

# Home Computing WEEKLY

An Argus Specialist Publication

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No. 60  
May 1-7, 1984

40p

## FREE

24-page supplement for VIC-20 and Commodore 64 users—add-on guide, using graphics, a fun VIC-20 game, and screen designer

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Software reviews for: Spectrum, BBC, Oric, Sord, TI, Commodore 64

Five games to type in for your Spectrum and Oric

Tatung's new micro: all the details

PLUS U.S. Scene, news, charts...



## Rabbit: 'We'll go on without Alan'

Heather Lamont, sole boss of Rabbit Software following Alan Savage's suicide, has vowed: "We will carry on."

Rabbit's 25-strong staff were stunned when they heard that Mr Savage, 36, had hung himself after a motorway crash.

He had been driving his white Mercedes, a recently restored collector's model, when he ran a VW Polo off the M10 in Buckinghamshire.

The VW finished upside down in a ditch, trapping and injuring a woman driver of 42 and her 73-year-old friend.

Mr Savage left on foot — leaving behind a woman friend — after an argument with the driver and police were alerted because the VW driver thought

*Continued on page 6*

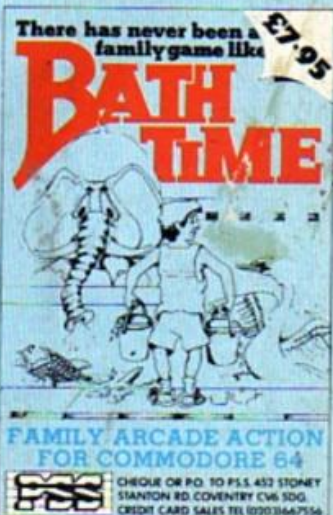
## Computers help with the cooking

In a bid to make computers more useful around the house, two companies have launched menu-planning programs.

One of them, for the BBC micro, is by husband-and-wife team John and Yolande Smith. The other, from Bug-Byte for the Spectrum, contains 80 recipes from professional chef Ian Hoare.

Mrs Smith, a 53-year-old mother of two, said: "Women don't use computers, so what

*Continued on page 6*





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## REGULARS

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## SOFTWARE REVIEWS

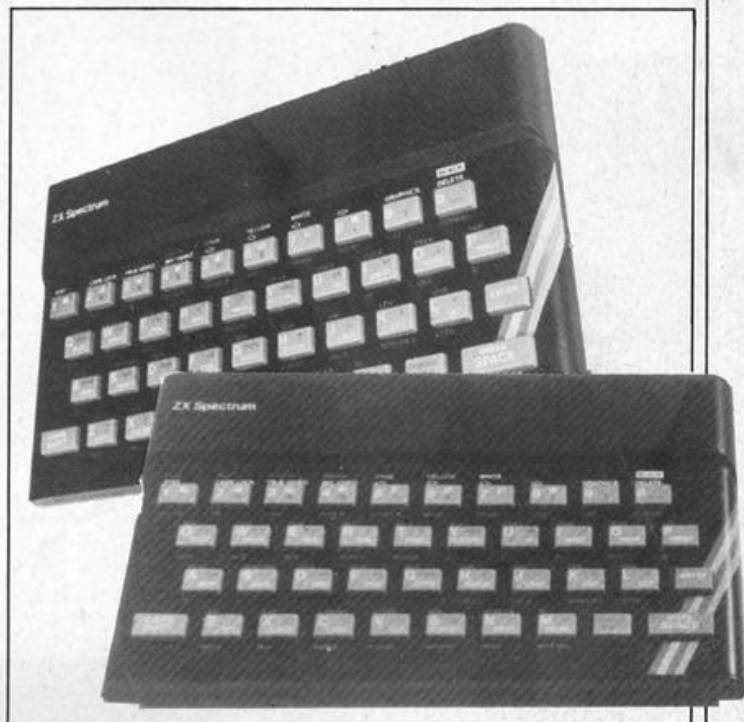
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New games for the Sord M5 and the TI-99/4A

**There's a free 24-page supplement in this issue for users of the VIC-20 and Commodore 64. This is what's inside it:**

- a buyer's guide to add-ons
- a Pixel-Pad screen designer for the Commodore 64
- how to create good-looking graphics for your games
- a free-to-enter competition for Bubble Bus software
- a game with a difference for the VIC-20



## PROGRAMS

**Spectrum** ..... 8  
Three quality-tested games to type in: tackle the Hall of Mirrors, sort the mail and play patience

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Two games to play: find the keys to escape... eat the Mouldfish to live

**VIC-20 and Commodore 64** .....  
...you'll find listings for these two computers in our 24-page supplement

**Readers:** we welcome your programs, articles and tips — see the panel in this issue for details

**Software houses:** send your software for review to the editor. Contact him for competitions and other promotions, as well

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# STAND BY. T.L.L. APPROACHES.

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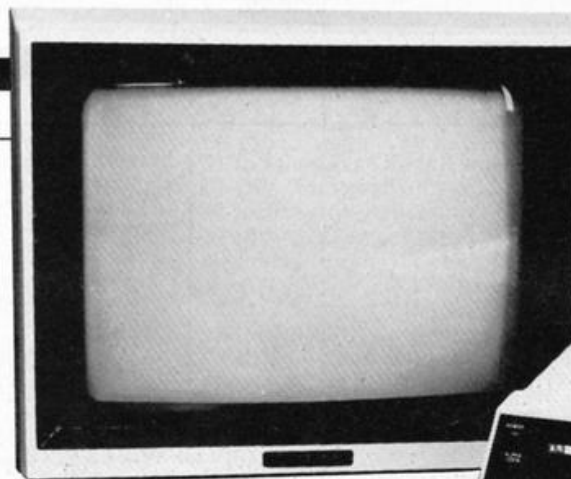
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The Einstein computer with Tatung's colour monitor



Can Tatung tackle the BBC micro? Read Paul Liptrot's full report on its aims and what the Einstein offers



# Revealed: the Einstein micro from Tatung

Tatung is aiming to hit computers like Acorn's BBC micro with its new Einstein, which offers 64K of RAM, a 3in disc drive and 67 typewriter-style keys for £499.

Sales boss Mike Bayliss said it would cost an extra £560 to give the £399 BBC computer the same features.

Made and designed in Britain by the UK arm of a giant Taiwanese company, Einstein deliveries start in June and 50,000 are planned for this year.

Dr Bayliss said the Einstein was an up-market computer designed for the home enthusiast, education and small business. An Apple IIE with similar specification would be £1,010.

The Einstein's disc operating system handles programs running under CP/M, the industry standard system for business software. The DOS and BASIC are on a disc supplied with the computer. This is to allow other languages to be used without losing memory to a built-in BASIC.

Asked about the Amstrad computers, launched a week earlier, technical boss Roy Clarke said the Einstein was 25 per cent faster, the BASIC was more extensive, the keyboard more reliable and longer lasting and more RAM was available to the user.

When BASIC had been loaded, 48K could be used and just over 43K was available with both BASIC and the DOS loaded.

Amstrad's two cassette computers had 42K available to BASIC. The available memory in its two disc models was not known. Amstrad's prices are £329 for cassette model with colour monitor and £529 for 3in disc model with colour monitor. With green screen the prices are £100 lower.

Dr Clarke said the Einstein was intended to fill the gap between

ABS  
ADC analogue/  
digital  
AND  
APPEND  
ASC  
ATN  
AUTO line  
numbering  
BCOL background  
colour  
BEEP  
BINS  
BTN  
CALL  
CHAIN  
CHRS  
CLEAR  
CLOSE  
CLS  
CONT  
COS  
CREATE file  
DATA  
DEEK  
DEFine function  
DEGreess  
DELeTe  
DIM  
DIRectory  
DOKE  
DOS  
DRAW  
DRIVE  
ELLIPSE  
ELSE  
END  
EOF  
ERAsE  
ERRor

## Einstein BASIC keywords

ERRS  
ERL error line  
EVALuate  
EXP  
FILL  
FMT format  
FN function  
FOR  
GCOL graphics  
colour  
GOSUB  
GOTO  
HEXS  
HOLD pause  
IF  
INCH wait for  
key input  
INCHS  
INPUT from port  
INPUT  
INPUT#  
INTeger  
IOM i/o modify  
KBD keyboard  
KBDS  
KEY define  
function keys  
KEY LIST contents  
of function contents  
LEFTS  
LENGth  
LET  
LIST  
LSTPrint  
LN natural log  
LOAD  
LOCK  
LOG  
MAGnify  
MGE merge

MIDS  
MODulus  
MON m/c monitor  
MULS multiple  
of string  
MUSIC  
NEW  
NEXT  
NOT  
NULL  
OFF  
ON  
ON...GOTO  
ON...GOSUB  
OPEN disc file  
OR  
ORIGIN  
OUTPUT  
PEEK  
PI  
PLOT  
POINT  
POKE  
POLYgon  
POP  
POSITION of csr.  
PRINT  
PRINTAT  
PROTECT  
PSG sound gen.  
PTR pointer  
RADIAN  
READ  
REM  
REName  
RENUM  
RESTORE  
RETURN  
RIGHTS  
RND

RST restart  
RUN  
SAVE  
SCRNS  
SEP redef.  
separators  
SGN  
SHAPE  
SIN  
SIZE memory left  
SPEED output  
delay (0-255)  
SPRITE  
SPRITE OFF  
SOR  
STEP  
STOP  
STRS  
SWAP bytes  
TAB  
TAN  
TCOL text colour  
TEMPO  
THEN  
TIS set/print time  
TO  
UNLOCK file  
UNPLOT  
VAL  
VDEEK  
VDOKE  
VERIFY  
VOICE  
VPEEK  
VPOKE  
WAIT pause  
WIDTH of text  
XOR  
ZONE print area

between computers costing £200-£300 and £1,000. He said: "It will be bought by people upgrading from micros like the Spectrum, those who want a better computer from square one and by businesses.

"There is so much talk of jam tomorrow. What we say is available will be available, not sometime next year or maybe never. And there's more than one offender."

**The processor:** Z80A, used in the Spectrum and others, running at 4MHz. Screen display is handled by a separate 16K Texas Instruments chip and the operating system is in an 8K ROM.

**Display:** 56 alphanumeric characters and 160 symbols — in a 5 x 7 grid — all of which can be redefined, plus 32 sprites, four in one line.

No. of colours	horiz. pixels	vert. pixels	chars.
16	256	192	40/32 x 24

**Keyboard:** QWERTY with graphics symbols etched on fronts, eight function keys, 11 control and cursor keys.

**Disc drive:** made by Teac, each 3in disc has a claimed capacity of 250K per side, or 200 K when formatted. Tatung branded discs are to be available. A second drive, costing £149, can be installed above and to the right of the keyboard. A separate drive will be £189 and a separate twin drive is planned.

**Language/operating system:** Tatung/Xtal BASIC, written by Crystal Research, allows users to add to the BASIC keywords and

the 32 error messages. It includes a full screen editor. Tatung says the DOS is designed to be easily understandable by first-time users.

**Input/output:** RS232-C, Centronics, four-channel analogue-to-digital converter for joysticks etc, eight-bit user port, external disc drive connector, UHF TV, YUV/RGB for monitor, and the Tatung "Pipe" — a 60-way general purpose connector.

**Sound:** three channels, plus noise, with volume control and amplitude, pitch and envelope control in BASIC. Speaker measures 3¼in by 2¼in.

**Software:** games would cost £7-£15 and business software up to £250. Companies writing for the Einstein included: A&F, Kuma, Gem Software, Crystal, Leasalink Viewdata and Micro Simplex. At least 50 would be available straight away.

**Peripherals:** joysticks, £5; Tatung branded Shinwa dot matrix printer with Tatung ROM, £229; internal and external disc drives. As a launch offer there will be vouchers for £10 off the printer, extra drive and Tatung's 14in colour monitor, usually £240. Promised soon: a Prestel software upgrade. At the end of the year there would be a unit for 80-column display, greater resolution, and more sprites, plus a speech synthesiser.

Tatung has an annual turnover of £500m and 25,000 employees — 800 of them in the UK. It makes home appliances, power plant and industrial equipment and has 30 subsidiaries, half in China and the rest in Asia, South Africa and Europe.

The Einstein was designed in its Bradford laboratory and is made in Bridgenorth, Shropshire, which also manufactures products like Deccacolour TV sets. Tatung bought the plant from Decca in 1981.



# Rabbit

From front page

he may have taken pills with drink.

Police searched with tracker dogs and Mr Savage's body was found slumped against a tree by a man walking his dog. He had hung himself with his belt.

Miss Lamont revealed that Mr Savage had his stomach pumped out after an earlier attempt to kill himself with an overdose. And two other cars, a BMW and a Jaguar-Daimler, had been badly damaged in recent accidents with Mr Savage at the wheel.

Miss Lamont said: "He had personal problems and when your mind isn't together they seem enormous. He felt his world was falling apart. I don't know if he was schizophrenic, but this is the sort of thing that happens. Perhaps the car crash was the last straw."

I had spoken to him that morning and he was fine. Obviously his mind was unstable and something clicked and he just couldn't cope. It

was nothing to do with Rabbit — the company is doing fine.

"His ex-wife broke the news to me. I was absolutely sick. I can't explain the feeling. I was so totally shocked that I felt ill."

