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Home Computing WEEKLY

An Argus Specialist Publication

No.43
Jan 3-9, 1984

40p

FREE inside

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Software reviews: more than ever before. For Spectrum, Dragon, Texas, Oric, BBC, Commodore 64

How to add a CIRCLE to your BBC micro

Type in our Commodore 64 sprite editor

More listings for: Spectrum, Dragon, BBC, VIC-20, ZX81

PLUS: U.S. Scene, letters, news, One Man's View...



Price row over Dragon, new Tandys

New Tandy Colour Computers go on sale next month — with a claim that Dragon has under-priced its rival micro by £30.

The new range of three models has a 57-key typewriter keyboard to replace the calculator type and a white casing, instead of grey, which is the new Tandy house colour.

Prices, say Tandy, will be in line with the present models, from £240. They are at present on special offer at £179.95-£299.95. The Dragon 32 costs about £175 and the new Dragon 64 is £225.

Both Tandy and Dragon use Motorola's 6809 processor and Microsoft BASIC, which means most software will run on either models.

Asked about pricing, Tandy's Martin Soble said: "Dragon Data is not using the same procedures to calculate prices that we do.

"If you look at its recent history, it had to raise money to maintain production. Dragon was under-pricing by £30.

"We could do the same if we

Continued on page 5

No tears over scrapping of ITV micro

Most of the independent TV companies had mixed feelings about plans for an ITV micro — and many of them are relieved that the idea has been dropped.

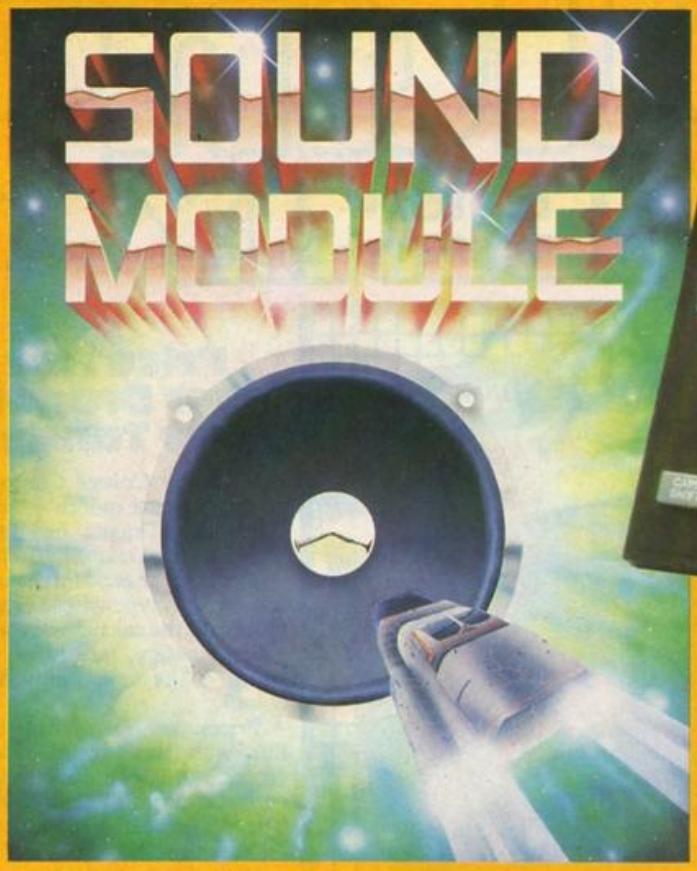
After consultations with the Independent TV Companies Association, the Independent Broadcasting Authority decided that the planned micro might breach the Broadcasting Act, which governs ITV but not the BBC.

Section 8 of the Broadcasting Act stresses that adverts should be kept separate from programme material. And conflicts with advertisers could have arisen if the ITV had decided to sponsor one particular brand of micro.

Spokesmen for some of the independent TV companies felt that a special ITV micro would have interfered with their existing

Continued on page 5

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Terminal Software, purveyors of programs for the Commodore 64 and VIC-20, have now launched their first two programs for the Spectrum. They are Vampire Village and Space Island, and Terminal describes them as "real-time graphic adventures." They cost £6.95 each.

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

This monitor stand for the BBC micro and similar computers is made from quarter-inch thick tinted perspex by Camel Products. It measures 17in by 12in by 3¾" and costs £19.50, plus VAT and postage.

Cambridge Microelectronics, 1 Milton Road, Cambridge CB4 1UY

Zarm, Martian Attack and Cybertron are Micro Power's three new titles for the Electron and BBC micro, priced at £7.95 each. Micro Power is also converting most of its range to run on the Electron, including its best-selling Killer Gorilla. Prices will range from £6.95 to £9.95.

Micro Power, Northwood House, North Street, Leeds LS7 2AA

The Joy of Computers is a new book which, with illustrations, diagrams and colour photos tries to convey the fun of computing. It's written by Peter Laurie, ex-editor of Practical Computing and costs £9.95 in hardback. From most bookshops, or by post for an extra £1.85.

Southdata, 166 Portobello Road, London W11 2EB

All the family can learn with two new programs from Sulis Software. Time Traveller, for the 48K Spectrum and BBC, aims to test your knowledge of British history from the Bronze Age to the present day. Besieged, for the BBC only, is a spelling program in which you try to get a knight on horseback across a ravine by spelling jumbled words to build a bridge. Versions for other machines are coming soon. Price: £9.95 each.

Sulis Software, 4 Church Street, Abbey GReen, Bath BA1 1NL

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There's eight pages of software reviews in this issue — that's a total of 40 programs tested for you. We review more software than any other magazine



Bash the brickwork with the game on page 19 — it packs a lot into the unexpandced VIC-20



Type in and have fun with the BBC game on pages 26 and 27 — it's so furiously simple....



Stay up to date with the 16K ZX81 program on pages 40 and 41

LUNAR JETMAN – 48K ZX Spectrum



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Price row

From front page

decided to lose £30 per machine. We are committed to providing full support and we also want to be here tomorrow.

"Many people think it's a licence to print money. It will be interesting to see how many manufacturers are around in the New Year."

Dragon's sales boss Richard Wadman, told of Mr Soble's comments, said: "It's a load of rubbish. The re-financing has got nothing to do with it. There's no relation. It was due to the fact that when we started we had 40 staff and now we have six times that amount and a major development programme.

"Obviously, as a manufacturer, I would like to see a higher price — but the market place doesn't."

Tandy's new models, made in Korea, are a 16K version, 16K with Extended BASIC and 32K, or 64K with a 5¼in disc drive which also adds Tandy's OS/9 disc operating system. The circuit board has also been re-designed.

All present software and peripherals will work on the new micros, except Tandy's graphics pad.

Meanwhile, Dragon is planning to bring out a computer aimed at businesses in February/March, followed by a 128K Dragon.

Tandy, Tameway Tower, Bridge Street, Walsall, West Midlands WS1 1LA
Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, West Glamorgan SA13 2PE

ITV micro

From front page

plans for home computer programmes.

Roy Addison, of Thames TV, said "On one hand, it's a pity that the BBC can bring out a micro and we can't. On the other hand, we have an independent educational programme about the world of computers, called Data Base, which covers all kinds of micros, so we were quite worried about the IBA's reaction."

Data Base, which was broadcast in the London area only last year, will be coming back during 1984.

Adam Hart-David, who is producing a computer programme for Yorkshire TV, said: "An ITV micro would have had advantages and disadvantages. But to try and cram all the different ITV companies' wants into one machine would have been quite difficult.

"For example, at Yorkshire TV we're trying to make a simple little programme for home computer users. If we'd been lumbered with an expensive ITV micro, I'd have been very unhappy."

Mr Hart-Davis is working on a series of four or five programmes which should start to appear on viewers' screens nationwide in June. The aim of the series will be to encourage people to write their own programs.

The series will concentrate on two microcomputers, both costing less than £250, one of which is likely to be the Spectrum. It will be presented by Fred Harris, best known for his appearances on Play School.

Describing the series, Mr Hart-Davis said: "We want it to be educationally sound, but fun too. The most exciting thing about computing is when your first program runs, and that's what we want to get across."

He is also on the lookout for people who do odd things with micros, and said: "if any of your readers fit the bill, tell them to get in touch with me."

Tommy Boyd, who along with Isla Sinclair presents Central TV's Saturday Show, said: "There are too many types of computer anyway — it will be better when they are all standardised. We want to concentrate on using micros to make entertaining programmes."

The Saturday Show has a regular computer spot called Interface. From 7 January it will be starting a Fairground of the Future, in which viewers control a robot arm via a computer modem link from their own homes, and try to pick up prizes from a turntable.

Interface is co-presented by Tommy Boyd and technical expert Chris Palmer.

London Weekend Television is also actively pursuing the idea of making its own home computer programme. It's currently discussing proposals which should become public in a few weeks.

New show date

The organisers of the London Home Computer Show have decided to re-schedule the exhibition, because many potential exhibitors wish to attend the Las Vegas computer show at the same time.

The London show has been postponed for a month and will now take place in the Royal Horticultural Society's Old Hall, Vincent Square, Westminster, London, on February 3-5. Admission: £2.50, children under 15 £1.50.

Home Computing Weekly is one of the magazines that sponsors the London Home Computer Show.

Argus Specialist Exhibitions, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS

Cutting idea for a Dragon

So who says home computers can't do anything useful? Seventeen year old Stephen Hurcombe proved them wrong with his prize winning entry for the Microquest competition run by Williams and Glyns and the Mocroelectronics Application Project.

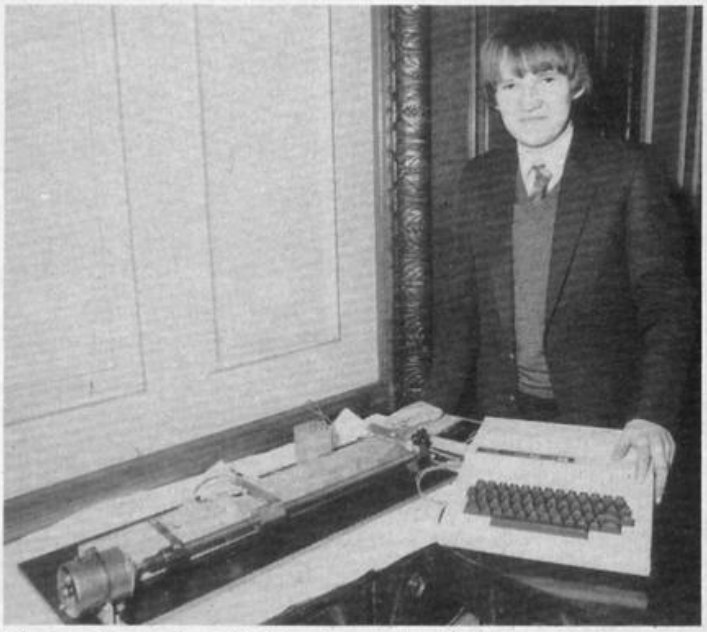
Stephen's entry, which used a Dragon 32 to control a mortice cutter, has a very real use in streamlining manufacture of storm porches at his father's joinery business.

He learned about microelectronics partly through home computing on his Dragon, and partly through work experience as an apprentice with British Telecom, at the Madley satellite earth station.

As national Microquest winner, Stephen was awarded £1,000. He also received £250 as the Midlands regional winner, and plans to use the money to buy more computer equipment.

One thing he won't have to buy is disc drives — Dragon Data has already presented him with a disc system.

Now Stephen is hoping that, with the help of MAP, his idea may be developed commercially.



Stephen Hurcombe with his prize-winning Dragon project

Split-level stand

Zygon has come up with another variation on the computer stand theme.

Its stand uses a two-tier arrangement, with the computer on a lower shelf which slides away when not in use. The screen is set back on a higher shelf, and side shelves hold disc drives and other peripheral equipment.

The whole stand will wheel out of sight on double castors, and there's even a brake to prevent your hobby running away with you. Price: £106.08.

Zygon, 9 Sheredes Drive, Hoddesdon, Herts EN11 8LH



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Quick on the draw

Software company Audiogenic has now moved into peripherals with Koala Painter, a £90 graphics tablet for the Commodore 64 plus discs.

Graphics tablets allow on-screen pictures to be produced without the need for programming knowledge, by drawing with a special stylus on an electronic pad.

Koala Painter, so called because it is made by the Koala Technologies Corp of Santa Clara, California, is controlled by a disc-based program which allows you to draw in eight line widths, 16 colours and 16 patterns.

You can undo a previous command to correct mistakes, copy picture elements, create mirror images and zoom in for detailed drawings.

To select any of these features, you press one of the Koala's buttons to get to the menu. Press the button again to choose the option you want, and another button press returns you to drawing mode.

Koala Painter measures eight inches by six inches by one inch, and weighs just one pound. The graphics pad surface is four inches square.

Audiogenic, PO Box 88, Reading, Berks RG1 2SN



The Koala Painter from Audiogenic — graphics at your fingertips

You could be on our pages

We welcome programs, articles and tips from our readers.

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

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

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

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

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

It's a no-lose situation

In HCW 38, this column was devoted to a complaint from "an anonymous software house" complaining of "blackmail" from "the few big distributors" who "demand that they buy programs at 60% margins".

"Is the man mad?" I ask myself. "Has he not observed the transformation of the software market that has taken place in the last 12 months? Can he not see that this is to the advantage of both his company and to would-be purchasers of his software? Is he not pleased that today the consumer can walk into any town in the country and find a shop selling good quality software attractively packaged and presented and retailing at an acceptable price?".

It would be wrong to place all the credit for this situation with the various distributors of computer software, but there can be no doubt that they have played an important part.

Let me take an example. This morning, my company received an order from one of our distributors for 4,000 copies of 3D Seiddab Attack, our new Spectrum cassette.

For an order of this size, we willingly allow the distributor a discount in the region of 60%. We do so because the distributor is providing a service to the public which we could not equal, let alone surpass.

He is also serving us by arranging that copies of the cassette will be available in hundreds of retailers up and down the country on the launch date — 17 December. When the general public sees our advertisement, or reads the first independent reviews, the cassette will be available at a convenient local outlet.

Contrast this arrangement with the situation of a year ago, when the potential purchaser had either to search out one of the small number of specialist computer shops, or to entrust his money to the vagaries of the postal system.

There are other benefits to both the distributor and to ourselves in this arrangement. We know that he will settle our bills on time and he knows that we will deliver our software on schedule because we both wish to continue a mutually profitable trading relationship in the future.

He also gets to know the style and quality of our software and learns that we will only offer him reliable products which he can readily sell.

Retailers also benefit. They need not run 20 or 30 accounts with a variety of software houses, each of which requires telephone calls, paperwork and, in some cases, time consuming and expensive weeding out of poor cassettes.

Finally, the public also benefit. They can buy their software from the local newsagents, hi-fi shop, camera shop, computer shop, chemist or supermarket, and can be confident that the selection is of good quality and will contain all the latest releases.

Surely this is preferable to the unseemly mail order scramble of a year ago? I know that the hundreds of thousands of purchasers of our software certainly think so — our mail order sales now represent a tiny fraction of our total turnover. I think so, too. We can now concentrate all our energies on what we do best — creating, packaging and presenting top quality, value for money software.

The only losers in this market are the software houses which cannot deliver good material. I for one will not mourn their demise.

Andrew Hewson
Hewson Consultants
Wallingford, Oxfordshire

● This space is for you to sound off about the micro scene, to present bouquets or to hurl brickbats. Share your views by sending them to Paul Liptrot, Opinion, Home Computing Weekly, 1 Golden Square, London W1R 3AB. Please include your occupation and your interest in computing.



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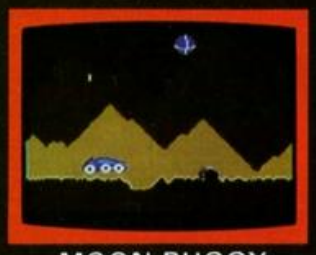
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In an alien situation

More programs to fill your TV screen with hostile space creatures. Our reviewers battled through them to give you their ratings

I'm In Shock Spectrum £4.95

Artic, Main Street, Brandesburton, Driffield YO25 8RL

Why am I in shock? Well, wouldn't you be if you'd been away fighting aliens only to find it was all a decoy, and the earth had been taken over in your absence?

You find yourself on a grid, with some static triangles that deflect your shots. This makes killing the aliens quite an art even though they are pretty docile.

On level 5 they speed up and fire indiscriminately.

The sound, a fast throbbing noise, is good and the effect of the screen flashing white when a triangle is hit is excellent.

The game is let down badly by the poor graphics and the lack of variety of aliens — there are only three types.

It's difficult to position your ship in a particular column because the keys are over-responsive. One touch and you move three or four spaces. However, it is a logical choice of keys.

I doubt the game's lasting appeal, even with the different skill levels, because it can become monotonous. But it's certainly fun to play for a while. **S.E.**

instructions	60%
playability	65%
graphics	35%
value for money	60%

★ ★ ★

Proteans 32K BBC £6.95

dk'tronics, Shire Hill Industrial Estate, Saffron Waldon, Essex

You control the usual laser gun which is under constant attack by waves of enemy aliens, which move around in a random fashion rather than the strict formation of Space Invaders.

These are some of the fastest-moving aliens I've experienced. There are no less than 36 waves of them, each wave increasing in difficulty and speed, and they appear in nine different forms.

Choice of control keys is good, being equally suitable for left or right handed players (other software writers please note). Unfortunately, the author has not given the option to use joysticks, which is a pity.

Instructions are displayed while the main program is loading, and a high scores table is provided. I particularly liked the way that the screen scrolls from the end of the game into the high score routine.

Excellent use is made of the Beeb's sound and graphics facilities. If you like the fast moving, noisy arcade games, you'll like this. **G.T.**

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

★ ★ ★ ★ ★

Spectron 48K Spectrum £5.95

Virgin Games, 61/63 Portobello Road, London W11

According to the blurb, this is a game which can never be beaten no matter how proficient you become. If that is indeed the case, what is the point of playing it?

The game is another version of Space Invaders. This time, you are in the centre of the screen being attacked from all sides by the monsters.

Keys Q,A,B and v or a combination of two of them, allow you to move in eight directions, firing in the direction you travel. This does cut down the number of keys you need to use.

In all, this is a rather standard game despite the nine skill levels. I feel that better use could have been made of colour, especially in the instructions, which look quite drab in black and white.

Movement of the characters is very smooth, however and the game is up to the standards of this type of game — competent but uninspiring. **N.B.**

instructions	80%
playability	80%
graphics	70%
value for money	75%

★ ★ ★

Stix CBM 64 £8.95

Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex

It doesn't take much thought to realise that this is a copy of an Atari game of similar sounding name. Unlike most copies, however, this game is superb.

An alien bundle of energy resembling a bundle of sticks moves about the screen. You try to pen it in by drawing a line about it with a force field.

As you complete the perimeter, the area outside the field is filled with colour. You must not pause whilst forming the force field or a 'ripple' will come and get you.

Similarly two quarks creep about trying to jump on you. When you've covered at least 76% of the screen you get a new screen.

With each new screen the alien and the quarks become meaner and go for the throat with increased alacrity. In fact, after about six screens, life becomes positively impossible.

The game uses the bit mapped mode and is beautifully programmed. My only complaints were the lack of a high score display and the lack of clarity of the score.

If you have a 64, you must get Stix. It shows what a **real** game is like. **A.W.**

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

★ ★ ★ ★ ★

Arena/Alien Swarm Spectrum £6.95

K-Tel, 620 Western Avenue, London W3

"You are a captive of a warlike alien race... you are in the arena... you will have comets, lazer bolts and lazer spears shot at you..." it says here.

Which is an interesting description of a little spaceman, stuck in the middle of a rectangle, being bombarded by amorphous blobs of colour to the sound of random bleeps.

The instructions also tell you to keep away from the side spikes of the "arena". They're supposed to be deadly, but my spaceman wouldn't go near them.

And they're supposed to move in as time goes on, but mine appeared to be frightened and kept running back.

To be fair, you can define the movement keys — every time you start (yawn!). And you can adjust the speed and difficulty from geriatric to impossible.

