Home Computing WEEKLY

An Argus Specialist Publication

EVERY WEEK: More software reviews than any other magazine

No. 38
Nov 22-28, 1983

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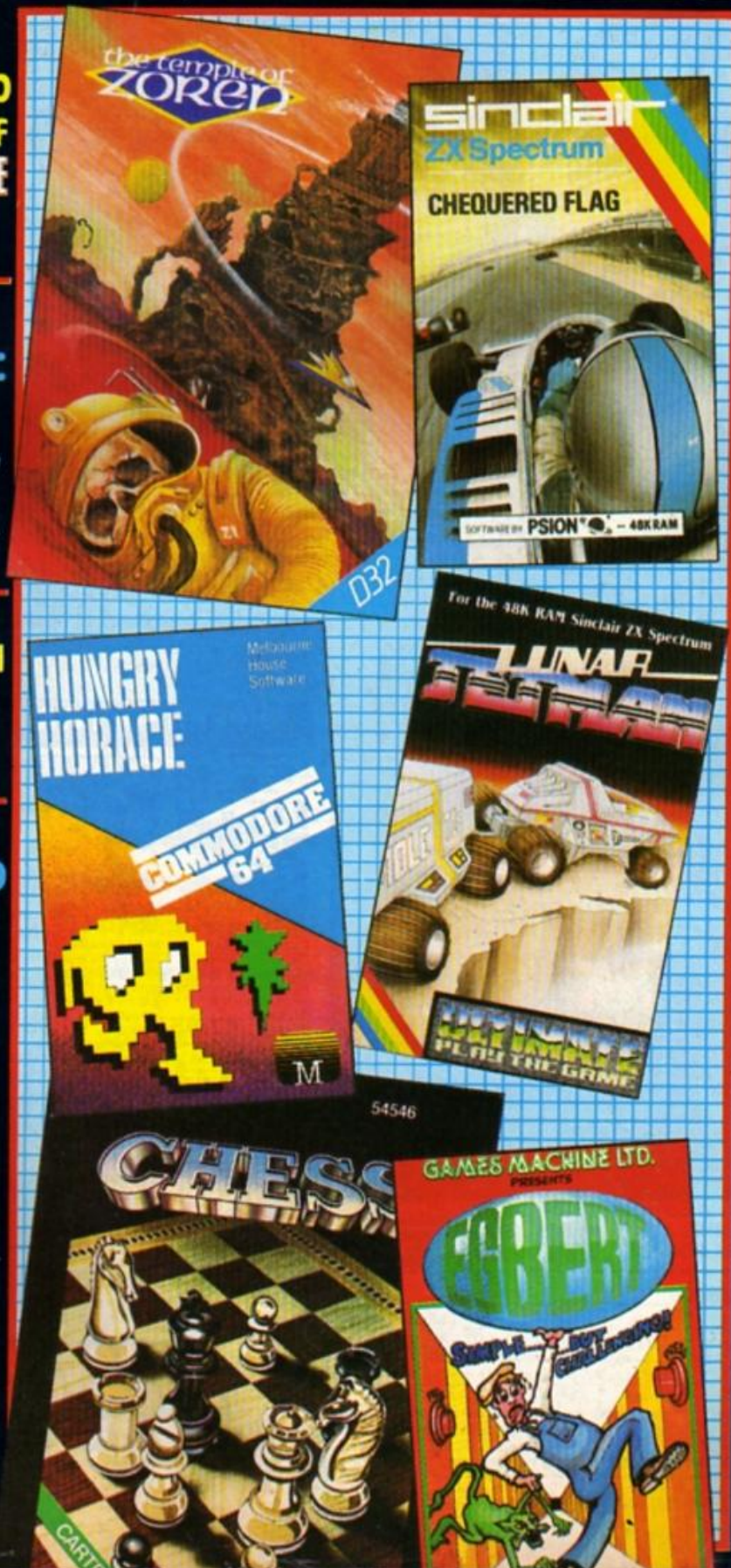
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Battle over BBC micro

Several computer companies will be in the battle when Acorn's three-year contract to make BBC-branded computers ends next year.

Although there have been no outside discussions, the BBC has already started preliminary talks with Acorn.

A spokesman said: "There is nothing to stop anyone putting in a bid.

"It is not a formality that the contract will be renewed.

"If the discussions with Acorn are not succesful we may invite other offers."

Sinclair Research and Dragon Data are asking for copies of the specification and a Commodore spokesman said: "We are always interested in getting business whereever we can and this is no exception."

Continued on page 5

Video shops to sell software

You will soon be able to buy computer software in the same shops that rent video films.

A big distributor says a few shops will be stocking games by Christmas with many more to follow.

Peter Graham, chairman of Centre Video, is talking to software distributors about programs for the Spectrum and Commodore 64.

His company supplies 2,000

Continued on page 5

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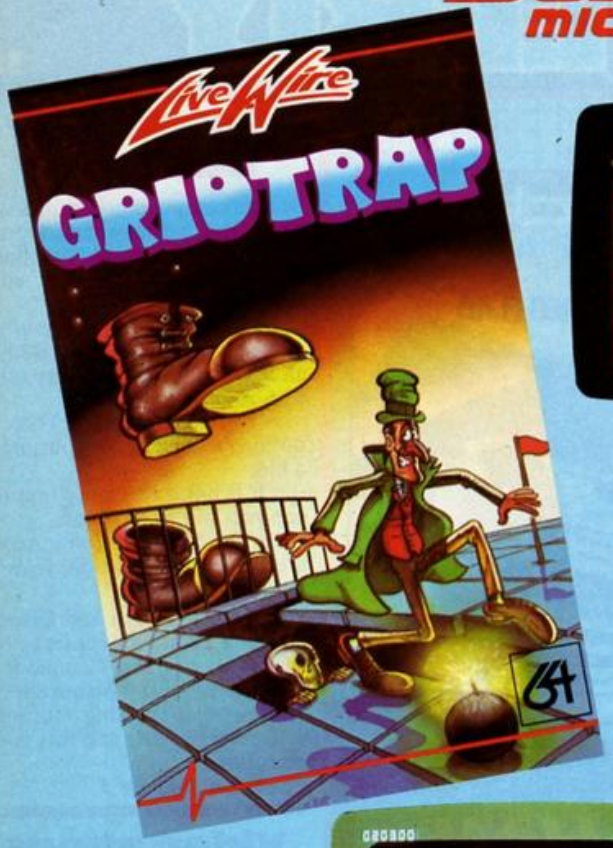
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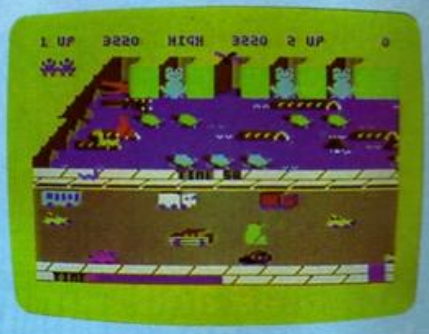
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More micro firms up before ASA

Oric has been hauled up before the Advertising Standards Authority again, for making misleading claims in advert in the computer press.

The company had said that the 48K Oric had VERIFY, DOUBLE, FLASH, and INVERSE facilities, plus a facility for drawing arcs at high speed in the high-res graphics mode.

But when put on the spot by the ASA, it failed to demonstrate that the facilities existed.

Two software companies reported to the ASA recently came off rather better.

Despite a complaint that Sparten Software's Housebreak game was likely to encourage burglary, the ASA decided that "although the subject of the game was tasteless, it was unlikely to cause offence, or to encourage criminal offences."

And Softek managed to defend its Super C compiler against complaints that it did not perform as advertised.

The advert stated that the compiler could "compile virtually any Spectrum BASIC statement", "instantly convert Spectrum BASIC into machine code" and convert any BASIC program into a compiled version.

But a Spectrum user from Brighton complained that Super C could handle only 62 of the Spectrum's 96 instructions and only 26 variables, and would not deal with programs containing INPUT statements — meaning that such programs had to be rewritten especially for the computer.

After consulting independent experts, however, the ASA decided that Softek has explained these limitations, and that the advert's claims were fair enough.

Advertising Standards Authority, Brook House, Torrington Place, London WC1E 7HN

Out now from Sunshine is a full-feature assembler/disassembler for the Commodore 64. It includes a machine code monitor and file editor, and costs a mere £14.95.

Sunshine, 12/13 Little Newport Street, London WC2R 3LD

BUY THIS SPACE

To advertise your latest products!
Ring Coleen or Barry on
01-437 1002 NOW!



There's five pages of software reviews in this issue. Read before you buy



Our first program for the new Sord M5 is on page 49



• Watch out for the Micro Tips scattered throughout this and furture issues of Home Computing Weekly

AGF

JOYSTICK INTERFACE II for Spectrum or ZX81

NEW PRICE

ONLY 19.95 +£1.00pp

15.95

JOYSTICK INTERFACE

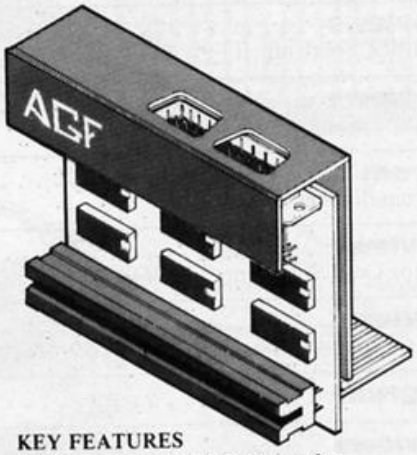
The Interface Module II has been specially designed to plug on to the rear connector of your ZX Spectrum or ZX81 and allow you to connect any standard Atari type digital Joysticks. All of the computer's connections are duplicated on an extension connector so that you can still use any other devices intended for use with your computer.

The Interface Module II resides in the same memory space as the keyboard, which remains fully functional at all times, therefore it will not interfere with anything else connected.

When a suitable joystick is plugged into 'Player 1' socket its action will mimic pressing the cursor keys, up "7", left "5" and so on. The firing button will simulate key 0. This unique feature guarantees the best software support.

Take a look at the selection of compatible games we have listed. More are being added all the time as a result of our contact with the various software companies.

A second Joystick may be connected in the 'Player 2' position which simulates in a parallel fashion keys T-Y-U-I-P. This will allow you to play a whole new generation of two player games.



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Escape	: New Generation Software	£4.95
3D Tunnel	: " "	£5.95
Knot in 3D	: " "	£5.95
Cyber Rats	: Silversoft	£5.95

COMPATIBILITY CASSETTES £4.95

These cassettes have short programs to load before the chosen game which will convert it to use the cursor keys and therefore become compatible with the Interface Module II.

Cassette 1 converts	Cassette 2 converts
Arcadia	Centipede
Schizoids	Planetoids
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Horace Goes Skiing	† Pssst
Spectres	† 3D Combat Zone
Penetrator	† Invaders

† *Will require 48K Memory.*

FROM: MR/MRS/MISS

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HCW38

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24 Gloucester Road, Brighton BN1 4AQ

GB Microland
7 Queens Parade, London Road, Waterlooville, Hants

Melgray Hi-Tech Ltd
49 Broad Street, Hereford HR4 9AR

Micro Fare
296 Gloucester Road, Horfield, Bristol

Raven Video
74 Green Lane, Tettenhall, Wolverhampton

Screen Scene
144 St George's Road, Cheltenham Gloucestershire GL50 3EL

Screens
6 Main Avenue, Moor Park, Northwood Middlesex.

Syntax Computers
76 Cornwall Street, Plymouth PL1 1NS

Teleco Video
53 Maple Road, Penge, London SE20

Telford Electronics & Computing
26a Bradford Street, Shipnal, Shropshire TF11 8AU

The Computer Shop
Unit 25, Handyside Arcade, Percy Street, Newcastle-upon-Tyne NE1 4PZ

The Computer Centre (Humberside) Ltd
26 Anlaby Road, Hull HU1 2PA

BBC micro

From front page

For each BBC micro sold the corporation gets a percentage. So far about 200,000 have been sold, mostly to schools, giving Acorn a big boost.

Acorn is expected to report £10m profits this year, helped substantially by this contract. It recently launched a "cut-down" model, the Electron, at £199.

Richard Wadman, Dragon's marketing boss, said his company was writing to the BBC for a specification.

Depending on the details, Dragon would offer to build a machine that met the specification or adapt a future machine now on the drawing board.

Mr Wadman, a former lecturer in statistics and computing, said the Dragon was designed with education in mind.

He said: "We feel that our machine has been passed over for education largely because of the time it arrived."

Many were now in use in schools, but the Dragon has been launched later than the Spectrum and BBC computers, for which schools get a 50 per cent Government grant.

Sir Clive Sinclair is known to have been unhappy that his company was not awarded the BBC contract. Among the computers considered at the time was the Newbrain.

Now, a Sinclair spokeswoman said, "We want to look at the ground rules to see if we want to enter. We want to encourage the BBC to look at other computers before a new contract is signed."

Robert Blood, for Acorn, said: "The BBC has given no indication that it wants a change or that it is looking around. On the contrary, there are positive indications that it does not want to change. It will be a formality to renew."

The contract comes to an end in autumn next year and Mr Wadman said he expected a number of computer companies to put in a bid. Overseas firms would ensure they had UK manufacturing to ensure they were not excluded because of foreign ownership.

Video shops

From front page

video shops throughout the UK and has a team of 30 salespeople.

He said: "We are simply adding computer software to our price list and contacting all the retailers and suggesting it would be a good idea to start stocking it.

"After all, people who have a video recorder are not the type of people who are likely to be frightened of high-tech."

He said they may even distribute home computers. And to encourage reluctant purchasers, he is planning to offer a hire-or-buy scheme already offered by some public libraries.

Customers would try a Spectrum, plus software, for a week at a hire fee of about £10. If they wanted to keep it the £10 would come off the purchase price.

Mr Graham, who owns a Spectrum himself, said: "I would like to talk to Sinclair about doing it all over the country."

Centre Video was founded nine years ago. Mr Graham owns 70 per cent of the company and 26 per cent is owned by the National Coal Board pension fund.

He said: "I expect the first tapes to go on sale in the first shop within a couple of months.

"The shops are coming round to the fact that there is additional profit to be made."

Jeff Minter, boss of Llamasoft, said his company would sell tapes to any retailers — providing they were not hired out.

Asked about the principal of hiring computers, Bill Nichols, for Sinclair Research, said: "It's a very interesting development. It's something which is being done by libraries, but I don't think anyone has done it on a large scale before.

"I think it could increase sales. It will be interesting to see the results."

Centre Video, French's Avenue, Dunstable, Beds LU6 1BH

Briefly

The BBC is the latest micro to get a version of The Hobbit, the adventure program originally written for the Spectrum by Melbourne House and now available for the Oric and Commodore 64. But because of the BBC's memory limitations, it will be a text-only version. Price: £14.95, which as usual includes a copy of the book on which the program is based.

Melbourne House, 224 Stanley Road, Teddington, Middlesex TW11 8UE

○ ○ ○

Just to show that it isn't leaving TI-99/4A owners in the lurch, Texas Instruments has got together with Collins Educational to produce four software packs which take you from the basics of programming right through to writing your own games. They are Starter Packs 1 and 2 and Games Writer Packs 1 and w, and cost £9.95 each. From Texas Instruments dealers.

Did you get it right?



Here's the solution to the Virgin Games word square competition which appeared in issue number 33.

We asked you to find the Virgin software titles hidden in a square of letters and provided a list of games, some of which were in the square.

Many entrants found all the titles . . . and some found words not in our list.

The first 40 correct entries we opened will get about £25-worth of games from Virgin for their computers, Spectrum, BBC model B or Dragon.

They will be despatched by Virgin to reach the winners within 28 days.

The winners are:

W. H. Walker, of Stevenage; Miss J. M. Bould, Shrewsbury; Mr R. Chowdhury, Houghton Regis; Andrew Young, Davyhulme; J. R. Allison, Bury St Edmunds; David Nelson, Wishaw; Mr R. Longhurst, Huntington; Elizabeth Knight, Orpington;

John Goodbody, Ickenham; Jon Woods, Boscombe; Mr J. R. Smith, Crosby; S. P. Berry, Ossett; P. Bluman, Crouch End; C. B. Hodges, Paddock Wood; Mrs C. Corbett, Pontyclwn; Alan Spicer, Cheshunt; R. Richardson, Barnsley; Mrs L. Scares, Maidenhead; James Casey, Cambuslang;

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● Keep this voucher, and the one in last week's issue, and send it to us with the coupon in the next week's Home Computing Weekly. If your envelope is among the first 750 we open you will receive a free Bug-Byte T-shirt, depending on the size requested.

Free T-shirt

Home Computing Weekly

BUG-BYTE SOFTWARE

2 voucher



Newbrain's future secure

The Newbrain will soon be on sale in more dealers than ever, according to Allan Mann of Brainwave.

Brainwave, which also sells Newbrain software, was recently appointed sole UK distributor for the Newbrain by Tradecom, the Dutch company which has taken over the Newbrain's design and marketing rights from Grundy.

But Mr Mann said that Brainwave would be adopting a new approach to the Newbrain's marketing. "It was marketed by Grundy as a home machine, sold over the counter. But that's not really what it was designed for — it was designed as a business machine.

"Because it's aimed at the business market, it does a lot of things that home micros don't do. So dealers can't just leave people to play a few games on it — they need to explain the features to them.

That's why we'll be putting more emphasis on selling the machine through specialist dealers."

Grundy had a policy of not disclosing much technical information about the Newbrain, but Tradecom is taking the opposite approach. According to Allan Mann: "Tradecom will give any amount of information to companies who want to make add-ons for the Newbrain.

"It wants to encourage people to open the box. And if it likes the peripherals people come up with, it'll market them too."

Mr Mann said that Tradecom was itself working on a networking module, which would enable 16 Newbrains to communicate and share peripheral equipment.

And Brainwave has produced some new programs for the Newbrain's relaunch. As well as business programs, these include a 30K adventure game with 50 different monsters to fight.

Mr Mann said he was confident that Tradecom and Brainwave would be able to succeed where Grundy had failed.

He said: "I don't really know how Grundy managed to go under — the order books were full. I've been in touch with all the big UK dealers, and without exception, they've all said they'll restock. The response from the marketplace has been tremendous.

"In fact, a group of the dealers had even taken the unusual step of getting together to try and buy the rights to the Newbrain, before Tradecom stepped in."

Editor Ray

HCW contributor Ray Elder has been appointed editor of our sister magazine, ZX Computing. He succeeds Roger Munford who is now a freelance journalist. We would like to wish the best of luck to both of them.

Ace company up for sale

If you have dreamed of owning a computer company, now's your chance.

Jupiter Cantab, which made the Jupiter Ace, is now being offered for sale by liquidator Dennis Cross.

Launched at the end of last year, the Ace is the only home computer using Forth as its built-in language instead of BASIC.

In a statement, Mr Cross' firm says problems began when Jupiter Cantab expanded into UK and overseas retail and distribution markets and large orders were placed which were either not taken up or not paid for.

This caused strain on cash flow, halting further research and development into areas like robotics and control for which the Ace was suited.

It ends: "Time ran out for Jupiter and the Ace's true potential remained unrealised."

All the employees of Jupiter Cantab have been dismissed. Mr Cross is offering the company for sale as a going concern. If no suitable offers are received, he will have to sell off the stock for as much as can be raised for the creditors.

Mr J. D. Cross, Chater and Myhill, Sussex House, Hobson Street, Cambridge CB1 1NJ

Teaching programs for the Spectrum

Sixteen new programs recently launched by Sinclair will boost the Spectrum's credibility as an educational micro.

For all 16, Sinclair has followed its usual policy of teaming up with another company, which writes the software for Sinclair to market.

But one of the companies it is collaborating with is best known for books rather than software — Macmillan Education, which is a leading publisher of school text books.

Macmillan is contributing a total of nine programs to the range. There are five Learn to Read programs, for five to seven year olds, and four Science Horizon programs aimed at eight to 12 year olds.

In addition, Blackboard Software has developed six spelling and punctuation programs for six to 12 year olds.

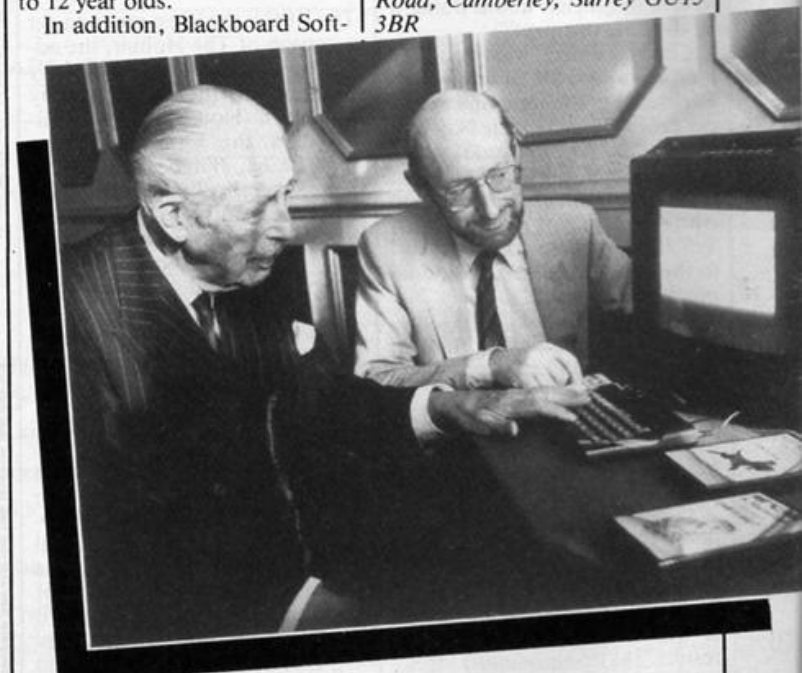
And Sinclair is also offering Micro-PROLOG, a version of the PROLOG programming language, adapted for microcomputers by Logic Programming Associates.

Micro-PROLOG allows you to talk to the Spectrum in simple English-like phrases, and makes it easy to build up an information database which can answer questions like an "expert system".

The full-scale version of PROLOG has been used to program sophisticated artificial intelligence machines.

Initially the programs will be available by mail order only. The Macmillan programs cost £9.95, the Blackboard programs cost £7.95, and the Micro-PROLOG costs £24.95.

Sinclair Research, Stanhope Road, Camberley, Surrey GU15 3BR

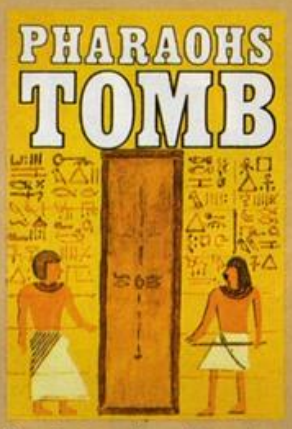


Sir Clive Sinclair and Harold Macmillan at the launch of Macmillan and Sinclair's joint venture into educational software

48K ZX SPECTRUM ADVENTURES – PICTURE GRAPHICS AND COLOUR



You are a Knight of Camelot, searching for Merlin's lost treasure. On your way you will discover the Witches' Tower, rescue a Princess held by the wicked Wizard of Trill. **£5.95**



You discover the entrance to an ancient pyramid blocked by a rock. Once inside, you discover fire rooms, ice rooms and other traps set by the builders to protect the Pharaoh. **£4.95**

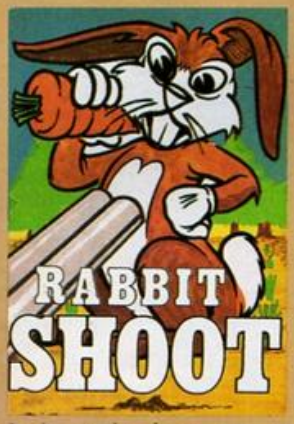


A rope above a rock fissure is the only way into this Magic Mountain, or is it? Legends tell of vast stores of treasure but also of poisonous spiders, lizards and magic at work. **£4.95**

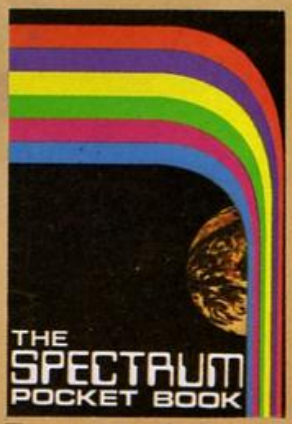


An old deserted mining town holds the clues to the location of a lost gold mine. Once in the mine, your problems are not over – the roof creaks alarmingly and might cave in. **£4.95**

16K ZX SPECTRUM GAMES AND PUZZLES



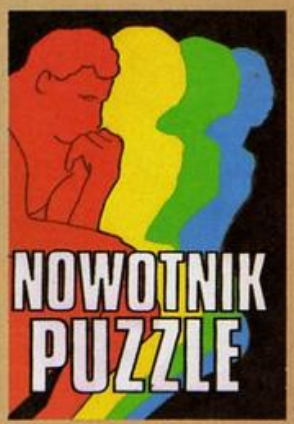
It is nearly dawn, you are poaching rabbits in a field of carrots. See how many you can bag undetected by the game keeper. Highly original arcade style game. **£4.95**



The cassette of the book. Contains six games (including Castle Walls, Great Fire of London, Reversi) machine code assembler, disassembler. **£5.95**
Book available separately **£6.50**



The traditional game with superb screen presentation. Score points by making the two ends add to a multiple of five or three. The first one to reach 72 points wins. **£4.95**



The computer breaks and shuffles a two by two coloured square, whilst you watch the moves it makes. You must then unscramble it to reassemble the original squares. Machine coded. **£4.95**

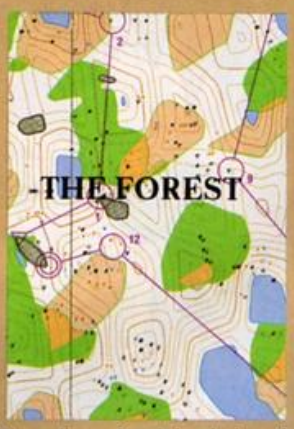
48K ZX SPECTRUM GAMES



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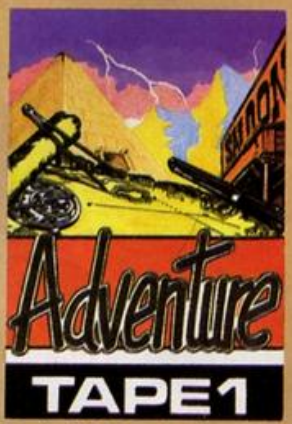


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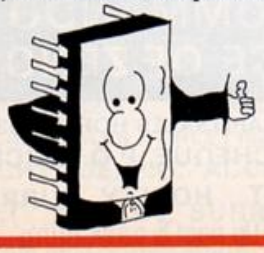
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Keep cool, calm and collecting

All you need is £8 to get you off Danger Island and safely home. Simon Lucas, who wrote this mini-adventure for either Oric, explains how to earn your fare

It was bad enough choosing Danger Island for your holiday, but now you've run out of money how do you ever get home?