On the surface Mr Savage seemed to have everything to live for. A few days before his death, he told HCW editor Paul Liptrot that Rabbit was thriving and spoke of his personal plans. Rabbit's premises near Wealdstone also includes Soft Copy, trade name for its own cassette duplication and blank tape operation.

Mr Savage, who trained as a communications engineer, was in the process of buying a £200,000 house in Hertfordshire and also planned to remarry. He recently had a hair transplant.

Miss Lamont, formerly an assistant manager at British Home Stores, joined Mr Savage in a technical staff agency which later turned to computer retailing under the name Cream Computers. Rabbit was formed about three years ago and computer sales ended.

Now Rabbit has a range of 17 titles for the Spectrum, VIC-20 and Commodore 64 — about 36 products counting those available for more than one computer.

A new title, Stalag 1, a comic arcade game for the Commodore 64, has just been released and Vortex, an arcade game for the Spectrum and Commodore 64, is due out in mid-May.

Miss Lamont said she owned 51 per cent of Rabbit's shares and Mr Savage owned the remaining 49 per cent. A will had not yet been found, but if it turned out that Mr Savage's shares went to his mother Miss Lamont said she would raise the money and offer to buy them. Rabbit's three-strong board consisted of Miss Lamont, Mr Savage and Miss Lamont's father, Arthur.

Miss Lamont said: "We are a good, solid company. We are in about the middle of the range. We are not like Imagine or the rest of them and we are not down at the bottom. But I don't really want to be in the big league."

Mr Savage, who lived in Willesden, was a car enthusiast. As well as the BMW, the Mercedes and the Jaguar-Daimler, he also drove a restored E-type Jaguar.

Asked if personal relationships could have led to the tragedy, Miss Lamont said: "Alan had been unstable for a long time and a lot of people passed through his life. There's no blame to put on anybody."

Paying tribute to him, she said: "OK, he had a troubled mind but he was a super person. A lot of people cared for him."

"He had a flair for the business. He gave a lot to Rabbit and he got a lot of enjoyment out of it. He had everything to live for but

because of his mental state he could not see it."

Rabbit's software director, Terry Grant, said: "I was devastated. Everyone here is upset but we are all getting on with our work."

# Cooking

From front page

can you do to attract them?

"At first I thought of a recipe book, but you can't take a computer into the kitchen. Then I thought: 'What is the most boring job you have to do?' That's deciding what to cook."

"Most women have 200 or 300 recipes in their minds, but you forget them and end up having chips every day."

What's to Eat?, on cassette for £9.95 and a disc version at £12.95, is designed to plan meals for everyday and for special occasions. When the choice is made — from a claimed 20,000 possible combinations — the menu is displayed, ingredients listed and a shopping list produced.

The program was written largely by Mr Smith with data from his wife, based on her years of cooking for the family.

Mr Smith, 54, a former electronics engineer, and Mrs Smith, a former civil servant, also produce business software. They call themselves Shumwari Associates. Mr Smith said Shumwari meant small friend in a south-east Asian language.

Bug-Byte's Computer Cookbook is in a two-cassette pack — one for the index and the other for the recipes — and costs £9.50.

Mr Hoare said his program started with a request from a friend for a popular recipe. He said: "As a joke, I tried to put the recipe into the computer."

After months of work, and the promise of a Bug-Byte contract, he has finished a program which now contains more than 80 of his recipes in imperial or metric measures and for any number of people up to 200. Wines to accompany the dishes are also given.

Bug-Byte says the program is more than just a cookery book. Using the index you could, for example, tell the computer you had some pork in the fridge and the program will select suitable recipes.

It will also list recipes by category, such as starters and desserts, simplicity and country of origin.

Shumwari Associates, 12 Marlin Ct, Marlow, Bucks SL7 2AJ

Bug-Byte, Mulberry Hse, Canning Place, Liverpool L1 8JB

# You could be on our pages

We welcome programs, articles and tips from our readers. If you feel that your work meets our standards, please submit it to us for consideration for publication.

- Programs must always be sent on cassette. Listings are helpful, but not necessary. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

- Articles on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

- Tips are short articles, and brief programming routines. Your hints can aid other computer users.

All submissions will be acknowledged and the copyright in such works which will pass to Argus Specialist Publications Ltd will be paid for at competitive rates.

Keep a copy of your work and include an SAE. Label everything clearly and give a daytime and home phone number if you can.

All work for consideration should be sent to:

Paul Liptrot, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

# Help for your budget

Now available for the CBM 64: Cash Controller, to help you with budgeting and banking. Three areas of finance are catered for by this program: bank account, budget and mortgage. Printouts of statements and budgets are possible and data may be saved to cassette or disk.

Richard Shepherd Software has converted this program from the Spectrum, and both CBM 64 and Spectrum cassettes cost £9.95. Commodore disk version costs £14.95.

Richard Shepherd Software, Elm House, 23-25 Elmshott Lane, Cippenham, Slough, Berks



THE NAME IN VIDEO GAMES

# Visions

## DEMOLATOR

Following the Thousand year war with the Alien Demolators the last remnants of the human race are being transported across the galaxy in cryogenic suspension aboard the B.S. Quinn (Battle Star).

The Demolators however have invaded the cargo bay and it is your job to destroy the Demolators and to protect the human cargo. All you have to defend Humanity with is Xeno

(popularly named "the Phobe") the

ultimate Robot. You can control his movements on two planes and fire an ultrasonic Cannon to defend humanity with.



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## Hall of Mirrors by David Nowotnik

Here's a game for all Spectrum users which should be both fun and educational. The main purpose is to demonstrate the principles of reflection in mirrors. And this you'll have to grasp quickly if you're aiming to achieve high scores.

When the game starts, the hall of mirrors is drawn and the computer gives you an aerial view. The walls of the building are lined with mirrors which are arranged to alternate in the direction they face. More mirrors will appear inside the hall; some will always appear in the same place, while others are placed randomly, so each game is different.

There is one exit to the hall, at the top of the screen. By the exit is a colour scale, which is your target. The object of the game is to direct a beam of light such that it eventually hits one of the coloured boxes. If you can, you will obviously go for the green box for the maximum score.

On the screen you'll see a flashing "greater than" symbol on the left of the hall. This is the point from which the beam of light will emerge. It starts off going horizontally across the screen. You have to place a number of mirrors in the beam's path to deflect the light onto the target box.

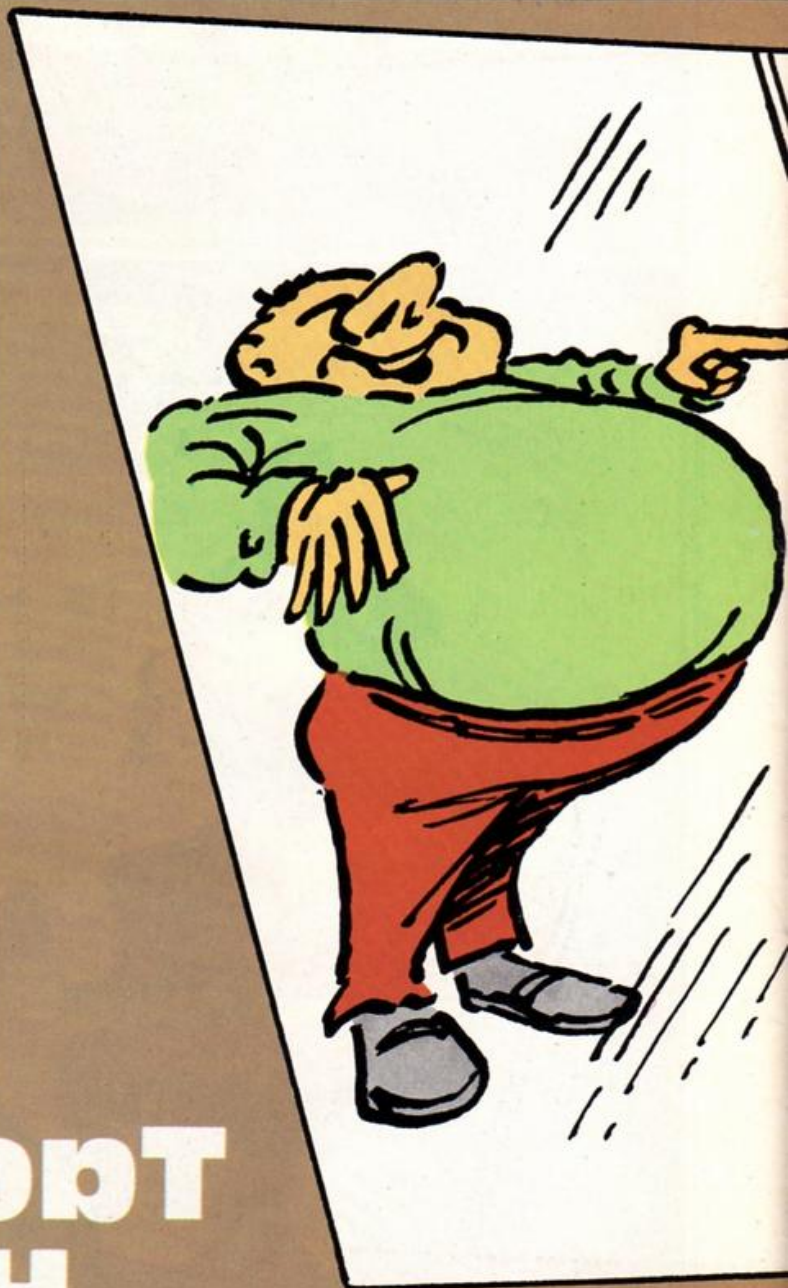
### How it works

100-150 move character set from ROM  
160 redirects CHARs  
170-210 define new characters  
240-290 machine code to block move attribute file  
1000-1250 set up the board  
1260-1280 position set mirrors  
1290-1340 position random mirrors  
1500-1810 select positions and place mirrors onto the board  
1815 machine code to copy the attribute file  
1820-1920 draw the light beam  
1950-1990 reflect the light beam  
3000-3060 score message  
5000-5040 light beam plotting routine

You can place up to five mirrors in the hall. To place a mirror, you'll need to enter the horizontal and vertical co-ordinates, and the direction of the mirror.

### Main variables

a,b READ variables  
att attribute check  
c,c\$ INPUT variables for mirror type  
h,h\$ INPUT for horizontal position of mirror  
mS,n\$ mirror characters  
n the number of dots to be plotted.  
score the running total  
v,v\$ INPUT for vertical position of mirror  
x,y co-ordinates of the random position mirrors  
x1,y1 used in position calculation  
zq a dummy variable used when calling machine code



# Tackle the Hall of Mirrors, sort the mess and win

To help you with the co-ordinates, there are letters along the sides of the hall, and the inside of the hall is mapped out like a chess board. So, decide where you want to place a mirror, enter the co-ordinates of that position when you get the screen prompt, and tell the computer which mirror type you want. This game uses double surface mirrors; that is,

they will reflect on both sides.

Once you have placed all the mirrors you want (up to a maximum of five) the light beam will be "fired". But to let you see what happens, I have dramatically reduced the speed of light! The beam will leave a trail to let you see where it has been.

And if you've planned the positions of your mirrors well, the light beam should

eventually hit one of the coloured boxes. However, if you find that all your plans have gone wrong, then you can start again by pressing CAPS SHIFT and S.

After a few goes you should be able to achieve the maximum score most times. And you should have grasped the ancient physics principle, that "the angle of incidence equals the angle of reflection".

A treat for Spectrum owners — three games to type in. Two of them are by HCW regulars and the third is from a newcomer



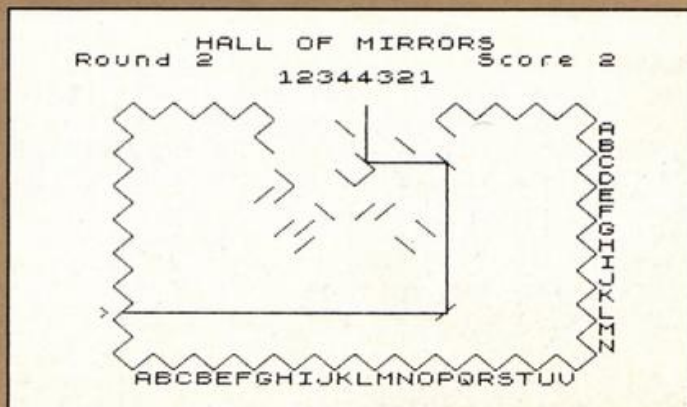


# prim bnp

There are two small pieces of machine code in this game, so once you've entered the listing into your Spectrum, do **SAVE** it on tape before you attempt to **RUN** it, just in case. You only need one slight mistake with machine code to give you a crash, from which the only recovery is to pull out the plug — and lose the program!

Screen dump of Hall of Mirrors

● In nearly all cases, the **CAPITALS** in **PRINT** statements should, unless text, be entered in **GRAPHICS** mode. In **Patience** these are indicated by an underline.



## The Sorting Room by A.G. Bird

Your job as a Post Office employee is to direct the mail in the sorting room.

Due to wear and tear on the conveyor belt, however, sorting mail does tend to get harder and harder. But as a trusted employee you must do your best.

