

95p

Sinclair programs

July/August

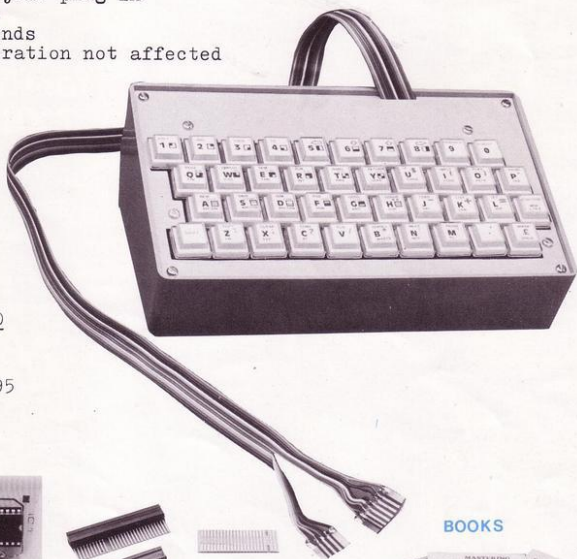
40 programs
for the Spectrum,
ZX81 and ZX80

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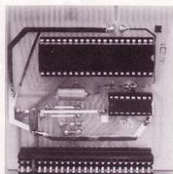
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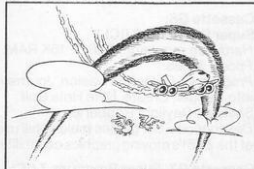
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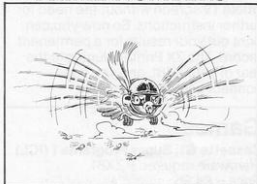


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- 48 GRUB RACE**

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. Character Doodle. Currency Conversion.

Description - Five 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 Biorhythms.

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?

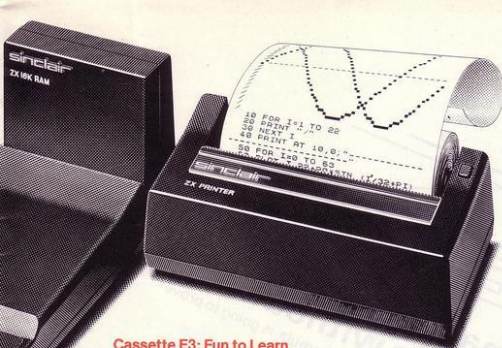
Cassette E2: Fun to Learn series -

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

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	G7: Super Programs 7	36	£4.95			E8: Spelling 1	51	£6.95	
	G8: Super Programs 8	37	£4.95			B1: Collector's Pack	52	£9.95	
	G9: Biorhythms	38	£6.95			B2: Club Record Controller	53	£9.95	
	G10: Backgammon	39	£5.95			B3: VU-CALC	54	£7.95	
	G11: Chess	40	£6.95			B4: VU-FILE	55	£7.95	
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	G13: Space Raiders & Bomber	42	£3.95			ZX Printer	27	£59.95	
	G14: Flight Simulation	43	£5.95			Post & packing - only if ordering hardware		£2.95	
	E1: English Literature 1	44	£6.95						

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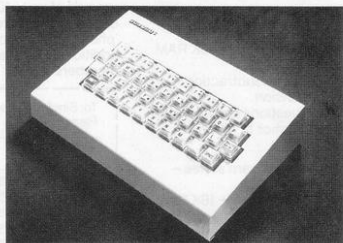
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THE ZX BOOK CLUB

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

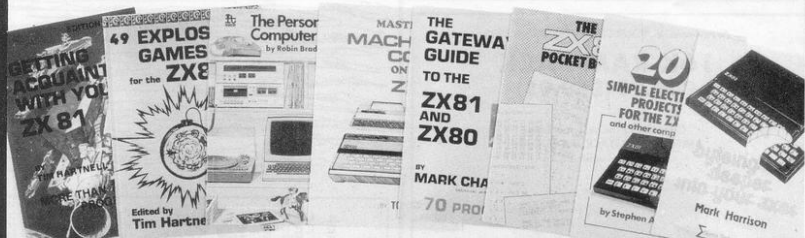
For value for money, these two computers must be the best "computer" buys on the market – but – to get the most from them, every owner, and prospective owner, needs a library of books for programs and operations.

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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ZX1

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.

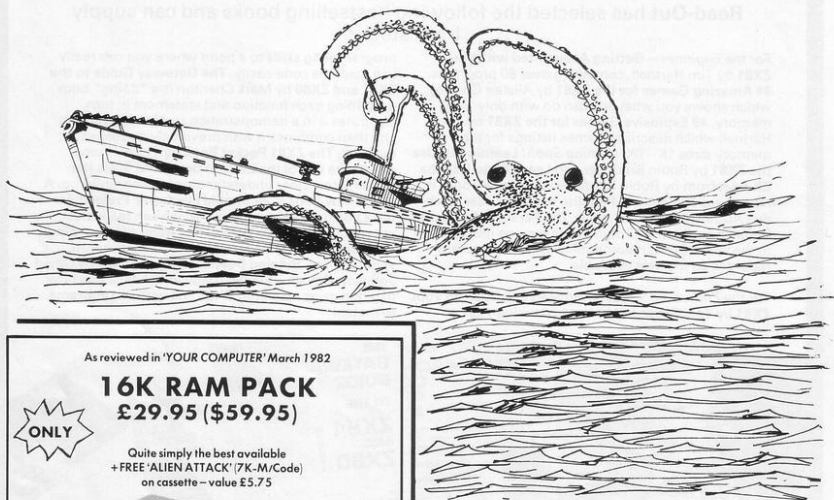
As an added interest, when the octopus hits the top of the screen the lines comprising it

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 Gourack, Renfrewshire.

OCTOPUS

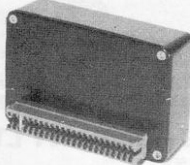


As reviewed in 'YOUR COMPUTER' March 1982

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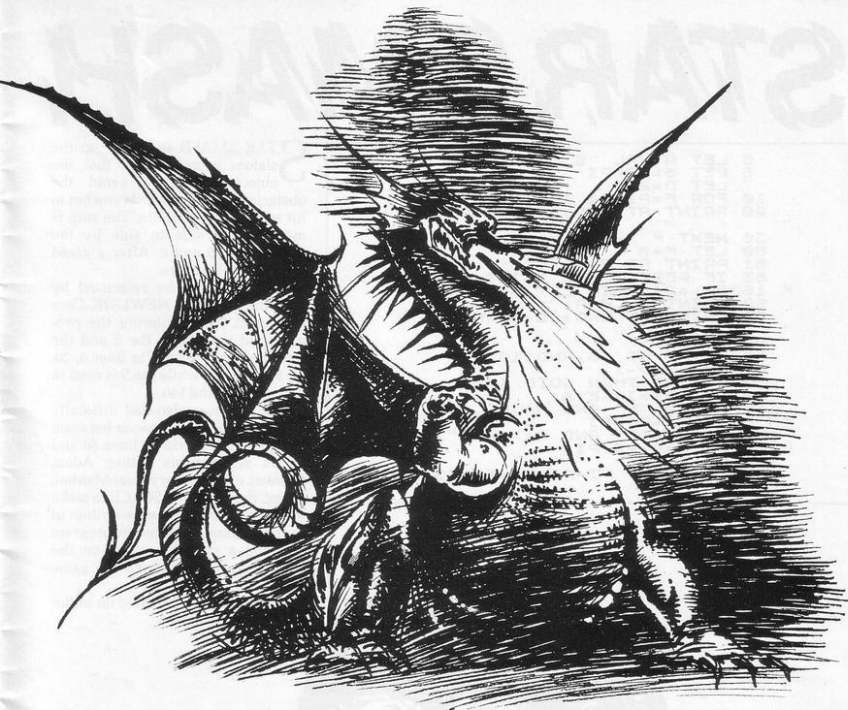
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```

1 LET A$=" "
2 LET B$=" "
3 LET C$=" "
4 LET L=INT (RAND*10)+1
5 LET K=INT (RAND*10)+1
6 LET G=INT (RAND*10)+12
7 LET H=INT (RAND*10)+1
8 GOTO 50
9 PRINT AT G,H;C$;AT K,L;A$
10 PRINT AT K+1,L;B$
11 IF K=6 AND L=H THEN PRINT A
12 IF "SCORE " < "SCORE " THEN PRINT A
13 IF K=6 AND L=H THEN STOP
14 IF G>K THEN LET K=K+1
15 IF L>H THEN LET L=L-1
16 IF K>6 THEN LET K=K-1
17 IF H>L THEN LET L=L+1
18 IF INKEY$="5" THEN LET H=H-
19 IF INKEY$="3" THEN LET H=H+
20 IF INKEY$="6" THEN LET G=G+
21 IF INKEY$="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=5:IN PI
6 LET Q=VAL "2"
8 LET C#="*****"
10 PRINT "INPUT NO;S0;S0;OE;O0;NW
;NE;SE;SW"
12 FOR K=H TO VAL "9"
14 PRINT C#
16 NEXT K
18 LET E=INT (RND*K)
20 LET Y=INT (RND*K)
22 LET G=INT (RND*K)
24 LET X=INT (RND*K)
26 IF NOT H THEN GOTO CODE "■"
AND E*Y*X
30 INPUT B#
32 IF LEN B#<0 THEN GOTO VAL "
30"
34 LET Y=0+(B$(SGN 0)="S" AND
Q(K)-(B$(SGN 0)="N" AND Q$(SGN 0)
100 LET X=P-(B$(0)="J" AND P>SG
N 0)+(B$(0)="E" AND P<K)
110 LET E=SGN (Y-E)*(RND>0/K)
120 LET G=SGN (X-G)*(RND>0/K)
130 IF H THEN PRINT AT Q,P;"■";
AT A;:" "
140 PRINT AT Y,X;"■";AT E,G;"■"
150 LET P=X
160 LET O=Y
170 LET H=H+SGN K
180 LET A=E
190 LET I=0
210 GOTO VAL "S0"+CODE "■"*(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 DG 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

```

100 LET A=VAL "S"
101 LET S=PI-PI
102 LET D=200
103 FOR F=PI/PI TO VAL "S"
104 PRINT AT RND*10+5,RND*10;"+"
105 NEXT F
106 LET F=0
107 PRINT AT F,A;"V"
108 IF PEEK (PEEK 16398+256*PEE
K 16399)=21 THEN LET S=S+1
109 PRINT AT F,A;" "
110 PRINT AT RND*10+5,RND*10;" "
111
112 SCROLL
113 PRINT AT 15,RND*10;"+"
114 LET D=D-1
115 IF D=0 THEN GOTO 140
116 LET A$=INKEY$
117 IF A$="S" AND A<>VAL "0" TH
EN LET A=A-PI/PI
118 IF A$="8" AND A<>VAL "11" T
HEN LET A=A+PI/PI
119 GOTO 50
120 PRINT AT PI-PI,PI-PI;"SCORE
=";S

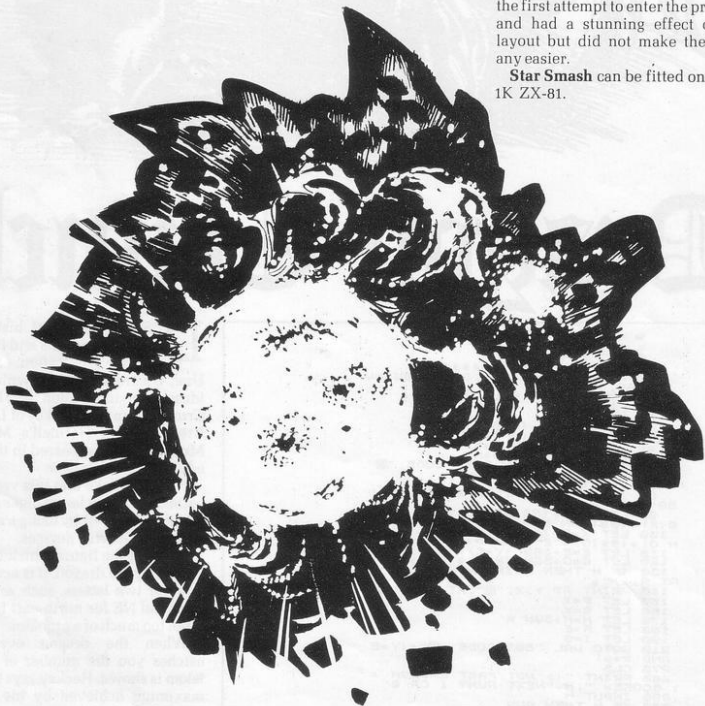
```