Well, there is one way. Scattered around the island are eight valuable objects. If you can collect them and take them to the pawnbrokers, you can get £1 each for them. Collect all eight and you have got just enough money for your fare home.

The treasures you must find are: a teapot, horseshoe, gold nugget, Chinese kite, Swiss Army knife, silver needle and a wedding ring.

The program will respond to two-word phrases. The words you can use are:

N S E W	GET
INVENTORY	TAKE
SCORE	GET
GRAB	DROP
LEAVE	PUT
SWIM	CLIMB
JUMP DOWN	OUT
GO DOWN	IN
GO OUT	GO IN
LOOK	THROW
EAT	DRINK
SEARCH	HELP
EXAMINE	DIG
GIVE	

The program was written in a 48K Oric, but should work on the 16K model.

Before you type the program in, there are two points you should note. The listing was produced on a printer which prints the £ sign as _ (an underscore), so you should change this back.

Second, you may find some lines seem to be too long to enter. They will fit if you enter PRINT as the shorthand ? (question mark).

One problem with listing Oric programs is that the printer will randomly produce squiggles. This is caused by the keyboard-scanning interrupts interfering with the output from the printer port.

To produce a squiggle-free listing, all you need to enter is: CALL (hash sign)E6CA:LLIST: CALL(hash sign)E804

ORIC PROGRAM

Hints on conversion

The program is in a fairly standard version of BASIC and will require only minor modifications to run on most machines.

Line 40 may be deleted from most machines, as it only selects the text mode and colours used. On the BBC micro use MODE 7.

Line 101 is a garbage collection routine and may be deleted from most machines entirely.

The CHR$ codes from 129-135 are used to change colour. They may be changed to suit your machine. **Note:** on the BBC micro, the same codes are used.

The PLOT commands, 3002-3020, print the text at different locations on the screen. The numbers are X coordinate, Y coordinate, text or X,Y, colour code (0-7). This may be replaced with PRINT TAB(X,Y) on BBC, PRINT @, on TRS80 etc.

Integer variables have been widely used as they are more economical of memory space. They may be changed to ordinary variables if required.

Main variables

X$(x) hold messages
P% holds the number of the current location
S%(x,y) holds the number of the location you visit if you go N,S,E,W
V$(x) holds what you are carrying
Q$(x) holds a description of the location
G$(x) holds items found at each location
N$(x) holds words recognised (second word entered)
B%(x,1), N%(x) act as pointers to other arrays
L% test flag
R the number of the word entered
Z$** your response to what should I do. This is split into two parts **C$ first word and **L$** is the second word
H,D act as counters for loops
A% score

Other variables act as flags to test if you have done certain things in the game, such as dropped the food.

```
10 REM DANGER ISLAND
20 REM A MINI-ADVENTURE FOR THE ORIC1 (16K & 48K)
30 REM BY S.W. LUCAS
40 TEXT:GRAB:PAPER0:INK1
45 GOSUB3000
50 DIMQ$(50),G$(50),S%(50,4),V$(4),B%(60,1),N$(60),X$(30),N%(60)
55 X$(30)="Even Tarzan couldn't carry any more!!!and I'm not that s
t*ong!!"
60 A$="":P%=1:RESTORE:GOSUB11000:GOSUB12000
90 CLS
100 PING:PRINTCHR$(131)"I am ":PRINTQ$(P%):A$=""
101 A=FRE(""):REM GARBAGE COLLECTION ROUTINE
110 IFS%(P%,1)>0THENA$="NORTH"
120 GOSUB11000
130 IFS%(P%,2)>0ANDLEN(A$)>0THENA$=A$+",SOUTH"ELSEIFS%(P%,2)>0THENA
$="SOUTH"
140 IFS%(P%,3)>0ANDLEN(A$)>0THENA$=A$+",EAST"ELSEIFS%(P%,3)>0THENA$
="EAST"
150 IFS%(P%,4)>0ANDLEN(A$)>0THENA$=A$+",WEST"ELSEIFS%(P%,4)>0THENA$
="WEST"
155 IFA$=""THENA$="Nowhere at all"
160 IFA%=8THENCLS:PAPER7:INK1:PRINT:PRINT:PRINT:PRINT:PRINT"WELL DO
NE YOU HAVE
170 IFA%=8THENPRINT:PRINT:PRINT"FOUND ALL 8 ITEMS OF TREASURE AND"
180 IFA%=8THENPRINT:PRINT:PRINT"EXCHANGED THEM FOR YOUR FARE HOME !
!"
185 IFA%=8THENFORZ=1TO10:ZAP:WAIT20:NEXT:END
190 PRINT:PRINTCHR$(129);"I can go :- "A$
200 E=0:FORT=1TO19:PP%=0:IFB%(T,1)=P%THENPP%=1
210 IFPP%=1THEN230
220 NEXT:GOTO250
230 IFE=0ANDG$(T)<>""THENPRINT:PRINTCHR$(133);"I can see :-"
240 PRINTG$(T):E=E+1:GOTO220
250 PRINT:PRINTCHR$(131)"What do I do ";:INPUTZ$
260 B$=LEFT$(Z$,2):C$=LEFT$(Z$,3)
270 CLS:PRINTCHR$(133)"HOLD ON A SEC!"
271 IFZ$="GO IN"ORB$="IN"THEN IFP%=20 THENP%=21:GOTO100
272 IFZ$="GO OUT"ORB$="OU"THEN IFP%=21 THENP%=20:GOTO100
275 IFB$="GO"THENPRINT"use N,S,E or W":GOTO100
280 IFB$="SC"THENGOSUB11000:PRINTCHR$(131);"you have made _";A%;" a
nd need _8"
290 IFB$="N"ANDS%(P%,1)<>0THENP%=S%(P%,1):GOTO100
300 IFB$="S"ANDS%(P%,2)<>0THENP%=S%(P%,2):GOTO100
310 IFB$="E"ANDS%(P%,3)<>0ANDP%<>17THENP%=S%(P%,3):GOTO100
311 IFB$="E"ANDP%=17ANDAB<>1THENPRINT"The dog won't let me go anywh
ere":GOTO100
312 IFB$="E"AN"P%=17THENP%=S%(P%,3):GOTO100
320 IFB$="W"ANDS%(P%,4)<>0THENP%=S%(P%,4):GOTO100
325 IFB$="FU"ORB$="PI"ORC$="BUG"THENGOSUB15000
330 IFB$="GE"ORB$="TA"ORB$="GR"THEN13000
340 IFC$="DRO"ORB$="LE"ORB$="PU"THEN14000
350 IFC$="INV"THEN14700
360 IFC$="SWI"THEN17000
365 IFC$="CLI"THENIFP%=10THENP%=22:GOTO100ELSEIFC$="CLI"THENPRINT"H
OW":GOTO100
366 IFB$="UP"THENIFP%=10THENP%=22:GOTO100
370 IFC$="JUM"ANDP%=22THEN17500
372 IFC$="JUM"THENPRINT"O.K. I don't get very far !!":GOTO100
375 IFC$="DW"ANDP%=22THENP%=10:GOTO100
376 IFC$="DOW"THENPRINT"DON'T BE STUPID":GOTO100
380 IFC$="LOO"THEN100
385 IFC$="THR"THEN17600
390 IFC$="EAT"THENPRINT"I'm not very hungry thank you!":GOTO100
395 IFC$="DRI"THENPRINT"There's nothing here to drink !":GOTO100
400 IFC$="HEL"THENPRINTCHR$(132);"Im not going to solve it for you
!":GOTO100
```

How it works

40 selects TEXT mode & colour of foreground/background
45 selects subroutine for titles etc.
50 DIMensions the arrays
60 sends it to two subroutines to check the score and to read data into the arrays
90-155 display directions you can go in
101 acts as garbage collection routine (may be omitted from other machines)
160-185 display messages if you have solved the game
190-240 display what you can see and where you can go
250 waits for your response
270-460 recognise your words and send to appropriate routine
3000-3020 titles
10000-110220 DATA for locations
10230-10290 DATA for items you find
10300-10330 DATA for words understood
11000-11090 score routine
12000-12050 reads DATA into arrays
13000-13480 routine for GET responses
13500-13570 splits input response into two words
14000-14500 drop routine
14700-14740 inventory routine
15000-15020 swearing not allowed routine
17000-17040 swim routine
17500-17540 death routine
17600-17800 throw routine
18000-18015 search routine
19000-19010 dig routine
19500- give routine

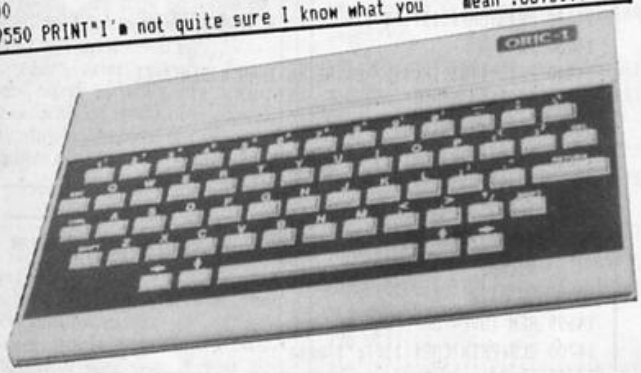


```
401 IFC$="EXA"THENPRINT"I can't see anything special !":GOTO100
405 IFC$="SEA"THEN18000
410 IFC$="DIG"ANDP%=23THEN19000ELSEIFC$="DIG"THENPRINT"not here!":G
OTO100
415 IFC$="GIV"THEN19500
450 PRINT"sorry!":GOTO100
460 END
2999 END
3000 CLS:PRINTCHR$(17)
3001 FORX=1TO2
3002 PLOT9,X,X:PLOT10,X,14:PLOT11,X,"DANGER ISLAD ":NEXT
3003 PLOT1,10,5
3004 PLOT2,10,"You are a student fallen on hard"
3005 PLOT1,11,5
3006 PLOT2,11,"times. You have gone on a long needed"
3007 PLOT1,12,5
3008 PLOT2,12,"holiday but have run out of money."
3009 PLOT1,20,3
3010 PLOT2,20,"Your task is to find sufficient items"
3011 PLOT1,21,3
3012 PLOT2,21,"of value and take them to the "
3013 PLOT1,22,3
3014 PLOT2,22,"pawnbrokers to exchange for cash."
3015 PLOT1,25,1
```

```
3016 PLOT2,25,"You need 8 pounds for your fare home"
3017 PLOT2,26,"and each treasure is worth _1"
3020 RETURN
9999 END
10000 DATAon a footpath with trees on either    side.,0,0,2,0
10010 DATAon the shores of a large lake,0,3,0,1
10020 DATAon a mountain track,2,4,0,0
10030 DATAat the top of a mountain. I can see   for miles.,3,0,5,6
1^040 DATAby a waterfall,0,10,0,4
10050 DATAon a narrow mountain track. It is very misty here.,0,7,4,
0
10060 DATAby a rock fall. There are boulders     everywhere.,6,8,0,
0
10070 DATAby a cave entrance,7,0,9,0
10080 DATAin a vast cavern with stalagtites      everywhere.,0,0,11
,8
10090 DATAby the waterfall. There is a very tall tree here.,5,11,0,
0
10100 DATAin the waterfall. I can see a cave    entrance.,10,0,12,9
10110 DATAat the other side of the waterfall.,0,13,0,11
10120 DATAon a footpath,12,14,0,0
10130 DATAat the bottom of the mountain.There isa small village.,13
,16,15,17
10140 DATAon a main road.,18,0,0,14
10150 DATAby the village blacksmiths. It is     closed.,14,0,0,0
10160 DATAby some houses.There is an old lady   here.,0,0,14,0
10170 DATAon a road bridge.,0,15,19,0
10180 DATAon the main road,20,0,0,18
10190 DATABy a pawnbroker's shop,0,^9,0,0
10200 DATAinside the pawnbroker's shop. Drop    your treasures here
!,0,0,0,0
10210 DATAup a tree,0,0,0,0
10220 DATAon a small island,0,0,0,0
10230 DATAan old empty beer can,12,some algae,11,a small boy,4
10240 DATA"",7,a tiny £GOLD£ nugget,9,a £HORSESHOE£,16,a £TEAPOT£,1
7
10250 DATA"",23,a £WEDDING RING£,23
10260 DATAa valuable Chinese £KITE£,22
10280 DATApebbles,11,stones,7,a squirrel,13,nuts,1,a shovel,23
10290 DATAa hammer,16,a dog,17,some dog food,1,a large boulder,8
10300 DATABEER,1,CAN,1,ALGAE,2,BOY,3,SWISS,3,BADGE,4,ROLLS,4,GLD,5,
NUGGET,5
10310 DATAHORSESHOE,6,SHOE,6,TEAPOT,7,SILVER,8,NEEDLE,8,WEDDING,9,R
ING,9
10320 DATACHINESE,10,KITE,10,PEBBLES,11,STONES,12,SQUIRREL,13,NUTS,
14,SHOVEL
10330 DATA15,HAMMER,16,DG,17,FOOD,18,BOULDER,19
11000 A%=0
11030 IFB%(3,1)=21 THENA%=A%+1
11040 IFB%(4,1)=21 THENA%=A%+1
11050 IFB%(5,1)=21 THENA%=A%+1
11060 IFB%(6,1)=21 THENA%=A%+1
11070 IFB%(7,1)=21 THENA%=A%+1
11072 IFB%(8,1)=21 THENA%=A%+1
11075 IFB%(9,1)=21 THENA%=A%+1
11080 IFB%(10,1)=21THENA%=A%+1
11090 RETURN
12000 FORH=1TO23:READQ$(H):FORD=1TO4:READS%(H,D):NEXTD,H
12010 FORH=1TO19:READG$(H),B%(H,1):NEXT
12040 FORH=1TO27:READN$(H),N%(H):NEXT
12050 RETURN
12999 REM GET ROUTINE
13000 GOSUB13500:IFL%=1THEN13020
13010 GOTO100
13020 E%=0:FORH=1T^19:IFB%(H,1)=P% ANDB%(N%(R),1)=P%THENE%=1
13030 NEXT
13040 IFE%=0THEN100
13041 IFR=23THENAA=AA+1
13042 IF(R=4ORR=5)ANDAC<>1THENPRINT"I  can't do that dummy !":GOTO1
00
13043 IFR=25THENPRINT"It has savagely attacked me aaaggghh!":GOTO17
510
13450 E%=0:FORD=1TO3:IFV$(D)=""THENV$(D)=G$(N%(R)):E%=1:D=5
13460 NEXT
13342 IFE%=0THENPRINTX$(30):GOTO100
13480 B%(N%(R),1)=0:GOTO100
13499 REM ROUTINE TO MAKE SENSE OF RESPONSE
13500 L$="":FORH=1TOLEN(Z$)
13510 IFMID$(Z$,H,1)=" "THENL$=RIGHT$(Z$,(LEN(Z$)-H)):H=H+40
13520 NEXT
13530 R=0
13540 L%=0:IFLEN(L$)<2THENRETURN
13550 FORH=1TO27:IFLEFT$(N$(H),LEN(L$))=L$ THENL%=1:R=H
13560 NEXT
13570 RETURN
13999 REM DROP ROUTINE
14000 GOSUB13500
14010 IFL%=1THEN14030
14020 PRINTCHR$(131)"I can't see a ";L$:GOTO100
14030 E%=0
14040 FORD=1TO3:IFV$(D)=G$(N%(R))THENV$(D)="":E%=1
14050 NEXT
14060 IFE%=1THEN14080
14070 PRINTCHR$(130);"I've not got it dummy!!!!":GOTO100
14080 B%(N%(R),1)=P%:CLS
14090 IFR=23THENAA=0
14100 IFP%=17ANDR=26THENAB=1:PRINT"It is busy eating. I think I can
      escape"
14500 GOTO100
14699 REM INVENTORY ROUTINE
14700 CLS:PRINTCHR$(130);"I have :- "
14705 F%=0
14710 FORH=1TO3:IFV$(H)<>""THENPRINTCHR$(131);V$(H):F%=1
14720 NEXT
14730 IFF%=0THENPRINT"Nothing at all"
14735 PRINT
14740 GOTO100
15000 CLS:PRINT:PRINT:PRINT:PRINTCHR$(131)"How dare you talk to me
like that?"
15010 PRINT:PRINT:PRINTCHR$(132)"What have you got to say to me now
?"
15020 REPEAT:INPUTZ$:ZAP:UNTIL Z$="SORRY":RETURN
16999 REM SWIM ROUTINE
17000 IFP%=20RP%=23THEN17020
17010 PRINT"I can't swim here! IDIOT!":GOTO100
17020 PRINT"O.K."
17030 IFP%=2THENP%=23ELSEIFP%=23THENP%=2
17040 GOTO100
17499 REM DEATH ROUTINE
17500 CLS:PAPER7:INK1:PRINT:PRINT:PRINT:PRINT"I FELL AND BROKE MY N
ECK "
17510 PRINT:PRINT:PRINT"I AM DEAD"
17520 PRINT:PRINT:PRINT"Do you want to play again?"
17530 GETA$
17540 IFA$="N"THENEND ELSE RUN
17599 REM THROW ROUTINE
17600 GOSUB13500
17610 IFL%=1THEN17630
17620 PRINT:PRINT"I can't see a ";L$:GOTO100
17630 E%=0
17640 FORD=1TO3:IFV$(D)=G$(N%(R))THENV$(D)="":E%=1
17650 NEXT
17660 IFE%=1THEN17680
17670 PRINT"I've not got it !!! dummy!!":GOTO100
17680 IFP%<23THENB%(N%(R),1)=P%+1ELSEB%(N%(R),1)=P%
17690 PRINT"O.K"
17800 GOTO100
17999 REM SEARCH ROUTINE
```

ORIC PROGRAM

```
18000 IFP%=7THEN18010ELSEPRINTCHR$(130)"I can't find anything":GOTO
100
18010 G$(4)="A £BADGE£ from a ROLLS ROYCE car"
18015 IFAZ<>0THENPRINT"There's nothing else here!":GOTO100
18020 PRINT"I have found something !!!":AZ=1:GOTO100
19000 IFAA<>1THENPRINT"I don't have anything to dig with":GOTO100
19010 PRINT"I have found something":G$(8)="A £SILVER £ needle":AA=2
:GOTO100
19500 GOSUB13500:IFL%=1THEN19515
19510 GOTO100
19515 IFP%=4ANDR=22THENPRINT"He takes a few and offers me something
"
19520 IFP%=4ANDR=22THENPRINT"in exchange. He then runs off singing"
19530 IFP%=4ANDR=22THENG$(3)="A £SWISS ARMY KNIFE£":N$(4)="KNIFE":A
C=1:GOTO100
19540 IFP%=21ANDR=22THENPRINT"The squirrel doesn't like them!":GOTO
100
19550 PRINT"I'm not quite sure I know what you    mean":GOTO100
```



Micro Tip — Dragon

Switch your switch

A very simple, and useful, modification to the cassette recorder that you use with your Dragon is a switch to override the computer control of the cassette motor.

Connections could not be easier, as a wire to each side of the remote jack will provide this function. Use a small, neat switch to suit the appearance of your particular recorder — there is a wide choice available from any electronic supplier.

Mount the switch at a convenient point on the cassette recorder case, making sure there is plenty of clearance, and solder the four connections. It now becomes easy to rewind program tapes while running programs, and to position DATA tapes accurately without pulling out the remote plug.

Many recorders make the job even easier as they feature an electrical (as opposed to mechanical) PAUSE switch, which in its present form simply cuts the power to the motor.

Although this feature is of limited use, a small wiring re-arrangement will provide the more useful override facility.

All you have to do is move the wire which goes from the pause switch to the motor to the other side of the switch and provide a new wire from the now spare switch contact to the dc supply side of the remote jack.

A further use for this is to find the gap between programs. Type AUDIO ON and switch on the override.

Eric Craven

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ΩOMEGAΩ
FOR DRAGON 32

COMPETITION

38 chances to win in our great Spot the Difference competition.

£1,000-worth of ENGLISH SOFTWARE tapes must be won

THERE'S more than £1,000-worth of software which could be won by readers who can spot the differences.

We have got together with English Software which is offering 38 prize packages worth £27 each. The prizes are for Atari and Commodore 64 computers.

And, as usual in Home Computing Weekly, the competition is fun to do, easy to enter . . . and free.

The prizes

English Software will choose a selection of tapes worth about £27 for each of the 38 winners.

Atari owners will get a package chosen from the following:

Steeple Jack
Word Olympics
Xenon Raid
Air Strike 2
Krazy Kopter
Captain Sticky's Gold
Jet Boot Jack
Hyperblast
Venus Voyager
Marathon
Diamonds
Firefleet
Tarot Card
Batty Builders
Bombastic
Air Strike 1

If you own a Commodore 64 your prize will be selected from these titles:

Marathon
Spritemaker 64
Superfont 4.0
Neptune's Daughters

The winners' names and the solution will appear in Home Computing Weekly. The editor's decision is final and no correspondence will be entered into.

How to enter

Look carefully at the two cartoons below — there are a number of differences between the two.

Circle the differences on the right-hand cartoon and then fill in your name, full address and the words Atari or Commodore 64, depending on the prizes you would like.

Then cut around the broken lines, seal the drawing with coupon attached in an envelope — and write clearly on the back of the envelope the number of differences you found.

Post your entry to English Software Competition, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Entries close at first post on Friday December 9. The winners will be the first 38 correct entries opened, regardless of prizes chosen, at noon on that day.

Copies of the coupon will not be accepted. The solution and the names of the winners will be published in the news columns of Home Computing Weekly and the prizes will arrive from English Software within 28 days of the publication of that issue.

The rules

The first 38 correct entries drawn at noon on Friday December 9, 1983, will win the prizes. Coupons which are not fully completed and envelopes without the number of differences found on the back will not be considered.

Entries will not be accepted from employees of Argus Specialist Publications, English Software and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

English Software Competition

Entry Coupon

Name _____

Address _____

_____

_____ **post code** _____

Computer _____

Number of differences found: _____

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Darts, chess, racing – your micro will play them all, and others too. The possibilities are endless

One Hundred and Eighty 32K BBC £6.90

A&F, 830 Hyde Road, Manchester M18 7JO

Not all computer owners are arcade fanatics, but this doesn't mean they don't enjoy playing games.

For the less energetic keyboard-bashers, 180 is a fully-fledged game of pub darts, with no need to leave your chair!

The game offers several different types of darts match. Standard is the traditional game, with starting scores anywhere between 101 and 901, but there is also Round the Clock, Os and Xs and Shanghai, all variants on the basic game.

When run, the program asks for each player's name, and the type of game required. A difficulty level from 1 to 5 can also be selected.

The board is then drawn in full colour, together with a side-on view of the darts board.

To throw a dart, you must use the keyboard to steer vertical cross-hairs to the correct distance into the board, then using separate keys, guide the dart as it flies into the board.

All scoring is done automatically, and the two players are depicted as matchstick men who sit down and stand up as required.

D.A.

instructions	80%
playability	80%
graphics	85%
value for money	75%

★★★★

Racing Manager 48K Spectrum £5.95

Virgin Games, 61/63 Portobello Road, London W11

This is more of a total concept than a game. It starts with the assumption that you have 10 horses, a spare £100,000 and ambitions to own a Derby winner.

During the season of 25 race meetings, each with seven races, you and the trainer of your choice must enter your horses, buy and sell as you see fit and build up for the big race.

You can gamble on the races and then watch them either from the start or just the last furlong, with a simulation that is almost as exciting as the real things.

After each race, you are shown your balance sheet.

The game does not end with the Derby. You just carry on, year after year. The save facility is a necessity here.

I suspect, though, that there is a bug in the program.

Despite the fact that after a full season, I have managed to acquire a string of winners and turn by original stake into a cool half million, my managerial rating still remains firmly at zero. It seems there's money in failure.

