

Lo Rak

# POPULAR Only 40p. Computing WEEKLY

20/27 December 1984

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Vol 3 No 51

## Acorn plans new BBCs

ACORN is thought to be working on two new computers to replace its now ageing BBC micro next year.

The first, tentatively called the BBC B+, will be a 64K Ram version of the present BBC machine. The micro will be compatible with existing BBC

software but with a switchable display mode, so it will be possible to displace the screen Ram giving the machine up to 64K of usable memory. A similar system of memory organisation is already being marketed as an add-on Ram board for

continued on page 5 ▶

## BT 'mole' theory squashed

THE argument over whether a British Telecom mole' exists who is supplying confidential system information to hackers (see *Popular Computing*

Weekly, December 13) seems to have reached a conclusion.

Last week Timeframe International, Prestel's second largest information provider, which suggested on Prestel that there could possibly be a BT 'mole' at work, climbed

```
To: ICL-NW-REG-1 (ICL )
To: ICL-NW-REG-2 (ICL )
To: ICL-SNE-REG-3 (ICL )
To: ICL-MERL-IN-A/C (ICL )
To: TELEXBOX (ICL )
To: J.V.FANTER (ICL )
To: ICL-SU-DEMO-1 (ICL )
From: TELEXBOX (ICL ) Posted: Tu
e 4-Dec-84 10:53 GMT SWS 84 (12)
Subject: Hacker here!
```

## MSX prices look set to tumble

MSX prices are tumbling in a last-minute bid for the Christmas market.

Both Toshiba and Spectrum Group have announced price cuts in their respective machines, the HX-10 and the AVT Goldstar FC-200.

The HX-10 price has dropped by £40, from £279.95. Two days after Toshiba announced its cut to £239.95, the Goldstar, launched at £239.99 was reduced in price to £199.99, making it £100 less than Sony, Sanyo and Mitsubishi models.

"This is a permanent price change, for the HX-10, and not just for the Christmas rush," explained a Toshiba spokesman. "It's a lively challenge for the leadership of the MSX market — we were the first to

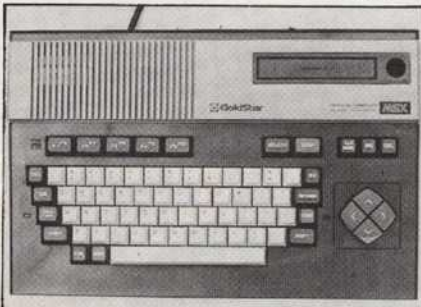
continued on page 7 ▶

down. Timeframe was blacked from the network following its allegation, and was preparing a court injunction against its removal by BT.

"We have agreed to discontinue proceedings commenced against British Telecom in the High Court in return for reinstatement of our database on Prestel upon mutually agreed terms", said a spokesman at Timeframe.

Timeframe's original allegations were given weight when three hackers broke into ICL Telecom mailboxes two weeks ago. One of the hackers involved has claimed he received the necessary passwords to access the ICL pages in a message left in his own electronic mailbox by an individual signing him or herself 'BT Mole'.

British Telecom has always continued on page 5 ▶



## READERS POLL



INSIDE } FREE 6-MONTH CALENDAR } 1984 REVIEWED }

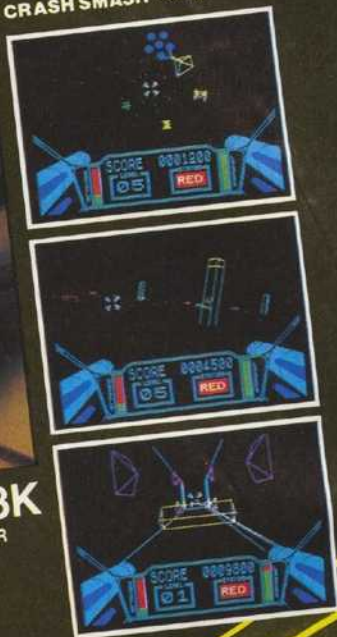
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Well, what do you know?

The MSX manufacturers are beginning to realise that £276-plus is really a bit on the steep side for a conventional 64K Z80 micro.

Toshiba has cut its price by £40 to £239 and Goldstar has followed suit by dropping to £199. The other MSX companies may well now consider dropping their prices accordingly.

At under £200 the MSX standard begins to look a bit more attractive. Still, Commodore in turn may feel sufficiently threatened to cut the cost of its C64 well under £199 after Christmas, following last week's example set by Atari. The Atari 800XL is now only £129.

Now take two paces back and try to look objectively at the BBC micro. At £399 for a 32K 8-bit machine it now represents pretty appalling value for money. Even the 32K Acorn Electron at £199 looks overpriced.

Surely Acorn must do something soon with the BBC micro. Either it must cut the cost dramatically or it must launch its larger memory BBC B 'Plus' model early next year.

On a simple memory-for-your-money scale the Acorn machines are now both lagging way behind their competitors.

Changing the subject totally, this is our Christmas issue.

May we wish you a Merry Christmas and a Happy New Year from all at *Popular*.

Don't take in too much of the Christmas spirit all at once — see you in the New Year.



## Presents...

**News** > Commodore's C128 micro confirmed

**Star Game** > Everybody do the Train Shuffle written for the BBC B and Electron

**Hardware Review** > John Cochrane draws a line between the Sakata SCP-800 and the Penman plotters

**Review of the Year** > What happened in 1984 — who made it big, who crashed and when — we tell it all

**Software Reviews** > *Space Pilot* from Anirog on the 64, *Trouble in Store* for the Oric from Orpheus

**Spectrum** > Festive fun for any Spectrum from the pen of Peter Millar

**Staff Poll** > The views, opinions and downright prejudices of the *Popular* team — 1984 software reviewed

**Dragon** > Help Santa collect his presents with the aid of Darren Howe

**Readers Poll** > Tell the people who matter what you think — vote, vote, vote!

**Commodore 64** > Christmas Eve shown in graphic detail on the 64 by Mark Gornall

**Best of the Rest** > Letters 11 > Sinclair competition result 17 > Amstrad 30 > Seasonal BBC page 31 > QL Biorhythms 35 > Open Forum 48 > Arcade Avenue 48 > Music Box 50 > Bookends 53 > Adventure Corner 59 > Peek & Poke 61 > Readers Chart, Top Ten, Diary 74 > New Releases 75 > This Week 75 > Puzzle, Ziggurat, Hackers 78

## Futures...

Screeendump to printer on QL, dissolve your Spectrum screen...and Star Game is Fly-by-night on C64

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ABC

56,052 copies sold every week  
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**How to submit articles** Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year



14  
20  
23



29  
32

38  
40  
46

# tír na nòg

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# C128 confirmed

COMMODORE'S new 128K machine — the C128 — is set for launch at January's Consumer Electronics show in Las Vegas.