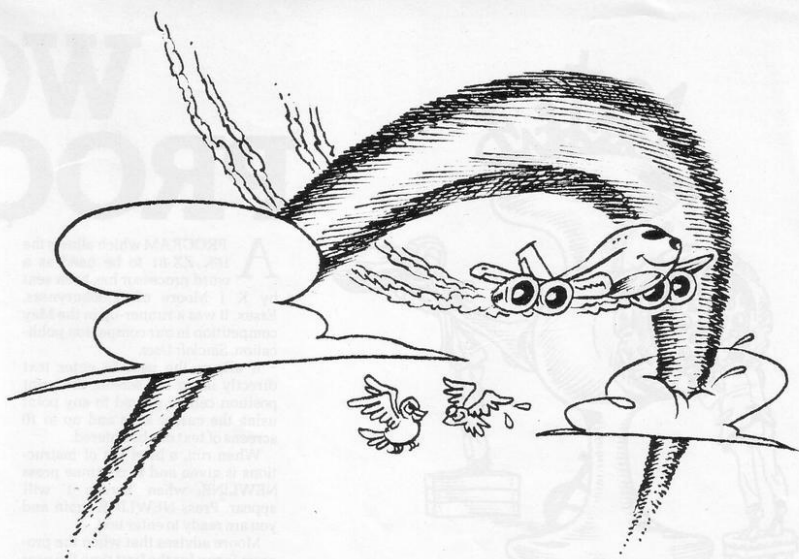
STAR SMASH is similar to the slalom games except that the object is not to avoid the obstacles moving towards you but to hit as many as possible. The ship is moved from side to side by the cursor keys 5 and 8. After a given time a score is shown.

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.

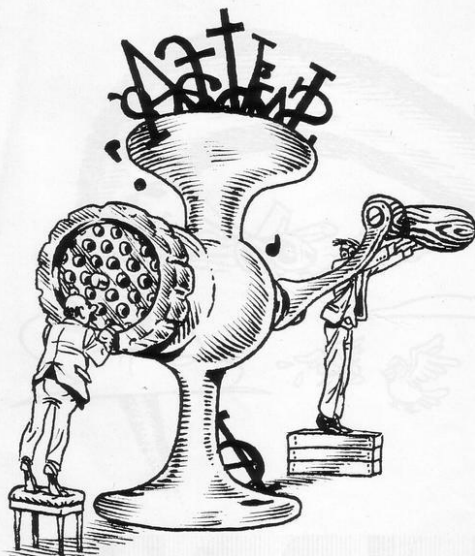
The first **Rainbow**, which as you might expect draws a rainbow, makes use of the Spectrum colour capabilities. The other, **Interfere**, requires the addition of the printer on which it produces some very attractive interference patterns.

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
105 STORE 1000: FOR M=0 TO 7
110 READ a,b,c: FOR N=0 TO 11*(
115 7): PLOT PAPER b, INK c: INVER
120 SE a: 0,n+12*: DRAW PAPER b, INK
125 c: INVERSE a: 255,0,-1.5: IF ABS
130 ((m/2)-INT (m/2))>.1 THEN LET n
135 =n+7
140 BEEP .01,30: NEXT n: NEXT m
150 PAPER 0: INK 7: INVERSE 0
160 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: 5
1710 RIGHT 1: CLS: OVER 1
1715 LET DX=8*2*(1+INT (RND*3)):
1720 LET X1=255/DX: LET C=5+INT (RND
1725 *2): FOR G=0 TO 1: INK C: IF G T
1730 HEN INK 5-C
1735 FOR K=0 TO X1-1: FOR N=0 TO
1740 1: FOR X=0 TO DX-1: PLOT DX*K,1
1745 *N: DRAW X,175-350*N: PLOT DX*
1750 (K+1)-1,175*N: DRAW -X,175-350*N
1755 : NEXT X: NEXT N: NEXT K
1760 NEXT G: GO TO 1700
1765 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"
100 PRINT AT 4,0;"USE THE KEY-B"
110 AS NORMAL"
20 PRINT AT 6,0;"PRESS ""NEW-L"
INE"" FOR A SPACE"
25 PRINT "PRESS ""FUNCTION"" F"
OR A NEW LINE"
30 PRINT "PRESS ""GRAPHICS"" F"
OR INU CHRS"
35 PRINT "PRESS ""EDIT"" FOR P"
RINTING MENU"
40 PRINT
50 PRINT
60 PRINT "DO NOT PRESS THE ""S"
PACE"" KEY ""
70 PRINT "THIS WILL STOP THE P"
ROGRAM."
80 INPUT U$
90 CLS
100 LET DFA=PEEK 16396+256*PEEK
16397
110 LET G=0
120 LET OP1=0
130 LET OP2=0
140 LET G=1
150 DIM A$(10,22,32)
200 FOR N=1 TO 10
205 LET OP1=0
230 LET G=0
240 PRINT AT 10,5;"SCREEN ";N
320 INPUT U$
330 CLS
240 FOR L=0 TO 21
250 FOR C=0 TO 31
350 LET CI=0
355 IF INKEY$="" THEN GOTO 260
360 LET A=CODE INKEY$
365 IF A=63 AND A<112 THEN GOTO
370
372 IF A<11 THEN GOTO 260
375 IF A=116 AND G=0 THEN LET A
=0
380 IF A=116 THEN GOSUB 5000
385 IF A=111 AND A<116 THEN GOS
UB 1000
390 IF A=121 AND OP1=0 THEN GOT
O 415
392 IF A=116 THEN GOTO 260
395 IF A=117 THEN GOSUB 5000
398 IF A=117 THEN GOTO 240
399 IF A=116 THEN GOTO 260
399 IF G=1 THEN GOSUB 5500
399 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 5000
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
1050 LET OP1=DFA+(L*33)+C+1
1070 LET OP2=PEEK OP1
1080 PRINT AT L,C;CHR$
1090 LET CI=1
1100 RETURN
5000 IF INKEY$<>"" THEN GOTO 500
5005 IF G=1 THEN GOTO 5040
5010 LET G=1
5020 PRINT AT L,C;"S"
5030 RETURN
5040 LET G=0
5050 PRINT AT L,C;"E"
5060 RETURN
5500 IF A=116 THEN LET A=126
5505 IF A<11 OR A>64 AND A<126
THEN GOTO 5000
5510 IF A<126 THEN LET A=125
5520 RETURN
5000 LET P=0
5005 LET S$=""
5010 CLS
5020 PRINT AT 2,0;"1. LIST SCREE
N N"
5030 PRINT "2. LIST SCREEN N UNT
IL Z"
5040 PRINT "3. LIST SCREEN X THR
U Y"
5050 PRINT "4. LIST SCREEN X THR
U Y UNTIL Z"
5060 PRINT "5.PRINT SCREEN N"
5070 PRINT "6.PRINT SCREEN N UNT
IL Z"
5080 PRINT "7.PRINT SCREEN X THR
U Y"
5090 PRINT "8.PRINT SCREEN X THR
U Y UNTIL Z"

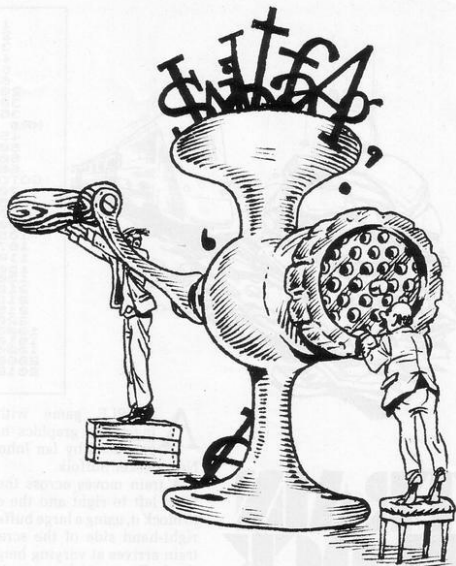
```

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;"SALES-PROD"
5110 INPUT C
5120 IF D<1 OR D>5 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 6340
5350 LET Y=X
5355 LET Z=1
5360 GOTO 5000
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 6415
5420 LET Y=X
5425 PRINT AT 4,0;"ENTER Z"
5430 INPUT Z
5440 IF Z<1 THEN GOTO 6430
5450 GOTO 5000
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 6511
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 5000
5600 IF P=0 THEN PRINT AT 2,0;"4. LIST SCREEN X THRU Y UNTIL Z"
5605 IF P=1 THEN PRINT AT 2,0;"8. PRINT SCREEN X THRU Y UNTIL Z"
5610 PRINT AT 4,0;"ENTER X"
5612 INPUT X
5615 IF X<1 OR X>9 THEN GOTO 6611
5620 PRINT AT 4,0;"ENTER Y"

```

```

5622 INPUT Y
5625 IF Y<X THEN GOTO 6620
5626 IF Y>10 THEN GOTO 6620
5630 PRINT AT 4,0;"ENTER Z"
5635 INPUT Z
5640 IF Z<1 THEN GOTO 6630
5645 GOTO 5000
5700 CLS
5805 IF P=1 THEN GOTO 6100
5910 PRINT AT 2,0;"DO YOU WANT:"
5920 PRINT AT 4,0;"1. A CONTINUOUS LISTING OR,"
5930 IF P=0 THEN PRINT "2. A PAGE BY PAGE LISTING?"
5940 PRINT AT 9,0;"ENTER CHOICE"
5950 INPUT Q
5955 IF Q<1 OR Q>2 THEN GOTO 8040
5970 GOTO 6200
6100 PRINT AT 2,0;"DO YOU WANT PAGE SEPARATORS?"
6110 PRINT AT 6,0;"ENTER"
6120 INPUT S$
6130 IF S$<"N" AND S$>"Y" THEN GOTO 6120
6200 FOR R=1 TO Z
6210 FOR S=X TO Y
6220 CLS
6230 IF Q=2 AND P=0 THEN PRINT AT 1,0;"SCREEN";S
6250 IF P=1 AND S$="Y" THEN LPRI NT
6260 IF P=1 AND S$="Y" THEN LPRI NT
6270 IF P=1 AND S$="Y" THEN LPRI NT
6280 FOR T=1 TO 22
6290 PRINT A$(S,T)
6300 NEXT T
6310 IF Q=2 AND P=0 THEN INPUT U
6320 IF P=1 THEN COPY
6330 NEXT S
6340 NEXT R
6350 LET N=Y
6360 IF P=1 AND S$="Y" THEN LPRI NT
6370 IF P=1 AND S$="Y" THEN LPRI NT
6380 IF P=1 AND S$="Y" THEN LPRI NT
6390 RETURN