This is certainly a game that will appeal, not only to racing nuts, but to the whole family. It is, in my opinion, one of the better games on the market today. **N.B.**

instructions	85%
playability	95%
graphics	95%
value for money	100%

★★★★★

Go For Broke Dragon £7

Omega, 38 Hammond Ave, Bacup, Lancs OL13 8LN

A board-type game for two to four players. You are a business tycoon dealing in property and attempting to bankrupt your opponents.

Although the plot may seem familiar, the places you will find yourself in are not. There are 36 locations spread throughout the British Isles, ranging from Luton Airport to the Falls Road, Belfast.

Occasionally you will be awarded "pot luck" when various demands on your capital will be made.

This is one point at which the computer version of this type of game scores, as you get a random penalty or windfall.

Play proceeds by simply pressing the spacebar to roll a pair of "dice". Using single keys enables you to buy and sell your property, houses and hotels.

A very stern-looking bank manager will lend you money if you need it, and a policeman will bash you all the way to jail if you are arrested.

This game grows on you, but I miss handling the real, imitation money that was a feature of the original **E.C.**

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

★★★★

Chess Dragon (cartridge) £24.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot SA13 2PE

In the introduction to the comprehensive User Manual, you're told that Cyrus is a strong chess program which won the European Microcomputer Championship in 1981. The present version includes new operating features.

You move the cursor by using the arrow keys to indicate which piece you want to move and its destination. Illegal moves are not permitted.

You can press the space bar at any time to see a message display which includes a record of the last few moves made as well as the commands available at that time.

There are nine levels of play and you can force the computer to make a move if you think that it is taking too long to analyse the situation.

You can take back as many moves already made as you want to, and change sides whenever you wish.

You can make the computer play itself, then you can interrupt and start playing yourself.

You can even get hints as to your best move, if you are getting desperate. For chess enthusiasts there is a facility enabling you to set up special positions on the board if you want the computer to solve a chess problem. **J.E.M.**

instructions	90%
playability	90%
graphics	90%
value for money	85%

★★★★★

Pirate Island TI-99/4A £4.99

Andromeda Software, 56 Wells Street, Haslingden, Rossendale, Lancashire

Pirate Island is a board type game for two players. The instructions and game are both on cassette and loaded separately.

Each player controls a ship which they sail across the seas seeking fortunes at Pirate, Anchor and Arrow islands.

As they gather treasure it must be deposited at their home ports to gain points.

Before starting, a target score must be decided, to be retained by the computer, which will decide the winner of each game.

The screen displays the games-board in the centre, and the statuses for each player are shown to the left and right hand sides. Messages to the players appear at the bottom of the screen.

To make the game more than a straight race, there is a computer controlled ship, the attack capabilities of which are determined by skill level.

At level 0, the computer ship will not participate at all, so play is confined to the two players.

From skills 1-10 the number of moves the ship makes per turn corresponds to the level chosen.

Certainly the most competitive and aggressive play is obtained at level 10, which makes Pirate Island a challenging board game reproduction. **J.W.**

instructions	30%
playability	90%
graphics	80%
value for money	90%

★★★★★

Playing fast and loose

Five new action games — our review panel gives its verdicts

Crusader Dragon plus joystick £6.95

J. Morrison Micros, 2 Glensdale Street, Leeds LS9 9JJ

You are the hero in search of the Holy Grail and you have to overcome seven increasingly difficult stages to achieve your goal.

On the first level, you are faced with the task of climbing steps to reach the top of a wall, jumping over lethal scorpions as you go.

Once this is achieved the graphics move smoothly to show the flat wall top. Those scorpions still keep coming. Safely at the other side, the next task glides into view.

There is a large gap in the wall which you must negotiate by jumping up to catch a hook which moves across the top of the screen. Failure means a watery death. I could not get beyond this level despite determined efforts.

The display goes into idle if you fail to initiate the next game. It makes it all look very easy and I got a glimpse of level four. This is another large gap in the wall, which the unfortunate hero has to cross aided by columns, which move up and down in the water.

The cassette is well packaged in a sort of mini video container. Minimal on-screen instructions — they're all on the insert, though. **J.E.M.**

instructions	75%
playability	90%
graphics	95%
value for money	90%

★ ★ ★ ★ ★

Lunar Jetman 48K Spectrum £5.50

Ultimate Play the Game, The Green, Ashby de la Zouch, Leics LE6 5JU

It's subtitled Jetpac II, the sequel; but, unlike most movie sequals, this program is as good and possibly even better than the original.

The scene is set on the cassette insert. Jetman has crashed on a planet inhabited by hostile beings which attack. So far, it's simply another zap game, but that's only the beginning!

Jetman has to explore the scrolling planetscape, find various bits of equipment and destroy the missile installations about to attack earth, at the same time as being attacked himself.

And, just so it's not too easy, you are not told how to proceed or what each item does, but simply provided with the eight control options — a joystick can also be used.

I haven't even managed to get into the high score chart yet, and I've played it non stop. Disgustingly addictive, superb animation, colour and sound — I especially liked the buggy and its destruction sequence.

This game, which is arcade with adventure elements grafted on, will take all but the best a long time to master, and when they do, the high score chart will ensure continued interest. Another winner from Ultimate. **R.E.**

instructions	91%
playability	98%
graphics	100%
value for money	100%

★ ★ ★ ★ ★

Traxx 48K Spectrum £6.95

Quicksilva, 13 Palmerston Road, Southampton SO1 1LL

This game is a variation on a theme, but nonetheless an enjoyable variation.

The idea is to track around the squares of a grid, trailing a coloured line after you.

Sounds easy? Don't you believe it! Whether by accident or design, the line that you "pull" after you is very reluctant to follow.

Just when you think that you have got it made, zap! the trail flies back as though it were on elastic.

This in spite of the fact that you can program in the speed to suit yourself; you can also program in the number of nasties that chase you.

Luckily you can pick up your trail from any loose end, and if you manage to cover the four corners you have a limited time to eat up the nasties.

You will have no problems with loading — it's only after loading that your problems start.

I would strongly advise starting with the slowest speed, and only one nasty to chase you. That way your sanity will only go gradually. Otherwise, the men in white coats will soon be coming for you.

I found it playable, but taxing. **B.B.**

instructions	100%
playability	90%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

Egbert Commodore 64 plus joystick £7.95

Games Machine, Bessemer Drive, Stevenage, Herts

This game has a very peculiar setting. Egbert is a character who works on a production line pressing buttons and is in charge of an egg!

Left to its own devices, the egg falls slowly down the screen and smashes on the floor. But, using the joystick, you can get Egbert to it before it breaks.

Red buttons appear at random down the sides of the screen and Egbert's job is to push these.

The egg is confined to the middle of the screen, however, so Egbert has to dash to the button across a gangway where deadly Pets are patrolling, push it, and dash back to catch the egg again.

The screen display is relatively simple, but the action is fast. Egbert fortunately has three lives and earns his points by pushing the buttons.

Egg smashing, button pushing and being deaded are all accompanied by suitable sounds. As you advance from being a novice you can go up six levels of skill.

I found the game interesting without being compulsive. **L.C.**

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

★ ★ ★

Hungry Horace Commodore 64 £5.95

Melbourne House, 131 Trafalgar Road, London SE10

Melbourne House's famous Horace character, first created for the Spectrum, has now made an appearance on the Commodore 64. But after playing this game, I'm bound to wonder what the fuss was all about.

You take the role of Hungry Horace, and your aim is to get from one side of a park to the other without being stopped by the park-keeper.

On the way, you can eat the flowers and the park-keeper's lunch for extra points.

There are four sections of park to go through. After reaching the end of the fourth part, you re-enter the first, but this time the game is much faster.

The game comes with a screen editor so that you can draw your own park sections and save them to tape. I found this difficult to use, and the instructions were not much help either.

If you manage to use the editor, then you can substitute your own mazes for the ones supplied with the game.

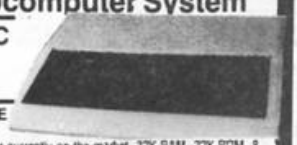
I didn't much enjoy playing Hungry Horace. I don't feel that the graphics or the sound really use the Commodore 64's capabilities to the full. **K.I.**

instructions	30%
playability	50%
graphics	30%
value for money	40%

★ ★

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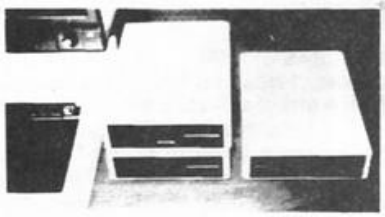


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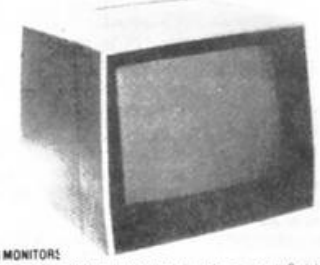
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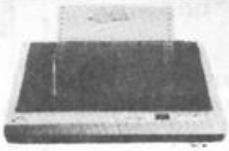
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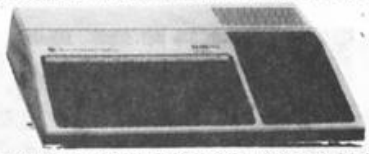
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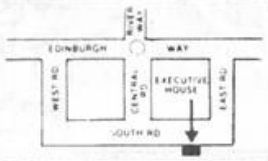
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TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

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SPECTRUM 48K
ADMIRAL GRAF SPEE
by Simon Mansfield
An original game of strategy based on historically accurate records of the Graf Spee's formidable presence in the North and South Atlantic.
As her Captain use full graphic instrumentation to calculate speed, compass bearings, fuel, distance, ammunition states: locate and manoeuvre into visual range and destroy enemy ships which can also evade, seek and destroy you! Attacked targets can only be destroyed by the same number of salvos or torpedoes as were necessary for the tonnage during the original action.
7 levels of difficulty –

SPECTRUM 16K
CHALLENGE
by Neil Streeter
A Temptation games double.
1. MASTER CODE DELUXE – all the features of the well known game. 2 skill levels – any code or no repeated colours. Good clear graphics show the success or failure of your logic as the computer assesses each line.
2. HIGHER AND LOWER – skill, hunches and sixth sense are needed to beat this fast dealing machine. Graphically as realistic as a certain television series. Will you be able to get to the end of the row of five cards, guessing whether the next card will be HIGHER or LOWER?

SPECTRUM 16K
GODZILLA AND THE MARTIANS
by Neil Streeter
The Martians have invaded, destroying the molecular structure of earth's atmosphere to make it compatible with their own planet.
"The girl of your dreams" is trapped at the top of a building site but for the moment protected from the evil invaders by a friendly Dinosaur! Leap over deadly Martian invaders – scale ladders – jump the man traps – rescue her before the oxygen is totally absorbed.
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Baron is a complex simulation game for up to four players.
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HCW38

Save your town from a watery disaster

The townsfolk are looking to you to save their homes. Are you ready to take on the missiles? Nigel Ridgway's game for the unexpanded VIC-20 will put you to the test

Here's your opportunity to save the town of Pollington, population 100,000, with your VIC-20 — the unexpanded model at that.

Your job is to defend the dam above the town by knocking out the missiles.

If a missile hits the dam, making a big enough hole, the valley will flood leaving the people of Pollington awash.

You have won if you manage to hold the dam until everyone has got to safety. The number of people left in the valley is shown at the top of the screen.

Here's a hint: let the missile get near the dam before blowing it up and the townsfolk will have more time to get away.

To get more out of the unexpanded VIC the program is in two parts. The first defines the characters and give instructions and part 2 is the main body of the game.

Variables

A position of missile
P population
XX number of missiles fired
W position of your ship
J position of bomb

Listing 1 — type this in first. Title etc. has been removed from lines 100-500

```
1 POKE52,28:POKE56,28:CLR:POKE650,128:PRINTCHR$(8)
2 GOTO100
10 FORI=7168TO7207:READT:POKEI,T:NEXTI
20 FORI=7424TO7431:POKEI,0:NEXTI:FORT=1TO200:NEXTT
50 DATA255,255,255,255,255,255,255,255
60 DATA170,85,170,85,170,85,170,85
70 DATA0,1,98,252,252,98,1,0
80 DATA255,24,60,126,255,231,195,38
90 DATA0,36,24,24,60,126,60,24
95 GOTO510
160 PRINT"■■YOU ARE IN CONTROL OFTHE DAM IN POLLINGTON.YOU ARE BEING ATTACKED";
170 PRINT"BY ALIEN MISSILES.YOU MUST DEFEND THE DAM ASLONG AS YOU CAN SO THE";
180 PRINT"PEOPLE IN THE  VALLEY CAN EVACUATE TO SAFETY";
190 PRINT"■■■■■PRESS A KEY";
200 GETA$:IFA$=""THEN200
210 PRINT"□■■■    ■USE THESE KEYS■"
220 PRINT"■■■F5■ TO LAUNCH SHIP"
230 PRINT"■■■F7■ TO DROP BOMB"
240 PRINT"■■■     PLEASE WAIT"
500 GOTO10
510 PRINT"■■NOW LOAD PART 2 OF DAM RAID"
520 END
```

Hints on conversion

Conversion should be fairly easy if you have a Commodore 64 or a PET. To convert to other computers you would have to look up the method your computer uses to make the characters and replace listing 1.

You would have to replace all the screen locations and sound control

Here are the POKE locations I have used:

36878 sets volume for sound
36874-36877 sound voices
36879 border and screen colour
7680-8185 screen locations
38400-38805 colour locations

How it works Part 2

0-170 input width of dam, draw dam
180-200 decide approach of missile
210-240 move missile
260-300 update population left
1000-1090 missile hits dam
1500-2000 dam blows up
2000-2500 no people left in valley
2500-3000 move ship, check to see if bomb is to be dropped
3001-3300 move bomb
3305-3380 bomb hits missile
3500-3580 bomb misses

Listing 2 — the main game

```
10 POKE36879,25:PRINT"□":POKE36878,15
15 POKE36869,240
20 PRINT"■INPUT WIDTH OF DAM 1-5":INPUTW
25 IFW<>INT(W)ORW>5ORW<1THEN20
30 POKE36869,255
50 CO=30720:CC=7680:P=100000:S=36874:XX=0
55 PRINT"□"
60 FORBB=0TO1
70 FORB=7724+BBTO8164+BBSTEP22
80 POKEB,0:POKEB+CO,6
90 NEXTB
100 NEXTBB
110 FORBB=0TOW-1
120 FORB=7726+BBTO8166+BBSTEP22
130 POKES,241
140 POKEB,1:POKEB+CO,0
150 POKES,0
160 NEXTB
170 NEXTBB
180 Q=INT(RND(1)*20):XX=XX+1
185 T=0
190 QQ=Q*22
200 Q=7745+QQ
210 POKEQ,2:POKEQ+CO,2
220 EE=0:IFQ=0THEN180
225 Q=Q-1:IFPEEK(Q)<>32THEN1000
230 POKES,135
235 POKEQ+1,32:POKEQ,2:POKEQ+CO,2
240 POKES,0
260 PRINT"■■■POPULATION ="P"■■ "
270 QQ=INT(RND(1)*100)
280 P=P-QQ:IFP<=0THEN2000
290 GETA$:IFA$="■"ANDT=0THEN2500
300 GOTO220
1000 IFPEEK(Q-1)<>1THEN1500
1010 POKEQ+1,32:POKEQ,32
1020 POKE36877,220
1030 FORB=15TO0STEP-1
1040 POKE36878,B
1050 FORBB=1TO50:NEXTBB,B
1060 POKE36877,0:POKE36878,15
1070 QQ=INT(RND(1)*100)
1080 P=P-QQ:IFP<=0THEN2000
1090 GOTO180
1500 POKEQ,32
1510 POKES,0
1520 PRINT"■□■■■■  THE DAM HAS BEEN          DESTROYED"
1530 PRINT"■■■YOU MANAGED TO SAVE    "100000-P"PEOPLE"
1540 PRINT"■■BUT";P;"PEOPLE DIED IN THE FLOOD THAT     FLOWED"
1545 PRINT"■■IT TOOK"XX"MISSILES TO BLOW THE DAM"
1550 PRINT"■■■ANOTHER GAME (Y/N)"
1560 GETB$:IFB$="Y"THENRUN
1570 IFB$="N"THENSYS64802
1580 GOTO1560
2000 PRINT"□"
2010 PRINT"■■■WELL DONE YOU MANAGED TO HOLD THE DAM UNTIL ALL 100000 PEOPLE
 EVACUATED"
2020 PRINT"■■■YOU SURVIVED "XX"MISSILES"
2030 GOTO1550
2500 W=7702:T=1
2510 POKEW,3:POKEW+CO,5
2520 W=W+1:IFW>7723THENPOKEW-1,32:GOTO220
2525 POKES,199:POKES+1,241:POKES+2,135
2530 GETA$:IFA$="■"ANDEE=0THEN3000
2540 POKEW-1,32:POKEW,3:POKEW+CO,5
2550 POKES,0:POKES+1,0:POKES+2,0
2570 GOTO2520
3000 EE=1:J=W+21:POKES,0:POKES+1,0:POKES+2,0:POKES+3,0:IFPEEK(J)<>32THEN3300
3001 FORB=230TO128STEP-1
3002 POKE36875,0
3003 POKE36876,0
3004 POKE36877,200
3005 J=J+22:IFJ>8185THEN3500
3010 IFPEEK(J)<>32THEN3300
3020 POKEJ-22,32:POKEJ,4:POKEJ+CO,0
3025 IFZZ=0THENNEXTB
3090 IFB>15THEN3120
3100 POKE36878,B
3110 POKE36877,0
3120 ZZ=1:B=15:GOTO3006
3130 POKE36878,15
3300 IFPEEK(J)>2THEN3330
3305 POKEJ,32
3310 POKES,0:POKES+1,0:POKES+2,0:POKES+3,0:POKE36878,15
3320 POKEJ-22,32:Q=0
3330 POKES+3,215
3340 FORB=15TO0STEP-1
3350 POKE36878,B
3355 FORBB=1TO50:NEXTBB
3360 NEXTB
3370 POKES+3,0:POKE36878,15
3380 GOTO2530
3500 POKEJ-22,32:POKES,0:POKES+1,0:POKES+2,0:POKES+3,0:POKE36878,15
3510 POKE36877,220:FORB=15TO0STEP-1
3515 POKE36878,B
3520 POKE36865,37
3530 FORBB=1TO30:NEXTBB:POKE36865,39
3540 FORBB=1TO30:NEXTBB
3550 NEXTB
3560 POKE36865,38
3570 POKE36877,0:POKE36878,15
3580 GOTO2530
```

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Just as Henry is getting in to his evening at the tables his wife – Mad Martha – has noticed his absence. Realising Henry has absconded with the housekeeping she sets out after him with an axe.
Guess what part you play in this happy tale? That's right, you're Henry. Watch out for that axe!

A game to invest in... funny, genuinely original, and the graphics are great... hit the key to begin, the Spectrum plays a real Hollywood-style movie theme tune, and the hunt is on!
Personal Computer News

And now –

Mad Martha II

Time for the annual holiday and Martha decides to visit her half-cousin Manuel, who is a waiter in a plush hotel in Barcelona.
One afternoon, Martha sets out on a bus tour with her son, young Arbuthnot, leaving orders for Manuel to keep an eye on Henry. Unbeknown to Martha, crafty Henry has a Spanish pen-pal, and has planned a secret rendezvous. Henry leaves the hotel, brimming with enthusiasm and Manuel (who is totally wacky!) is hot on his trail. The adventure takes us through the thrills and spills of a madcap chase, taking in amongst other delights, a bull fight in which poor Henry is forced to play the leading role. Guaranteed laughs and fun for all the family!



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Programs with a purpose

Our review panel test a selection of programs whose aim is to help you out

The Quill 48K Spectrum £14.95

Gilsoft, 30 Hawthorn Road, Barry, South Glamorgan CF6 8LE

Described by Gilsoft as an "Adventure Editor", I would go as far as to call this a completely new language. Not like BASIC or Forth, but a language developed and dedicated to one task — writing adventure programs.

The idea is to allow writers of adventure programs to concentrate on producing their maps, plots, encounters etc. without having to learn the intricacies of programming.

The tape arrived complete with a professional 52-page booklet which explained in detail the workings of the program's sections and functions and led the user through its operations via a simple demo program.

The manual and program need practice and careful reading. Don't assume that this is a "programming made easy for idiots" tape.

The program is in three parts: Editor, Interpreter, and Database. The company allows for commercial use by only holding copyright on the editor and manual.

If a program is created and marketed then all Gilsoft ask is a mention in the credits. **R.E.**

instructions	97%
ease of use	93%
display	91%
value for money	90%

★ ★ ★ ★ ★

Aid 48K Oric £10

D. Bandoo, 81 Mount Pleasant, Wembley, Middlesex HA0 1UD

A comprehensive package consisting of a toolkit for BASIC programs, monitor and assembler. The tape loaded well and proved a joy to review.

Simple but very well written instructions explain each of the three machine code programs in turn. Toolkit supports Append, Convert (memory contents into BASIC data statements), Delete, Find, Line Number, Verify, Renumber and four other commands.

Together they offer a powerful system which any serious BASIC programmers would be delighted to have at their disposal.

The monitor was effective without the need for fancy display, and I liked the pause facilities offered during screen scrolling.

The assembler occupies the location also used by the hi-res screen, but if this mode is called the Toolkit and Monitor remain intact.

BYT, TXT, and ASM are supported and the assembly code is entered like a BASIC program — aided by Toolkit — allowing separate saving of both it and the assembled machine code. **P.W.**

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

★ ★ ★ ★ ★

Microprint 42/51 Spectrum £5

Myrmidon Software, PO Box 2, Tadworth, Surrey KT20 7LU

This 823-byte utility prints 42 or 51 characters per line, to 24 lines, using all keyboard characters, including udgs, with usual colour combinations.

Sounds good? Yes, but! Alphabet/numerics are reduced individually and look good.

Predefined graphics, though, are reduced by removing middle bits, resulting in identical but opposite shapes being no longer identical in shape or size.

This makes building up large title letters, for example, difficult, since they may no longer meet.

With udgs, the last (right) two or three bits are removed — only ⅝ths of your graphic prints!

Graphics must be redesigned to use only the unremoved bits, requiring data-switch and more memory.

You cannot use Microprint in any commercial program without "prior agreement". Naughtily, this is only mentioned in the instructions, ie after you've bought it, which may not make it legally binding.

If "agreement" translates as "share of royalties" (and why should the screwdriver expect to profit from the sale of your woodwork?) then the usefulness of an excellent program is sadly limited. **D.C.**

instructions	90%
ease of use	90%
display	n/a
value for money	90%

★ ★ ★ ★ ★

Music Maker 48K Spectrum £5.75

Bellflower Software, 6 Rosewood Avenue, Greenford, Middlesex

This is a really comprehensive music making program, a masterpiece of presentation and programming in BASIC.

It allows you to input your own creations in standard music notation, play the tune back, store it on tape and even print it out using the ZX Printer.

Although not fully error trapped, it is most impressive, particularly the re-definition of lower case characters as notation.

There is however a strange contradiction in the purpose of this program.

To use it to the full, you need to know standard music notation very well.

If you do, then it's unlikely that you have access to an instrument which sounds much better than a Spectrum, and you could write your music down with a pencil!

If, on the other hand, you are a computer freak who wants to see the sound capability of the Spectrum explored, then you will have to get to grips with the notation before this program is of value.

And, in my opinion, standard musical notation is harder to understand than assembly language programming! **D.M.**

instructions	75%
ease of use	85%
display	95%
value for money	80%

★ ★ ★ ★ ★

Save-A-Sketch TI-99/4A plus MiniMemory Module £5

Stainless Software, 10 Alstone Road, Stockport

This program is not intended to reside within the MiniMemory module, but makes use of some of the extra functions provided by the module for TI BASIC.

Using a character redefinition technique, the program allows you to either draw a limited high-resolution picture on the screen, or to print a picture already defined within the program.

It is unusual in that it is of the type known as self-modifying; that is, the program re-writes part of itself so that if you SAVE the program after it has finished its stuff, when you reload it will print up your picture in double-quick time.

Control of a small pen is achieved through the keyboard, using the W,E,R,S,D,Z,X and C keys.

Also active are the 1,2,4 and 5 keys, giving pen up, pen down, initiate re-writing, and pen erase.

This is not a fast program because of the restrictions of TI BASIC, but nevertheless with patience a satisfying image can be produced.

The program works with both TI-99/4 and 4A, and overcomes the CALL KEY() bug on the 4A. **P.B.**

instructions	70%
ease of use	80%
display	60%
value for money	60%

★ ★ ★



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HCW38

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Cars and boats and planes

Our reviewers took to the road, sea and air to bring you their ratings of these games

Admiral Graf Spee 16K ZX81 £5.95

Temptation Software, 27 Cinque Ports Street, Rye, East Sussex

I had trouble with this tape. It appeared to load successfully but whether I was just bad at playing it or whether there was a fault on my copy I don't know.

The game makes you the captain of the battleship Graf Spee in the Atlantic in 1940, and your task is to sink all the enemy shipping in the area.

First you are shown a map of the Atlantic with your position, and you have to locate the enemy ships; this I found almost impossible as they seemed to appear and disappear erratically.

Once you have come close to them, however (which I only managed by accident) you are then given a view of the horizon and you must seek out and destroy the enemy with guns or torpedoes; but beware, he is shooting at you too.

The instructions that come with the tape say that you are offered seven levels of difficulty, but at no time when I tried the game was I given such a choice!

Very little time was allowed for keying in an instruction, and the response to the keys seemed poor.

The instructions were not very helpful, and I found it irritating merely trying to make the game work.