The machine will be produced in two versions — one of which will contain a built-in twin disc drive. Unlike the Plus/4, neither model will include any built-in software.

The 128K memory of the machine is divided into two

'banks' of 64K each, as its design is based on the 6502 processor which can only address up to 64K. The first 64K is immediately available — and is fully compatible with existing C64 software; second becomes available by hitting a function key.

Both C128 machines are expected to be shipped to the UK in April.

## Acorn

◀ continued from page 1

the BBC by Aries and the company is believed to be working with Acorn on the BBC B+. The B+ is expected to sell for around £400.

The second new Acorn machine is called the C30. The machine is unlikely to be launched before Summer 1988 and will probably use a 16-bit version of the BBC machine's 6502 processor. Acorn's likely choice will be the W65SC816 chip, being developed by the US company Western Design Centre.

The W65SC816 is not quite a true 16-bit processor, but it can address a larger area of memory, up to 24 megabytes. For Acorn it also has the big advantage that it is pin-compatible with the 6502 chip used in the existing BBC machine. The C30 is expected to cost around £800.

## Thurnall enhances disc drive

THURNALL Electronics has released an enhanced version of its Spectrum disc drive.

The new version will enable users to transfer their programs from cassette or microdrive to the discs. The drive, which previously used a Hungarian MCD disc system, now uses the standard Hitachi drive system, running 3inch discs.

The disc drive is fully compatible with microdrives, Interface 1, printers and joysticks. A *Tasword* package has also been developed, with Tasman's permission, which will enable users to save files to the disc system to use with *Tasword*.

The disc system, which costs £219.95, contains the disc drive,

## Mole squashed

◀ continued from page 1

firmly denied the existence of any moles: "There never was a Prestel 'mole' and no-one has ever suggested a BT Gold mole," commented an official spokesman.

The three hackers used the passwords from the so-called BT Mole to gain access to British Telecom's BT Gold information system using a VTX 5000 modem linked to a Spectrum.

The message from BT Mole detailed BT, BT Gold and terminal pass codes together with ICL identity numbers.

The hackers were able to gain access to a number of ICL mailboxes sending messages such as 'Hacker here' and 'Hacking (yet again)' to 30 to 40 other mailboxes.

They also entered ICL's Telex box and sent telexes to ICL regional offices in the UK, to

regional offices of BT, and one to the News editor of ITN, Steve Clark.

Steve Clark confirmed he had received a telex from ICL from someone purporting to be a hacker, he said, "The telex claimed that similar telexes had been sent out to various other accounts."

The three hackers also claim that the motive for their break-in was as a protest against BT's security, and to draw BT's attention to security lapses.

A spokeswoman for ICL commented, "The mailboxes that were broken into were unprotected with no special passwords needed to enter them, so to hack them would not have been too difficult. Although, it is annoying there would be no confidential information kept in those boxes."

"Since the hacking, those mailboxes have had passwords put into them, so they are now protected."

## Microdrives no price cut

THE price of Sinclair's microdrive cartridges now seems very unlikely to come down this year as originally promised by the company.

In the summer, Sinclair managing director Nigel Searle said that Sinclair would cut the price of the cartridges from their present price of £4.95 "before the end of the year".

Last week, a Sinclair spokesman said, "I've heard nothing about the planned reduction, and I don't think there will be any news in that area."

Sinclair is considering the possibility of offering Spectrum + machines in a form of upgrade from the ordinary Spectrum. Whether owners would exchange their 'rubber-keyed' models for the Plus, or whether the up-grade would be made available in kit-form has not yet been decided.

tyres are entirely made of plastic, while the chassis is made of pressed steel.

The C5 is intended to be the first in a series of Sinclair cars, and the bottom of the range.

It is being made at the Hoover plant in Merthyr Tydfil, and Sinclair plans to manufacture over 100,000 of the cars in 1988.

## Amstrad games from Hewson

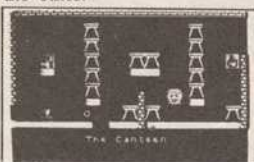
HEWSON Consultants launched a new range of products last week, aimed at the 'post-Christmas' market.

Of the games, only one is brand new — *Technician Ted*, a *Jet-Set Willy*-type game set in a (silicon) chip factory. It is available for Spectrum and Amstrad CPC464 machines (£5.95 and £7.95, respectively).

The highly rated graphic and text adventure *Fantasia Diamond* has been converted for the Amstrad at £7.95. This game will also be available for the Enterprise in February, under Enterprise's own name, as will *Heathrow Air Traffic Control*.

Also for the Amstrad, Hewson launched *Heathrow International ATC* at £7.95,

consisting of two games — *Heathrow*, complete with Concorde on one side of the tape, and *Schipol Airport* on the other.



"This year retailers have been far more cautious about stocking the shelves with software for Christmas itself," said Hewson managing director Andrew Hewson. "We feel there will be a demand after Christmas for new games".

More news on page 7



an introductory program, manual and leads.

Details from Thurnall Electronics, 95 Liverpool Road, Cadishead, Manchester.

## Sinclair car due out soon

THE much discussed Sinclair electric car is due to go on sale in January, for around the same price as a QL computer, just under £400.

The car has been designed for either commuting or leisure purposes. Its top speed is just 15 mph and its twin electric batteries give it a range of 24 miles after being fully charged. The batteries drive a motor derived from that in a conventional automatic washing machine.

The car, currently code-named the C5, is just 6½ feet long and 2½ feet wide. It is a single-seater and in its basic form it is open-topped. A roof cover will be available as an optional extra.

The bodywork, wheels and

# REAL ARCADE ACTION! FROM JETSOFT



## BMX STUNTS

BMX STUNTS Based on the original arcade game this action packed game challenges your skill over six tests, straight race, wheelie, ramp jump, slalom, bunny hops and the ultimate test over a V.W. beetle in the Beetle ride.

**FAST LOAD**  
2 minutes

**Cavelon I**

All 3  
games for  
Commodore  
**64**

**FAST LOAD**  
1 1/2 minutes

Can you destroy the wicked wizard of castle Cavelon? Can you avoid his mystical powers? Only after negotiating the six levels in his castle. Collect all the door pieces before you can attain the next level, pick up shields for extra points. Help is at hand in this all thrills, all action, real arcade game, when excalbur appears, achieve indestructibility - but only temporarily.