```




TRAIN BLOCK

```

1001 LET K=155
1002 LET C=0
1003 LET D=0
1004 LET P=K
1005 LET S=4
1006 FOR T=D TO 23
1007 PRINT AT S,T," "
1008 PRINT AT P,27," "
1009 CHR$ Q;C
1010 HR$ K
1011 LET U=0
1012 IF INKEY$="Q" THEN LET U=-4
1013 IF INKEY$="A" THEN LET U=4
1014 IF INKEY$="P" AND P=S THEN
1015 GOTO 200
1016 IF P+U<=3 THEN LET U=0
1017 CLS
1018 P=P+U
1019 NEXT T
1020 LET C=C+1
1021 IF C=3 THEN GOTO 2000
1022 LET S=INT (RND*4)+4
1023 IF S>=16 THEN LET S=4
1024 GOTO 1006
1025 LET K=K+1
1026 IF K=155 THEN GOSUB 1000
1027 LET D=D+.5
1028 GOTO 1006
1029 LET K=155
1030 RETURN
2001 PRINT CHR$ 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.

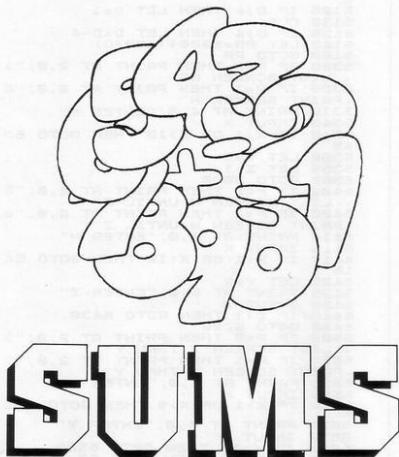
Each time a train is blocked, one is added to the score, which is shown on the buffer. The game ends when three trains have passed the buffer.

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? (= -)",,,"SHARI
NG? (= /)",,," "
50 INPUT N$
60 CLS
70 PRINT "ENTER YOUR FIRST NUM
BER:"
80 INPUT P
90 PRINT 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 PONT00N**
2  REM **BY P.MAPSTONE**
3  RAND
4  DIM A$(8,5)
5  DIM T$(11,5)
6  LET A$(1)=5
7  LET A$(2)=10
8  LET A$(3)=10
9  LET A$(4)=10
10 LET A$(5)=10
11 LET A$(6)=10
12 LET A$(7)=10
13 LET A$(8)=10
14 LET T$(1)=10000000
15 LET T$(2)=10000000
16 LET T$(3)=10000000
17 LET T$(4)=10000000
18 LET T$(5)=10000000
19 LET T$(6)=10000000
20 LET T$(7)=10000000
21 LET T$(8)=10000000
22 LET T$(9)=10000000
23 LET T$(10)=10000000
24 LET T$(11)=10000000

```



```

160 LET T$(6)="145642"
170 LET T$(7)="135642"
180 LET T$(8)="144442"
190 LET T$(9)="143442"
200 LET T$(10)="134342"
210 LET T$(11)="136662"
220 PRINT AT 21,20;"CREDITS:10"
230 LET CR=10
240 DIM P(6)
250 FOR N=1 TO 6
260 LET P(N)=0
270 LET D(N)=0
280 NEXT N
290 LET C=1
300 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=5
450 GOSUB 2000
460 LET P(1)=N
470 LET L=0
480 LET C=6
490 LET N=1
500 GOSUB 2000
510 LET L=6
520 GOSUB 2000
530 LET P(2)=N
540 PRINT AT 15,1;"PLAYERS SCORE"
550 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 685
630 REM NET 5 ACE=1
640 LET N=1
650 IF P(N)<11 THEN GOTO 670
660 LET P(N)=1
670 GOTO 680
680 LET N=N+1
690 IF N=7 THEN GOTO 2200
700 GOTO 640
710 PRINT AT 15,15;PT
720 IF NP=6 THEN GOTO 2300
730 IF INKEY$="" THEN GOTO 700
740 IF INKEY$="5" THEN GOTO 100
750 LET C=C+5
760 LET NP=NP+1
770 GOSUB 2000
780 LET P(NP)=N
790 GOTO 600
1000 IF NP=5 THEN GOTO 2400
1010 REM ***DEALERS TURN
1020 LET ND=1
1030 LET L=0
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 1050
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
1210 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 U=1 TO 6
2030 PRINT AT L+U,C;A$(VAL T$(N,
L))
2040 NEXT U
2050 RETURN
2100 PRINT AT 15,15;"***PONTON**"
2200 LET N=2
2300 GOTO 3600
2400 PRINT AT 15,15;"BUST"
2500 GOTO 3500
2600 PRINT AT 15,15;"SIX CARD TR
ICK"
2700 LET N=4
2800 GOTO 3600
2900 PRINT AT 15,15;"FIVE CARD T
RICK"
3000 LET N=2
3100 GOTO 3600
3200 PRINT AT 7,15;"***PONTON**"
3300 GOTO 3500
3400 PRINT AT 7,15;"BUST"
3500 LET N=1
3600 GOTO 3600
3700 PRINT AT 7,15;"FIVE CARD TR
ICK"
3800 LET CR=CR-1
3900 PRINT AT 19,5;"YOU LOSE 1 C
REDIT"
3930 IF CR=0 THEN GOTO 3700
3940 PRINT AT 21,28;"0"
3950 PRINT AT 17,1;"YOU HAVE RUN
OUT OF CREDITS"
3960 IF INKEY$="" THEN GOTO 3700
3970 IF INKEY$="5" THEN GOTO 3550
3980 IF INKEY$="N" THEN STOP
3990 RUN
4000 LET CR=CR+N
4010 IF N=1 THEN PRINT AT 19,5;"
YOU WIN 1 CREDIT"
4020 IF N=1 THEN PRINT AT 19,5;"
YOU WIN 1 CREDIT"
4030 PRINT AT 21,28;CR;" "
4040 PRINT AT 17,1;"(16 SPACES)"
4050 PRINT AT 21,28;"DECK?"
4060 IF INKEY$="" THEN GOTO 3700
4070 IF INKEY$="N" THEN STOP
4080 CLS
4090 PRINT AT 21,20;"CREDITS:";C
R
4100 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(BS)=CODE(GS) THEN LET L(B)
=CODE(GS)
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$(CODE(BS));
165 LET BS=TL$(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'S IT"
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.

```

120 DIM C$(7,3)
200 DIM N(4)
300 REM .....
400 GOSUB 1000 .....DISPLAY
500 REM .....SET UP NOTE TABLE
600 GOSUB 1500
700 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$="" THEN LET N(1)=N(
160 )+1
170 IF N$="," THEN LET N(1)=N(1
180 )-1
190 REM .....CHORDS
200 FOR I=1 TO 7
210 IF N$=S$(I) THEN GOTO I*50
220 NEXT I
230 IF A$("<") THEN GOTO 100
240 REM .....PRINT CHORD
250 PRINT AT 5,1;"(31 SPACES)"
260 FOR I=1 TO 4
270 IF N(I)<0 THEN PRINT AT 5,
N(I),
280 NEXT I
290 FOR I=1 TO 4
300 LET N(I)=0
310 NEXT I
320 GOTO 200
330 REM *****CREATE DISPLAY*****
340 PRINT "CHORD FORMATION C
350 PRINT "
360 PRINT "
370 PRINT "
380 PRINT "
390 PRINT "
400 PRINT "
410 PRINT "
420 PRINT "
430 PRINT "
440 PRINT "
450 PRINT "
460 PRINT "
470 PRINT "
480 PRINT "
490 PRINT "
500 PRINT "
510 PRINT "
520 PRINT "
530 PRINT "
540 PRINT "
550 PRINT "
560 PRINT "
570 PRINT "
580 PRINT "
590 PRINT "
600 PRINT "
610 PRINT "
620 PRINT "
630 PRINT "
640 PRINT "
650 PRINT "
660 PRINT "
670 PRINT "
680 PRINT "
690 PRINT "
700 PRINT "
710 PRINT "
720 PRINT "
730 PRINT "
740 PRINT "
750 PRINT "
760 PRINT "
770 PRINT "
780 PRINT "
790 PRINT "
800 PRINT "
810 PRINT "
820 PRINT "
830 PRINT "
840 PRINT "
850 PRINT "
860 PRINT "
870 PRINT "
880 PRINT "
890 PRINT "
900 PRINT "
910 PRINT "
920 PRINT "
930 PRINT "
940 PRINT "
950 PRINT "
960 PRINT "
970 PRINT "
980 PRINT "
990 PRINT "
1000 PRINT "
1010 PRINT "
1020 PRINT "
1030 PRINT "
1040 PRINT "
1050 PRINT "
1060 PRINT "
1070 PRINT "
1080 PRINT "
1090 PRINT "
1100 PRINT "
1110 PRINT "
1120 PRINT "
1130 PRINT "
1140 PRINT "
1150 PRINT "

```

```

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)="D02"
1530 LET C$(3)="E03"
1540 LET C$(4)="F04"
1550 LET C$(5)="G05"
1560 LET C$(6)="A06"
1570 LET C$(7)="B07"
1580 LET C$="MNE7I+-"
1590 RETURN
1600 REM *****FIND PRINT POSITION*****
1610 FOR I=1 TO 7
1620 IF N$=C$(I,1) THEN LET N(1)
1630 =I,2 TO )
1640 NEXT I
1650 RETURN
1660 REM *****MAJOR CHORD*****
1670 LET N(2)=N(1)+4
1680 LET N(3)=N(1)+7
1690 LET N(4)=0
1700 RETURN
1710 REM *****MINOR CHORD*****
1720 LET N(2)=N(1)+3
1730 LET N(3)=N(1)+7
1740 LET N(4)=0
1750 RETURN
1760 REM *****ADD SIXTH*****
1770 LET N(4)=N(1)+5
1780 RETURN
1790 REM *****ADD SEVENTH*****
1800 LET N(4)=N(1)+10
1810 RETURN
1820 REM *****INVERSION ROUTINE*****
1830 LET T=N(1)
1840 LET N(1)=N(2)
1850 LET N(2)=N(3)
1860 LET N(3)=N(4)
1870 LET N(4)=T
1880 IF T<0 THEN LET N(4)=T+12
1890 RETURN
1900 REM *****AUGMENTED CHORD*****
1910 LET N(2)=N(1)+4
1920 LET N(3)=N(1)+8
1930 LET N(4)=0
1940 RETURN
1950 REM *****DIMINISHED CHORD*****
1960 LET N(2)=N(1)+3
1970 LET N(3)=N(1)+6
1980 LET N(4)=N(1)+9
1990 RETURN

```

Treasure Island

Lat. $5^{\circ} 34' 52''$ N
Long. $82^{\circ} 24' 11''$ 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.

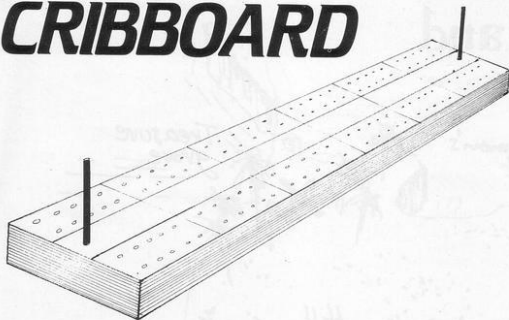
Treasure Hunter was sent by P Brown of Charlesworth, Derbyshire.