### How it works

15 keyboard BEEP  
20-60 initialise  
100-170 start game, part of conveyor chopped  
180-240 draw scene  
250-280 name and address on letter  
290-300 letter slide  
400-580 main loop for letter's journey  
700-710 subroutine for letter down slide  
1000-1100 horizontal movement on conveyor 1  
2000-2100 correct box check  
2500-2520 end of game routine  
8000-8010 instruction  
9000-9040 graphics

### Variables

a\$, b\$ first and fourth, second and third conveyor belts  
b\$ city  
x,y letter co-ordinates  
a,b,c substring numbers  
sort number of letters  
n main loop  
m part of conveyor chopped  
z belts two and three movement  
h slide drop  
s counter for slide drop  
c correct location (score)

## Patience by Tim Lang

This is a version of **Patience** which demonstrates the use of strings and arrays to set up a pack of cards, shuffle and deal and keep track of the play.

Note the use of the hash character to print into the lower portion of the screen instead of using **INPUT** which requires the **ENTER** key to be pressed after each entry.

### How it works

100 instructions — expand or leave out  
1000 DIMension arrays and call subroutine at 1560 to set user-defined graphics  
1010 shuffle and deal cards  
1150 main loop  
1180 detect last card  
1370 detect a wrong entry and loop back  
1410 subroutine to change J,Q etc. into numbers  
1460 calculate score and offer new game.



## Listing for Hall of Mirrors

```

10 REM      Hall of Mirrors
20 REM      by David Nowotnik
30 REM      Feb. 1984
40 REM
50 REM      Initialise
60 REM
100 CLEAR 30000
110 FOR i=31000 TO 31011
120 READ a: POKE i,a
130 NEXT i
140 DATA 33,0,61,17,0,124,1,0,3,237,176,201
150 LET zq=USR 31000
160 POKE 23607,123
170 LET a=.5: LET x=32496
180 FOR i=0 TO 7
190 LET a=a*2: LET b=128/a
200 POKE x+i,a: POKE x+i+8,b
210 NEXT i
220 LET m$=CHR$ 126
230 LET n$=CHR$ 127
240 FOR i=30002 TO 30025
250 READ a: POKE i,a: NEXT i
260 DATA 33,0,88,17,148,117,1
270 DATA 0,3,237,176,201
280 DATA 33,148,117,17,0,88,1
290 DATA 0,3,237,176,201
500 REM Score
510 LET score=0: LET round=1
1000 REM      Set up the board
1010 PAPER 7: INK 0: BORDER 7: CLS
1020 PRINT TAB 8;"HALL OF MIRRORS"," Round ";round," Score ";score
1030 PRINT AT 4,4;: FOR i=1 TO 12: PRINT INK 1;m$: INK 2;n$;: NEXT i
1040 FOR i=5 TO 18 STEP 2
1050 PRINT AT i,4; INK 2;n$;AT i+1,4; INK 1;m$
1060 PRINT AT i,27; INK 1;m$;AT i+1,27; INK 2;n$
1070 NEXT i
1080 PRINT TAB 4;: FOR i=1 TO 12: PRINT INK 2;n$; INK 1;m$;: NEXT i
1090 PRINT AT 4,12;" "
1100 BRIGHT 1
1110 FOR i=5 TO 18 STEP 2
1120 FOR j=5 TO 26 STEP 2
1130 PRINT AT i,j;" ";AT i+1,j+1;" "
1140 NEXT j: NEXT i
1150 BRIGHT 0
1160 PRINT
1170 PRINT TAB 5;"ABCDEFGHIJKLMNPOQRSTUVWXYZ"
1180 PRINT AT 3,12;
1190 FOR j=1 TO 4: PRINT PAPER j;" ";: NEXT j
1200 FOR j=4 TO 1 STEP -1: PRINT PAPER j;" ";: NEXT j
1210 PRINT AT 2,12;"12344321"
1220 FOR j=5 TO 18
1230 PRINT AT j,28;CHR$ (j+60)
1240 NEXT j
1250 PRINT AT 16,3; FLASH 1;">"
1260 PRINT AT 5,11; INK 1;CHR$ 126;AT 5,20; INK 2;CHR$ 127;AT 8,15; INK 2;CHR$ 1
27; INK 1;CHR$ 126
1270 PRINT AT 10,14; INK 2;CHR$ 127;AT 10,17; INK 1;CHR$ 126
1280 PRINT AT 12,13; INK 1;CHR$ 126;AT 12,18; INK 2;CHR$ 127
1290 FOR i=1 TO 12
1300 LET x=5+INT (RND*7)
1310 LET y=11+INT (RND*10)
1320 IF SCREEN$ (x,y)<>" " THEN GO TO 1300
1330 LET a=INT (RND+1.5): PRINT AT x,y; INK a;CHR$ (25+a)
1340 NEXT i
1500 REM      Main Routine

```



# PROGRAMS

```

1510 FOR i=1 TO 5
1520 INPUT AT 0,0; ("Mirror ";i;". Enter horizontal coordinates (A to V) ")
; LINE h$
1540 IF LEN h$<>1 THEN GO TO 1520
1550 LET h=CODE h$: IF h>90 THEN LET h=h-32
1560 IF h<65 OR h>86 THEN GO TO 1520
1570 LET h=h-60
1580 POKE 23168+h,184
1590 INPUT AT 0,0; ("Mirror ";i;". Enter vertical coordinates (A to N) ");
LINE v$
1610 IF LEN v$<>1 THEN GO TO 1590
1620 LET v=CODE v$: IF v>90 THEN LET v=v-32
1630 IF v<65 OR v>78 THEN GO TO 1590
1640 LET v=v-60
1650 POKE 22556+v*32,184
1660 LET att=ATTR (v,h)
1670 IF SCREEN$ (v,h)=CHR$ 32 THEN GO TO 1720
1680 PRINT #1;"This square is already occupied"
1690 PAUSE 200
1700 POKE 23168+h,56: POKE 22556+v*32,56
1710 GO TO 1520
1720 PRINT AT v,h; FLASH 1;" "
1730 PRINT AT 21,0;"Mirror ";i;". Enter mirror "
1740 INPUT (" type (";CHR$ 126;" =1, ";CHR$ 127;" =2) "); LINE c$
1750 IF LEN c$<>1 THEN GO TO 1740
1760 LET c=CODE c$-48: IF c<1 OR c>2 THEN GO TO 1740
1770 PRINT AT 21,0;" ";
1780 PRINT AT v,h; INK c;CHR$ (c+125)
1790 POKE 23168+h,56: POKE 22556+v*32,56
1800 IF i<5 THEN INPUT "Any more mirrors (y/n) "; LINE c$: IF c$="n" OR c$="N"
THEN GO TO 1815
1810 NEXT i
1815 LET zq=USR 30002
1820 BEE 1,1: LET h=5: LET v=16: INK 1
1830 LET y=43: LET x1=1: LET y1=0
1840 FOR i=35 TO 39

1850 PLOT i,y: NEXT i: LET x=i
1860 IF INKEY$="S" THEN PAUSE 200: GO TO 1000
1870 LET zq=USR 30014: LET att=ATTR (v,h): IF att=56 OR att=120 THEN GO TO 1900
1880 IF att=57 OR att=58 THEN GO TO 1950
1890 GO TO 3000
1900 PRINT AT v,h; BRIGHT (att=120);" "
1910 LET n=8: GO SUB 5000: LET h=h+x1: LET v=v-y1
1920 GO TO 1860
1950 INK att-56: LET n=4: GO SUB 5000
1960 LET a=x1: LET x1=y1: LET y1=a
1970 IF att=58 THEN LET x1=-x1: LET y1=-y1
1980 GO SUB 5000: POKE 22528+h+32*v,att
1990 LET h=h+x1: LET v=v-y1: GO TO 1860
3000 REM Increment score
3010 LET score=score+att/8
3020 PRINT #1;" Your score in round ";round;" was ";att/8
3040 PAUSE 400
3050 IF round<5 THEN LET round=round+1: GO TO 1000
3060 CLS : PRINT AT 5,5;"Your total was ";score;" points."
4990 STOP
5000 FOR i=1 TO n
5010 PLOT x,y
5020 LET x=x+x1: LET y=y+y1
5030 NEXT i
5040 RETURN

```



# SPECTRUM PROGRAMS

## Listing for The Sorting Room

```

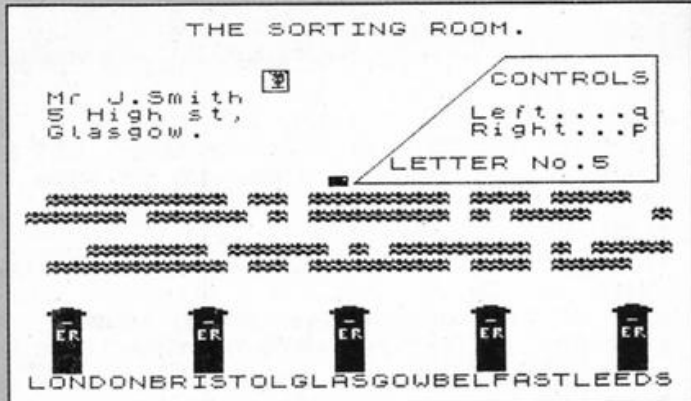
1 REM THE SORTING OFFICE By A.G.Bird. 1984
10 GO SUB 9000: GO SUB 8000:
15 POKE 23609,100
20 LET c=0: DIM a$(64): DIM b$(64)
30 LET a$="AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
35 LET b$="AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
40 BORDER 0: PAPER 0: CLS: PRINT AT 0,0: PAPER 6: INK 0:
THE SORTING
ROOM: "IAT 7,0:" By A.G.Bird.
50 INK 2: BRIGHT 1: FOR f=0 TO 30 STEP 3: PRINT AT 2,f:"DE": BEEP .01,f: PRINT
AT 3,f:"FG": BEEP .01,f+10: PRINT AT 4,f:"HI": BEEP .01,f+20: PRINT AT 5,f:"HI"
: BEEP .01,f+30: NEXT f
60 INPUT "HOW MANY LETTERS DO YOU
T TO SORT ?" : ISORT
99 REM Start of game Main Loop
100 FOR n=1 TO sort
110 LET h=0: LET s=0: LET x=9: LET y=15: LET a=1: LET b=1: LET d=1
120 IF RND>.5 THEN GO TO 100
130 LET a=INT (RND*32)+1
140 IF a=15 THEN GO TO 130
160 LET a$(a)=" : LET a$(a+32)="
170 LET b$(a)=" : LET b$(a+32)="
180 BORDER 0: PAPER 0: INK 2: BRIGHT 1: CLS
190 PRINT AT 0,0: INK 0: PAPER 6:
THE SORTING ROOM.
200 FOR f=1 TO 29 STEP 7: PRINT AT 17,f:"DE":IAT 10,f:"FG":IAT 19,f:"HI":IAT 20,f:
"HI": NEXT f
210 INK 0: BRIGHT 0: PRINT AT 21,0: PAPER 6:"LONDON":IAT 21,13:"GLASGOW":IAT 21,2
7:"LEEDS":IAT 21,61: PAPER 5:"BRISTOL":IAT 21,20:"BELFAST"
220 FOR f=2 TO 30 STEP 4: PRINT AT 4,0: PAPER 7: BRIGHT 0:
: NEXT f
230 PRINT AT 3,12: INK 5: PAPER 7: BRIGHT 1: "C"
240 PLOT 94,142: DRAW 0,10: DRAW 0,0: DRAW 0,-10: DRAW -10,0
250 PAPER 7: INK 0: GO SUB INT (RND*7)+5001
260 GO SUB INT (RND*7)+5101
270 GO SUB INT (RND*5)+5201
280 PRINT AT 6,1:"
290 INK 5: PLOT 130,90: DRAW 60,60: DRAW 60,0: DRAW 0,-60: DRAW -120,0
300 PRINT AT 3,25: INK 6: PAPER 0: "CONTROLS":IAT 5,22:"Left....q":IAT 6,22:"Right
...d":IAT 8,10:"LETTER No.5"
410 LET a=(INKEY$="q")-(INKEY$="p")
420 IF a=0 THEN LET a=32
430 IF a=33 THEN LET a=1
440 IF a=33 THEN LET b=1
450 IF d=0 THEN LET d=2
460 PAPER 0: IAT 3,1: PRINT AT 10,0:afia TO a+31:IAT 14,0:afia TO a+31
470 INK 4: PRINT AT 11,0:bfb TO b+31:IAT 13,0:bfb TO b+31
480 IF s=0 THEN GO SUB 700
490 PRINT AT x,y:
500 IF SCREEN# (x+1,y)= " THEN LET x=x+1
510 PRINT AT x,y: INK 7: BRIGHT 1:"B"
520 IF x=10 THEN GO SUB 1000
530 IF x=11 THEN LET y=y+1: IF y<0 THEN LET y=31
540 IF x=13 THEN LET y=y+1: IF y>31 THEN LET y=0
550 IF x=16 THEN GO TO 2000
560 LET z=INT (RND*2)
570 LET b=b+z: LET d=d-z
580 GO TO 400
590 REM Letter Slide
700 FOR f=31 TO 25 STEP -1: PRINT AT 1,f: INK 7: BRIGHT 1:"B": BEEP .01,f+2: PR
INT AT 1,f: " : NEXT f
710 FOR f=23 TO 15 STEP -1: PRINT AT 1+h,f: INK 7:"B": BEEP .01,f+2: PRINT AT 1
+h,f: " : LET h=h+1: NEXT f
720 LET s=1: RETURN
999 REM Letter movement Belt 1
1000 LET y=y+(INKEY$="p")-(INKEY$="q")
1010 IF y>31 THEN LET y=0
1020 IF y<0 THEN LET y=31
1030 IF SCREEN# (x,y-1)= " THEN LET y=y-1
1040 IF SCREEN# (x,y+1)= " THEN LET y=y+1
1050 RETURN