## Quari

27 levels of increasingly difficult real arcade action. Based on the game Bongo, you must avoid the chasing dinosaur, pterodactyls, falling rocks, native spears and bouncing Bongos. Negotiate rope bridges and erupting volcanoes, picking up the treasures of a lost civilisation as you go - and finally cage the dinosaur - if you can!



**FAST LOAD**  
1 1/2 minutes

### SPRITE AND CHARACTER EDITOR

### SPRITE AND CHARACTER EDITOR

The Jetsoft Sprite and character editor is a professional quality character editor written entirely in machine code. It can be used to write new or modify existing character sets. It is quick and easy to use having a number of sophisticated commands not available on most other editors, along with concise on-screen instructions.

# JetSoft

the  
arcade people 061 775 0333

## Maplin's hero comes to UK

MAPLIN Electronics, well known as suppliers of electronic and computer components has launched Hero Jr on to the UK market.

Hero Jr is claimed by the company to be 'the world's first fully pre-programmed and programmable personal robot.'

Says David Snoad of Maplin, 'With his special personality modes and pre-programmed routines, he is the first real home companion robot.'

These routines include spontaneously spouting poetry, singing nursery rhymes, seeking out human companions and playing games. More seriously, although designed primarily for entertainment, using sonic and infra-red sensors, Hero Jr can also be used as a home security guard.

Powered by two six volt rechargeable batteries, the 19inch robot, weighing in at 21.4lbs, is controlled by a 6808 chip with 32K of monitor Rom and 8K Ram expandable up to 24K. An RS232 interface has been included, so it is possible

to program the device from most home micros.

Hero Jr is not cheap. It costs £599 in kit form and £1099 fully-assembled. A de-luxe version is available at Harrods costing £1495.

Details from Maplin, PO Box 3, Rayleigh, Essex.

## MSX prices tumble

◀ continued from page 1

launch in the UK, and so we're anxious to maintain that leadership."

"We certainly didn't think of it as a deliberate move into the Goldstar's price range."

Commenting on the cut in the price of the Goldstar, Neil Johnson joint managing director of Micro Dealer UK, which distributes the machine, said, "The MSX Goldstar has just the same facilities as its more expensive Japanese rivals. We are simply ensuring that consumers are faced with their original choice. Why pay more for the same thing?"

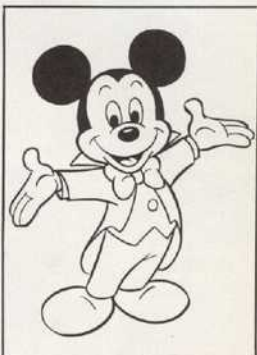
"The real question to ask is

## Mickey goes on C64

WALT DISNEY'S link-up with US software house Sierra, announced in June, has produced its first programs for the Commodore 64.

Three titles are now available — *Winnie the Pooh in the Hundred Acre Wood*, *Donald Duck's Playground* and

*Mickey's Space Adventure*. All three have a strong educational slant and are aimed at the 7 to 11 age group.



why did a strong brand name company like Toshiba feel it necessary to slash its price?"

Whether other MSX companies follow suit and cut their prices remains to be seen, but at the top end of the price range, both Sony and Mitsubishi (64K machines each £299) claimed their prices would stay the same.

A Mitsubishi spokesman commented: "Our 32K machine is £249, and therefore in the same sort of price area. Certainly Mitsubishi are not considering a reduction for the 64K model."

"There is no kind of agree-

ment within the MSX working group to keep prices consistent — now that the machines are launched, it's very much a go-it-alone situation."

Steve Dowdle, product manager for Sony, said, "We are not planning a price drop. We feel that £299 is the right price for the quality of the product."

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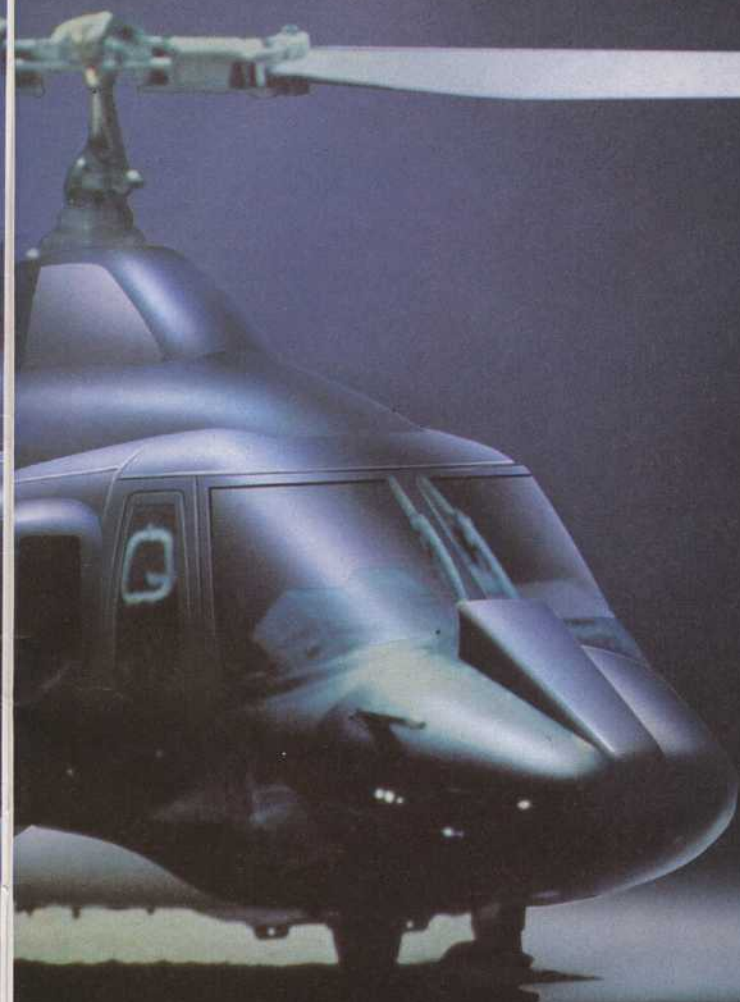
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*Joystick Genius*



## A loss leader

No Amstrad Bug? Or am I spoiled by Sinclair?