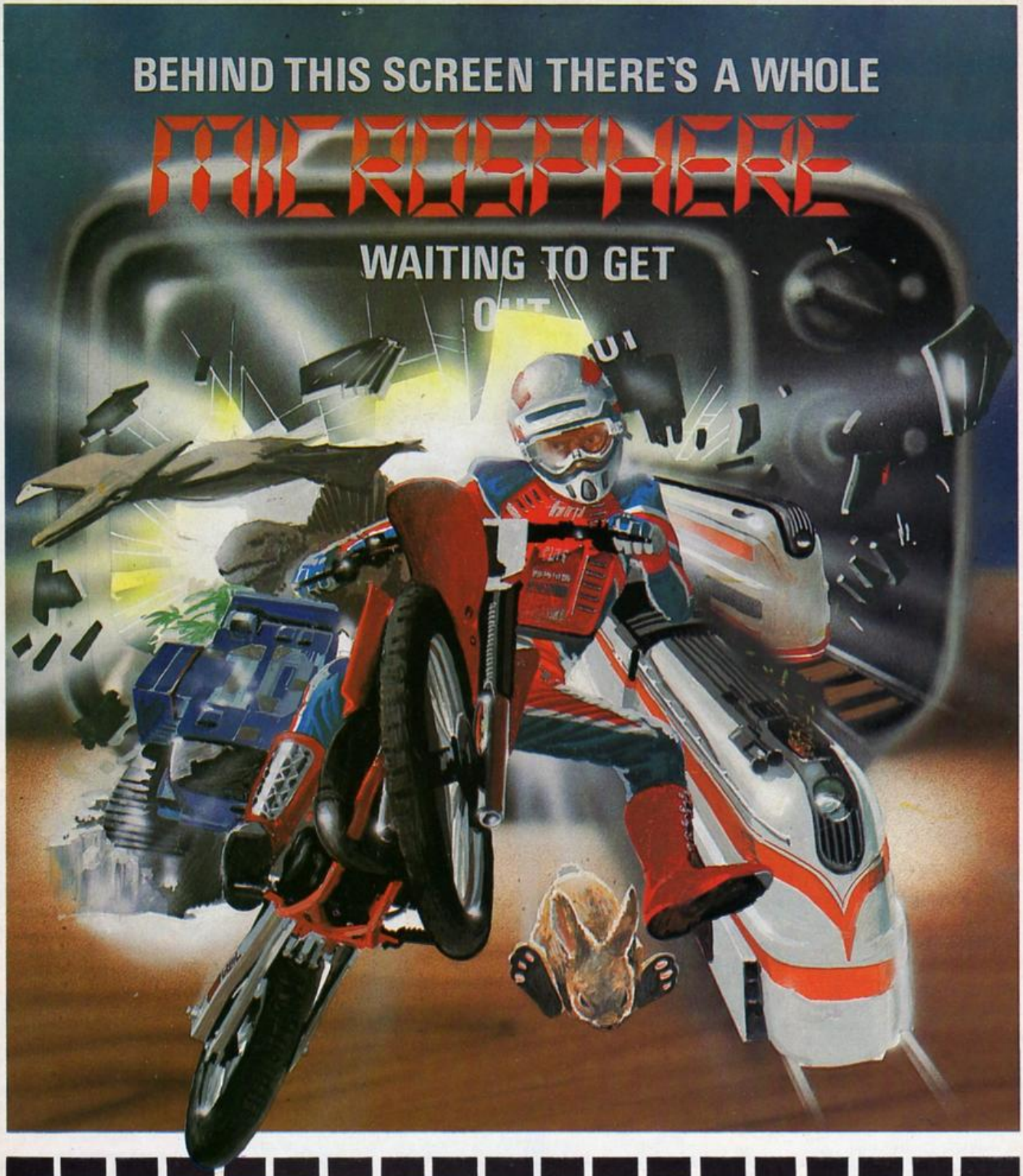
The problem here is that the easiest level is 9 and the hardest is 1, which by convention is back to front. The graphics are jerky and the sound is rudimentary.

The concept of the game is quite good, and if you like it, go out and buy Zip Zap from Imagine, because this just doesn't bear comparison.

Sold as a double-game along with Alien Swarm. **D.M.**

instructions	95%
playability	60%
graphics	20%
value for money	30%

★ ★



★ **WHEELIE** (48K Spectrum)
As proud owner of the ultimate racing motorbike, you find yourself in a strange world — a world full of double-decker buses to leap and where even the hedgehogs are out to get you! Your only hope of escape is to find the elusive ghostrider and then beat him in a life-or-death race.
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"Fun, fun, fun to play . . .
(Home Computing Weekly 27/9/83)

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"If more programs shared the quality of OMNICALC then we might see more Spectrums in offices"
(Home Computing Weekly 3/6/83)

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Get that sprite right

Playing about with sprites is a piece of cake when you use Tony Kelly's Sprite Editor program. A few keys let you change your sprite's size, shape and colour

My Sprite Editor program helps you to get the most out of your Commodore 64's sprite facilities.

It makes it easy to first draw your sprite on the screen, and then see it in four different modes: expanded, normal, expanded in X direction and expanded in Y direction.

To move about, use the normal cursor keys plus colon, semicolon, full stop and slash.

You can be in one of three modes:

Mode 1 press 1 — you will start printing as you move.

Mode 2 press 2 — you can move without deleting anything.

Mode 3 press 3 — you will delete the square you are on and any other you move to.

The other functions are:

Press Q to change the colour of the sprite to anything but black.

Press A you will be confronted by "are you sure?" This was put in because I found I sometimes pressed the wrong key and cleared the screen by mistake. You must reply with either Y or N. N will return straight away. Y will clear the screen and then return.

Press S this must be pressed after S if you want the data for the sprite you have on the right hand side of the screen. Pressing D will print the data, then wait for a key to be pressed.

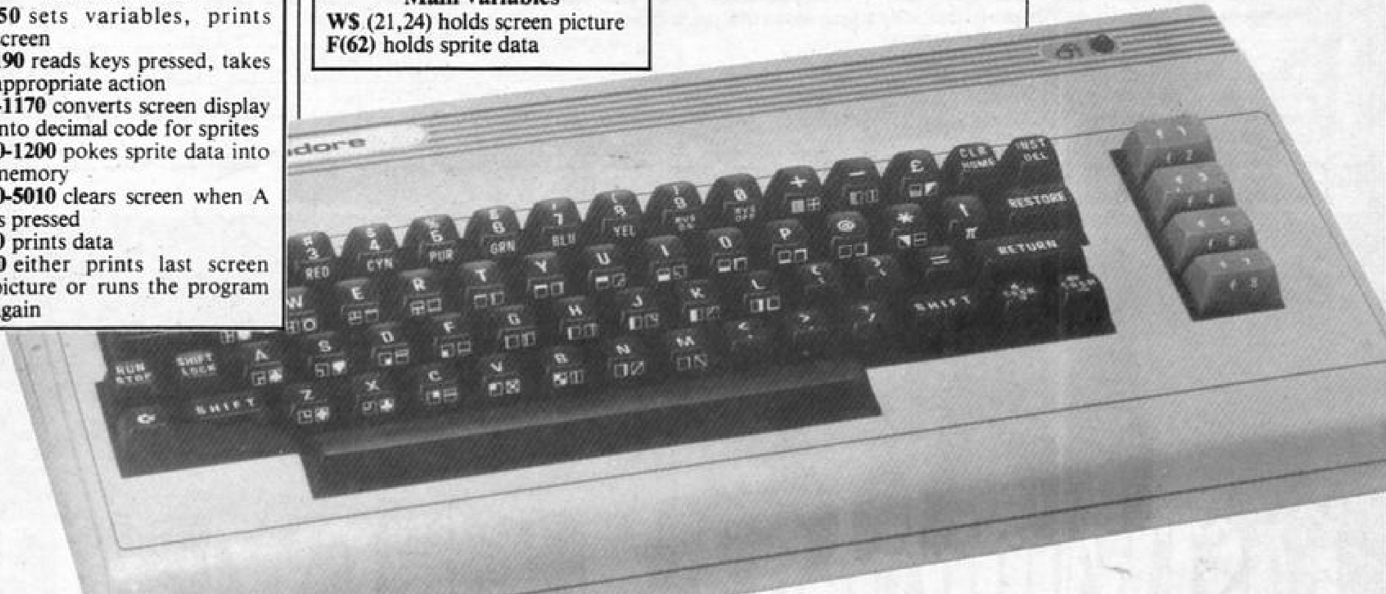
Press R to return to the sprite draw and clear screen. If you press any other key, the program will print your picture back on the screen.

How it works

10-50 sets variables, prints screen
60-190 reads keys pressed, takes appropriate action
500-1170 converts screen display into decimal code for sprites
1190-1200 pokes sprite data into memory
5000-5010 clears screen when A is pressed
5500 prints data
5510 either prints last screen picture or runs the program again

Main variables

W$ (21,24) holds screen picture
F(62) holds sprite data



```
SPRITE EDITOR

9 REM [CLR]
10 PRINT"♥":DIMW$(21,24):POKE53281,0:POKE53280,0:DIMF(62):CO=0:V=53248
11 POKEV+21,15:POKEV+23,6:POKEV+29,10:POKEV,255:POKEV+1,175:POKEV+2,255
12 POKEV+3,130:POKEV+4,255:POKEV+5,80:POKEV+6,255:POKEV+7,200:POKE2040,200
14 POKE2041,200:POKE2042,200:POKE2043,200
19 REM[HOME]
20 PRINT"■";:PRINTCHR$(28);"/‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾\"
30 FORA=0TO20:PRINT"|"SPC(24);"|":NEXT
40 PRINT"\________________________/"
50 DEFFNA(X)=1024+X+40*Y:X=1:Y=1
60 Z=PEEK(FNA(X))
66 IFPEEK(FNA(X))=32THENPOKEFNA(X),91:GOTO70
67 POKEFNA(X),219
70 GETA$:IFA$=""THEN70
72 IFP=1THENPOKEFNA(X),224
73 IFP=2THENPOKEFNA(X),32
74 IFP=0THENPOKEFNA(X),Z
75 REM[CRSR RIGHT]
80 IFA$="■"THENX=X+1
81 IFA$="/"THENX=X+1:Y=Y+1
85 REM [CRSR LEFT]
90 IFA$="■"THENX=X-1
91 IFA$=":"THENX=X-1:Y=Y-1
95 REM [CRSR DOWN]
100 IFA$="■"THENY=Y+1
101 IFA$=";"THENY=Y-1:X=X+1
105 REM [CRSR UP]
110 IFA$="■"THENY=Y-1
111 IFA$="."THENY=Y+1:X=X-1
120 IFA$="1"THENP=1:POKEFNA(X),219
130 IFA$="2"THENP=0
140 IFA$="3"THENP=2:POKEFNA(X),32
145 IFA$="A"THENGOSUB5000
146 IFA$="Q"THENCO=CO+1:POKEV+40,CO:POKEV+39,CO:POKEV+41,CO:POKEV+42,CO
147 IFA$="D"THENPOKEV+21,0:GOSUB5500
149 IFCO=15THENCO=0
150 IFX>=24THENX=24
160 IFX<=1THENX=1
170 IFY<=1THENY=1
180 IFY>=21THENY=21
181 IFA$="S"THENPOKEV+21,0:GOSUB500
190 GOTO60
500 FORA=1TO21:FORB=1TO24
510 IFPEEK(1024+B+40*A)=32THENW$(A,B)="0":GOTO530
520 LETW$(A,B)="1"
530 NEXTB:NEXTA
1020 TH=0
1030 FORA=1TO21
1040 FORC=0TO2
1050 T=C*8
1060 SD=0
1070 IFW$(A,1+T)="1"THENSD=SD+128
1080 IFW$(A,2+T)="1"THENSD=SD+64
1090 IFW$(A,3+T)="1"THENSD=SD+32
1100 IFW$(A,4+T)="1"THENSD=SD+16
1110 IFW$(A,5+T)="1"THENSD=SD+8
1120 IFW$(A,6+T)="1"THENSD=SD+4
1130 IFW$(A,7+T)="1"THENSD=SD+2
1140 IFW$(A,8+T)="1"THENSD=SD+1
1150 F(TH)=SD:TH=TH+1
1160 NEXTC
1170 NEXTA
1190 FORA=0TO62:POKE200*64+A,F(A):NEXT
1210 POKEV+21,15:RETURN
4999 REM [HOME]
5000 PRINT"■";SPC(26);"ARE YOU SURE":GETA$:IFA$=""THEN5000
5001 IFA$="Y"THENPRINT"■";SPC(26);"              ":GOTO5009
5002 PRINT"■";SPC(26);"              ":RETURN
5005 REM [BLU] [HOME] [CRSR RIGHT] [2 CRSR DOWNS]
5009 PRINT"■■■■                        ■"
5010 FORA=1TO21:PRINT"■                        ":NEXT:RETURN
5495 REM [CLR]
5500 PRINT"♥";:FORA=0TO62:PRINTF(A),:NEXT
5510 GETA$:IFA$=""THEN5510
5520 IFA$="R"THENPOKE53281,7:POKE53280,7:RUN
5525 POKE53281,6:POKE53280,6:PRINT"♥"
5530 FORA=1TO21:FORB=1TO24
5540 IFW$(A,B)="1"THENPOKE1024+B+40*A,224
5550 NEXTB:NEXTA:POKE53281,0:POKE53280,0
5560 POKEV+21,15: GOTO20
```

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Price of each program £6.50 (incl Vat, P & P). Overseas orders £1 extra per tape for airmail delivery. Money back guarantee.

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PARTY TIME for Age 3 yrs +

With parent's help even tiny tots will love to play these party games. They can 'blow out' the candles on a cake, sing along with nursery rhymes, even draw on the screen. If you have a printer you can record your Clever Clogs artistic efforts and watch their progress as they develop new skills. Because each Clever Clogs program offers a choice of games to play and has the facility to increase the 'difficulty' factor your children won't grow out of them so quickly.

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Correct answers to questions build up a picture of an animal - is it a real one? That's up to the player. Take your choice and create your own unique zoo. Then enter the great Safari Park chase . . . the possibilities are endless!

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A game of skill and chance for 1-4 players that will get your whizzkids thinking hard. But Clever Clogs of this age like a challenge. You can proceed from the general knowledge questions already programmed and you can enter up to 100 questions of your own - there's tremendous scope here for the really clever, Clever Clogs! Watch them develop their three 'R's' and in a way that will fascinate you as much as them.

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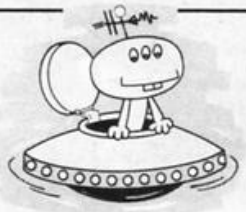
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Zap while you learn... but be quick about it

Space games can be educational, too. Gerard Morgan proves it with his Physics Invaders game for the Spectrum. And it's easy to change the quiz questions for other subjects



Have fun while you're learning with Physics Invaders, which combines education with play.

Every time you get the answer right you can gain bonus points by shooting a UFO.

Although I have used questions on physics, it is a simple matter to change the DATA in lines 2000-2950 to any other topic. It could be Sport Invaders, General Knowledge Invaders, and so on.

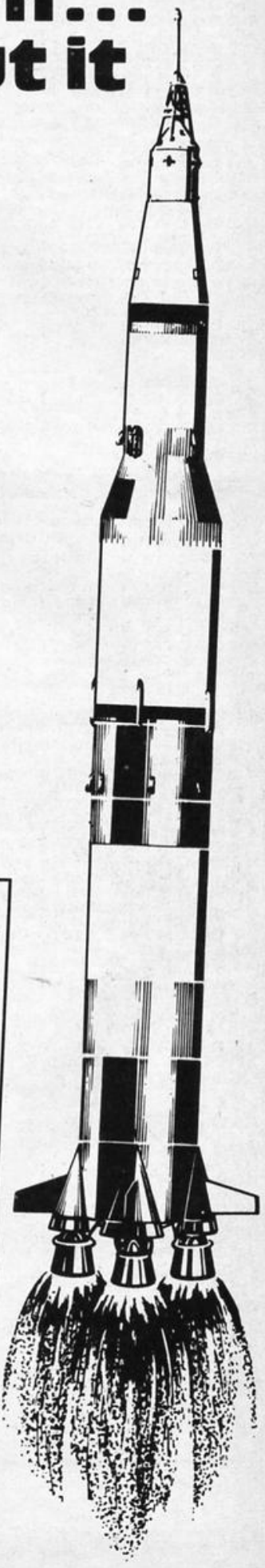
Each time a question is asked four choices of answer are given — a, b, c or d.

While waiting for an answer, a UFO flies across the screen above a gun. The trigger is the key for the correct answer.

A correct answer earns 10 points and there's a bonus of another 10 for a hit.

If you take too long too answer — time for the UFO to cross the screen 10 times — a "too slow" message appears and you lose the chance to score on that question.

Your score is given after all 10 questions.



How it works

15 sets BORDER colour
20 GOSUB to assign variables
40 GOTO instructions
45 GOTO subroutine to define UFO
60 start
62 initialise value of ct: number of times UFO has crossed screen
65 clear screen
70 read DATA
90-110 PRINT question, choices of answer
115 set initial position of UFO
118 magenta for UFO
120 PRINT UFO. Note: obtained by typing PQR in graphics mode
125 noise
126-140 PRINTs gun and score in black
150 if correct GOTO fire routine
160 if incorrect, give correct answer
170 new UFO position, check if at edge, increase ct by one, erase UFO, restore to initial position
175 has UFO crossed 10 times? If so give answer
180 move UFO
185 clear screen
190 next question
200-211 clear screen, give result
220 end
1000 set initial value of score
1010-1020 initial bullet co-ordinates
1030 initial value of ct
1090-1094, 2000-2950 DATA for UFO, questions and answers
3000-3092 instructions
3093-3096 if s is pressed return to start
4000-4003 PRINT "correct", increase and PRINT score, noise
4010-4035 move bullet
4040-4070 check for hit, miss etc
4075 delay
4080 next question
5000-5020 give correct answer, delay, next question
7000-7040 define characters for UFO
8010-8030 noise, tell player is too slow, give answer, delay, next question

Variables

t number of questions
ct number of times UFO crosses screen
tl target line
tc target column
sc score
bl bullet line
bc bullet column
y check if s (start) pressed
d, f, g delays
n, a used in defining graphics

The answers

1 a	2 d	3 b	4 a	5 c
6 d	7 d	8 c	9 a	10 b

```
   10 REM PHYSICS INVADERS (C)
   MORGAN 1983
   15 BORDER 4
   20 GO SUB 1000: REM assign var
iables
   40 GO SUB 3000: REM TITLES
   45 GO SUB 7000: REM draw UFO
   50 REM START
   60 FOR t=1 TO 10
   62 LET ct=0
   65 CLS
   70 READ a$,b$,c$,d$,e$,f$,g$,h
$,i$,j$
   80 CLS
   90 PRINT "No.";t
  100 PRINT a$;b$;c$;d$
  110 PRINT e$: PRINT f$: PRINT g
$: PRINT h$
  115 LET tl=4: LET tc=10
  118 INK 3
  120 PRINT AT tl,tc-1;" PQR"
  125 BEEP .01,1: BEEP .01,10
  126 INK 0
  127 PRINT AT 21,23;"SCORE=";sc
  130 PRINT AT 21,19;"  "
  140 PRINT AT 20,20;"  "
  150 IF INKEY$=i$ THEN GO TO 400
0: REM FIRING
  160 IF INKEY$<>"" AND INKEY$<>i
$ THEN GO TO 5000: REM EXPRIN
  170 LET tc=tc+1: IF tc=30 THEN
LET ct=ct+1: PRINT AT 4,29;"
": LET tc=10
  175 IF ct=10 THEN GO TO 8000
  180 GO TO 118
  185 CLS
  190 NEXT t
  200 CLS
  210 PRINT AT 9,0;"YOU SCORED ";
sc;" OUT OF A
";211 PRINT AT 11,8;"POSSIBLE 200
```

```
  220 STOP
1000 LET sc=0

1010 LET bl=19
1020 LET bc=20
1030 LET ct=0
1040 RETURN
1090 DATA 0,0,0,3,15,3,0,0
1092 DATA 0,24,60,255,255,255,28
,8
1094 DATA 0,0,0,192,240,192,0,0
2000 DATA "A force of 20N acts o
n a mass of"
2010 DATA " 5kg.What is the acce
leration?"
2030 DATA " "," ","a.4","b.5","c
.10","d.100"
2040 DATA "a","4"
2100 DATA "Water waves have a fr
equency of"
2110 DATA " 5Hz and a wavelength
 of 3m.What"
2120 DATA " is their speed?"," "
2130 DATA "a.3","b.330","c.75","
d.15"

2140 DATA "d","15"
2200 DATA "Which electromagnetic
 radiation "
2210 DATA "has a frequency great
er than "
2220 DATA "  light but less tha
n X-rays?"," "
2230 DATA "a.Gamma","b.Ultra-vio
let"
2240 DATA "c.Infra-red","d.Radio
 waves?"
2250 DATA "b","Ultra-violet"
2300 DATA "The units of specific
 latent "
2310 DATA "   heat are"," "," "
2320 DATA "a.J/kg","b.Jkg","c.J
kg K","d.J kg/K"
2330 DATA "a","J/kg"
2400 DATA "An alpha particle is"
2402 DATA "
2404 DATA "
2406 DATA "
2410 DATA "a.An electron","b.A H
elium atom"
2420 DATA "c.A Helium nucleus","
d.A wave"
2430 DATA "c","A Helium nucleus"
2500 DATA "S=2500J/kg/K,m=2kg,In
itial temp-"
2510 DATA "erature=298K,final "
2520 DATA "temperature= 313K.Ene
rgy supplied="," "
2540 DATA "a.30J","b.5000J","c.7
500J","d.75000J"
2550 DATA "d","75000J"
2600 DATA "The melting point of
pure ice is"
2610 DATA "
2620 DATA "
2630 DATA "
2640 DATA "a.-373K","b.-273K","c
.100K","d.273K"
2650 DATA "d","273K"
2700 DATA "Kinetic energy is equ
al to"
2710 DATA "
2720 DATA "
2730 DATA "
2740 DATA "a.mv","b.mgh","c.(mvv
)/2","d.(mgh)/2"
2750 DATA "c","(mvv)/2"
2800 DATA "Resistance is measure
d in"
2810 DATA "

2820 DATA "
2830 DATA "
2840 DATA "a.Ohms","b.Watts","c.
Amps","d.Volts"
2850 DATA "a","Ohms"
2900 DATA "Which equation is fal
se?"
2910 DATA "
2920 DATA "
2930 DATA "
2940 DATA "a.F=ma","b.v=s+at","c
.V=IR","d.V=E/Q"
2950 DATA "b","v=s+at"
3000 REM INSTRUCTIONS
3010 PRINT AT 1,7;"PHYSICS INVAD
ERS"
3020 PRINT : PRINT "You will be
asked 10 multiple"
3030 PRINT : PRINT "choice quest
ions,while a UFO "
3040 PRINT : PRINT "flies overhe
ad."
3050 PRINT : PRINT "If you answe
r the question "
3060 PRINT : PRINT "correctly,a
bullet will fire "
3070 PRINT : PRINT "from your gu
n;so time your "
3080 PRINT : PRINT "answer to hi
t the UFO as you "
3090 PRINT : PRINT "gain 10 bonu
s points for a hit."
3091 PRINT : PRINT "A correct an
swer=10 points."
3092 PRINT : PRINT "Press 's' to
 start"
3093 LET y=0
3094 IF INKEY$="s" THEN LET y=1

3095 IF y=0 THEN GO TO 3094
3096 RETURN
4000 PRINT AT 20,0;"Correct": LE
T sc=sc+10
4001 PRINT AT 21,23;"SCORE=";sc
4003 BEEP .2,10
4006 LET bl=19
4010 LET bl=bl-1
4030 PRINT AT bl,bc;"↑"
4035 PRINT AT bl+1,bc;" "
4040 IF tc=18 AND bl=4 OR tc=19
AND bl=4 OR tc=20 AND bl=4 THEN
PRINT AT 4,18;"HIT "
4045 IF tc=18 AND bl=4 OR tc=19
AND bl=4 OR tc=20 AND bl=4 THEN
LET sc=sc+10
4050 IF bl=4 AND tc<18 OR bl=4 A
ND tc>20 THEN PRINT AT 4,17;"MIS
SED "
4070 IF bl<>4 THEN GO TO 4010
4075 FOR d=1 TO 200: NEXT d
4080 GO TO 185

5000 PRINT AT 20,0;"Wrong.";
5010 PRINT "The correct answer w
as ";i$
5012 PRINT "i.e. ";j$
5015 FOR f=1 TO 500: NEXT f
5020 GO TO 185
7000 REM UFO
7010 FOR n=0 TO 7: READ a: POKE
USR "p"+n,a: NEXT n
7020 FOR n=0 TO 7: READ a: POKE
USR "q"+n,a: NEXT n
7030 FOR n=0 TO 7: READ a: POKE
USR "r"+n,a: NEXT n
7040 RETURN
8000 REM
8010 BEEP 2,15: PRINT AT 10,0;"T
oo slow!The answer is ";i$
8020 FOR g=1 TO 500: NEXT g
8030 GO TO 185
```

```
No.1
A force of 20N acts on a mass of
 5kg.What is the acceleration?
a.4
b.5
c.10
d.100
                    ↑
Correct                  SCORE=10
```

How Physics Invaders looks in action

Arcade favourites to take away

There's a familiar sound to this collection of games — it's the sound of the arcades, ready to fill your living room

Kong TI-99/4A (Ext. BASIC) plus joysticks £8.95

Extended Software, from Timeless Software, 3 Bridgend, Fauldhouse, West Lothian

The first thing that hits you about this game is the packaging — American, and very professional.