```

```

1999 REM Correct Box check
2000 IF y=1 AND t$="London." OR y=2 AND t$="London." THEN LET c=c+1
2010 IF y=0 AND t$="Bristol." OR y=9 AND t$="Bristol." THEN LET c=c+1
2020 IF y=15 AND t$="Glasgow." OR y=16 AND t$="Glasgow." THEN LET c=c+1
2030 IF y=22 AND t$="Belfast." OR y=23 AND t$="Belfast." THEN LET c=c+1
2040 IF y=29 AND t$="Leeds." OR y=30 AND t$="Leeds." THEN LET c=c+1
2050 PRINT AT x,y: " : BEEP .01,50: PAUSE 25
2100 CLS: NEXT n
2400 REM End of game routine
2500 FOR f=60 TO -50 STEP -5: BEEP .01,f: BEEP .01,f+2: BEEP .01,f+4: NEXT f
2510 BORDER 0: PAPER 0: INK 5: CLS: PRINT AT 9,3:"YOU HAVE CORRECTLY SORTED":IAT
10,61:" OF THE :sort: LETTERS."
2520 PRINT AT 21,0: " PRESS ANY KEY FOR ANOTHER GO.": PAUSE 0: GO TO 20
5000 REM Name
5001 PRINT AT 4,1:"Mr J.Smith": RETURN
5002 PRINT AT 4,1:"Mr Collins": RETURN
5003 PRINT AT 4,1:"Mrs Jones": RETURN
5004 PRINT AT 4,1:"Dr Peters": RETURN
5005 PRINT AT 4,1:"E.A.Woods": RETURN
5006 PRINT AT 4,1:"B.S.Giles": RETURN
5007 PRINT AT 4,1:"Mrs Green": RETURN
5100 REM Address
5101 PRINT AT 5,1:"1 Church st.": RETURN
5102 PRINT AT 5,1:"27 Harp Ave.": RETURN
5103 PRINT AT 5,1:"King street.": RETURN
5104 PRINT AT 5,1:"5 High st.": RETURN
5105 PRINT AT 5,1:"Oxford Road.": RETURN
5106 PRINT AT 5,1:"B Hill Rise.": RETURN
5107 PRINT AT 5,1:"P.O.Box.200.": RETURN
5200 REM City
5201 LET t$="London.": RETURN
5202 LET t$="Glasgow.": RETURN
5203 LET t$="Belfast.": RETURN
5204 LET t$="Bristol.": RETURN
5205 LET t$="Leeds.": RETURN
7999 REM Instructions
8000 BORDER 6: PAPER 6: INK 0: CLS: PRINT "You have just started work in a""P
ost Office sorting room. Your""job is to direct the letters""into the correc
t boxes at the""end of the conveyor belt system.""A malfunction in the syste
a""means that you can only control""the first and last belts and""also bel
t wear means your job""gradually gets harder."
8010 PRINT AT 21,0: INK 0: PAPER 5: " Press any key to start work. " : PAUSE 0:
RETURN
8999 REM Graphics
9000 FOR q=65768 TO 65479: READ r: POKE q,r: NEXT q
9010 DATA 0,0,90,255,153,102,255,153
9020 DATA 0,0,255,255,255,255,0,0,5,62,7,63,255,255,63,63,63
.60
9030 DATA 224,252,255,255,252,252,252,60,63,63,63,49,55,51,55,49,252,252,252,140
.172,156,172,100
9040 DATA 63,63,63,63,63,63,63,252,252,252,252,252,252,252,252
9050 RETURN

```



## Screen dump of The Sorting Room

## Listing for Patience

```

1 REM PATIENCE by T.J.LAMB
10 PAPER 1: BORDER 1: INK 6: CLS
20 PRINT AT 1,0:"COMPUTER PATIENCE":IAT 2,0:"*****"
30 PRINT AT 1,1: INK 7: "PRESS 1 FOR INSTRUCTIONS OR ANY KEY TO START"
IAT 0
40 PAUSE 0
50 INPUT "1: IF INKEY$<"I" AND INKEY$<"I" THEN GO TO 140
100 REM INSTRUCTIONS
110 PRINT "THE OBJECT OF THE GAME IS TO REMOVE THE BOTTOM CARD FROM EACHCU
LURN AND PLACE IT ON THE UPTURNED FILE." "EACH CARD MOVED MUST BE DR
ABOVE OR ONE LESS THAN THE CARD CURRENTLY SHOWING"
120 PRINT "IF A MOVE IS NOT POSSIBLE THEN PRESS SPACE TO DEAL ANOTHER CARDFRU
H THE REST OF THE PACK" "PRESS X TO END THE GAME"
130 PRINT "PRESS ANY KEY TO START": PAUSE 0
1000 LET h=52: GO SUB 1500: DIM a$(52,2): LET d$="SCDS": REM GRAPHICS "CDS"
1010 CLS: PRINT "PLEASE WAIT WHILE THE COMPUTER""SHUFFLES AND DEALS THE CARDS
"
1020 LET c$="12345678910JK": REM 1 16 GRAPHICS "T"
1030 FOR n=1 TO 13: FOR a=0 TO 39 STEP 13
1040 LET a$(n+1,c)=a$(n)
1050 NEXT a: NEXT n
1060 FOR n=1 TO 13: FOR a=0 TO 3
1070 LET a$(n+13,a,2)=a$(n+1)
1080 NEXT a: NEXT n
1090 FOR n=1 TO 52: LET r=INT (RND*52+1): LET d=a$(r): LET a$(r)=a$(r+1): LET a$(
r)=d: NEXT n
1100 CLS: FOR n=1 TO 7
1110 PRINT AT 1,n+2:n
1120 NEXT n
1130 FOR n=1 TO 35
1140 PRINT AT v(n),x(n):af(n): NEXT n
1150 REM MAIN LOOP
1160 FOR p=36 TO 52
1170 LET c=a$(p)
1180 IF p=52 THEN PRINT AT 21,0:"THIS IS THE LAST CARD " : INVERSE 1:"X to CAD
"
1190 PRINT AT 17,14:c
1200 INPUT "1: PRINT 0: INK 6:"WHILE: COLUMN ? " : IF p=52 THEN PRINT 0: INK 6:
INVERSE 1:"SPACE to DEAL": PAUSE 0: INPUT "
1210 IF p=52 THEN PAUSE 0: INPUT "
1220 IF CODE INKEY$=32 AND p=52 THEN NEXT p
1230 IF INKEY$="X" OR INKEY$="X" THEN GO TO 1460
1240 IF CODE INKEY$=55 OR CODE INKEY$=49 THEN BEEP 1,3: GO TO 1200
1250 LET c=VAL INKEY$
1260 GO SUB 1300
1270 GO TO 1190
1280 NEXT p
1290 GO TO 1460
1300 LET c=20+c
1310 IF a$(c,1)= " THEN IF c=7 THEN LET c=c-7: GO TO 1310
1320 LET a=CODE a$(c,1)
1330 LET b=a-40: GO SUB 1410
1340 LET d=b
1350 LET a=CODE c$(1)
1360 LET b=a-48: GO SUB 1410
1370 IF d<b+1 AND d<b-1 THEN INPUT "1: PRINT 0: INK 3: INVERSE 1:"WHILE: COLU
M""X to DEAL"" : BEEP 1,0: GO TO 1200
1380 LET c=a$(c): LET a$(c)= "
1390 PRINT AT v(c),x(c): "
1400 RETURN
1410 IF a=163 THEN LET b=10
1420 IF a=74 THEN LET b=11
1430 IF a=81 THEN LET b=12
1440 IF a=75 THEN LET b=13
1450 RETURN
1460 LET q=0: FOR n=1 TO 35: IF a$(n,1)<> " THEN LET q=n: NEXT n
1470 NEXT n
1480 PRINT AT 21,0: "IAT 0
1490 PRINT AT 17,0:IAT 8:q: CARDS LEFT:IAT 0
1500 IF q=0 THEN LET h=h+1: PRINT AT 19,0:IAT 8:"A NEW HIGH SCORE" FOR n=1 TO
25: BEEP .1,n: NEXT n: GO TO 1520
1510 PRINT AT 19,0:IAT 8:"HI-SCORE = " : INI
1520 PRINT AT 1,1: INK 5:"DO YOU WANT ANOTHER GAME ? (Y/N)"
1530 PAUSE 0
1540 IF INKEY$="Y" OR INKEY$="y" THEN GO TO 1010
1550 CLS: STOP
1560 REM INITIALISE
1570 BEEP .2,25: BEEP .2,20
1580 DIM v(35): DIM x(35)
1590 FOR n=1 TO 5: FOR a=1 TO 7
1600 LET v(7*(n-1)+a)=4*a-2
1610 LET x(7*(n-1)+a)=2+2*a
1620 NEXT a
1630 NEXT n
1640 RESTORE 1: FOR a=0 TO 7
1650 READ w: POKE w, "d""n""w
1660 READ w: POKE w, "c""n""w
1670 READ w: POKE w, "h""n""w
1680 READ w: POKE w, "o""n""w
1690 READ w: POKE w, "t""n""w
1700 NEXT a
1710 DATA 0,0,34,0,0,28,26,119,39,95
1720 DATA 62,42,127,62,91,127,127,127,127,81
1730 DATA 62,42,62,127,111,28,8,20,42,81
1740 DATA 0,0,0,0,95,0,0,0,0,0
1750 RETURN
9990 SAVE "PATIENCE" LINE 1

```



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## My Secret File 32K BBC £9.95

Mosaic, 187 Upper St, London  
NI 1RQ

Almost an exact replica of the Puffin book, written by John Astrop, with the same title. It is a database enabling the user to store secret information. With two secret codes to crack no one can sneak a look at your own file.

After the program has LOADED you are asked if you wish to LOAD previously saved data. If you do you can LOAD it, update, and then reSAVE it. It's that simple. On the other hand if you want to start a new file, before you have filled the previous one, about 400 or 500

entries have to be made. The file doesn't have to be filled before it can be SAVED, though. There are fifty pages to choose from, including My Vital Statistics, and Pocket Money which shows to whom it is aimed.

The complete package includes book, cassette and full instructions. I loved being secretive when I was a child, and if you do, or indeed your child does, then I think this program would get a lot of use in your household. **M.B.**

instructions	90%
ease of use	80%
display	70%
value for money	80%



## Killer Watt CBM 64 £7.95

Alligata, 178 West St, Sheffield  
S1 4ET

After a disappointing start, software available for the 64 has improved beyond all expectations. This program demonstrates the high quality becoming standard from some.

You control a spaceship and must explore a series of caves — inhabited by bizarre species — destroying light bulbs as you go. The maze is complex and, combined with the nasties, tests your reactions and delicacy of touch.

Graphically the game is of a high standard with caves scrolling from side to side. Single pixel scroll is nicely implemented

and movement is extremely smooth. Sprites design is good — I found the mechanical ducks particularly attractive. And sound is nice, the theme being Tocata and Fugue... well, nearly.

There are five skill levels and you can choose the number of protective shields on the spaceship.

A game of the highest quality which offers excellent value for money and is guaranteed to keep you twitching over the keyboard for many hours. Nice one, Alligata. **A.W.**

instructions	80%
playability	95%
graphics	95%
value for money	100%



## BC BASIC CBM 64 £57

Kuma, 12 Horseshoe Pk, Horse-  
shoe Rd, Pangbourne, Berks

BASIC 2 is adequate, but the CBM 64 offers no support for the superb graphics and sound and there are no commands for "structured" BASIC. BC BASIC, first on cassette and now in cartridge, attempts to cure this.

It offers a mind-boggling range of commands — I have no intention of describing each. The quality is variable. Commands for sound, sprites and structured BASIC are notable, high resolution commands effective if not over-complex. The "machine code" aids are a joke. Apart from block save and DEEK and DOKE, they are of limited use. A machine code monitor would have been a better option.

Overall, the package functioned well, although I noticed the system had been somehow tweaked. A warm reset (SYS 64738) wouldn't work and my own monitor could not be used with the cassette in place (and it lives at \$1000!)

An improvement on Simon's BASIC, but also ill thought-out. The author appears to have tried to cram in as much as possible rather than keep a balance. A good product, if you use BASIC only, but too highly priced.

instructions	90%
ease of use	75%
graphics	N/A
value for money	60%



# Useful... and fun

Reviews of utilities — and a  
couple of programs for  
amusement. Our team tells  
you if they're worth the  
money

## Bel Graph 32K BBC £14.89

Bel Tech, Stanmore Industrial  
Estate, Bridgenorth WV15 5HP

A flexible graph drawing program meant for serious educational or business uses. There are many options including line graphs, barcharts, histograms, pie charts besides fairly comprehensive function plotting routines. The program can accept and store up to four sets of data of which one can be time related and plotted accordingly.