```

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 QP=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-OQ
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
3 LETTER (A OR B) FOLLOWED BY HIS
4 SCORE FOLLOWED BY NEWLINE
5 REM AN ENTRY GREATER THAN
6 WILL NOT BE ACCEPTED
7 REM THE FIRST PLAYER TO
8 SCORE 121 OR MORE IS THE WINNER
9 PRINT "DO YOU WANT TO FINISH
10 ON EXACTLY 121? IF YES
11 PRESS "Y" ELSE PRESS "N"
12 INPUT B$
13 IF B$="Y" THEN GOTO 4000
14 IF B$="N" THEN CLS
15 LET C=0
16 LET D=0
17 GOSUB 9000
18 GOSUB 9500
19 INPUT A$
20 PRINT "A", 15, 4; " " "AT 1
21 "
22 IF VAL A$(2 TO ) > 29 OR VAL
23 A$(2 TO ) = 19 THEN GOTO 40
24 IF A$(1) = "A" THEN GOTO 1000
25 IF A$(1) = "B" THEN GOTO 2000
26 IF A$(1) < "A" AND A$(1) < "B"
27 THEN GOTO 40
28 IF VAL A$(2 TO ) + A <= 121 T
29 HEN PLOT X,Y
30 LET A=A+VAL A$(2 TO )
31 IF A<31 THEN GOTO 1020
32 IF A<30 AND A<61 THEN LET X
33 =2+A-62
34 IF A<60 AND A<91 THEN LET X
35 =2+ABS (A-2-180)
36 IF A<90 AND A<121 THEN LET
37 X=2+A-2-180
38 IF A<120 THEN GOTO 1100
39 IF A<31 OR (A<60 AND A<91)
40 THEN LET Y=37
41 IF (A<30 AND A<61) OR A<90
42 THEN LET Y=4
43 IF A<31 THEN LET X=62-(A-2)
44 UNPLOT X,Y
45 PRINT AT 13,5;A
46 GOTO 40
47 UNPLOT 62,35
48 UNPLOT 62,35
49 PLOT X,Y
50 PRINT AT 13,5;"121"
51 PRINT AT 15,4;"WINNER"
52 LET C=C+1
53 PRINT AT 17,5;C
54 GOTO 3000
55 LET A=A-VAL A$(2 TO )
56 PRINT AT 15,5;"BUST"
57 PRINT AT 13,5;A
58 GOTO 40
59 IF VAL A$(2 TO ) + B <= 121 T
60 HEN PLOT U,V
61 LET B=B+VAL A$(2 TO )
62 IF B<31 THEN GOTO 2020
63 IF B<30 AND B<61 THEN LET U
64 =2+B-62
65 IF B<60 AND B<91 THEN LET U
66 =2+ABS (B-2-180)
67 IF B<90 AND B<121 THEN LET
68 U=2+B-2-180
69 IF B<120 THEN GOTO 2100
70 IF B<31 OR (B<60 AND B<91)
71 THEN LET V=37
72 IF (B<30 AND B<61) OR B<90
73 THEN LET V=30
74 UNPLOT U,V
75 PRINT AT 13,23;B
76 GOTO 40
77 UNPLOT 62,29
78 UNPLOT 62,28
79 PLOT U,V
80 PRINT AT 13,23;"121"
81 PRINT AT 15,21;"WINNER"
82 LET D=D+1
83 PRINT AT 17,23;D
84 GOTO 3000
85 LET B=B-VAL A$(2 TO )
86 PRINT AT 15,2;"BUST"
87 PRINT AT 13,23;B
88 GOTO 40
89 PRINT AT 20,0;"DO YOU WANT
90 ANOTHER GAME? (Y/N)"
91 INPUT C$
92 IF C$="Y" THEN CLS
93 IF C$="N" THEN GOTO 20
94 CLS
95 LET E=1
96 GOTO 10
97 FAST
98 FOR X=0 TO 63
99 PLOT X,39
100 NEXT X
101 FOR X=0 TO 63
102 PLOT X,25
103 NEXT X
104 FOR Y=26 TO 38
105 PLOT 0,Y
106 NEXT Y
107 FOR Y=26 TO 38
108 PLOT 63,Y
109 NEXT Y
110 FOR X=2 TO 60 STEP 2
111 PLOT X,37
112 NEXT X
113 FOR X=2 TO 60 STEP 2
114 PLOT X,34
115 NEXT X
116 FOR X=2 TO 60 STEP 2
117 PLOT X,30
118 NEXT X
119 FOR X=2 TO 60 STEP 2
120 PLOT X,27
121 NEXT X
122 PLOT 62,35
123 PLOT 62,35
124 PLOT 62,29
125 PLOT 62,28
126 PRINT AT 11,4;"A=TOP";AT 11
127 "B=BOTTOM"
128 PRINT AT 13,12;"<SCORE>"
129 PRINT AT 17,12;"<GAMES>"
130 SLOW
131 RETURN
132 LET A=0
133 LET B=0
134 LET U=50
135 LET V=50
136 LET Y=37
137 LET Y=37
138 PRINT AT 13,5;A;AT 13,23;B
139 PRINT AT 17,5;C;AT 17,23;D
140 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 OLS
5 LET SO=2
6 LET S=0
7 PRINT "*****"
8 PRINT AT 14,15;"LEVEL:";A$
9 PRINT AT 16,10;"HIGH SCORE:"
10 PRINT AT 18,0;"*****"
11 PRINT AT 18,0;"*****"
12 PRINT AT 20,0;"*****"
13 PRINT AT 20,0;"*****"
14 LET X=17
15 LET Y=0
16 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=10
130 LET C=17
140 LET D=4
150 LET E=19
160 LET F=2
170 LET HH=6
180 LET GG=19
190 LET HH=6
200 PRINT AT U,U;"*"
210 PRINT AT X,Y;"*"
220 PRINT AT A,B;"*"
230 PRINT AT C,D;"*"
240 PRINT AT E,F;"*"

```



```

240 PRINT AT GG,HH;"X"
250 LET Q=141
255 LET M=X
260 LET N=Y
265 GOSUB 20000
270 LET U=0
275 GOTO 60000
280 LET X=M
285 LET Y=N
290 PRINT AT X,Y;"$"
295 GOSUB 2430
300 LET M=X
305 LET N=Y
310 GOSUB 20000
315 LET U=0
320 GOTO 60000
325 LET S=N
330 LET B=N
335 PRINT AT A,B;"$"
340 GOSUB 2430
345 LET M=X
350 LET N=Y
355 GOSUB 20000
360 LET U=0
365 GOTO 60000
370 LET S=N
375 LET B=N
380 PRINT AT A,B;"$"
385 GOSUB 2430
390 LET M=X
395 LET N=Y
400 GOSUB 20000
405 LET U=0
410 GOTO 60000
415 LET S=N
420 LET B=N
425 PRINT AT A,B;"$"
430 GOSUB 2430
435 LET M=X
440 LET N=Y
445 GOSUB 20000
450 LET U=0
455 GOTO 60000
460 LET S=N
465 LET B=N
470 PRINT AT A,B;"$"
475 GOSUB 2430
480 LET M=X
485 LET N=Y
490 GOSUB 20000
495 LET U=0
500 GOTO 60000
505 LET S=N
510 LET B=N
515 PRINT AT A,B;"$"
520 GOSUB 2430
525 LET M=X
530 LET N=Y
535 GOSUB 20000
540 LET U=0
545 GOTO 60000
550 LET S=N
555 LET B=N
560 PRINT AT A,B;"$"
565 GOSUB 2430
570 LET M=X
575 LET N=Y
580 GOSUB 20000
585 LET U=0
590 GOTO 60000
595 LET S=N
600 LET B=N
605 PRINT AT A,B;"$"
610 GOSUB 2430
615 LET M=X
620 LET N=Y
625 GOSUB 20000
630 LET U=0
635 GOTO 60000
640 LET S=N
645 LET B=N
650 PRINT AT A,B;"$"
655 GOSUB 2430
660 LET M=X
665 LET N=Y
670 GOSUB 20000
675 LET U=0
680 GOTO 60000
685 LET S=N
690 LET B=N
695 PRINT AT A,B;"$"
700 GOSUB 2430
705 LET M=X
710 LET N=Y
715 GOSUB 20000
720 LET U=0
725 GOTO 60000
730 LET S=N
735 LET B=N
740 PRINT AT A,B;"$"
745 GOSUB 2430
750 LET M=X
755 LET N=Y
760 GOSUB 20000
765 LET U=0
770 GOTO 60000
775 LET S=N
780 LET B=N
785 PRINT AT A,B;"$"
790 GOSUB 2430
795 LET M=X
800 LET N=Y
805 GOSUB 20000
810 LET U=0
815 GOTO 60000
820 LET S=N
825 LET B=N
830 PRINT AT A,B;"$"
835 GOSUB 2430
840 LET M=X
845 LET N=Y
850 GOSUB 20000
855 LET U=0
860 GOTO 60000
865 LET S=N
870 LET B=N
875 PRINT AT A,B;"$"
880 GOSUB 2430
885 LET M=X
890 LET N=Y
895 GOSUB 20000
900 LET U=0
905 GOTO 60000
910 LET S=N
915 LET B=N
920 PRINT AT A,B;"$"
925 GOSUB 2430
930 LET M=X
935 LET N=Y
940 GOSUB 20000
945 LET U=0
950 GOTO 60000
955 LET S=N
960 LET B=N
965 PRINT AT A,B;"$"
970 GOSUB 2430
975 LET M=X
980 LET N=Y
985 GOSUB 20000
990 LET U=0
995 GOTO 60000

```

```

2520 IF INKEY$="S" AND U<0 AND (
U<17 OR U=19 OR U=21) THEN LET U
=U+1
2525 IF INKEY$="S" AND U<0 AND (
U<17 OR U=19 OR U=21) THEN LET U
=U-1
2530 IF INKEY$="S" AND U<21 AND (
U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN LET U=U+1
2535 IF INKEY$="S" AND U<17 AND (
U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN LET U=U-1
2540 GOTO 3005
2545 PRINT AT HX,HY;" "
2550 IF INKEY$="S" AND U<0 AND (
U<17 OR U=19 OR U=21) THEN GOTO
2700
2555 IF INKEY$="S" AND U<8 AND (
U<21 OR U=19 OR U=17) THEN GOTO
2750
2560 IF INKEY$="S" AND U<21 AND (
U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN GOTO 2800
2565 IF INKEY$="S" AND U<21 AND (
U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN GOTO 2800
2570 IF INKEY$="S" AND U<17 AND (
U=0 OR U=2 OR U=4 OR U=6 OR U=8
) THEN GOTO 2800
2575 GOTO 3005
2580 LET HX=U
2585 LET HY=U-1
2590 GOTO 3000
2595 LET HX=U
2600 LET HY=U+1
2605 GOTO 3000
2610 LET HX=U+1
2615 LET HY=U
2620 GOTO 3000
2625 LET HX=U-1
2630 LET HY=U
2635 IF HX=X AND HY=Y OR HX=A AND
HY=B OR HX=C AND HY=D OR HX=E AND
HY=F OR HX=G AND HY=H THEN
LET HX=15
3003 IF HX<>15 THEN PRINT AT HX,
HY;"O"
3020 IF HX=U AND HY=U OR U=X AND
U=Y OR U=A AND U=B OR U=C AND U=D
OR U=E AND U=F OR U=G AND U=H
THEN GOTO 7000
3030 PRINT AT U,U;"$"
3040 RETURN
3050 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=G AND N=H THEN GOTO U
3055 IF M=HX AND N=HY THEN GOTO
3060
3060 GOTO U-10
3065 LET Q=141 THEN LET S=S+100
3070 LET S=S+100
3075 PRINT AT M,N,CHR$(Q)
3080 IF S/3000<INT(S/3000) OR (
3-100)/3000<INT((3-100)/3000) THEN
LET S=S+50-1
3085 PRINT AT 20,21,5
3090 PRINT AT 20,21,50
3095 LET HX=15
3100 GOTO U-10
3105 PRINT AT U,U;"$"
3110 LET S=S+50-1
3115 PAUSE 100
3120 IF S<-1 THEN GOTO 6000
3125 CLS
3130 GOTO 20
3135 FOR N=0 TO 21
3140 SCROLL
3145 NEXT N
3150 IF S<3 THEN LET BEST=S
3155 PRINT AT 0,0;"GAME OVER, ALL
YOUR MEN ARE DEAD"
3160 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.

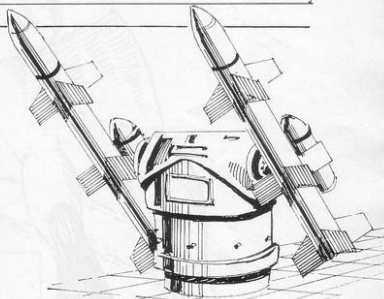
The object is to finish with only one O on the screen. Despite a lengthy attempt by the Sinclair Programs reviewer, that proved impossible but Paterson maintains that it can be done with a little thought and concentration.

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 5
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$="8" THEN LET B=B+
14
15 IF INKEY$="6" THEN LET B=B-
16
17 IF INKEY$="5" THEN LET A=A+
18
19 IF INKEY$="7" THEN LET A=A-
20
21 PRINT AT A+1,B;" "
22 IF B>16 OR B<0 THEN LET B=0
23 IF A>10 OR A<0 THEN LET A=0
24 PRINT AT A-1,B;" "
25 GOTO 30
  
```

SHIPS



```

1000 LET C=0
1010 RAND R=0
1020 FOR A=1 TO 10
1030 CLS
1040 LET M=18
1050 FOR F=0 TO 20
1060 LET B=F*(INT (RND*8))
1070 PRINT AT F,B;" "
1080 PRINT AT 10,15;" "
1090 IF H<F THEN LET M=M-1
1100 IF INKEY$="P" OR H<18 THEN
1110 PRINT AT M,15;" "
1120 IF B=15 AND M=F THEN GOTO 1
1130
1140 IF INKEY$="P" OR H<18 THEN
1150 GOSUB 1000
1160 PRINT AT F,B;" "
1170 NEXT B
1180 NEXT A
1190 PRINT AT 20,15;"C"
1200 PRINT AT M,15;" "
1210 LET M=M-2
1220 RETURN
1230 PRINT AT M,B;"BANG"
1240 PAUSE 50
1250 LET C=C+1
1260 NEXT A
1270 PRINT AT 20,15;"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 1000 are, all shifted, 3,6 and 4 and line 125,Q,F and W. Ships was sent by Ian Johnston, of Newmarket, Suffolk.