C.C-R.

instructions	30%
playability	30%
graphics	50%
value for money	40%

★★

Gran Pree TI-99/4A (Extended BASIC) £4.99

Andromeda Software, 56 Wells Street, Haslingden, Rossendale

Gran Pree is a one or two player game in which cars are raced against those controlled by the computer.

Before starting you are given the option of either playing through a full Grand Prix season of 15 races, or selecting your own limits for race duration and the number of wins required to become champion.

The race track is then displayed with two lane chicane and pit stop. Cars line up on the starting grid and play begins when a flashing light changes from red to green.

Player's cars may be moved up or down, accelerated or decelerated, and their current fuel reserve and speed are displayed at the bottom of the screen.

Changes in speed are indicated by a series of discords, the drone of which soon becomes intolerable.

With a choice of four skill levels, you might expect this to be a fairly entertaining race simulation.

The action was too slow for my liking, however, and I soon became frustrated and bored, whether playing solely against the computer or with another player.

J.W.

instructions	75%
playability	30%
graphics	70%
value for money	50%

★★★

Super Dogfight Commodore 64 £9.95

Terminal Software, 28 Church Lane, Prestwich, Manchester M25 5AJ

This is the classic two-player dogfight, as seen on a thousand Atari video games.

Two bi-planes, in a cloudless sky, are trying to blast each other to bits with machine guns. Your opponent must be hit 10 times before you win.

Graphics are better than on the Atari version — I particularly liked the way that the loser parachutes out of the plane that gets hit, and the bits falling off the plane.

Sound effects are good, too, with engine noise rattling away constantly.

Instructions are clear, and you have the choice of control by two joysticks or keyboard and joystick. There is no option to play against the computer, which is a shame.

The set-up is good and so is the implementation, and the whole thing seems to be relatively bug-free.

It would be an excellent game at £5, but at £10 I think it's grossly overpriced for what is basically a re-vamp of an old idea. There is much better value on the market than this.

M.R.

instructions	90%
playability	85%
graphics	80%
value for money	20%

★★★

Chequered Flag 48K Spectrum £6.95

Sinclair Research, Stanhope Road, Camberley, Surrey GU15

Chequered Flag is one of the best programs since Flight Simulation and well up to Psion's usual high standard.

The game is to drive a Formula 1 racing car so as to get the best possible time over a chosen course and distance.

After a straightforward loading, you are invited to select from plan views of 10 courses, and then pick your car from three models requiring different levels of skill. The easiest has automatic gears!

You can then either see a demonstration run and on-screen instructions (there are full instructions on the insert too) or go straight to the game.

This starts with a view of the road ahead, complete with starting lights, in the top half of the screen, and a very detailed cockpit in the lower.

The track rushes past and you have to dodge a variety of hazards which can slow you or force a pit stop.

Leaving the road slows the car, and if not quickly corrected, results in a crash.

Chequered Flag is an excellent game, well put together and very exciting. Highly recommended.

H.C.

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

★★★★★

Harrier Attack Spectrum £5.50

Durrell, Castle Lodge, Castle Green, Taunton TA1 4AB

Similar to Scramble, although with enough unique features to be an original game.

Your task is to take off, fly to an island, fly across the island through a barrage of flak and enemy plane attacks, bomb the base and return and land safely.

The top three-quarters of the screen shows your plane and the terrain which scrolls smoothly from right to left.

Beneath this is a graphic display showing your speed, fuel, bombs and missiles.

Five levels of play are offered. Level 1 is the easiest, and even that takes a bit of practice. On higher levels your speed/fuel ratios begin to cause added headaches!

A very professional program throughout. Nice insert, clear, concise instructions, good screen presentation, first class graphics, colour and sound and a hall of fame for the highest scores.

The control keys are cursor keys 5, 6, 7 and 8, for slower, up/down, faster, with key 9 to bomb and key 0 to fire missile — space key is the emergency eject.

A slightly cramped arrangement, but I soon became familiar with it; especially the eject key!

R.E.

instructions	96%
playability	94%
graphics	89%
value for money	93%

★★★★★

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Now you are on your own and you must decide how to proceed to Highsville Mainstreet to find the various establishments to enter and .....

OGLES **for BBC/B**

Designed with people of all ages in mind this programme provides an aid to learn and match colours as well as being very entertaining. Not only have colours to be matched in sequence but co-ordination skills can be developed by moving the correct coloured OGLE to match a pattern displayed on the screen. Interest and amusement are provided by you as Gordon having to control your pet dog Flash by guiding him to collect the matching OGLE, carry it back and to drop it at the correct position.
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Poor Gordon! His drainpipes are blocked again and the only way to clear them is to drop barrels down them. Gordon stands on the top of his roof with 5 barrels. When the game starts he'll roll one down the roof. Press ***SPACE*** to drop it through the roof accurately into the centre of a drainpipe and you'll score the number of points in the pipe, which will start to flash, and Gordon will get the barrel back for another go. The barrel will be lost if the drop is inaccurate, or into a pipe already filled, but - Flash the dog is on hand! If you know you're going to lose the barrel and you can see Flash peeping out from the bottom-right corner, press ***D*** and Flash will save it! Once you clean all 5 pipes, you will get a bonus, but there's a surprise in store before you get the next set of pipes to fill **£5.95**

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Give them a lift... if you can stand the strain

It's a risky job being a lift attendant – in this program anyway. Rod Lane wrote the game for the unexpanded TI-99/4A



My game places you in the role of a despairing lift attendant whose job is to carry passengers in a six-storey office building to the roof-top helipad.

However, your lift is in need of repair and the doors have the unfortunate habit of opening when leaned on — even when the lift is not present — and the passengers take a nasty tumble.

Your task then is to whisk the passengers to the roof as quickly as possible, using the E and X keys.

This is complicated by two factors.

The mechanism is old and weak and if you try to cram more than six people into your lift the cable will snap with obvious consequences.

And when a disaster happens the other workers, realising something is amiss, pour out of their offices into the corridor near the lift shaft.

When more than 10 people have suffered an untimely end the game finishes and displays your tally and the opportunity to try again.

If at any time the strain becomes too much you can break the program by pressing FCTN/CLEAR.

How it works

140-250 set up variables
260-370 define characters
380-590 draw screen
600-900 scan keyboard, move lift or move passengers and, when lift reaches roof, write total number of passengers
910-1270 randomly decide on which floor the passenger advances and remembers how far along corridor figure has reached. Extra choices included to make progress of the figures less smooth
1280-1380 move figures
1390-1490 check when passenger reaches lift shaft whether lift is present, score success, check for over-loading
1670-1770 crash lift on over-loading
1780-1800 print tally, offer new game

Hints on conversion

TI BASIC is fairly standard with two main exceptions. Single statement lines are used and subroutines for graphics and sound are available, prefixed with CALL, as detailed below.

CALL CLEAR clears screen
CALL SCREEN defines screen colour
CALL CHAR defines a character with a 16-digit hex string from an eight by eight grid. Other machines will use a different method
CALL COLOUR (character set, foreground, background) sets colour of character
CALL HCHAR (row, column, character code, number of repeats) places character on screen at co-ordinates specified and optionally repeats character horizontally
CALL VCHAR similar to HCHAR but repeats character vertically
CALL GCHAR (row, column, variable) similar to a screen PEEK on other machines. Gives the ASCII code at the given screen co-ordinates
CALL SOUND (D,F,V) gives sound of duration D, frequency F and volume V. Three sounds can be produced at once

Variables

F,S,T,FT,FIF,SX column positions of the six figures
COL value of above used in subroutine
MET number of passengers met and therefore in the lift
TOT total of passengers to reach the helipad
LOST number of passengers who failed to make it
DET number of places from the end of the floor on which the figures appear

```
100 REM  LIFT ATTENDANT
110 REM  BY R.LANE.
120 REM
130 REM  INITIAL VALUES
140 CALL CLEAR
150 F=31
160 S=31
170 T=31
180 FT=31
190 FIF=31
200 SX=31
210 MET=0
220 LOST=0
230 DET=0
240 TOT=0
250 RANDOMIZE
260 REM  DRAW CHARACTERS
270 CALL CHAR(128,"0808080808080
808")
280 CALL CHAR(129,"087F557F557F5
57F")
290 CALL CHAR(136,"0010301038102
868")
300 CALL CHAR(137,"0010301038102
C24")
310 CALL CHAR(132,"000000CE14237
8FF")
320 CALL CHAR(144,"FFFF00000000F
FFF")
330 CALL COLOR(14,6,1)
340 CALL COLOR(15,9,1)
350 CALL COLOR(3,8,1)
360 CALL COLOR(4,8,1)
370 CALL SCREEN(16)
380 REM  SET UP SCREEN
390 CALL VCHAR(1,4,30,24)
400 CALL VCHAR(2,6,30,23)
410 CALL VCHAR(1,5,128,24)
420 P=INT(24*RND)+1
430 CALL HCHAR(P,5,129)
440 FOR ROW=4 TO 24 STEP 4
450 CALL HCHAR(ROW,7,30,25)
460 CALL HCHAR(ROW-1,6,32)
```

```
470 NEXT ROW
480 CALL HCHAR(2,7,144,4)
490 M$="MET"
500 C=11
510 GOSUB 560
520 M$="LOST"
530 C=21
540 GOSUB 560
550 GOTO 610
560 FOR L=1 TO LEN(M$)
570 CALL HCHAR(2,C+L,ASC(SEG$(M$
,L,1)))
580 NEXT L
590 RETURN
600 REM  Move Lift
610 CALL KEY(3,K,ST)
620 IF ST=0 THEN 920
630 IF K=69 THEN 660
640 IF K=88 THEN 830
650 GOTO 920
660 P=P-1
670 IF P<=0 THEN 720
680 CALL HCHAR(P+1,5,128)
690 CALL HCHAR(P,5,129)
700 CALL SOUND(150,-7,0)
710 GOTO 610
720 P=1
730 TOT=TOT+MET
740 MET=0
750 CALL HCHAR(2,16,48)
760 FOR I=1 TO LEN(STR$(TOT))
770 CALL HCHAR(1,6+I,ASC(SEG$(ST
R$(TOT),I,1)))
780 NEXT I
790 CALL HCHAR(1,6+I,136)
800 CALL SOUND(150,659,3)
810 CALL SOUND(100,880,0)
820 GOTO 920
830 P=P+1
840 IF P>=25 THEN 890
850 CALL HCHAR(P-1,5,128)
860 CALL HCHAR(P,5,129)
870 CALL SOUND(150,-7,0)
880 GOTO 610
890 P=24
900 GOTO 610
910 REM   Decide On Floor
920 C=INT(10*RND)+1
930 ON C GOTO 940,990,1040,1090,
1140,1190,1240,1250,1260,1270
940 ROW=3
950 COL=F
960 GOSUB 1290
970 F=COL
980 GOTO 610
990 ROW=7
1000 COL=S
1010 GOSUB 1290
1020 S=COL
1030 GOTO 610
1040 ROW=11
1050 COL=T
1060 GOSUB 1290
1070 T=COL
1080 GOTO 610
1090 ROW=15
1100 COL=FT
1110 GOSUB 1290
1120 FT=COL
1130 GOTO 610
1140 ROW=19
1150 COL=FIF
1160 GOSUB 1290
1170 FIF=COL
1180 GOTO 610
1190 ROW=23
1200 COL=SX
1210 GOSUB 1290
1220 SX=COL
1230 GOTO 610
1240 GOTO 610
1250 GOTO 610
1260 GOTO 610
1270 GOTO 610
1280 REM  Move Passengers Subrou
tine
1290 CALL HCHAR(ROW,COL+1,32)
1300 IF (COL=5)+(COL-1=5)THEN 14
00
1310 CALL HCHAR(ROW,COL,136)
1320 COL=COL-1
1330 CALL SOUND(60,880,0)
1340 CALL HCHAR(ROW,COL+1,32)
1350 CALL HCHAR(ROW,COL,137)
1360 CALL SOUND(100,587,0)
1370 COL=COL-1
1380 RETURN
1390 REM  Check For Lift
1400 CALL GCHAR(ROW,5,GET)
1410 IF GET<>129 THEN 1510
1420 CALL SOUND(100,440,0)
1430 MET=MET+1
1440 IF MET>6 THEN 1680
1450 FOR I=1 TO LEN(STR$(MET))
1460 CALL HCHAR(2,15+I,ASC(SEG$(
STR$(MET),I,1)))
1470 NEXT I
1480 COL=31-DET
1485 IF COL>8 THEN 1490
1486 COL=8
1490 RETURN
1500 REM  Miss Passenger
1510 FOR SOUND=880 TO 220 STEP -
20
```

TI-99/4A PROGRAM

```
1520 CALL SOUND(50,SOUND,0)
1530 NEXT SOUND
1540 DET=DET+3
1550 LOST=LOST+1
1560 FOR I=1 TO LEN(STR$(LOST))
1570 CALL HCHAR(2,26+I,ASC(SEG$(
STR$(LOST),I,1)))
1580 NEXT I
1590 IF LOST>10 THEN 1640
1600 COL=31-DET
1610 IF COL>8 THEN 1630
1620 COL=8
1630 RETURN
1640 FOR DELAY=1 TO 2000
1650 NEXT DELAY
1660 GOTO 1780
1670 REM  OVERLOAD SEQUENCE
1680 FOR E=ROW TO 24
1690 CALL HCHAR(E,5,32)
1700 CALL SOUND(50,-6,0)
1710 NEXT E
1720 CALL HCHAR(24,5,132)
1730 CALL SOUND(350,-7,1,110,0,1
15,0,120,0)
```

```
1740 FOR DELAY=1 TO 2000
1750 NEXT DELAY
1760 CALL CLEAR
1770 PRINT "YOU OVERLOADED THE L
IFT.":::
1780 PRINT "YOU ELEVATED";TOT;"P
ASSENGERS":"YOU LOST";LOST+MET;"
LIVES.":::
1790 INPUT "PRESS ENTER TO START
 AGAIN":A$
1800 GOTO 140
```

Micro Tip — **VIC-20**

Make space for hi-res

This line can be entered as a direct command, or as part of a program, so as to reconfigure your VIC to take hi-res graphics with a 16K RAM pack.

It can be used in a program of instructions, for instance, to reserve space for hi-res and then to auto-load the next part of the.program.

POKE 198,0 : POKE 648,30 : POKE 642,32 : POKE 198,10 : POKE 631,131 : SYS 64824

631 is the first location of the keyboard buffer — not 632, as was stated recently in one magazine.

David Shepherdson

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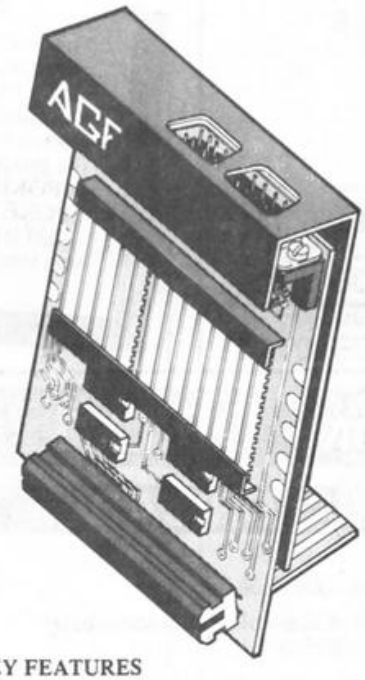
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Where should you turn for maze games?

If you're trying to find your way about the new maze games on the market, our reviewers offer you some guidance

Gopher TI-99/4A (Extended BASIC) £8

Titan, from Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

Gopher is a Caterpillar type game for one or two players in which you rush through a maze munching numbers, but avoiding your tail.

The maze is displayed with several bolt holes permitting exit and re-entry on the opposite side of the screen.

When ready, you start the gopher moving and will be unable to stop again until you've travelled through 200 squares without crashing.

After this you progress to the next level where the points are doubled for each number eaten. If you survive this, then at the following level points are tripled and so on.

There is a choice of three speeds. Speed one is the fastest but speed two provides more numbers to eat and bricks to avoid. Speed three is slow but challenging, especially when attempting the two player game.

The latter variation is the most enjoyable feature of Gopher. It's far more tricky to outwit your opponent by blocking him off as well as race against him to obtain the highest score. **J.W.**

instructions	95%
playability	75%
graphics	60%
value for money	60%

★ ★ ★

Oricmunch 48K Oric £7.95

Tansoft, 3 Club Mews, Ely, Cambs CB7 4NW

It seems that no micro is launched these days without its own version of Pacman or Space Invaders appearing very soon afterwards.

This is not necessarily a bad thing, as long as the versions are good.

Tansoft's Oricmunch is certainly one of the better Pacman-style games on the market, retaining most of the features of the arcade original while still managing to be very fast.

You are pursued by the usual four ghosts around a variety of mazes (a different one at each level).

Eating two of the ghosts causes the remaining two to increase the speed at which they pursue you. This offsets their inability to regenerate before the next level.

All this is accompanies by some wonderfully silly sounds. The bonus fruits from the arcade version are replaced by a variety of symbols. On the whole the movement is very smooth and flicker-free.

The only gripe I have is that whenever you lose a life you are forced to start that screen again (very frustrating if you only had a few dots to go).

Certainly if you like Pacman then this game is well worth the money. **M.J.**

instructions	80%
playability	90%
graphics	85%
value for money	80%

★ ★ ★ ★ ★

Cybertanks Spectrum £5.50

Star Dreams, 17 Barn Close, Seaford, Sussex

You are in a maze of houses with four tanks after you.

Steering is via the cursor keys or, if you have one, a Kempston joystick and, obviously, you have to get them before they get you.

If you succeed, then another maze is set up and four more tanks take up the chase — but this time they are laying mines.

Fortunately, providing you are not a humanitarian, you can blast your way through the houses to get a clear path.

Your pursuers don't seem to be too bright, though, and I found that it was quite possible to drive straight past them without injury.

This should not deter you as they tend to hit you more often than not.

I would not class this as an exceptional game but it is certainly very competent with clear, if not outstanding graphics.

It also has a high score table for the top 10 scores.

As a game, this one will probably give a deal of pleasure. But I feel that it would be a lot more enjoyable with the addition of different skill levels. **N.B.**

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

★ ★ ★ ★

Snail Trail 32K BBC £4.95

R. H. Electronics, Chesterton Mill, French's Road, Cambridge CB4 3NP

A simple game with very little action. A maze is drawn on the screen and the player has to find a way out by moving a marker through the maze by means of four keys.

There are four levels of play, and the player plays against the clock. The lower level is easily mastered but the higher levels will test the most skilful keyboard exponent.

Each new screen display draws a different maze, but lack of action, no sound and the simplicity of the game soon makes interest wane, despite the variation.

Little use is made of the full potential of the BBC and adding to the tedium is the extraordinary length of time the program takes to set up each new screen, especially at the higher levels of play.

In fact, because each game is quickly over, you spend longer waiting for the screen to be set up than playing the game.

At all levels, the mark being moved is very difficult to see and while each level of play has a different coloured maze, the use of colour action is poor. BBC owners have come to expect something better than this.

A poor game, even at the price. **J.D.**

	80%
instructions	40%
playability	40%
graphics	40%
value for money	

★ ★

Mined-Out 32K BBC £6.95

Quicksilva, 13 Palmerston Road, Southampton SO1 1LL

Don't be put off by the insane insert blurb — and don't be too attracted by the half naked damsel floating in a bubble on the cover either. The presentation may be over the top but the game is fun.

Frustrating, certainly, but therein lies its addiction. The racing fraternity might refer to it as Surround out of UXB.

Ignore all mention of Bill the Worm — star of stage and silver screen — this is a maze game. Using the Z, X, : and / keys you must wend your way from bottom to top through nine mazes, each ploughed with hidden mines.

You are told how many mines are adjacent to your present position but not where they are — you must discover that for yourself.

You have one life (how realistic), and the opportunity to rescue damsels — clones, all, of Nora Mudroe — who are looking for Bill their hero. You get extra points for this chivalrous act.

The first few mazes are easy but then a little bug starts to follow you, forcing you to go faster and make mistakes — and get blown up.

A mine layer sweeps across the screen, putting some down and picking some up and some mines become visible.

And Bill snores peacefully through it all. **I.W.**

instructions	95%
playability	90%
graphics	85%
value for money	85%

★ ★ ★ ★ ★

LETTERS

Send your letter to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address

Logic doesn't cheat anymore!

Following the software review of Logic Systems Draughts in HCW 30 where it was pointed out that the program "cheated" the player, and to which the reviewer concluded "Now that's what I call really human behaviour!", Logic Systems assures HCW that this is not the case with any of the Draughts tapes currently on the market.

An early copy was sent to HCW, which had a fault whereby if you manoeuvered the game so that you could take more than one piece at a go, your piece just disappeared into thin air!

The faulty copies were, of course, replaced, but what with this review and the amused comments we received about this fault, I'm not so sure that we shouldn't have offered it as a feature!

Logic Systems, Cherry Hinton, Cambridge

Is this the end?

The announcement that Texas Instruments is to cease production of the TI-99/4A must have alarmed many TI owners.

Owners may be assured that TI has its guarantee commitments in mind, and will continue to provide service for at least the next year.

From TI we learn: "Texas Instruments will of course carry on supporting the TI-99/4A in terms of service/repair and there is plenty of software and accessories to satisfy existing owners and those who purchase up to Christmas . . ."

Present owners should remember that no new TI modules or peripherals will be produced and buy what they need within the next month. Supplies of some items are very low.

We understand that there are many surplus consoles and these are likely to be reduced in price, as are some of the games modules, to clear stock before the end of the year.

The more costly modules and the peripherals are not in such surplus, however. If you are thinking of buying these you should obtain a loan and buy them while you can!

Galaxy Video in Maidstone have very small supplies of a very recently released module LOGO2, and some new Funware modules (Ambulance and Driving Demon). Owners should support such dealers!

If owners wish to maintain support, it is suggested that all requests be channelled through the three or four dealers who have shown practical support for the computer.

By concentrating demand, we can make it worth their while to consider the import of third party modules and peripherals from the States . . . always a risk business.

Here in the UK we have a third party supplier of 32K RAMs (Arcade Hardware) and they, together with others, also supply joysticks or adaptors. Galaxy lists over 20 titles of books, and also supplies 99er Magazine.

Stainless Software will continue to supply cassette programs so long as there is demand. We understand the other principal software houses will be continuing. Stainless Software still welcomes additions to its catalogue, by individual programmers or from small suppliers who now wish to leave the market.

But all enquiries to us from individuals **must** be accompanied by an SAE!

Stephen Shaw, Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH



The ultimate frustration?

Some of the software houses charge more for their games and perhaps include booklets etc. in their package.

Ultimate, who have produced some excellent games this year, should have charged more for their current game Jetman and included a bottle of Scotch and a swear box!

If I ever get to pick up that damn bomb I shall know exactly where to drop it — The Green, Ashby de la Zouch.

Thanks, anyway, to Ultimate for top quality games.

Roy Bristow, Bradford-on-Avon, Wilts

Long wait for Micronet

Please warn any readers hoping to join Micronet in the future that they may be in for a very long wait, as it has taken me just over two months to get in!

I first of all filled in the form which came with my Prism modem, and posted it off first class. I waited for three weeks and heard nothing, and so decided to give them a ring and find out what was happening. I was told that it would take between three and four weeks to deal with my application, which I accepted.

But another two weeks went by and still nothing had happened, so I gave them another call. They told me I would get my number within the next 10 days, as they were very busy (the advert says the whole process takes 28 days).

About five days later, I received a call asking me for another £100 for my modem. I explained that I already had a modem and just wanted my number, and the girl I spoke to said that she would deal with it.

She did that alright, as the next time I rang up, they had lost my form. After this I thought things could only get better. How wrong could I be?

When they eventually found my form, I was promised that the number would be sent that day, first class. My number finally arrived two months later, and gratefully received.

I immediately went and entered my number into the computer only to find that it was not my number at all, and so would not work. The right number arrived eventually — but without instructions or directory, which took another week to come.

Vicki Blundell, Potters Bar, Herts

A Micronet spokesman said: "The service has been bad, there's no denying it, but we are trying our best to improve it — and practice makes perfect. You can currently expect to wait about six weeks, but we're hoping to reduce that soon. One problem has been that the application form is fairly complex, and people have filled it in wrongly, which has slowed the process down. Secondly, bear in mind that the time it takes to connect up to Micronet is not entirely under our control — it partly depends on British Telecom, who have to come and fit the jack plugs."

LETTERS

Scoring high...

I was pleased to see you are reviewing modules for the TI-99/4A and carrying a regular Texas program.

Since many Texas owners are writing in to tell you about their high scores on Parsec, mine is 201,000. But what I'd really like to know is whether anyone has beaten my high score on the Munchman module: 212,500. Munchman gets very fast, especially when you get on to the 60th sheet.

Lee Lambert, Hull, Humberside

...with cartridges

I read in HCW 35 that Paul Hopkins, a TI-99/4A owner, had achieved a score of 1,080,500 on Parsec, and wanted to know if this was an all-time high.

In fact the highest score I know of was by Cody Collins of Arlington, Texas, who wrote into the 99er magazine Hall of Fame. My own record on Parsec is 702,100.

My favourite TI cartridges are Alpiner (reviewed in HCW 30) and TI Invader. I achieved a score of 115,959 on the third level of Alpiner — this level is quite ridiculous, as you can't move without an avalanche hitting you. On TI Invader, my record is 16,150.

And I'd also like to know whether anyone can beat these scores: Car Wars — 28,520 and Munchman — 151,680.