The data can be entered from the keyboard, from a previously stored file or even generated by the function you specify. This gives you a great range of options which are very valuable. Each set of data can have up to

52 values. The ability to label each set of data is useful. There is also an Epson screen dump, on the disc version at least, which produces very pleasant results. There are some problems however. One causes the data to be badly formatted, overlapping in places, and the other prevented me from plotting a line graph at all — giving an error message every time. I haven't yet had time to send in the user registration and give them my problems. Disc version £16.45.

**D.C.**

instructions	70%
ease of use	85%
graphics	90%
value for money	60%



## Microtext 48K Oric/ Atmos £15

Microplot, 19 The Earls Croit,  
Cheylesmore, Coventry CV3 5ES

Microtext is described as an easy to use text and data processing package. It never actually says it is a wordprocessor or a database. I'm not surprised...

When LOADED, the first thing that happened was "UDEF'D STATEMENT ERROR AT 20". A GOSUB statement to a non-existent line. I had to LOAD the program at slow speed. I typed in a few sentences to realise that it was in overwrite mode so I went into insert mode — which all decent wordprocessors default to — and tried to type again.

Being mostly in BASIC, if you try to insert a letter at the beginning, you have to wait a couple of seconds for the program to adjust all the letters. That's just for one letter and, just to put you off, it pings every time! I then tried replace and search. Up came a Syntax Error. I typed CTRL-D by mistake. Syntax Error. On many occasions, I lost a whole text for no apparent reason. Hmmm...

There is a distinct lack of serious software for the Oric but I'm surprised any software house has the nerve to market a program of this quality. Avoid like the plague. **S.S.**

instructions	50%
ease of use	10%
display	10%
value for money	0%





## Picture Book Oric £4.95

Softbacks, PO Box 257, Watford  
WD1 3LQ

Very young children can build up pictures by typing in the names of familiar objects and seeing them appear "by magic". From the child's point of view, Picture Book is an exciting new way of making pictures rather than a spelling practice. This is important as it puts skills of writing and spelling on the right perspective. Or at least, that's the idea behind this program.

Technically, this program is very good compared with other educational, usually written by teachers who know the subject but do not know how to

program. Oric graphics are used well and it is well fool-proofed. There is facility to SAVE and LOAD pictures created using this program.

I do agree that writing and spelling are simple means of enabling the child to do something he or she wants, as the inlay card says. But whether a child who is still learning to spell words such as "TOY" is capable of LOADING this program and using the QWERTY keyboard is another matter. S.S.

instructions	100%
ease of use	90%
display	90%
value for money	90%



## Reading Aid 2 48K Spectrum £17.19

James Nisbet & Co. Digwell Pl,  
Welwyn, Herts

This second in the series of features of introductory SCREENS with identical, and equally abysmal, screen presentation.

Because you can read, you probably aren't aware how complex it is. If your child has problems, it can be frustrating to try to help because you don't understand why they can't do it properly. This may help by outlining some clues we use when reading.

Although we were taught to "sound the letters" we don't now because we use clues to read quickly. Many children find this a difficult process and this series

will help diagnose which clues are causing problems. Some clues are ..... others are not.

No, it's not a mistake, just an example of the "cloze" technique used. Can you supply the missing word. As in Aid 1, the child types a response and, if correct, it floats into position. No fuss is made of incorrect responses. They are recorded to be printed out by an adult.

Among the items dealt with: word forms, rhyme clues, anticipation, similar consonant blends and endings. Sadly, price and unimaginative presentation make this less than a best buy. D.M.

instructions	100%
ease of use	80%
display	10%
value for money	35%



## Computer Studies 48K Spectrum £8.95

Scisoft, 5 Minster Gdns, New-  
thorpe, Eastwood, Notts

A well packaged, impressively documented suite of programs designed for students of 13-plus and aimed at O-level and CSE computer studies.

It features flowcharts, CESIL (an introduction to machine language), logic gates, truth tables, Karnaugh maps, bases and a logic processor. Each is graphically illustrated and accompanied by enough BEEPs to drive you mad if your Spectrum is amplified!

None of the programs can actually teach its subject, though the manual helps. It will, however, show up areas in which you are weak and give pointers. In effect you are asked to respond to prompts and the computer will draw the flowchart, print the truth table, calculate the number in base 96 or show the logic system you've designed.

Perhaps the most valuable feature is the built-in revision advice which considers how long you have until your exam and tailors suitable revision for you. Add to that a built-in mock exam, complete with grade estimator, and you have a really first class Dutch uncle.

A useful package, but some sections are difficult to load and there is still some poor error trapping of user input. D.M.

instructions	90%
ease of use	80%
display	95%
value for money	90%



# What will they learn from these?

Your computer as a teacher.  
Our experts explain how these  
five measured up

## Story Book Oric £4.95

Softbacks, PO Box 257, Watford  
WD1 3LQ

The inlay card describes this as a challenging game that develops reading skills.

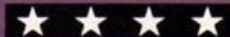
When the program is run it displays various options. If the child chooses option 1 — recreate story — at this point, a story will be displayed except that all the letters are replaced by underscore characters. The child must guess the words to the story. If he/she gets totally stuck, the word can be revealed by pressing "?". When the whole story has been guessed and the help facility has not been over-used, a tune will be played in three-part harmony! The

program has facilities to create stories and SAVE for later use. Obviously, the parent can type in a proverb or a story and SAVE it on cassette.

Technically, this program is well written, fool-proofed and has many useful options. If a story is long, the only clue is the punctuation and the game becomes rather like a wild guessing game. But it is fun to play and a child could learn a proverb or two.

It's better than a lot of the supposedly educational software available for the Oric today. S.S.

instructions	100%
ease of use	80%
display	80%
value for money	75%



## Reading Aid 1 49K Spectrum £17.19

James Nisbet & Co. Digwell Pl,  
Welwyn, Herts

Designed to identify specific reading problems — reversing letters and substituting one word for another — this sombre-looking double tape package of eight programs seems to be aimed at teachers rather than parents.

Comprehensive notes for the "teacher/supervisor" detail the sentences used and the options, including the facility to print and analyse the user's problem. Brief mention is made of the need to talk to the user about the responses.

Basically, sentences are shown with gaps and the child types in one of the two options. Input is fully error-trapped and, if the word is correct, it winds its way into the gap with BEEPs. An incorrect response falls through and the user is expected to try again.

I'm not a great believer in dressing up all educational programs as space games, but I do feel attractive screens are important. This is about as attractive as a tax return and, for parents, of questionable use. There's not much point in diagnosing what a problem is if you don't know how to cure it. The programs won't do that and, at this price, a school would have to be well-off to consider it. D.M.

instructions	100%
ease of use	80%
display	10%
value for money	40%





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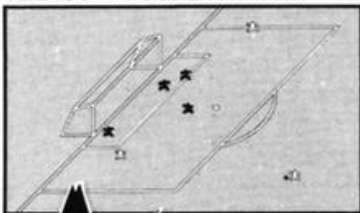
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\* ZX81 Chart

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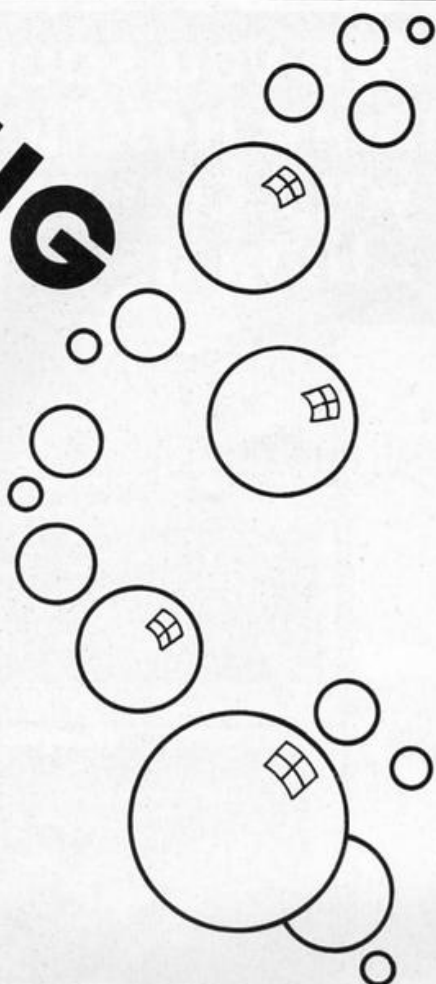
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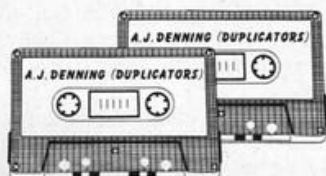