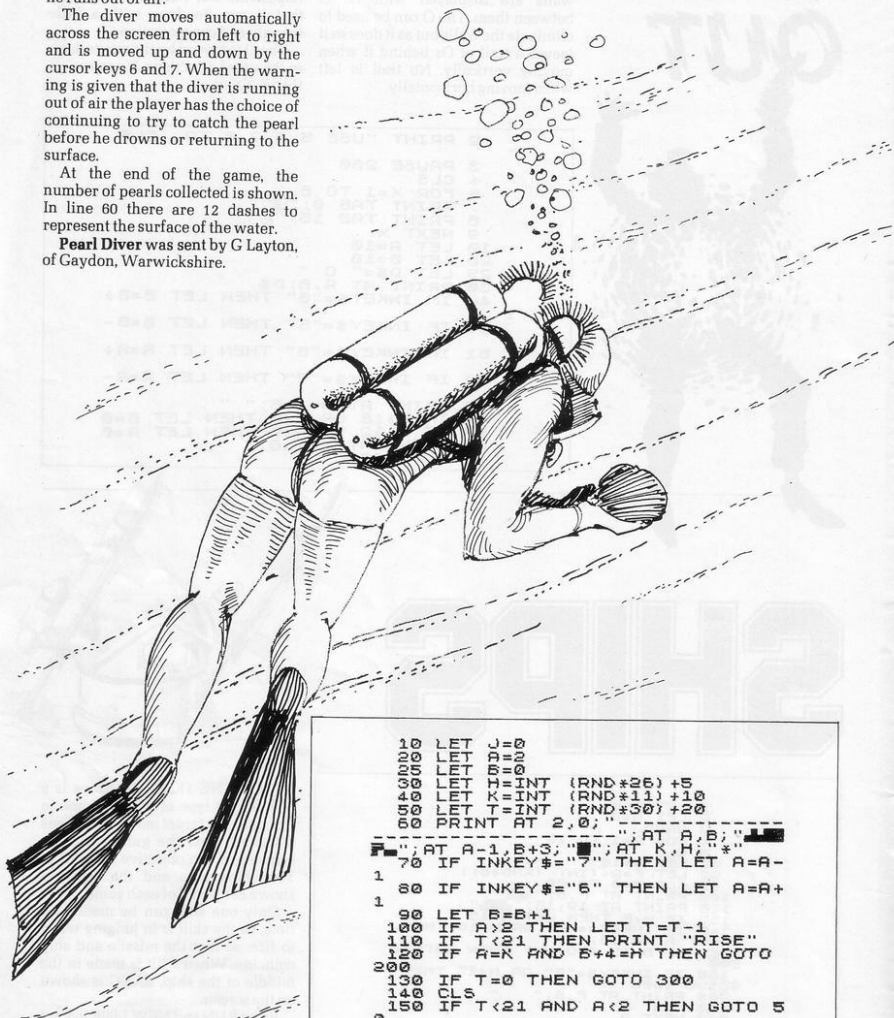
PEARL DIVER will fit on the 1K ZX-81 and, as the name suggests, involves a diver attempting to pick up a pearl before he runs out of air.

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
200 LET A=2
300 LET H=INT (RND*26)+5
400 LET K=INT (RND*11)+10
500 LET T=INT (RND*30)+20
600 PRINT AT 2,0;"-----"
F" ";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
3010 PRINT AT 0,0;"PEARLS COLLEC
TED=";J
320 GOTO 20
300 PRINT AT 0,0;"YOU RAN OUT O
F AIR"

```

CONSTELLATIONS is a program specially for all avid stargazers.

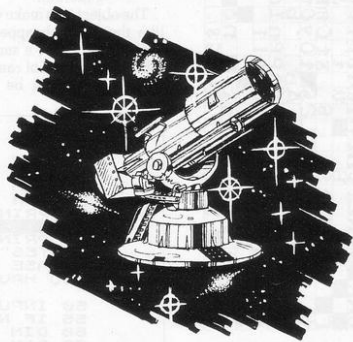
After the lengthy process of entering it, press RUN and NEW LINE and a menu is provided, listing 10 groups of stars. Pick which one you wish to see and the group of stars is shown, along with its name.

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.

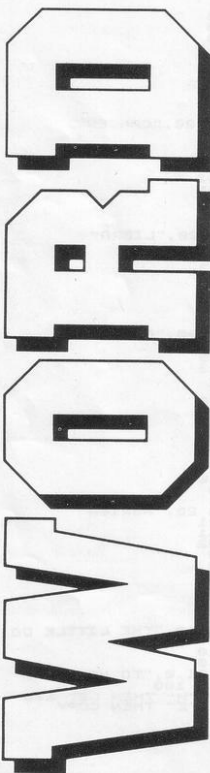
CONSTELLATIONS



```

10 PRINT "CONSTELLATION MENU"
15 PRINT
20 PRINT "1. DELPHINUS"
30 PRINT "2. LYRA"
35 PRINT "3. BOOTES"
36 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 F
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 26,200
140 PLOT 51,200
150 PLOT 56,99
161 GOTO 1100
200 CLS
205 PRINT TAB 20,"LYRA"
210 PLOT 31,330
215 PLOT 36,330
220 PLOT 34,300
230 PLOT 45,300
240 PLOT 16,35
250 PLOT 13,30
260 PLOT 7,37
271 GOTO 1100
300 CLS
305 PRINT TAB 20,"BOOTES"
310 PLOT 32,33
315 PLOT 38,36
320 PLOT 39,33
330 PLOT 39,33
340 PLOT 39,31
350 PLOT 24,3
360 PLOT 34,3
370 GOTO 1100
400 CLS
401 PRINT TAB 20,"LEPUS"
410 PLOT 32,10
420 PLOT 42,14
430 PLOT 47,12
440 PLOT 45,22
450 PLOT 46,27
460 PLOT 27,24
470 PLOT 24,23
480 PLOT 23,23
490 PLOT 23,13
491 GOTO 1100
500 CLS
501 PRINT TAB 20,"PEGASUS"
510 PLOT 32,15
515 PLOT 30,10
520 PLOT 26,3
525 PLOT 45,3
530 PLOT 78,30
535 PLOT 78,30
540 PLOT 49,33
545 PLOT 49,33
550 PLOT 47,32
555 PLOT 110,37
600 CLS
605 PRINT TAB 20,"CANCER"
610 PLOT 32,37
620 PLOT 49,33
630 PLOT 57,43
640 PLOT 106,33
645 PLOT 20,32
650 PLOT 49,32
655 PLOT 49,32
660 GOTO 1100
700 CLS
705 PRINT TAB 20,"LIBRA"
710 PLOT 32,37
720 PLOT 42,37
730 PLOT 24,37
740 PLOT 24,37
750 PLOT 24,7
760 PLOT 35,14
770 GOTO 1100
800 CLS
805 PRINT TAB 20,"CETUS"
810 PLOT 39,17
820 PLOT 54,15
830 PLOT 43,13
840 PLOT 49,2
845 PLOT 35,5
850 PLOT 16,30
860 PLOT 31,16
870 PLOT 14,34
880 PLOT 14,36
890 PLOT 18,42
900 PLOT 29,39
910 PLOT 29,37
920 GOTO 1100
930 CLS
935 PRINT TAB 20,"AURIGA"
940 PLOT 32,21
950 PLOT 25,41
960 PLOT 18,22
970 PLOT 14,9
980 PLOT 39,0
990 PLOT 39,18
1000 PLOT 42,18
1010 GOTO 1100
1020 CLS
1025 PRINT TAB 18,"THE LITTLE DOG"
1030 PLOT 10,10
1040 PLOT 40,40
1050 PRINT AT 21,0,"TO HOLD:H"
1060 FOR S=1 TO 100
1070 IF INKEY#="H" THEN LET S=S+1
1080 IF INKEY#="Z" THEN COPY
1090 NEXT S
1100 RUN
1110 SAVE "CON"
1120 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

```

100 REM *WORD SQUARE GENERATOR*
101 REM (C) A. BLACKBURN 1982
102 REM
103 REM
104 PRINT "WORD SQUARE"
105
106 PRINT "THIS PROGRAM G
ENERATES "WORD SQUARE PUZZLES".
PLEASE INPUT THE NUMBER OF WORDS
YOU HAVE. (YOU CAN USE UP TO 15)"
107
108 INPUT N
109 IF N>15 THEN GOTO 50
110 DIM X(12)
111 DIM Y(12)
112 DIM D(16)
113 DIM G$(15,15)
114 CLS
115 PRINT "PLEASE INPUT YOUR "
N: "WORDS NOW", "IN ORDER OF LENGTH
(LONGEST", "FIRST, SMALLEST LAST)"
116
117 PRINT "YOU CAN USE UP TO
12 LETTERS PER WORD"
118
119 PRINT
120 INPUT A$
121 DIM U$(15,LEN A$)
122 LET U$(1)=A$
123 PRINT A$
124 FOR M=2 TO N
125 INPUT U$(M)
126 PRINT U$(M)
127 NEXT M
128 PRINT AT 17,0;"IT WILL TAKE
ME A FEW MINUTES" "TO SORT THE
WORDS OUT",,"**PRESS NEWLINE TO
START"
129 INPUT U$
130 CLS
131 FAST
132 REM ** MAIN LOOP **
133 LET D(1)=0
134 FOR M=1 TO N
135 REM **RANDOM DIRECTIONS+STARTING POINTS**
136 LET D(M+1)=INT (RND*6)+1
137 IF D(M+1)=D(M) THEN GOTO 240
138
139 LET L=INT (RND*15)+1
140 LET C=INT (RND*15)+1
141 FOR A=1 TO LEN U$(M)
142 GOSUB 1000+D(M+1)*20
143 IF L<1 OR L>15 THEN GOTO 250
144
145 IF C<1 OR C>15 THEN GOTO 250
146
147 LET A$=U$(M,A)
148 IF G$(L,C)="" AND G$(L,C)
<>A$ THEN GOTO 240
149 LET X(A)=L
150 LET Y(A)=C
151 NEXT A
152 REM **OK WE HAVE A WORD FIT
SO PUT IT IN THE GRID**
153 FOR K=1 TO LEN U$(M)
154 LET G$(X(K),Y(K))=U$(M,K)
155 NEXT K
156 REM **GET NEXT WORD**
157 NEXT M
158 REM ** WORD SQUARE COMPLETE
**
159 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.

```

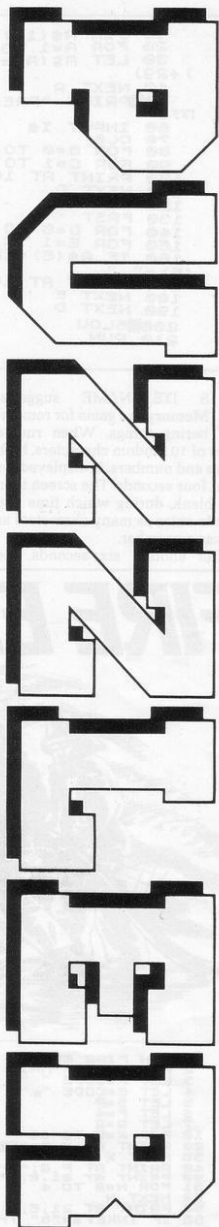
450 FOR D=1 TO 10000
455 LET A$=INKEY$
460 PRINT AT 5,0;"WORD SQUARE"
470 PRINT AT 20,0;"PRESS ""C""
TO CONTINUE"
480 IF A$="C" THEN GOTO 495
485 PRINT AT 5,0;"* G.K. WORDS"
490 IS COMPLETE "*"
495 NEXT D
495 CLS
500 PRINT "PLEASE INPUT THE TITLE OF YOUR""WORD SQUARE"
505 INPUT T$
505 CLS
510 PRINT AT 0,5,T$
515 FOR S=1 TO LEN T$
520 PRINT AT 1,4+S;" "
525 NEXT S
525 PRINT
530 FOR A=1 TO 15
535 FOR B=1 TO 15
540 IF G$(A,B)="" THEN LET G$(A,B)=CHR$(INT(RND*26)+65)
550 PRINT G$(A,B);
560 NEXT B
570 PRINT "(4 SPACES)";W$(A)
590 NEXT A
600 PRINT AT 21,0;"INPUT ""C""
TO COPY THE SCREEN"
610 INPUT U$
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
VWDINGJPMUEEARZK	SOFTWARE
YJLYKCONGTRIBLE	HARDWARE
UXETRNNHGUAGYQHV	KEYBOARD
SPAHIDUPUDTGTCTY	PRINTER
SONJRCMDJESNQVU	SILICON
STEKYORENBHJPRRN	MEMORY
STEECAFHHFOLISD	SCREEN
SCRYHHKYXRCIMOC	CURSOR
EVCBZEECXESRII	MICRO
NFSOFTWAREREPPGRI	BYTE
UIOAJCHIPAHOZVI	CHIP
RUURCNPNWDOGMRKS	STOP
FWDHLUUSGMIUXG	BIT
AOTUGRETNIRPIUA	RUN

EXAMPLE WORDSQUARE USING THIS PROGRAM



```

10 DIM A$(10)
20 FOR A=1 TO 10
30 LET A$(A)=CHR$(INT (RND*35
)+32)
40 NEXT A
50 PRINT "PRESS NEWLINE TO STA
RT."
60 INPUT I$
70 CLS
80 FOR B=0 TO 5
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.