The package was described as Games Pak/III, supposedly consisting of three programs, Kong, Bouncer, and Romeo, but only Kong was supplied for the price. I wondered if the original package had been broken down into three separate packages, and if so, why?

Anyway, the game is a moderately-good version of the gorilla-based Donkey Kong, requiring joysticks to work and thus likely to fall foul of the alphalock key.

The documentation is very good indeed; two sheets of instructions and a publicity blurb.

One sheet is given over to instructions for loading from cassette, even suggesting solutions to loading difficulties in some detail.

The second sheet is an equally-detailed discussion on playing the game, offering strategic suggestions.

The program is announced on tape using the Terminal Emulator II, of interest to those working on text-to-speech algorithms. **P.B.**

instructions	95%
playability	80%
graphics	80%
value for money	55%

★ ★ ★

Krazy Kong 48K Spectrum £5.95

PSS, 452 Stoney Stanton Road, Coventry

The aim, of course, is to rescue Jane from the evil gorilla. To do this you must get to the top of four different screens and then Kong should fall — although I'll have to take PSS's word for that.

There are numerous hazards including barrels, which have the nasty habit of falling on you when you least expect it, plus fireballs, conveyor belts, flans, and what look like flying tin cans. There are lifts on the higher levels.

To cap it all your bonus depends on the time you take — too long and you lose a life. Bonus points can be gained for picking up water buckets.

The animation of the man is excellent, the legs actually appear to move properly, it's even interesting just to watch him jump.

You can use a Kempston joystick or keys 1-5, which have been chosen for compatability with Interface 2.

So far I've found it impossible to get past the second screen, although it has been done, so this shouldn't be a game that gets mastered too easily. Its difficulty could be offputting, though. **S.E.**

instructions	80%
playability	68%
graphics	70%
value for money	69%

★ ★ ★ ★

Kong TI-99/4A £5

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

The gorilla has got the girl, and you must rescue her.

You would think that she would be more careful after that business in New York, but no.

No sooner is she rescued than she's caught again, and you repeat the performance scoring 100 points for each successful mission.

Avoid barrels thrown by Kong and holes in the floor which you can jump across.

I found this game to be quite enjoyable and relaxing to play, since there is no time limit involved. Even so, it was difficult to reach high scores — those barrels can be tricky!

The screen presentation is neat, with pleasing use of sound. The game can be played using keyboard or joysticks.

One minor annoyance is the need to use ENTER when responding to the instructions prompt — this can be avoided simply by changing the INPUT statement to a CALL KEY routine — but that is my only quibble, in all other respects this program functions well, loading easily and apparently bug free. **C.E.**

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

★ ★ ★ ★ ★

Hopper Spectrum £5.95

PSS, 452 Stoney Stanton Road, Coventry

Pilot Fergus the Frog across a busy road, hop across a river on the back of turtles and logs on to a lilypad.

The highway has six lanes with varying traffic speeds. Once this has been crossed you must avoid a train before hopping across the river.

You must be wary of the turtles diving under water — which can be very annoying.

The "lilypads" appear to be river inlets — the first time I jumped on to the forest only to hear the Death March, which wasn't too encouraging!

You have a choice of Kempston joystick or two sets of control keys — the cursor keys or a more logical arrangement. At first it's difficult to control Fergus because he moves two spaces at a time if you press the key for too long — a delicate touch is needed.

The game is livened up by a few different tunes and the odd muted croak from Fergus. If Fergus dies on the road an ambulance appears.

Hopper gets more difficult when all four lilypads are filled. This game can be highly recommended. **S.E.**

	75%
instructions	75%
playability	65%
graphics	65%
value for money	

★ ★ ★ ★

Cruncher 32K BBC £7.95

Virgin Games, 61/63 Portobello Road, London W11

This game is a rather poor copy of the arcade game Checkman.

The aim is to defuse time bombs before they explode. To do so you have to simply walk over them (the very last thing I would advise in 'real' life).

If you can contrive to pass through various flags on the way, you score extra points.

Meanwhile you are being pursued by bovver boots intent on stamping you out.

The game is fairly good, but does seem a little unresponsive until you get used to it.

The animation routine is very interesting as the 'robot' turns his back on you to walk away.

Unfortunately it misses many features of the original — particularly a steady increase in speed and bonus screens. These would have held the attention for longer and added that little extra that this game certainly needs.

It is by no means bad, but it isn't up to the standard of Program Power's Danger UXB by any means. Do see both before you choose. **D.C.**

instructions	80%
playability	60%
graphics	70%
value for money	60%

★ ★ ★

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All good, clean fun

If you're feeling bad about zapping all those poor aliens, here's a selection of more peaceful programs, tested for you by our reviewers

Atom Smasher
BBC £6.99

Romik, 272 Argyll Avenue, Slough, Berks

Romik's policy of including a screen picture of the game on the cassette insert is a good one.

In this case, however, the picture is from the VIC-20 version, from which this was adapted, and although the differences are slight there is not much in either the picture or the game to get excited about.

The tape loaded perfectly to reveal this scenario: a reactor is melting down and you must delay it. Shut down is impossible.

Use your laser cannon to fire at a yellow proton which revolves inside a central neutron.

Every time you hit it a blue electron is released. These move quite quickly and if you hit one with your laser they speed up even more for a short while.

If one of them hits your laser you lose one of your three lives.

In play, the electrons move so quickly that once eight or ten appear you have little hope of avoiding them. There is a joystick option and nine skill levels.

Most games have standardised on the use of the Z, X, : and / keys for movement. Why not this one?

This program may have been lapped up when there was little software available, but I doubt if it will attract many games players now. **I.W.**

instructions	90%
playability	25%
graphics	50%
value for money	20%

★

Killer Caverns
Oric £6.95

Virgin Games, 61/63 Portobello Road, London W11

This offering from Virgin for the Oric is set in underground caverns inhabited by many nasty perils, ranging from red spiders to blue subterranean worms.

The idea is that you, Helpless Harold, must survive long enough to collect 17 sections of ladder and fit them together. When you have done this, Harold can climb down a well to collect a treasure chest.

Loading the tape proved a little tricky, but the instructions were clear enough. The major problem to overcome is your boredom, because after one or two sections have been found the game becomes very stodgy.

A timer counts down from 40,000, so it seems that you are expected to persevere, but time seems to pass very slowly.

The graphics are simple and Harold moves amusingly but slowly — we need Jumping Jack or Horace on the Oric soon! Avoiding the hazards requires more luck than skill.

There are enough good Oric games around now for me to doubt whether anyone is desperate enough to buy Killer Caverns.

Perhaps if more thought could be put into the display and sound there is potential for a good game here, but my opinion is that it is Virgin on the mediocre. **P.S.W.**

instructions	90%
playability	15%
graphics	20%
value for money	20%

★★

Plankwalk
32K BBC £7.95

Virgin Games, 61/63 Portobello Road, London W11

Reviewing Plankwalk was very difficult. It isn't outstanding, nor is it obviously poor quality. It just seems rather indifferent.

The action takes place on the scaffolding at a building site, where Sid is being chased by a monster (the foreman?) and has to leap from plank to plank to survive.

There are special concrete blocks to earn Sid points and some planks act as though they slope, though strangely they are drawn straight.

If that is not enough, some planks are false and poor Sid falls straight through them. Presumably dry rot! There are cherries to be eaten too.

Controls enable Sid to move left and right, jump and run fast. The cherries must be eaten slowly, while the monster can be killed by running at him very fast, consequently the pace of the game can change quickly.

There are several other trimmings, like power towers to give Sid his strength back.

The graphics are adequate but not particularly impressive. The black monster is hard to see at times.

I didn't enjoy this game though it is hard to define why. **J.P.**

instructions	90%
playability	40%
graphics	60%
value for money	50%

★★★

Transistors Revenge
32K BBC £6.95

Softspot, 29 South Crescent Prittlewell, Southend, Essex

This game has it all — addiction, speed, interest and an enchanting story line too.

The scenario is that the discrete components (all those not part of a chip) inside your computer have become jealous of the CPU chip and decide to try to destroy it to vent their frustration.

They do this by moving along the tracks of the printed circuit board until they touch the CPU, causing its destruction.

They are aided and abetted by mains spikes, which also destroy the processor if it is addressing that line at the time, and various household tools which threaten it ominously.

If you get the impression that this story has enthralled me you are dead right!

You defend the poor processor with energy pulses and are allowed three re-incarnations per game.

One excellent feature of the program is the ability to carry on from where you last finished, and therefore try levels you would not otherwise reach.

The control layout is excellent, as are the full colour graphics. Just to make things more interesting the circuit down which the components move changes for every level. **D.C.**

instructions	90%
playability	100%
graphics	95%
value for money	100%

★★★★★

Caesar the Cat
CBM 64 £8.95

Mirrorsoft, Holborn Circus, London EC1P 1DQ

Caesar the Cat has the distinction of being one of the few game to really appeal to me. The object is to make the cat catch some very elusive mice and to take them out through a door.

The action takes place on some shelves upon which are plates of cakes, cheese, sausage and other goodies. The mice eat these whilst Caesar is chasing them — the more they eat, the lower your score.

Also on the shelves are items of crockery which, if knocked down by the cat, lose lots of hard earned points.

Three different coloured species of mice can appear, with different score potentials.

The program is very well written with excellent graphics, smooth animation and brilliant sound effects and music.

The cat has real character, and prowls and pounces well. The mice dart about and show real intelligence — they actually sit on the crockery to evade capture.

Overall this is a gem of a game. It's well packaged, and should appeal to both children and hardened arcade fanatics. More please, Mirrorsoft. **M.W.**

instructions	90%
playability	100%
graphics	100%
value for money	80%

★★★★

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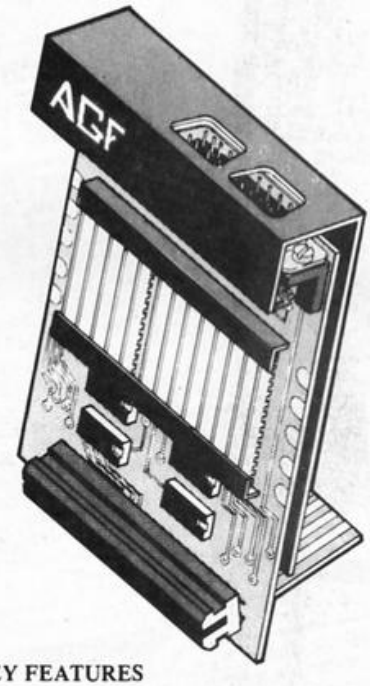
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The interface is programmed by a two digit code, which is looked up on a programming chart supplied, for each direction and firing button. The two numbers are then selected on a pair of leads which are clipped onto appropriately numbered strips on the interface.

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VIC-20 PROGRAM

Batter the brickwork and earn a mystery bonus

Deflexor makes full use of the 3.5K of useable RAM in the unexpanded VIC-20. Peter Berrecloth explains....

My two-part game of Deflexor packs a lot into the unexpanded VIC-20.

You have to knock out all but four bricks from the top of the screen.

There are piles at the bottom which build up every time you miss the ball. Should these reach your bat level the game ends.

Your bat is controlled by the left arrow key and function key one and is moved by a machine code routine located in RAM area 680-732. A joystick is optional.

There are no side borders, so the ball can go off the side and reappear on the other side. There are five bonuses to score — you'll have to find out how.

A permanent high-score is kept in RAM area 319-325, so RUN STOP/RESTORE will not reset it.

At the start these are the options:

F1 will change the ball character

F3 will flip between rebound and normal mode. If normal is selected, the ball falls straight down. If you choose rebound, the ball returns at the approach angle

F5 will change the bat from one to two characters wide and vice versa

F7 game start

Note: After entering part one, SAVE it for safety, then type NEW before typing in part two. SAVE that also before RUNning.

Variables

X score
HI hi-score
HI$ hi-score string
EE ball hold counter
FNB(C) produces a random number between 7768 and 7789
E9 rebound angle

How it works part one

4 loads machine code and initialises it
9 hi-score reset
10-15 Deflexor display
16 loads next part

How it works part two

2 check for new ball
3 keep ball on screen
4 determines rebound
5-6 check ball on way down
7-8 check for brick collision
10 return to line 2
20-21 check ball on way up
30-33 "stage completed" bonus
43-45 "far out" bonus and "amazing shot" bonus
50-53 "oh dear" warning
80-83 "ball hold" bonus
90-91 check piles
95 bricks gone?
100-101 display score
200-203 end effect
204-211 options
212-215 score display effect
220-221 start game
300-309 subroutine to initialise screen and variables
310-313 store hi-score

```
0 REM    DEFLEXOR          SEE LINES 17 ONWARDS FOR EPLANATION OF SYMBOLS
1 REM  PROGRAMMED BY
2 REM   P.A.B. 1983
3 PRINT"■" POKE36879,8
4 POKE0,197 POKE1,0 POKE673,0 POKE674,10 POKE675,8 POKE676,39
5 FORT=680T0732 READA POKET,A NEXT
6 DATA172,162,2,169,32,153,95,31,169,32,153,96,31,162,0,161,0,205,163,2,208,7,1
92,2,240
7 DATA3,136,161,0,205,164,2,208,5,192,20,240,1,200,169,120,153,95,31,169,120,15
3,96,31
8 DATA140,162,2,96
9 FORT=319T0325 POKET,0 NEXT REM PESET HI-SCORE
10 PRINT"■___________  ____  ///|\\\"
11 PRINT"■"
12 PRINT"■"
13 PRINT"■"
14 PRINT"■"
15 PRINT"■ THE MAIN PROGRAM" PRINT"■IS LOADING■"
16 POKE198,10 POKE631,131 END
17 REM LINE 10 =  [HOME] [CRSR DOWN] [4 CRSR RIGHT] [WHT]
18 REM 11=[GRN][3 CRSR RIGHT][RVS ON][BLU][RED][GRN][CRSR RIGHT][YEL][GRN][RED]
19 REM 12=[3 CRSR RT][RVS ON][BLU][RED][GRN][RVS OFF][RVS ON][CRSR RT][YEL]
20 REM 12 (CONT..) [RVS OFF] [RVS ON] [GRN] [RED]
21 REM 12=[3 CRSR RT][RVS ON][BLU][RED][GRN][RVS OFF][RVS ON][CRSR RT][YEL]
22 REM 13 (CONT..) [RVS OFF] [RVS ON] [GRN] [RED]
23 REM LINE 14 = [ CRSR DOWN] [CRSR RIGHT] [GRN]
```

```
0 GOSUB300:GOTO204
1 GOSUB300
2 SYS680:IFI=0THENJ=FNB(C):I=1
3 IFJ>8164THEN10
4 IFLE=1THENE9=E(K)
5 SYS680:M=PEEK(J+E9):IFM=32THENJ=J+E9:POKEJ,A:POKEJ-E9,32:GOTO2
6 IFM=120THENK=INT(RND(1)*8):POKES,200:X=X+2:GOSUB100:POKES,0:D2=D2+1:GOTO19
7 IFM=FTHEN80
8 IFM=ATHEN90
10 SYS680:I=0:IFD2<6THEND2=0:GOTO2
11 GOTO27
19 IFK=3THENPOKES-2,191:POKES-1,128:POKEW,6
20 SYS680:M=PEEK(J-E(K)):IFM=32THENJ=J-E(K):POKEJ,A:POKEJ+E(K),32:GOTO20
21 IFM=FTHENPOKEJ-E(K),32:FORT=220T0190STEP-3:POKES,T:NEXT:POKES,0:X=X+10:Z=Z+1
:GOSUB100:GOTO2
22 IFM=ATHENO=J-E(K):U1=PEEK(O-1):U2=PEEK(O+1):POKEO-1,53:POKEO,48:POKEO+1,48:G
OTO97
25 IFJ<7746THENPOKES,190:SYS680:POKES,0:IFZ=>62THEN30
26 IFD2<6THEN2
27 D2=0:PRINT"■   FAR OUT!":GOTO40
30 TR=TR+1:FORT=15TO0STEP-1:SYS680:POKE646,INT(RND(1)*7)+1:POKEW,T:FORTT=220TO2
40:POKES,TT:NEXT
31 PRINT"■STAGE"TR"COMPLETED":NEXTT:POKES,0
32 POKEW,15:PRINT"■ BONUS x"TR*1000:FORT=1TOTR*1000STEP50:POKES,200:X=X+5
0:GOSUB100:POKES,0:NEXT
33 Z=0:EE=0:FG=0:D2=0:RESTORE:I=0:BG=BG+1:GOTO1
40 FORT=10TO0STEP-1:POKES,128+(T*5):X=X+10:GOSUB100:POKES,0:NEXT:FG=0
41 FORT=8054TO8075:POKET,62:POKET+G,1:NEXT:FORT=8054TO8075:POKET,32:POKET+G,2:N
EXT                         ":GOTO2
42 PRINT"■
43 PRINT"■AMAZING SHOT":X=X+1000
44 FORTT=1TO10:FORT=250TO190STEP-TT:POKES-1,T:NEXT:POKES-1,0:NEXT:GOSUB100
45 GOTO51
50 PRINT"■OH DEAR!!":PRINT"■"6-D2"■HITS REQUIRED":IF6-D2<1THEN4
3
51 FORT=1TO7:POKEJ-44,22:POKES,200
52 FORL=1TO50:NEXT:POKES,0:POKEJ-44,32:FORL=1TO50:NEXTL,T:PRINT"■
"                         ":GOTO92
53 PRINT"■
80 EE=EE+1:PRINT"■BALL HOLD"EE:PRINT"■SCORE ADD BONUS x"EE*100"
81 FORT=1TO10:SYS680:POKEJ+G,4:POKES,128:X=X+10*EE:GOSUB100:POKES,0:POKEJ+G,5:N
EXT                                                 ":I=0:GOTO2
82 FORT=1TO99:NEXT                 ":PRINT"■
83 PRINT"■
90 K=0:IFJ<8054ANDJ>7834THEN200
91 IFJ<8076ANDJ>7834ANDFG=0THENFG=1:GOTO50
92 POKES,210:X=X-1:GOSUB100:POKES,0:I=0:IFD2<6THEN2
93 GOTO27
95 IFZ>=66THEN30
96 GOTO2
97 PRINT"■DEFLEXOR BONUS x 500":X=X+500:GOSUB100:FORT=10TO0STEP-1:SYS680
:POKEW,T
98 FORL=241TO135STEP-6:POKES,L:NEXTL,T:POKES,0:POKEW,15:PRINT"■
"
99 POKEO-1,U1:POKEO,32:POKEO+1,U2:EE=EE-1:GOTO2
100 SYS680:PRINT"■SCORE ■HI":POKES-1,0:POKES-2,0:POKEW,15
```

```
101 S$=STR$(X):Q9=LEN(S$):PRINT"■"LEFT$("00000",7-Q9)+RIGHT$(S$,Q9-1):RE
TURN
109 GOTO204
200 L=8033
201 IFPEEK(L)<>120THENL=L+1:GOTO201
202 FORT=1TO60:POKEJ+G,1:POKEL+G,2:POKEL+1+G,2:POKES,120+T:POKEJ+G,2:POKES,0:PO
KEL+G,1:POKEL+1+G,1:NEXT
203 IFX>YTHENY=X:GOSUB100:FORT=15TO0STEP-1:POKEW,T:FORL=241TO135STEP-5:POKES,L:
NEXTL,T:POKES,0
204 PRINT"■F1■ BALL ●":PRINT"■F3■ REB/NOR":PRINT"■F5■
BAT SIZE"
205 PRINT"■F7■ START GAME":A=81:GOSUB310
206 T=PEEK(197):IFT=39THENA=A+1:POKE7802,A:IFA>245THENA=0
207 IFT=63THEN220
208 IFT=47THENIFLE=0THENLE=1:PRINT"■REBOUND":GOTO212
209 IFT=47THENLE=0:PRINT"■NORMAL "
210 IFT=55THENIFPEEK(725)=120THENPOKE725,32:POKE715,21:SYS680:GOTO212
211 IFT=55THENIFPEEK(725)=32THENPOKE725,120:POKE715,20:SYS680
212 W2=W2+1:IFW2<3THEN206
213 W2=0:POKE38406+W3,G6:POKE38415+W3,G6:W3=W3+1:IFW3<7THEN206
214 W3=0:IFG6=0THENG6=1:GOTO206
215 G6=0:GOTO206
220 POKEW,15:X=0:Z=0:EE=0:FG=0:D2=0:BG=0:RESTORE:FORTT=1TO10:FORT=250TO190STEP-
TT:POKES+1,T
221 NEXT:POKES+1,0:NEXT:GOTO1
300 S=36876:W=36878:E(3)=11:E9=22
301 POKE36879,8:D=INT(RND(1)*7)+1:G=30720:F=207
302 PRINT"■":GOSUB100:GOSUB310:DEFFNB(C)=INT(RND(1)*22)+7768:E(0)=22:E(1)=21:E(
2)=23:E(4)=21.5
303 E(5)=22.5:E(6)=20:E(7)=24:FORT=8032TO8053:POKET+G,4:NEXT:FORT=7702TO7767:PO
KET,F:POKET+G,D:NEXT
304 H=8054:K=0:V=1:FORT=1TO6:V=V+1:FORTT=0TO21:POKETT+H+G,V:NEXT:H=H+TT:NEXT:PO
KEW,15
305 POKE8010,120:POKE8010+G,5:POKE8031,120:POKE8031+G,5
307 IFBG=0THENRETURN
308 TT=8185:IFBG>4THENBG=4
309 FORT=1TOBG:FORT1=TTTOTT-21STEP-1:POKET1,102:POKET1+G,3+T:NEXT:TT=TT-22:NEXT
:RETURN
310 S$=STR$(Y):Q9=LEN(S$):HI$=LEFT$("00000",7-Q9)+RIGHT$(S$,Q9-1):PRINT"■
"               "HI$
312 IFHI$<>"000000"THENFORT=1TO6:POKE318+T,VAL(MID$(HI$,T,1)):NEXT:HI$=""
313 HI$="":FORT=319TO324:S$=STR$(PEEK(T)):HI$=HI$+RIGHT$(S$,1):NEXT:Y=VAL(HI$):
RETURN
```

```
0 REM *CONTROL CHARS*
1 REM" ■=CURSOR HOME                       ■=CLEAR SCREEN
2 REM" ■=CURSOR DOWN                       ■=CURSOR RIGHT
3 REM" ■ PRODUCES          NORMAL TEXT IN HI-RES MODE
4 REM" ■ RETURNS TO HI-RES
5 REM" ■=BLK ■=WHT ■=RED ■=CYN ■=PUR ■=GRN ■=BLU ■=YEL
```

