=B
370 GOSUB 2000
375 LET U=410
380 GOTO 6000
400 LET B=N
405 LET A=M
410 PRINT AT A,B;"$"
415 GOSUB 2430
417 LET Q=189
420 LET M=C
440 LET N=D
450 GOSUB 2000
470 LET U=510
475 GOTO 6000
500 LET D=N
505 LET C=M
510 PRINT AT C,D;"X"
515 GOSUB 2430
520 LET M=E
530 LET N=F
540 GOSUB 2000
570 LET U=610
580 GOTO 6000
600 LET F=N
605 LET E=M
610 PRINT AT E,F;"X"
615 GOSUB 2430
620 LET M=GG
640 LET N=HH
650 GOSUB 2000
670 LET U=710
680 GOTO 6000
700 LET HH=N
705 LET GG=M
710 PRINT AT GG,HH;"X"
720 GOSUB 2430
770 GOTO 300

2003 IF INKEY$="1" THEN LET G=1
2004 IF INKEY$="2" THEN LET G=2
2005 LET R=AND
2010 LET Z=AND
2020 PRINT AT M,N;" "
2030 IF M=18 OR M=20 OR N=U AND
A$="P" AND (N=0 OR N=2 OR N=4 OR
N=6 OR N=8) THEN GOTO 2120
2100 IF R<=.5 OR M=U OR N=1 OR N
=3 OR N=5 OR N=7 THEN GOTO 2300
2120 IF M=21 OR U<M AND A$="P" T
HEN LET Z=.7
2122 IF M=17 OR U>M AND A$="P" T
HEN LET Z=.5
2125 IF Z<=.5 THEN LET M=M+1
2140 IF Z>.5 THEN LET M=M-1
2150 GOTO 2340
2300 IF N=0 OR N<U THEN LET Z=.5
2305 IF N=8 OR N>U THEN LET Z=.7
2310 IF Z<=.5 THEN LET N=N+1
2320 IF Z>.5 AND N>0 THEN LET N=
N-1
2340 IF M=U AND N=U THEN GOTO 70
80
2400 IF INKEY$="2" THEN LET G=2
2410 IF INKEY$="1" THEN LET G=1
2420 RETURN
2430 IF INKEY$<>"5" AND INKEY$<>
"6" AND INKEY$<>"7" AND INKEY$<>
"8" THEN RETURN
2440 IF G=2 THEN GOTO 2590
2450 PRINT AT U,V;" "

```

```

2520 IF INKEY$="5" AND U>0 AND (
U=17 OR U=19 OR U=21) THEN LET U
=U-1
2530 IF INKEY$="6" AND U<21 AND
(U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN LET U=U+1
2530 IF INKEY$="7" AND U>17 AND
(U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN LET U=U-1
2535 GOTO 3005
2590 PRINT AT HX,HY;" "
2597 IF INKEY$="5" AND U>0 AND (
U=21 OR U=19 OR U=17) THEN GOTO
2700
2600 IF INKEY$="8" AND U<8 AND (
U=21 OR U=19 OR U=17) THEN GOTO
2750
2620 IF INKEY$="6" AND U<21 AND
(U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN LET U=U+1
2620 IF INKEY$="8" AND U<21 AND
(U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN GOTO 2800
2640 IF INKEY$="7" AND U>17 AND
(U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN GOTO 2850
2650 GOTO 3005
2700 LET HX=U
2710 LET HY=U-1
2720 GOTO 3000
2750 LET HX=U
2760 LET HY=U+1
2770 GOTO 3000
2800 LET HX=U+1
2810 LET HY=U
2820 GOTO 3000
2850 LET HX=U-1
2860 LET HY=U
3000 IF HX=X AND HY=Y OR HX=A AN
D HY=B OR HX=C AND HY=D OR HX=E
AND HY=F OR HX=GG AND HY=HH THEN
LET HX=15
3003 IF HX<>15 THEN PRINT AT HX,
HY;" "
3020 IF HX=U AND HY=U OR U=X AND
U=Y OR U=A AND U=B OR U=C AND U
=D OR U=E AND U=F OR U=GG AND U=
HH THEN GOTO 7000
3030 PRINT AT U,V;"$"
3040 RETURN
6000 IF M=X AND N=Y OR M=A AND N
=B OR M=C AND N=D OR M=E AND N=F
OR M=GG AND N=HH THEN GOTO U
6005 IF M=HX AND N=HY THEN GOTO
6020
6010 GOTO U-10
6020 IF Q=141 THEN LET S=S+100
6035 LET S=S+100
6040 PRINT AT M,N;CHR$ Q
6044 IF S/3000=INT (S/3000) OR (
S-100)/3000=INT ((S-100)/3000) T
HEN LET SO=S+1
6045 PRINT AT 18,21;S
6047 PRINT AT 20,21;SO
6050 LET HX=15
6060 GOTO U-10
7000 PRINT AT U,V;"$"
7010 LET SO=SO-1
7030 PAUSE 100
7032 IF SO=-1 THEN GOTO 8000
7035 CLS
7040 GOTO 20
8000 FOR N=0 TO 21
8010 SCROLL
8020 NEXT N
8030 IF S>BEST THEN LET BEST=S
8040 PRINT AT 0,0;"GAME OVER, AL
L YOUR MEN ARE DEAD"
8050 GOTO 2

```

WIPE OUT



A DECEPTIVELY simple but frustrating game has been sent by Keith Paterson of Newmarket, Suffolk. When run, two walls are displayed with an O between them. The O can be used to eliminate the walls but as it does so it leaves a trail of Os behind it when moving vertically. No trail is left when moving horizontally.

The object is to finish with only one O on the screen. Despite a lengthy attempt by the Sinclair Programs reviewer, that proved impossible but Paterson maintains that it can be done with a little thought and concentration.

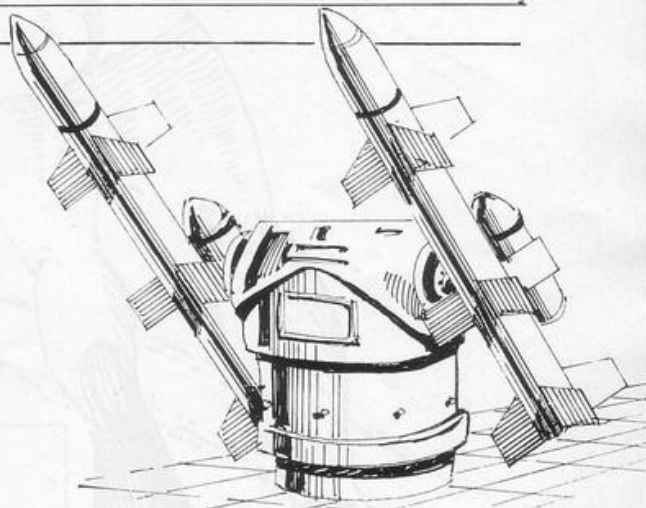
The O is moved by the cursor keys in the usual directions. It can run on the 1K ZX-81.

```

2 PRINT "USE 5,6,7,8 TO CLS
3 PAUSE 200
4 CLS
5 FOR X=1 TO 6
6 PRINT TAB 8;"O"
7 PRINT TAB 16;"O"
8 NEXT X
9 LET A=10
10 LET B=10
11 LET D$=""
12 PRINT AT A,B;D$
13 IF INKEY$="8" THEN LET B=B+
14 IF INKEY$="5" THEN LET B=B-
15 IF INKEY$="6" THEN LET A=A+
16 IF INKEY$="7" THEN LET A=A-
17 PRINT AT A+1,B;" "
18 IF B>16 OR B<0 THEN LET B=0
19 IF A>12 OR A<0 THEN LET A=0
20 PRINT AT A-1,B;" "
21 GOTO 12

```

SHIPS



```

1 LET C=0
2 LET A=0
3 RAND
4 FOR A=1 TO 10
5 CLS
6 LET M=18
7 LET F=2*(INT (RND*8))
8 FOR B=0 TO 20
9 PRINT AT A,B;" "
10 PRINT AT 19,15;" "
11 IF M<F THEN LET M=F
12 IF INKEY$="P" OR M<18 THEN
13 PRINT AT M,16;" "
14 IF B=15 AND M=F THEN GOTO 1
15 IF INKEY$="P" OR M<18 THEN
16 GOSUB 1000
17 PRINT AT F,B;" "
18 NEXT B
19 NEXT A
20 PRINT AT 20,16;C
21 PRINT AT M,16;" "
22 LET M=M-2
23 RETURN
24 PRINT AT M,B;"BANG"
25 PAUSE 50
26 LET C=C+1
27 NEXT A
28 PRINT AT 20,16;C

```

FOR THE 1K ZX-81, **Ships** is a simple type of missile game in which a target moves at various distances from the gun across the screen and the objective is to hit it. Ten ships pass and the score is shown at the end of each game.

Only one shot can be made at a time, so the skill is in judging when to fire, so that the missile and ship coincide. When a hit is made in the middle of the ship, BANG is shown on the screen.

Press RUN and NEW LINE to start each game and P to fire the missile. The Sinclair Programs reviewer managed a top score of four.

The graphics in line 100 are, all shifted, 3,6 and 4 and line 125,Q,F and W. Ships was sent by Ian Johnston, of Newmarket, Suffolk.

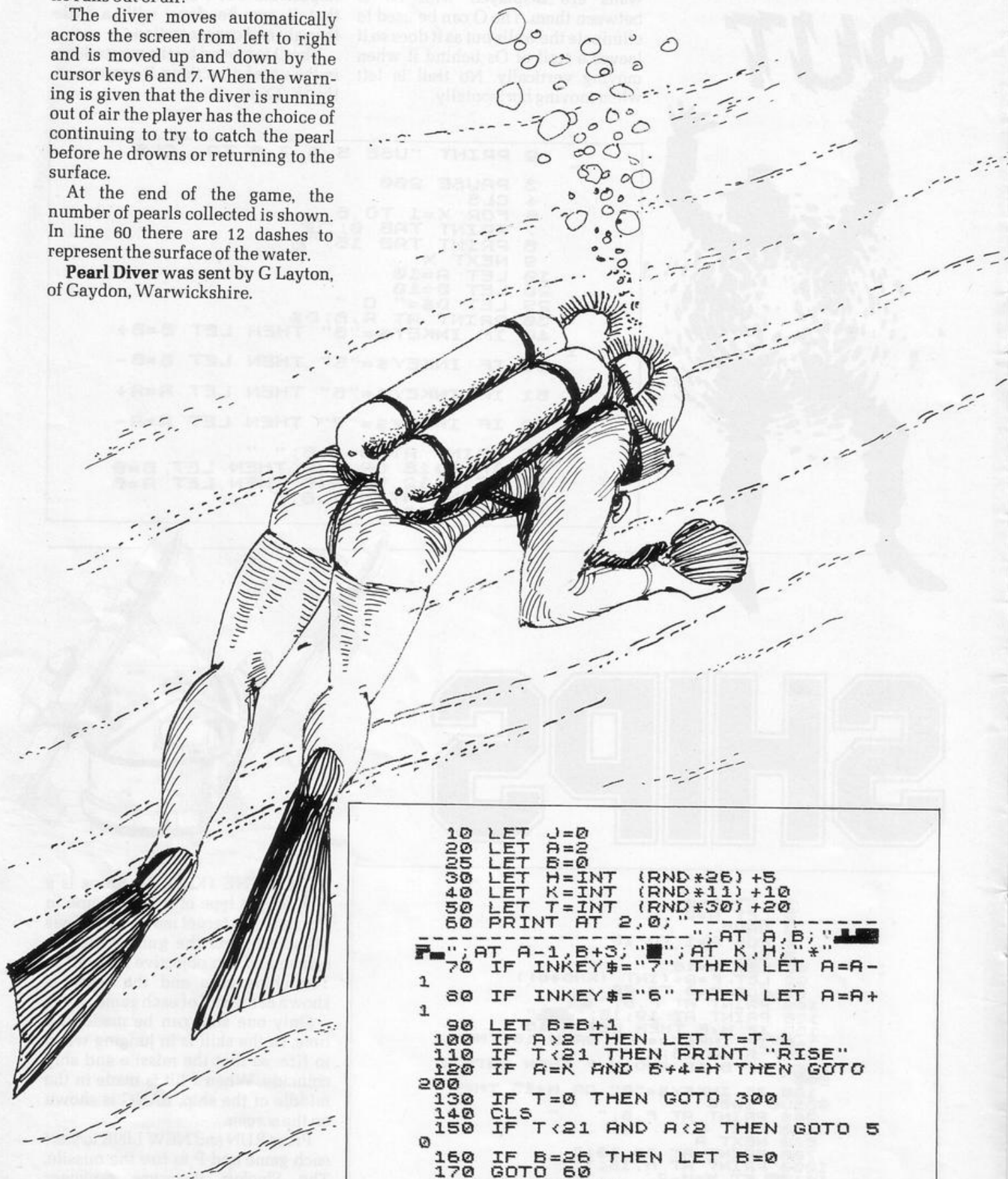
PEARL DIVER will fit on the 1K ZX-81 and, as the name suggests, involves a diver attempting to pick up a pearl before he runs out of air.

The diver moves automatically across the screen from left to right and is moved up and down by the cursor keys 6 and 7. When the warning is given that the diver is running out of air the player has the choice of continuing to try to catch the pearl before he drowns or returning to the surface.

At the end of the game, the number of pearls collected is shown. In line 60 there are 12 dashes to represent the surface of the water.

Pearl Diver was sent by G Layton, of Gaydon, Warwickshire.

PEARL DIVER