Try editing below a *Data* statement. For example, *50 Read Proofer\$(n) + ""*. Also *35 a\$ = "arnold" + ""*. This is demonstrably a housekeeping error — the \$ makes it a dynamic variable.

Breaking from a tape operation often leaves HiMem temporarily 4K lower than usual. *Clear* seems to be the simplest way to overcome this — what else can be done if you want to continue? I didn't try "close-out", but then these commands were unused because at the time I didn't realise you can *Poke* things to Stream 9.

Over feeding the sound queue from interrupts has a higher priority than *Break*. I have never waited to see if this lock-up will time-out.

One other point: why did Amstrad place the transformer next to the green-screen VDU coils? Try removing it and see if Amstrad still regard 'gentle undulations' as a non-fault condition.

Do Amstrad think they have a loss leader or something? Apparently software up-dates are not available unless one pays out £20 a year.

Why is there still no modular version of the machine? That's nearly as bad as the Spectrum (£180 — hey look a joystick and printer port.)

H Williams  
69 High Street  
Brockley  
Northants

## Mutually dependent

As one of those unfortunate souls who try to scrape a living creating software masterpieces I spend a great deal of time criticising the computer press, usually in words of four letters.

As a method of relieving tension in times of stress, casting aspersions upon the intellect of reviewers takes a lot of beating.

However, recognising that we are mutually dependent I usually avoid making my views public. Indeed, my first excursions into the computing indus-

try were made via the typewriter rather than the computer keyboard, so I like to think I can see both sides of the many arguments.

But now *Popular Computing Weekly*, of all the mags on the shelves, has been the first to annoy me enough for me to wipe the cobwebs off the old typewriter and write a letter of complaint. Bad reviews I can take, after all any review is subjective and it is inevitable that some reviewers have bad taste.

No, what has really got my proverbial goat is your Readers' Chart. But, you might say, and indeed probably are, nearly every magazine has a readers chart. This is democracy in action. (Then why hasn't the government tried to abolish it?) What makes your chart different from all the others is the prize offered for predicting the Top 3 correctly. This will inevitably result in a large proportion of the votes being predictions rather than true expressions of opinion. As a result the best known names will tend to monopolise the top of the chart at the expense of the lesser known, and often better, programs. Surely no-one, except maybe the programmers of *Daley Thompson's Decathlon*, could pretend for a minute that this sort of 'chart' is good for the industry. You could be doing the same thing to games charts as the Radio One playlist has done for the music charts.

Nevertheless, like any good synchronised swimmer I refuse to let my smile fade and enclose three entries/votes for your competition/chart.



"Is that to be an MSX standard price?"

- 1) Predictions
  - 1) Daley Thompson's Joystick Devastator (Spectrum) Ultimate
  - 2) Underwulde (Spectrum) Ultimate
  - 3) Knight's Lore (Spectrum) Ultimate
- 2) What I would like to see
  - 1) Sorcery (C64) Virgin Games
  - 2) Strangeloop (Spectrum) Virgin Games
  - 3) Falcon Patrol II (C64) Virgin Games
- 3) Genuine votes
  - 1) Knight's Lore (Spectrum) Ultimate
  - 2) Summer Games (C64) Epyx/Quicksilva
  - 3) Sorcery (C64) Virgin Games (a little bias here I think)

(I was going to enclose a five pound note to encourage you to print this but I gave it to a barperson instead.)

Andy Wilson  
Virgin Games  
2 Vernon Yard  
119 Portobello road  
London W11

I can see your point, Andy, but it's one of those things where if you offer a prize people vote for what they think will win but if you don't not enough people vote to make the chart in any way meaningful.

## No coverage

In response to AE Slad's letter (December 6 issue), I would like to say what a load of rubbish.

Could anybody tell me how the Dragon is superior to the BBC or QL?

I agree it is very upsetting when your micro is nearly dead through lack of press coverage so leading to little software, etc — I own both an Atom and a Memotech MTX 500.

But this leaves no excuse for slugging off perfectly good micros, without bothering to see how bad the Dragon is. Next time, THINK!

P Arkley  
Accrington  
Lancashire



## Procedure name

I have found a problem concerning the Sinclair QL which I have not seen any correspondence about in the magazines and wonder if it is a peculiarity of my machine. I have a replacement JM version Rom.

When a procedure is defined, and then subsequently deleted from the program (or when its name is changed) in the course of program development, the procedure name is still remembered by the system, and any attempt to use the same name (for example, as a variable name) results in an error. Typing the name directly produces the same effect, but more seriously, in a proportion of cases the computer then locks up. This problem is resistant to the *Clear* command, though a *New* will restore order.

Removing redundant procedures is therefore very risky if they are subsequently called. The effect can be avoided by saving the program to micro-drive and then reloading it.

Hugh O'Neal  
The Old Bakery  
Lewes Road  
Ringmer  
E Sussex

# Train shuffle

The thinking man's answer to falling leaves on the line,  
for the BBC B or Electron, by Robert Hadden

In this colour graphics game with a difference, you have to create a safe path for a train and guide it through the stations, so it travels relentlessly on its way.

The track is divided into a square grid with one empty square. Just as in the plastic pocket games where you try to complete a picture, here you must move the track squares into the empty space to try and arrange one continuous length of track (it is even possible to move the square with the train on it).

When the train has visited all the red-coloured stations, you get a new random track pattern which is first larger, and then

more difficult — the train moves faster, and there are more track corners than cross-roads.

## Program Notes

The program has a main loop in *Lines 20-80* which calls various procedures until all the stations are visited, or you have crashed.

**Procsetup** — draws the grid with a *For/Next* loop and sets the random track pattern into the array  $G(x,y)$ . *VDU 8* links the text to the graphics cursor.

**Proctr(t)** — draws track pattern number  $t$  (from 1 to 10) by using *Plot 81* which draws triangles relative to  $(O_i,O_j)$   $DX$ ,  $DY$ , etc, are relative movements about the four corners of the track on the square.