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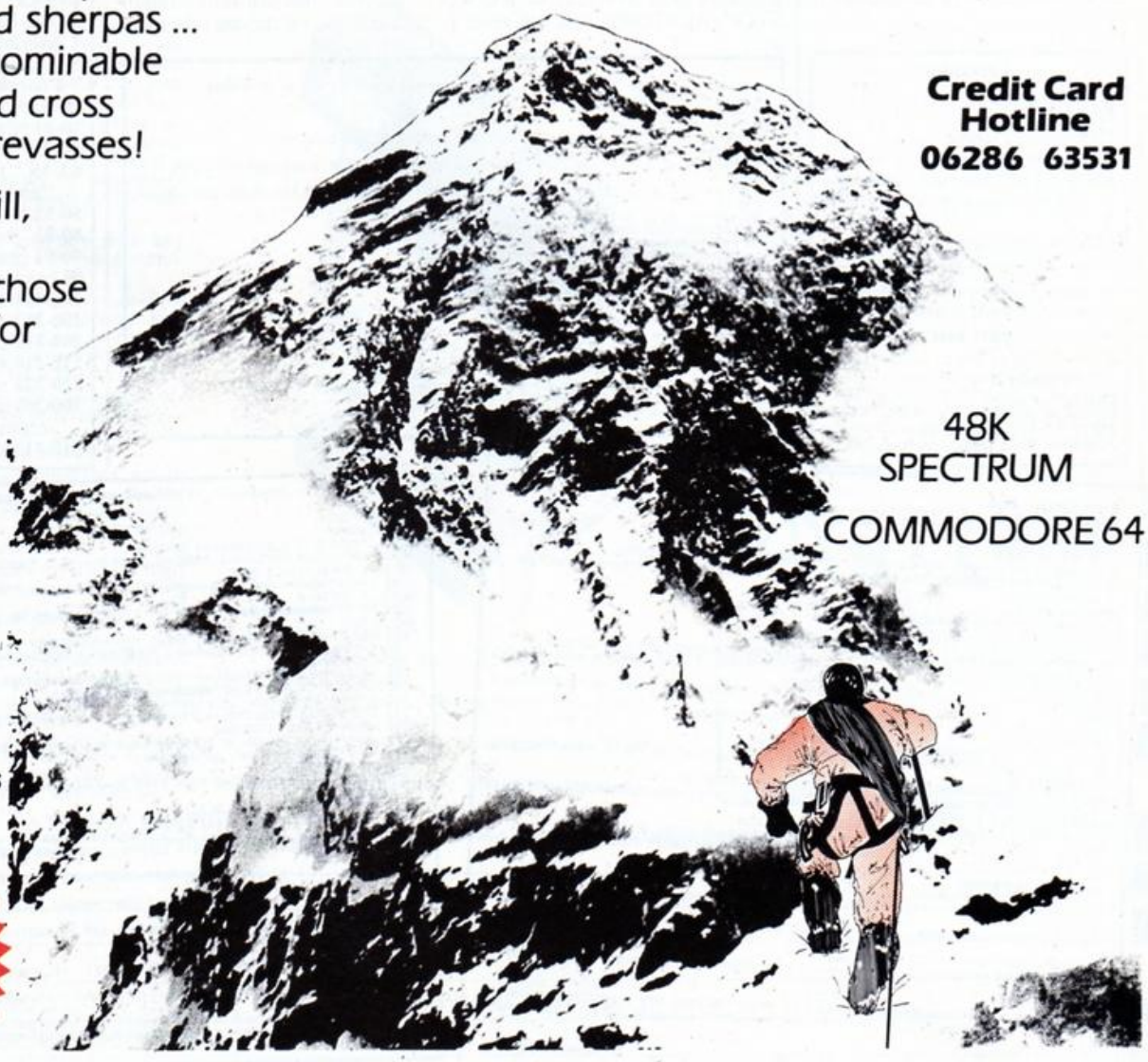
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In a class of their own

At its best, educational software can turn your micro into a versatile teacher with limitless time and patience. How do these programs match up? Our reviewers tell you what they think

Alphabet Games 48K Spectrum £7.95

Sinclair Research, Free Post, Camberley, Surrey GU15 3BR

Three games are included. A rat zapping game where the child must recognise the letter to fire a gun, thus scoring points, an Invaders-type game where recognition of the letter on the invader prevents him landing, and a game where the child must supply the missing letters in an incomplete alaphabet row.

The program is very user friendly, even to the point of telling you where to locate useful screen routines for large alphabet within the listing, so that you can use them in your own programs. And the program is suitably error trapped to prevent less restrained fingers from running amok!

The graphics are super, colourful and nicely animated, and the program is personalised with the user's name.

There is, however, one slight flaw in the logic. To use the program the child has to read the screen... and if they can read the screen they must be able to recognise letters... so they don't need the program.

For a child without these skills, adult assistance and discussion are required. This, of course, in itself is a valuable educational experience. Provided you remain patient! **D.M.**

instructions	100%
ease of use	100%
display	85%
value for money	70%

★ ★ ★ ★

Ollie Octopus' Sketchpad 32K BBC £6.95

Storm, Winchester House, Wootton Grove, Sherborne, Dorset

Screen drawing programs are becoming almost as regular a feature of a software house's catalogue as space games, but this is a little unusual in that it is aimed at children and meant for them to use.

This would be great if the program was, indeed, easy to use but it isn't! As an example of its deficiencies there is no way to move the 'paintbrush' (cursor) from one position to another without changing to background colour so that it doesn't leave a trail.

This means of course that it leaves a trail over the foreground unless you change to that colour at the appropriate moment.

There are other omissions. No abstract or non-regular area fill facility; only circles, squares and triangles are possible.

The enlarge and contract facility is well done, with good 'rubber-banding' on screen. The colour change system is also neat and easy to use.

There is a screen save facility (taking four and a half minutes) if anyone should want to use it, but no screen dumping command. **D.C.**

instructions	60%
ease of use	20%
graphics	50%
value for money	30%

★ ★

Whizz Quiz 7+ 48K Spectrum £6.50

Computertutor, PO Box 3, St. Neots, Cambs PE19 3NW

Another instruction program using a game as a carrot to learning. Clever Clogs welcomes us to Whizz Quiz by asking the number of players and their names.

C.C. then leads them through a game of Ludo, where occasionally questions are asked of the players prior to a turn — three correct result in an extra turn.

Some of the 100 questions appear more often than others.

Correct answers receive flashing congratulations and C.C. smiles, while wrong answers make him grimace and give corrections.

The computer throws dice for each turn — highest throw being 36 — and then suggests which counter may be moved.

For the age group aimed at, the program will be addictive as they watch their four chips chasing others around the board and hoping for the fanfare as each reach 'home'.

The final accolade is a repeatedly flashing name as Whizz Winner.

Press p for Play appeared at the end, allowing parents to alter the questions. Instructions throughout were reasonable, but only parents with time will find this program useful. **T.W.**

instructions	85%
ease of use	90%
display	80%
value for money	80%

★ ★ ★ ★

Sum Scruncher Spectrum £7.95

Longman Software, Longman House, Burnt Mill, Harlow

The player controls the tireless Microbug, whose mission is to explore the corridors of an underground maze in search of the answers to a series of computer generated questions.

Microbug is continually chased around the maze by a stupid but speedy serpent whose appetite for microbugs knows no bounds. The game has six difficulty levels ranging from easy addition and subtraction to quite difficult division.

You have to steer Microbug around the maze, keeping out of the way of the snake, until you are under the answer to the sum displayed. Moving up through the number opens the passage, increases your score, and destroys the snake — but there are 39 still to go!

It is quite difficult to get the bug in just the right place to get through. One pixel wrong and you bump your head!

One other little moan — single digit numbers are shown with a zero preceding the digit, e.g. 09. This might be a little off-putting to a child.

Microbug can get caught five times before you lose the game. If you outwit all the snakes you get a new frame.

Super graphics and sound effects. I can't get my children away from the keyboard! **C.B.**

instructions	95%
ease of use	80%
display	100%
value for money	90%

★ ★ ★ ★ ★

Mr. T's Number Games 32K BBC £12.95

Ebury Software, 72 Broadwick St, London W1V 2BP

Colourfully packaged in a plastic book-style casing, the tape comes with full documentation.

The first game, How Many?, uses nice graphics of a ladybird to teach five levels of skills: Numbers 1 to 5; Numbers 6 to 9; Counting Ladybird; Number Match; Ladybird Game.

There is a gradual development, so that in a further variation of the game the number keys are used.

On the second side of the tape is the Elephant Game which can be played singly, with an adult, or between two children.

This involves feeding and watering an elephant, beautifully drawn, by pressing one of two keys in response to a number on screen.

Decisions have to be made and the game can be won, by filling up on one of the ingredients, or lost, by running out.

A further feature is the Parent Screen. On all games you can make it harder, choose to adjudicate or 'let Mr. T Decide', switch the sound on and off, and adjust the contrast on a black and white set.

The program is aimed at children up to about seven years old, but many older children were fascinated by the graphics and simplicity of operation. The only problem is the price. **M.P.**

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

★ ★ ★ ★ ★

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The chart-hitting

Mad Martha



Poor little Henry is the hen-pecked hero of this domestic tale. One night Henry can take no more. He steals his wages from his wife's purse, and sneaks out of the house being careful not to wake the baby or trip over the cat, and heads for the bright lights to have some fun. Trouble is he runs out of money. His only way to raise some cash is to gamble his few remaining pounds on the spinning wheel of the roulette table.

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

Marvellous adventure, really dotty... a refreshing change from some of the doomladen programs encountered nowadays... a game where you won't get to the next stage without solving the present conundrum.
Popular Computing Weekly

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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In praise of Things

Your reviewer can't have spent much time on the excellent program Halls of the Things. I find it very addictive, and having obtained all seven rings and the key on several occasions I can't understand why B.B. couldn't even find one ring. He/she obviously couldn't have tried very hard.

Incidentally, my score on Halls of the Things is 1,685.
Paula Wollerson, Ruislip, Middlesex

Our reviewer commented: "I obviously can't spend weeks on each program I review, but I did spend quite a while on Halls of the Things, and also showed it to a couple of friends whose reactions were the same as mine. However, in the end it all boils down to a question of individual taste."

Go for the personal touch

Your reader who complains about computer dealers not giving demonstrations and good advice has obviously not visited the Multi-coloured Micro Shop in Cleveland.

There he will find staff who are only too pleased to demonstrate both computers and software. Indeed, they positively prefer customers to try goods out before they buy. This, I think, is an excellent approach.

Another advantage, of course, is that customers know that the cassette or cartridge has loaded on to the shop's computer, and so should do the same when they've got it home.

The MMS has a wide range of software and accessories, but if they haven't got what you want, the proprietor Mr Buxton will go out of his way to try and get it for you.

How different from the giant High Street chains, who seem to only be interested in offloading their huge stocks on to the public, and don't seem to care about back-up service once you've bought your computer.

My advice to Mr Willett is to go for the personal touch — or move to the north east of England.
Kenneth Rowley, Guisborough, Cleveland

Danger errors

I have just noticed that there are a few errors in the listing of my Oric program Danger Island, which you printed in HCW 38.

Send your letter to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. 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



The errors were caused by a bug in the Oric's LLIST command, which causes random squiggles to be printed in the listing.

The method stated in the article should stop this happening, but obviously it doesn't work all the time!

Here's a list of the errors I have found:

55 word should read "strong"
312 should start IFB$= "E"AND
375 should start IF C$= "DOW"
10190 should read DATABy a pawnbroker's shop,0, 19,0,0
13020 should start E% = 0: FORH = 1T019:
Steve W. Lucas, Cheadle Hume, Cheshire

Where's my ZX81?

After reading B. E. Smith's letter a few weeks ago, I scorned his allegations that us ZX81 owners are made to feel like freaks. But when my ZX81 refused to work, I found out how true his words were.

I returned the computer to Greens, where I had bought it three months before. I handed it over to the computer salesman, who handed it straigt back, telling me he would order a new one which should be in within the next week.

Two weeks later there was still no sign of it, so I went back to complain. The same salesman said he would reorder the ZX81, which should arrive within the next week.

A week passed. Still no ZX81. I went back again and was told, by the same man: "That's one problem machine. Quite honestly I can't be bothered, and it seems neither can they" — meaning the main ordering centre.

I asked for my money back, and he first offered me an Aquarius, which I refused.

He then said I could have my money back, as long as I brought in the receipt. I couldn't find the receipt, but I could prove through my bank statement that I bought the computer from Greens. I told the salesman this, but he wouldn't accept it — he would only say he would reorder the computer.

On asking him when I was likely to receive the ZX81, he replied that he didn't know. What can I do now?
Martin Eckstein, Bexhill-on-Sea, East Sussex

Mr Knight, buying and marketing manager for home computers at Greens, said: "At Greens, our policy is that whatever the customer wants, we will do. Provided Mr Eckstein has some proof of purchase, he is welcome to a refund, an exchange credit note, or a replacement, and I'll be contacting him personally to sort this out.

"We have had some problems with home computer repairs because a couple of weeks ago, our warehouse burnt down, and with it the service department and records, plus a lot of home computers. This headache was aggravated by the fact that Sinclair no longer has repair facilities for the ZX81.

"We're discontinuing the ZX81 soon, but we will hold small stocks in reserve so that we can replace machines that go wrong.

"Normally our staff gets a lot of training in selling computers — the primary computer sales staff have both on and off the job specialist training. But at this time of year, it's inevitable that temporary staff have to be brought in."

Give us more education!

Would it be possible to feature more on educational developments? I'm sure that a lot of your readers are parents, teachers and children who would like more information on educational software.

I have recently with some other teachers started a company producing educational maths programs, and I'm sure there must be other groups of teachers doing the same thing.
Ken Heaton, Jive Software, Wheathampstead, Herts

We are currently aiming to carry a page of educational software reviews a week, which is as far as we know more than any of the other general-interest computer magazines, and we are always glad to receive educational programs for review. We're also on the lookout for educational listings — so get programming, all you teachers...

MR CHIP SOFTWARE

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This is it, the ultimate Fruit Machine for the VIC with nudge, hold and respin 100% machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty." Home Computing Weekly No. 20 19/7/83 ..... **£5.50**

KWAZY KWAKS

Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics in this new and challenging game from the author of Jackpot. 100% machine code, joystick or keyboard control **£5.50**

PACMANIA

Choose your own game from the following options — difficulty 1-3 speed 1-3, size of maze 1-3, visible or invisible maze, still or moving power pills, define your own key controls, any combination, if this is your type of game, then this is the one for you, for the 3K expand VIC **£5.50**

BUGSY (Joystick Only)

This is a Minefield with a difference as you step on the stones whilst collecting purple boxes which give your both time and points, they disappear from beneath your feet. DO NOT DESPAIR! "BUGSY" will randomly replace the stones but avoid bumping into him or its sudden death! An original compulsive and challenging game **£5.50**

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At last its here, specially written for the 64, by the author of "JACKPOT" the ultimate Fruit Machine program for the VIC **£5.50**
(available from 1st Nov)

WESTMINSTER

A game for up to four players, can you lead the party of your choice and win the general election, you tour the 60 constituencies (seats) buying votes, when you can, (just like the real thing), this must be one of the first board type games specially written for the computer. Why play on your own, have fun with your family and friends playing WESTMINSTER **£5.50**

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A game for 1-4 players, with sound and graphics. Make money in casinos, commit robbery, hide from the police, hire secret agents, (some of whom can be treacherous), negotiate for weapons, find and attack the secret rocket base to launch the missile, and watch the havoc and destruction caused. There's no turning back from "RED ALERT" **£5.50**

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A game for two to twenty players, become a tycoon of the motor trade, you must obtain gearboxes, tyres and engines to produce cars for sale. Form syndicates, buy and exchange parts, buy dealerships, but be careful, you may become bankrupt and have to liquidate, find out what you are made of, have you got what it takes to become a WH££LER DEALER **£5.50**

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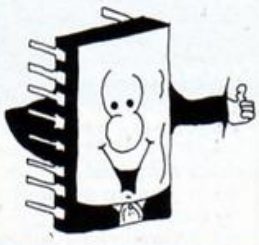
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The best of both worlds?

Not just an arcade game, not just an adventure, these games are a little of both. Does the combination work well or are they, as one reviewer said, neither one thing nor t'other? Read on...

Transylvanian Tower Dragon £6.50

Richard Shepherd, 23-35 Elmshott Lane, Sippenham, Slough

This program is one of the new breed of game hybrids, a fusion of two strains which tries to interest two or more types of enthusiast at one and the same time.

It is a cross between an adventure, a maze game and a shooting game and involves skills developed by each.

The aim is to meet Count Kreepie and to kill him, thereby gaining a map to help you seek his lost treasure — which unfortunately is still guarded by Vampire Bats.

The only way to do this is to walk through the rooms of the tower, which are shown on the screen in 3D.

Unfortunately the best traditions of 3D mazes are not continued here and you only get to see the possible exits for each room as you come to it.

If you get above the dungeon level then the bats are after you and only by shooting them can you obtain a floor plan (they carry one each, very handy!).

There are also weapons in the maze for you to gather — hence the adventure-type play.

This is obviously an innovative idea, but it seems to me that this program could easily get boring after a while. **D.C.**

instructions	90%
playability	60%
graphics	80%
value for money	70%

★ ★ ★ ★

Robber 48K Spectrum £5.95

Virgin Games, 61 Portobello Road, London W11

In this adventure game you are a robber who has to find a castle dungeon vault to steal the 'untold riches' kept in a safe there.

It has three screen displays. In the first you have to guide a little man to pick up three objects without being killed by a moving torch beam.

The second screen shows a row of circles meant to look like a bridge. The circles disappear randomly so it is difficult to cross the bridge without falling through. Three splats and you are back to the beginning.

If you make it, the following screen represents flooded caves and catacombs, inhabited by deadly fish, birds, and oddly, gigantic bouncing balls, all after your blood.

If you escape these, a path appears occasionally for you to find your way to the treasure. If you take too long on this, a time lock operates and seals you in the vault forever.

My copy was difficult to load, requiring very high output levels on the tape player. The instructions gave the wrong movement keys, though the correct ones are given on screen.

Not much impressed with this program. **H.C.**

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

★ ★

Dodge City 48K Spectrum £9.99

Phoenix, Spangles House, 116 March Road, Pinner, Middlesex

The package comes with two tapes, one for the action game, and the other for the adventure game, which is a 'follow on'.

In order to get into the adventure game you have to complete certain tasks in the action game, solve the clues, and come up with a code.

Taking the action game first, the scenario is the wild West, and you have to collect the mail and deliver all four sacks of it to Dodge City.

Every other time you manage to do this, there is a message waiting for you. These messages are all clues to help you with the adventure game.

While collecting the mail, you have to fight off the 'baddies' in the shape of Indians, Mexican bandits, and common or garden outlaws.

In the adventure game you are accused of a murder, and you have to get your own way out of it. This consists of making a choice from options offered you. Some of the responses are obviously a random selection.

As you go along the adventure, many of the locations are depicted at the top of the screen as full colour scenes.

The graphics in the action game are a bit chunky, and the game is not what I would call addictive. **B.B.**

instructions	50%
playability	75%
graphics	80%
value for money	60%

★ ★ ★

Abyss 48K Spectrum £5

CCS, 14 Langton Way, London SE3 7TL

According to the cassette insert, this is an 'Adventure Game, set in a hidden gorge in the Mountain of the Golden Lion, where you must destroy monsters'.