```

10 LET J=0
20 LET A=2
25 LET B=0
30 LET H=INT (RND*26)+5
40 LET K=INT (RND*11)+10
50 LET T=INT (RND*30)+20
60 PRINT AT 2,0;"-----"
  "AT A-1,B+3;" "AT K,H;"*
70 IF INKEY$="7" THEN LET A=A-
1 80 IF INKEY$="6" THEN LET A=A+
1 90 LET B=B+1
100 IF A>2 THEN LET T=T-1
110 IF T<21 THEN PRINT "RISE"
120 IF A=K AND B+4=H THEN GOTO
200
130 IF T=0 THEN GOTO 300
140 CLS
150 IF T<21 AND A<2 THEN GOTO 5
0
160 IF B=26 THEN LET B=0
170 GOTO 60
200 LET J=J+1
210 PRINT AT 0,0;"PEARLS COLLEC
TED=";J
220 GOTO 20
300 PRINT AT 0,0;"YOU RAN OUT O
F AIR"

```

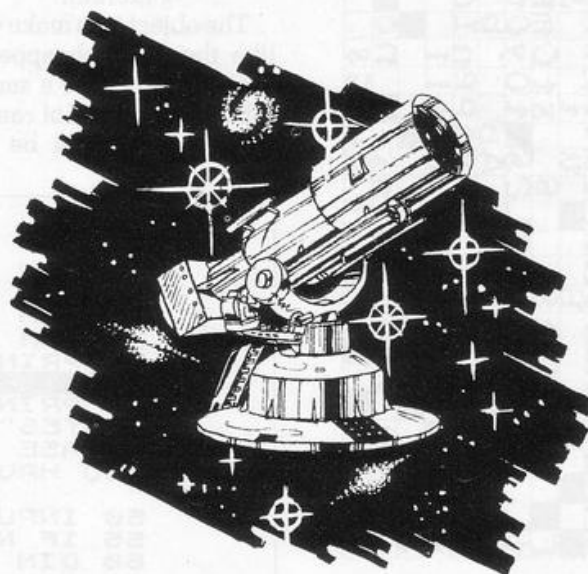
CONSTELLATIONS is a program specially for all avid stargazers. After the lengthy process of entering it, press RUN and NEW LINE and a menu is provided, listing 10 groups of stars. Pick which one you wish to see and the group of stars is shown, along with its name.

The list available is the same as that sent by the writer of the program but others can be added or substituted according to taste.

The main idea is to provide some kind of record of a particular constellation, so it is essential to save the program on cassette.

Kevan Cheyne, aged 10, of Hartlepool, Cleveland, wrote the program for a school project on stars. No doubt the next project will be to draw a picture of Patrick Moore.

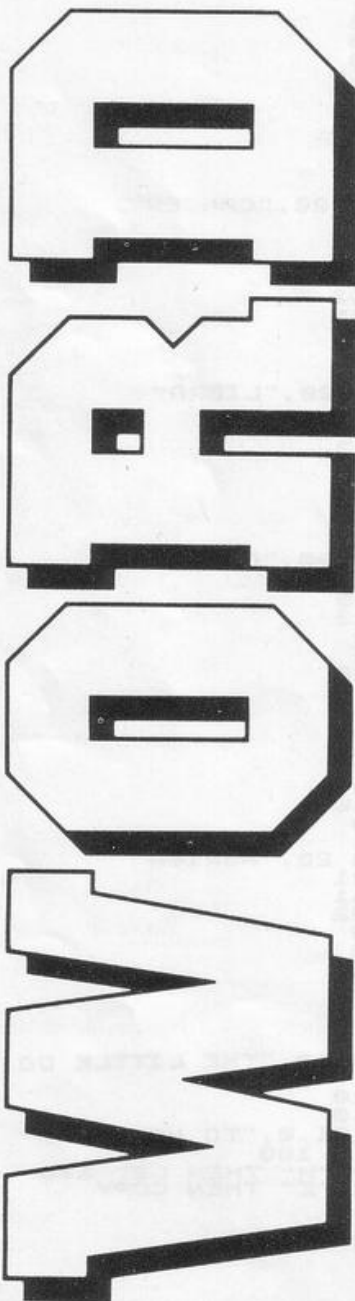
CONSTELLATIONS



```

10 PRINT "CONSTELLATION MENU"
15 PRINT "1. DELPHINUS"
20 PRINT "2. LYRA"
30 PRINT "3. BOOTES"
35 PRINT "4. LEPUS"
40 PRINT "5. PEGASUS"
41 PRINT "6. CANCER"
42 PRINT "7. LIBRA"
43 PRINT "8. CETUS"
44 PRINT "9. AURIGA"
45 PRINT "10. THE LITTLE DOG"
46 FOR F=1 TO 9
47 PRINT " "
48 NEXT F
50 INPUT A
51 IF A<1 OR A>10 THEN GOTO 9
70 GOTO A*100
100 CLS
105 PRINT TAB 1, "DELPHINUS"
110 PLOT 21,42
120 PLOT 46,43
130 PLOT 26,22
140 PLOT 51,22
150 PLOT 56,0
151 GOTO 1100
200 CLS
205 PRINT TAB 20, "LYRA"
210 PLOT 31,30
215 PLOT 36,32
220 PLOT 56,36
225 PLOT 54,9
230 PLOT 45,2
235 PLOT 31,15
240 PLOT 16,3
245 PLOT 12,0
250 PLOT 7,37
251 GOTO 1100
300 CLS
305 PRINT TAB 20, "BOOTES"
310 PLOT 32,23
320 PLOT 35,36
325 PLOT 30,33
330 PLOT 22,36
335 PLOT 25,21
340 PLOT 29,4
350 PLOT 24,3
355 PLOT 34,2
370 GOTO 1100
400 CLS
401 PRINT TAB 20, "LEPUS"
410 PLOT 32,10
420 PLOT 42,14
425 PLOT 47,12
430 PLOT 45,22
435 PLOT 46,27
440 PLOT 42,27
445 PLOT 37,20
450 PLOT 27,24
455 PLOT 24,26
460 PLOT 23,23
465 PLOT 28,13
470 GOTO 1100
500 CLS
501 PRINT TAB 20, "PEGASUS"
510 PLOT 32,15
515 PLOT 30,10
520 PLOT 26,3
525 PLOT 45,30
530 PLOT 7,30
535 PLOT 25,43
540 PLOT 45,33
545 PLOT 48,33
550 PLOT 47,20
555 PLOT 49,27
560 GOTO 1100
600 CLS
602 PRINT TAB 20, "CANCER"
610 PLOT 32,37
620 PLOT 42,30
630 PLOT 57,43
640 PLOT 10,30
645 PLOT 22,22
650 PLOT 42,25
655 GOTO 1100
700 CLS
701 PRINT TAB 20, "LIBRA"
710 PLOT 32,37
720 PLOT 42,27
730 PLOT 24,27
740 PLOT 26,9
750 PLOT 24,7
760 PLOT 35,14
770 GOTO 1100
800 CLS
801 PRINT TAB 20, "CETUS"
810 PLOT 39,17
820 PLOT 54,15
830 PLOT 43,13
835 PLOT 49,2
840 PLOT 35,5
845 PLOT 16,30
850 PLOT 31,10
855 PLOT 14,34
860 PLOT 14,36
865 PLOT 18,42
870 PLOT 25,39
875 PLOT 21,37
880 PLOT 18,34
890 GOTO 1100
900 CLS
902 PRINT TAB 20, "AURIGA"
910 PLOT 32,21
920 PLOT 26,41
930 PLOT 18,22
940 PLOT 14,9
950 PLOT 39,0
960 PLOT 39,18
970 PLOT 42,18
971 PLOT 41,22
980 GOTO 1100
1000 CLS
1002 PRINT TAB 18, "THE LITTLE DOG"
1010 PLOT 10,10
1020 PLOT 40,40
1100 PRINT AT 21,0, "TO HOLD:H"
1104 FOR S=1 TO 100
1105 IF INKEY#="H" THEN LET S=0
1106 IF INKEY#="Z" THEN COPY
1110 NEXT S
1111 RUN
1120 SAVE "CON"
1121 RUN

```

WORD PUZZLER is not so much a game as a game generator.

The object is to make word puzzles like those which appear in puzzle magazines, where a series of words is hidden in a grid of random letters.

The words can be vertical, re-

versed or diagonal, but rarely obvious.

The ingenious program requires a list of up to 15 words each of up to 12 letters, in order of length and pressing NEWLINE TO to start. The screen goes blank as the computer goes into fast mode to re-arrange the

```

10 REM *WORD SQUARE GENERATOR*
20 REM (C) A. BLACKBURN 1982
30 REM
40 REM
50 PRINT "WORD SQUARE"
60 PRINT "THIS PROGRAM G
ENERATES" "WORD SQUARE PUZZLES"
70 PRINT "PLEASE INPUT THE NUMBER OF WORDS
YOU HAVE.. (YOU CAN USE UP TO 15)"
80 INPUT N
90 IF N>15 THEN GOTO 50
100 DIM X(12)
110 DIM Y(12)
120 DIM D(15)
130 DIM G$(15,15)
140 CLS
150 PRINT "PLEASE INPUT YOUR ";
N: " WORDS NOW", "IN ORDER OF LENGTH
(LONGEST", "FIRST, SMALLEST LAST)"
160 PRINT "YOU CAN USE UP TO
12 LETTERS PERWORD"
170 PRINT
180 INPUT A$
190 DIM W$(15,LEN A$)
200 LET W$(1)=A$
210 PRINT A$
220 FOR M=2 TO N
230 INPUT W$(M)
240 PRINT W$(M)
250 NEXT M
260 PRINT AT 17,0: "IT WILL TAKE
ME A FEW MINUTES", "TO SORT THE
WORDS OUT", " **PRESS NEWLINE TO
START"
270 INPUT W$
280 CLS
290 FAST
300 REM ** MAIN LOOP **
310 LET D(1)=0
320 FOR M=1 TO N
330 REM **RANDOM DIRECTIONS+STARTING POINTS**
340 LET D(M+1)=INT (RND*8)+1
350 IF D(M+1)=D(M) THEN GOTO 340
360 LET L=INT (RND*15)+1
370 LET C=INT (RND*15)+1
380 FOR A=1 TO LEN W$(M)
390 GOSUB 1000+D(M+1)*20
400 IF L<1 OR L>15 THEN GOTO 350
410 IF C<1 OR C>15 THEN GOTO 350
420 LET A$=W$(M,A)
430 IF G$(L,C)="" AND G$(L,C)
<>A$ THEN GOTO 240
440 LET X(A)=L
450 LET Y(A)=C
460 NEXT A
470 REM **OK WE HAVE A WORD FIT
SO PUT IT IN THE GRID**
480 FOR K=1 TO LEN W$(M)
490 LET G$(X(K),Y(K))=W$(M,K)
500 NEXT K
510 REM **GET NEXT WORD**
520 NEXT M
530 REM ** WORD SQUARE COMPLETE
**
540 SLOW

```

letters and hide the words in a square of 15 by 15 letters.

Eventually the word puzzle is shown on the screen and the game is to find the input words which are listed by the side of the square.

The grid can be printed so that a number of puzzles with different

words can be made at the same time.

The dimensions of the square are set by the variable G\$(15,15) which can be altered to provide other sizes.

Word Puzzler is from Andrew Blackburn, of North Hykeham, Lincoln.

```

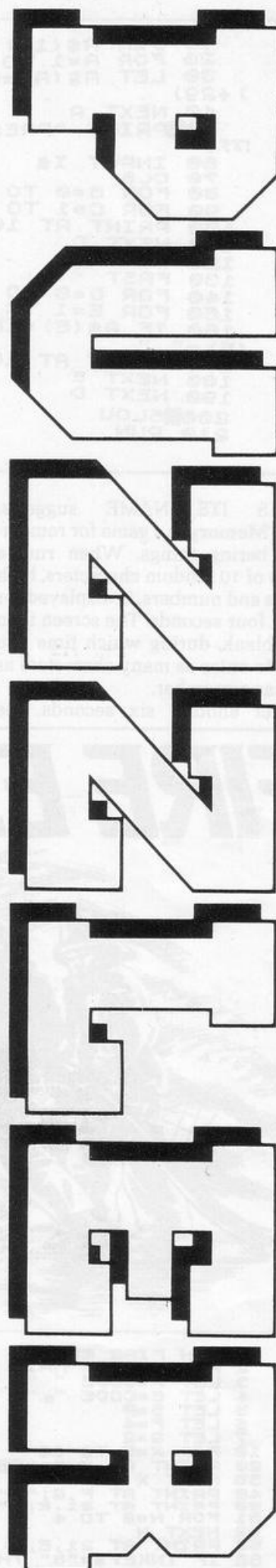
450 FOR D=1 TO 10000
455 LET A$=INKEY$
460 PRINT AT 5,0;"PRESS ""C""
TO CONTINUE
470 PRINT AT 20,0;"PRESS ""C""
TO CONTINUE"
480 IF A$="C" THEN GOTO 495
485 PRINT AT 5,0;"* G.K. WORDSQU
UARE IS COMPLETE *"
489 NEXT D
495 CLS
500 PRINT "PLEASE INPUT THE TIT
LE OF YOUR", "WORDSQUARE"
505 INPUT T$
506 CLS
510 PRINT AT 0,5;T$
515 FOR S=1 TO LEN T$
520 PRINT AT 1,4+S;" "
525 NEXT S
526 PRINT
530 FOR A=1 TO 15
535 FOR B=1 TO 15
540 IF G$(A,B)="" THEN LET G$(
A,B)=CHR$(INT (RAND*26)+38)
550 PRINT G$(A,B);
560 NEXT B
570 PRINT "(4 SPACES)";U$(A)
590 NEXT A
600 PRINT AT 21,0;"INPUT ""C""
TO COPY THE SCREEN"
610 INPUT U$
620 PRINT AT 21,0;"(32 SPACES)"
630 IF U$="C" THEN COPY
640 GOTO 600
1000 REM ** DIRECTIONS **
1020 LET C=C-1
1030 RETURN
1040 LET C=C+1
1050 RETURN
1060 LET L=L+1
1070 RETURN
1080 LET L=L-1
1090 RETURN
1100 LET L=L+1
1110 GOTO 1040
1120 LET L=L-1
1130 GOTO 1020
1140 LET L=L+1
1150 GOTO 1020
1160 LET L=L-1
1170 GOTO 1040
D834 REM
E090 REM

```

BITS "N" BYTES

ASBITTUJUAURXNI	COMPUTER
VVDIHGJPMUEEARZK	SOFTWARE
YJLYKCONQTRIBLE	HARDWARE
WXETRNHGUAQYQHU	KEYBOARD
GPAHIOUPWDTGTCTY	PRINTER
SONJRCMDJESNGUV	SILICON
BTEKYORENBJPARN	MEMORY
SSEECAFHMFOLISO	SCREEN
SCRYHKYWORCINOC	CURSOR
EUCBZEECIXEESRI	MICRO
NFSOFTWAREPPQAL	BYTE
UIQAJCHIPAHQZUI	CHIP
RUURCNPUDOGMRKS	STOP
FUYDHLUUSGMIUXG	BIT
AOTVGRETNIRPIUA	RUN

EXAMPLE WORDSQUARE USING THIS PROGRAM