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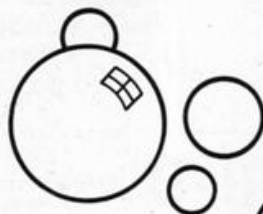
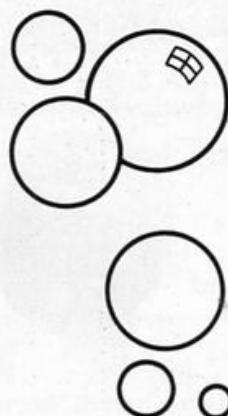
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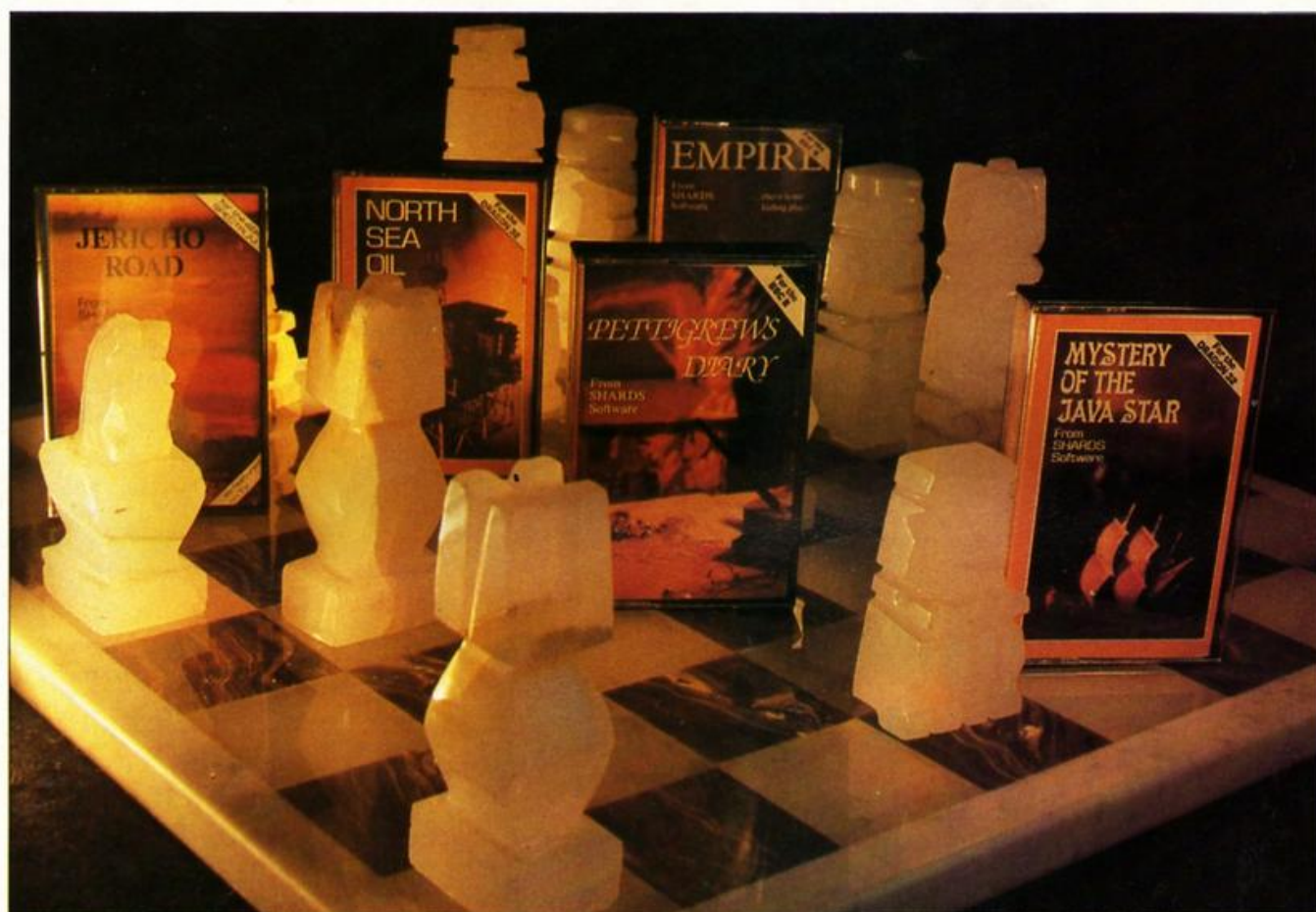
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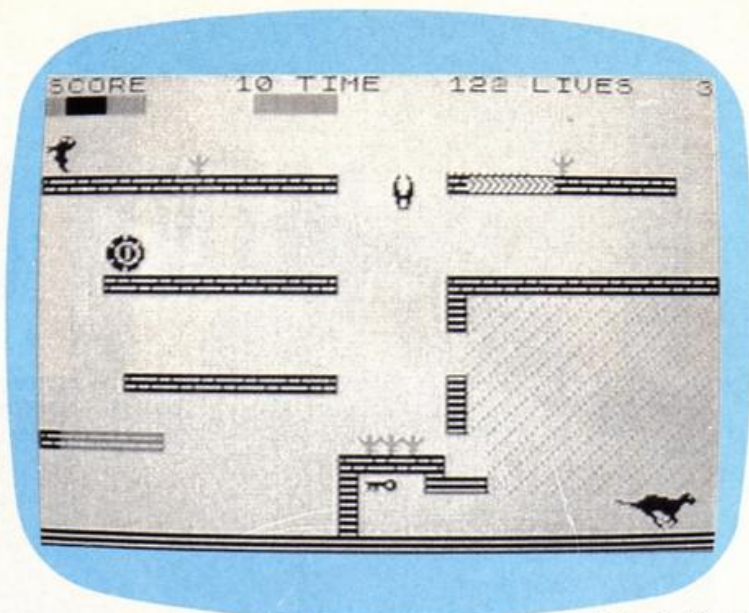
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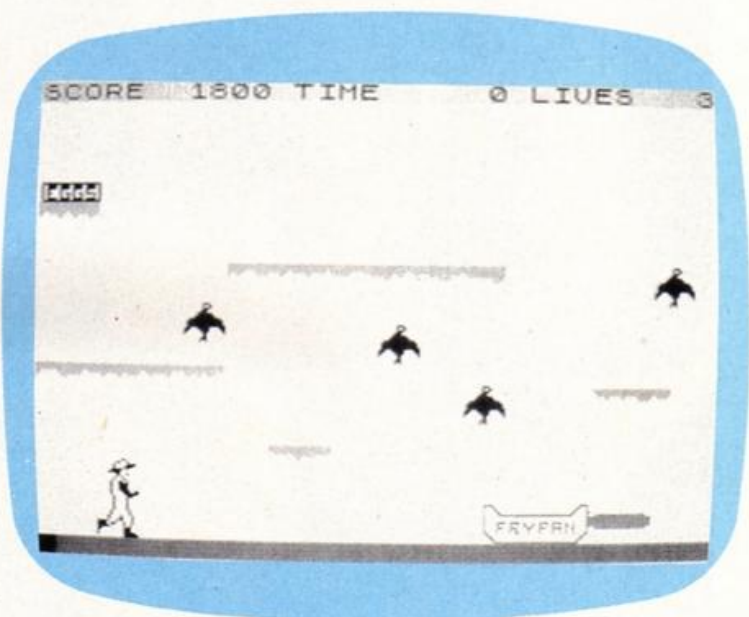
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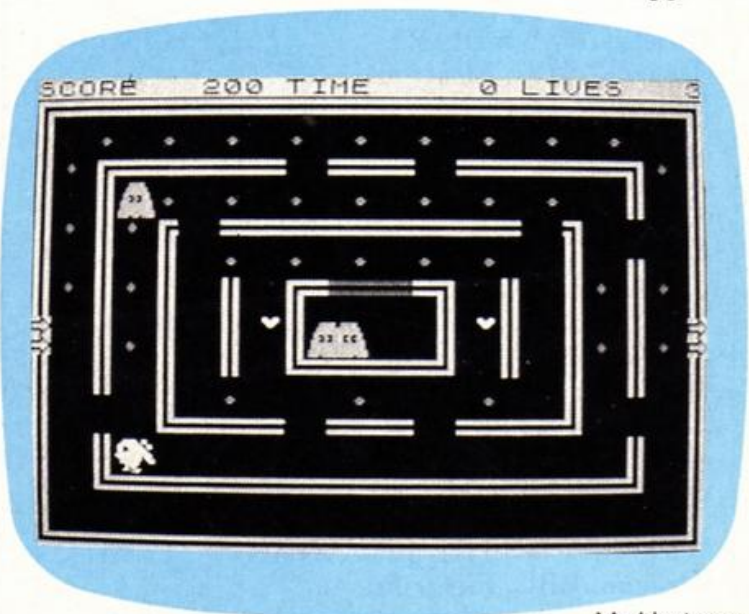
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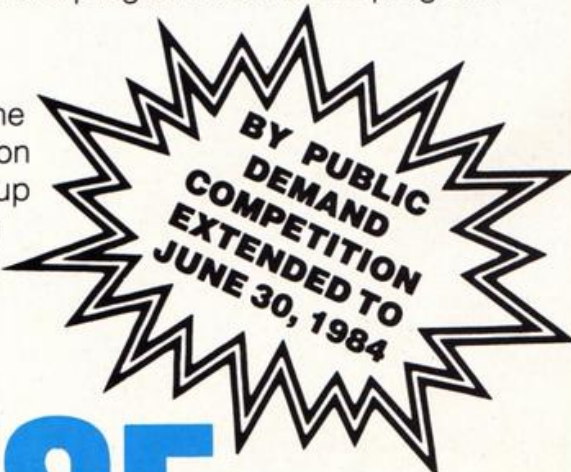
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All versions of "The Hobbit" are identical with regard to the adventure program. Due to memory limitations, BBC cassette version does not include graphics.

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## Guttong Gotton Sord M5 £23.95

Computer Games, Goldings Hill, Loughton, Essex IG10 2RR

You play the part of a railroad builder. First you have to lay tracks to the station and then drive the train through the stations.

The screen is divided into 24 blocks, one of which is empty, exactly like sliding block puzzles, popular some years back. Each block has a track on it and you have to move them so that the train, which is moving continuously, won't go into a dead end. It's no good simply keeping the train running as you have to collect all the passengers at the stations, located at the

edge of the screen, to go on to the next screen. There are enemy trains which try to crash into you but, but by manipulating the tracks, you can make them crash into each other.

The graphics are very nice and sounds very impressive. The game has some jolly tunes and the overall presentation is excellent. If you want a mind stimulating game which also has the addictive quality of a real time arcade game, buy this. It is great fun to play and is refreshingly different. S.S.

instructions	90%
playability	90%
graphics	90%
value for money	90%



## Step Up Sord M5 £23.95

Computer Games, Goldings Hill, Loughton, Essex IG10 2RR

The instructions explain that you have to climb 10 flights of stairs, jump over the obstacles or evade them with your barrier, get to the top and escape with the friendly UFO before your energy runs out. You control a cute little figure and make him climb stairs. With a quick push on the left edge of the attack button, you can make him jump, or the right edge to make him invincible for a few seconds.

Even on the first screen, there is a huge number of nasties, including spiders, mice, spider's webs and monsters wandering around and, at first, it can be

frustrating as you lose your three lives in a matter of seconds. But if you persevere, you will eventually get to the top to get rescued by the UFO, then there's the next screen where there's even more spiders, mice, monsters...

The characters are well defined and animation is good. However, the sprite feature is not used to its fullest. In fact, some characters aren't even sprites, but hardened arcade players could do worse than buying this highly original game. S.S.

instructions	80%
playability	70%
graphics	70%
value for money	80%



## Backgammon TI-99/4A £7

Not Polyoptics, from Stainless, 10 Alstone Rd, Stockport, Cheshire

This opportunity to challenge the TI was greeted enthusiastically by our household, but we were soon to be disappointed.

The program contains options to either play against the computer or another player. During the first attempt at the one player game, while the computer was considering its second move, the program crashed with a Bad Value in 2010.

The second game I managed to win, but at its end the board disappeared and I was informed my score was now one, meaning I had won one game. Scoring in the original game is done on a points system, the most being awarded for a backgammon. Omitting this seems very strange, particularly as the program includes an option to double.

On my third attempt everything was just going well when the display partially scrolled off the screen and the program locked. This couldn't be cleared, so I had to quit and re-load.

Fortunately, several subsequent games passed uneventfully, but the computer proved to be a fairly pedestrian and not altogether intelligent opponent. In view of the limited memory available, the program overall seems reasonable, but has little to offer an experienced player. Needs Extended BASIC.

J.W.

instructions	60%
playability	50%
graphics	50%
value for money	80%



# For the fun of it...

Build a railway, play  
backgammon... two games in  
this collection tested by our  
review panel

## Shakey/ Barrier Attack Sord M5 £8.95

Computer Games, Goldings Hill, Loughton, Essex IG10 2RR

Snakey is a typical snake game where you control a hungry snake that feeds on frogs whilst avoiding rocks and the electrified fence. Also, as Snakey grows he restricts his own movement. The snake is very colourful, movement is fast and key response is good. In the tiny memory of the standard M5, it even has a joystick option and difficulty levels.

The second game is rather disappointing in comparison. The blurb says that in the year 4501, the uneasy cosmic peace is about to be shattered by barbarians, the uncouth warriors

of the dreaded Oasys Squadron. You, as the commander of the 17th zone Defence Battalion, must prevent them from destroying your ship and over-running your section of the galaxy, and so on. Sounds incredibly exciting doesn't it? Well, it's a simple vertical scrolling game. Your ship at the top of the screen can be moved left and right. By pressing 1 or the attack button, you can clear a path. Graphics are simple and sound is boring.

To conclude, not a bad package, second game could have been better. S.S.

instructions	95%
playability	60%
graphics	60%
value for money	70%



## Quasimodo/ Q Bono TI-99/4A £8

Stainless, 10 Alstone Rd, Stockport, Cheshire

Here's two Extended BASIC games for the high scorers among us. Each is loaded separately. Quasimodo requires the use of a joystick, but Q is for keyboard only.

In Quasimodo you have five lives with which to survive as many screens as you can — ringing bells all the way! The purpose is to rescue damsels in distress. On each of several screens you run and jump along a brick wall. Hazards to avoid are combinations of arrows, cannonballs and holes in the wall. Points are scored for ringing a bell or rescuing a maiden.

Q Bono is a simple yet addictive game. Your man starts at the top of a pyramid of cubes. Using four arrow keys to control his diagonal movements he must travel across all the cubes which changes their colour to cyan. He is pursued by a snake which will take one of his lives if both land on the same cube together. After the first screen each cube must be visited twice. In subsequent screens this number increases. If you've a black and white TV, numbers can be shown on the cubes to indicate colour changes.

J.W.

instructions	80%
playability	80%
graphics	75%
value for money	100%





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to escape  
eat the  
Mouldfish  
live**

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# keys e... ne sh to

For owners  
type in. Will  
thy from the  
an you avoid  
tions of the  
sh?



```

390 IFK$=CHR$(11)AND SCRN(X,Y-1)<106 THEN Y=Y-1
400 IFY=7THEN GOSUB 2000
410 IFX<=1 THEN X=2
420 PLOTX,Y,"h"
430 PLOTMX,MY," "
450 IFMY<Y AND SCRN(MX,MY+1)<106THEN MY=MY+1:GOTO510
460 IFMX<X AND SCRN(MX+1,MY)<106THEN MX=MX+1:GOTO490
470 IFMY>Y AND SCRN(MX,MY-1)<106THEN MY=MY-1:GOTO490
480 IFMX>X AND SCRN(MX-1,MY)<106THEN MX=MX-1
490 IFMX<=1 THEN MX=2
510 PLOTMX,MY,"!"
520 IFSCRN(X,Y)=33 THEN 1900
530 GOTO312
1800 PLOTX,Y,"m":GOSUB2200
1810 LI=LI-1:IFLI<=0THEN 2100
1820 CLS:PLOT9,13,"YOUR BONUS HAS RUN OUT":WAIT50
1830 PLOT11,15,N$:WAIT90
1835 GOSUB2600
1840 GOTO45
1900 PLOTX,Y,"m":GOSUB2200
1910 LI=LI-1:IFLI<=0THEN 2100
1920 CLS:PLOT9,13,"THE MONSTER GOT YOU":WAIT50
1930 PLOT11,15,N$:WAIT90
1935 GOSUB2600
1940 GOTO45
2000 IFD<=0 THEN 2020
2010 Y=8:RETURN
2020 IF LI<5 THEN LI=LI+1
2030 L=L+1:SC=SC+B0:GOSUB 2600
2035 CLS
2040 PLOT9,13,CHR$(142)+" CONGRATULATIONS"
2050 PLOT9,14,CHR$(142)+" CONGRATULATIONS"
2060 PRINT:PRINT"YOU HAVE GOT "L" PARTS OF THE LEBASI"
:PRINT
2070 PRINTSPC(14)"TREASURE":WAIT200
2080 PRINT:PRINTSPC(11)N$:WAIT100
2090 GOTO45
2100 CLS
2105 PRINT"YOU HAVE NO MORE LIVES LEFT":PRINT
2110 PRINT"YOUR SCORE IS "SC:PRINT
2120 PRINT"YOU HAVE "L" PART(S) OF THE LEBASI TREASURE
"
2130 PRINT:PRINT"GET READY FOR ANOTHER GAME"
2140 WAIT 2000:GOTO 27
2200 FORT=12 TO 1 STEP-1:WAIT10
2230 MUSIC1,6,T,10
2240 NEXTT:PING
2250 WAIT100
2260 RETURN
2600 IF SC>8000 THEN D=5 ELSE D=4
2610 IF SC>16000 THEN D=6
2620 IF SC>24000 THEN D=7
2630 RETURN
2990 REM GRAPHICS + VARIABLES
3000 FORT=46344 TO 46351:READG:POKET,G:NEXTT
3010 FORT=46376 TO 46391:READG:POKET,G:NEXTT
3020 FORT=46912 TO 46919:READG:POKET,G:NEXTT
3030 FORT=46920 TO 46927:READG:POKET,G:NEXTT
3040 FORT=46928 TO 46935:READG:POKET,G:NEXTT
3050 FORT=46936 TO 46943:READG:POKET,G:NEXTT
3060 FORT=46944 TO 46951:READG:POKET,G:NEXTT
3070 FORT=46952 TO 46959:READG:POKET,G:NEXTT
3100 DATA 20,42,8,20,28,28,34,34
3110 DATA 0,1,3,15,30,60,62,63,0,0,32,56,60,62,62,62

```



## Pyramid by Sean Rogers

You have just had the misfortune of being transported to the inside of a pyramid from which there seems to be no escape.