You see a number of diamonds — 'monster places', connected by lines — 'bridges', through which you move to the finish by cursor.

Reaching a diamond produces a monster — which turns out to be a test of some kind: memorise letters displayed for eight seconds or a whole word shown for a microsecond; mental arithmetic, and a number of mini-games.

An interesting idea, but not the adventure game you were led to expect and the times allowed for completion are utterly unrealistic.

The games each use different movement keys and are very unresponsive, while objects you must avoid fill the screen so rapidly that even the Fastest Fingers in the West could never make it.

In one test, you are supposed to complete the fourth number in a sequence and my maths expert could find no logical sequence at all, nor was there any apparent difference between the three levels of difficulty.

Definitely a 'try before you buy', and perhaps the publishers should be a little less misleading in their insert description. **D.C.**

instructions	60%
playability	30%
graphics	50%
value for money	50%

★ ★ ★

Mad Martha II 48K Spectrum £6.95

Mikro-Gen, 1 Devonshire Cottages, London Road, Bracknell, Berks RG12 2TQ

This game is a mixture. It is a text adventure game with pictures, plus three action games, along the way.

The first of these three games is a bullfight. You are in a bullring and have to jump over the bull as it charges.

The second game is in a restaurant — you have to make your way through the customers as they float up the screen.

The last is a kind of maze game. In this you have to steer a disembodied head through a maze against the clock.

Although the action is fairly smooth, the graphics are nothing to write home about. Before you get to play the games though, you have to make your way through the adventure game.

At the beginning you are asked for your name (on default, your name becomes Henry). Next you are asked to input your skill level, from 1 to 3, which determines the time you have to complete the game. The display consists of either a rough sketch of your location, for example a crossroads, or maybe the bullring or restaurant.

I found the game rather slow, especially the response to your typed in command. As my old grandad used to say, it was "neither one thing nor t'other". **B.B.**

instructions	80%
playability	60%
graphics	80%
value for money	75%

★ ★ ★ ★

It's so furiously simple

Invert sounds an easy game to play — but wait until you try. John Waterhouse wrote it for the BBC micro, model A or B

This is a simple but often infuriating game written for the BBC micro, using only Teletext graphics and colours.

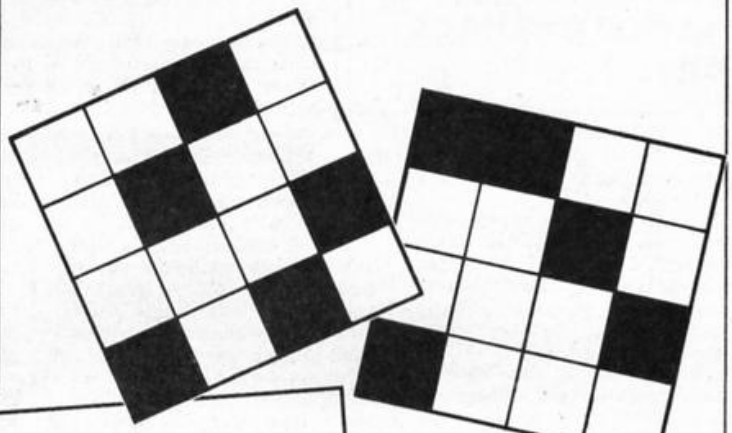
The object is simply to make a grid of 16 squares all one colour. Each square in the grid is initially set to one of two colours at random and the player must then move around the grid one square at a time, using four control keys: U,D,R,L.

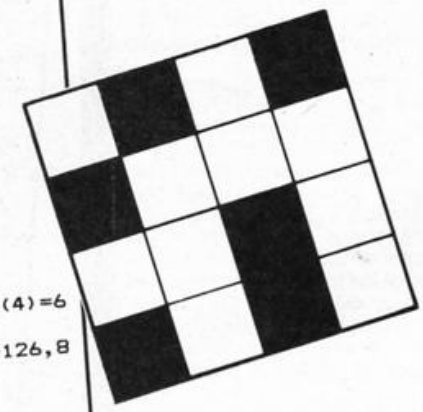
Each time the player moves onto a square it changes to the alternate colour. The only restriction is that you can't move back to the square you just left.

Sounds easy? It can be — but just try it a few times.

The game is written in BASIC for the BBC micro and should run happily on either Model A or B. It may not run quite so readily though on machines with the 0.1 operating system.

The game was developed using a colour monitor so some of the colours may need altering to show up satisfactorily on a monochrome TV or monitor.







```
10 MODE7
20 VDU23,1,0;0;0;0;
30 DIM HERE(4),here(4),SQ(4,4)
40 L=0:H=0
50 *FX11,0
60 PROCintro
70 PROCinit
80 PROCscore
90 REPEAT
100 PROCselectmove
110 PROCchange
120 PROCcheck
130 PROCscore
140 UNTIL E>1
150 PROCend
160 GOTO70
170 END
180 DEF PROCinit
190 CLS
200 HERE(1)=72:HERE(2)=69:HERE(3)=82:HERE(4)=6
9
210 ENVELOPE1,6,126,0,0,206,0,0,126,0,0,-126,8
0,60
220 FOR I=1 TO 19
230  PRINTTAB(0,I)CHR$154
240  NEXT
250 VDU28,1,24,39,0
260 FOR x=3 TO 21 STEP6
270  FOR y=0 TO 15 STEP5
280   R=RND(2)
290   IF R=1 THEN C=145 ELSE C=150
300   IF x=3 AND y=15 pos=1 ELSE pos=0
310   PROCprint
320   SQ((x+3)/6,(y+5)/5)=C
330   NEXT
340  NEXT
350 M$=CHR$76+CHR$11+CHR$85+CHR$10+CHR$82+CHR$
10+CHR$8+CHR$8+CHR$68
360 X=1:Y=4:X1=X:Y1=Y:X2=0:Y2=0
370 S=0:Z$="      ":E=0
380 ENDPROC
390 DEF PROCprint
400 FOR I=1 TO 4
410  IF pos=1 here(I)=HERE(I) ELSE here(I)=255
```

How it works

10-170 set up screen, DIMension arrays, call PROCedures

180-380 PROCinit sets up initial conditions for game and prints grid using PROCprint. Line 200 contains ASCII codes to print HERE to identify current square

220-250 print control codes for separated graphics down left hand side of screen and then redefine screen

260-340 randomly select one of two colours and print grid. Variables x and y are co-ordinates of upper left hand corners of squares. Array SQ(,) stores colour values of squares

390-450 PROCprint prints one square and if it is current position (pos = 1) prints HERE within the square

460-590 PROCselect move prompts player to move by printing M$ (defined at line 350), checks move is valid and updates move-to co-ordinates (X,Y), current position co-ordinates (X1,Y1) and last position co-ordinates (Y2,Y2). If move is invalid score is incremented (attempts to move off the grid are ignored) and player is warned

600-690 PROCscore prints current score (number of moves) S, Low score L, Score for last game H, and direction of last move Z$

700-770 PROCcheck totals values held in array SQ(,) until all squares are one colour and sets flag E to 3, if this is true

790-890 PROCchange re-prints old square in same colour but without HERE and prints new square in alternate colour by providing co-ordinates x,y for PROCprint and setting colour C. Stores new colour to array SQ(,)

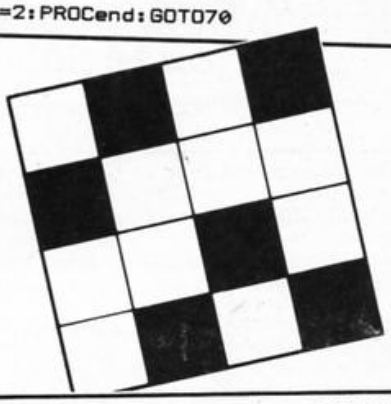
900-990 PROCinst gives brief instructions for playing the game and shows movement keys

1000-1100 PROCend displays suitable prompts at end of game

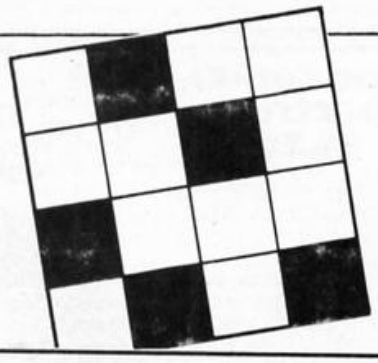
1110-1380 PROCintro produces a multicolour title using Teletext graphic characters. Data is read from statements at line **1390** onwards and printed directly to the screen. The second FOR . . . NEXT loop is used to invert colours of the first image. The *FX command at line 1340 is used to ensure that the caps lock is on before using GET

The main body of the game is contained within a REPEAT . . . UNTIL loop between lines 90 and 140. Line 20 turns off the cursor and line 50 turns off the keyboard auto-repeat.

```
  420  PRINTTAB(x,y+I);
  430  VDUC,255,255,here(I),255,255
  440  NEXT
  450 ENDPROC
  460 DEF PROCselectmove
  470 PRINTTAB(6,23)"Which direction ";M$;
  480 *FX202,32
  490 G=GET
  500 IF E<>1 THEN X2=X1:Y2=Y1:X1=X:Y1=Y
  510 IF G<>85 AND G<>68 AND G<>76 AND G<>82 AND
 G<>81 THEN 480
  520 IF G=85 THEN Y=Y-1:Z$="  UP ":IF Y<1 THEN
Y=1:E=1:GOTO480
  530 IF G=68 THEN Y=Y+1:Z$="DOWN ":IF Y>4 THEN
Y=4:E=1:GOTO480
  540 IF G=76 THEN X=X-1:Z$="LEFT ":IF X<1 THEN
X=1:E=1:GOTO480
  550 IF G=82 THEN X=X+1:Z$="RIGHT":IF X>4 THEN
X=4:E=1:GOTO480
  560 IF G=81 E=2:PROCend:GOTO70
```



```
  570 IF X2=X AND Y2=Y THEN Z$="NO!!!":SOUND1,1,
100,6:E=1:X=X1:Y=Y1:S=S+1:PROCscore:GOTO480
  580 E=0:S=S+1
  590 ENDPROC
  600 DEF PROCscore
  610 PRINTTAB(30,2)CHR$131;"MOVES"
  620 PRINTTAB(32,4)CHR$131;S
  630 PRINTTAB(28,7)CHR$132;"LAST GAME"
  640 PRINTTAB(32,9)CHR$132;H
  650 PRINTTAB(28,12)CHR$133;"LOW SCORE"
  660 PRINTTAB(32,14)CHR$133;L
  670 PRINTTAB(28,17)CHR$130;"LAST MOVE"
  680 PRINTTAB(30,19)CHR$130;Z$
  690 ENDPROC
  700 DEF PROCcheck
  710 tot=0
  720 FORI=1 TO 4
  730  FOR J=1 TO 4
  740   tot=tot+SQ(I,J)
  750   NEXT
  760  NEXT
  770 IF tot=2320 OR tot=2400 THEN E=3
  780 ENDPROC
  790 DEF PROCchange
  800 x=X1*6-3:y=Y1*5-5
  810 C=SQ(X1,Y1):pos=0
  820 PROCprint
  830 x=X*6-3:y=Y*5-5
  840 IF SQ(X,Y)=150 THEN C=145 ELSE C=150
  850 pos=1
  860 SQ(X,Y)=C
  870 SOUND1,-10,4,4
  880 PROCprint
  890 ENDPROC
  900 DEF PROCinst
  910 CLS
  920 PRINTTAB(4,2)"The object of the game is to
"
  930 PRINTTAB(4)"make all sixteen squares the"'
"    same colour"'
  940 PRINTTAB(4)"You must do this in the least"
'"    possible number of moves"'"    You may no
t move back to the"'"    position previously occ
upied"
  950 PRINT'"    Move using these keys :-"''
  960 PRINTTAB(12)"U - up"'TAB(12)"D - down"'TAB
(12)"L - left"'TAB(12)"R - right"'TAB(12)"Q - qu
it"
```



```
  970 PRINT''CHR$129;"         PRESS SPACE BAR"
  980 G=GET:IF G<>32 THEN 980
  990 ENDPROC
 1000 DEF PROCend
 1010 CLS
 1020 IF E=2 THEN 1080
 1030 PRINTTAB(6,4)CHR$133;"YOU SUCCEDED IN";CHR
$130;S;CHR$133;"MOVES"
 1040 H=S
 1050 IF L=0 THEN L=S
 1060 IF S<L THEN L=S ELSE 1080
 1070 PRINTTAB(5,8)CHR$131;"YOURS IS THE NEW LOW
 SCORE"
 1080 PRINTTAB(2,16)CHR$129;"PRESS SPACE BAR FOR
 ANOTHER GAME"
 1090 G=GET:IF G<>32 THEN CLS:FOR I=1 TO 200:PRI
NTTAB(RND(39),RND(23))CHR$(RND(7)+128);"END";:NE
XT:CLS:END
 1100 ENDPROC
 1110 DEF PROCintro
 1120 CLS
 1130 FOR I=4 TO 9
 1140  FOR J=1 TO 37
 1150   READ char
 1160   PRINTTAB(J,I)CHR$(char)
 1170   NEXT
 1180  NEXT
 1190 RESTORE
 1200 FOR I=11 TO 16
 1210  FOR J=1 TO 37
 1220   READ char
 1230   IF J=1 AND I=11 char=149
 1240   IF J=1 AND I=12 char=148
 1250   IF J=1 AND I=13 char=150
 1260   IF J=1 AND I=14 char=146
 1270   IF J=1 AND I=15 char=147
 1280   IF J=1 AND I=16 char=145
 1290   PRINTTAB(J,I)CHR$(char)
 1300   NEXT
 1310  NEXT
 1320 PRINTTAB(5,22)"DO YOU WANT INSTRUCTIONS"
 1330 PRINTTAB(7)"Press Y-yes or N-no"
 1340 *FX202,32
 1350 G=GET
 1360 IF G<>89 AND G<>78 THEN 1340
 1370 IF G=89 THEN PROCinst
 1380 ENDPROC
 1390 DATA 145,255,32,32,255,52,32,32,255,32,32,
239,48,32,224,63,32,32
 1400 DATA 255,47,47,47,47,32,32,255,47,47,47,25
5,32,32,47,47,255,47,47
 1410 DATA 147,255,32,32,255,239,48,32,255,32,32
,106,53,32,106,53,32,32
 1420 DATA 255,32,32,32,32,32,32,255,32,32,32,25
5,32,32,32,32,255,32,32
 1430 DATA 146,255,32,32,255,42,117,32,255,32,32
,34,255,32,255,33,32,32
 1440 DATA 255,124,124,32,32,32,32,255,124,124,1
24,255,32,32,32,32,255,32,32
 1450 DATA 150,255,32,32,255,32,239,48,255,32,32
,32,239,112,63,32,32,32
 1460 DATA 255,32,32,32,32,32,32,255,32,235,52,3
2,32,32,32,32,255,32,32
 1470 DATA 148,255,32,32,255,32,32,125,255,32,32
,32,106,255,53,32,32,32
 1480 DATA 255,32,32,32,32,32,32,255,32,34,125,3
2,32,32,32,32,255,32,32
 1490 DATA 149,255,32,32,255,32,32,170,255,32,32
,32,32,255,32,32,32,32
 1500 DATA 255,124,124,124,124,32,32,.55,32,32,1
70,117,32,32,32,32,255,32,32
```

Serious software

Our reviewers try out a selection of programs with a job to do

Tape Copier Spectrum £4.50

Lerm Software, 16 Stonepit Drive, Cottingham, Market Harborough, Leics

I cannot believe that anyone would be naive enough to believe that a tape copier such as this is produced just to make back up copies of your own tapes.

However, just to make sure that you don't infringe any copyright laws, Lerm does remind you that it is illegal to make copies of commercial tapes.

So, bearing that in mind, if you do need a tape copier, this is probably as good as any.

There are two programs on each side. One program is called simply Tape Copier, and the other is called Minitape.

My version came complete with four A4 size sheets of information and instructions about both programs. I found it easy to use, and it worked every time on my own programs.

Lerm claims that this tape will copy any other tape, except those produced by Lerm itself. I have no doubt that the software houses will do their best to disprove that claim.

I also have no doubt that people will continue to produce tapes similar to this one, and that people will continue to buy them. What use they put them to is a matter of conscience. **B.B.**

instructions	100%
ease is use	100%
display	80%
value for money	100%

★ ★ ★ ★ ★

Monitor and Disassembler Spectrum £12.95

Sinclair Research, Freepost, Camberley, Surrey GU15 3BR

This is the companion to the Zeus Assembler that I reviewed a short while ago. Only those who use machine code, or assembler will find this of interest.

But having said that, if you are interested in taking up either, then perhaps this may help you.

I say that because the disassembler will convert the data held in any address into standard Z80 mnemonics in a very readable form.

The command P will display data in hexadecimal form from a specified address, and the command D will show that data disassembled.

For the 'initiated', registers can be assigned using A, and the contents of **all** the CPU registers are displayed using R.

Substitution of byte XY with byte YX within a block is possible, as is setting a block of bytes to zero. If you copy a block of bytes from one location to another then verification of the move is quite easy.

A useful utility is the setting of a breakpoint. After setting the breakpoint and running, the registers' status is displayed. **B.B.**

instructions	100%
ease of use	95%
display	95%
value for money	75%

★ ★ ★ ★

Toad Graphics TI-99/4A £6.95

Timeless Software, 3 Bridgend, Fauldhouse, West Lothian

This program is designed to give the computer novice an understanding of computers and the principles of programming them.

When the program is run, the Toad is displayed near the centre of the screen and the set of standard "tiles" is displayed at the bottom. The tiles are simply pre-defined characters which include, among other things, various faces and shapes.

Using simple commands, the Toad can be made to move around the screen. For instance, if FO 2 is typed into the computer, the Toad will move forward two squares. Similarly, if BA 2 is typed, the Toad will move backward two squares.

The Toad can be turned by using LT for left and RT for right.

Tiles can be dropped around the screen, and the Toad can leave "footprints" of tiles.

You can re-define your own characters by drawing them on an eight by eight grid on the screen.

There are many different commands that can be used which instruct the Toad to complete various tasks.

As well as giving beginners an introduction to computer programming, Toad Graphics should be interesting to the more experienced programmer who would like a change from programming in BASIC. **J.J.**

instructions	100%
ease of use	100%
display	100%
value for money	95%

★ ★ ★ ★ ★

Dream: Editor Assembler Dragon 32 £7.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot

This is an unusual package containing, as far as I can see, two unrelated programs in machine code.

One program is essentially a word processor or screen text editor which can be used to create letters, files, books etc, and the other is a full feature 6809 assembler.

The editor has facilities for creating new text or loading or merging old text.

There are 13 cursor or screen control commands and 25 text handling commands which gives a farily reasonable word processor.

Many of the more subtle and fancy controls are omitted but there is enough to be useful to the home user or a very small business.

The assembler is efficient and well documented, but does not explain or teach machine code programming; this is a whole book subject anyway. Object code may be saved separately on tape.

The two programs link up insofar as files of data can be created by the editor and read from your machine code program — could be useful to a machine code programmer writing adventures! It can be used in conjunction with the Dreambug monitor and debug program. **R.E.**

instructions	91%
ease of use	63%
display	71%
value for money	80%

★ ★ ★ ★

Abersoft forth 48K Spectrum £14.95

Melbourne House, Glebe House, Station Road, Cheddington, Beds

Anyone learning Forth needs to practice, and many beginners will buy this program.

The 28-page instructions assume prior knowledge and initially are mainly incomprehensible, not helped by several omissions and misprints.

But if you absorb the bits which describe the difference in use of computers, i.e. different methods for getting the E-Mode Red symbols, and restrain yourself from jumping eagerly to the special Abersoft graphic commands, things eventually become clearer.

This is an implementation of Fig-Forth, with disc simulation in RAM plus special extensions covering sound, colour, graphics, printer and keyboard commands.

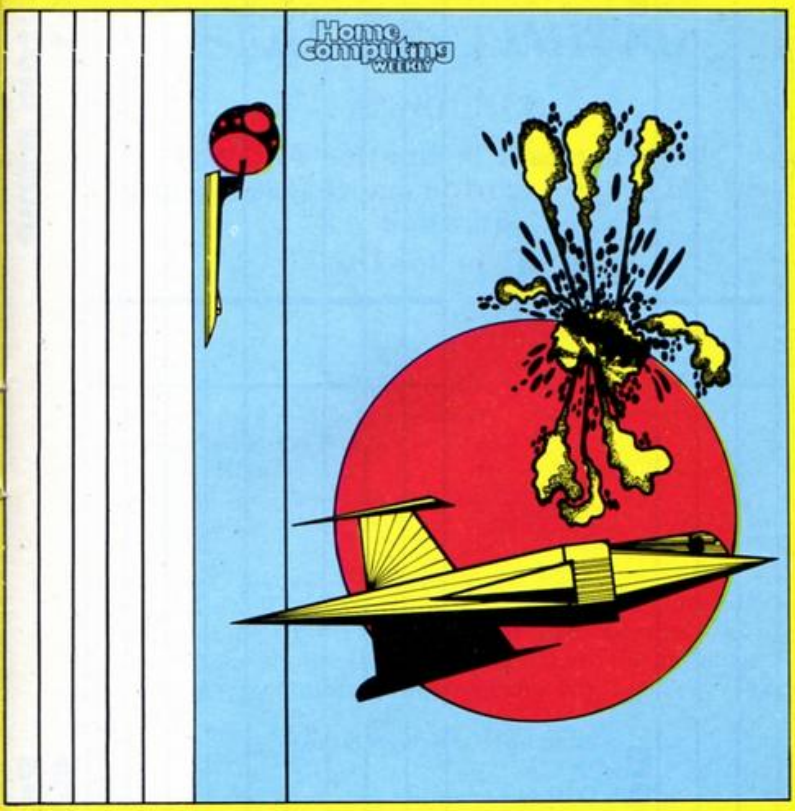
Sound is much more varied than possible with BASIC and speed, particularly in graphics, can be improved up to 50 times.