If you're thinking of buying a joystick for your TI-99/4A, don't buy the TI joystick — it's very uncomfortable and has slow reactions. I have bought the Suncom TAC2 joystick and adaptor, which I think is much better.

Julian Shawcross, Boothstown, Manchester

A series of disasters

I am having difficulties with Issue 3 Spectrums which have no connection with the published IN function problem.

So far, I have had three Issue 3 48K Spectrums, all of which seem to have an intermittent fault, which seems unrelated to overheating, since it can occur within minutes of power-up, or to memory limit, since it can occur on quite small programs. When present, the following happens:

1. Moving graphics, which have previously run without difficulty, now fail to print the leading or trailing space. Overprinted graphics fail to erase those previously printed. It is as if the OVER function has been switched on.
2. Out of Memory appears when trying to re-load an under-2K BASIC program, only just Saved and Verified.
3. The Load Search Border sequence can suddenly start in the middle of running a professional program.
4. The C cursor changes to an asterisk and will only print rubbish. If delete is used, the screen scrolls one character space left, the lost first letters re-entering on the right, and then crashes. This is an adventure program.
5. The K cursor, when listing, disappears by itself and coloured squares appear in the listing, with an Invalid Colour message.
6. When listing, a 'black window' appears in the middle third of the screen, displaying flashing coloured squares and random letters.
7. Entering LIST produces an Invalid Stream message (I don't have a Microdrive) All efforts to get back into the listing or run the program stops with more Invalid Stream messages.
8. Programs, written in BASIC, on the same computer, which have run without problems many times, stop with Nonsense in BASIC messages, referring to perfectly legitimate lines.
9. Listing will not accept NO to scroll
10. Graphic figures are unintentionally erased.
11. The program NEWS by itself.

Seven of the above problems have been common to all three Issue 3s, which makes me wonder if the new chip has side-effects unsuspected by Sinclair.

Are any of your readers having similar difficulties with Issue 3s?

Dorene Cox, Dagenham, Essex

Fun for all the family

I own a TI-99/4A and like Patricia Bates (HCW 31), I am addicted to my computer. The children love it, and I spend more time keeping up with them than on my own games.

But my husband was totally disinterested in computing — until we bought a Video Chess cartridge. "It does do something after all", he says, after beating the TI-99/4A at chess first game.

I too like Patricia Bates, am plodding away, learning programming — but in a couple of years I'll be able to compile bits and pieces. I am pretty much self-taught, with the help of the excellent TI Users Book and the TI Users Group — grateful thanks to Terry Grimshaw.

I cannot praise the TI people at Bedford enough. I had problems with my modulator, but didn't want to part from it. Since it was under guarantee, I was promptly sent another one, and loads of literature.

I'd like to see more women sending in programs — and not just games. For example, what about some simple programs for pre-school children — or a how-to-murder-your-husband computer program?

A. Bates, Havant, Hants

Boxing clever

As someone new to home computing, I have recently bought examples of all the usually available magazines.

The support that HCW gives to the TI-99/4A as illustrated by "Save us from an Alien Invasion" and the profile of Stainless Software (issue 27) makes it a firm favourite of mine destined for regular reading.

One disadvantage I have noticed with all programs listed in magazines is that once they're on tape and working, only a rough home-produced label is available for future reference on the cassette box.

May I suggest that all listings you produce are accompanied by a cassette box sized printed picture and title with instructions for use on the reverse?

I am sure other users would find this a useful aid to remembering what each program is. It also gives a record of program source — good future advertising for you and the programmers!

R Brunt, Gloucester

It's a good idea, but unfortunately as space is at a premium in HCW, we wouldn't have room to include an insert specially for each listing. However, we do plan to print more of the colourful inserts that appeared in HCW 29, for readers to cut out and use with their own programs. And those who own a VIC-20 and a printer could always print their own, using Alan Blackham's program in HCW 30.

Is TI its own worst enemy?

Like most TI-99/4A owners I have spent, and wasted a lot of time trying to find good quality independent software for my machine and I am beginning to think that the problem may be self-perpetuating.

If little software is available, perhaps TI owners are learning to program for themselves and discovering that this is infinitely more satisfying than buying and playing even the best games available.

This may reduce the market to the point where the big software houses won't consider producing TI software, leaving supply in the hands of the small independent producers, some of whom have marketed some first-class products.

To move on to TI's own marketing, I recently visited three local chain stores, all advertising the TI-99/4A as being in stock. The first had the machine but no Texas software at all, and still has none six weeks later.

The second had an excellent selection, all priced about 25 per cent higher than I have ever seen before. The third shop had a few forlorn modules on the bottom shelf and an assistant who, when approached said: "Oh, have you got a Texas? Perhaps you can help me. I've just bought one and I need some advice ...".

Surely my experience is not typical ... Is it?

Graham Baldwin, South Croydon, Surrey

Encourage me to buy

High street computer dealers will have to give themselves a hard kick up the backside if they are to clear their shelves.

As a complete newcomer to the scene, I have visited various shops for advice on what I should buy and what the apparatus will do.

Not a single one has offered to give me a demonstration, although I am obviously a sincere prospective buyer, and my questions have met with horribly vague answers such as: "Well, you know like, it's difficult to say. I suppose they'll do most things, so to speak. I'm not quite sure, really."

One shop had an Atari with a permanent display which announced 13 + 7 = 20. Another was equipped with a Spectrum attached to a TV showing an amateurish drawing of the planet Saturn and a printout which said "Input error". The following day it depicted nothing except a non-stop snowstorm of black and white stripes. Day 3: switched off.

What encouragement is there to spend the £150-180, which was what I had in mind?

So-called beginners' books are no better. They all start off by announcing they are for the average man in the street — but after a few pages assume the reader is managing director of a multinational firm with 3,286 customers in Outer Mongolia alone.

There must be many other people who have decided to delay buying until things get put on a more business-like basis.

G. H. Willett, Basildon, Essex

Treasure island disc

I've got a great idea for Lance Booth's Treasure Island game (HCW30). When you are eaten by a shark, or drowned in the river, or lost in the mountains, a Death March plays.

Just add the following program lines, making sure the line numbers are correct:

```
156 DATA 294,400,294,
    300,294,240,294,300,
    349,400,330,300
157 DATA 330,350,294,
    350,294,300,277,350,
    294,500,0,0
1331 GOSUB 2000
1361 GOSUB 2000
1391 GOSUB 2000
1421 GOSUB 2000
1451 GOSUB 2000
1481 GOSUB 2000
2000 RESTORE 156
2010 READ NOTE ,DUR
2020 IF(NOTE = 0)*(DUR
    = 0) THEN 2050
2030 CALL SOUND (DUR,
    NOTE,1)
2040 GOTO 2010
2050 RETURN
```

John Macdonald

Don't abandon the Atari

All right, own up. You've abandoned the Atari, haven't you? Your magazine is going all Spectrum and BBC like all the others.

Although I realise it's up to the reader to send in programs, you have hardly printed a review either.

A couple of days ago I received a list from Atari of books and magazines that cater for their machine. There were only two English magazines on the list — and HCW was one of them. So come on, buck your ideas up.

Steven Hurst, Bolton, Lancs

Just for you, there's an Atari program in this week's issue

DRAGON

BOOKS BY MELBOURNE HOUSE



This complete collection of books explains everything you need to know to get the most out of your Dragon 32. The most exciting games, the latest programming techniques and the most practical step-by-step instructions — everything necessary to make your Dragon roar.

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Melbourne House Publishers

HCW 3/11

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Suit yourself — 10 ways to win at poker

Even if you missed the earlier games, you can still play Les Howarth's game of Poker Patience. All the listings you need are here and they'll run on any Atari

Poker Patience is the sixth game in my series. It's my favourite and I find it quite addictive.

The aim is to make the best possible poker hands in a five by five grid using one card at a time dealt by the computer.

Five hands are made in the five rows of the grid, another five in the columns and two on the diagonals.

Once a card has been placed in the layout it cannot be changed, so think carefully. Remember: each card is part of at least two hands and sometimes three or four.

When the grid has been filled, the computer scores each of your 10 hands and totals them. The value depends on how good a poker hand it is.

The computer scores each row first, then the columns and, finally, the diagonals.

Average scores tend to be around 60-80, so I have put in a target hi-score of 85 which shouldn't be too difficult to beat.

Poker hands are as follows:

Royal flush A,K,Q,J,10 all in same suit
Straight flush any run of five cards in same suit
Fours any four of same denomination
Straight a run of five cards not in suit
Full house three of a kind and pair in same hand
Flush any five cards in same suit
Threes three cards of same denomination
Two pairs two pairs in same hand
One pair any pair
Any other hand does not score

These hands can be counted in any order. For example, 5, 8, 7, 6, and 4 on the same line still counts as a run.

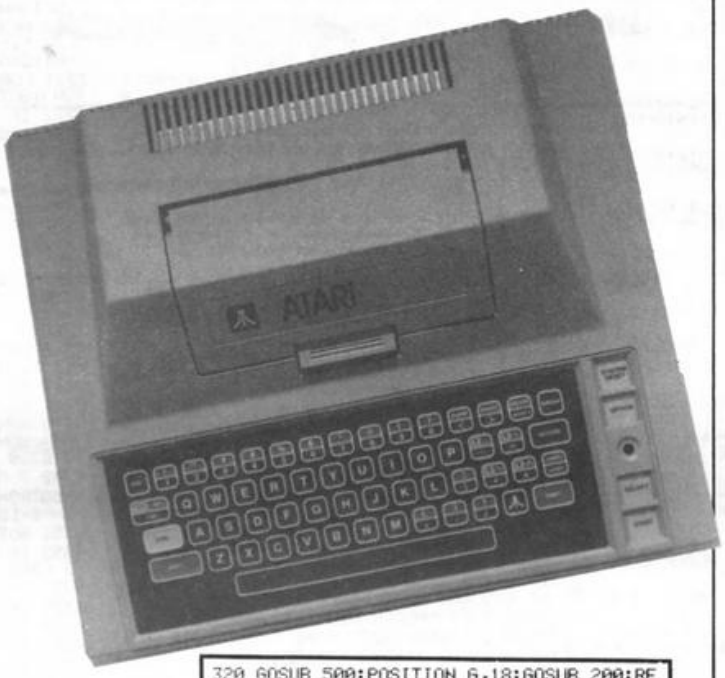
I don't know the possible best score, but my highest to date is 123.

Special instructions: In print statements the letters U D L R refer to cursor control arrows. U = Up arrow etc. To print an arrow use ESC/CTRL/and appropriate arrow.

6020-6030 all print statements are in inverse characters, inverse spaces and inverse CTRL/R. Each title is followed by two spaces and 12 x CTRL/R except for last title
6040 use inverse for title and for Hi-Score
6050 print statement contains inverse space
6110 print statement is – "L L L L CTRL/Q CTRL/R CTRL/R CTRL/E
6200 print 24 normal spaces
6220 print 14 normal spaces
6370 print inverse "Score – "
6374 second print statement is inverse "Score – "
6400-6410 print a clear screen character, use ESC/SHIFT/CLEAR
6480 second print statement is inverse "Hi-Score" =
8109 change variable GM to read GM (greater than) N6, or GM (greater than) N3 in the case of two programs

Screen colour can be altered by changing these POKES.

Address **704** Cursor Colour, **709** cards and writing colour, **710** background, **712** border, **1538** D.L.I. colour



Listing 1 — initialisation etc. Type this in first

```
10 REM Patience by R.L.Howarth.NOV'82
20 DIM A$(512),B$(36),B1$(40):GRAPHICS 0
25 B$(1)="♠":B$(34,34)="♥♥":B1$(1,3
)="♥":B1$(2)=B1$:POKE 559,62
30 I=PEEK(106)-16
40 POKE 54279,I:POKE 53256,1:POKE 53277,
3:UTAB=PEEK(134)+PEEK(135)*256:ATAB=PEEK
(140)+PEEK(141)*256
60 OFFS=I*256+1024-ATAB:HI=INT(OFFS/256)
:LO=OFFS-HI*256:POKE UTAB+2,LO:POKE UTAB
+3,HI
70 GOSUB 8000:GOSUB 8200:HI=85:GOTO 8100
80 U=N1:FOR T2=28 TO 49 STEP N3:FOR H=N3
TO N1 STEP -N1:S(U)=P(T2+H):U=U+N1:NEXT
H:NEXT T2
90 U=29:H=53:FOR T2=N1 TO 24:IF S(T2)=N0
THEN H=H-N1:GOTO 95
93 P(U)=S(T2):U=U+N1
95 NEXT T2:IF H<53 THEN FOR I=H TO N52:P
(I)=N0:NEXT I
96 RETURN
200 ? NU$;"♦♣♥";SU$:RETURN
300 SUIT=N1:C=P(T):POSITION N13,19:IF T1
<N1 THEN ? " ":GOTO 320
310 ? T1;:IF T1<N10 THEN ? " "
320 GOSUB 500:POSITION 6,18:GOSUB 200:RE
TURN
400 FOR T=N1 TO N52:P(T)=T:NEXT T:FOR I=
N1 TO N52:R=INT(N52*RND(N0))+N1:A=P(I):P
(I)=P(R):P(R)=A:NEXT I:RETURN
500 SUIT=N1
505 IF C>N13 THEN C=C-N13:SUIT=SUIT+N1:6
0TO 505
510 NU$=STR$(C):IF C=N1 THEN NU$="A "
520 IF C>N10 THEN NU$="J ":IF C>N11 THEN
 NU$="Q ":IF C>N12 THEN NU$="K "
525 IF C<N10 THEN NU$(N2,N2)=" "
530 SU$="♣":IF SUIT>N1 THEN SU$="♦":IF S
UIT>N2 THEN SU$="♥":IF SUIT>N3 THEN SU$=
"♠"
540 RETURN
700 ST=STICK(0):IF STRIG(N0)=N0 THEN POP
:ON GM GOTO 810,2100,3100,4100,5100,610
0
701 IF PEEK(53279)=N6 THEN POP :GOTO 810
0
702 IF PEEK(53279)=N3 THEN POP :GOTO 812
0
703 IF ST=15 THEN 700
705 H=N0:U=N0:H=H+(ST=N7)-(ST=N11)+(ST=N
6)-(ST=N10)+(ST=N5)-(ST=9):Y1=Y:Z=Z+(H#2
0):POKE 77,N0
710 IF GM>N2 THEN 714
712 IF (ST=N14 OR ST=N6 OR ST=N10) AND Y
=170 THEN Y=N130:GOTO 720
714 IF (ST=N14 OR ST=N10 OR ST=N6) AND Y
>N34 THEN Y=Y-GU:IF GM=N3 AND Y=N130 THE
N Y=114
716 IF (ST=N13 OR ST=9 OR ST=N5) THEN Y=
Y+GU:IF Y>N130 AND GM<N4 THEN Y=170:A$(Y
1,Y1+40)=B1$:GOTO 722
720 A$(Y1,Y1+36)=B1$
722 IF GM=N3 OR GM>N4 THEN RETURN
723 IF Z>176 THEN Z=176
```

How it works
Poker Patience

6000-6085 set up game in usual manner, but this time array D is filled as you place cards on the layout
6090-6098 link program to joystick routine
6100-6160 deposit card on layout, update array D and turn up next card
6200-6370 scoring routine. First 13 places in P array and S array are cleared and then used to hold values of cards in a hand ie, a two in P (12) would indicate two queens. Loops are used to check each hand. Loop V controls direction of checking — row, column, first diagonal, second diagonal. Variable PS is player score
6372-6420 print total score and check if Hi-Score has been beaten. Computer then waits for you to press Option or Start for new game
6480-6490 update hi-score

```
724 IF Z<N56 THEN Z=N56
726 IF Y<N34 THEN Y=N34
728 IF Y>N130 AND GM=N1 THEN Z=96
730 IF GM=N2 THEN RETURN
734 IF Y>162 AND GM>N3 THEN Y=162
740 A$(Y,Y+35)=B$:POKE 53248,Z:RETURN
1000 SOUND N0,255,N10,8:FOR I=N1 TO N52:
NEXT I:SOUND N0,N0,N0,N0:RETURN
1100 FOR I=N1 TO N2:SOUND N0,20*I*(PICK+
N1),N10,N4:SOUND N1,20*I*(PICK+N2),N10,N
4
1110 FOR W=N1 TO 8:NEXT W:NEXT I:SOUND N
0,N0,N0,N0:SOUND N1,N0,N0,N0:RETURN
1200 V=PEEK(709):FOR I=N0 TO N3:FOR W=N3
 TO N10 STEP 0.5:ON GM GOTO 1210,1212,12
14,1216,1218,1220
1210 SOUND I,200/(I+GM),N12,N12-W:NEXT W
:NEXT I:GOTO 1240
1212 SOUND I,240/(I+GM),N12,N12-W:NEXT W
:NEXT I:GOTO 1240
1214 SOUND I,N4*(I+GM),N2,N12-W:NEXT W:N
EXT I:GOTO 1240
1216 SOUND I,120*(I+GM),N10,N12-W:NEXT W
:NEXT I:GOTO 1240
1218 SOUND I,120/(I+GM),N12,N12-W:NEXT W
:NEXT I:GOTO 1240
1220 SOUND I,220/(I+GM),N10,N12-W:NEXT W
:NEXT I:GOTO 1240
1240 FOR I=N0 TO N3:POKE 709,16-I*I:FOR
W=N1 TO N10:SOUND I,(N10+I*GM),N12,N10-(
W*(GM=N6)):FOR A=N1 TO N3:NEXT A
1250 NEXT W:NEXT I:POKE 709,V:FOR I=N0 T
O N3:SOUND I,N0,N0,N0:NEXT I
1300 SOUND N0,N10,N0,N4:FOR W=N1 TO N5:N
EXT W:SOUND N0,N0,N0,N0:RETURN
8000 N1=1:N0=N1-N1:N2=N1+N1:N3=N2+N1:N4=
N3+N1:N5=N4+N1:N6=N5+N1:N7=N6+N1:N10=N5*
N2:N11=N10+N1:N12=N10+N2
8005 N13=N12+N1:N14=N12+N2:N17=N12+N5:N2
2=N17+N5:N23=N22+N1:N34=N17*N2:N52=52:N5
6=56:N130=130
8010 PS=N0:DIM P(N52),SU$(N1),NU$(N2),D(
N7,N6),CARD$(40),BLANK$(40),FD$(40),S(25
):OPEN #N1,N4,N0,"K:":PICK=N1
8020 CARD$="┌──┐┌────┐  ┌────┐  ┌────┐
  │????└──┘":BLANK$="     "
    └────┘└────┘
8030 FD$="┌──┐┌────┐  ┌────┐  ┌────┐
└────┘└──┘"
8040 RETURN
8050 A$(1)="♡":A$(512)="♡":A$(2)=A$:GOSU
B 740:RETURN
8060 FOR I=N0 TO N7:FOR ROW=N0 TO N6:D(I
,ROW)=N0:NEXT ROW:NEXT I:RETURN
8100 GRAPHICS N1:POKE 711,12:POKE 559,62
:POKE 752,N1:POKE 710,116:POKE 712,116:P
OKE 53248,N0
8101 ? #N6;"----------":? #N6
8102 POKE 764,255:GM=N0:? #N6;"    SELEC
T GAME"
8103 ? #N6:? #N6;"  r HOLE IN ONE":? #N6
;"  - PACKET BOAT":? #N6;"  + BLOCK ELEV
EN":? #N6;"  ● REVERSE PUZZLE"
8104 ? #N6;"  ▬ MONTE CARLO":? #6;"  ! P
OKER SOLITAIRE":? #6
8105 ? #N6;"  during play press   option
-to restart          game":? #N6;"  star
t -to return          to menu"
8109 GET #N1,GM:L=GM+256:GM=GM-48:IF GM<
N1 OR GM>N6 THEN 8109
8110 POKE 704,N0:GOSUB 1100:POSITION N2,
N0:? #N6;"selected game ";CHR$(L):GOSUB
9000:GRAPHICS N0:POKE 752,N1
8120 ? ")":GOSUB 400:POKE 559,62:POKE 75
2,N1:ON GM GOTO 600,2000,3000,4000,5000,
6000
8200 GRAPHICS N0:POKE 82,N0:DL=PEEK(560)
+256*PEEK(561)+N4:POKE 752,N1:POKE 710,3
4:POKE 709,0:POKE 712,N0
8210 POKE 708,200:FOR I=N2 TO N11:POKE D
L+I,N5:NEXT I:FOR I=N12 TO 17:POKE DL+I,
N6:NEXT I
8226 POSITION N0,N10:? "XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXX";:POSITION N3,N
12:? "BY r.l.howarth"
8230 FOR I=N0 TO 35 STEP N5:POSITION I,N
4:? CARD$:NEXT I:FOR I=N1 TO 36 STEP N5
8240 READ SU$:SOUND 0,ASC(SU$)-I,N10,N4:
SOUND N1,ASC(SU$)-I+N1,N10,N4:POSITION I
,N5:? SU$:FOR W=N1 TO N7:NEXT W
8250 POSITION I+N1,N7:? "♦":NEXT I:SOUND
 N0,N0,N0,N0:SOUND N1,N0,N0,N0:FOR I=N1
TO 70:NEXT I:POKE 82,N2
8260 RESTORE 8310:FOR I=N0 TO N10:READ C
:POKE 1536+I,C:NEXT I:POKE 512,N0:POKE 5
13,N6:RETURN
8300 DATA P,A,T,I,E,N,C,E
8310 DATA 72,169,22,141,10,212,141,24,20
8,104,64
9000 ? " DO YOU REQUIRE INSTRUCTIONS? Y/
N":?
9010 POKE 764,255:GET #N1,W:IF W=78 THEN
 10020
9020 IF W<>89 THEN 9010
9030 GRAPHICS N0:POKE 710,N4:POKE 559,62
:POKE 752,N1:ON GM GOTO 9100,9200,9300,9
400,9500,9600
9200 ? " 28 cards are dealt in seven col
umns, only the bottom card of each colum
n isplayable ";
9210 ? "The object of the game is to col
lect packets of 4 cards of the same deno
mination.Cards can be played";
9220 ? " on  each other if they are simi
lar. When  4 similar cards have been bro
ught     together,";
9230 ? " they are removed by placing th
e cursor on the bottom card and    press
ing the button. Cards are dealt";
9240 ? "    from the pack by placing curs
or on    pack and pressing button. A spa
ce can only  be filled by a card";
9250 ? " from the     discard pile. Pack
is redealt from   discards":GOTO 10000
9300 ? " 9 Cards are dealt in a square.
  The object of the game is to get rid
of all the pack,";
9310 ? "by taking any 2 cards which add
to eleven. Picture cards     can only be
taken when Jack,Queen,King ";
9320 ? "are on the board at the same tim
e.   Spaces can be filled from the pack
by placing cursor on a space ";
9330 ? "and pressing button.":GOTO 10000
9400 ? " 20 Cards are dealt face up in a
 large square"
9410 ? " The object of the game is to en
d up  with the cards in the layout all f
ace down.";
9420 ? " Place the cursor over any card
 and press button to turn face down.":?
" Count this as 1."
9440 ? " Now move in a clockwise directi
on    counting 2,3,4. Turn the fourth ca
rd  face down. Choose ";
9450 ? "any other card,count 1 and turn
down.Turn down the fourth card and carry
 on turning 1 and 4 "
9460 ? "until all the cards are reversed
":GOTO 10000
9500 ? "25 Cards are dealt in a 5*5 layo
ut.Theobject of the game is to pair off
all the cards.A pair can only ";
9510 ? "be taken,if  they are next to ea
ch other in any   direction-":? "  VERT
ICAL,HORIZONTAL or DIAGONAL."
9520 ? "Place cursor on card and press b
utton. If ";
9530 ? "you cant go,then place cursor on
 pack and press button.The cards in the
 layout  will be re-dealt ";
9540 ? "minus any   spaces.The layout wi
ll be increased to 25 cards from the dec
k":GOTO 10000
9600 ? "25 Cards are dealt from the stoc
k one by one.Place each card anywhere on
 a  5*5 grid to make the best ";
9610 ? "poker hands.Once laid,a card can
not be moved.":? "When the grid is fille
d,the score willbe  calculated ";
9620 ? "for 10 hands-":? "  5 across,5 d
own and 2 diagonal.":? "The object being
 to get the best score possible"
10000 ? :? "PRESS START TO BEGIN"
10010 IF PEEK(53279)<>N6 THEN 10010
10020 GOSUB 1100:? ")":RETURN
```