### How it works

10-27 set colour, turn off caps, cursor and key-click, reset DATA pointer  
30-40 branch to user-defined graphics and instructions  
45 sets variables  
47-317 set up screen  
318-420 move you around screen, check for keys, plot you on screen  
430-530 move monster and check if you have been killed  
1800-1940 routine for when bonus runs out and for when the monster gets you  
2000-2090 check if you have enough keys if you make it to the top  
2100-2140 message when all lives lost  
2200-2260 music  
2600-2630 routine to see how many keys are needed  
3000-3170 user-defined graphics  
3180-3190 more variables  
3540-3630 instructions

You must run around and collect the required number of keys and then make your way to the top to get a part of the Lebasi treasure.

Do this as fast as possible and you'll get a good bonus.

By the way, watch out for the monster!

### Main variables

X,Y your position  
BO bonus  
LI lives  
SC score  
MX,MY monster's position

Movement is by the cursor keys.

The pyramid might look a bit like a Christmas tree, but I needed the space.

When your bonus drops below 1,000 the fourth digit will stay at 0 and so on. This will make it harder to notice when your bonus is low.

### Hints on conversion

PLOT in Oric BASIC is the same as PRINT AT. The Oric uses an 8 x 6 grid for user-defined graphics compared with the 8 x 8 of most other computers.

```
3120 DATA 12,18,12,15,12,20,34,51
3130 DATA 2,10,14,10,2,2,7,7
3140 DATA 63,63,63,63,63,63,63,63
3150 DATA 32,48,48,56,60,62,62,63
3160 DATA 1,3,3,7,15,31,31,63
3170 DATA 4,4,31,4,4,4,14,31
3180 SC=0:LI=3:D=4
3190 N$="HERE WE GO AGAIN"
3200 RETURN
3540 CLS:PRINTSPC(11)"P Y R A M I D"
3550 PRINT:PRINT:PRINT
3560 PRINT"THE OBJECT OF THE GAME IS TO GET IN":PRINT
3570 PRINT"THE FIRST GAME AT LEAST 4 KEYS FROM":PRINT
3580 PRINT"THEN ON EVERY 8000 POINTS YOU NEED":PRINT
3585 PRINT"ONE EXTRA KEY UNTIL YOU NEED ALL 7.":PRINT
3590 PRINT"YOU THEN GO TO THE ROOM AT THE TOP":PRINT
3600 PRINT"OF THE PYRAMID TO GET A PART OF THE":PRINT
3610 PRINTSPC(11)"LEBASI TRESURE"
3620 PLOT13,26,"PRESS A KEY"
3630 GETA$:RETURN
```

### Listing for Electric Eel

```
1 REM ELECTRIC EEL by Simon Overy
10 GOSUB9000
20 TEXT:CLS:PAPER1:INK0
21 PRINTSPC(50);CHR$(4);CHR$(27);
22 PRINT"NELECTRIC EEL";CHR$(4)
23 SOUND1,37,0:SOUND2,75,0
24 PLAY3,0,1,4000
25 PLOT13,10,"By Simon Overy":WAIT300
40 GOSUB160:GOSUB7000:GOSUB6000
50 GOSUB5000:GOSUB4000
90 IFYN$="Y"THEN40
95 POKE48035,7:CLS:EXPLODE:END
160 CLS:PAPER3:PRINTSPC(76)
170 PRINT,"You are an ELECTRIC EEL "
180 PRINT,"and must swim around the "
190 PRINT,"aquarium eating MOULDFISH"
200 PRINT,"( [ ) but avoiding SPIKE "
210 PRINT,"FISH( \ ),the glass sides"
220 PRINT,"and your own tail! "
230 PRINT," A loud noise indicates"
240 PRINT,"that you must swim to the"
250 PRINT,"top before your oxygen "
260 PRINT,"runs out.Once you are "
270 PRINT,"fully oxygenated you can "
275 PRINT,"either turn left or right"
276 PRINT,"You can only surface when"
280 PRINT,"in need of oxygen .":PRINT
285 PRINT" HINT:Spikefish have side suction !? !?":

290 FORI=19TO24:PLOT1,I,21:NEXTI
300 PLOT2,19,"SCORING:-"
310 PLOT9,21,"The deeper the better!"
320 PLOT2,23,"ARROW KEYS TO MOVE"
330 PLOT1,25,"Hit any key for a swim...":GETK$
340 FORI=1TO15:SOUND1,T(I)*10,0
350 SOUND2,T(I)*100,0:SOUND3,T(I)*200,0
360 PLAY 7,0,1,2000:WAIT35:NEXTI
370 RETURN
```





## Electric Eel by Simon Overy

You are an eel in a large aquarium and to stay alive you must swim about eating one kind of fish but avoiding the other type.

### How it works

20-25 title  
160-330 instructions  
340-360 tune  
4000-4080 end of game  
5000-5910 main game routine  
6000-6170 display start screen  
7000-7010 set game variables  
9000-9530 initialisation and user-defined graphics

A loud continuous noise tells you that you are short of oxygen and must swim to the surface within a certain time.

The deeper the Mouldfish are the more points you will score for eating them. The eel increases in length every time it eats something.

The game ends when either your oxygen runs out, you are hit — or touched horizontally — by a Spikefish, or there are no Mouldfish left.

### Variables

SC present score  
HI high score  
OX indicates oxygen needed  
XC counter for oxygen left  
EP(I,J) position of eel  
EF,EB front, back of eel  
MF(I,J) position of Mouldfish  
MC counter for Mouldfish left  
EX,EY direction of eel  
T(I) tune array

### Hints on conversion

Leave out all the POKEs and use your own computer's clock. Omit double height title (CHR\$ 4 and 27) and change 6000-6170 to suit your own screen.

POKE 48035,7 turns CAPS off  
POKE (hash)26A,10 turns off key-click and cursor  
DOKE 630,n controls internal timer  
CHRSs 91, 92 and 93 are the user graphics



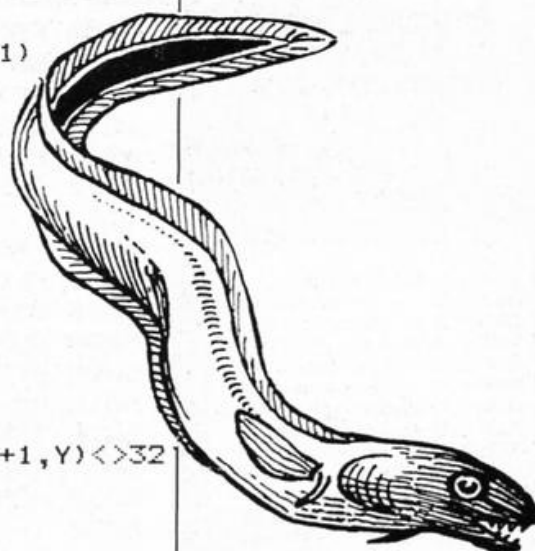
```

4000 FORI=100TO500STEP2
4010 SOUND1,I,10
4020 NEXTI
4030 CLS:PAPER5:INK4:PRINTCHR$(4):ZAP
4040 PRINTSPC(160);CHR$(27);"JS C O R E 1 ";STR$(SC)
4050 IFSC>HITHENHI=SC:HI$=RIGHT$(STR$(SC),LEN(STR$(SC)
)-1)
4060 PRINTCHR$(4)
4070 PLOT1,20,"Hit 'Y' for play , any other to stop."
4080 K$=KEY$:GETYN$:RETURN
5000 DOKE630,1600
5008 REPEAT
5015 RR=RND(1)
5016 IFRR<0.01ANDOX=0THENOX=1:XC=0
5017 IFOX=1THENGOSUB5800
5020 SS=SCRN(EP(EF,1),EP(EF,2))
5030 IFSS=32THENGOSUB5070:GOTO5055
5040 IFSS=91THENGOSUB5180:GOTO5055
5052 SS=1:PLOTEP(EF,1),EP(EF,2),93
5055 UNTIL MC=0 OR SS=1 OR XC=35
5060 RETURN
5070 PLOTEP(EF,1),EP(EF,2),93
5080 PLOTEP(EB,1),EP(EB,2),32
5090 EF=EF+1:EB=EB+1
5100 IFEF=401THENEF=1:WP=399:GOTO5125
5110 IFEB=401THENEB=1
5120 WP=-1
5125 K$=KEY$:IFK$<>" "THENGOSUB5500
5130 EP(EF,1)=EP(EF+WP,1)+EX:EP(EF,2)=EP(EF+WP,2)+EY
5140 IFDEEK(630)>1000THEN5170
5150 PLOTMF(MC,1),MF(MC,2),32:MC=MC-1
5160 DOKE630,1600
5170 RETURN
5180 PLAY 7,0,1,2000
5190 SOUND 1,100,0
5200 SOUND 2,500,0
5210 SOUND 3,999,0
5220 SC=SC+(10*EP(EF,2)):GOSUB5900
5230 FORI=1TOMC
5240 IFMF(I,1)=EP(EF,1)ANDMF(I,2)=EP(EF,2)THENII=I
5250 NEXTI
5260 PLOTMF(II,1),MF(II,2),32
5270 X=INT(RND(1)*35)+2:Y=INT(RND(1)*22)+3
5280 IFSCRN(X,Y)<>32THEN5270
5290 MF(II,1)=X:MF(II,2)=Y:PLOTX,Y,91
5300 IFEB>3THENEB=EB-3
5320 II=0:DOKE630,DEEK(630)+350
5330 RETURN
5500 K=ASC(K$)
5510 IFK=8THENEX=-1:EY=0
5520 IFK=9THENEX=1:EY=0
5530 IFK=10THENEX=0:EY=1
5540 IFK=11THENEX=0:EY=-1
5550 RETURN
5700 EP(EF,2)=EP(EF,2)+1
5702 TT=DEEK(630):GETK$:GOSUB5500:DOKE630,TT
5703 EP(EF,1)=EP(EF,1)+EX
5705 EY=0:OX=0:XC=0
5710 RETURN
5800 IFEF(EF,2)=2THEN5700
5805 SOUND1,1000,0:SOUND2,300,0:PLAY3,0,1,2000

```



# ORIC PROGRAMS



```

5810 XC=XC+1:RETURN
5900 PLOT10,26,RIGHT$(STR$(SC),LEN(STR$(SC))-1)
5910 RETURN
6000 TEXT:CLS:PAPER4:INK2
6010 FORI=0TO2:FORJ=1TO38:PLOTJ,I,22:NEXTJ,I
6020 PLOT1,26,23:PLOT2,26,0
6030 PLOT3,26,"SCORE:"
6040 PLOT20,26,"HIGH:":PLOT26,26,HI$
6050 FORI=3TO24
6060 PLOT1,I,148:PLOT38,I,148
6070 NEXTI
6080 FORI=1TO38:PLOTI,25,148:NEXTI
6090 FORI=1TO10
6100 X=INT(RND(1)*32)+4:Y=INT(RND(1)*19)+4
6110 IFSCRN(X-1,Y)<>32ORSCRN(X,Y)<>32ORSCRN(X+1,Y)<>32
THEN6100
6120 PLOTX-1,Y,SF$
6130 X=INT(RND(1)*35)+2:Y=INT(RND(1)*19)+4
6140 IFSCRN(X,Y)<>32THEN6130
6150 PLOTX,Y,91:MF(I,1)=X:MF(I,2)=Y
6160 NEXTI
6170 RETURN
7000 SC=0:EF=10:EB=1:EX=0:EY=-1:MC=10
7010 EP(10,1)=2:EP(10,2)=24:RETURN
9000 DIMEP(400,2),T(15)
9010 POKE#26A,10:POKE48035,0
9030 FORI=46808TO46831
9040 READJ:POKEI,J

```

```

9050 NEXTI
9060 SF$=CHR$(1)+"\ "+CHR$(2)
9070 FORI=1TO15:READJ:T(I)=J:NEXTI
9080 RETURN
9500 DATA 12,12,18,30,33,33,45,18
9510 DATA 0,18,45,12,12,45,18,0
9520 DATA 12,18,33,45,45,33,18,12
9530 DATA 5,15,25,15,8,9,10,5,15,
      25,15,8,12,16,20

```

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## U.S. SCENE

# Sales slow for IBM micro

Let's start this week's column with a few items of general interest. On a seemingly contradictory note, IBM has announced that it expects to increase production of its personal computers by about 300 per cent this year. At the same time, dealers selling the new PC jr. have stated that their sales have been running far below expectations. I feel the main reason for this is a contradiction between the price of the unit and its capabilities.