The Editor facility is rather complicated to use and the glossary does not specify which words are Abersoft specials, and therefore non-Fig-Forth standard, which might make your programs difficult to run on other Forth computers.

The documentation could be more beginner-orientated and perhaps the graphic examples could be a little clearer, but the program itself is excellent and the special features are well worth the extra money. **D.C.**

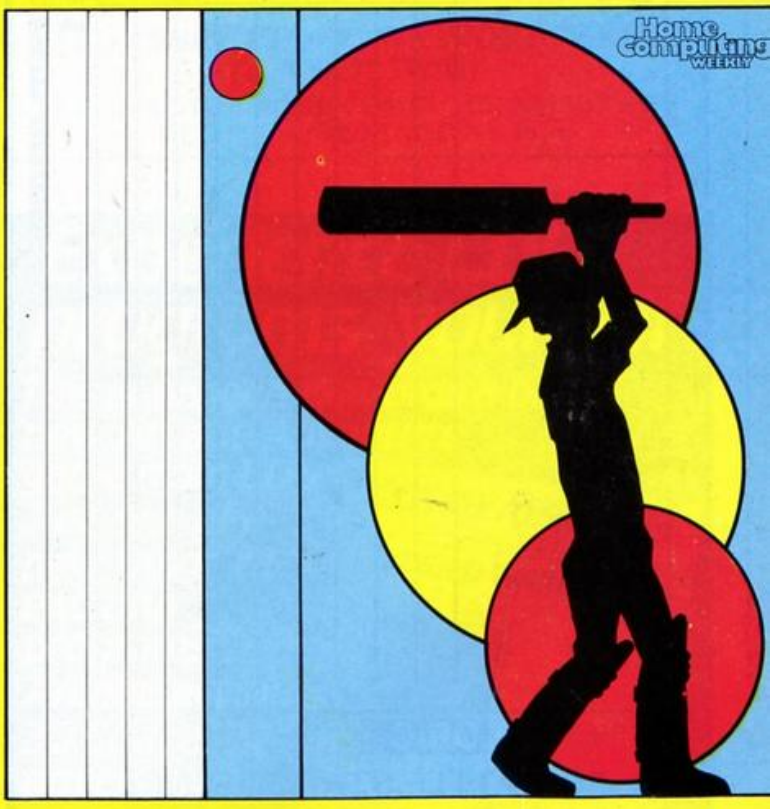
instructions	60%
ease of use	90%
display	90%
value for money	95%

★ ★ ★ ★ ★









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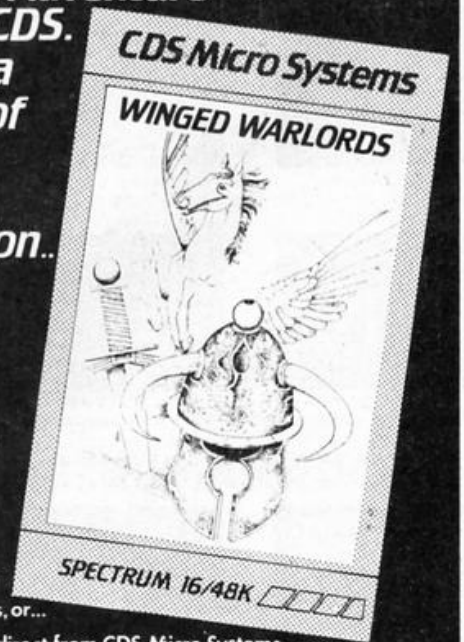
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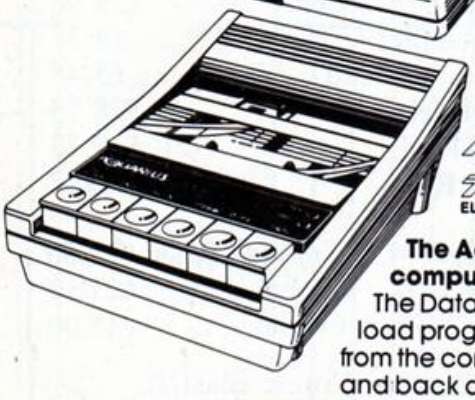
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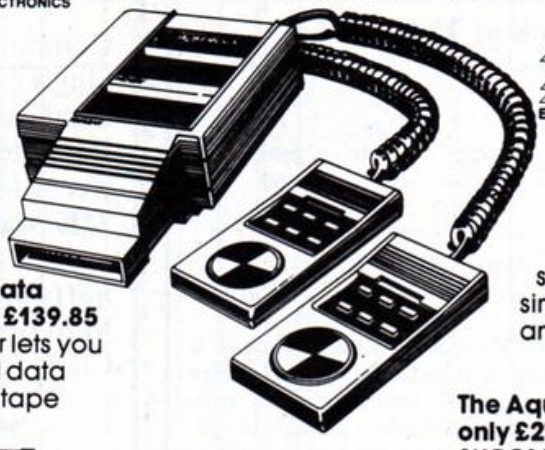
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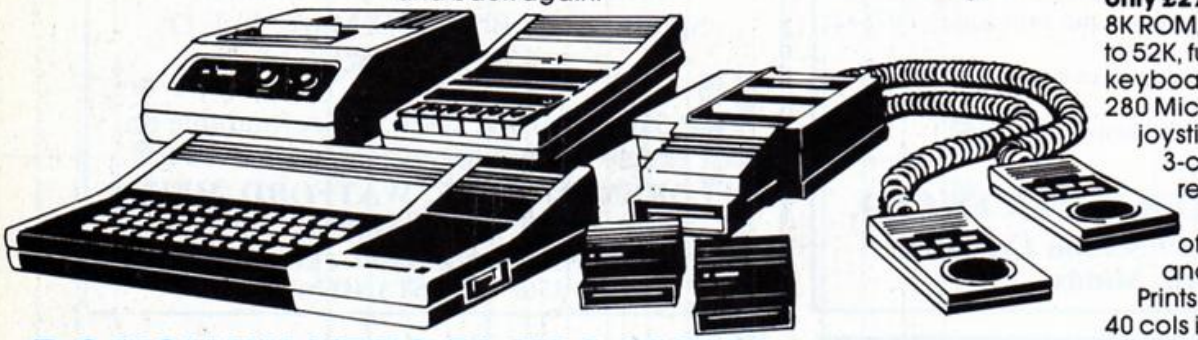
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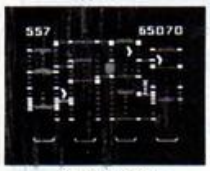
Chess
Play the computer or an opponent.



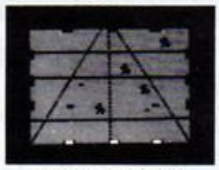
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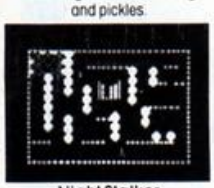
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Make burgers, avoid hot dogs and pickles.



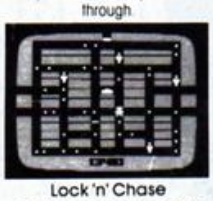
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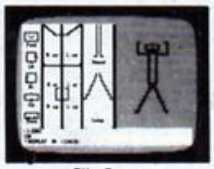
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Collected works

Compilation cassettes can be a good way of hedging your bets when buying software. Here are five our reviewers have tried out for you

A.B.M. Control/ Cavern Hunt TI-99/4A (Ext. BASIC, joystick) £4.95

Fantasia 99, from Timeless Software, 3 Bridgend, Fauldhouse, West Lothian, Scotland

A.B.M. Control is a one or two player game in which you must survive through as many screens as possible by defending your cities against the computer's attack.

This becomes more difficult to assuage as bombers and cruise missiles join the barrage of bombs.

A score is given after each successful defence, determined by the number of cities intact and various classes of missile destroyed, both as multiples of screens completed. The game ends when no more cities remain.

Cavern Hunt is a version of Hunt the Wumpus, or in this case the Wumpit!

You are randomly located in a one-dimensional maze.

The maze contains bats and slime pits. The number of these, as do Wumpits to be found, depend on which of three levels of difficulty is chosen.

The number of bloodspots left as clues to the Wumpits' whereabouts are also determined by difficulty level.

Actually travelling through the maze is quite slow. **J.W.**

instructions	90%
playability	80%
graphics	80%
value for money	100%

★ ★ ★ ★ ★

Multi-Games Pack 2 48K Oric £6.90

Tansoft, 3 Club Mews, Market Square, Ely, Cambs

Another package of games from Tansoft, comprising a varied selection with just about something for everybody. The best of the bunch are a computer version of the old favourite Hangman and a sort of 3D noughts and crosses.

Hangman can be modified to take an alternative selection of words, so that when you have mastered the original set, you can substitute your own. One slight snag — I am sure the random selection of words could be made a little more random.

3D Link is a game for clear thinkers. You can play either against an opponent or Oric and I think with practice, you could develop some quite sophisticated play.

I will not say much about the other three games, since they are of limited appeal and will probably only interest the youngest players for any length of time.

All five games are recorded slowly and are interconnected in the programs, and I found it very tedious having to wait so long to load and play each different game. However, there were no loading problems. **P.W.**

instructions	70%
playability	65%
graphics	75%
value for money	65%

★ ★ ★

The Soft Seven Dragon 32 £3.50

T. D. Copsey, 20 Thorington Avenue, Daws Heath, Hadleigh, Benfleet, Essex

I expected this to be a typical compilation cassette. Seven standard games, all described as "family favourites", written by a hobbyist and selling for a modest sum to compensate for below-average presentation.

Well, it wasn't quite like that. Soft Seven has more going for it than many other compilation tapes.

The programs are loaded in one go, with a menu depicting your choice displayed on screen. I was amazed that so much could be fitted into the Dragon's memory, and it's a big advantage to be able to select between programs by a single key press, without having to reload.

The programs themselves aren't wildly original, with names like Galactic Bomber, Hear and Spell, Wordsearch, Graphix, Music Maker, Hangman and The Great Race.

Several do stand out, though. Galactic Bomber is an effective hi-res bomber game, which shows that a BASIC game can still be fast. Hear and Spell uses the often-neglected MOTOR and AUDIO commands to play a hearing/spelling word game.

In conclusion, an ideal first tape for the new Dragon owner — the sort of tape that Dragon should have supplied with the machine, in fact. **C.G.**

instructions	65%
playability	55%
graphics	35%
value for money	95%

★ ★ ★ ★

Games Pack III 48K Lynx £7.95

Gem Software, Unit D, The Maltings, Station Road, Sawbridgeworth, Herts

This tape contains no less than three games.

The first, Reversi (Othello), plays a reasonable game, and can be set at different levels of difficulty. It loads in two parts — first the instructions, then the game proper.

Second is Pontoon — a three-way card game simulation between two human players and the computer. The graphics on this are superb, and the game is played well. I think this is the best game on the tape, my only complaint being that it is a little slow.

Game three is a version of the old favourite where you are a snake and have to try and touch certain objects, while growing longer all the time, and not bumping into your own body.

This is as reasonable an implementation as you can get, with good graphics and a few new twists.

All the games have good instructions, and the tape loaded with no problems on TAPE3. Excellent value for money as a starter pack — the games aren't the usual run-of-the-mill arcade variety, and should offer something for everybody. **M.R.**

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

★ ★ ★ ★ ★

Games Pack IV 48K Lynx £7.95

Gem Software, Unit D, The Maltings, Station Road, Sawbridgeworth, Herts

Both games on this tape load in at once, and a menu option is used to select between them.

In the first, an aeroplane is trying to land on its aircraft carrier, but the way is barred by "chemical clouds". These must be bombed away to allow the plane to land on the moving deck of the ship.

Bomb the ship by mistake, however, and you destroy part of it, leaving you less area to land on. This is a very easy and therefore uninteresting game.

The second game shows more promise, being somewhat more challenging, though you'll soon find you win this one every time, too.

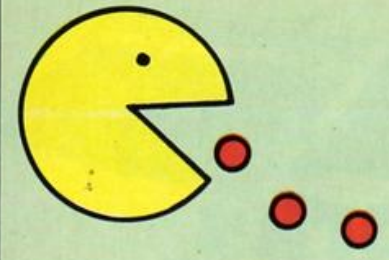
Here you have to try and depth charge submarines from a ship.

However, both games have excellent graphics and clear instructions for use, and loaded quickly and without fuss on TAPE3. Both written in machine-code, they were very fast. The graphics animation was smooth and flicker-free.

Perhaps this would be a good tape for younger children, or for people who can't get the hand of the more demanding video games. And two games on the tape means that it isn't bad value for money. **M.R.**

instructions	80%
playability	20%
graphics	90%
value for money	60%

★ ★ ★



The choice is yours: chomp or jump...



Lots of features are built into John Williams' game for the Dragon 32. Will you chomp to victory... or will you be forced to use Hyper Jump?

Can you chomp your way through the maze without being chomped? How many levels can you pass?

This game has instructions and difficulty level, hyper jump and power meter. You have to eat all the yellow dots (food) and dodge the ghost.

How it works

100-310 variable and level of difficulty
320-490 sets up screen
550-980 moves ghosts and man
990-1030 if you lose a life
1110-1160 end part
1170-1310 instruction

If you eat the blue dots in the corner (power pellets, eight points) then you become a ghost chomper. But beware: as soon as you eat them they return and you have a limited supply shown at the bottom of the screen as a yellow box with P.M. (power meter) at the side of it.

Hyper Jump enables you to move from anywhere on the screen to the middle, but you only have four of these so use them carefully.

Variables

HI high score
G1,G2,H1,H2 ghosts
PP food

Hints on conversion

The Dragon uses a fairly standard version of Microsoft BASIC so just study the listing to convert for any other micro.

```
20 HSC=100:HS$="CHOMP-MAN"
30 HP =0
40 CLS
50 DD=0
60 GOTO90
70 PRINT "                                                    CHO
MPERS                                                        powe
r meter THIS IS TO SEE HOW  MUCH POWER PELLET POWER YOU
 HAVE LEFT ,THIS IS AT THE BOTTEM OF THE SCREEN":IF DD=
1 THEN RETURN ELSE GOTO100
80 CLS
90 CLS
100 DIMLK(20,20):DIM KL(20,20):DIM TV(20,20):DIM M(20,2
0):DIMSP(20,SP):DIMSI(20,20):DIM SD(20,20):DIM GP(20,20
)
110 QW=20:ZX=50
120 SC=0:FF=0
130 PP=ZX
140 L=10
150 CLS6:INPUT "INSTUCTIONS (Y/N)"; Q$
160 IF Q$="N" THEN GOTO180
170 IF Q$="Y" THEN PLAY"O2L5G":GOTO 1170
180 CLS4:INPUT"LEVEL OF DIFFICULTY (1,2,3,4,5)";X:IF X>
5 THEN GOTO180
190 DL=X
200 X=X+3
210 QW=QW*X:X=X*5:PP=PP-X:PLAY"L5 O4G"
220 CLS:PRINT"          CHOMPERS                                B
Y   JOHN   WILLIAMS ""
230 HP=0
240 FOR X=0 TO15:PLAY"O3L219T255BAGFEDL8C":NEXT
250 LV=3:SA=QW
260 LK=0
270 FF=0
280 TG=0
290 G1=208:H1=223:G2=11:H2=20
300 G3=16:H3=31:G4=11:H4=20
310 Q=88:W=98:E=117:R=125
320 PMODE3,1:IF LK=0 THEN PCLS
330 IF LK=2 THEN GOTO 400
340 FORC=22 TO 166 STEP12
350 FORZ=24 TO216 STEP12:PSET(Z,C,2)
360 NEXT:NEXT
370 DRAW"C2BM210,190;U10R5D5L5R5B R10D5U10R4D10U10R4D10
";:COLOR2,5:LINE(7,185)-(205,190),PSET,BF:COLOR4,5
380 PSET(215,189,2)
390 DRAW"C2BM250,20;L5D10R5B D5D10U5L5U5D10B D5D10R5U10
L5D10B D5D10U10R3D10U10R4D10B D5B L2L5R5D5L5U5D10B D5R5
L5D5R5L5D5R5L5B D5D11U5F6H6R5U5L5D10B D5R5L5D5R5D5L5C4"
400 DRAW"BM12,106;U72R24L24U24R72D24U24R24;R24;R24D24U2
4R72D24L24R24D48
410 LK=0
420 DRAW"BM12,106;D48R24L24D24R72U24D24R24;R24;R24U24D2
4R72U24L24R24U72
430 DRAW"BM36,58;D36R24L24D36;B ;R24;D24U36;B U48U36D36
;B ;R24;B D12;D24R24L24U24R24;B U24;L24R24B U24R24B D24
R24B D24L24R24D24L24B D24R24L24B D24;L24B U24L24
440 C$="O2L255AT3"
450 DRAW"BM180,34;D36;B ;R24U12D72U36L24;B ;D24D36
460 DRAW"C3BM115,93E5F5G5E5C4" :GET(115,110)-(125,85),K
L:PUT(115,110)-(125,85),LK
465 COLOR2,2:LINE(5,179)-(230,5),PSET,B:PAINT(1,1),3,2
470 PSET(24,22,3):PSET(216,22,3):PSET(24,166,7):PSET(21
6,166,7)
480 CIRCLE(120,94),7,4,1,.3:DRAW"BM120,93;C4D7U7R7L7C2"
:PAINT(119,92),4,4
490 SCREEN1,0
500 CIRCLE(24,19),8,2,1,.5:DRAW"C2BM17,20;E2F2E2F2E2F2E
2F2":PAINT(24,17),2,2
510 GET(16,11)-(31,20),SP
520 GET(115,88)-(125,104),M
530 GET(16,11)-(31,20),GP
540 PUT(117,88)-(125,98),SD
550 JY=JOYSTK(1):JK=JOYSTK(0)
560 IF HP=4 THEN GOTO580
570 IF PEEK(65280)=126OR PEEK(65280)=254 THEN Q=88:W=98
:E=117:R=125:PLAY"L10T150CDEFGBT10ADC":HP=HP+1
580 PUT(E,Q)-(R,W),M:
590 IF TG<1 AND Q-5=G4 AND E-5=G3 THEN PLAY"L10O1GGGL10
O1AAAO1GAO1CC":GOTO1010
600 IF TG<1 AND Q-5=G2 AND E-5=G1 THEN PLAY"L50O3GGGL20
O2FFFL10O1EEEL6O1CCCDDDD":GOTO1010
610 IF TG>0 AND Q-5=G4 AND E-5=G3 THEN GOSUB 1090
620 IF TG>0 ANDQ-5=G2 AND E-5=G1THEN  GOSUB1070:GOSUB 1
040
630 IF PPOINT(E-8,Q+6)=3 OR PPOINT(R+7,Q+6)=3THEN SC=SC
+8: GOSUB 990
640 IF TG>0 THEN TG=TG+1:FORF=189 TO191 :PSET(K,F,2):NE
XT:K=K-4:IF K=<0 THEN K=16
650 IF TG>PP THEN TG=0:PLAY"L50AAACCCEEE":C$="L50O2A"
660 PUT(G1,G2)-(H1,H2),SP:PUT(G3,G4)-(H3,H4),GP:PLAYC$
670 PUT(G1,G2)-(H1,H2),TV:PUT(G3,G4)-(H3,H4),TV
680 AS=RND(150)
690 IF AS<SA ANDG2+5<Q ANDPPOINT(H1-7,H2+14)<> 4 THEN P
UT(G1,G2)-(H1,H2),TV:G2=G2+12:H2=H2+12:TF=1:GOTO720
700 IF AS<SA ANDG1+5>E AND PPOINT(G1-4,G2+8)<>4 THEN G1
=G1-12:H1=H1-12:TF=1:GOTO720
710 IF AS<SA ANDG2+5>Q AND PPOINT(G1+8,G2-1)<>4 THEN G2
=G2-12:H2=H2-12:TF=1:GOTO720
720 PUT(E,Q)-(R,W),SD:IF TF=1 THEN TF=0:GOTO740
730 IF AS<SA ANDG1<E-5 AND PPOINT(H1+5,H2+0)<>4 THEN G1
=G1+12:H1=H1+12
740 IF H3<E AND PPOINT(H3+5,H4+2)<>4 THENG3=G3+12:H3=H3
+12
750 IF INKEY$="N"THEN FF=132
760 IF AS<SA ANDG4+5>Q AND PPOINT(G3+8,G4-1)<>4 THEN G4
=G4-12:H4=H4-12
770 IF AS<SA AND H4<Q AND PPOINT(H3-7,H4+14)<>4 THEN G4
=G4+12:H4=H4+12
780 IF AS<SA AND G3>E AND PPOINT(G3-4,H4+2)<>4 THEN  G3
=G3-12:H3=H3-12
790 IF JY>50 AND PPOINT(E+4,W+8)<>4 THEN GOSUB870
800 IF JY<5 AND PPOINT(E+4,Q-6)<>4 THEN GOSUB 900
810 IF JK>60 AND PPOINT(R+7,Q+6)<>4 THEN GOTO 960
820 IF JK<5 AND PPOINT(E-8,Q+6)<>4 THEN GOSUB930
830 IF FF>131 THENCLS4:DL=DL+1:SA=SA+10:PP=PP-5:PRINT@
224+7,"YOUR SCORE IS"SC;:PLAY"O2L7EGEFEA":FOR X=1TO 500
```