Listing 2 — Poker Patience

```
5990 REM Game 6
6000 POKE 710,64:POKE 712,70:T=N1:GU=32:
POKE DL+N17,N2:POKE DL+N22,130:POKE 5428
6,192:POKE 704,146
6015 FOR I=N1 TO 24:S(I)=N0:NEXT I:POKE
82,26
6020 POSITION 26,0:? " ROY'FLUSH=60 ──
──────── STR'FLUSH=50 ──────── F
OURS    =30 ";
6025 ? " ──────── STRAIGHT =20 ──
──────── FULLHOUSE=16 ──────── F
LUSH    =12 ──────── ";
6030 ? " THREES   = 8 ──────── THO
PAIRS = 5 ──────── ONE PAIR = 2 ";
6040 POKE 82,N2:POSITION N10,N23:? "POKE
R SOLITAIRE";:POSITION 27,N23:? "HI SCOR
E=";HI;:FOR ROW=N2 TO 18 STEP N4
6050 FOR I=N3 TO N23 STEP N5:POSITION I,
ROW:? " ":GOSUB 1300:NEXT I:NEXT ROW:T=N
1:GOSUB 8060
6080 POSITION 31,N17:? CARD$:C=P(N1):GOS
UB 500:POSITION 32,18:GOSUB 200:GOSUB 13
00
6085 Y=N34:Z=N56:GOSUB 8050
6090 GOSUB 700
6092 IF Z>136 THEN Z=136
6098 GOSUB 724:GOTO 6090
6100 A=INT(Z/20)-N1:R=INT(Y/32)-N1:IF D(
A,R)<>N0 THEN GOSUB 1000:GOTO 6090
6110 D(A,R)=P(T):A1=A*N5-N3:R1=R*N4:POSI
TION A1,R1:? CARD$;:IF Y<162 AND D(A,R+N
1)<>N0 THEN ? "↑↑↑↑┌──┐"
6120 C=P(T):GOSUB 500:POSITION A1+N1,R1+
N1:GOSUB 200:GOSUB 1300
6130 T=T+N1:IF T=26 THEN 6200
6140 C=P(T):GOSUB 500:POSITION 32,18:GOS
UB 200
6160 GOTO 6090
6200 POP :POSITION 31,N17:? FD$:PS=N0:PO
SITION N2,23:? "
";:FOR V=N1 TO N4
6210 FOR ROW=N0 TO N4:T5=N1:T2=N0:T1=N0:
C1=N0:R5=N0:D1=N0:FOR I=N1 TO N13:P(I)=N
0:S(I)=N0
6220 NEXT I:POSITION N2,N23:? "
     ";:IF V=N4 THEN FOR I=N5 TO N1 STEP
 -N1:C=D(I,ROW):GOTO 6230
6221 FOR I=N1 TO N5:IF V<>N2 THEN C=D(I,
ROW):GOTO 6230
6222 IF V=N2 THEN C=D(ROW+N1,I-N1)
6230 GOSUB 500:S(I)=C:P(C)=P(C)+N1:IF I=
N1 THEN R5=SUIT
6235 IF V>N2 THEN ROW=ROW+N1
6240 D1=D1+(SUIT=R5):NEXT I:IF D1=N5 THE
N PS=PS+N12:C1=N2:GOTO 6340
6250 FOR I=N1 TO N13:IF P(I)>N1 THEN T2=
T2+(P(I)=N2)+N10*(P(I)=N3)+100*(P(I)=N4)
6255 NEXT I:T1=N4+(T2=N11)-(T2(N11)-(T2(
N10)-(T2<N2)-(T2<N1):POSITION N2,23
6330 PS=PS+N2*(T1=N1)+N5*(T1=N2)+8*(T1=N
3)+16*(T1=N5)+30*(T1=N4):IF T1<>N0 THEN
 6360
6340 POSITION N2,N23:S1=S(1):LO=S1:FOR H
=N2 TO N5:IF S(H)>S1 THEN S1=S(H)
6343 IF S(H)<LO THEN LO=S(H):T5=H
6345 IF ABS(S1-LO)>N4 THEN 6352
6348 NEXT H:C1=C1+N1:IF C1=N3 AND LO=N10
 AND S1=N14 THEN ? "ROYAL";:PS=PS+N10:GO
TO 6350
6349 ? "STRAIGHT";
6350 PS=PS+20:IF C1=N3 THEN ? " FLUSH";:
PS=PS+18
6351 GOTO 6355
6352 IF LO=N1 AND S1>9 THEN S(T5)=N14:GO
TO 6340
6353 IF C1=N0 THEN ? "NO SCORE";
6355 IF C1=N2 THEN ? "FLUSH";
6360 IF T1=N1 THEN ? "1 PAIR";
6361 IF T1=N2 THEN ? "2 PAIRS";
6362 IF T1=N3 THEN ? "3 OF A KIND";
6363 IF T1=N4 THEN ? "4 OF A KIND";
6365 IF T1=N5 THEN ? "FULL HOUSE";
6370 POSITION 16,N23:? " SCORE-";PS;:NEX
T ROW:NEXT V
6372 FOR I=N1 TO N10:NEXT I:POSITION N2,
N23:? "                ";
6374 FOR I=N1 TO N6:POSITION N17,N23:? "
SCORE-";:FOR W=N1 TO N10:NEXT W:POSITION
 N17,N23:? "SCORE-";:NEXT I
6380 IF PS>HI THEN HI=PS:GOTO 6480
6400 IF PEEK(53279)=N6 THEN ? ")":GOTO 8
100
6410 IF PEEK(53279)=N3 THEN ? ")":GOTO 8
120
6420 GOTO 6400
6480 FOR I=N1 TO N6:POSITION 27,N23:? "H
I SCORE=";HI;:FOR W=N1 TO N6:NEXT W:POSI
TION 27,N23:? "HI SCORE=";
6490 NEXT I:GOSUB 1200:GOTO 6400
```

Micro Tip — **TI-99/4A**

Sound of music

I have written a musical sound program for the TI-99/4A. Any key with an ASCII code pressed will play a musical note.

note.

```
10 CALL KEY (0,K,S)
20 IF S = 0 THEN 10
30 K = K*5
40 CALL SOUND (100,K,0)
50 GOTO 10
```

Line 30 can be changed to K = K*25 or any other number. The lower the number, the lower the frequency.

Sarah Finch

Make your printer obey the Dragon's orders

Until now there was little to tell you how to make your printer work well with the Dragon. Alan Gray passes on what he has learned

Sooner or later some Dragon owners will buy a printer. This is usually quite easy to interface with the correct cable, but to get it working, well, that's different.

The Dragon manual is not very helpful with only comments like PRINT -2, USING:OPEN "0", -2, "filename" & LLIST. There is no mention of graphics or control codes. I hope to overcome these shortcomings with this short article.

One of the first problems is the control over the length of the printed line. This is overcome by a simple POKE command 155,x, where x equals the length of the line. For example, POKE 155,32 will give you a line length of 32 characters and then a line feed.

Location 328 sets the Dragon to give an auto line feed at the end of a line. To set this in operation POKE 328,0.

If, however, the location is left at its default of 155 then the computer will print a line length to the width of the printer irrespective of the value POKED in to location 155. Both of these commands can be used in the direct mode or from part of a program.

Another area which can be covered with a single POKE is line spacing. This can be set to double spacing with POKE 330,2, giving a double line feed at the end of a line. To revert back to single spacing POKE 330,1.

The other area for comment is that of formatting the print. This can be achieved by PRINT or the comma field. The latter is controlled by location 153. POKE this with the number of spaces you want after the comma.

The Dragon does not have an escape key. Control codes can be implanted by the use of PRINT -2,CHR$(27); "function code." For example PRINT -2,CHR$(27); "8" is a code for the Microline 83 to space text at eight lines per inch.

You will have to check with your printer manual for the various codes.

The block graphic codes on the printer do not match those of the Dragon, so you will have to experiment.

Just to give you an idea of what is available I have listed the graphic blocks from the Microline 83 together with the ASCII codes for the various patterns. You will notice that the first 16 blocks have different codes to that of the computer. This is because the graphics codes do not fall into any standard, and therefore those listed in **figure 1** will produce the pattern on the left, with the Dragon code equivalent shown on the right.

The listing of the screen dump, **listing 1,** can be used as a subroutine to copy any text screen. Graphics can cause problems as stated before so check your printer manual for the ASCII codes.

The routine in **listing 2,** will, if included in a program, allow the use of both printer and screen wi thout the need to have separate lines for each.

One final point: Don't forget to POKE location 155 with the width of your printer if you want to use POS(-2). See what happens if you don't!

Listing 2 — subroutine for screen/printer loop

```
100X=0:'SET FLAG FOR SCREEN
110FOR LP=1 TO 2:'START LOOP
120OPEN"O",#-X,"OUT":'OPEN CHANNEL
130PRINT#-X,"enter text here":'ENTER TEXT BETWEEN LINES 130-140
140CLOSE#-X:'CLOSE CHANNEL
150IF X=0 THEN X=2:'RESET FLAG FOR PRINTER,COULD BE SET TO X=1 FOR TAPE
160NEXT L:'RETURN TO LOOP
```

Figure 1 — graphics conversion table for Microline 83 printer and Dragon

character	printer	Dragon
	128	143
	129	135
	130	139
	131	131
	132	141
	133	133
	134	137
	135	129
	136	142
	137	134
	138	138
	139	130
	140	140
	141	132
	142	136
	143	128
	144	144
	145	145
	146	146
	147	147
	148	148
	149	149
	150	150
	151	151
	152	152

Listing 1 — screen dump

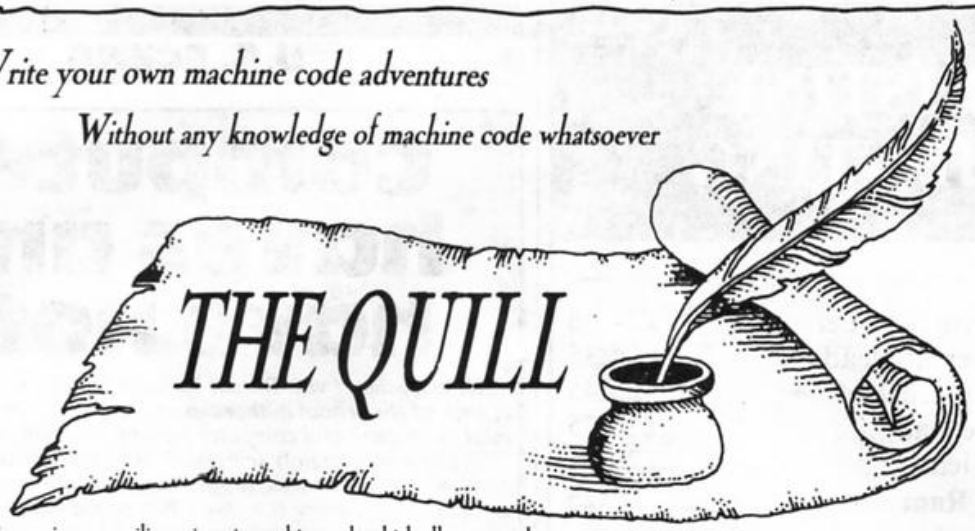
```
10 FOR Y=0 TO 15:FOR X=0 TO 31:'Y=SCREEN DEPTH X=SCREEN WIDTH
20 A=PEEK(1024+X+(Y*32)):'1024 TOP LEFT LOCATION OF TEXT SCREEN
30 IF A>95 AND A<127 THEN A=A-64 ELSE IF A>0 AND A<27 THEN A=A+64 ELSE
IF A=0 THEN A=32:'CHECK ASCII CODE AND MODIFY
40 PRINT#-2,CHR$(A);:NEXT X:PRINT #-2,CHR$(13);:NEXT Y:'PRINT CHR$ A
PRINT#-2,CHR$(13)=LINE FEED
```

153	153	
154	154	
155	155	
156	156	
157	157	
158	158	
159	159	
160	160	
161	161	
162	162	
163	163	
164	164	
165	165	
166	166	
167	167	
168	168	
169	169	
170	170	
171	171	
172	172	
173	173	
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227	227	
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241	241	
242	242	
243	243	
244	244	
245	245	
246	246	
247	247	
248	248	
249	249	
250	250	
251	251	
252	252	
253	253	
254	254	
255	255	



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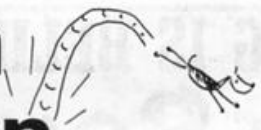
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U.S. SCENE

Computer haves and have nots

Each year when I visit Britain I remain impressed with the sincere efforts of the school authorities and computer manufacturers to establish meaningful computer training programs in the schools.

There are certainly few people who know about this industry who are not aware that Britain has more computer literates per capita than anywhere else. Including here in the good ol' USA.

There is now starting quite a bit of concern that in 10 years or less, this country will be divided even further into the haves and have-nots based on computer literacy.

At the present time, about 70% of US schools considered to be wealthy have micros while only 40% of the poor schools do so. For poor, read minority.

In less than a decade, many indicators appear to signify that the minorities may be considered so in another way. Here are a few of the indicators:

Children attending any of the nation's 12,000 richest school districts are more than four times as likely to receive computer training than any child attending school in one of the 12,000 poorest districts.

About 45 per cent of the clerical workforce is now obtaining computer training, yet only 4 per cent of the blue-collar (unskilled) workforce is being exposed to computers.

Because the telephone system has been deregulated, it is expected that increasing rates for service will result in a drastic reduction in service to poorer customers, thereby eliminating them from the Teletext revolution and likewise preclude their use of modems.

It would be unfortunate to continue the trend that results in white youth becoming good at computer skills while the minority youth becomes skilled at video games.

These issues are in part now being addressed by prospective legislation such as the Computer Education Assistance Act which if passed would make about $150 million available for schools in matching funds for equipment and software purchasing, and by activists who would try to identify the coming crisis and do something about it now before it hits in the coming decade.

This is an urban as well as a suburban problem. Even a large Californian city such as Los Angeles has no meaningful computer program in its inner-city schools. Would that we take a lesson from our British cousins and develop cooperation between education and industry to get micros in all the schools.

As one local activist put it, computers can do more than furnish jobs and provide information, they can also serve as a tool in the battle against prejudice.

After all, a computer cannot determine, nor does it care about, the sex or ethnic background of its operator as long as it is fed the correct information. Let us hope that this tool is used for good and to bring us together rather than as a wedge to drive us even further apart.

★ ★ ★ ★

Want a good letter quality printer, but don't want to spend a fortune on it? You might be interested in one of the new generation of low cost daisywheel printers.

This one is called the Transtar 120. It weighs less that 19 pounds, is generally plug-in compatible with most word processing programs on a variety of computers, prints at 14 cps, and costs only $599, list.

It will do super and subscripting, boldface, and single sheet loading. Transtar advertises that the failure rate (presumably in warranty) is less than one per cent.

Sounds like excellent value for money. Write to Transtar, PO Box C-96975, Bellevue Washington 98009, for more details.

This week I think I am glad I am out of room. See you next week.

Bud Izen
Fairfield, California

BEST SELLERS

Top Ten programs for the Dragon

1	Frogger	Microdeal (4)
=	Cuthbert Goes Walkabout	Microdeal (3)
3	Mined Out	Quicksilva (7)
4	Drone Databank	Cablesoft (–)
5	Nightflight	Salamander (–)
6	Champions	Peaksoft (–)
7	Empire	Shards (–)
8	Shark Treasure	Dragon (6)
9	Quiz Pack	Shards (–)
10	The King	Microdeal (1)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Skyhawk	Quicksilva (5)
3	Wacky Waiters	Imagine (3)
4	Panic	Bug Byte (–)
5	Catcha Snatcha	Imagine (2)
6	Sargon II Chess	Commodore (–)
7	Matrix	Llamasoft (10)
8	Frantic	Quicksilva (–)
9	Bonzo	Audiogenic (–)
10	Home Office	Audiogenic (–)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the Commodore 64

1	Crazy Kong	Interceptor (2)
2	Frogger	Interceptor (5)
3	Hover Bovver	Llamasoft (1)
4	Spriteman	Interceptor (4)
5	Purple Turtles	Quicksilva (–)
6	Scramble	Interceptor (6)
7	Quintic Warriors	Quicksilva (–)
8	Ring of Power	Quicksilva (–)
9	Cosmic Split	PSS (–)
10	Krystals of Zong	PSS (–)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the ZX81

1	Scramble	Quicksilva (2)
2	Defender	Quicksilva (7)
3	City Patrol	Macronics (–)
4	1K Chess	Sinclair (6)
5	Sabotage	Macronics (–)
6	Chess	Sinclair (–)
7	Asteroids	Quicksilva (4)
8	Football Manager	Addictive (1)
9	1K Games	Sinclair (5)
10	VU-File	Sinclair (–)

Compiled by Boots. Figures in brackets are last week's positions

Top 30

1	Jet Pac	Ultimate	Spectrum (2)
2	Manic Miner	Bug Byte	Spectrum (1)
3	Trans-Am	Ultimate	Spectrum (3)
4	Zzoom	Imagine	Spectrum (6)
5	Horace and the Spiders	Psion	Spectrum (23)
6	Kong	Ocean	Spectrum (26)
7	Cookie	Ultimate	Spectrum (4)
8	Killer Gorilla	Program Power	BBC (–)
9	Jumpin' Jack	Imagine	Spectrum (25)
10	Hall of the Things	Crystal	Spectrum (22)
11	Splat	Incentive	Spectrum (18)
12	Cuthbert Goes Walkabout	Microdeal	Dragon (15)
13	Cuthbert in the Jungle	Microdeal	Dragon (12)
14	Krazy Kong	Anirog	VIC-20 (9)
15	Pssst	Ultimate	Spectrum (11)
16	3D Combat Zone	Artic	Spectrum (5)
17	Chuckie Egg	A & F	Spectrum (7)
18	Johnny Reb	Lothlorien	Spectrum (8)
19	Horace Goes Skiing	Psion	Spectrum (10)
20	The Hobbit	Melbourne House	Spectrum (–)
21	Frogger	Microdeal	Spectrum (14)
22	Penetrator	Melbourne House	Spectrum (13)
23	Pool	CDS	Spectrum (–)
24	The King	Microdeal	Dragon (–)
25	The Hobbit	Melbourne House	CBM 64 (–)
26	Valhalla	Legend	Spectrum (–)
27	Lunar Jetman	Ultimate	Spectrum (–)
28	Dungeon Master	Crystal	Spectrum (30)
29	Bewitched	Imagine	VIC-20 (–)
30	Hunchback	Superior	BBC (27)

Compiled by PCS Distribution (0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in the UK and Northern Ireland for the fortnight ended November 6

Top Ten programs for the Spectrum

1	Ant Attack	Quicksilva (2)
2	Harrier Attack	Durell (–)
3	Lunar Jetman	Ultimate (3)
4	Jetpac	Ultimate (–)
5	Bugaboo	Quicksilva (–)
6	Flight Simulation	Psion (1)
7	Maziacs	dk'tronics (–)
8	Zzoom	Imagine (4)
9	Kong	Ocean (7)
10	Manic Miner	Bug Byte (–)

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

Give them a run for your money

Who can't resist a flutter? Geoff Turner's program, for the BBC model B micro, takes you to the dogs and puts £20 gambling money in your pocket

The original idea for this game came from those amusement arcade machines which allow you to gamble on any one of five different coloured horses. The horses pay different odds but, of course, the white one which pays the best odds, very rarely wins.

In developing the graphics for the game, the horses appeared more like dogs, so the game became the Greyhound Derby Stakes.

Up to five players may participate. They each start with £20 stake money which they may gamble as they wish on each of five races. The overall winner is the player who has won most after the five races are over.

Before the first race, all the dogs have equal chances of winning and therefore have odds of five to one. The players are invited to place their bets on the race, and the actual starting prices are then calculated according to the betting. Heavy betting on any one dog will greatly reduce its starting price.

As the race takes place, the course is displayed with the front and back 'straights' of the course shown on the screen.

As the dogs reach the end of the straight they disappear of the end of the screen as they go round the bend of the course. The race carries on while they are out of view, and the dogs reappear along the back straight.

The same happens at the left hand bend on the course, and the dogs finally reappear again on the front straight heading towards the winning post.

After each race new odds are calculated depending on the form of each dog — with each win, a dog's form improves and the odds are reduced accordingly. In subsequent races each dog's chances of winning are slightly increased if it has won any previous races.

After the final race the program displays how much each player has won or lost and the player with the highest total is declared the winner.

The program runs on a BBC model B computer. The display uses a Mode 2 screen, and the program uses almost all available memory. For this reason REM statements have been omitted from the listing, and care should be taken to avoid unnecessary spaces when typing in the program.

Main variables

LD$ large dog user defined character
SD$ small dog user defined character
W number of wins
O betting odds
B number of dog on which bet is placed
BET amount of bet placed
P amount of money held by each player
N$ player's name
TB total amount bet on each dog
PP total amount of money held by all players
TR total number of races
SF$ small fence
LF$ large fence
LI$ lines on racecourse
GR$ grass in centre of racecourse
X,Y,XX,RX X,Y coordinates of dog and hare positions