```

10 DIM A$(10)
20 FOR A=1 TO 10
30 LET A$(A)=CHR$(INT (RND*35
)+29)
40 NEXT A
50 PRINT "PRESS NEWLINE TO STA
RT."
60 INPUT I$
70 CLS
80 FOR B=0 TO 6
90 FOR C=1 TO 10
100 PRINT AT 10,C*3;A$(C)
110 NEXT C
120 NEXT B
130 FAST
140 FOR D=0 TO 30
150 FOR E=1 TO 10
160 IF A$(E)=INKEY$ THEN LET A$
(E)=" "
170 PRINT AT 10,E*3;A$(E)
180 NEXT E
190 NEXT D
200 SLOW
210 RUN

```



MEMORY

AS ITS NAME suggests, **Memory** is a game for remembering things. When run, a series of 10 random characters, both letters and numbers, is displayed for about four seconds. The screen then goes blank, during which time you have to enter as many characters as you can remember.

After another six seconds, the

characters which you did not type-in are displayed on the screen.

The game can then be repeated by pressing RUN and NEW LINE, when another series of characters appears.

It is a simple but absorbing game which can be played for hours. It was sent by C J Barnatt, of Fernhill Heath, Worcester.

FIRE ESCAPE



FIRE ESCAPE, which can fit into 1K ZX-81, is a variation of the catcher type of game. When run, a block of flats is simulated on the left-hand side of the screen from which a figure, denoted by a bracket, jumps, and the object is to catch the figure before it hits the ground.

The catching blanket is moved from side to side by the cursor keys 5 and 8.

The game is made more interesting and difficult by a 'wind' moving the figure in the air, which makes constant adjustment of the blanket necessary. The concentration needed to do it makes it difficult to play the game for long, as the flashing of the figures hurts the eyes after a time.

After 10 people have jumped, your score, showing how many you saved, is shown and you can start the game again.

Fire Escape was sent by Roy Hair, of Kilmarnock, Scotland.

```

2 REM FIRE ESCAPE
3 REM BY ROY HAIR
4 LET P=CODE " "
5 LET E=CODE " "
6 LET S=P
7 LET F=4
8 LET G=2
10 FOR X=5 TO 18
20 PRINT AT X,0;" "
30 NEXT X
40 PRINT AT F,G;" ("
50 PRINT AT 21,E;" "
61 FOR N=0 TO 4
52 NEXT N
55 PRINT AT 21,E;" "
60 IF INKEY$="8" THEN LET E=E+

```

```

1 70 IF INKEY$="5" THEN LET E=E-
1 80 PRINT AT F,G;" "
90 LET F=F+1
100 LET G=G+INT (RND*2)
105 IF F=21 THEN GOTO 170
110 GOTO CODE "C"
170 IF G=E THEN LET S=S+CODE " "
175 LET P=P+CODE " "
176 PRINT AT 10,15;S
177 IF P=CODE " " THEN STOP
180 PAUSE CODE "M"
190 CLS
200 GOTO CODE " "

```

KNIGHT'S MOVE

KNIGHT'S MOVE uses the movement pattern of the Knight in chess to try to cover every space in a square. The program asks where you wish to start on the board, giving the vertical co-ordinate first, and then marks the moves as you make your way round the board.

There is a check routine to make sure you cannot cheat by making an incorrect move or land more than once on the same square. When no more squares can be visited, enter 0 as the number for the next square.

Press NEW LINE to replay the game or any other key and NEW LINE to end the game.

The graphics in line 20 are the capital I reversed with two reversed dashes, shifted J, between each. In line 30 the dashes are replaced by reversed spaces.

Knight's Move was sent by K M Godolphin, of Camborne, Cornwall, and needs 16K RAM.

```

10 DIM B(8,8)
20 LET A$="I-I-I-I-I-I-I-I-I-I"
30 LET B$="I-I-I-I-I-I-I-I-I-I"
40 CLS
50 FAST
60 PRINT TAB 5;"1 2 3 4 5
7 6
70 PRINT TAB 5;A$
80 FOR L=1 TO 8
90 PRINT TAB 3;L;" ";B$;TAB 5;
A$
100 NEXT L
110 FOR L=1 TO 8
120 FOR C=1 TO 8
130 LET B(L,C)=0
140 NEXT C
150 NEXT L
160 LET M=0
170 SLOW
180 PRINT AT 20,0;"WHERE DO YOU
190 PRINT AT 20,0;"WISH TO GO NEXT"
200 INPUT C$
210 IF C$="0" THEN GOTO 490
220 GOSUB 410
230 IF L=9 THEN GOTO 320
240 IF L=L1-2 OR L=L1+2 AND C=C
250 1-1 OR C=C1+1 THEN GOTO 220
260 IF L=L1-1 OR L=L1+1 AND C=C
270 1-2 OR C=C1+2 THEN GOTO 220
280 PRINT AT 19,0;"IMPOSSIBLE"
290 GOTO 320
300 PRINT AT 20,0;" 26 SPACES
310
320 IF LEN C$<2 THEN GOTO 470
330 LET L=VAL C$(1)
340 LET C=VAL C$(2)
350 IF L<1 OR L>8 OR C<1 OR C>8
360 THEN GOTO 460
370 IF B(L,C)=1 THEN GOTO 460
380 RETURN
390 LET L=9
400 PRINT AT 19,0;"IMPOSSIBLE"
410 RETURN
420 PRINT AT 21,0;"NL TO REPLAY
430
440 RETURN
450 PRINT AT 21,0;"NL TO REPLAY
460
470 INPUT C$
480 IF C$="" THEN GOTO 40

```

```

ONS"
300 GOTO 490
310 PRINT AT 19,0;" 10 SPACES "
320 PRINT AT 20,0;"WHERE DO YOU
WISH TO GO NEXT"
330 INPUT C$
340 IF C$="0" THEN GOTO 490
350 GOSUB 410
360 IF L=9 THEN GOTO 320
370 IF L=L1-2 OR L=L1+2 AND C=C
1-1 OR C=C1+1 THEN GOTO 220
380 IF L=L1-1 OR L=L1+1 AND C=C
1-2 OR C=C1+2 THEN GOTO 220
390 PRINT AT 19,0;"IMPOSSIBLE"
400 GOTO 320
410 PRINT AT 20,0;" 26 SPACES
420
420 IF LEN C$<2 THEN GOTO 470
430 LET L=VAL C$(1)
440 LET C=VAL C$(2)
450 IF L<1 OR L>8 OR C<1 OR C>8
460 THEN GOTO 460
470 IF B(L,C)=1 THEN GOTO 460
480 RETURN
490 LET L=9
500 PRINT AT 19,0;"IMPOSSIBLE"
510 RETURN
520 PRINT AT 21,0;"NL TO REPLAY
530
540 RETURN
550 PRINT AT 21,0;"NL TO REPLAY
560
570 INPUT C$
580 IF C$="" THEN GOTO 40

```




STUNT RIDER

STUNT RIDER simulates a motor-cyclist of the Evil Knievel variety jumping a series of barrels. The J key is pressed to jump and if it is not held down long enough the cyclist falls into the barrels, bringing a CRASH on the screen.

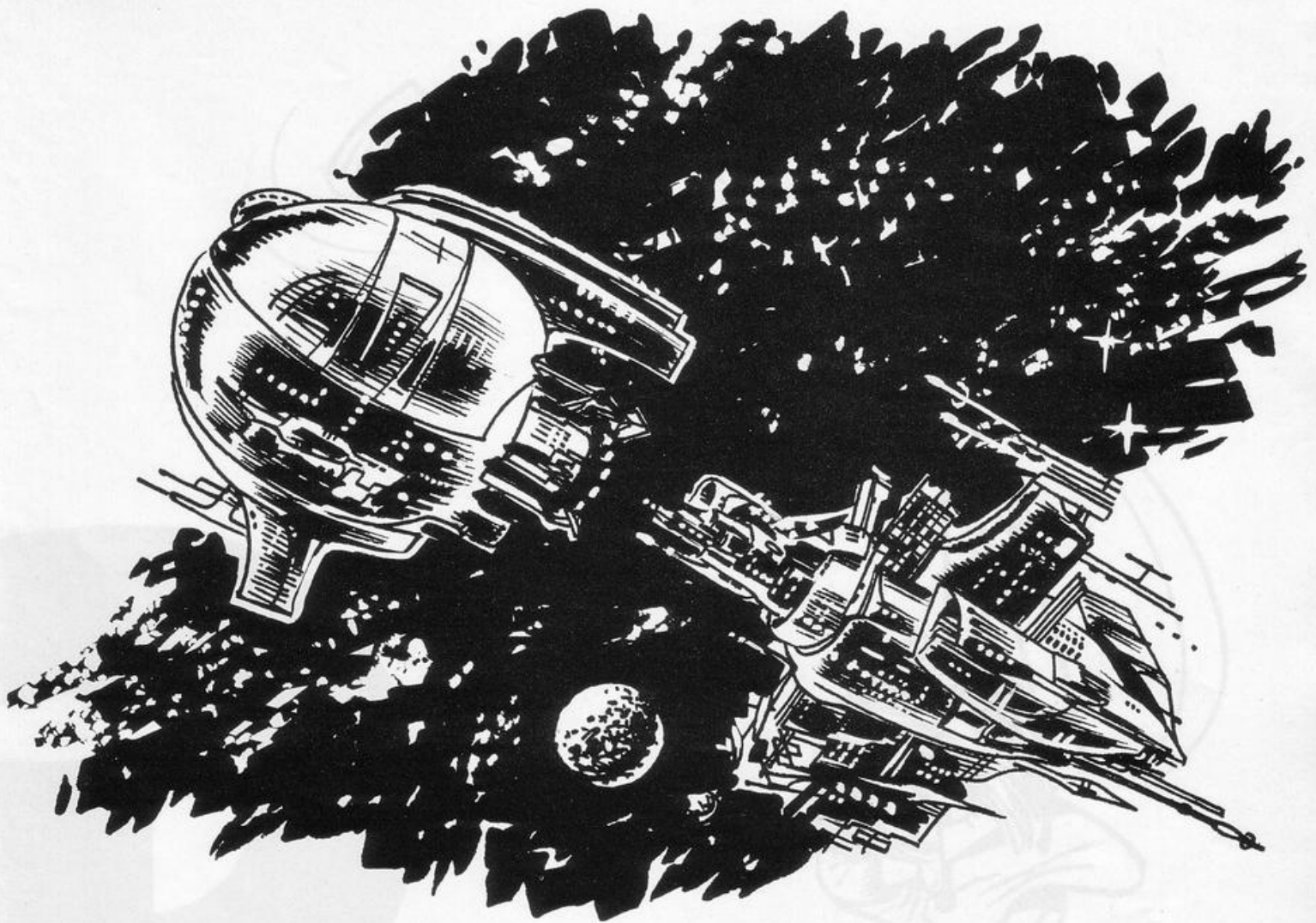
It is a very simple program. It does not take long to enter and can provide some enjoyment. To help with the design in line 30 there are 32 dashes and in lines 45 and 80 there are four spaces between each set of quotation marks.

Stunt Rider was sent by Paul Richards, of Swindon, Wiltshire.

```

5 PRINT "*****STUNT RIDER*****"
*
10 LET A=CODE " "
20 LET B=CODE "="
30 PRINT AT CODE "+",CODE " ";
-----
40 PRINT AT B-1,A;"-";AT B,A;
" 0"
45 PRINT AT B-1,A;" ";AT B,
A;" "
50 PRINT AT 19,10;" /";AT 20,1
0;" /"
60 IF INKEY$="J" AND A>=6 AND
B>17 THEN LET B=B-1
62 IF INKEY$<>"J" AND B<20 THE
N LET B=B+1
70 LET A=A+1
71 PRINT AT 20,14;"0000000000"
74 IF A>13 AND A<22 AND B=20 T
HEN PRINT AT 20,A;"CRASH"
75 IF A>13 AND A<22 AND B=20 T
75 IF A>13 AND A<22 AND B=20 T
HEN STOP
80 IF A=29 THEN PRINT AT 19,A;
" ";AT 20,A;" "
100 IF A=29 THEN LET A=0
110 GOTO 40

```



DOCKING

```

1  RAND
11 LET X=INT (RAND*50)
20 LET Y=INT (RAND*30)
30 LET A=CODE " "
40 LET B=A
41 LET S=A
45 CLS
46 PLOT A,B
47 PLOT X-1,Y+1
48 PLOT X,Y+1
50 PLOT X-1,Y
51 IF A=X AND B=Y THEN GOTO 10
0
53 LET X=X+2*(RAND<.5 AND X<50)
-2*(RAND>.5 AND X>0)
55 LET Y=Y+2*(RAND>.5 AND Y<40)
-2*(RAND<.5 AND Y>0)
56 LET A=A+(INKEY$="8" AND A<5
0)-(INKEY$="5" AND A>0)
57 LET B=B+(INKEY$="7" AND B<4
0)-(INKEY$="6" AND B>0)
59 LET S=S+1
60 IF S>300 THEN GOTO 103
61 GOTO 45
101 PRINT AT 21,0;"DOCKED IN ";
S;" MOVES";END
103 PRINT "NO ENERGY"

```

DOCKING, from J Smith of Coulsdon, Surrey, is like many of the Lunar Lander types of games where a craft has to be manoeuvred to land safely. The added spice to this version is that, in the words of its creator, "the space station is infested with 'space virus' which creates havoc and sends people mad. The station therefore is out of control".

The landing must be made as the station is moving about the screen in a random fashion with a limited amount of fuel remaining.

As usual, movement is controlled by the cursor keys and if a safe landing is achieved the number of moves taken is recorded.