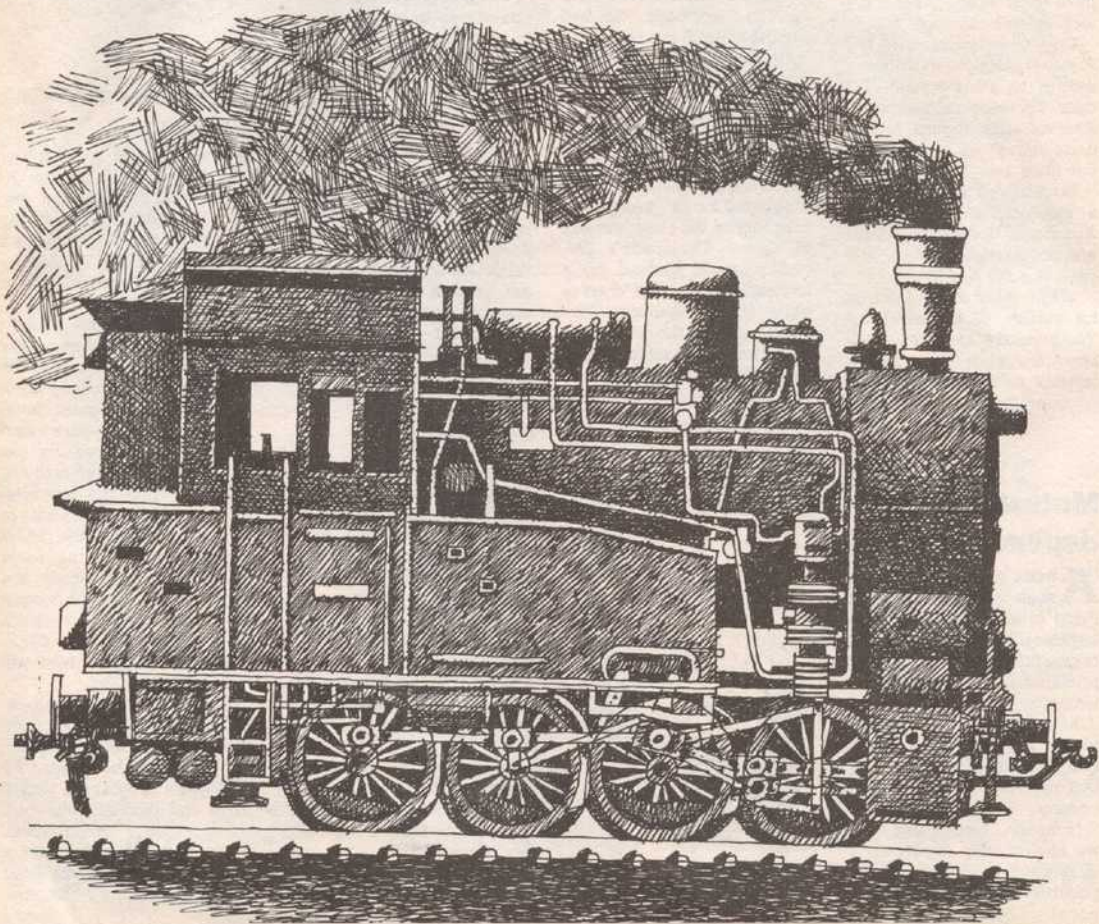
**Procpe** — prints engine at the point  $(x,y)$

**Proccn** — moves the engine and checks the colour of the point it moves to by *Point (x,y)*. Yellow or green (colours 0 to 3) indicate a crash, and red (colour 1) a station. When the engine reaches the edge of a square, it recalculates its direction of travel.

**Procrst** — turns the red track to black, and scores points.

**Procmove** — tests the keyboard buffer with *Inkey* and adjusts the co-ordinates  $(i,j)$  of the blank square, which is swapped with one track square. If needed, the train is moved.

**Procsq(x,y)** — fills in the square at the point specified



```

10 MODE5:VDU19,0,2;0;19,3,3;0;19,2,0;0;VDU23,255,0,0,132,180,252,252,252,72:
DIMG(8,8)
20 S=0:L=4:SK=8:CHE=0:D=0:REPEAT
30 PROCSETUP
40 REPEAT
50 PROCMOVE
60 PROCEN
70 PROCMOVE
80 UNTILST=0ORD:UNTILD:SOUND1,-15,20,15:VDU4:PRINT"GAME OVER";
90 IFGET=32 GOTO201:SERGT090
100 DEFPROCSETUP
110 L=L+1:IFL=8 L=5:SK=SK+2*(SK)-1
120 ST=2*INT(L/2):GCOL0,2:CLS:VDU4:COLOUR1:IFL<7 PRINTTAB(3,0)"TRAIN SHUFFLE"5
PC(B)"by R.Hadden""A-up Z-down""<-left >-right"
130 G=L*130+100:FORQ=100TO8 STEP130:MOVE100,Q:DRAW6,Q:MOVEQ,100:DRAWQ,6:NEXT
140 FOROI=1TOL:FOROJ=1TOL:IFOI=2ANDOJ=2 T=BELSET=RND(6+SK):IFT>10 REPEAT:T=T-S
K+4:UNTILT<11
150 G(OI,OJ):T:PROCTR(G(OI,OJ)):NEXTOJ,OI
160 GCOL0,1:FORQ=0TO1:OI=(L+1)*Q:FORF=1TOINT(L/2):OJ=2*F-1:PROCTR(2-Q):G(OI,OJ)
)=2-Q:OJ=OJ+1:PROCTR(4-Q):G(OI,OJ)=4-Q:NEXTF,Q
170 A=2:B=2:T=G(A,B):I=L:J=L:GCOL0,3:PROCSQ(I,J):OI=I:OJ=J:PRINTTAB(0,30)"Score
e ";S:XS=0:YS=10:C=12:GCOL4,1:X=295:Y=235:VDU5:PROCPE
180 ENDPROC
190 DEFFNPOS(V):=(V+30)/32.5)MOD4
200 DEFPROCTR(T)
210 MOVE130*OI-30,130*OJ-30
220 IFT>4 GOTO270
230 IFT MOD2=1 DY=0:DX=80:DZ=30:DW=50:DV=0ELSEDY=130:DX=-50:DZ=-30:DW=80:DV=30
240 PLOT0,DY,DW:PLOT0,0,DZ
250 IFT<3 DY=DV+50:DZ=-30ELSEDY=DV-80:DX=DX-30:DZ=30
260 PLOTB1,DX,DY:PLOTB1,DZ,0:ENDPROC
270 IFT=9 PROCTR(1):PROCTR(4):ENDPROC
280 IFT=10 PROCTR(2):PROCTR(3):ENDPROC
290 IFT>5 PLOT0,50,0:PLOT0,0,130:PLOTB1,30,-130:PLOTB1,0,130:PLOT0,-80,-130
300 IFT=6 ENDPROC
310 PLOT0,0,50:PLOT0,130,0:PLOTB1,-130,30:PLOTB1,130,0:ENDPROC
320 DEFPROCPE:MOVEX-32,Y+16:VDU255:ENDPROC
330 DEFPROCEN
340 PROCPE:X=X+XS:Y=Y+YS:P=POINT(X,Y):IFP=0ORP=3 D=1
350 IFP=1 PROCST
360 C=C-1:IFC PROCPE:ENDPROC
370 OA=A:P=FNPOS(X):IFP=3ORP=0 P=(P-1.5)/1.5:X=X+P*10:A=A+P
380 OB=B:P=FNPOS(Y):IFP=3ORP=0 P=(P-1.5)/1.5:Y=Y+P*10:B=B+P
390 T=G(A,B):IFT<9ANDT>4 C=12ELSEC=6
400 XS=10*((A-OA)-(A=OA)*(T<5)*(T MOD2=0)+(A=OA)*(T<5)*(T MOD2=1)-(T>8)*(A=OA)
)*(OB-B)*2*(9.5-T))
410 YS=10*((B-OB)-(B=OB)*(T<5)*(T<3)+(B=OB)*(T<5)*(T>2)-(T>8)*(B=OB)*(OA-A)*2
*(9.5-T)):PROCPE:ENDPROC
420 DEFPROCST:SOUND1,-15,60,3:PROCSQ((12-SK)*L*2):ST=ST-.5:GCOL0,2:G=FNPOS(X):
W=FNPOS(Y):T=(Q=0)*(YS/10-2)+(Q=3)*(YS/10-3)+(W=0)*(-XS/20-3.5)+(W=3)*(-XS/20-1.
5):OI=A:OJ=B:PROCTR(T):OI=I:OJ=J:GCOL4,0:ENDPROC
430 DEFPROCMOVE
440 G=INKEY0:IFG=65 J=J-(J<L)
450 IFG=90 J=J+(J>1)
460 IFG=44 I=I+(I>1)
470 IFG=46 I=I-(I<L)
480 IFA=I ANDB=J A=A+OI-I:X=X+130*(OI-I):B=B+OJ-J:Y=Y+130*(OJ-J):CHE=1
490 IFOJ=J ANDOI=I FORPAUSE=1TO10+10*SK:NEXT:ENDPROC
500 GCOL0,3:PROCSQ(I,J):G(OI,OJ)=6(I,J):GCOL0,0:PROCSQ(OI,OJ):GCOL0,2:PROCTR(G
(OI,OJ)):IFCHE GCOL4,0:PROCPE:CHE=0
510 OI=I:OJ=J:GCOL4,0:ENDPROC
520 DEFPROCSC(X,Y):MOVE130*X-22,130*Y-25:PLOT0,0,120:PLOTB1,114,-120:PLOTB1,0,
120:ENDPROC
530 DEFPROCSC(P):S=S+P:VDU4:PRINTTAB(6,30);S:VDU5:ENDPROC