How it works

10-160 main program loop calling PROCedures
120-130 check if all players have lost all their money
170-500 initialise variables. Several user defined graphics are assembled using VDU 23 command.
510-730 Set up screen for course. VDU 19 in 520 sets all colours to black while screen is printed. Colours are restored by VDU 20 at 720.
740-1090 prepare race start. Dogs are placed at start line and hare is seen to run along side of track
1100-2110 main part of program which displays race. Each dog jumps forward a random number of steps with a slight bias for a dog which is on form. Race continues while the dogs disappear from view around bends, and first to reach winning line after one circuit is declared winner. New odds are calculated at 2060-2090
2120-2770 display new odds after each race, request players to place bets on next race. After bets have been placed, starting prices are calculated and displayed
2780-2900 request number of players and their names
2910-3190 PROCedure to end game, after five races or when all players have lost their money
3200-3450 PROCedure to display instructions
3460-3470 display error messages

```
   10 REM GREYHOUND DERBY STAKES
   20 REM By Geoff Turner
   30 *TV255
   40 ON ERROR GOTO 3460
   50 MODE 7
   60 PROCINSTRUCTIONS:PROCINIT:PROCNAMES
   70 PROCBETS
   80 MODE 2
   90 PROCSCREEN:PROCSTART:PROCRACE
  100 MODE7
  110 PP=0
  120 FOR I=1 TO PL:PP=PP+P(I):NEXT
  130 IF PP=0 OR TR=5 THEN 140 ELSE 70
  140 PROCEND
  150 IF IK$="Y" THEN RUN
  160 CLS:END
  170 DEFPROCINIT
  180 DIM X(5),Y(5),XX(5),LD(5),SD(5),LD$(5),SD$(5
),W(5),O(5),B(5),BET(5),P(5),N$(5),TB(5)
  190 FOR D=1 TO 5:O(D)=5:NEXT
  200 TR=0
  210 FOR I=1 TO 5:P(I)=20:NEXT
  220 VDU23,224,56,56,16,56,84,16,40,40
  230 VDU23,225,0,0,0,85,255,85,85,255
  240 VDU23,226,0,85,255,255,85,85,255,255
  250 VDU23,227,0,0,0,0,0,0,0,255
  260 VDU23,228,255,255,255,255,255,255,255,255
  270 VDU23,229,0,0,0,0,48,48,15,15
  280 VDU23,230,0,0,0,0,48,48,252,252
  290 VDU23,231,15,15,12,12,48,48,0,0
  300 VDU23,232,192,192,48,48,12,12,0,0
  310 VDU23,233,15,15,12,12,3,3,0,0
  320 VDU23,234,192,192,48,48,192,192,0,0
  330 VDU23,235,0,0,34,124,28,36,66,0
  340 VDU23,236,0,0,34,124,28,36,24,0
  350 VDU23,237,64,64,64,64,64,64,64,64
  360 VDU23,238,0,8,6,6,28,188,114,121
  370 VDU23,239,0,16,96,96,56,61,78,158
  380 SF$=STRING$(20,CHR$(225))
  390 LF$=STRING$(20,CHR$(226))
  400 LI$=STRING$(20,CHR$(227))
  410 GR$=STRING$(20,CHR$(228))
  420 SP$=STRING$(20," ")
  430 CL$=" "+CHR$(10)+CHR$(8)+" "
  440 LD$(1)=CHR$(229)+CHR$(10)+CHR$(8)+CHR$(231)+
CHR$(232)+CHR$(8)+CHR$(11)+CHR$(230)
  450 LD$(2)=CHR$(229)+CHR$(10)+CHR$(8)+CHR$(233)+
CHR$(234)+CHR$(8)+CHR$(11)+CHR$(230)
  460 LD$(3)=CHR$(229)+CHR$(10)+CHR$(8)+CHR$(231)+
CL$
  470 LD$(4)=CHR$(229)+CHR$(10)+CHR$(8)+CHR$(233)+
CL$
  480 SD$(1)=CHR$(235)
  490 SD$(2)=CHR$(236)
  500 ENDPROC
  510 DEFPROCSCREEN
  520 FOR C=1 TO 7:VDU19,C,0,0,0,0,0:NEXT
  530 VDU 5
  540 X=0
  550 Y=928+RND(32)
  560 GCOL 0,RND(7)
  570 MOVE X,Y:VDU 224
  580 X=X+32+RND(20)
  590 IF X<1270 THEN 550
  600 MOVE 0,928:GCOL 0,7:PRINT SF$;
  610 FOR L=1 TO 5:PRINT LI$;:NEXT
```

```
 620 GCOL 0,2
 630 FOR G=1 TO 6:PRINT GR$;:NEXT
 640 GCOL 0,7
 650 FOR L=1 TO 5:PRINT SP$;LI$;:NEXT
 660 PRINT
 670 PRINT LF$;:X=0
 680 Y=128+RND(32):GCOL 0,RND(7)
 690 MOVE X,Y:VDU 224
 700 X=X+32+RND(20)
 710 IF X<1270 THEN 680
 720 VDU20
 730 ENDPROC
 740 DEFPROCSTART
 750 X=0:Y=644-96
 760 FOR D=1 TO 5
 770   MOVE X,Y
 780   GCOL 0,D:PRINT LD$(1);
 790   Y=Y-64
 800   NEXT D
 810 GCOL0,7
 820 MOVE 130,544:DRAW 130,196
 830 TIME=0
 840 FOR I=1 TO 12
 850   READ P,L
 860   SOUND 1,0,0,0
 870   SOUND 1,-15,P,L
 880   NEXT
 890 RESTORE
 900 DATA 101,5,101,5,101,5,89,5,101,5
 910 DATA 109,5,101,5,89,10,89,5,81,20
 920 DATA 89,5,81,10
 930 REPEAT UNTIL TIME>500
 940 RX=0:RY=588
 950 MOVE RX,RY:GCOL 0,0:VDU238
 960 REPEAT
 970   NRX=RX+16
 980   TIME=0:REPEAT UNTIL TIME>5
 990   MOVE NRX,RY:GCOL 3,2:VDU 238
1000   MOVE RX,RY:VDU 238
1010   RX=NRX
1020   UNTIL RX>1270
1030 VDU 7
1040 GCOL 0,7
1050 MOVE 130,544:PLOT 7,130,196
1060 FOR P=484 TO 196 STEP -64
1070   PLOT 69,130,P
1080   NEXT
1090 ENDPROC
1100 DEFPROCRACE
1110 FOR D=1 TO 5:LD(D)=1:NEXT
1120 FOR D=1 TO 5
1130   X(D)=0:Y(D)=644-(64*(D-1))-96
1140   NEXT
1150 REPEAT
1160   FOR D=1 TO 5
1170     XX(D)=X(D)+(RND(8)*4)
1180     GCOL 0,0
1190     MOVE X(D),Y(D)
1200     LDT=LD(D)
1210     PRINT LD$(LD(D));
1220     MOVE XX(D),Y(D)
1230     GCOL 0,D
1240     IF LD(D)=1 THEN LD(D)=2 ELSE LD(D)=1
1250     IF XX(D)>1214 LD(D)=LD(D)+2
1260     PRINT LD$(LD(D));
1270     X(D)=XX(D)
1280     NEXT
1290   UNTIL X(1)>1400 AND X(2)>1400 AND X(3)>140
0 AND X(4)>1400 AND X(5)>1400
1300 RX=1239:RY=720
1310 MOVE RX,RY:GCOL 0,0:VDU239
1320 REPEAT
1330   NRX=RX-16
1340   MOVE NRX,RY:GCOL 3,2:VDU 239
1350   MOVE RX,RY:VDU 239
1360   RX=NRX
1370   TIME=0:REPEAT UNTIL TIME>5
1380   UNTIL RX<-64
1390 FOR D=1 TO 5:SD(D)=1:NEXT
1400 FOR D=1 TO 5
1410   X(D)=1600-(X(D)-1400)
1420   Y(D)=772+(32*(D-1))
1430   NEXT
1440 REPEAT
1450   FOR D=1 TO 5
1460     IF SD(D)=1 THEN SD(D)=2 ELSE SD(D)=1
1470     XX(D)=X(D)-(RND(4)*4)
1480     GCOL 3,D
1490     MOVE XX(D),Y(D)
1500     SDT=SD(D)
1510     PRINT SD$(SD(D));
1520     MOVE X(D),Y(D)
1530     SD(D)=SDT
1540     IF SD(D)=2 PRINT SD$(1);
1550     IF SD(D)=1 PRINT SD$(2);
1560     X(D)=XX(D)
1570     SD(D)=SDT
1580     NEXT
1590   UNTIL X(1)<-200 AND X(2)<-200 AND X(3)<-20
0 AND X(4)<-200 AND X(5)<-200
1600 RX=0:RY=588
1610 MOVE RX,RY:GCOL 0,0:VDU238
1620 REPEAT
1630   NRX=RX+16
1640   TIME=0:REPEAT UNTIL TIME>5
1650   MOVE NRX,RY:GCOL 3,2:VDU 238
1660   MOVE RX,RY:VDU 238
1670   RX=NRX
1680   UNTIL RX>1270
1690 GCOL 0,7
1700 MOVE 1200,548:DRAW 1200,196
1710 WINNER=0
1720 FOR D=1 TO 5:LD(D)=1:NEXT
1730 FOR D=1 TO 5
1740   X(D)=-400+(ABS(X(D))-200)
1750   Y(D)=644-96-(64*(D-1))
1760   NEXT
1770 REPEAT
1780   FOR D=1 TO 5
1790     IF WINNER<>0 THEN 1940
1800     XX(D)=X(D)+(RND(8)*4)+RND(W(D))
1810     LDT=LD(D)
1820     GCOL 0,0
1830     MOVE X(D),Y(D)
1840     LDT=LD(D)
1850     IF XX(D)>1088 THEN XX(D)=1088:WINNER=D:V
DU 7
1860     IF XX(D)<30 GOTO 1930
1870     PRINT LD$(LD(D));
1880     MOVE XX(D),Y(D)
1890     IF LD(D)=1 THEN LD(D)=2 ELSE LD(D)=1
1900     GCOL 0,D
1910     IF X(D)<0 GOTO 1930
1920     PRINT LD$(LD(D));
1930     X(D)=XX(D)
1940     NEXT
1950   UNTIL WINNER<>0
1960 MOVE 0,64
1970 GCOL 0,WINNER
1980 PRINT"THE WINNER IS ";LD$(1);
1990 W(WINNER)=W(WINNER)+1
2000 FOR I=1 TO PL
2010   IF WINNER=B(I) THEN P(I)=P(I)+(BET(I)*O(B(
I))) ELSE P(I)=P(I)-BET(I)
2020   NEXT
2030 TIME=0
2040 REPEAT UNTIL TIME>500
2050 TR=TR+1
2060 FOR I=1 TO 5
2070   O(I)=5+TR-2*W(I)
2080   IF O(I)<1 THEN O(I)=1
2090   IF O(I)>100 THEN O(I)=100
2100   NEXT
2110 ENDPROC
2120 DEFPROCBETS
2130 CLS
2140 PRINT CHR$(141);" GREYHOUND DERBY - LATEST B
ETTING"
2150 PRINT CHR$(141);" GREYHOUND DERBY - LATEST B
ETTING"
2160 PRINT
2170 PRINT" RACE NUMBER ";TR+1
2180 PRINT
2190 PRINT" RUNNER          WINS          ODDS"
2200 PRINT" ======          ====          ====="
2210 PRINT
2220 PRINT CHR$(129);"1 RED           ";W(1),O(1)
;" to 1"
2230 PRINT CHR$(130);"2 GREEN         ";W(2),O(2)
;" to 1"
2240 PRINT CHR$(131);"3 YELLOW        ";W(3),O(3)
;" to 1"
2250 PRINT CHR$(132);"4 BLUE          ";W(4),O(4)
;" to 1"
```

```
 2260 PRINT CHR$(133);"5 MAGENTA       ";W(5),O(5)
;" to 1"
 2270 PRINT
 2280 PRINT"************************************
*"
 2290 PRINT
 2300 FOR I=1 TO 5:TB(I)=0:NEXT
 2310 TB=0
 2320 FOR I=1 TO PL
 2330   VDU 7
 2340   PRINTTAB(9,15);CHR$(136);CHR$(134);"PLACE
YOUR BETS "
 2350   PRINT
 2360   PRINT CHR$(141);N$(I);"  YOU HAVE  '";P(I)
;SPC(5)
 2370   PRINT CHR$(141);N$(I);"  YOU HAVE  '";P(I)
;SPC(5)
 2380   PRINT
 2390   *FX15,1
 2400   IF P(I)<1 THEN 2410 ELSE 2440
 2410   PRINT" SORRY YOUR OUT OF IT ! "
 2420   P(I)=0:BET(I)=0:B(I)=0
 2430   IK=INKEY(400):GOTO 2550
 2440   INPUT " HOW MUCH DO YOU WANT TO BET ? "BET
(I)
 2450   IF BET(I)>P(I) OR BET(I)<1 THEN I=I-1:GOTO
 2530
 2460   IF BET(I)<>INT(BET(I)) THEN I=I-1:GOTO 253
0
 2470   PRINT
 2480   INPUT" CHOOSE YOUR DOG (1 to 5) ",B(I)
 2490   IF B(I)<1 OR B(I)>5 THEN I=I-1:GOTO 2530
 2500   IF B(I)<>INT(B(I)) THEN I=I-1:GOTO 2530
 2510   TB=TB+BET(I)
 2520   TB(B(I))=TB(B(I))+BET(I)
 2530   PRINTTAB(0,20);STRING$(40," ")
 2540   PRINTTAB(0,22);STRING$(40," ")
 2550   NEXT
 2560 CLS
 2570 FOR I=1 TO 5
 2580   IF TB=0 THEN 2630
 2590   O(I)=INT(O(I)-(TB(I)/TB*TB/10))
 2600   IF TB(I)=0 THEN O(I)=INT(O(I)+TB/5)
 2610   IF O(I)<1 THEN O(I)=1
 2620   IF O(I)>100 THEN O(I)=100
 2630   NEXT
 2640 PRINT CHR$(141);" GREYHOUND DERBY STARTING P
RICES"
 2650 PRINT CHR$(141);" GREYHOUND DERBY STARTING P
RICES"
 2660 PRINT
 2670 PRINT CHR$(129);"1 RED         ",O(1);" to 1"
 2680 PRINT CHR$(130);"2 GREEN       ",O(2);" to 1"
 2690 PRINT CHR$(131);"3 YELLOW      ",O(3);" to 1"
 2700 PRINT CHR$(132);"4 BLUE        ",O(4);" to 1"
 2710 PRINT CHR$(133);"5 MAGENTA     ",O(5);" to 1"
 2720 PRINT
 2730 PRINT STRING$(40,"*")
 2740 PRINT:PRINT
 2750 PRINT CHR$(136);" PRESS SPACE BAR TO START R
ACE"
 2760  IF NOT INKEY(-99) THEN 2760
 2770 ENDPROC
 2780 DEFPROCNAMES
 2790 CLS
 2800 PRINT TAB(8,1);CHR$(141);" GREYHOUND DERBY"
 2810 PRINT TAB(8,2);CHR$(141);" GREYHOUND DERBY"
 2820 *FX15,1
 2830 PRINTTAB(3,4);CHR$(134);:INPUT" HOW MANY PLA
YERS (1 to 5) ? "PL
 2840 IF PL<1 OR PL>5 OR PL<>INT(PL) VDU 7:GOTO 27
90
 2850 PRINTTAB(4,6);CHR$(131);"ENTER  EACH  PLAYER
S  NAME"
 2860 FOR I=1 TO PL
 2870   PRINTTAB(5,10+I);"PLAYER ";I;" ";:INPUT""N
$(I)
 2880   IF N$(I)="" THEN 2870
 2890   NEXT
 2900 ENDPROC
 2910 DEFPROCEND
 2920 IF PP=0 THEN 2930 ELSE 3010
 2930 PRINT CHR$(141);"WELL YOU ALL APPEAR TO"
 2940 PRINT CHR$(141);"WELL YOU ALL APPEAR TO"
 2950 PRINT CHR$(141);"HAVE LOST YOUR MONEY"
 2960 PRINT CHR$(141);"HAVE LOST YOUR MONEY"
 2970 PRINT
 2980 PRINT" SERVES YOU RIGHT !"
 2990 PRINT" YOU SHOULDN'T GAMBLE !"
 3000 GOTO 3150
 3010 PRINT CHR$(141);"AFTER FIVE RACES"
 3020 PRINT CHR$(141);"AFTER FIVE RACES"
 3030 PRINT
 3040 FOR I=1 TO 5
 3050   PRINT CHR$(134);N$(I);"  HAS   '";P(I)
 3060   NEXT
 3070 FOR I=1 TO PL-1
 3080   FOR X=2 TO PL
 3090     IF P(I)>P(X) THEN WIN$=N$(I)
 3100     NEXT
 3110   NEXT
 3120 PRINT
 3130 PRINT CHR$(141);"THE WINNER IS  ";WIN$
 3140 PRINT CHR$(141);"THE WINNER IS  ";WIN$
 3150 PRINT:PRINT
 3160 PRINT" WANT ANOTHER GO ? (Y/N) "
 3170 IK$=INKEY$(0)
 3180 IF IK$="Y" OR IK$="N" THEN 3190 ELSE 3170
 3190 ENDPROC
 3200 DEFPROCINSTRUCTIONS
 3210 PRINT SPC(5);CHR$(129);CHR$(141);"GREYHOUND
DERBY STAKES"
 3220 PRINT SPC(5);CHR$(129);CHR$(141);"GREYHOUND
DERBY STAKES"
 3230 PRINT
 3240 PRINT"In this game for up to 5 players, each
"
 3250 PRINT"player begins with '20 stake money."
 3260 PRINT"Bets can be placed on one of five"
 3270 PRINT"greyhounds. The game lasts for five"
 3280 PRINT"races, and the winner is the player"
 3290 PRINT"with the most money at the end of the"
 3300 PRINT"game."
 3310 PRINT"All the dogs begin the game with equal
"
 3320 PRINT"odds, but starting prices are affected
"
 3330 PRINT"by the amount of money placed on each"
 3340 PRINT"dog."
 3350 PRINT"Heavy betting on any one dog will"
 3360 PRINT"greatly reduce its starting price."
 3370 PRINT"After each race, the odds change"
 3380 PRINT"according to the number of races that"
 3390 PRINT"each dog has won, and as a dogs form"
 3400 PRINT"improves, then its chances of winning"
 3410 PRINT"also improve and its odds are reduced.
"
 3420 PRINT
 3430 PRINT CHR$(129);SPC(8)"PRESS SPACE BAR"
 3440 IF NOT INKEY(-99) THEN 3440
 3450 ENDPROC
 3460 MODE7
 3470 REPORT:PRINT " at ";ERL
```



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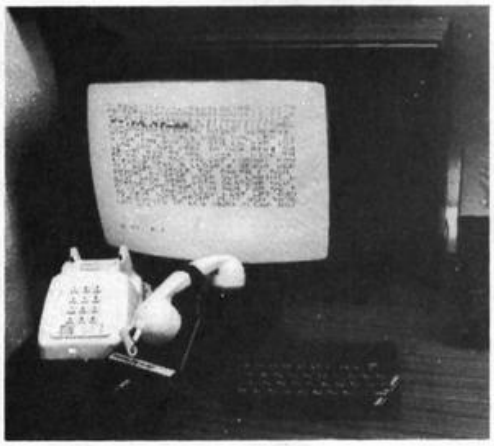


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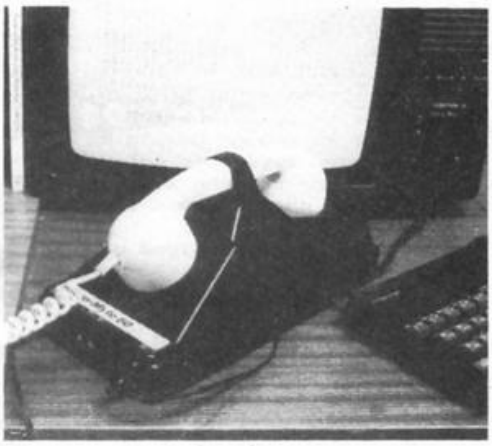
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A winter's tale

Wintersoft graduated into an independent company just four months ago, when one of its partners graduated from college. John Humphreys told Candice Goodwin the story so far

When Middlesex Polytechnic sent John Humphreys on a year's work experience placement as part of his business studies course, writing games on the Dragon was probably not the kind of experience they had in mind.

The idea was that he would be writing business programs on the Apple for personal computer retailers S. W. Winter. But then Sinclair brought out the Spectrum — and John got interested in home computing.

If it hadn't been for Sinclair's delivery problems, Wintersoft might be a very different company now. As it was, John got tired of waiting for the Spectrum he had ordered to turn up. When the Dragon came to the market, he talked S. W. Winter into buying some to sell with their business machines, then talked them into lending him one to take home. He still has that machine today.

John found the Dragon pretty easy to master. "I'd done a lot of BASIC programming on my course, and the Microsoft BASIC the Dragon uses is similar to that on the Apple", he explained.

His first full-scale games program was Dragon Trek. The idea for the game came from his old friend Dave Briskham, who knew someone who knew about Dungeons and Dragons. John and Dave felt there was a gap in the market for an adventure game with graphics, and decided to try and write one.

It was a joint effort, with John doing the main programming and Dave doing the graphics "because he's good at designing creatures." The whole thing took them several months. To get the effects he wanted, John had to take some time to learn machine code, but says "it stood me in good stead for my course." Dragon Trek was finished off during the Christmas '82 holidays, and more Dragon programs followed — Pepper's Games Pack, a utility called Artist/Designer, and Ring of Darkness, Wintersoft's best seller.

The programs were originally sold only by mail order. Though John had now left S. W. Winter and was back at college, S. W. Winter handled the mail order for him — he just designed the advertisements. Because of the association with Winter, John and Dave decided to use the name Wintersoft.

Software companies who have tried for months to get their programs into the High Street stores must be enraged to hear that for Wintersoft, the break into the High Street came without even trying. "Boots had heard about Ring of Darkness and approached us for a copy for evaluation," said John. "It was submitted to their testers.

"And though Ring of Darkness takes quite a long time to play — it has taken some people three months — someone sat down and played it all the way through. Boots are very thorough."





Finally, Boots decided to take the program, and it has featured in the Dragon best-seller charts ever since.

When he went back to college in autumn last year, John knew that he wanted to work for himself, writing software. As soon as he graduated from Middlesex Polytechnic, with an honours degree, he went into partnership with Dave, who gave up his job as an engineer with Thorn Lighting, and Wintersoft became a separate company. "S. W. Winter were very helpful," John says. "It was always understood that I'd be setting up on my own once I'd finished college. They still do some of the mail order for us, though."

John prefers to write for the Dragon, but Dave likes the Oric better. Between them, they wrote Operation Gremlin, just released for the 48K Oric. In November, they will be releasing an Oric version of Ring of Darkness — and one for the Spectrum.

After that, they plan to bring out Ring of Darkness 2 for all three machines. "It will have the same strengths as the first one, but some differences too. I can't say much about it yet," said John.

"We're also talking to some teachers about producing some educational programs — but that's just pie in the sky at the moment."

John reckons that Wintersoft will stick with adventure games, and predicts that arcade games are on the wane. He hopes to make strong graphics Wintersoft's trademark; his main objection to the Dragon is the limited resolution of its graphics, and he looks forward to working with machines that are less restricted graphically. "I think computers at home are becoming more sophisticated, because people becoming more demanding — and rightly so. The machines currently on the market are stretched to their limits."

After such a short time in business, it's hard to say exactly how well Wintersoft is doing, but John hopes to make "a bit of a profit — which we'll reinvest in extra programmers. It'd be quite nice to be an employer."

Though he feels that his business and programming training was a good foundation for running his own company, John wouldn't necessarily want to recruit someone with a qualification like his own. "I'd look at what programs they'd written already", he says. "You don't need qualifications to write computer games — you just need to be keen and enthusiastic."

On the trail of the unexpected

Take micro, load program, start playing. We look at what's new in adventure games

The Temple Of Zoren Dragon £7.95

Dungeon Software, Milton House, St Johns Street, Ashbourne, Derbyshire DE6 1GH

Dungeon Software has its own distinctive style of producing software. This adventure comes in the company's mini video-type case with a colourful inlay card and good instructions.

The game places you in charge of a damaged ship about to land on Zoren. You, as agent 6809, must bring back four objects: the Golden Orb, a map of Zoren, a new laser pack and a new fuel module without which you cannot get back to Earth.

A detailed high resolution picture starts the game. A city is shown and you must land your vessel on the landing pad.

From there the adventure returns to the more orthodox style of text-type adventures.

The locations are described at length, and the program shows more than a passing resemblance to Dungeon's other main adventure, The Crystal Chalice.

There is a more "spacey" feel about the adventure, though, with robots, horrific aliens and murderous secret police which must be avoided.

The adventure is supposed to be easier than the Crystal Chalice and there is certainly more chance to explore the locations without fear of coming to grief. **C.G.**

instructions	80%
playability	65%
graphics	55%
value for money	65%

★ ★ ★ ★

The Crystal Chalice Of Quorom Dragon £7.95

Dungeon Software, Milton House, St Johns Street, Ashbourne, Derbyshire DE6 1GH

The Crystal Chalice could best be described as an advanced adventure. I had no trouble with loading or with the well-written instructions.

The game starts with a title page and very good use is made of the Dragon's meagre sound facilities. The actual game, however, is less inspired.

There are text descriptions of each location, some filling up three quarters of the screen. You are told just a few of the commands available, and there are many others to discover as you try to find all the pieces of the legendary Chalice and place them back in the Palace.

The program responds fairly slowly and has a couple of game errors which do detract from the overall adventure.

For instance, if you type in SAVE to save the game for future play, a funny message about a bird appears. You cannot enter another command and the program eventually breaks with a File Not Open error.

To its credit, the adventure is quite large and definately complex. **C.G.**

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

★ ★ ★

Pettigrews Diary Dragon £7

Shards Software, 189 Eton Road, Ilford, Essex IG1 2UQ

This is an adventure in three chapters linked by the diary of the title. The chapters are independent, but you can only progress by completing the earlier ones.

Chapter 1 is a graphic adventure set in a burning farmhouse. A birds-eye view shows you the rooms, you (represented by a cross), and deadly flames, shown as circles, spreading through the house.

Your task is to find a certain object which you need to be able to obtain the code allowing access to the next chapter.

Chapter 2 is a real-time text adventure set in London. The object of this chapter is revealed by the diary. You begin with £100 and must be careful, as £10 a day is necessary for survival.

You can travel on the underground for £2, using the arrow keys for movement.

So far I have been, among other things, fined for causing a breach of the peace, robbed and set to work in a kitchen.

I have not, however, been able to acquire the right knowledge to progress to Chapter 3.

According to the written instructions, Chapter 3 is entitled European Trek and consists of eight separate challenges. **J.E.M.**

instructions	85%
playability	90%
graphics	85%
value for money	90%

★ ★ ★ ★ ★

Tombs of Xeiops Commodore 64 £6.99

Romik Software, 272 Argyll Avenue, Slough, Berks

A text adventure game set in the Egyptian desert. Your objective is to find tombs, search rooms and collect treasure.

On your journeys you will come across the normal useful articles which you can pick up in case they come in handy later on. You will also encounter some nasty situations and foes.

The cassette inlay card is quite helpful, given that it mustn't give away too much about the adventure to come.

Apparently there are more than 100 rooms to explore, once you have got inside the tombs.

This seemed quite a good game, although there were the usual limitations of the computer not understanding input.

For example, on coming to a door, "open" prompted the reply "no key" which is fair enough. But "break door", "examine door" and the like gave the response "can't see it".

If you like textual adventures, then this is worth considering. Its days must be numbered, though, with the increase in adventures that allow you to switch between text or graphics as you wish. **L.C.**

instructions	70%
playability	75%
graphics	n/a
value for money	70%

★ ★ ★ ★

Quest 48K Spectrum £5.95

Hewson, 60A St Mary's Street, Wallingford, Oxon

One of the classic adventure themes which start: "You are on a path leading through a dark wood."

The aim is to find a scroll with clues to how to go on and find a map.

There are, of course, a selection of hostile monsters in the wood, and treasure here and there.

The player is invited to choose one of five characters, each with a different mixture of strength, luck, dexterity, constitution and charm, and these are used in a complex calculation to decide who wins fights with the monsters.

After a lengthy but easy loading, a very attractive three-dimensional picture of a primrose path and trees and mountains appears, scrolling to the usual adventure-style prompts.

I hit a few snags though. On one occasion I plodded steadily north repeatedly finding the same hole in the ground. Another time I went on and on and on, and found nothing. Curved space, perhaps.

The instructions on the insert are mind-bogglingly comprehensive. **H.C.**

instructions	90%
playability	80%
graphics	80%
value for money	70%

★ ★ ★ ★

You're lost in space and low on fuel...

Our first program for the Sord M5 is Space Pilot, by Shingo Sugiura. Type it in and see how long you can survive...

You are in control of a ship patrolling the galaxy but your radar system has broken down and you are totally lost.

How long will you survive without crashing into an asteroid? Will you be able to replenish your ever-diminishing fuel supply quickly enough?

When you RUN this program, a brief set of instructions will appear telling you the controls among other things.

Then the computer will wait for you to press the space key. When you do you'll see your small humble ship in the middle of the screen which is littered with asteroids and space pods.

Ramming one of these space pods will increase your fuel supply but if you crash into an asteroid, it's the end of your ship and the game. You will be told your score and asked if you'd like another game.

Typing in the program: The rather flimsy manual (if you could call it that) which comes with the M-5 doesn't tell you much about the machine and you might have difficulty typing in the program unless you read the following.

Inverse characters which appear in various lines — 20 and 70, for example — must be obtained by simultaneously pressing SHIFT + CTRL and the appropriate key.

Do not forget to type in the 17 spaces in line 210 after the semicolon.

The arrows which appear in lines 530,550,610,650,660 and 680 must be obtained by pressing SHIFT + CTRL and the appropriate cursor keys.

While typing in this program you might find the screen go totally blank although you can still hear the click every time you press a key. This means that you pressed CTRL and Y by mistake. Simply press CTRL and Y simultaneously and all should be well.