```

REN FIRE ESCAPE
REN BY ROY HAIR
LET P=CODE "P"
LET E=CODE "E"
LET S=0
LET F=1
LET G=2
FOR X=5 TO 18
PRINT AT X,0;" "
NEXT X
PRINT AT F,G;" ("
FOR N=0 TO 4
NEXT N
PRINT AT 21,E;" "
IF INKEY$="S" THEN LET E=E+

```

```

1 70 IF INKEY$="S" 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"
115 IF G=E THEN LET S=S+CODE "S"
175 LET P=CODE "P"
177 IF P=CODE "P" THEN STOP
180 PAUSE CODE "M"
190 CLS
200 GOTO CODE "J"

```

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$=""
30 LET B$=""
40 CLS
50 FIRST
60 PRINT TAB 5;"1 2 3 4 5"
70 PRINT TAB 5;"6 7 8 9 10"
80 FOR L=1 TO 8
90 PRINT TAB 3;"L:"";B$;TAB 5;
100 NEXT L
110 FOR L=1 TO 8
120 FOR B=L TO 8
130 LET C=L*B
140 NEXT C
150 NEXT L
160 LET H=0
170 PRINT AT 20,0;"WHERE DO YOU"
180 PRINT AT 20,0;"WISH TO GO NEXT"
190 INPUT C$
200 IF C$="" THEN GOTO 400
210 IF L=9 THEN GOTO 180
220 LET H=H+1
230 PRINT AT L*2,C*2+3;H
240 IF H=16 THEN PRINT AT L*2,C
250 LET C1=C
260 LET B1=B
270 LET S(L,C)=1
280 IF H=6 THEN GOTO 310
290 PRINT AT 20,0;"CONGRATULATI

```

```

ONS"
300 GOTO 420
310 PRINT AT 19,0;" 10 SPACES "
320 PRINT AT 20,0;"WHERE DO YOU"
330 PRINT AT 20,0;"WISH TO GO NEXT"
340 INPUT C$
350 IF C$="" THEN GOTO 400
360 GOSUB 410
370 IF L=9 THEN GOTO 320
380 IF L=1-2 OR L=1-2 AND C=C
1-1 OR C=C+1-1 THEN GOTO 320
390 IF L=1-1 OR L=1-1 AND C=C
1-2 OR C=C+1-2 THEN GOTO 320
400 PRINT AT 19,0;"IMPOSSIBLE"
410 GOTO 320
420 PRINT AT 20,0;" 28 SPACES "
430 IF LEN C$>2 THEN GOTO 470
440 LET L=VAL C$(1)
450 LET C=VAL C$(2)
460 IF L=1 OR L=8 OR C=1 OR C=8
THEN GOTO 460
470 IF B(L,C)=1 THEN GOTO 460
480 RETURN
490 LET L=9
470 PRINT AT 19,0;"IMPOSSIBLE"
480 RETURN
490 PRINT AT 21,0;"NL TO REPLAY"
480 RETURN
490 PRINT AT 21,0;"NL TO REPLAY"
500 INPUT C$
510 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.

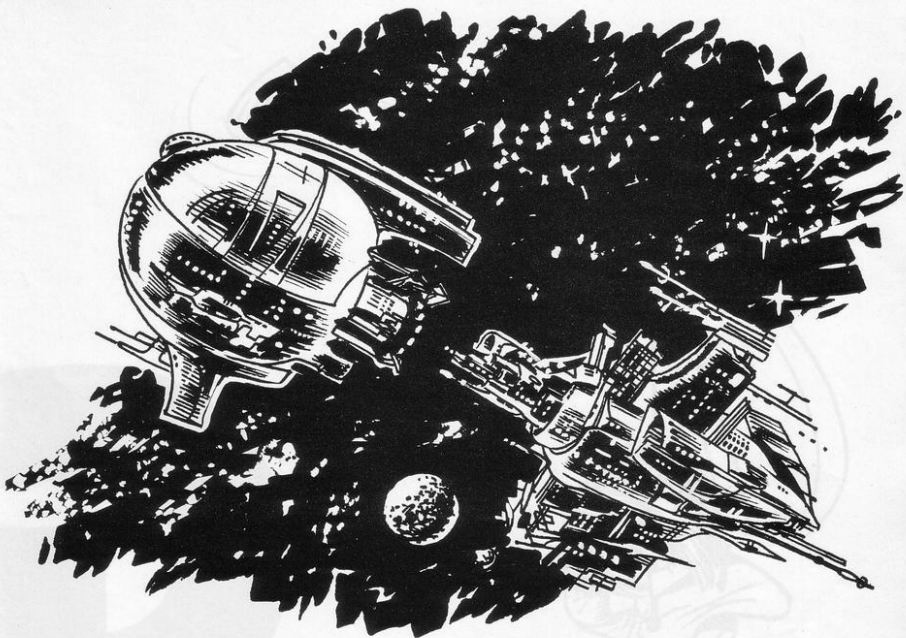
It is a very simple program. It does not take long to enter and can provide some enjoyment. To help with the design in line 30 there are 32 dashes and in lines 45 and 80 there are four spaces between each set of quotation marks.

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;
" "
45 PRINT AT B-1,A;" " "; AT B,
H;
50 PRINT AT 19,10;" / "; AT 20,1
0;
60 IF INKEY$="J" AND A>=5 AND
B>17 THEN LET B=B-1
62 IF INKEY$<>"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$="8" AND A<6
0)-(INKEY$="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 46
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
11 LET M=0
12 LET A=1
13 IF A=1 THEN GOTO 600
14 LET D=(INT (RND*200)+200)
15 LET S=0
16 PRINT
17 PRINT "HOLE NO. ";A;" ";D;"
18 GOSUB 800
19 PRINT
20 PRINT "PAR ";P
21 LET H=M+P
22 PRINT
23 PRINT "PLAY YOUR STROKE,STR
24 EN
25 INPUT J
26 CLS
27 LET B=B+1
28 LET T=T+1
29 IF J=1 THEN LET K=1
30 IF J=2 THEN LET K=INT (RND*
31) +1
32 IF J=3 THEN LET K=INT (RND*
33) +4
34 IF J=4 THEN LET K=INT (RND*
35) +8
36 IF J=5 THEN LET K=INT (RND*
37) +12
38 IF J=6 THEN LET K=INT (RND*
39) +16
40 IF J=7 THEN LET K=INT (RND*
41) +20
42 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
11) +100 J=9 THEN LET K=INT (RND*
100 IF D=K THEN GOSUB 500
101 IF D=0 THEN GOTO 25
102 IF D<K THEN GOTO 105
103 IF D>K THEN GOSUB 400
105 GOSUB 300
106 IF D=0 THEN GOTO 60
107 LET D=(K-D)
108 IF D=1 THEN PRINT "YOU ARE
ONE YARD PAST THE HOLE"
109 IF D=1 THEN PRINT "YOU ARE
"0;" YARDS PAST THE HOLE"
110 PRINT
111 IF B=1 THEN PRINT "ONE STRO
KE PLAYED"
112 IF B=1 THEN PRINT B;" STROK
ES PLAYED"
113 RETURN
114 LET D=(D-K)
115 IF D=1 THEN PRINT "YOU ARE
ONE YARD FROM THE HOLE"
116 IF D=1 THEN PRINT "YOU ARE
"0;" YARDS FROM THE HOLE"
117 PRINT
118 IF B=1 THEN PRINT "ONE STRO
KE PLAYED"
119 IF B=1 THEN PRINT B;" STROK
ES PLAYED"
120 RETURN

```

```

500 LET D=(D-K)
501 IF (P-B)=1 THEN PRINT "HOLE
FOR A BIRDIE"
502 IF B>P THEN PRINT "HOLED, "
OVER PAR"
503 IF P=B THEN PRINT "HOLED AT
PAR"
504 IF P-B=2 THEN PRINT "HOLED
AN EAGLE"
505 IF P-B=3 THEN PRINT "HOLED
FOR AN ALBATROSS"
506 PAUSE 50
507 POKE 16437,255
508 LET A=A+1
509 RETURN
510 PRINT "SCORE FOR THE COURSE
"
511 PRINT
512 PRINT "PAR FOR THIS COURSE
"
513 PRINT
514 IF T=M THEN PRINT "SEE YOU
AT GLENARAGLES NEXT YEAR"
515 IF (T-M)<10 THEN PRINT "KE
EP PRACTISING"
516 IF (T-M)>10 THEN PRINT "SEL
L YOUR CLUBS"
517 STOP
518 IF D>=200 AND D<=275 THEN L
ET P=3
519 IF D>275 AND D<=350 THEN LE
T P=4
520 IF D>350 THEN LET P=5
521 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.

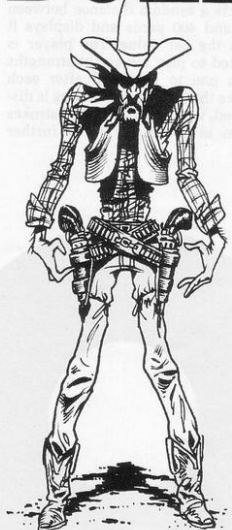
Duel, which can fit on to the 1K ZX-81, was sent by Mark Beard of Hilsa, Portsmouth.

DUEL

```

10 REM "DUEL"
20 LET A=10
30 LET B=INT (RND*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 (RND*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, 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 line 150 shifted T,three spaces,Y and in line 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;"O O"
20 PRINT AT 11,7;"| O O"
30 PRINT AT 12,7;"| O O"
40 PAUSE 25
50 PRINT AT 11,9;" "
60 PRINT AT 11,10;" "
70 PRINT AT 11,10;"O"
80 PRINT AT 11,10;"O"
90 PAUSE 25
100 PRINT AT 11,10;" "
110 PRINT AT 11,10;" "
120 PRINT AT 11,9;"O"
130 PRINT AT 14,10;"O"
140 PRINT AT 14,10;"O"
150 PRINT AT 15,11;" "
160 PRINT AT 15,11;" "
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 Cowlshaw 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 TEAMS"
40 INPUT NT
50 LET Y=9
60 DIM P(NT)
70 DIM W(NT)
80 DIM D(NT)
90 DIM L(NT)
100 DIM F(NT)
110 DIM A(NT)
120 DIM N(NT)
130 DIM T$(NT,Y)
140 LET W=3
150 LET D=1
160 LET L=0
170 CLS
180 GOTO 400
190 PRINT "
200 PRINT "
210 PRINT "
220 PRINT "
230 PRINT "
240 PRINT "
250 PRINT "
260 PRINT "
270 PRINT "
280 PRINT "
290 PRINT "
300 PRINT "
310 PRINT "
320 PRINT "
330 PRINT "
340 PRINT "
350 PRINT "
360 PRINT "
370 PRINT "
380 PRINT "
390 PRINT "
400 PRINT "
410 PRINT "
420 PRINT "
430 PRINT "
440 PRINT "
450 PRINT "
460 PRINT "
470 PRINT "
480 PRINT "
490 PRINT "
500 PRINT "
510 PRINT "
520 PRINT "
530 PRINT "
540 PRINT "
550 PRINT "
560 PRINT "
570 PRINT "
580 PRINT "
590 PRINT "
600 PRINT "
610 PRINT "
620 PRINT "
630 PRINT "
640 PRINT "
650 PRINT "
660 PRINT "
670 PRINT "
680 PRINT "
690 PRINT "
700 PRINT "
710 PRINT "
720 PRINT "
730 PRINT "
740 PRINT "
750 PRINT "
760 PRINT "
770 PRINT "
780 PRINT "
790 PRINT "
800 PRINT "
810 PRINT "
820 PRINT "
830 PRINT "
840 PRINT "
850 PRINT "
860 PRINT "
870 PRINT "
880 PRINT "
890 PRINT "
900 PRINT "
910 PRINT "
920 PRINT "
930 PRINT "
940 PRINT "
950 PRINT "
960 PRINT "
970 PRINT "
980 PRINT "
990 PRINT "

```