For obvious reasons, IBM did not want to make the machine compatible with its big brother the PC. Yet most dealers feel that they could sell lots more of the machines if they came with a better keyboard, more memory expansion capability, and a second disc drive. With all these limitations, coupled with an over-\$1,000 price tag, the machine seems to be suffering from a confusing market image. Business users look to it to be used as a small business computer, yet the Apple IIe or the Kaypro (to cite but two examples) cost less while offering more. On the other hand, in its most basic form, the machine is still very expensive and limited in performance compared with other units designed for use in the home.

Apparently IBM has loads of the machines awaiting shipment in various warehouses. In order to improve sales, some dealers have been discounting jr. systems as much as \$300 down from the \$1,700 list price, and including up to four free software packages. Other dealers are offering the \$669 machine (in its most basic form) for free if the purchaser buys a complete system. It appears as though IBM is waiting to let the marketplace decide into what niche the machine will fit, and is also waiting to see what sort of software will be developed for it. This is no surprise as this is exactly the same approach it used when the PC was debuted.

One thing is for sure: with such a fabulous marketing budget and the name IBM behind it, the firm need not produce the best product in order to survive. We shall certainly see what happens.

I always wanted to know exactly how much money schools were spending on computers — and now I have a fairly good idea. A recent study, called *Microcomputer Hardware and Software in the El-Hi Market, 1983-87* has just been completed by Knowledge Industry Publications, of White Plains, New York. The El stands for elementary and the Hi stands for junior and high schools, by the way.

Among other interesting statistics, we learn that these schools bought \$448m-worth of microcomputer equipment last year of which only \$38m was spent on software. Schools purchased about 180,000 microcomputers, bringing the total in use to approximately 400,000. The study guesses that this cumulative total could rise to as much as 2m units in use by the end of 1987. Apparently more than two-thirds of all schools have at least one desktop computer.

So what is in use? Apple, Radio Shack (Tandy to you), and Commodore supplied 87 per cent of all computers purchased by schools last year. No surprise there, I suppose. This study, by the way, did not mention either the number of items or the dollar value of computers and software that has been donated to schools. Now that would be an interesting statistic!

That's all for this week.

Bud Izen, Fairfield, California





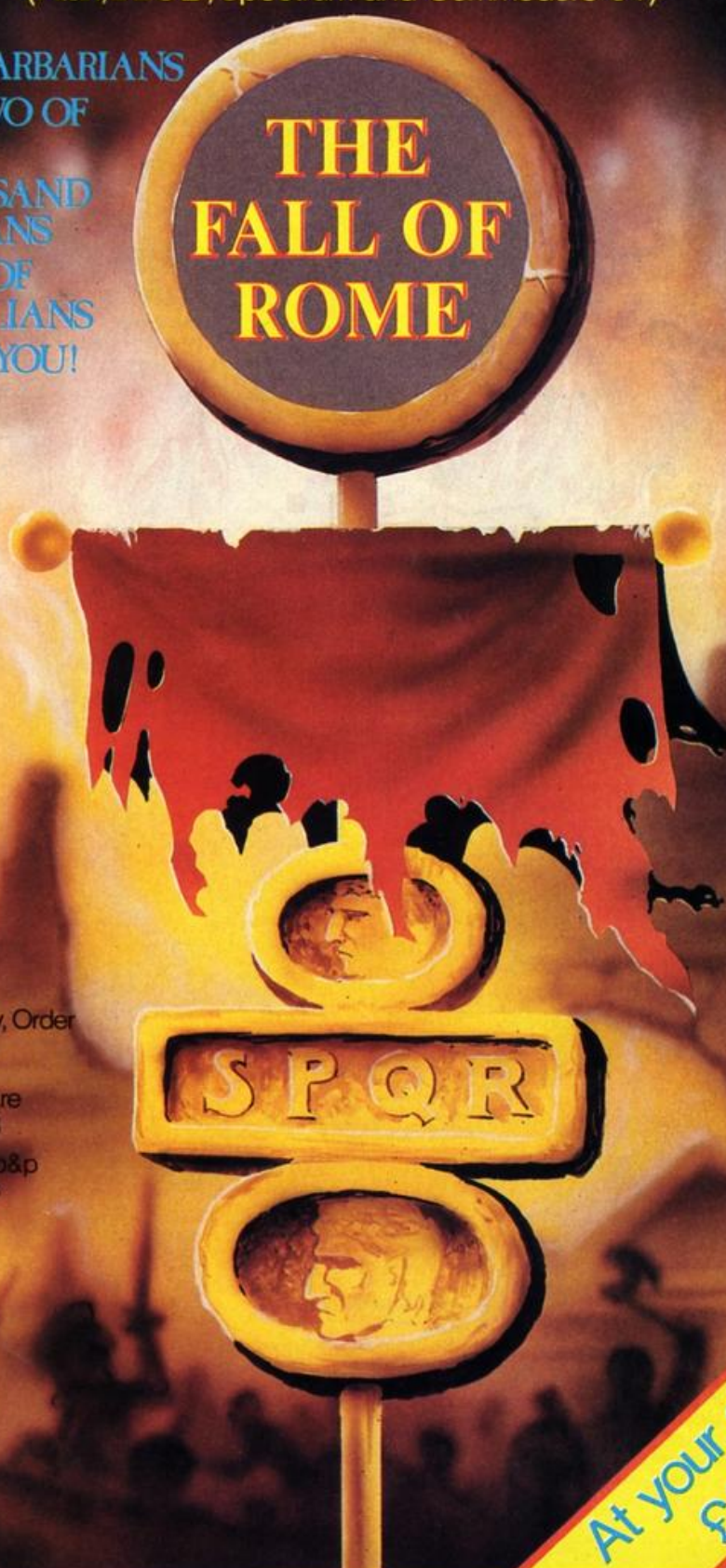
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2 UGHI	Softek (-)
3 Hungry Horace	M.House (4)
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7 Up Periscope	Beyond (2)
8 Space Shuttle Simulator	Microdeal (-)
9 Devil Assault	Microdeal (5)
10 Cuthbert in the Mines	Microdeal (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

## VIC-20

1 Snooker	Visions (1)
2 Flight 015	Ferranti / Davenport (4)
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4 M.L.B.A.E.T.	Llamosoft (-)
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3 Space Raiders	Sinclair (5)
4 Asteroids	Quicksilva (6)
5 Football Manager	Addictive (9)
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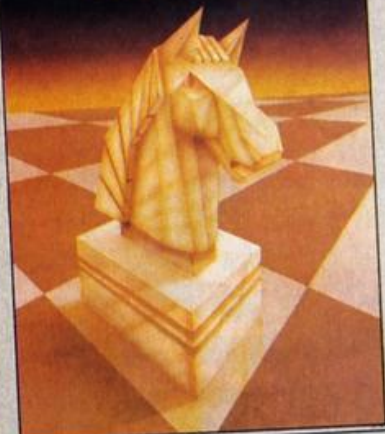


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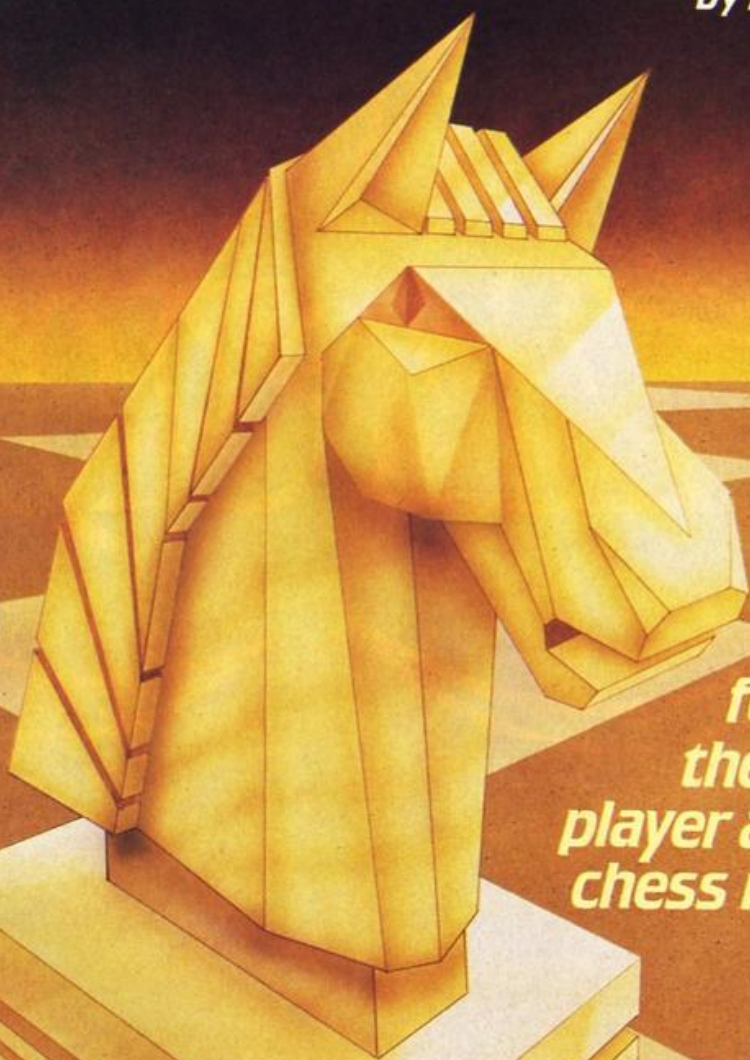
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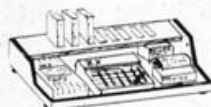
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20      LD      BC, #1800
20 LOOP LD      A, (HL)
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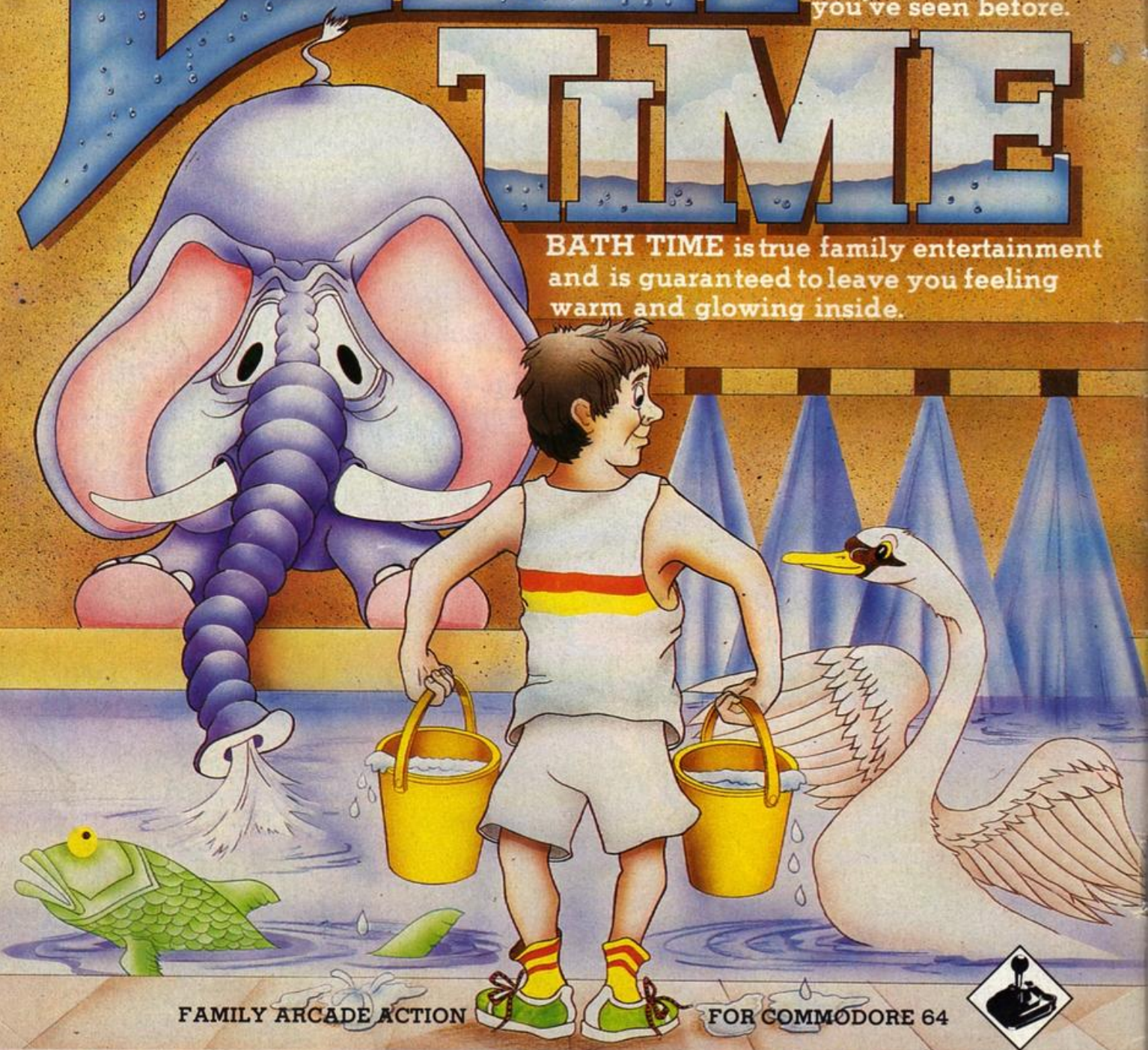


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