DRAGON 32 PROGRAM

```
:LK=0:NEXTX:GOTO840
840 IF FF>131 THEN PRINT@256+4,"HIGH SCORE =";HSC;:FOR
X=1TO 600:NEXT
850 IF FF>131 THEN FF=0:GOTO280
860 GOTO550
870 IF PPOINT(E+4,W+8)=2 THEN SC=SC+1:FF=FF+1
880 W=W+12:Q=Q+12
890 GOTO550
900 IF PPOINT(E+4,Q-6)=2 THENSC=SC +1:FF =FF+1
910 Q=Q-12:W=W-12
920 GOTO550
930 IF PPOINT(E-8,Q+6)=2 THEN SC=SC+1:FF=FF+1
940 E=E-12:R=R-12
950 GOTO550
960 IF PPOINT(R+7,Q+6)=2 THENSC=SC+1:FF=FF+.
970 R=R+12:E=E+12
980 GOTO550
990 K= 8:FOR K=K TO PP*4  STEP4:FORF=189TO191:PSET(K,F,
3):TG=1:C$="O3L219T255BAGFEDL8CT2":PRESET(E-8,Q+6):PRES
ET(R+7,Q+6)
1000 NEXT:NEXT:RETURN
1010 LV=LV-1:CLS4:PRINT" YOU ARE CAUGHT BY THE GHOST
  MONSTERS YOU SCORED";SC;" AND      YOU GOT ONTO DIFFIC
ULTY LEVEL";DL;:PLAY"L8T202GL9EL10GGGL7EEEL8DGE
1020 IFLV<1 THEN GOSUB1320,1110
1030 IF LV>0 THEN PRINT@192,"  YOU HAVE ";LV"LIVES LEFT
 HAPPY                CHOMPING":FORX=0 TO 2000:NEXT:LK=2:
GOSUB 1340:GOTO280
1040 PLAY"L4001E02F03G04B05A"
1050 IF L=5 THENG1=208:H1=223:G2=11:H2=20:SC=SC+10:RETU
RN
1060 IF L=0 THEN G3=16:H3=31:G4=11:H4=20:SC=SC+15:RETUR
N
1070 L=5
1080 RETURN
1090 L=0:GOSUB 1040
1100 GOTO650
1110 FOR  E=0 TO 8:FOR W=1 TO100:  :CLSE:NEXT:PRINT"  YO
U HAVE BEEN KILLED AND                SCORED=";SC"
      HIGH SCORE ="HSC"BY "HS$::NEXT:IF SC>HSC THEN HSC
=SC :PLAY"L1002T1C2A02E03D02F01C":PRINT"          YOU SCOR
ED TODAYS HIGHEST SCORE!!!"
1120 IF HSC=SC  THEN INPUT"WHAT IS YOUR NAME";NM$:HS$=N
M$
```

```
1130 INPUT "ANOTHER GO(Y/N)??";N$
1140 IF N$="Y" THEN GOTO 110
1150 IF N$="N" THEN STOP
1160 GOTO1140
1170 PRINT"SCORE: ghosts   GHOST MONSTERS          ARE D
EADLY BUT IF YOU           EAT ANY OF THE FOUR
    POWER PELLETS THEN THE          GHOST ARE EATABLE A
ND          WORTH 10POINTS!!"
1180 PRINT "SCORE: power pelletsTHESE ARE IN        EACH
 CORNER OF THE MAZE .       IF YOU EAT ONE THEN A
     DIFFERENT SOUND IS HEARD       THIS MEANS THE GHO
ST          MONSTERS ARE EATABLE.          POWER PEL
LETS ARE WORTH         8 POINTS!
1190 GOSUB 1290
1200 PRINT"                                    SCORE: food
FOOD IS YELLOW AND         YOU GET 1POINT FOR IT
                                "
1210 PRINT "the object of the game:          IS TO EAT A
LL THE FOOD AND       POWER PELLETS WITHOUT GETING    K
ILLED.YOU ONLY HAY 3 LIVES AND IF YOU EAT ALL THE FOOD
AND    POWER PELLETS YOU START ON AN   HARDER LEVEL. AS
 YOU GET ONTO    HARDER";
1220 PRINT        " LEVELS YOUR POWER PELLETRUN OUT QUI
CKER                                              "
1230 GOSUB1290
1240 DD=1:GOSUB 70
1250 PRINT"hyper jump IF YOU ARE TRAPPED   YOU CAN USE
HYPER JUMP TO       RETURN YOU TO THE MIDDLE BUT BE WAR
NED YOU CAN ONLY USE IT 4    TIMES.
                                "
1260 PRINT"                                    PRESS SP
ACE BAR!!"
1270 IF INKEY$ =" " THEN PLAY"L603G":GOTO180
1280 GOTO 1270
1290 PRINT "      push*space*bar*to*go*on"
1300 IF INKEY$=" " THEN PLAY"O5L5C": RETURN
1310 GOTO1300
1320 PMODE3,1:SCREEN1,0:FOR X=1 TO 200 STEP 19:PLAY"O3L
10T55EFGCD":CIRCLE(128,96),X,3:NEXT:PLAY"O3L50T2ABGFECD
ABGFECABGFEDC"
1330 GOTO 1110
1340 PUT (E,Q)-(R,W),SD
1350 RETURN
```






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Top Ten programs for the Spectrum

1	Atic Atac	Ultimate (2)
2	The Pyramid	Fantasy (3)
3	Chequered Flag	Psion (1)
4	Flight Simulation	Psion (9)
5	Manic Miner	Bug Byte (7)
6	Ant Attack	Quicksilva (4)
7	Lunar Jetman	Ultimate (6)
8	Pool	CDS (–)
9	Kong	Ocean (5)
10	Splat	Incentive (8)

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

Top Ten programs for the ZX81

1	Defender	Quicksilva (6)
2	Scramble	Quicksilva (1)
3	Asteroids	Quicksilva (7)
4	Chess	Sinclair (5)
5	Space Raiders	Sinclair (9)
6	Fantasy Games	Sinclair (8)
7	Invaders	Quicksilva (–)
8	Inca Curse	Sinclair (–)
9	ZX81 Forth	Sinclair (–)
10	Maths/Geography	Sinclair (–)

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

Top Ten programs for the Dragon

1	Mined Out	Quicksilva (3)
2	Pettigrews Diary	Shards (10)
3	Night Flight	Salamander (–)
4	Ring of Darkness	Wintersoft (1)
5	Dragonfly II	Hewson (–)
6	Gridrunner	Salamander (–)
7	Champions	Peaksoft (5)
8	Lionheart	Peaksoft (–)
9	Frogger	Microdeal (6)
10	Morocco Grand Prix	Microdeal (–)

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

Top Ten programs for the VIC-20

1	Arcadia	Imagine (4)
2	Wizard & the Princess	Melbourne House (1)
3	Wacky Waiters	Imagine (2)
4	Laser Zone	Llamasoft (–)
5	Matrix	Llamasoft (10)
6	Gridrunner	Llamasoft (–)
7	Skyhawk	Quicksilva (5)
8	Sargon II	Commodore (–)
9	Money Manager	Commodore (–)
10	Panic	Bug Byte (3)

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

BEST SELLERS

Top 30

1	Atic Atac	Ultimate	Spectrum (–)
2	Lunar Jetman	Ultimate	Spectrum (7)
3	Kong	Ocean	Spectrum (5)
4	Jetpac	Ultimate	Spectrum (2)
5	Manic Miner	Bug Byte	Spectrum (3)
6	The Hobbit	M.House	Spectrum (4)
7	Valhalla	Legend	Spectrum (1)
9	Chuckie Egg	A&F	Spectrum (I7)
10	747 Flight Simulator	Doctorsoft	BBC
11	Pool	CDS	Spectrum (I6)
12	Melbourne Draw	M.House	Spectrum (–)
13	Falcon Patrol	Virgin	CBM 64 (25)
14	Ostron	Softek	Spectrum (–)
15	Night Flight	Microdeal	Dragon (–)
16	Killer Gorilla	Program Power	BBC (10)
17	Trans-Am	Ultimate	Spectrum (8)
18	Splat	Incentive	Spectrum (–)
19	Cookie	Ultimate	Spectrum (9)
20	Horace and the Spiders	Psion	Spectrum (13)
21	The King	Microdeal	Dragon (18)
22	Penetrator	M.House	Spectrum (22)
23	Hall of theThings	Crystal	Spectrum (14)
24	Cuthbert in the Jungle	Microdeal	Dragon (15)
25	Snooker	Arctic	Spectrum (–)
26	Franklins Tomb	Salamander	Dragon (–)
27	3D Dimension Destruction	Arctic	Spectrum (–)
28	Crazy Painter	Microdeal	Dragon (–)
29	Pssst	Ultimate	Spectrum (20)
30	3D Combat Zone	Arctic	Spectrum (23)

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 December 4

Top Ten programs for the Commodore 64

1	Crazy Kong	Interceptor (8)
2	Frogger	Interceptor (1)
3	Laser Zone	Llamasoft (–)
4	Spriteman	Interceptor (10)
5	Motormania	Audiogenic (6)
6	Purple Turtles	Quicksilva (2)
7	Quintic Warrior	Quicksilva (4)
8	Aquaplane	Quicksilva (9)
9	Renaissance	Audiogenic (–)
10	Caesar the Cat	Mirrorsoft (–)

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

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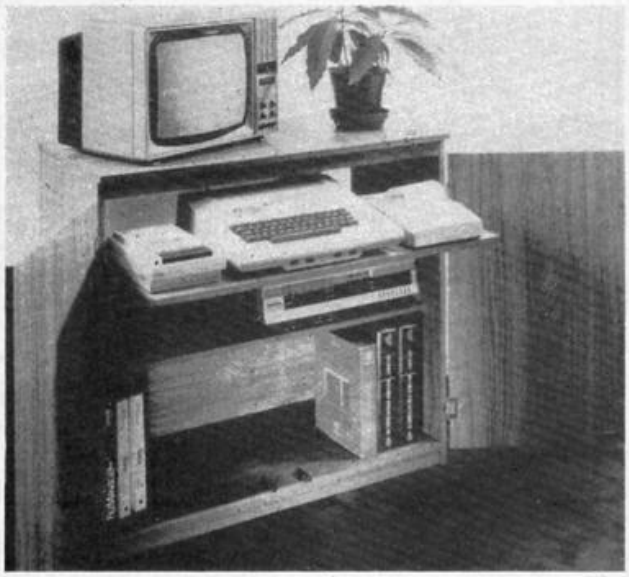
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When will they ever learn?

Over at Coleco, things seem to be shaping up rather well. Recently Coleco opened their doors to reporters at their New York manufacturing facilities and showed members of the press how they planned to roll out as many as 140,000 of the new Adam micro by the end of 1983.

Critics of Coleco have stated that the firm's future may be determined by how Adam does in the marketplace.

The Adam is being constructed in two huge buildings, one a converted carpet factory, the other the size of a large airplane hangar.

There are roughly 50 workers to an assembly line, and lots of assembly lines. Even though many of the workers put in parts by hand which are then manually soldered in place, Coleco states that only about $50 is spent on labour.

This on a unit that wholesales for about $525 now with an expected increase to $650 come January.

About 2,000 units per day are being assembled, with an anticipated increase in that figure to about 6,000 per day by the end of this month. In January, production is anticipated to reach 7,500 units per day, amounting to some 150,000 units per month!

During the tour reporters saw the computers coming off the line at a rate of four per minute. I'll leave you to figure out how many computers per minute need to come off the line to make 150,000 per month.

Approximately 3000 workers are involved in the production of the unit, and about 20 per cent of those are one way or another involved in quality control inspections.

Coleco has definitely had to rework some of its software and a bit of hardware. The former because it was terrible and the latter because certain parts were unavailable in significant quantities.

Although Coleco officials admitted that a significant number of customers have brought back their units as defective, most of the time the troubles have been traced to the poorly written instructions which accompanied the earlier units.

Even though Coleco seems very serious about manufacturing a good product, when is this industry ever going to learn that users need excellent documentation to avoid turning that wonderful machine into a very expensive paperweight?

★ ★ ★ ★

Let us all pause for a moment in order to silently voice a farewell to the TI-99/4A.

When that funny looking little box was debuted, it cost a whopping $1050. What is even more amazing is that they sold a few at that price. I wonder to whom? Or how they feel now?

Anyway, if you are not particularly hip to the home computer scene over here, you might never guess that TI has said bye-bye to the home market. They still have nigh on half a million of the things in warehouses, and boy oh boy do they want to unload.

A friend of mine who has one of the things and knew they weren't being made anymore was still confused as he witnessed one local dealer lower the price on brand new units to $50, and watched in surprise as one man came in and bought 16 of 'em, then was even more surprised when the very next week the price jumped up to $150 with a $50 rebate from TI.

It didn't make a whole lot of sense to me either until I thought about it. TI has been advertising the little guy like crazy, with barely a word about going out of the business.

Let's face it, they can write off the advertising as a cost of doing business, but those computers sitting in the warehouse are nothing but a liability until they are sold, regardless of how much TI does or doesn't make on them. So they raised the price up to fool people.

Not that it matters much. Even for a machine no longer in production, for $50 it's a steal, and for $100 it still is a good value. There are oodles of third party vendors now making hardware and software for the machine, so I would not feel too bad if I owned one (unless I paid $1050 for it).

If I were not out of room I would mention some nice TI compatible products to cheer you up.

★ ★ ★ ★

I have just come into possession of one of the hottest rumours in all of computerdom, which, if it is as credible as it appears to be, explains why the much-announced but delayed IBM PC junior (or Peanut as everyone is now calling it) took so long to make it to market.

Apparently, it is all due to the folks at Microsoft who are the authors of, among other operating systems, MS-DOS which is called PC-DOS by IBM. The new computer is based on the 80188 microprocessor. Apparently, in what is a clear oversight, some software designer made a routine call to two particular jump vectors out of the available 256 jump vector addresses inside the microchip. Unfortunately, Intel, the maker of the chips, had clearly indicated that those two particular vectors were to be reserved (by Intel) for future use.

If the chips, as made, are not modified, the new IBM computer will not be able to run all those thousands of MS-DOS programs. To avoid that either the new IBM computer would have to be completely re-engineered to use an 8088 (fat chance of that happening), or Intel would have to scrap existing 80188s and re-engineer the chip to un-reserve (as it were) those two vectors.

As I write this, I have been unable to determine which chip the new IBM home computer uses, but I can tell you one thing: A lot of people are upset with Microsoft.

Lots are also thinking that the new home IBM is too expensive with its supposed $525 add-on disc drive unit. Maybe Commodore can do to IBM what it is trying to do to Apple. Imagine an IBM Peanut Compatible computer for $200 or so, with an add-on drive for only $300. My rumour source says they could call it the Goober (American slang for peanut).

Ah, the hardware wars are such fun to watch. I'll of course keep you posted as the situation develops.

★ ★ ★ ★

I just received an excellent catalogue from a mail order firm and felt I should pass the information along.

It is called The Home Guild Software Buyer's Guide and contains 65 full colour pages of software products and accessories for all the well known home micros. All, of course, offered at discount prices.

What makes this catalogue so exceptional is that not only is the usual program title and price included, but the firm also includes a paragraph description of what each program does and, through the use of a series of 23 symbols (explained at the beginning of the catalogue) also rates each program.

The rating factors take into consideration format (disc, cartridge, or cassette), peripherals required, user information (level of experience required, age limit, ease of use, hours to learn, and numbers of players possible).

A special set of symbols is also used to rate program quality in terms of documentation, graphics, educational value, action level, and general enjoyment level. I have never seen a vendor go through so much trouble to produce such a worthy catalogue.

If this were not enough, the firm also offers bonus stamps with each purchase. After you accumulate enough bonus stamps, you can then use them instead of cash to purchase any software from the catalogue.

Finally, all software purchased is guaranteed for 30 days against defects and will be exchanged if returned in its original condition with proof of purchase.

The catalogue offers a wide mixture of applications software that will run on the IBM, Atari, VIC-20, Apple, Commodore 64 and TI-99/4A.

The firm offers a wide range of out-of-the-ordinary programs in addition to the more popular ones. For example, how about Hebrew II Plus (for the Apple) that acts as a text processor and tutor (written right to left of course)? Or Know Your Own Personality for the VIC, derived from a book of the same name, written by two psychologists?

If you would like to obtain a copy of this unique catalogue, drop a line to The Home Software Guild, P.O. Box 2031, Nashua, New Hampshire 03061-2031. It will be worth your while.

See you next week.

Bud Izen
Fairfield, California

Let your micro keep you up to date

Give you the time of day? With Ken Chua's program, your 16K ZX81 will do better than that. It'll tell you the day of the week and give you a monthly — or yearly — calendar

This program will print a calendar month by month, or tell you the day of week of any date you ask.

It starts with a menu and you have three options.

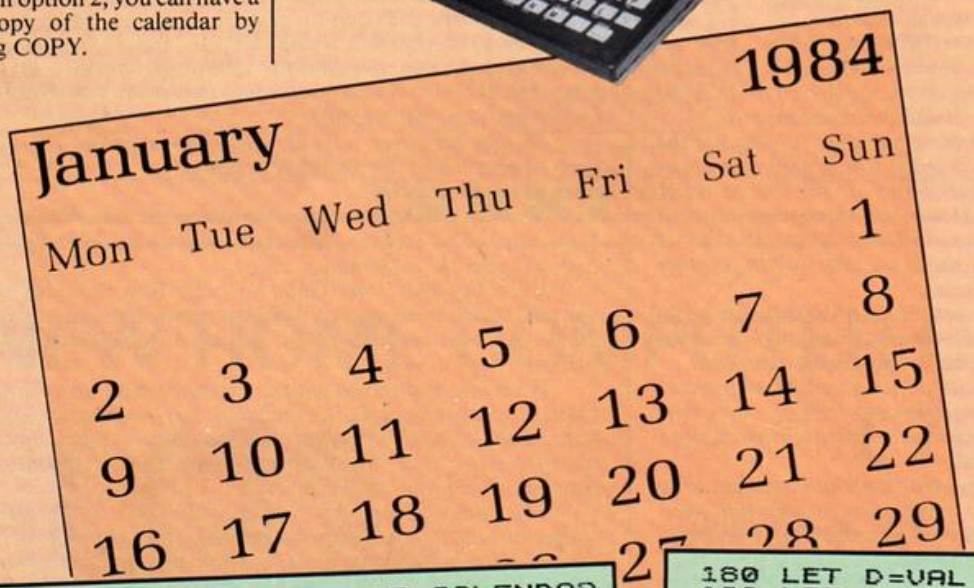
Option 1 will ask you for the full date and tell you the day of week for that date.

If you enter CONT after it stops, it will proceed to print the calendar of the month on screen (option 2).

After option 2, CONT will send it into printing the whole year calendar on printer (option 3).

To avoid all these, always RUN. In option 2, you can have a hard copy of the calendar by pressing COPY.





How it works

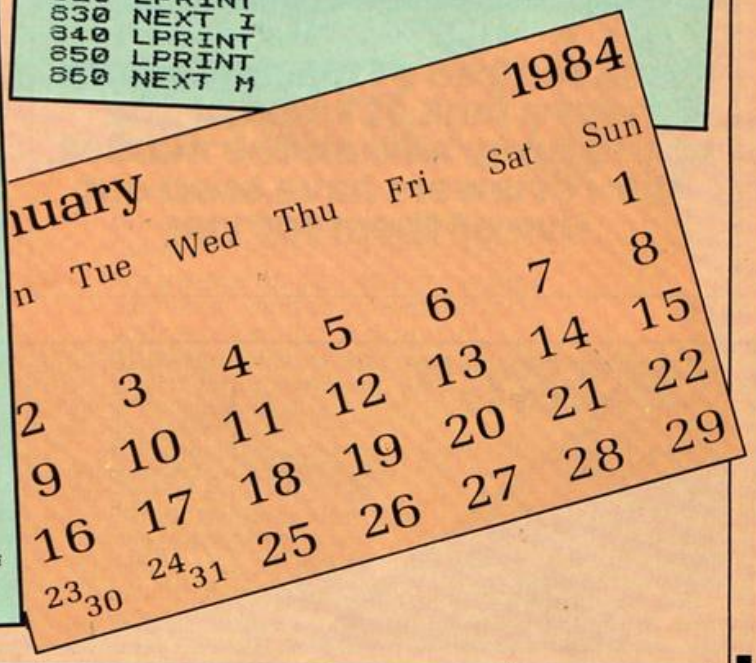
10 store for information on day of week of the day before the first day of each month
20 names of week days
30 names of months
40 parameters for the 12 months, used in the calculations of W()
50-80 menu
90-150 a way of using INKEY$
160-210 prompting for date (option 1)
220-260 prompting for month (option 2)
270-280 prompting for year (option 3)
290-310 to detect leap year
320-360 to work out the day of week of the first day of year
370-410 store the values of W()
420 jump if it is not option 1
430-440 work out day of week of the date
450-460 print answer for option 1
490 number of days in each month
500 leap year
510 the 31 days
520 14 spaces
530 jump if it is option 3
540 day of week for first day of month
550 Sunday
560 number of days in the month
570 string for printing the days at correct positions
580 columns required for printing the days
590 printing month and year
610-670 print calendar of the month
690-860 print the year calendar on printer

```
   1 REM DAY OF WEEK OR CALENDAR
BY KEN CHUA, NOVEMBER 1983.
  10 DIM W(12)
  20 LET W$="SUNDAY    MONDAY
TUESDAY    WEDNESDAY THURSDAY  F
RIDAY      SATURDAY  "
  30 LET M$="JANUARY   FEBRUARY
 MARCH      APRIL       MAY        J
UNE        JULY        AUGUST     SEP
TEMBER OCTOBER     NOVEMBER   DECEM
BER   "
  40 LET A$="030323233232"
  50 PRINT "YOU MAY CHOOSE 1, 2
OR 3:"
  60 PRINT "1:FOR DAY OF THE WEE
K AT CERTAIN  DATE"
  70 PRINT "2:FOR CALENDAR OF CE
RTAIN MONTH"
  80 PRINT "3:FOR PRINTING A WHO
LE YEAR       CALENDAR ON PAPER"
  90 FOR I=1 TO 2 STEP 0
 100 LET B$=INKEY$
 110 IF B$="1" OR B$="2" OR B$="
3" THEN LET I=3
 120 NEXT I
 130 CLS
 140 IF B$="2" THEN GOTO 220
 150 IF B$="3" THEN GOTO 270
 160 PRINT "PLEASE ENTER DATE (D
D.MM.YYYY)"
 170 INPUT C$
 180 LET D=VAL C$(1 TO 2)
 190 LET M=VAL C$(4 TO 5)
 200 LET Y=VAL C$(7 TO 10)
 210 GOTO 290
 220 PRINT "WHICH MONTH PLEASE ?
 (MM.YYYY)"
 230 INPUT C$
 240 LET M=VAL C$(1 TO 2)
 250 LET Y=VAL C$(4 TO 7)
 260 GOTO 290
 270 PRINT "WHICH YEAR PLEASE ?"
 280 INPUT Y
 290 IF INT (Y/4)*4=Y THEN LET A
$(3)="1"
 300 IF INT (Y/100)*100=Y THEN L
ET A$(3)="0"
 310 IF INT (Y/400)*400=Y THEN L
ET A$(3)="1"
 320 LET Y1=INT ((Y-1)/100)
 330 LET Y2=Y-1-100*Y1
 340 LET V=799+Y2+INT (Y2/4)+INT
 (Y1/4)-2*Y1
 350 LET V=V-INT (V/7)*7
 360 IF V=0 THEN LET V=7
 370 LET W(1)=V-1
 380 FOR I=2 TO 12
 390 LET A=W(I-1)+VAL A$(I)
 400 LET W(I)=A-INT (A/7)*7
 410 NEXT I
 420 IF B$<>"1" THEN GOTO 480
 430 LET A=D+W(M)
 440 LET V=A-INT (A/7)*7
```