```

10 LET T=0
15 LET M=0
20 LET A=1
25 IF A=10 THEN GOTO 600
30 LET D=(INT (RND*200)+200)
40 LET B=0
45 PRINT
50 PRINT "HOLE NO. ";A;" ";D;"
YARDS"
55 GOSUB 800
60 PRINT
65 PRINT "PAR ";P
70 LET M=M+P
75 PRINT
80 PRINT "PLAY YOUR STROKE,STR
LENGTH 1 TO 9"
85 INPUT J
90 CLS
95 LET B=B+1
100 LET T=T+1
105 IF J=1 THEN LET K=1
110 IF J=2 THEN LET K=INT (RND*
3)+0
115 IF J=3 THEN LET K=INT (RND*
2)+4
120 IF J=4 THEN LET K=INT (RND*
3)+8
125 IF J=5 THEN LET K=INT (RND*
4)+12
130 IF J=6 THEN LET K=INT (RND*
5)+16
135 IF J=7 THEN LET K=INT (RND*
6)+20
140 IF J=8 THEN LET K=INT (RND*

```

ON THE RARE occasions when the weather is too bad to play Golf, fanatics may care to try the computer version. It requires the 16K RAM pack and can be as frustrating as the real thing—but not so tiring or expensive.

For each of nine holes the program selects a random distance between 200 and 400 yards and displays it with the par value. The player is invited to play strokes at strengths from one to nine and after each stroke the distance remaining is displayed, with the number of strokes taken at the hole, and a further

request to choose a shot.

That continues until the ball is in the hole, when the comparison with par is shown.

At the end of the nine holes the par for the course is shown, with the score for that game and some advice about the future of your game.

The numbers for strength of shot do not correspond to the numbers of real clubs. The best guide to the distance which can be expected can be obtained from lines 90 to 98. Although each distance is chosen at random, they are in the region of the last figures. The exception is shot

one, which always moves the ball one yard.

That random element is the cause of the frustration, particularly when the ball is less than four yards from the hole. The choice must always be between taking the safe method and playing a series of one-yard shots, and the two, which can give two, three or four yards.

With a little concentration, a good level of skill can be achieved and you can avoid being told to sell your clubs at the end of the nine holes.

Golf was sent by R A Lean of St Austell, Cornwall.

GOLF

```

9) +145
98 IF J=9 THEN LET K=INT (RND*
11) +195
99 IF D=K THEN GOSUB 500
100 IF D=0 THEN GOTO 25
101 IF D<K THEN GOTO 105
102 IF D>K THEN GOSUB 400
103 IF D>0 THEN GOTO 60
105 GOSUB 300
106 IF D>0 THEN GOTO 60
300 LET D=(K-D)
305 IF D=1 THEN PRINT "YOU ARE
ONE YARD PAST THE HOLE"
310 IF D>1 THEN PRINT "YOU ARE
";D;" YARDS PAST THE HOLE"
311 PRINT
312 IF B=1 THEN PRINT "ONE STRO
KE PLAYED"
313 IF B>1 THEN PRINT B;" STROK
ES PLAYED"
320 RETURN
400 LET D=(D-K)
405 IF D=1 THEN PRINT "YOU ARE
ONE YARD FROM THE HOLE"
410 IF D>1 THEN PRINT "YOU ARE
";D;" YARDS FROM THE HOLE"
411 PRINT
412 IF B=1 THEN PRINT "ONE STRO
KE PLAYED"
413 IF B>1 THEN PRINT B;" STROK
ES PLAYED"
420 RETURN

```

```

500 LET D=(D-K)
505 IF (P-B)=1 THEN PRINT "HOLE
D FOR A BIRDIE"
510 IF B>P THEN PRINT "HOLED, "
;B-P;" OVER PAR"
520 IF P=B THEN PRINT "HOLED AT
PAR"
530 IF P-B=2 THEN PRINT "HOLED
FOR AN EAGLE"
540 IF P-B=3 THEN PRINT "HOLED
FOR AN ALBATROSS"
550 PAUSE 50
560 POKE 16437,255
570 LET A=A+1
580 RETURN
600 CLS
610 PRINT "SCORE FOR THE COURSE
";T
615 PRINT
620 PRINT "PAR FOR THIS COURSE
";M
625 PRINT
630 PRINT
700 IF T<=M THEN PRINT "SEE YOU
AT GLENEAGLES NEXT YEAR"
710 IF (T-M)<=10 THEN PRINT "KE
EP PRACTISING"
720 IF (T-M)>10 THEN PRINT "SEL
L YOUR CLUBS"
730 STOP
800 IF D>=200 AND D<=275 THEN L
ET P=3
810 IF D>275 AND D<=350 THEN LE
T P=4
820 IF D>350 THEN LET P=5
830 RETURN

```


DESPITE the two guns in this game looking more like machine-guns, they fire only one at a time. They are even gentlemanly about refusing to fire a shot until the previous shot has either missed or found its target.

The duel is fought against the

computer, which seems to have an uncanny sense of when to shoot. The player has to put the gun into the correct position by using D for moving up, G for down and F to fire.

Duel, which can fit on to the 1K ZX-81, was sent by Mark Beard of Hilsea, Portsmouth.

DUEL

```

10 REM "DUEL"
20 LET A=10
30 LET B=INT (RAND*21)
40 PRINT AT A,5;CHR$ 133;CHR$
7;CHR$ 7
50 PRINT AT B,23;CHR$ 132;CHR$
132;CHR$ 5
60 LET C=INT (RAND*3)
70 IF C=2 THEN GOSUB 260
80 IF INKEY$="F" THEN GOSUB 19
90 IF INKEY$="D" THEN LET A=A-
1
100 IF INKEY$="G" THEN LET A=A+
1
110 IF C=0 THEN LET B=B-1
120 IF C=1 THEN LET B=B+1
130 IF A<=0 THEN LET A=0
140 IF A>=21 THEN LET A=21
150 IF B<=0 THEN LET B=0
160 IF B>=21 THEN LET B=21
170 CLS
180 GOTO 40
190 FOR D=3 TO 22
200 PRINT AT A,D;">"
210 NEXT D
220 IF A=B THEN GOTO 240
230 RETURN
240 PRINT AT B,23;"SHOT"
250 STOP
260 FOR D=22 TO 8 STEP -1
270 PRINT AT B,D;"<"
280 NEXT D
290 IF B=A THEN GOTO 310
300 RETURN
310 PRINT AT A,5;"SHOT"

```



AN ATTEMPT is made by Martin Bushell, of Wokingham, Berkshire, to bring a little happiness into the lives of readers of *Sinclair Programs* by producing a smiling face.

When running, two eyes appear first on the screen, look around, and are then followed by the nose and a smiling mouth. The left eye then winks and continues winking until the program is stopped by pressing

the BREAK key.

It is a very simple program, with little sophistication, but it can provide some scope for making alterations to the graphics.

Bushell sent it as an entry for the May competition in *Sinclair Programs* companion publication, *Sinclair User*.

To help with the graphics shown on the printout in line 110 they are all shifted, T,7,7,7,Y, four

spaces,T,7,7,7,Y. In line 20 they are shifted 5,space,O,space,shifted 8, four spaces, shifted 5,space,O, space,shifted 8. In line 30, all shifted, Y,6,6,6,T,four spaces, Y,6,6,6,T. In line 140 they are shifted T,7,Y, in 150 shifted T,three spaces,Y and in 160 shifted 6,7,6,7,6.

In line 170 the graphics are shifted Y followed by 12 spaces and shifted T with in line 180 a row of 12 shifted sevens.

HAPPY FACE



```

10 PRINT AT 10,7;" "
20 PRINT AT 11,7;" "
30 PRINT AT 12,7;" "
40 PAUSE 25
50 PRINT AT 11,9;" "
60 PRINT AT 11,18;" "
70 PRINT AT 11,18;" "
80 PRINT AT 11,19;" "
90 PAUSE 25
100 PRINT AT 11,18;" "
110 PRINT AT 11,19;" "
120 PRINT AT 11,9;" "
130 PRINT AT 11,18;" "
140 PRINT AT 14,12;" "
150 PRINT AT 15,11;" "
160 PRINT AT 16,11;" "
170 PRINT AT 18,7;" "
180 PRINT AT 19,8;" "
190 PRINT AT 11,8;" "
200 PAUSE 25
210 RUN

```

FOR ANYONE who wants to keep records of league tables, as in football or cricket, this program is ideal. Once the teams and the system of scoring for wins, draws and losses have been entered, all you have to do is enter the results and the league table is updated automatically.

The new league table can then be recorded on tape and called-up when more results are to be entered.

The system in this listing is that of English league football but the values for the results can be altered in lines 150 to 170. When entering the scores, the sequence can be halted by pressing S and NEWLINE.

If the league has been re-loaded from tape, the menu is displayed first, asking whether you wish to enter new teams or the results or display the league table.

There are two notes of warning. If the program has been interrupted by BREAK, do not press RUN or CLEAR as all the variables will be cleared. If an error has been made and put on file it is better to re-load the initial program and begin entering the information again.

The program uses almost 3.5K of memory and was sent by Stephen Cowlishaw of Nottingham. It was a runner-up in the May competition in our companion publication, *Sinclair User*.

The graphics include 10 spaces in line 200, 31 spaces in line 590, four spaces in line 600 and 32 spaces in line 730. In line 1340 there are 11 shifted 6s, followed by a shifted Q, two more shifted 6s, a shifted Q and so on.



LEAGUE TABLES

```

10 REM LEAGUE
20 GOTO 200
30 PRINT " ENTER NUMBER OF TEA
MS"
40 INPUT NT
50 LET Y=9
60 DIM P(NT)
70 DIM W(NT)
80 DIM L(NT)
90 DIM D(NT)
100 DIM F(NT)
110 DIM A(NT)
120 DIM G(NT)
130 DIM N(NT)
140 DIM T$(NT,Y)
150 LET W=3
160 LET D=1
170 LET L=0
180 CLS
190 GOTO 400
200 PRINT "
210 PRINT "
220 PRINT "
230 PRINT "YOU HAVE THE FOLLOWING
NO OPTIONS"
240 PRINT
250 PRINT "1. ENTER DETAILS OF
TEAMS"
260 PRINT "2. ENTER AND UPDATE
SCORES"

```

```

270 PRINT "3. PRINT LEAGUE"
280 PRINT "4. SAVE LEAGUE ON TA
PE"
290 PRINT
300 PRINT
310 PRINT " INPUT CODE NUMBER T
O CONTINUE"
320 INPUT P$
330 IF P$<>"1" AND P$<>"2" AND
P$<>"3" AND P$<>"4" THEN GOTO 32
0
340 CLS
350 IF P$="1" THEN RUN 30
360 IF P$="2" THEN GOTO 570
370 IF P$="3" THEN GOTO 940
380 IF P$="4" THEN GOTO 1540
390 PRINT "
DETAILS OF TEAM
400 PRINT " ENTER EACH TEAM FOL
LOWED BY N/L"
410 FOR F=1 TO NT
420 LET A$=""
430 INPUT T$(F)
440 PRINT AT 21,0;T$(F)
450 SCROLL
460 IF (LEN T$(F))-Y=0 THEN GOT
O 510
470 FOR A=0 TO (LEN T$(F))-Y
480 LET A$=A$+CHR$(

```




```

490 NEXT A
500 LET T$(F)=T$(F)+A$
510 NEXT F
520 SCROLL
530 PRINT "PRESS N/L TO CONTINU
E"
540 INPUT Z$
550 CLS
560 GOTO 200
570 LET S$=""
580 PRINT "ENTER AND UPDATE
SCORES"
590 PRINT AT 1,0;"
600 PRINT AT 2,0;"HOME TEAM?"
610 INPUT R$
620 IF R$="S" THEN CLS
630 IF R$="S" THEN GOTO 200
640 GOSUB 1450
650 PRINT "GOALS SCORED?"
660 INPUT R
670 PRINT AT 3,0;"
680 PRINT AT 2,0;"AWAY TEAM?"
690 INPUT S$
700 GOSUB 1450
710 PRINT AT 2,0;"GOALS SCORED?"
720 INPUT S
730 PRINT AT 2,0;"
740 SCROLL
750 FOR F=1 TO NT
760 IF T$(F)<>R$ AND T$(F)<>S$
THEN GOTO 900
770 LET P=L
780 IF T$(F)=R$ AND R>S OR T$(F)
=S$ AND S>R THEN LET P=W
790 IF S=R THEN LET P=D
800 LET N(F)=N(F)+P
810 IF T$(F)=S$ AND R>S OR T$(F)
=R$ AND S>R THEN LET L(F)=L(F)+
1
820 IF T$(F)=R$ AND R>S OR T$(F)
=S$ AND S>R THEN LET W(F)=W(F)+
1
830 IF S=R THEN LET D(F)=D(F)+1
840 IF T$(F)=R$ THEN LET F(F)=F
(F)+R
850 IF T$(F)=R$ THEN LET A(F)=A
(F)+S
860 IF T$(F)=S$ THEN LET A(F)=A
(F)+R
870 IF T$(F)=S$ THEN LET F(F)=F
(F)+S
880 LET P(F)=P(F)+1
890 LET G(F)=F(F)-A(F)
900 NEXT F
910 PRINT R$;" ";R$;" ";S$;" ";
S
920 LET S$=""
930 GOTO 600
940 FAST
950 FOR X=1 TO NT-1
960 FOR N=X+1 TO NT
970 IF N(X)>N(N) THEN GOTO 1280
980 IF N(X)=N(N) AND G(X)>G(N)
THEN GOTO 1280
990 IF N(X)=N(N) AND G(X)=G(N)
AND F(X)>F(N) THEN GOTO 1280

```