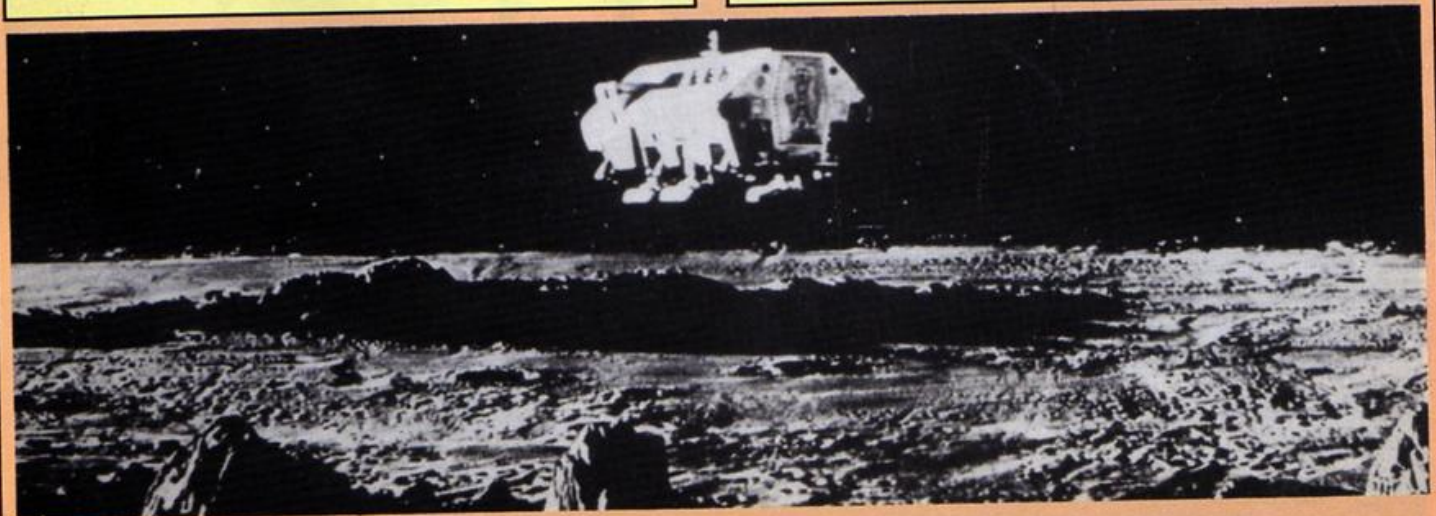
How it works

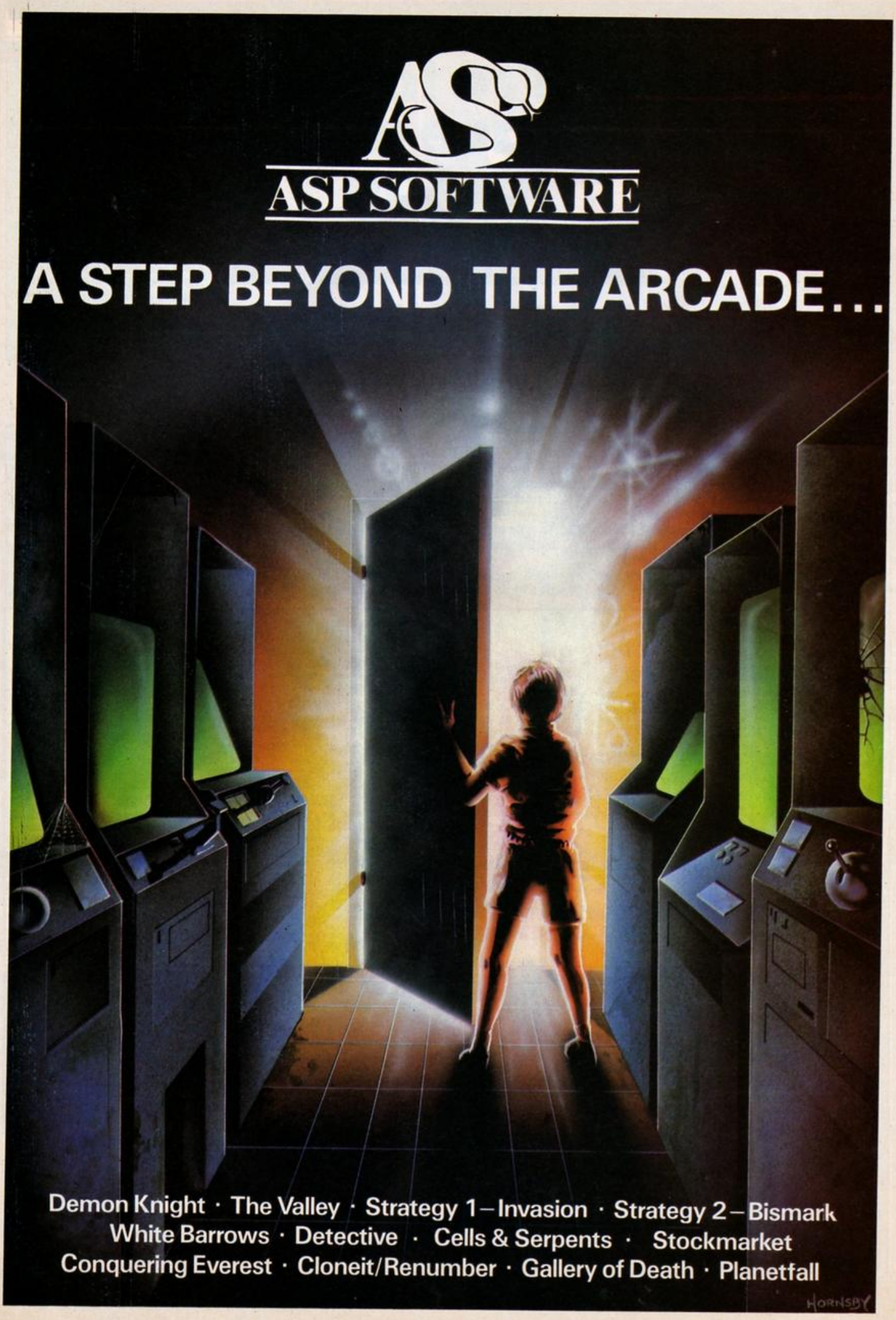
10-20 prepare the screen
30 call procedures to define characters and print instructions
70 print score and energy status
80 decrease energy level
90-120 check keyboard and take appropriate action
170-200 print asteroids or space pods
230-260 scroll screen in appropriate direction
270 if energy level is zero you lose
280 go back to beginning
290-440 define characters and colour them
450-580 end of game
590-740 instructions

Hints on conversion

It would be very difficult to convert this program to run on other machines as you'd have to write machine code routines to scroll the screen in four directions, although most machines will allow you to scroll the screen vertically.

```
10 Poke &701A,Peek(&701A)and &EF
20 Print "■■■"
30 gosub 290:gosub 590
40 for I=0 to 31:loc I to 300,300:next I
50 let S=0:let VR=&3800
60 let MK=65:let M=-32:let E=1000
70 Print "■ s:";S;"e:";E
80 let E=E-5
90 if Peek(&702B)=55 then let MK=65:let M=-32
100 if Peek(&702B)=46 then let MK=66:let M=32
110 if Peek(&702B)=33 then let MK=67:let M=-1
120 if Peek(&702B)=34 then let MK=68:let M=1
130 vPoke VR+32+12+16,MK
140 let P=vPeek(VR+32+12+16+M)
150 if P=69 then let E=E-300:gosub 450
160 if P=70 then let S=S+50:let E=E+35:Print "■"
170 if MK=65 then vPoke VR+32+rnd(32),69:vPoke VR+32+rnd(32)
,70
180 if MK=66 then vPoke VR+32+rnd(32),69:vPoke VR+32+23+rnd(
32),70
190 if MK=67 then vPoke VR+32+rnd(32),69:vPoke VR+32+rnd(23)
,70
200 if MK=68 then vPoke VR+32+rnd(23)+31,69:vPoke VR+32+rnd(
23)+31,70
210 Print chr$(11);"
220 vPoke VR+32+12+16,32
230 if MK=65 then Print "■"
240 if MK=66 then Print "■"
250 if MK=67 then Print "■"
260 if MK=68 then Print "■"
270 if E<0 then goto 460
280 goto 70
290 for I=1 to 3
300 stchr "1818183c24667e7f" to 65,I
310 stchr "ff7e66243c181818" to 66,I
320 stchr "0107171f3f3f1f07" to 67,I
330 stchr "80e0f8fcfcf8e080" to 68,I
340 stchr "18183ce7e73c1818" to 69,I
350 stchr "0000183c7e180000" to 70,I
360 next I
370 for I=4 to 6
380 for J=65 to 68
390 stchr "7070707070707070" to J,I
400 next J
410 stchr "d0d0d0d0d0d0d0d0" to 69,I
420 stchr "5050505050505050" to 70,I
430 next I
440 return
450 out &20,&E7
460 out &20,&E7
470 Print cursor(10,10);"game over"
480 for I=240 to 255
490 out &20,I
500 for J=1 to 700:next J
510 next I
520 out &20,&FF
530 Print "↓→→→→→→Score:";S
540 for I=1 to 1000:let A$=inkey$:next I
550 Print "↓→→→→try again Y/n"
560 let A$=inkey$:if A$="Y" or A$="y" then goto 20
570 if A$<>"n" and A$<>"N" then goto 560
580 end
590 Print tab(8);"Space Pilot"
600 Print tab(4);"by shingo sugiura"
610 Print "↓ control your ship around the"
620 Print "galaxy avoiding the sattelites"
630 Print "whilst watching the fuel level."
640 Print "Increase fuel by ramming a Pod"
650 Print "↓controls:"
660 Print "↓'Z' - left  'X' - right"
670 Print "':' - up    '/' - down"
680 Print "↓A your ship"
690 Print "E sattelite"
700 Print "F Space Pod"
710 Print tab(4);"↓Press Space to Play"
720 if inkey$<>" " then goto 720
730 Print "■"
740 return
```




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ONE COMPANY'S VIEW

Greed that could hit you

In the beginning, the home computer software industry was not so much a business, more a pleasure. It was also one from which programmers, software companies and dealers could all make a good income and still give the public products it wanted at a fair price. But recently things have changed.

Since the beginning of this year, a number of "distributors" have sprung up. They have courted dealers by promising bigger profits with less work. The distributor will tell the shops what to stock, so they needn't worry their little heads about it any longer.

So, you might think, what a nice chap the distributor is to look after the dealer so well. If that was the end of the story, no one would object — but the distributor is not a nice chap. The distributor is greedy.

At the moment, and all but the most powerful software houses will back this up, distributors demand that they buy programs at a 60 per cent margin.

To put that into English, take the example of an average program selling at £5.95. The Government takes 78p VAT, the distributor wants £3.10 and the software company is left with 2.07p. For the £2.07 the software house has to:

1 *Find the program*
2 *Pay the person who wrote it and provide computers to write it on*
3 *Design the packaging*
4 *Arrange and pay for the manufacture of the program*
5 *Advertise it to dealers and the public*
6 *Sell it*
7 *Deliver it to their customers*

Once you have paid all these bills, you might, if you are lucky, have something left over to pay the rent, rates and taxman. How many software houses are going to go bust because of the Inland Revenue's new-found interest, created by certain idiots going on about £35,000-a-year programmers?

For the £3.10 the distribution is getting, he is taking a product out of a warehouse and putting it on to dealers' shelves where it may get sold.

What if the software house thinks that this is a bit unfair? Well unfortunately, the few big distributors now control the vast majority of outlets selling software — so if you don't like their terms of business, you don't get to sell anything. Simple really isn't it?

Well, I call it blackmail, because if you don't go bust by dealing with them, you certainly will by not selling at all.

The small software houses must get together and tell the distributors where to get off. This would be something useful for the Guild of Software Houses to do rather than putting out customer's charters.

And next time you hear of another software company going under (and you will be reading about quite a few of these soon) or you cannot find the cassette you want in your local dealer, maybe you will understand why.

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LUNAR JETMAN – For the **48K Sinclair ZX Spectrum**
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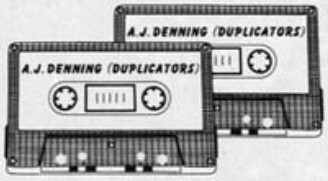
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sinclair special 6



Inside...

Setting new standards in educational software with Sinclair-Macmillan

Plus six other learning programs

TODAY, LEARNING IS A NEW GAME

Subsidised microcomputers are now commonplace as teaching aids for the very youngest children and the ZX Spectrum is prominent amongst those micros at use in schools.

In the relatively short time that the Spectrum has been at work in the classroom, two questions have been answered. Yes: with the right software, the micro can and does teach effectively and thoroughly (and gives teachers more time to devote to individual pupils). Yes: young children think little of working rapidly and successfully, with a screen and keyboard, on even quite complex subjects.

In this Sinclair Special we reveal a range of educational software specifically designed to make full use of these advantages. The programs produced by Sinclair in collaboration with Macmillan Education are fascinating. They deal imaginatively and most effectively with early reading skills and take a truly refreshing approach to basic science.

In the Blackboard range we've programs which bring a light-hearted clarity to the tricky matters of spelling and punctuation.

These programs are designed for use both at home and in the classroom. Each program is accompanied by full documentation which gives parents helpful advice and guidance on the educational objectives.

The programs covered on these pages represent only a fraction of the full and fast-growing list of Spectrum software. Be assured we'll keep you in touch with new developments as they happen.

David Park

David Park
Education Marketing Manager

NEW WAYS TO LEARN WITH THE ZX SPECTRUM™

Programs from Blackboard Software

The new range of educational programs from Blackboard Software makes learning an enjoyable process by involving the child in a game which teaches as it entertains.

Each program has a step-by-step example section and gives correct answers after a number of attempts. Vocabulary changes can be made, allowing each program to keep pace with the child's development. This flexibility can also be used in the classroom to cater for children of differing ability.

The instructive and colourful games which follow the successful completion of each group of sentences provide useful practice in letter recognition and increase familiarity with the Spectrum keyboard.

All programs are written for the 48K RAM Spectrum.



Alphabet Games

Three games of letter recognition (using either upper or lower case) to help children learn the alphabet and find their way round the computer keyboard.

Alphagaps – The full alphabet is displayed, along with a second, incomplete version. The child must fill in the missing letters.

Random Rats – Press the letter key that is displayed on the gun to destroy the rats which have invaded the cellar!

Invaders – Stop little green men from landing on Earth by pressing the appropriate letter.

Early Punctuation

While an animated matchstick man marches above displayed sentences the child must decide which punctuation mark is missing and where to insert it. At the touch of a key the matchstick man drops the mark into place. After successful completion of every sentence in the exercise, light relief comes in the form of a bottle-shooting game!

The Apostrophe

As each sentence is displayed, a bird appears with a worm in its beak. The keyboard is used to move the bird and drop the worm into the correct place for the apostrophe. When ten sentences have been corrected, the Grub Game is displayed. Press the correct character to change the grub into a butterfly...before it munches through a flower!

Capital Letters

A program to teach the use of capital letters. Sentences incorporating proper nouns and sentences without opening capitals are displayed. The child inserts the correction by guiding an animated figure to the appropriate letter.

For each correct answer an apple grows on a tree. After ten correct answers the child's skills in recognising letters and using the Spectrum keyboard are needed to save the apples as they fall to the ground.

Speech Marks

A comprehensive program including sentences with one or two sets of speech marks ("inverted commas") and exercises in both direct and reported speech.

Using the Spectrum keyboard, a cursor is used to guide speech marks to the correct position. The program offers three levels of difficulty, with full examples for each section. Guide Max the mouse through a maze, after the correct completion of five sentences from each section, but beware of Persian cats!

Castle Spellerous

A spelling game with ten levels of vocabulary, including words with silent first letters, double letters and other difficult words. The Princess has been captured and carried off to Castle Spellerous. Helped by ten soldiers, the child can attempt a rescue by giving the right answers. Part of a siege tower is built for each correctly spelt word. Mistakes are costly – the wicked wizard appears as a vampire bat, turning the men into frogs, butterflies and bats!

When ten words are spelt correctly the rescue begins and the wizard takes flight.

SINCLAIR + MACMILLAN: A NEW DIMENSION IN EDUCATIONAL PROGRAMS

Sinclair have joined forces with Macmillan Education to produce a completely new and different range of educational software. The results so far can be seen in these exceptional programs.

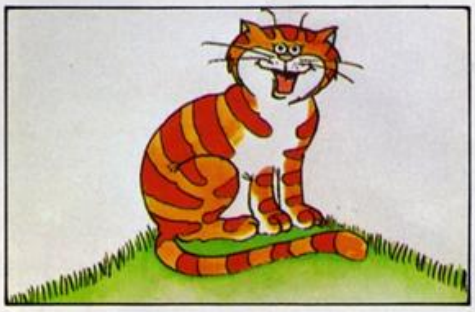
The Learn to Read series is derived from Macmillan Education's best-selling primary school reading scheme, Gay Way. It offers a unique opportunity for parents and teachers to participate in the child's first experience in reading.

Macmillan Education's Science Horizons is one of Britain's most successful school science schemes. Each program concentrates on key scientific ideas and, through simulation of real life, makes the learning process entertaining and enjoyable.



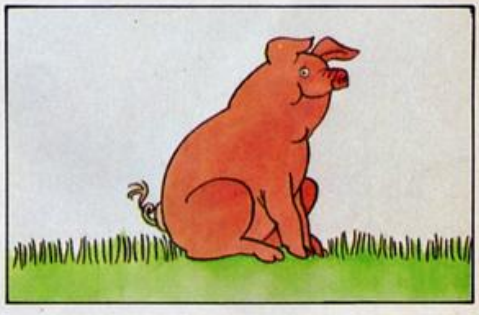
Learn to Read 1

Learn to Read 1 is designed for children who are just beginning to read. It is in four parts, each of which develops skills central to the reading process – letter recognition, sight vocabulary, early spelling and memory. The program is full of colour and fun and children will enjoy learning to read as they meet the animal characters – Ben the dog, Jip the cat and their friends.



Learn to Read 2

Learn to Read 2 extends the fundamental reading skills practised in the first program, as well as encouraging logical thinking. The child's vocabulary is gradually built up as new words such as "red," "green," "car," "ship" and "bus" are introduced. In addition, Learn to Read 2 features an attractive 'reward' system enabling children to see their achievements grow.



Learn to Read 3

Learn to Read 3 builds on the child's progress so far, so that he or she can gain the confidence to move on through the complex reading process. Learn to Read 3 features four different activities, all of which are colourful and lively. Further vocabulary is introduced until the child is reading more than 30 words.



Learn to Read 4

Learn to Read 4 is the alphabet program in the Learn to Read series.

Using various stimulating activities the program gives the child plenty of practice in working with the alphabet – matching initial letters to words and pictures and spotting missing letters. These exercises build familiarity with simple sequences within the alphabet.



Learn to Read 5

Learn to Read 5 teaches positional language – often difficult to understand and remember – by using words and phrases such as "behind" and "in front of," "inside" and "outside."

The program first demonstrates the meanings of the words using clear pictures. It then tests the child's understanding of the words in two lively games.



Cargo

Set sail around the world. Choose your ports of call – New York, Tokyo, Belem, Helsinki – then the real challenge begins! You must reach your destinations safely, weathering storms on the way. But first, load your cargo – using all your knowledge and skill. Poor loading can mean capsizing and sinking. Your rank, if not your life, is always at stake!



Glider

Be a glider pilot! The glider models real-life gliding conditions so that you can learn through experience. As the pilot you must consider the time of day, the amount of cloud cover and the kind of terrain below you in order to find the up-currents of air that will keep you airborne. Try to fly as far as possible and, when you are high enough, navigate your way back to your home airfield and land safely – if you can.



Survival

Discover what it is like to be an animal in the wild! Be a lion stalking your prey, escaping human hunters. Or be a hawk, mouse or even a butterfly, searching for food and avoiding predators.

Survival models the natural world and brings to life hazards that different creatures must face in their struggle to stay alive.



Magnets

With an army of small magnets you set out to conquer the powerful supermagnets of your opponent. You have one weapon – your forces of magnetic attraction and repulsion.

The strategy is simple: attract smaller magnets to build strength to repel the super-magnet. When cornered, just turn your poles on your enemy and see what happens!

Learn to Read and Science Horizons programs are written for a 48K RAM Spectrum, and are supplied complete with comprehensive supporting documentation for parents and teachers.

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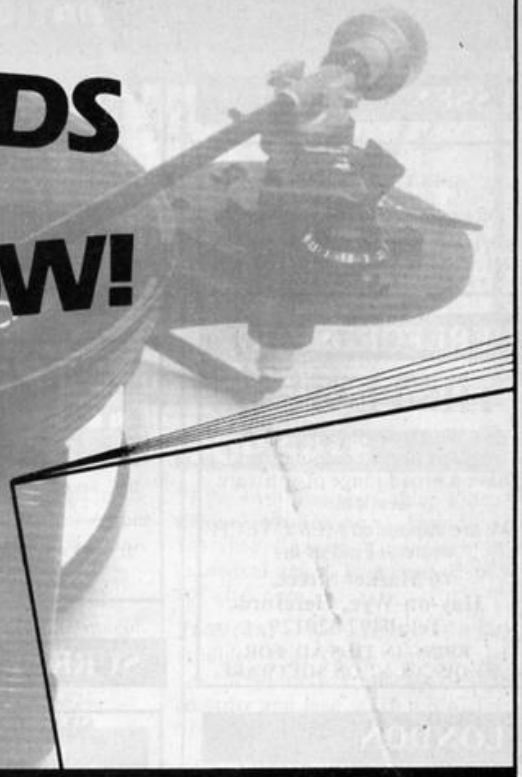
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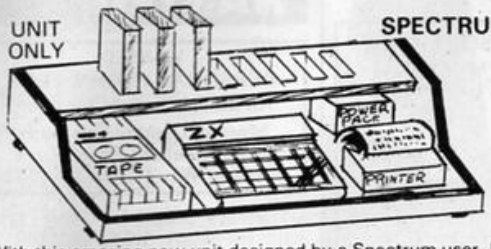
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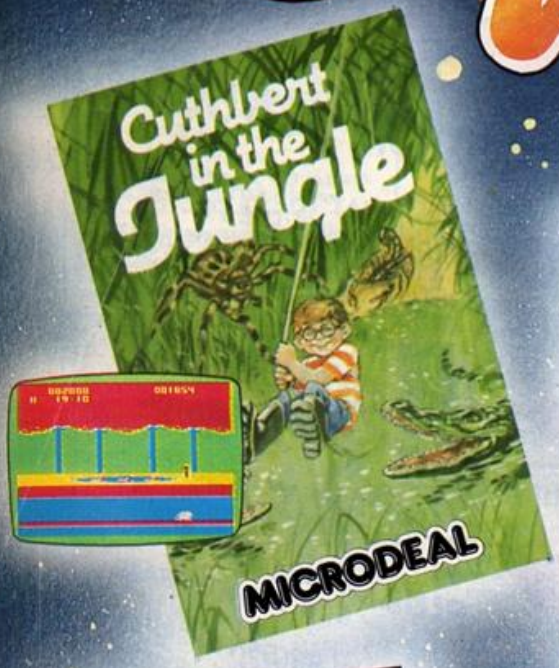
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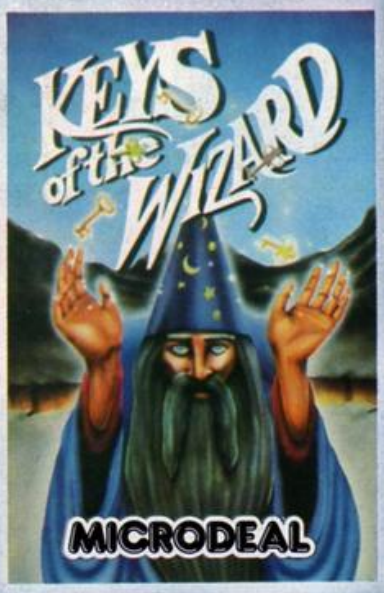
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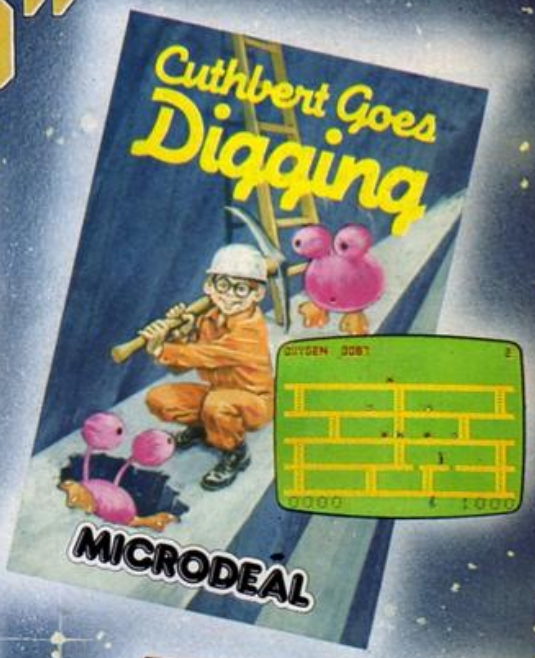
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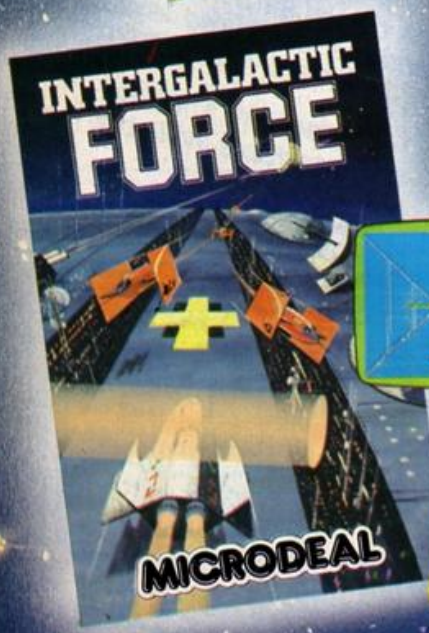
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