ZX81 PROGRAM

```
 450 CLS
 460 PRINT W$(10*V+1 TO 10*V+10)
;"FOR ";M$(10*(M-1)+1 TO 10*(M-1
)+10);D;", ";Y
 470 STOP
 480 CLS
 490 LET E$="312831303130313130313
13031"
 500 IF A$(3)="1" THEN LET E$(4)
="9"
 510 LET D$="  1 2 3 4 5 6 7 8 91
0111213141516171819202122232425262
72829303131"
 520 LET S$="                    "
 530 IF VAL B$>2 THEN GOTO 690
 540 LET A=1+W(M)
 550 IF A=7 THEN LET A=0
 560 LET E=VAL E$(2*M-1 TO 2*M)
 570 LET F$=S$(1 TO 2*A)+D$(1 TO
 2*E)+S$
 580 LET X=INT ((A+E+6)/7)-1
 590 PRINT M$(10*(M-1)+1 TO 10*(
M-1)+10);TAB 3*X+8;Y
 600 PRINT
 610 FOR I=0 TO 6
 620 PRINT W$(10*I+1 TO 10*I+10)
;
 630 FOR J=0 TO X
 640 PRINT F$(2*(7*J+I+1)-1 TO 2
*(7*J+I+1));S$(1);
 650 NEXT J
 660 PRINT
 670 NEXT I
 680 STOP
 690 FOR M=1 TO 12
 700 LET A=1+W(M)
 710 IF A=7 THEN LET A=0
 720 LET E=VAL E$(2*M-1 TO 2*M)
 730 LET F$=S$(1 TO 2*A)+D$(1 TO
 2*E)+S$
 740 LET X=INT ((A+E+6)/7)-1
```

```
 750 LPRINT M$(10*(M-1)+1 TO 10*
(M-1)+10);TAB 3*X+8;Y
 760 LPRINT
 770 FOR I=0 TO 6
 780 LPRINT W$(10*I+1 TO 10*I+10
);
 790 FOR J=0 TO X
 800 LPRINT F$(2*(7*J+I+1)-1 TO
2*(7*J+I+1));S$(1);
 810 NEXT J
 820 LPRINT
 830 NEXT I
 840 LPRINT
 850 LPRINT
 860 NEXT M
```



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STAR READER A	-	£6.95	TBA	TBA
STAR READER B	-	£6.95	TBA	TBA
FRENCH	-	TBA	-	-
GERMAN	-	TBA	-	-
MIDDLE SCHOOL MATHS—PART I	-	£7.95	-	£7.95
MIDDLE SCHOOL MATHS—PART II	-	£7.95	-	£7.95
MATHS PART I	£5.00	£8.95	TBA	TBA
MATHS PART II	-	£8.95	TBA	TBA
PHYSICS	£7.50	£8.95	TBA	TBA
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NEW

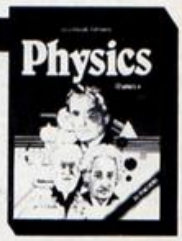
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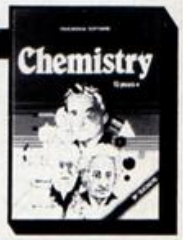
TO REVISE AT HOME. Written to be compatible with most O-Level Boards and also useful for the most able CSE pupil.

PHYSICS

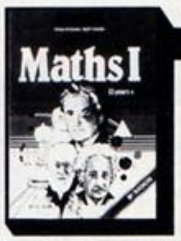


Two programs full of problems. Ohm's Law, Refraction, Resistances, Linear Expansion, Moments etc., etc., 5 sets of multiple choice questions. Book of notes. Hints on revision. Fantastic value.

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NEW

Make your micro earn its keep

If you're tired of playing games, have a look at some of the utility programs on the market. Our reviewers have tried out five of them for you

Profile (What makes you tick?) 32K BBC £5.95

Third Program, 189 Cheedon Road, Taunton, Somerset

Is this a serious utility or a game? I suppose it could be used as both in the right situation, though these are likely to be poles apart!

It is a personality test administered by computer and then analysed to present you with a profile of your character.

It seems to be based on Eysenck's theory of personality as a balance between extraversion and introversion on the one hand and neuroticism and stability on the other.

The theory is well respected by many psychologists but is based on very stringent control of the test and testing situations.

I cannot believe, then, that this can be a serious program as it doesn't follow the tests which I know of carefully enough and no norms are available for interpretation.

This leaves me with the conclusion that this is meant to be fun — but who would want to take psychological tests for fun?

I could see it being an interesting talking point at a certain kind of party, but it could lead to a great deal of embarrassment too.

So I have to conclude that whilst the program does perform as claimed, I can't see anyone wanting to buy it. **D.C.**

instructions	50%
ease of use	80%
display	70%
value for money	30%

★ ★

Quicker Qwerty TI-99/4A £9

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

This program is designed to teach you how to type on the TI-99/4A using all your fingers.

The keyboard is drawn on the screen and you are told to place your fingers over the "home keys", with your thumbs over the space bar.

A white dot is displayed on one of the keys. This key must be pressed as quickly as possible.

If you hit the right key, another dot is displayed on the keyboard.

This procedure is repeated several times before the computer tells you how many mistakes you made and the length of time between key presses.

If you made no mistakes, and you didn't take too long between key presses, the computer displays "Well done". This is then followed by another series of keys which must be pressed.

The program has 22 levels which are progressed through one after another.

Because it takes a long time to complete all the levels, the program can be left and continued later. This is simply done by entering the level you've reached at the beginning of the program. **J.J.**

instructions	85%
ease of use	90%
display	80%
value for money	80%

★ ★ ★ ★ ★

Vu-Type 32K BBC £16.10

British Broadcasting Corporation, 35 Marylebone High Street, London W1M 4AA

This program is well bred and from noble stock. Commissioned by the BBC and with exercises by Pitmans, you'd expect a high quality product and it certainly is.

The aim is to teach you to touch type and while it hasn't, yet, broken my two fingered habits, it has certainly improved my awareness of their inadequacy.

The package contains the main program, over 20 exercises and a 53-page book too.

In use, the screen displays a representation of the keyboard and the target phrase, word or exercise to be typed.

As you attempt to copy the target the key you should be pressing is illuminated and the letters you have typed appear under the phrase.

The program scores you for speed and accuracy and has so many options the mind reels with the possibilities. You can change the display, the sound, the colours, almost everything in fact.

This leads to one of my two, very minor, criticisms. The number of options is just too vast for anyone to really need. Secondly, the program won't teach the layout of text on a page.

If you are serious about learning to type, you should learn very well with this package and should then be able to go on to learn the other typing skills without too much trouble. **D.C.**

instructions	95%
ease of use	70%
display	90%
value for money	95%

★ ★ ★ ★ ★

Tax Calc 32K BBC £17.25

British Broadcasting Corporation, 35 Marylebone High Street, London W1M 4AA

Subtitled 'The Which? Income Tax Calculator 1982/3'. You simply give the program full details of all your income and outgoings, and it will calculate the amount of tax you should have paid for that year.

The year you wish to use it for is all-important, though, as the actual details of allowances and percentages are changed at each new budget and therefore the program will need updating too.

This raises a problem. There is no user registration in this package, and no offer of an update facility.

Having paid this amount for a package I would expect to be able to use it more than once.

If the program needed a full rewrite due to huge changes in the tax laws, even the offer of a discount on the new version would be better than nothing. This sort of software maintainance is being offered by some companies (Clares & Gemini, for example), so why can't the BBC do the same?

The program is very easy to use and has excellent documentation which can be used as a preparation sheet to get the information you need in the correct order for the program.

Value is difficult to assess. I suppose if you recoup more than its cost from the taxman it is good value. But is it tax deductable? **D.C.**

instructions	95%
ease of use	80%
display	70%
value for money	60%

★ ★ ★ ★

Beyond Basic 32K BBC £11.50 (Cassette) £7.25 (Book)

British Broadcasting Corporation, 35 Marylebone High Street, London W1M 4AA

If you have completed your education in BASIC and are ready to step into the realm of machine code then this package could be for you.

It is produced as a follow-up to 30 Hour Basic, and like its predecessor, it is extremely well thought out and structured.

It is important to realise, however, that it is subtitled '6502 Assembly Language on the BBC Micro', and while it may be of use to owners of other 6502 based machines, it does use the features of the BBC's Assembler and Operating System fairly extensively.

It needs to be said that the book is the centre of this package — the tape can't be used without it, and is simply a way of saving time and sore fingers.

The book is very good indeed, starting simple and working up towards full understanding.

It is the first time I have ever felt I understood Binary Coded Decimal and could use it properly, and yet I have three other texts on the subject.

Well written, with plenty of exercises to keep the mind nimble, this is a must for those starting on the path to machine code. **D.C.**

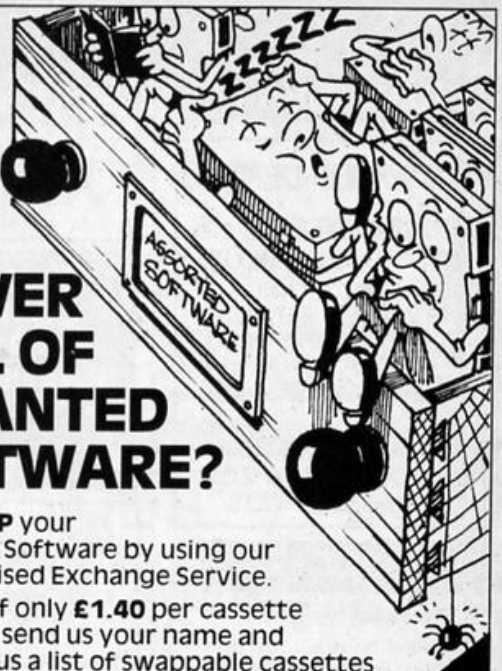
instructions	95%
ease of use	95%
display	n/a
value for money	100%

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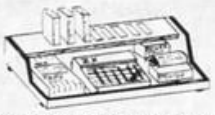
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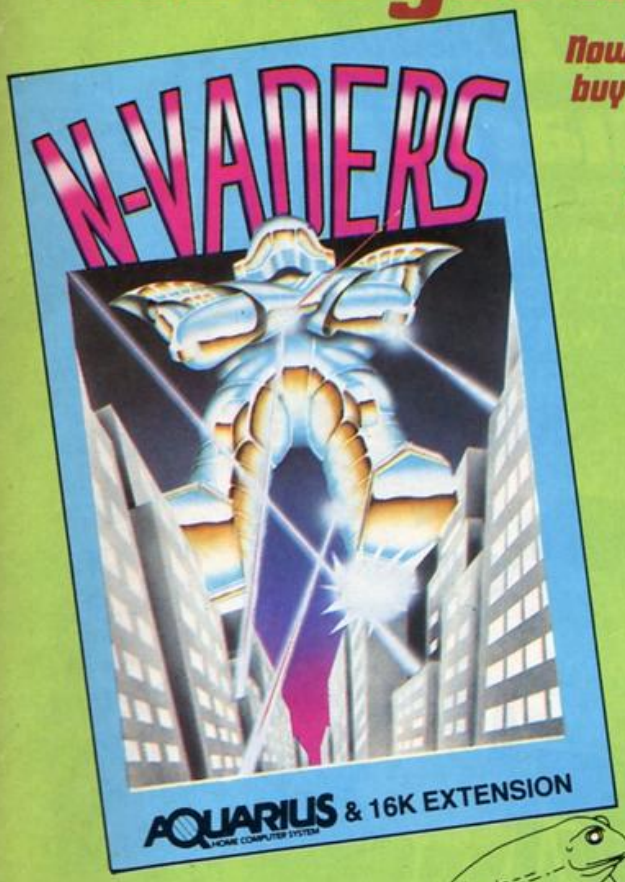
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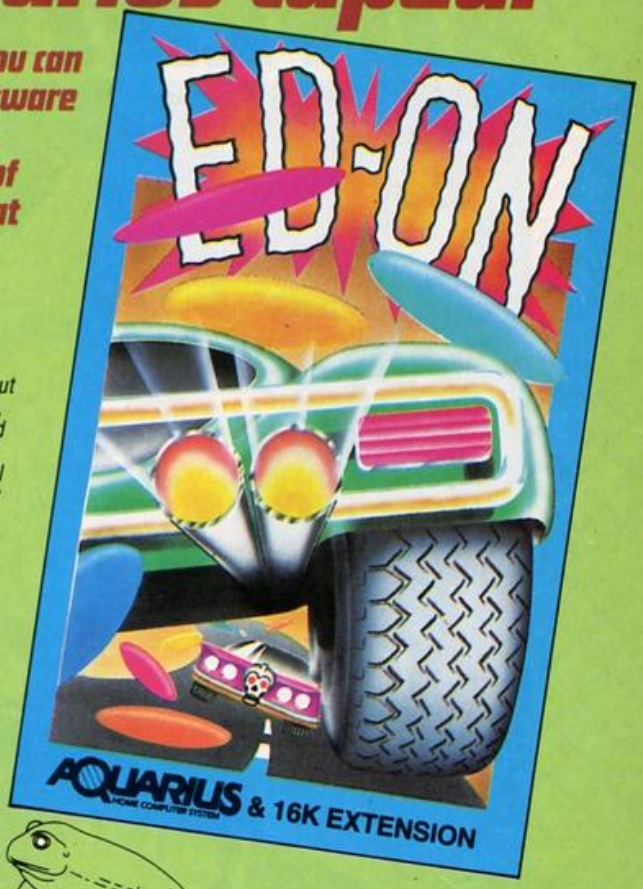
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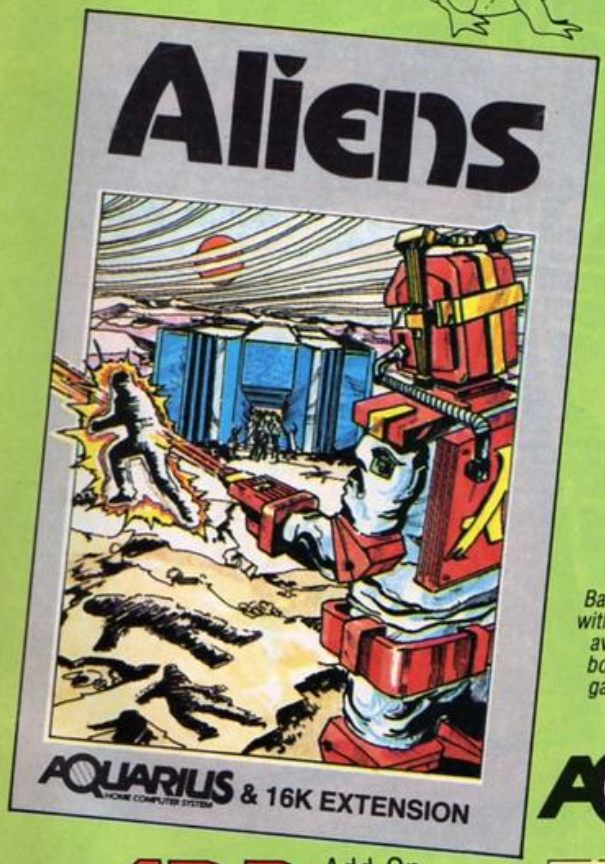
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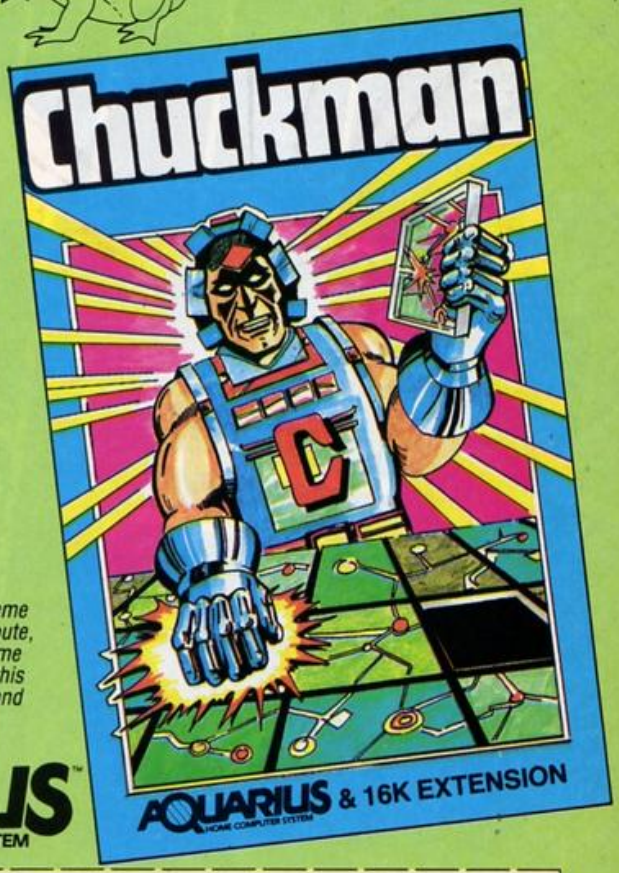


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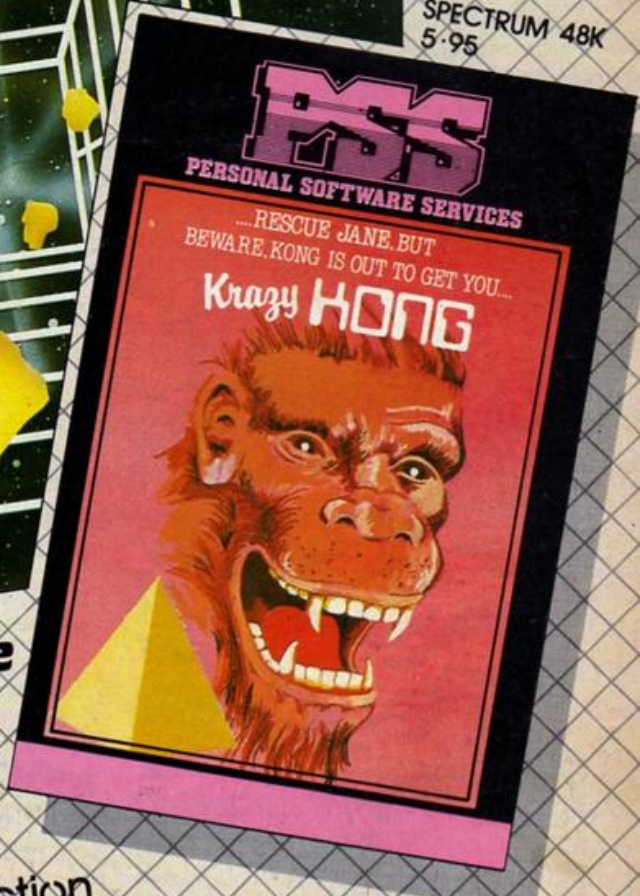
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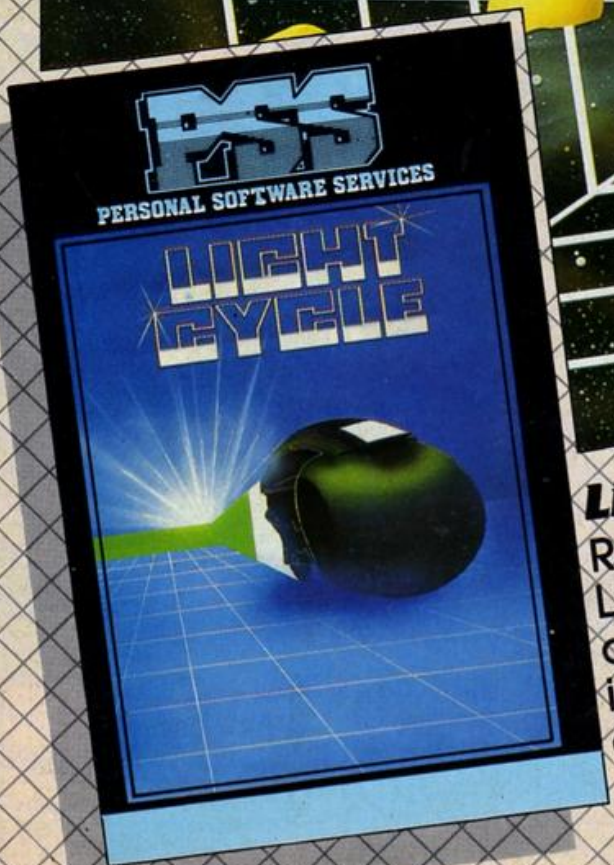


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