```

1000 IF N(X)=N(N) AND G(X)=G(N)
AND F(X)=F(N) THEN GOTO 1280
1010 LET E1=P(X)
1020 LET E2=W(X)
1030 LET E3=L(X)
1040 LET E4=D(X)
1050 LET E5=F(X)
1060 LET E6=A(X)
1070 LET E7=G(X)
1080 LET E8=N(X)
1090 LET E9=T$(X)
1100 LET P(X)=P(N)
1110 LET W(X)=W(N)
1120 LET L(X)=L(N)
1130 LET D(X)=D(N)
1140 LET F(X)=F(N)
1150 LET A(X)=A(N)
1160 LET G(X)=G(N)
1170 LET N(X)=N(N)
1180 LET T$(X)=T$(N)
1190 LET P(N)=E1
1200 LET W(N)=E2
1210 LET L(N)=E3
1220 LET D(N)=E4
1230 LET F(N)=E5
1240 LET A(N)=E6
1250 LET G(N)=E7
1260 LET N(N)=E8
1270 LET T$(N)=E9
1280 NEXT N
1290 NEXT X
1300 SLOW
1310 SCROLL
1320 PRINT "P";TAB 2;"TEAMS****"
P W L F A D
1330 SCROLL
1340 PRINT "
1350 SCROLL
1360 FOR N=1 TO NT
1370 PRINT N;TAB 2;T$(N);TAB 11;
P(N);TAB 14;W(N);TAB 17;
D(N);TAB 20;L(N);TAB 23;
F(N);TAB 26;A(N);TAB 29;
N(N)
1380 SCROLL
1390 NEXT N
1400 SCROLL
1410 IF INKEY$="" THEN GOTO 1410
1420 CLS
1430 GOTO 200
1440 STOP
1450 LET B$=""
1460 IF (LEN S$)-Y=0 OR S$="" AN
D (LEN R$)-Y=0 THEN GOTO 1530
1470 IF S$="" THEN FOR F=0 TO (Y
-LEN R$-1)
1480 IF S$<>"" THEN FOR F=0 TO (
Y-LEN S$-1)
1490 LET B$=B$+CHR$ 0
1500 NEXT F
1510 IF S$="" THEN LET R$=R$+B$
1520 IF NOT S$="" THEN LET S$=S$
+B$
1530 RETURN
1540 PRINT "WHEN CASSETTE IS REA
DY TO RECORD PRESS N/L"
1550 INPUT R$
1560 SAVE "LEAGUE"
1570 CLS
1580 GOTO 200

```

Prime

Numbers



```

10 LET L=2
20 SCROLL
30 PRINT 2
40 LET K=3
50 IF L/2=INT (L/2) THEN GOTO
120
60 IF L/K=INT (L/K) AND L<>K T
HEN GOTO 120
70 IF K>L THEN GOTO 100
80 LET K=K+2
90 GOTO 50
100 SCROLL
105 SLOW
110 PRINT L
120 LET L=L+1
130 GOTO 40

5 FAST
10 LET L=1000000
DELETE LINE 30
    
```

THE Prime Number Calculator was written by Mark Colson of Horncastle, Lincolnshire as a quick program for working-out high prime numbers. He has incorporated parts of other similar programs to achieve his objective and the result is that, once run, a series of prime numbers is printed at the bottom of the screen with the others scrolling upwards.

The program will continue until BREAK is pressed. If very high prime numbers are required, alter the listing by the three instructions and the first seven-digit prime number will be worked-out in about 13 seconds. Unfortunately the program then returns to slow mode and the second number takes much longer. Perhaps someone could produce a slight adjustment to overcome that?

THE AIM of Tug is to make as high a score as possible before a line which moves from right to left across the screen reaches the end. To stop the line moving it is necessary to match a random number which appears on the screen. Each incorrect answer allows the line to advance.

The program has nine skill levels, running from one to nine, with nine being the easiest. The most difficult is almost impossible, as the time allowed for entering the number is so short.

Tug will fit into the 1K ZX-81 and was sent by Peter Brett, of Swindon, Wiltshire.

TUG

```

10 REM TUG: GAME
20 PRINT "TUG: LEVEL 1 TO 9 (9
IS EASIEST)"
30 INPUT S
40 SCROLL
50 LET S=S*25
60 LET A$=CHR$ 125
70 LET B=0
80 PRINT AT 19,14;"INPUT";AT 2
1,14;"YOURS"
90 LET A=31
100 PRINT AT 10,A,A$
110 LET B$=CHR$ INT (RND*10+COD
E "0")
120 PRINT AT 19,20,B$
130 PAUSE S
140 POKE 16437,255
150 LET D$=INKEY$
160 PRINT AT 21,20,D$
170 IF NOT D$=B$ THEN LET A=A-1
180 IF D$=B$ THEN LET B=B+1
190 PRINT AT 5,5;"RIGHT=";B
200 IF NOT A=0 THEN GOTO 100
210 PRINT AT 20,5;"END"
220 STOP
    
```





```

10 LET X=100
100 PRINT AT 0,0;" "
110 PRINT AT 20,0;" "
120 GOSUB 1000
130 GOSUB 2000
140 FOR J=1 TO 5
150 PRINT AT A,B;" ";AT C,D;" "
;AT E,F;" "
152 NEXT J
153 IF A=1 AND B<9 THEN GOTO 30
00
160 IF C=1 AND D<20 AND D>11 TH
EN GOTO 3010
165 IF E=1 AND F>22 THEN GOTO 3
020
170 PRINT AT A,B;" ";AT C,D;" "
;AT E,F;" "
190 GOTO 130
1000 PRINT AT 20,4;" ";AT 20,16;
" ";AT 20,26;" "
10 LET X=100
100 PRINT AT 0,0;" "
110 PRINT AT 20,0;" "
120 GOSUB 1000
130 GOSUB 2000
140 FOR J=1 TO 5
150 PRINT AT A,B;" ";AT C,D;" "
;AT E,F;" "
152 NEXT J
153 IF A=1 AND B<9 THEN GOTO 30
00
160 IF C=1 AND D<20 AND D>11 TH
EN GOTO 3010
165 IF E=1 AND F>22 THEN GOTO 3
020
170 PRINT AT A,B;" ";AT C,D;" "
;AT E,F;" "
190 GOTO 130
1000 PRINT AT 20,4;" ";AT 20,16;
" ";AT 20,26;" "
1010 PRINT AT 8,10;"PIGEON-RACE"
1020 PRINT AT 12,2;"YOU HAVE UP
TO ";X;" POUNDS";AT 13,2;"TO
BET ON THE BIRD OF YOUR ";AT 1
4,2;"CHOICE, FIRST,ENTER PIGEON
";AT 15,2;" "A"" "B""OR ""C""
1030 INPUT A$

```

```

1031 IF A$="A" OR A$="B" OR A$="
C" THEN GOTO 1040
1035 LET A$=""
1036 GOTO 1010
1040 PRINT AT 12,2;"HOW MUCH MON
EY DO YOU(6 SPACES)";AT 13,2;"WA
NT TO BET ON PIGEON ";A$;"?(7 SP
ACES)";AT 14,2;"(30 SPACES)";AT
15,2;"(25 SPACES)"
1050 INPUT Z
1051 IF Z<=X THEN GOTO 1055
1052 LET Z=0
1053 GOTO 1040
1055 PRINT AT 12,2;"(60 SPACES)"
1060 PRINT AT 8,10;"(12 SPACES)"
1070 PRINT AT 20,4;" ";AT 20,16;
" ";AT 20,26;" "
1800 RETURN
2000 LET A=INT (RND*19)+1
2100 LET B=INT (RND*30)+1
2102 LET C=INT (RND*19)+1
2103 LET D=INT (RND*30)+1
2104 LET E=INT (RND*19)+1
2105 LET F=INT (RND*30)+1
2110 RETURN
3000 LET B$="A"
3005 GOTO 3500
3010 LET B$="B"
3015 GOTO 3500
3020 LET B$="C"
3025 GOTO 3500
3500 IF B$=A$ THEN LET X=X+Z
3510 IF B$<>A$ THEN LET X=X-Z
3520 IF X=0 THEN GOTO 3600
3530 PRINT AT 10,0;"PIGEON ";B$;
" WAS THE WINNER"
3540 PRINT AT 12,2;"YOU HAVE ";X
;" POUNDS(6 SPACES)";AT 13,2;"A
NEW RACE WILL BEGIN SHORTLY"
3545 FOR J=1 TO 250
3550 NEXT J
3555 PRINT AT 10,0;"(34 SPACES)"
3558 PRINT AT A,B;" ";AT C,D;" "
;AT E,F;" "
3560 GOTO 100
3600 PRINT AT 10,0;"PIGEON ";B$;
" WON ...YOU ARE BROKE PRESS
ANY KEY FOR A NEW GAME"
3610 PAUSE 4E4
3615 CLS
3620 GOTO 10

```

PIGEON RACE

IF YOU want a program to send you mad, **Pigeon** must be one of the contenders. It simulates a pigeon race with a set of three somewhat erratic pigeons which any self-respecting fancier would probably have put out of their misery long ago.

The object is to start with £100 and make more by backing the winning pigeon in each race. According to

the writer, Roy Kay, of New Ferry, Wirral, Merseyside, it is possible to be successful with a little intuition and a good deal of luck. The emphasis is on the luck.

The pigeons start the game at the bottom of the screen and are put to flight by the player first entering the bird which he will back and then the size of the bet. The game ends when one of the drunken birds

arrives at the corresponding coop at the top of the screen.

Because of the random element, some races can finish in a few seconds, while others seem to continue all day.

The graphics in line 100 are obtained by using the shifted E, eight shifted 7s and a shifted R, with the W and Q used in line 110, and it needs 16K to work.

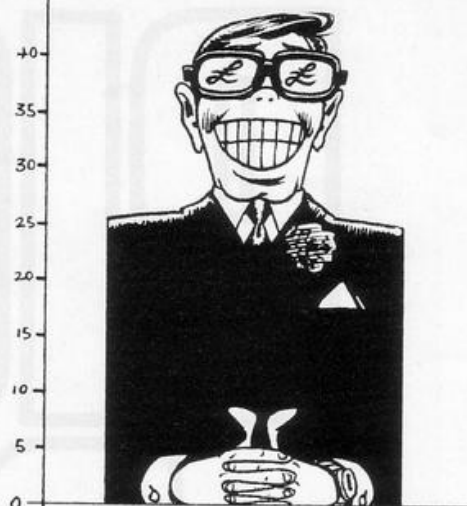


COMPOUND INTEREST

```

5 CLS
10 PRINT "ENTER PRINCIPLE IN P
OUNDS"
20 INPUT P
30 PRINT "ENTER TIME IN YEARS"
40 INPUT T
50 PRINT "ENTER RATE PER ANNUM
"
60 INPUT R
70 PRINT
80 PRINT "ENTER ""SI"" FOR SIM
PLE INTEREST"
85 PRINT
90 PRINT "ENTER ""CI"" FOR COM
POUND INTEREST"
100 INPUT A$
105 CLS
110 IF A$="SI" THEN GOTO 150
120 LET I=P*((1+R/100)**T)-P
130 GOTO 200
150 LET I=(P*R*T)/100
200 PRINT "INTEREST=E"; I
202 PRINT
205 PRINT "TOTAL=E"; I+P
206 PRINT
210 PRINT "IS THAT ALL? Y OR N
"
220 INPUT B$
230 IF B$="N" THEN RUN

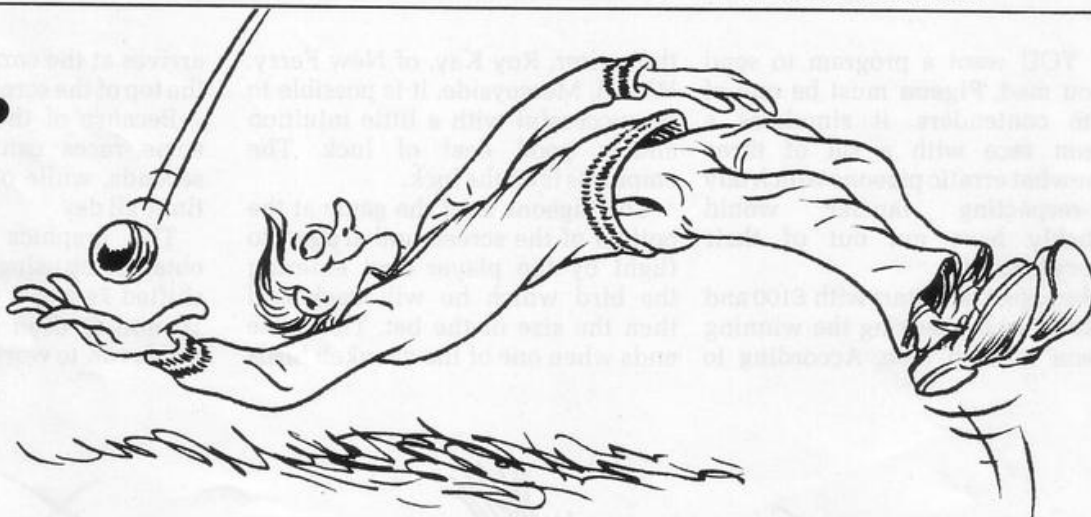
```



IF YOU detest having to work out compound interest, this program is for you. It works out the compound interest automatically once it has been told the principal, the rate of interest, and the number of years to be considered. It can also work out simple interest problems.

A short program, fitting into the 1K ZX-81, it was sent by Stephen Booth, of Barnsley, South Yorkshire. He said it is useful helping him with his homework.

Owzat



A SIMPLE GAME based on the famous cricket dice game, **Owzat**, simulates a simple form of the complex summer game. Once running, it runs automatically through until a team of 10 has completed its innings and gives the total score. The game is repeated to find the score of the opponents.

One problem which readers might like to tackle is to find a way of removing Owzat and not out once an appeal has been turned down. Because of this it is not known when another appeal has been made until one is allowed and the next batsman's score is shown.

Owzat fits into 1K ZX-81 and was sent by Nick Gray of Burton-on-Trent, Staffordshire.