```

## Colourful

**Hardware Sakata SCP-800 Plotter**  
**Micro General Price £206 Supplier**  
Stacom Distribution Ltd, 18 Grove Road, Sutton, Surrey.

**Hardware Penman, Micro General Price £250 (£229 until Feb. 1985), Manufacturer Penman Products Ltd, 8 Hazelwood Close, Dominion Way, Worthing, W. Sussex. Tel: (0903) 209081**

This week we get a chance to review a couple of the more colourful new peripherals for home and business micros. Both offer multi-colour plotting of text and diagrams but achieve it in completely different ways. The Sakata plotter follows the proven format of a four-barrel printer head which moves horizontally across a sheet of paper whilst the paper is fed backwards and forwards to build up a diagram. The Penman takes the turtle concept so beloved of Logo users, adds technological sophistication and some built-in software to give a sort of robot drawing machine which scurries round a sheet of paper, drawing and writing as it goes.

About two years ago Tandy started selling a cheap four-colour printer using ball-pen technology and drawing on 114mm wide roll-paper. This printer would also work as a small plotter and, at around £170, attracted a lot of attention from technical users who could not afford conventional flat-bed plotters around at that time. Now the technology has been stretched still further to offer a general purpose plotter which can draw on paper or card, individual sheets of roll-feed, from post-card size to A4, in four colours and at a low price.

The plotter comes with Centronics and SV serial ports, the serial port uses RS232 protocol hence BBC and Commodore 64 owners should be able to use this directly, if you can get hold of an appropriate cable. A full RS232 adaptor is available for those of you who can't get on with the low voltage job. When used as a printer the usual 96 ASCII characters are provided plus italic lettering, various special characters, and selectable international symbols such as the

UK pound sign. The print speed is much slower than that of a dedicated printer of comparable price as each letter is drawn out individually each time. One advantage over conventional printers is that you get full control of the print size. The smallest lettering comes out at 1.2mm high and you can get about 160 characters across an A4 page. The largest character print is roughly sixty times this size. Text can be printed horizontally, vertically, and even upside down.

Simple commands are used to control the printing and plotting process, with clear examples to explain each command. I soon found that I could control the output of the thing and felt quite confident that I could use it seriously. Small stepper-motors are used to drive the paper and pens, hence the lines produced can have small steps giving an image much like that of a high resolution screen display. For most applications this should not prove a problem.

And now for something completely different. The Penman plotter is certainly different, it may well get voted the executive toy of the year. It is much more than a toy, however, but I'm not quite sure just how much more. In principle, the Penman works much like a Logo turtle and can in fact be used in this role. There are three main parts to Penman, a power supply, control unit, and a motorised robot which can turn or move forwards and backwards. In plotting mode three pens are carried on the robot and software automatically controls the movements of the drive wheels to position the appropriate pen where required. Additional software is built-in to produce text (96 ASCII characters plus the UK pound), in sizes ranging from 1mm high to a whopping 127 mm high. Text can also be printed upwards, downwards, backwards, or forwards and slanted backwards or forwards giving an italic effect.

Paper size can go up to over A3. Larger plots can, in theory, be produced although they would have to be done in sections, moving the controller and robot between each section. A dark background is required for the paper as the robot uses the paper edge to align itself. It is possible to adjust the sensitivity of the edge-sensors to accom-

modate different paper and backing colours but this is not automatic. The plotting commands allow for straight lines or curves to be produced, Penman is very good at drawing circles.