```

270 PRINT "3. PRINT LEAGUE"
280 PRINT "4. SAVE LEAGUE ON TA
290 PRINT
300 PRINT
310 PRINT " INPUT CODE NUMBER T
320 INPUT P$
330 IF P$="1" AND P$="2" AND
P$="3" AND P$="4" THEN GOTO 32
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 "
400 PRINT "
410 PRINT "
420 PRINT "
430 PRINT "
440 PRINT "
450 PRINT "
460 PRINT "
470 PRINT "
480 PRINT "
490 PRINT "
500 PRINT "
510 PRINT "
520 PRINT "
530 PRINT "
540 PRINT "
550 PRINT "
560 PRINT "
570 PRINT "
580 PRINT "
590 PRINT "
600 PRINT "
610 PRINT "
620 PRINT "
630 PRINT "
640 PRINT "
650 PRINT "
660 PRINT "
670 PRINT "
680 PRINT "
690 PRINT "
700 PRINT "
710 PRINT "
720 PRINT "
730 PRINT "
740 PRINT "
750 PRINT "
760 PRINT "
770 PRINT "
780 PRINT "
790 PRINT "
800 PRINT "
810 PRINT "
820 PRINT "
830 PRINT "
840 PRINT "
850 PRINT "
860 PRINT "
870 PRINT "
880 PRINT "
890 PRINT "
900 PRINT "
910 PRINT "
920 PRINT "
930 PRINT "
940 PRINT "
950 PRINT "
960 PRINT "
970 PRINT "
980 PRINT "
990 PRINT "

```



```

490 NEXT A
500 LET T$(F) = T$(F) + A$
510 NEXT
520 SCROLL
530 PRINT "PRESS N/L TO CONTINU
E"
540 INPUT Z$
550 CLS
560 GOTO 200
570 LET S$ = ""
580 PRINT "ENTER ANI: UPDATE:
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 A
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=D
790 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 U(F)=U(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=U(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=N(X)
1100 LET D(X)=P(N)
1110 LET U(X)=U(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 T$(X)=E1
1200 LET U(N)=E2
1210 LET L(N)=E3
1220 LET D(N)=E4
1230 LET F(N)=E5
1240 LET A(N)=E6
1250 LET G(N)=E7
1260 LET N(N)=E8
1270 LET T$(N)=E9
1280 NEXT N
1290 NEXT X
1300 SLOW
1310 SCROLL
1320 PRINT "P"; TAB 2;"TEAMS";
P:U:D:L:F:A:G:N
1330 SCROLL
1340 PRINT "
1350 SCROLL
1360 FOR N=1 TO NT
1370 PRINT N; TAB 2; T$(N); TAB 11;
": P(N); TAB 14; ": U(N); TAB 17;
": L(N); TAB 20; ": L(N); TAB 23;
": F(N); TAB 26; ": A(N); TAB 29;
": N(N)
1380 SCROLL
1390 NEXT N
1400 SCROLL
1410 IF INKEY$="" THEN GOTO 1410
1420 CLS
1430 GOTO 200
1440 STOP
1450 LET B$=""
1460 IF (LEN S$)-Y=0 OR S$="" AND
D (LEN R$)-Y=0 THEN GOTO 1530
1470 IF S$="" THEN FOR F=0 TO (Y
-LEN R$)-1
1480 IF S$(F)="" THEN FOR F=0 TO (
Y-LEN S$)-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 L
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*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

15 FAST
16 LET L=10000000
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$=CHR$ 126
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
160 IF C=1 AND D<20 AND D>11 TH
EN GOTO 3010
165 IF E=1 AND F>22 THEN GOTO 3
20
170 PRINT AT A,B;" ";AT C,D;" "
:AT E,F;" "
190 GOTO 130
190 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
160 IF C=1 AND D<20 AND D>11 TH
EN GOTO 3010
165 IF E=1 AND F>22 THEN GOTO 3
20
170 PRINT AT A,B;" ";AT C,D;" "
:AT E,F;" "
190 GOTO 130
190 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"
1030 PRINT AT 13,2;"TO
BET ON THE BIRD OF YOUR
CHOICE"
1040 PRINT AT 15,2;"FIRST, ENTER PIGEON
"
1050 INPUT A$

```

```

1031 IF A$="A" OR A$="B" OR A$="
C" THEN GOTO 1040
1035 LET B$=""
1036 GOTO 1010
1040 PRINT AT 12,2;"HOW MUCH MON
EY DO YOU (6 SPACES)";AT 13,2;"UP
ON TO BET ON PIGEON "
1050 PRINT 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;" "
1300 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$;
" WAS THE WINNER";
3540 PRINT AT 12,2;"YOU HAVE ";X
" POUNDS (6 SPACES)";AT 13,2;"A
NEW RACE WILL BEGIN SHORTLY"
3545 FOR J=1 TO 250
3550 NEXT J
3555 PRINT AT 10,0;"(34 SPACES)";
3558 PRINT AT A,B;" ";AT C,D;" "
:AT E,F;" "
3560 GOTO 100
3560 PRINT AT 10,0;"PIGEON ";B$;
" WON...YOU ARE BROKE PRESS
ANY KEY FOR A NEW GAME"
3561 PAUSE 4E4
3565 CLS
3560 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.

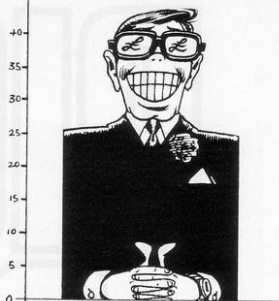


COMPOUND INTEREST

```

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$="SI" THEN GOTO 150
120 LET I=P*((1+R/100)**T)-P
130 GOTO 200
150 LET I=(P*R*T)/100
200 PRINT "INTEREST=F"; I
202 PRINT
205 PRINT "TOTAL=F"; I+P
206 PRINT
210 PRINT "IS THAT ALL? Y OR N
"
220 INPUT B$
230 IF B$="N" THEN RUN

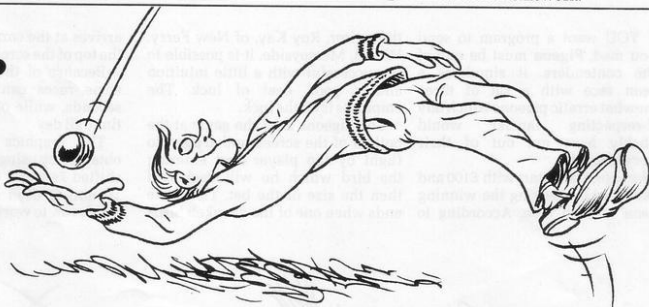
```



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.

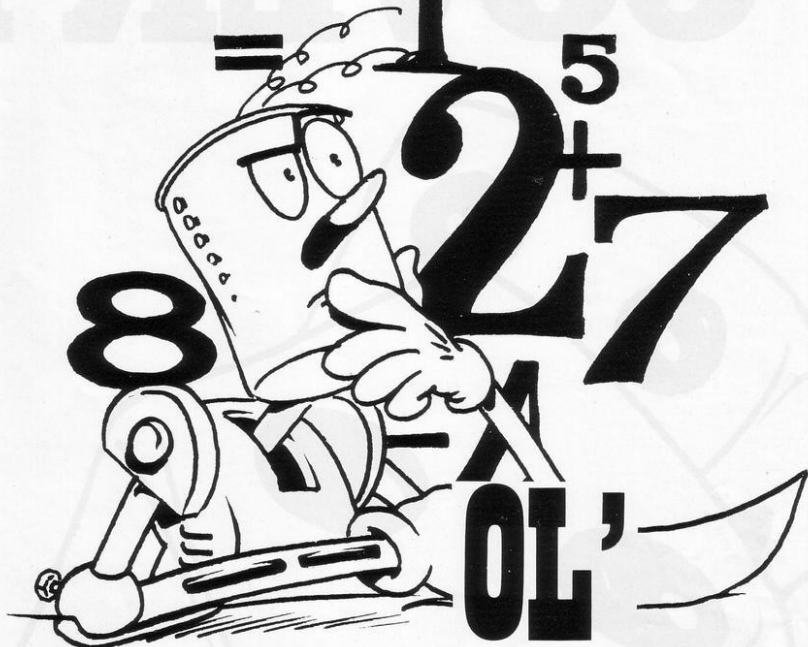
One problem which readers might like to tackle is to find a way of removing Owzat and not out once an appeal has been turned down. Because of this it is not known when another appeal has been made until one is allowed and the next batsman's score is shown.

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

```

10 LET T=0
15 LET N=0
16 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
116 NEXT Z
120 IF W=1 OR W=2 THEN PRINT "N
OT OUT"
125 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.

OL' FAITHFUL

```

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

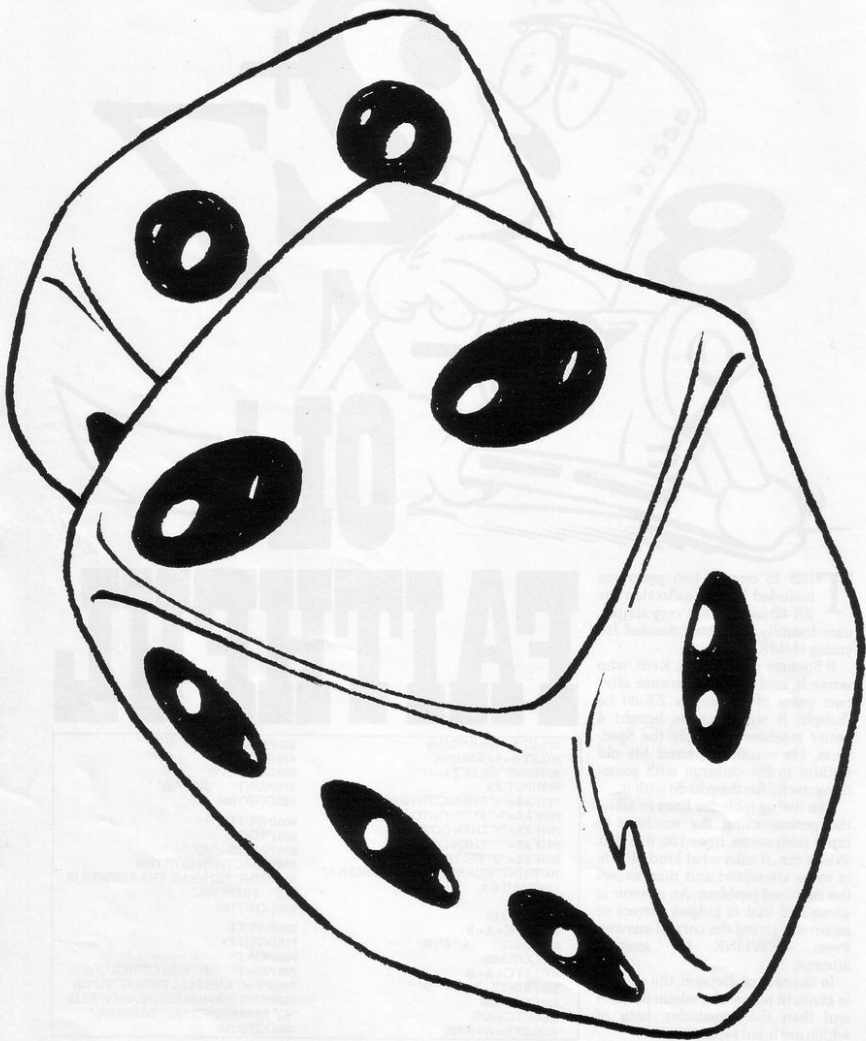
```

```

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

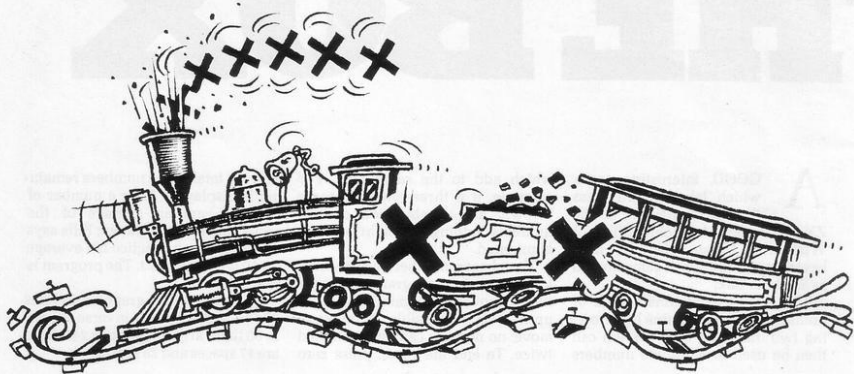
and the total of the numbers remaining is displayed. After a number of plays a running average of the remaining totals is shown; Ellis says that after much practice his average for 10 games was 8.3. The program is user-friendly.