```

0 LET T=0
5 LET N=0
10 FOR I=1 TO 10
20 PRINT AT I+1,0;I;": ";N;"(5
SPACES)TOTAL: ";T
30 LET S=INT (RND*6)+1
40 IF S=5 THEN GOTO 100
50 LET N=N+S
60 LET T=T+S
65 PRINT
66 PRINT
70 GOTO 20
75 LET N=0
80 NEXT I
90 STOP
100 PRINT "OWZAT"
110 LET W=INT (RND*6)+1
115 FOR Z=1 TO 50
125 NEXT Z
120 IF W=1 OR W=2 THEN PRINT "N
OT OUT"
123 IF W=3 OR W=4 OR W=5 OR W=6
THEN PRINT "OUT"
125 IF W=1 OR W=2 THEN GOTO 20
130 SCROLL
131 SCROLL
135 IF W=3 OR W=4 OR W=5 OR W=6
THEN GOTO 75

```



THIS IS one of two programs included in this collection for ZX-80 users. It is a very simple, user-friendly program intended for young children.

B Spencer of Chatham, Kent, who wrote it, said he did it because after two years of owning a ZX-80 he thought it was time he bought a better machine, probably the Spectrum. He wanted to hand his old faithful to his children with something useful for them to do with it.

The listing includes lines to allow the person using the machine to input their name, lines 100, 640, 750. When run, it asks what kind of sum is to be attempted and then shows the required problem. An answer is given and that is judged correct or incorrect, giving the correct answer. Press NEWLINE for another attempt.

In the case of division, the answer is given in terms of a whole number and then the remainder, both of which are input separately.

FAITHFUL

```

10 LET A = 10 + RND(50)
20 LET B = 1 + RND(10)
30 PRINT "SELECT + - / * "
40 INPUT XS
50 IF XS = "+" THEN GOTO 200
60 IF XS = "-" THEN GOTO 300
70 IF XS = "/" THEN GOTO 400
80 IF XS = "*" THEN GOTO 500
90 IF XS = "S" THEN STOP
100 PRINT "CORRECT NAME PRESS N/L"
110 INPUT GS
120 CLS
130 GOTO 10
200 LET C = A + B
210 PRINT "  ;A; + ;B; "
220 GOTO 600
300 LET C = A - B
310 PRINT "  ;A; - ;B; "
320 GOTO 600
400 LET C = A / B
410 LET L = A - (C * B)

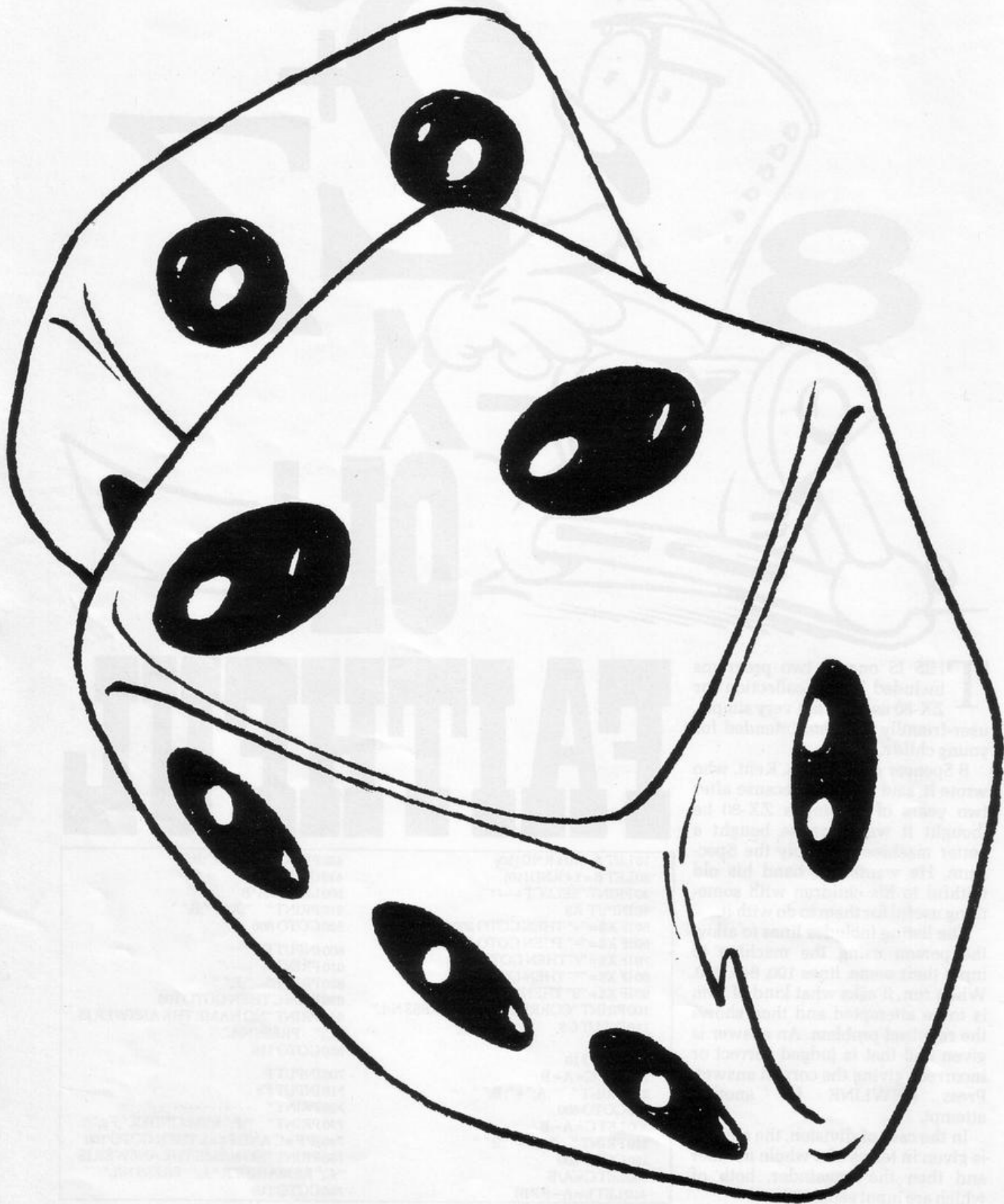
```

```

420 PRINT "  ;A; / ;B; "
430 GOTO 700
500 LET C = A * B
510 PRINT "  ;A; * ;B; "
520 GOTO 600
600 INPUT E
610 PRINT "  ----"
620 PRINT "  ;E; "
630 IF E = C THEN GOTO 100
640 PRINT "NO NAME THE ANSWER IS"
650 GOTO 110
700 INPUT F
710 INPUT F2
720 PRINT "  ----"
730 PRINT "  ;F; REMAINDER ;F2; "
740 IF F = C AND F2 = L THEN GOTO 100
750 PRINT "NO NAME THE ANSWER IS"
760 GOTO 110

```


COVER 1



THE BOX

A GOOD, interesting game, which takes slightly less than 3K of memory on the ZX-81 is sent by John Ellis, of Wimborne, Dorset. He says it is based on an old French game known as **Shut the Box**.

The aim is to eliminate each of numbers from one to nine by throwing two dice. The total thrown can then be used to eliminate numbers

which add to the same total. For example, if a three and a five are thrown, any combination of two numbers adding to eight can be eliminated.

The chosen numbers are entered together and the program checks for illegal moves. The game continues until it is impossible to make a move; no number can be eliminated twice. To end the game, press zero

and the total of the numbers remaining is displayed. After a number of plays a running average of the remaining totals is shown; Ellis says that after much practice his average for 10 games was 8.3. The program is user-friendly.

To help with the graphics, in lines 30 and 50 there are 27 inverse spaces; in 80 there are 23 spaces; in 240 there are 17 spaces and 26 spaces.

```

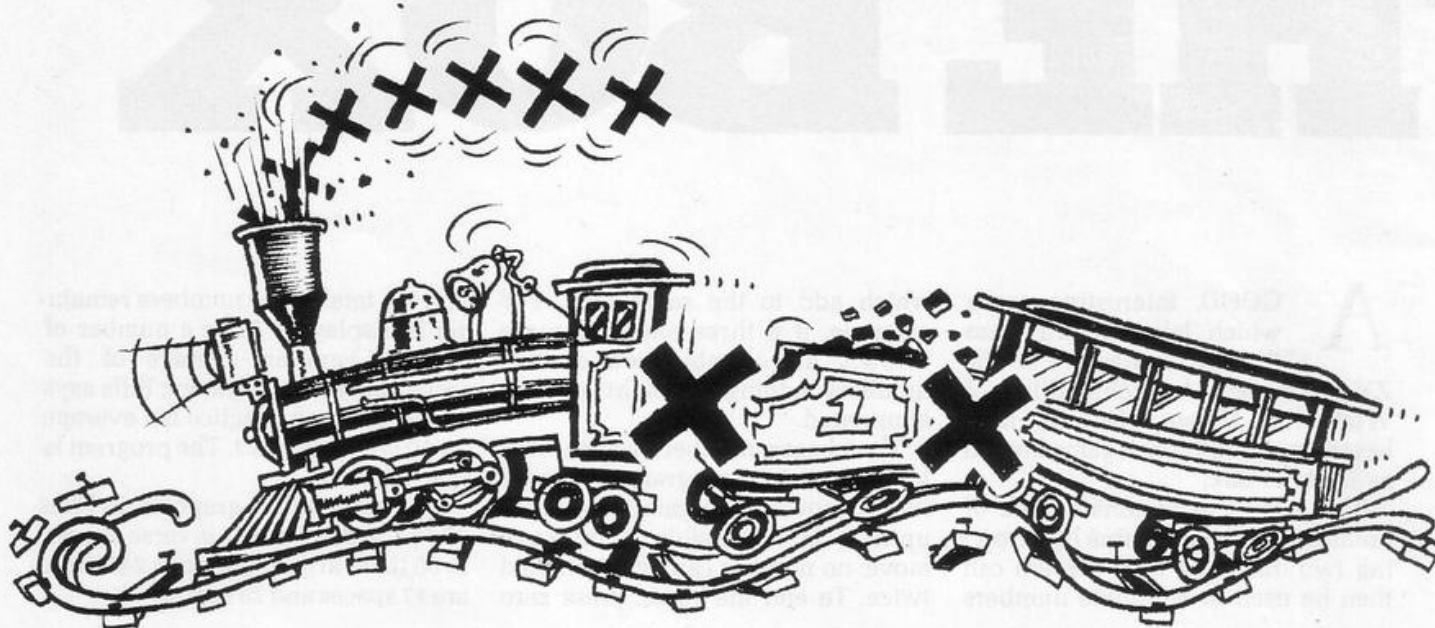
1 SLOW
2 LET TOT=0
3 LET G=0
4 GOSUB 9000
5 PRINT "GAME ";G+1
10 LET N$="123456789"
20 PRINT AT 1,2;"SHUT THE BOX"
30 PRINT TAB 2;" "
40 PRINT TAB 2;"1 2 3 4 5"
50 PRINT TAB 2;"6 7 8 9"
60 IF N$(7 TO 9) <>"" THEN GOTO 140
70 FOR O=10 TO 13
80 PRINT AT O,0;"
90 NEXT O
100 PRINT AT 7,7;"HOW MANY DICE"
110 INPUT A$
120 IF A$="1" THEN LET W=0
130 IF A$="1" THEN GOTO 190
140 PRINT AT 7,7;"YOU ROLLED"
150 LET O=INT (RND*6)+1
160 LET Z=9
170 GOSUB 900
180 LET W=0
190 LET Z=16
200 LET O=INT (RND*6)+1
210 GOSUB 900
220 PRINT AT 17,2;"WHAT DO YOU WANT TO COVER?"
230 INPUT G$
240 PRINT AT 19,8;"
    "AT 17,2;"
250 IF G$="0" THEN GOTO 480
260 LET T=0
270 FOR Y=1 TO LEN G$
280 LET T=T+VAL G$(Y)
290 NEXT Y
300 IF T=O+W THEN GOTO 330
310 PRINT AT 19,8;"YOU CANT DO THAT"
320 GOTO 220
330 FOR Y=1 TO LEN G$
340 IF N$(VAL G$(Y))="" THEN GOTO 310
350 NEXT Y
360 FOR Y=1 TO LEN G$
370 LET N$(VAL G$(Y))=""
380 PRINT AT 3,3+VAL G$(Y);" "
390 NEXT Y
400 IF N$="" THEN GOTO 420
410 GOTO 60
420 PRINT AT 7,0;"
430 FOR I=1 TO 14
440 PRINT "CONGRATULATIONS ";

```