Penman is designed around a full bi-directional RS232 interface which



means that not only can you command the robot to move around and print, but you can also receive information from the Penman controller. It is possible to find out, from software, where the robot is, what direction it's pointing in, which pen is in use, and so on. This may not seem to be a whole lot of use at first sight but holds a key to possible future uses of the machine. It is possible, for instance, to use the Penman robot as a kind of mouse, move the robot about by hand and use software to work out what the movements have been. A software utilities disk, £29, is available for the BBC which uses the robot in this way (very crudely mind you) to select from the various example and software driver routines. The Penman appears to have been developed with the BBC very firmly in mind and is well suited to it. The disk utilities are for Basic and Logo, the Logo must be Acornsoft Logo on ROM. A connecting cable for the BBC costs £23, but you can make up your own quite easily.

The utilities disk, which only works on BBC Version 2 Basic by the way, points to the main failing of the machine, although it uses relatively simple commands to control the plotting operation it really needs additional software before it can be used seriously. The robot is sensitive to any unevenness in the paper and slips easily on smooth paper, thus it tends to get out of alignment and must be reset periodically. I tried to plot a globe with lines of latitude and longitude and ended up with two half-globes and a number of disassociated lines, even after forcing a reset after plotting each component line. I think that it should be possible to produce quite high-accuracy plots but only through the use of some rather tricky software designed to overcome the hardware limitations. If you are not that worried about accuracy or have only simple plots to do then, after a bit of practice, you can get by using simple software.

All in all, if you want a simple reliable printer/plotter which does just what you tell it then go for the Sakata. If you are not fussy about getting results quickly or want to impress someone then the Penman may be just the job. The Penman may have a valuable role in education, leading from elementary line drawing to sophisticated multi-colour plotting using Logo or Basic. Meanwhile, I'm going to have another go at that globe before I have to give Penman back.

**John Cochrane**



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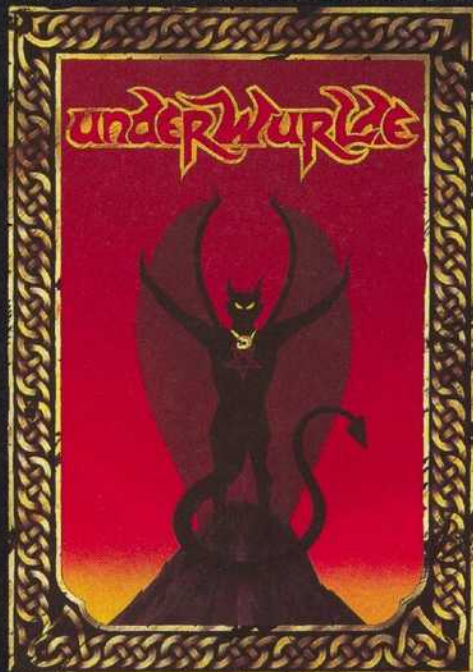
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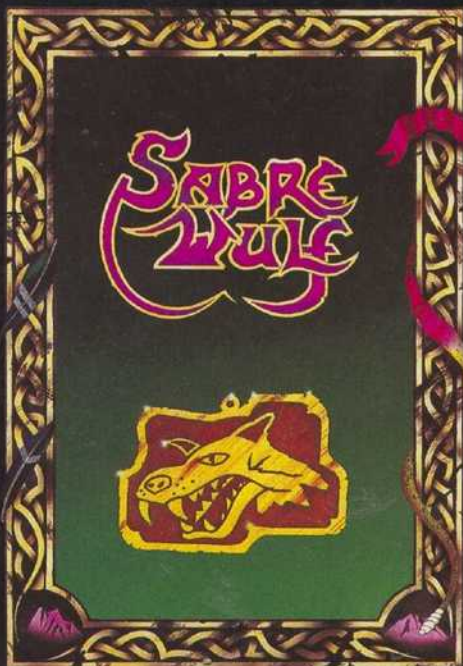


BBC MODEL B 1.2 OS

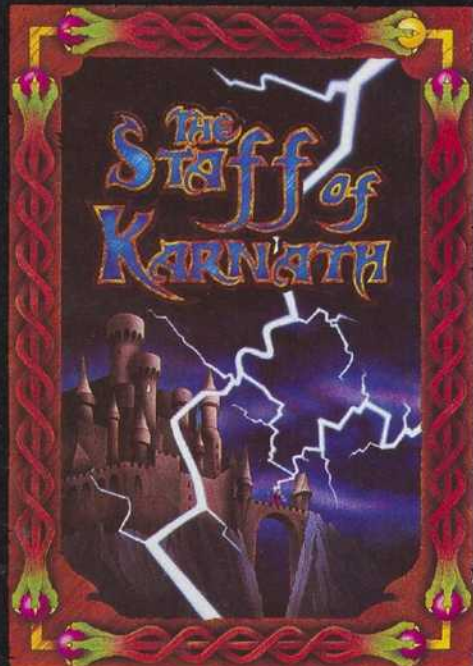
48K SINCLAIR ZX SPECTRUM



48K SINCLAIR ZX SPECTRUM



COMMODORE 64



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# Competition Result

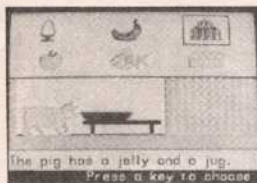
## ZX Spectrum + competition

A ZX Spectrum +, complete with Sinclair's Six-Pack, was up for grabs in the November competition run jointly by *Popular Computing Weekly* and Sinclair.

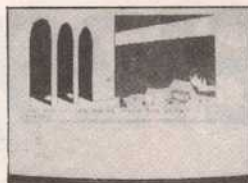
The winner was Liam Winer, of Padbury Close, Gatcombe Park, Hilsea, Portsmouth. Liam correctly identified each game shown in the TV advertisements and also sugges-

ted *The Legacy* as a suitable name for the new Sinclair game we described.

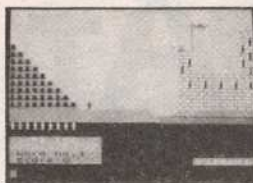
For those of you still foxed, the answers are below.



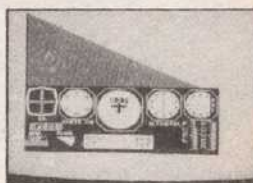
1. Learn to Read 3



2. The Hobbit



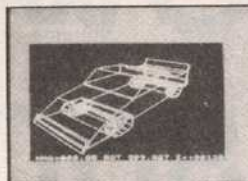
3. Castle Spellorous



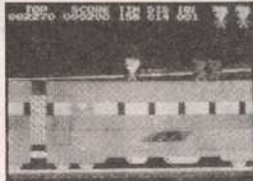
4. Flight Simulation



5. Match Point



6. Vu-3D



7. Stop the Express



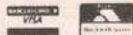
8. Tasword 2

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# The Review

David Kelly looks at the last twelve months in a blow-by-blow review of the year

**T**he micro industry always seems to pack so much into each year. In 1984, Sinclair tried to give us the QL for several months without success. Imagine's imagination proved to be bigger than its bank balance. Jack Tramiel, after making Commodore a \$1bn sales a year company, left and set Atari up in direct competition. A major blurt produced news of a new micro from Amstrad.