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$="123456789"
20 PRINT AT 1,2;"SHUT THE BOX"
30 PRINT TAB 2;"1 2 3 4 5 6 7 8 9"
40 PRINT TAB 2;"1 2 3 4 5 6 7 8 9"
50 PRINT TAB 2;"1 2 3 4 5 6 7 8 9"
60 IF N$(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 G=INT (RND*6)+1
160 LET Z=9
170 GOSUB 900
180 LET W=0
190 LET A=18
200 LET G=INT (RND*6)+1
210 GOSUB 900
220 PRINT AT 17,2;"WHAT DO YOU WANT TO COVER?"
230 INPUT G$
240 PRINT AT 19,6;" "
250 IF G$="0" THEN GOTO 450
260 LET T=0
270 FOR Y=1 TO LEN G$
280 LET T=T+VAL G$(Y)
290 NEXT Y
300 IF T=0 THEN GOTO 330
310 PRINT AT 19,6;"YOU CANT DO THAT"
320 GOTO 220
330 FOR Y=1 TO LEN G$
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 A=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;
530 " LEFT"
540 LET TOT=TOT+T
550 LET G=G+1
560 PRINT AT 18,5;"YOUR AVERAGE IS ";INT (1000*(TOT/G)/1000)
570 PRINT AT 20,1;"PRESS ANY KEY FOR ANOTHER GO..."
580 IF INKEY$="" THEN GOTO 550
590 CLS
600 GOTO 5
610 PRINT AT 10,Z;" "
620 PRINT AT 11,Z;" "
630 PRINT AT 12,Z;" "
640 PRINT AT 13,Z;" "
650 RETURN
660 PRINT TAB 6;"SHUT THE BOX"
670 PRINT TAB 6;"===== "
680 PRINT "THE OBJECT OF THE GAME IS TO:"
690 PRINT "COVER AS MANY OF THE NUMBERS"
700 PRINT "(1-9), AS POSSIBLE."
710 PRINT "ADD THE DICE SCORES AND COVER ANY COMBINATION OF NUMBERS THAT"
720 PRINT "GIVE THIS TOTAL."
730 PRINT "E.G. IF YOU THROW SIX AND ONE, YOU CAN COVER EITHER 7, OR 1 AND 6, OR 3 AND 4, OR 2 AND 5, OR 1, 2 AND 4."
740 PRINT AT 21,10;"PRESS ANY KEY"
750 PAUSE 4E4
760 CLS
770 PRINT "YOU CAN ONLY USE EACH NUMBER ONCE."
780 PRINT "IF YOU WANT TO COVER 1 AND 2, YOU SHOULD ENTER '1 2' OR '61'."
790 PRINT "WHEN YOU HAVE COVERED 7, 8 AND 9, YOU CAN USE EITHER 1, OR 2 DICE."
800 PRINT "PRESS '0' WHEN YOU CANT GO."
810 PRINT AT 15,12;"GOOD LUCK."
820 PRINT AT 21,10;"PRESS ANY KEY"
830 CLS
840 PAUSE 4E4
850 CLS
860 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$="1" THEN PRINT AT 5,0
A;" "
160 IF A$="2" THEN PRINT AT 5,0
C;" "
170 LET H=A*B
180 LET K=C*D
190 INPUT Z
200 IF A$="1" AND Z=H THEN GOTO
210
220 IF A$="2" AND Z=K THEN GOTO
230
240 PRINT AT 15,0;"WRONG"
250 PAUSE 100
260 GOTO 50
270 PRINT AT 9,X+2;" "
280 LET X=X+1
290 IF X<10 THEN GOTO 300
300 PRINT AT 12,15;" "
310 PRINT AT 13,15;" " WELL DONE

320 STOP
330 PAUSE 150
340 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
NEXT Q
5 RAND
15 LET CHECK=0
20 DIM NZ=INT (RAND*10)+1
30 DIM B(NZ)
40 DIM D(5)
50 DIM X(5)
60 LET PA=INT (RAND*10)+1
70 LET PB=INT (RAND*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 (RAND*10)+1
170 LET X(S)=INT (RAND*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 (RAND*10)+1
250 LET B(I)=INT (RAND*20)+1
260 PRINT AT A(I),B(I);"Z"
270 NEXT I
280 PRINT AT PA,PB;"X"
290 LET A$=INKEY$
300 IF A$="" THEN GOTO 280
310 PRINT AT PA,PB:
320 IF A$="1" THEN LET PA=PA-1
330 IF A$="2" THEN LET PB=PB-1
340 IF A$="3" THEN LET PA=PA+1
350 IF A$="4" THEN LET PB=PB+1
360 IF A$="5" THEN LET PA=PA-1
370 IF A$="6" THEN LET PB=PB-1
380 IF A$="7" THEN LET PA=PA+1
390 IF A$="8" THEN LET PB=PB+1
400 IF A$="9" THEN LET PA=PA-1
410 IF A$="0" THEN LET PB=PB+1
420 IF PA=10 THEN LET PA=10
430 IF PB=20 THEN LET PB=20
440 IF PA=1 THEN LET PA=1
450 IF PB=1 THEN LET PB=1
460 PRINT AT PA,PB;"X"
412 FOR J=1 TO 5
414 IF PA=D(J) AND PB=X(J) THEN
GOTO 3000
415 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 F
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
ECK+1
620 NEXT C
630 IF CHECK=NZ THEN GOTO 2000
640 LET CHECK=0
650 GOTO 230
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 POTHOLE"

```



```

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$="U" THEN GOTO 80
70 GOTO 30
80 UNPLOT X,Y
90 LET X=X+(INKEY$="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.

MORSE CODE

```

10 CLS
20 LET S=0
30 LET C$=""
40 LET D$=""
50 FOR V=1 TO 26
60 LET A=INT(RND*25)+1
70 LET B=A*130/26
80 LET C$=CHR$(B)
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"

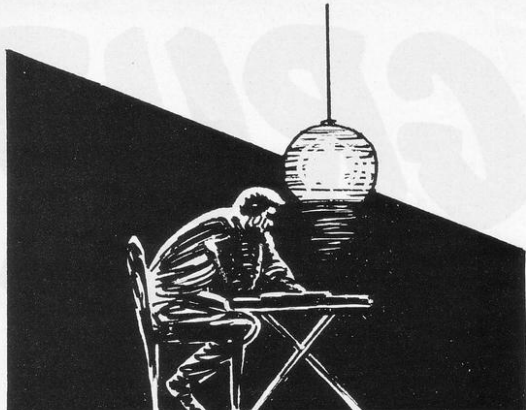
```



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"
180 LET A$(12) = "ON REQUEST"
190 DIM O$(79)
200 FOR I=1 TO 79
210 LET O$(I) = " "
220 IF C<12 AND C<16 OR C>22 AN
D C<26 OR C>30 AND C<36 OR C>42
AND C<46 OR C>72 AND C<76 THEN L
ET O$(I) = "O"
230 IF C=44 THEN LET O$(I) = "*"
240 IF C=40 OR C=50 OR C=36 OR
C=48 THEN LET O$(I) = "*"
250 FOR D=1 TO 7
260 IF C=(D*10+9) THEN LET O$(
I) = "X"
270 NEXT D
280 NEXT C
290 LET N$ = "1234567 "
300 LET X=32
310 LET B$ = "CONGRATULATIONS"
320 PRINT AT 21,0;"IF YOU CANT
MOVE TYPE ""F"" TO END"
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=1 TO F+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$(A) = "O" OR O$(B) = "O" T
HEN GOTO 790
750 IF O$(A) <> "O" OR O$(B) <> "O"
THEN GOTO 790
760 IF O$( (A+B)/2 ) = "O" THEN GOT
O 790
770 IF O$( (A+B)/2 ) = "*" THEN GOT
O 790
780 GOTO 650
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$(A) = "X"
860 LET O$( (A+B)/2 ) = "X"
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

```

GRUB RACE

GRUB RACE involves a race between three good representations of caterpillars. The progress of the race is decided by random elements in the program and the player places bets on the likely winner, starting with a total of £100.

The race is complicated by the fact that at any moment the caterpillars may turn into butterflies which, after fluttering on the screen for a time, return to being caterpillars and have to start again. Complete instructions are included in the program once it is run.

The graphics in lines 60, 70, and 80 are 30 shifted Ss and two shifted As and the butterflies in lines 1061, 1071 and 1081 include two shifted As.

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



```

1 PRINT AT 1,10,"GRUB RACE"
2 PRINT AT 4,3,"WILL YOUR CHO
SEN GRUB ";AT 5,3;"BE FIRST TO R
EACH THE ";AT 6,3;"SAFETY OF THE
CABBAGE PATCH?";AT 7,3;"IF HE I
S TRANSFORMED ";AT 8,3;"INTO A BU
UTTERFLY THEN HIS ";AT 9,3;"LIFE
WILL BE SPECTACULAR";AT 10,3;"
..BUT SHORT...";AT 12,3;"EACH BU
TTERFLY ";AT 13,3;"IS RESSURECTE
D AS A GRUB ";AT 14,3;"AND BEGIN
S AGAIN."
3 PRINT AT 16,4;"PRESS ANY KE
Y TO START"
5 PAUSE 4E4
6 CLS
20 LET M=100
50 REM GRUB RACE
60 PRINT AT 12,0;"
=====
65 PRINT AT 10,0;"S";AT 6,0;"2
";AT 2,0;"1"
70 PRINT AT 8,0;"
=====
80 PRINT AT 4,0;"
=====
85 GOTO 2000
90 LET X=0
92 LET Y=0
94 LET Z=0
150 PRINT AT 3,X;" ";AT 3,X-1;"
";AT 3,X-2;" ";AT 3,X+1;" ";AT
3,X+2;"

```

```

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=0
220 IF Y>29 THEN LET Y=0
230 IF Z>29 THEN LET Z=0
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
300 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 SETTING?"
2060 INPUT K
2055 IF K>M THEN GOTO 2040
2070 GOSUB 6000
2080 GOTO 90
2090 LET X=X
2010 LET Y=Y
2020 LET Z=Z
2040 IF X=23 AND H$="I" THEN GUT
O 4000
2045 IF Y=29 AND A$="2" THEN GOT
O 4000
2050 IF Z=29 AND A$="3" THEN GOT
O 4000

```

```

3055 LET M=M-K
3060 IF M=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;" "
3126 GOSUB 6000
3130 GOTO 55
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 55
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)"
5030 RETURN

```

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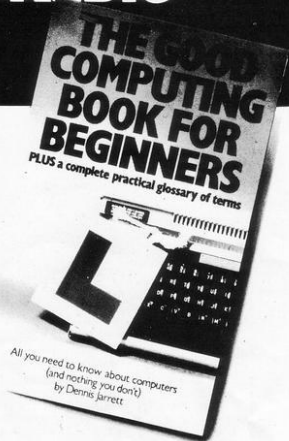
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