```

450 NEXT I
460 LET T=0
470 GOTO 520
480 LET T=0
490 FOR I=1 TO 9
500 IF N$(I) <>"" THEN LET T=T+VAL N$(I)
510 NEXT I
520 PRINT AT 16,7;"YOU HAD ";T;" LEFT"
530 LET TOT=TOT+T
540 LET G=G+1
550 PRINT AT 16,5;"YOUR AVERAGE IS ";INT (1000*TOT/G)/1000
560 PRINT AT 20,1;"PRESS ANY KEY FOR ANOTHER GO."
570 IF INKEY$ <>"" THEN GOTO 570
580 IF INKEY$="" THEN GOTO 580
590 CLS
600 GOTO 5
900 PRINT AT 10,Z;"
    " (4*0-3 TO 4*0)
910 PRINT AT 11,Z;"
    " (4*0-3 TO 4*0)
920 PRINT AT 12,Z;"
    " (4*0-3 TO 4*0)
930 PRINT AT 13,Z;"
    "
940 RETURN
9000 PRINT TAB 8;"SHUT THE BOX"
9010 PRINT TAB 8;"=====
9020 PRINT "THE OBJECT OF THE GAME IS TO"
9030 PRINT "COVER AS MANY OF THE NUMBERS"
9040 PRINT "ADD THE DICE SCORE S AND COVER"
9050 PRINT "ANY COMBINATION OF NUMBERS THAT"
9060 PRINT "GIVE THIS TOTAL"
9070 PRINT "E.G. IF YOU THROW SIX AND ONE"
9080 PRINT "YOU CAN COVER EITHER 7 OR 1 AND"
9090 PRINT "6 OR 3 AND 4 OR 2 AND 5 OR"
9100 PRINT "1,2 AND 4."
9110 PRINT "PRESS ANY KEY"
9120 PAUSE 4E4
9130 CLS
9140 PRINT "YOU CAN ONLY USE EACH NUMBER"
9150 PRINT "ONCE."
9160 PRINT "IF YOU WANT TO COVER 6 AND 1, YOU"
9170 PRINT "SHOULD ENTER ""1 6"" OR ""6 1""
9180 PRINT "WHEN YOU HAVE COVERED 7,8 AND 9"
9190 PRINT "YOU CAN USE EITHER 1 OR 2 DICE."
9200 PRINT
9210 PRINT "PRESS ""0"" WHEN YOU CANT GO."
9220 PRINT AT 15,12;"GOOD LUCK."
9230 PRINT AT 21,10;"PRESS ANY KEY"
9240 CLS
9250 PAUSE 4E4
9260 CLS
9270 RETURN

```

MULTIPLICATION TRAIN

A GOOD, simple game for testing a variety of abilities with multiplication sums has been sent by James Hurrell, of Knutsford, Cheshire. The aim is to take a train to the end of a track by giving the correct answers to multiplication problems given at random.

The program makes good use of the random function to produce different problems and it contains alternative levels of difficulty.

To start the game, press RUN and NEWLINE; the player is asked which level of difficulty is wanted, either one or two. A problem is then shown to which the player gives an answer. If correct, a train moves along a track with a puff of smoke from its funnel.

When the train reaches the end of the track, a buffer appears with "Well done".

Alternative difficulties can be obtained by changing the lines 50 to 80.

To help with the graphics in line 100 they are, all shifted, keys R, 3, unshifted space, 8 and unshifted space; in line 110 they are 8, three spaces, and 5; and in line 120 R, E, space, R, E. In line 130 there are 14 dashes.

```

10 LET Y=10
20 LET X=0
30 PRINT AT 3,0;"SKILL 1 OR 2?"

40 INPUT A$
50 LET A=INT (RND*20)
60 LET B=INT (RND*20)
70 LET C=INT (RND*10)
80 LET D=INT (RND*10)
90 CLS
100 PRINT AT Y,X;" "
110 PRINT AT Y+1,X;" "
120 PRINT AT Y+2,X;" "
130 PRINT AT 13,0;"-----"
140 PRINT AT 0,0;"GET TO THE EN
D"
150 IF A$="1" THEN PRINT AT 5,0
;A;"*";B
160 IF A$="2" THEN PRINT AT 5,0
;C;"*";D
170 LET H=A*B
180 LET K=C*D
190 INPUT Z
200 IF A$="1" AND Z=H THEN GOTO
250
210 IF A$="2" AND Z=K THEN GOTO
250
220 PRINT AT 15,0;"WRONG"
230 PAUSE 100
240 GOTO 50
250 PRINT AT 9,X+2;" "
260 LET X=X+1
270 IF X<10 THEN GOTO 300
275 PRINT AT 12,15;" "
280 PRINT AT 13,15;" " WELL DONE

290 STOP
300 PAUSE 150
310 GOTO 50

```

ZOMBIES is a version of the lure type of game where a number of attackers converge on a target. As they approach it they can hit various obstacles. The attackers are Zombies, shown as Zs chasing the players, an X, with potholes, Os, as obstacles.

The difference between this and other games is that there is a random number of Zombies chasing the player.

When a Zombie falls into a pothole, the event is marked by an announcement on the screen "Splash goes a Zombie". Should you lure all of them to their doom you are told, cheerily, that you may have won on that occasion but you cannot win in the end.

When a Zombie strikes you the screen is filled with sickening munches, gobbles and burps. You can move in any direction by following the positioning of numbers shown in a box beneath the game display.

Zombies was sent by Christopher Smith, of Christchurch, Dorset and requires the addition of a RAM pack. In line 2 there are 25 spaces and 20 in line 524.



ZOMBIES

```

1 REM **ZOMBIES**
2 PRINT AT 11,12;"ZOMBIES"
   =====
3 FOR Q=0 TO 14
4 SCROLL
5 NEXT Q
6 RAND
15 LET CHECK=0
20 LET NZ=INT (RND*10)+1
30 DIM A(NZ)
40 DIM B(NZ)
50 DIM D(5)
60 DIM X(5)
70 LET PA=INT (RND*10)+1
80 LET PB=INT (RND*20)+1
90 FOR N=1 TO 43
100 PLOT N,42
110 PLOT N,21
120 IF N<21 THEN PLOT 1,N+21
130 IF N<21 THEN PLOT 43,N+21
140 NEXT N
150 FOR S=1 TO 5
160 LET D(S)=INT (RND*10)+1
170 LET X(S)=INT (RND*20)+1
180 PRINT AT D(S),X(S);"D"
190 NEXT S
200 PRINT AT 12,0;"123"
210 PRINT "456"
220 PRINT "789"
230 FOR I=1 TO NZ
240 LET A(I)=INT (RND*10)+1
250 LET B(I)=INT (RND*20)+1
260 PRINT AT A(I),B(I);"Z"
270 NEXT I
275 PRINT AT PA,PB;"X"
280 LET A$=INKEY$
290 IF A$="" THEN GOTO 280
300 IF A$="1" THEN LET PA=PA-1
310 IF A$="2" THEN LET PB=PB-1
320 IF A$="3" THEN LET PA=PA+1
330 IF A$="4" THEN LET PB=PB+1
340 IF A$="5" THEN LET PA=PA-1
350 IF A$="6" THEN LET PB=PB+1
360 IF A$="7" THEN LET PA=PA+1
370 IF A$="8" THEN LET PB=PB-1
380 IF A$="9" THEN LET PA=PA+1
390 IF A$="0" THEN LET PB=PB+1
400 IF A$="9" THEN LET PA=PA+1
402 IF PA>10 THEN LET PA=10
404 IF PA<1 THEN LET PA=1
406 IF PB>20 THEN LET PB=20
408 IF PB<1 THEN LET PB=1
410 PRINT AT PA,PB;"X"
412 FOR J=1 TO 5
414 IF PA=D(J) AND PB=X(J) THEN
   GOTO 3000
416 NEXT J
420 FOR F=1 TO NZ
430 IF A(F)=0 THEN GOTO 590
435 PRINT AT A(F),B(F);" "
440 IF PA>A(F) THEN LET A(F)=A(
   F)+1
450 IF PA<A(F) THEN LET A(F)=A(
   F)-1
460 IF PB>B(F) THEN LET B(F)=B(
   F)+1
470 IF PB<B(F) THEN LET B(F)=B(
   F)-1
480 IF PA=A(F) AND PB=B(F) THEN
   GOTO 1000
490 FOR T=1 TO 5
500 IF A(F)<>D(T) OR B(F)<>X(T)
   THEN GOTO 530
510 PRINT AT 12,5;"SPLASH GOES
   A ZOMBIE"
513 FOR G=0 TO 50
517 NEXT G
520 LET A(F)=0
524 PRINT AT 12,5;"(20 SPACES)"
525 GOTO 590
530 NEXT T
540 IF A(F)>10 THEN LET A(F)=10
550 IF A(F)<1 THEN LET A(F)=1
560 IF B(F)>20 THEN LET B(F)=20
570 IF B(F)<1 THEN LET B(F)=1
580 PRINT AT A(F),B(F);"Z"
590 NEXT F
600 FOR C=1 TO NZ
610 IF A(C)=0 THEN LET CHECK=CH
   CK+1
620 NEXT C
630 IF CHECK=NZ THEN GOTO 2000
640 LET CHECK=0
650 GOTO 280
1000 PRINT AT 0,0;"GOBBLE GOBBLE
   MUNCH CHEW BURP"
1010 PRINT "GOBBLE GOBBLE MUNCH
   CHEW BURP"
1020 GOTO 1010
2010 PRINT AT 16,0;"YOU WON THIS
   TIME BUT"
2020 PRINT "THE ZOMBIES WILL GET
   YOU"
2030 PRINT "IN THE END"
2040 STOP
3010 PRINT AT 16,0;"IDIOT,YOU JU
   ST WALKED INTO"
3020 PRINT "A POT HOLE"

```




```

10 LET X=0
20 LET Y=0
30 PLOT X,Y
40 LET X=X+(INKEY$="8")-(INKEY
$="5")
50 LET Y=Y+(INKEY$="7")-(INKEY
$="6")
60 IF INKEY$="U" THEN GOTO 80
70 GOTO 30
80 PLOT X,Y
85 UNPLOT X,Y
90 LET X=X+(INKEY$="8")-(INKEY
$="5")
100 LET Y=Y+(INKEY$="7")-(INKEY
$="6")
110 IF INKEY$="P" THEN GOTO 30
120 GOTO 80

```

A SIMPLE sketching program has been produced by Stuart Foley, of New Duston, Northampton. Using the cursor keys, simple drawings can be made which still require a fair amount of skill and can be really entertaining.

Once started, by pressing RUN and NEWLINE, the blip in the screen begins drawing automatically. If you wish to erase anything or move to another design without leaving a

trail, press U, and a flashing blip erases anything it passes over. Pressing P will return the program to drawing mode.

One thing of which to beware is that if the blips hit the edge of the screen the program stops and cannot be re-started without losing everything which has been drawn. To avoid that, start by drawing a border round the screen. **Sketcher** fits into a 1K ZX-81.

SKETCHER

A PROGRAM for the radio enthusiast has been written by R S P Humpleby, of Heckmondwike, West Yorkshire. It involves inputting the alphabet in Morse code and then displaying the codes in random order and asking the player to give the correct letter.

After the whole of the alphabet, the total of correct answers is given. For anyone who does not know Morse, the codes in the listing are given in alphabetical order.

It is a simple but effective program which can fit into 1K RAM.

```

10 CLS
20 LET S=0
30 LET C$=""
40 FOR V=1 TO 26
50 LET A=INT (RND*25)+1
60 LET B=A*130/26
70 LET C=A+38
80 LET D=B+5
90 LET D$=C$(B TO D)
100 PRINT "WHAT IS ";D$;"?"
110 FOR E=1 TO 3
120 INPUT F$
130 IF CODE F$=C THEN GOTO 160
140 NEXT E
150 NEXT V
160 LET S=S+1
170 PRINT "CORRECT"
180 PAUSE 150
190 NEXT V
200 PRINT S;" OUT OF 26"

```

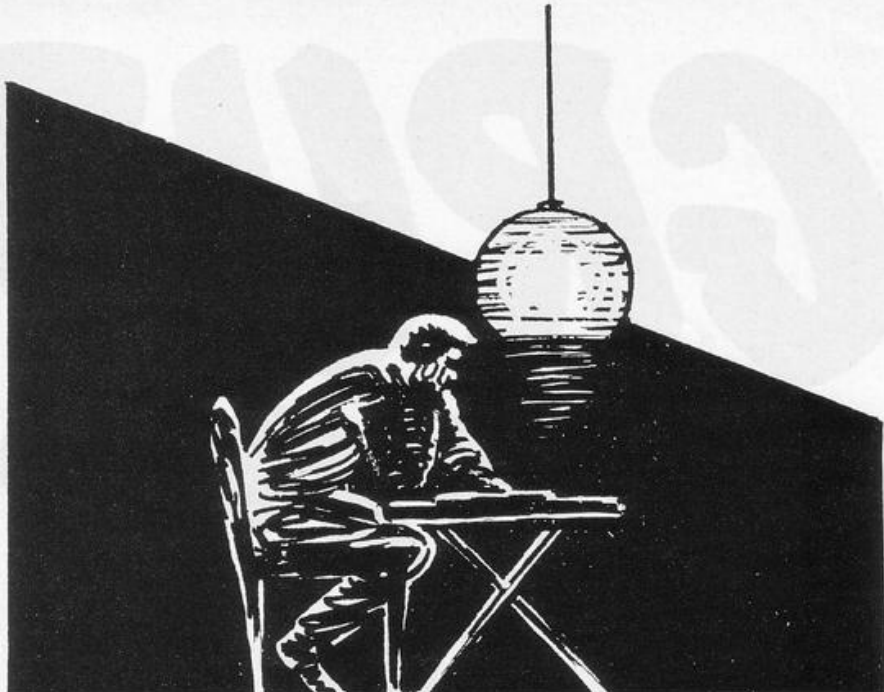
MORSE CODE



THIS is a 16K ZX-81 representation of the popular game of **Solitaire**, where the game begins with a number of pegs in a cross formation and one missing in the middle. The object is to clear the pegs by jumping over them and leaving one peg in the middle hole.

In this version, from Frank Webster, of West Kirby, Wirral, Merseyside, the pegs are shown by Os and the holes by stars. The board has vertical and horizontal coordinates and a move is made by entering the description of the peg being moved, with the vertical figure first and the description of the hole to which it is being moved, and pressing NEWLINE.

The program eliminates cheating by recognising invalid moves. When a player can no longer move the F is pressed to end the game.



SOLITAIRE

```

1 REM "SOLITAIRE"
10 PRINT "SOLITAIRE: -TO PLAY T
YPE NEWLINE"
20 INPUT Z$
30 CLS
40 FAST
50 REM FORM SQUARE*****
60 DIM A$(12,16)
70 LET A$(1)="THE AIM IS TO"
80 LET A$(2)="REMOVE ALL BUT"
90 LET A$(3)="ONE ZERO AND TO"
100 LET A$(4)="LEAVE THAT IN"
110 LET A$(5)="SQUARE 44"
120 LET A$(6)=" "
130 LET A$(7)="REMOVE ZEROS BY"
140 LET A$(8)="JUMPING TO * BUT"
150 LET A$(9)="NOT DIAGONALLY"
160 LET A$(10)=" "
170 LET A$(11)="INPUT SQUARE NO
S"
180 LET A$(12)="ON REQUEST"
190 DIM O$(79)
200 FOR C=1 TO 79
210 LET O$(C)=" "
220 IF C<12 AND C<16 OR C>22 AN
D C<26 OR C>30 AND C<56 OR C>62
AND C<66 OR C>72 AND C<76 THEN L
ET O$(C)="O"
230 IF C=44 THEN LET O$(C)="*"
240 IF C=40 OR C=50 OR C=36 OR
C=48 THEN LET O$(C)="*"
250 FOR D=1 TO 7
260 IF C=((D*10)+9) THEN LET O$
(C)=" "
270 NEXT D
280 NEXT C
290 LET N$=" 1234567 "
300 LET X=32
310 LET B$="CONGRATULATIONS"
320 PRINT AT 21,0;"IF YOU CANT
MOVE TYPE "F""
330 REM SET SCREEN*****
340 SLOW
350 PRINT AT 0,9;"SOLITAIRE"
360 IF X=1 AND O$(44)="O" THEN
PRINT AT 19,2;B$
370 LET E=1
380 LET F=2
390 PRINT AT F,2;N$
400 LET F=F+1
410 PRINT AT F,2;
420 FOR C=E TO E+9
430 PRINT O$(C);
440 NEXT C
450 PRINT AT 3,11;" "
460 LET E=E+10
470 PRINT
480 IF E=80 THEN PRINT AT F+1,2
;" "
490 IF E=80 THEN GOTO 520
500 IF E=11 THEN LET E=10
510 GOTO 400

```

```

520 LET F=2
530 FOR C=1 TO 9
540 LET F=F+1
550 PRINT AT F,1;N$(C)
560 NEXT C
570 LET D=2
580 FOR C=1 TO 12
590 PRINT AT D,16;A$(C)
600 LET D=D+1
610 NEXT C
620 IF X=1 AND O$(44)="O" THEN
GOTO 950
630 REM TEST VALIDITY*****
640 PRINT AT 16,2;"FROM ? TO
(23 SPACES)"
650 INPUT X$
660 IF X$="F" THEN GOTO 940
670 LET A=VAL X$
680 IF A<13 OR A>75 THEN GOTO 7
90
690 PRINT AT 16,7;A
700 INPUT B
710 PRINT AT 16,13;B
720 IF ABS (A-B)=2 OR ABS (A-B)
=20 THEN GOTO 740
730 GOTO 790
740 IF O$(A)=" " OR O$(B)=" " T
HEN GOTO 790
750 IF O$(A)<>"O" OR O$(B)<>"*"
THEN GOTO 790
760 IF O$((A+B)/2)=" " THEN GOT
O 790
770 IF O$((A+B)/2)="*" THEN GOT
O 790
780 GOTO 850
790 PRINT AT 16,16;"INVALID INP
UT"
800 PRINT AT 17,16;"PRESS NEWLI
NE"
810 INPUT X$
820 PRINT AT 17,16;"(16 SPACES)"
830 GOTO 640
840 REM PLAY*****
850 LET O$(A)="*"
860 LET O$((A+B)/2)="*"
870 LET O$(B)="O"
880 LET X=X-1
890 GOTO 350
900 FOR C=13 TO 75
910 IF O$(C)="O" AND O$(C+1)<>"
O" OR O$(C+10)<>"O" THEN GOTO 94
0
920 NEXT C
930 GOTO 350
940 PRINT AT 19,2;"HARD LUCK ";
X;" LEFT"
950 PRINT AT 21,0;"(31 SPACES)"
960 STOP
1000 SAVE "SOLITAIRE"
1010 GOTO 10

```

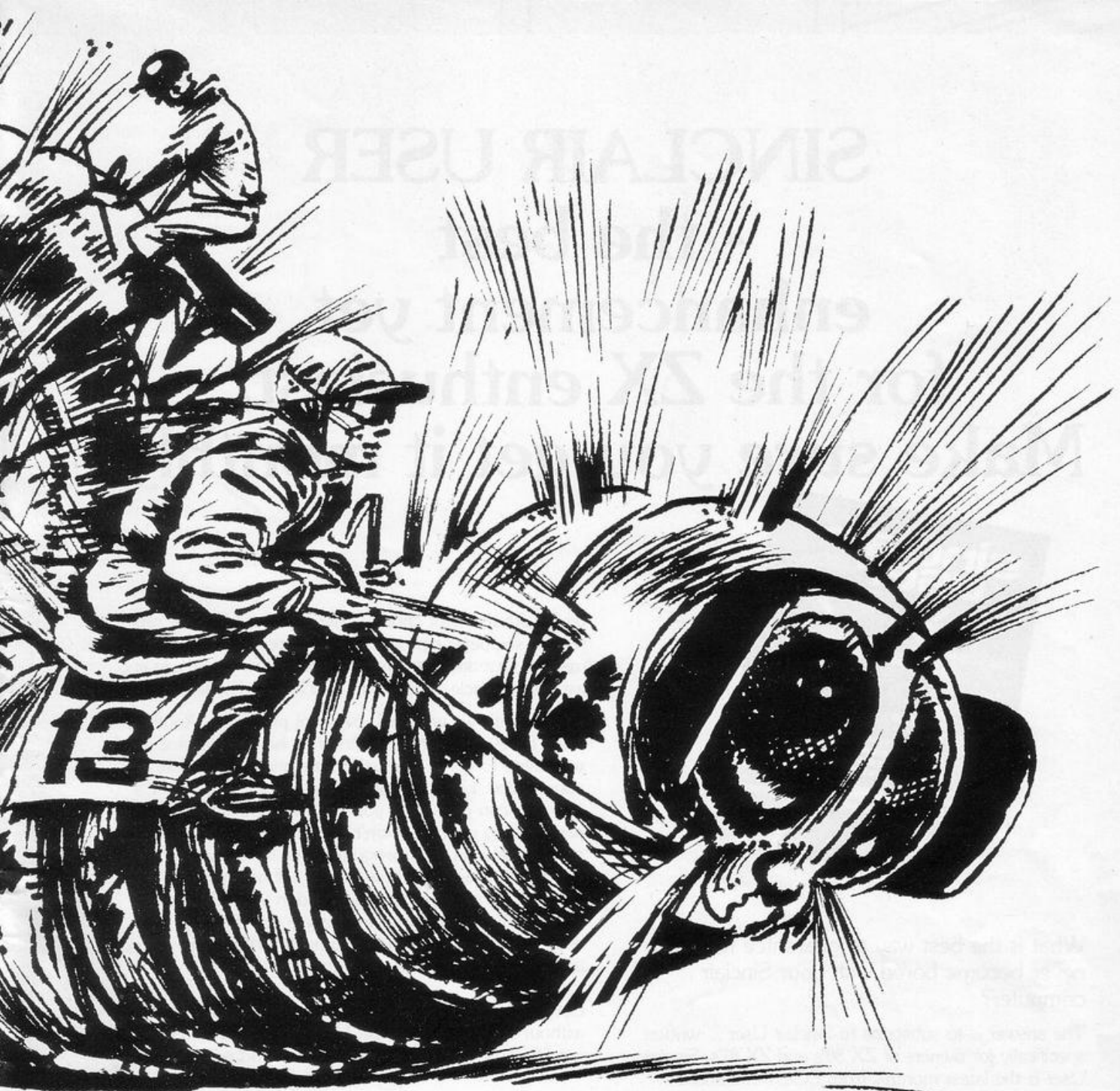

A large, stylized illustration of a character in a dynamic pose, possibly a superhero, with a large 'B' and 'E' in the background. The character is depicted in a crouched, powerful stance, with one arm raised and the other extended forward. The background features a large, bold 'B' and 'E' in a stylized font. The illustration is rendered in a high-contrast, black and white style with heavy, expressive lines.

Grub Race was sent by Roy Kay of Wirral, Merseyside and requires a RAM pack.

```

155 PRINT AT 7,Y;" " "AT 7,Y-1;"
    "AT 7,Y-2;" " "AT 7,Y+1;" " "AT
7,Y+2;"
160 PRINT AT 11,Z;" " "AT 11,Z-1
    "AT 11,Z-2;" " "AT 11,Z+1;" "
    "AT 11,Z+2;"
170 LET X=X+INT (RND*3)
180 LET Y=Y+INT (RND*3)
190 LET Z=Z+INT (RND*3)
200 IF X>29 THEN LET X=29
220 IF Y>29 THEN LET Y=29
230 IF Z>29 THEN LET Z=29
231 IF X=29 OR Y=29 OR Z=29 THE
N GOTO 3000
240 LET T=INT (RND*30)+1
250 IF T=25 THEN GOSUB 1000
600 GOTO 150
1000 LET G=INT (RND*3)+1
1001 PRINT AT 3,X-1;" " "AT 7,Y-1
    " "AT 11,Z-1;"
1010 IF G=1 THEN GOTO 1050
1020 IF G=2 THEN GOTO 1060
1030 IF G=3 THEN GOTO 1070
1050 FOR J=1 TO 50
1051 PRINT AT 3,X;" " " "
1052 PRINT AT 3,X;" " " "
1055 NEXT J
1056 LET X=0
1057 RETURN
1060 FOR J=1 TO 50
1061 PRINT AT 7,Y;" " " "
1062 PRINT AT 7,Y;" " " "
1063 NEXT J

```



```

1064 LET Y=0
1065 RETURN
1070 FOR J=1 TO 50
1071 PRINT AT 11,Z;"███"
1072 PRINT AT 11,Z;"███"
1073 NEXT J
1074 LET Z=0
1075 RETURN
2000 REM
2010 PRINT AT 15,0;"YOU HAVE UP
TO ";M;" POUNDS TO BET"
2020 PRINT AT 16,0;"FIRST ENTER
GRUB 1,2 OR 3"
2030 INPUT A$
2035 IF A$<>"1" AND A$<>"2" AND
A$<>"3" THEN GOTO 2010
2040 PRINT AT 15,0;"GRUB ";A$;"
IT IS....(16 SPACES)"
2050 PRINT AT 16,0;"HOW MUCH MON
EY ARE YOU BETTING?"
2060 INPUT K
2065 IF K>M THEN GOTO 2040
2070 GOSUB 6000
2080 GOTO 90
3000 LET X=X
3010 LET Y=Y
3020 LET Z=Z
3040 IF X=29 AND H$="1" THEN GUT
O 4000
3045 IF Y=29 AND A$="2" THEN GOT
O 4000
3050 IF Z=29 AND A$="3" THEN GOT
O 4000

```

```

3055 LET M=M-K
3060 IF H=0 THEN GOTO 5000
3100 PRINT AT 15,0;"BAD LUCK...Y
OU HAVE ";M;" POUNDS"
3110 PRINT AT 16,0;"A NEW RACE B
EGINS SOON"
3120 PAUSE 150
3125 PRINT AT 3,X-1;" ";AT 7,Y
-1;" ";AT 11,Z-1;" "
3128 GOSUB 6000
3130 GOTO 65
4000 LET M=M+K
4010 PRINT AT 15,0;"YOU GOT A WI
NNER...(12 SPACES)"
4020 PRINT AT 16,0;"YOU NOW HAVE
";M;" POUNDS,A NEW RACE BEGI
NS SOON"
4030 PAUSE 150
4031 PRINT AT 3,X-1;" ";AT 7,Y-
1;" ";AT 11,Z-1;" "
4035 GOSUB 6000
4040 GOTO 65
5000 PRINT AT 15,0;"YOU HAVE NO
MONEY LEFT"
5010 PRINT AT 16,0;"PRESS ANY KE
Y TO PLAY AGAIN"
5020 PAUSE 4E4
5030 CLS
5040 GOTO 20
5050 PRINT AT 15,0;"(32 SPACES)"
5060 PRINT AT 16,0;"(64 SPACES)"
6030 RETURN

```


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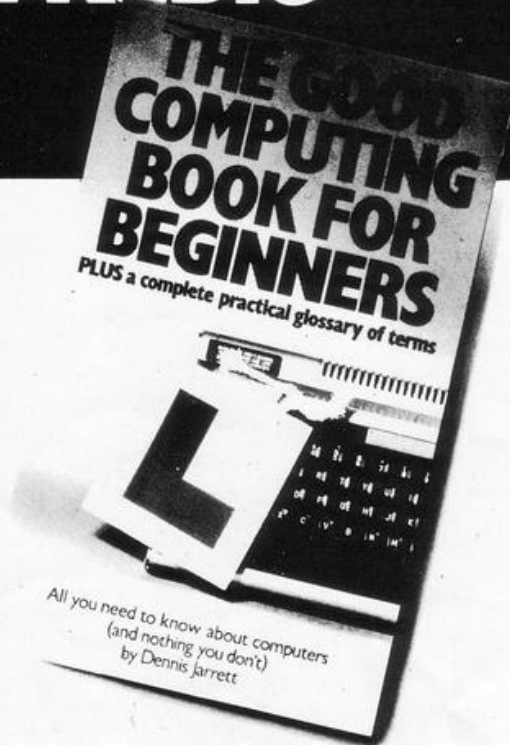
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