**January:** Sinclair announced a new 'professional' machine with an amazing 128K Ram and advanced 32-bit processor. Everybody got very excited about it and said that it made the Acorn BBC machine look a bit silly. The Coleco Adam which created such a stir - offering apparently exceptional value for money - in the US, finally made the leap across the pond. CRL announced it had tied up a deal to produce a game based on *War of the Worlds*. And Jack Tramiel - Commodore's founder - quite suddenly, without any apparent motivation, quit amid dark rumours of boardroom splits and amicable departures.

**February:** Commodore reacted to the QL launch by hinting at some wonderful new machines, including the Commodore 264, a successor for the C64, priced around £400 - coincidentally the same price as the QL. Dragon suffered another trauma and GEC agreed to step in and handle the company's marketing. The first pre-production MSX machines were unveiled to selected press representatives. Nobody could tell them apart and all the manuals were in Japanese. The MOD, in an unbridled fit of enthusiasm, attempted to stifle a chap in Barnsley who invented an apparently foolproof method of stopping computer piracy. People nodded sagely and said it was probably something to do with the MOD not wanting you to be able

to stop the authorities from tapping your phone.

A curious interlude. Elan Computers, formally Samurai in its previous incarnation, moved into home economics, renaming itself Flan. Its £199 Flan Enterprise computer was planned to be in the shops in April. Sinclair's appreciation of the passage of time became distorted again (funny, just like when the Spectrum came out) and people began to ask questions like - When am I going to get my QL? The question of how Sinclair was choosing to invest the interest from money taken from around 12,000 unfulfilled orders came up. Sinclair failed to see what all the fuss was about.

**March:** Timex admitted defeat and withdrew from the US market. It was generally thought that if it hadn't spent the best part of a year adding a new case and cartridge port to the Spectrum, the TS2000 would have stood more of a chance. Sinclair stood its ground and steadfastly refused to send anybody their QLs they had ordered. Some grumblings were heard when it became clear that Sinclair intended to hang on to the interest from everyone's money. For the first time the intelligence of using Micro-drives in the QL was questioned and software houses bemoaned the machine's lack of a cassette port. Some began to look favourably upon Amstrad's proposed machine.

Imagine got into a wrangle with Marshall Cavendish publishers and it became apparent that all was far from well at Titebarn House. Acorn launched its 6502 BBC second processor. Flan decided its new name wasn't quite as it had first imagined. Flan became Enterprise.

**April:** Spring arrived. So did the Amstrad - lots of machines to play with at the launch and the company announced that the CPC464 will be in the shops in June. General reaction was favourable. Pictures of the new Commodore 264 are seen and the design of its case is much admired. A 16K machine was also mooted from Commodore, but neither was available for investigation. British Home Stores embarrassed Dragon considerably by selling off its remaining stocks of the Dragon 32 at £88. Questions



Jack Tramiel

were asked about the long term survival of Dragon Data.

The QL delay mystery is explained and people who had given their QLs up for lost made the alarming discovery that the first QLs that were to be sent out would be fitted with a built-in extra. This external Rom cartridge, Sinclair explained, contained a substantial chunk of the machine's Rom which it had failed to fit into the QLs original design. Sinclair tried to put a brave face on the whole episode - not entirely with success. Sinclair backed down on the issue of interest on money paid for computers not delivered - and offered an RS232 printer cable peace offering. It was not a good month for Sinclair. No sign of the Samurai/Elan/Flan/Enterprise.

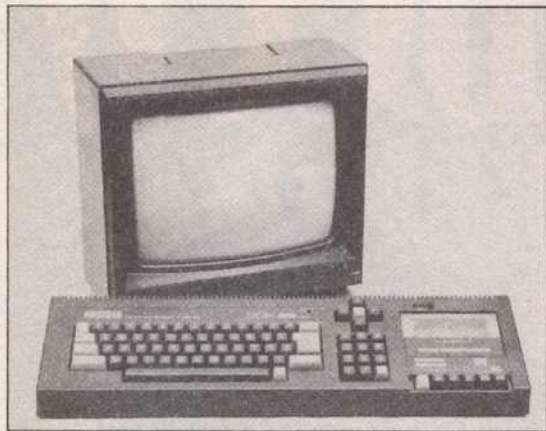
**May:** The Advance IBM-compatible micro arrived in W H Smith and looked good value. The trusty ZX Printer was discontinued. Acorn's Z80 second processor option for the BBC micro was announced. Dragon's troubles continued with speculation that Boots might follow BHS and drop the machine. Walls ice cream decided that a lolly called the Megabyte was a good idea. The first QLs, complete with value added extra 'dongle' went out, 16 weeks after they were ordered. MSX machines began to loom and the idea of a 'standard' was much ridiculed. Employees of Commodore in the US continued to leave at a great rate, following the departure from the company of Jack Tramiel, its founder, in January.

**June:** Dragons became became an endangered species. First the company announced it planned an MSX machine and then it called in the receiver. The company also contrived to show a new twin-disc version of the Dragon in the same week it went bust. Carnell Software also went through the hoop. Acorn discontinued its BBC A micro and Sinclair, disturbed by adverse press reaction to its QL, put a great deal of effort into persuading people otherwise. Commo-



Amstrad CPC464 micro

# Of The Year



Sinclair's QL — the first home micro to use the 68008 chip

dore decided that its 264 machine should from now on be referred to in polite company only as the Plus/4.

**July:** If June was bit dull, then July was not. Jack Tramiel reached into his back pocket and pulled out \$240m to buy Atari from Warners. Atari was busy losing \$800m per year at the time so Warners were quite keen to get shot of it. Lots of rumours floated around to the effect that Tramiel had been bored and had bought Atari to see if he could use it to knock out his old firm, Commodore.

Imagine suddenly turned belly-up and became insolvent amid in-fighting, wheeling and dealing and recriminations, the like of which the industry had not before seen. Imagine always were good copy. This was some of their best. Dragon was sold off to Spain. Microdeal got caught up in a legal jungle when Activision claimed its *Cuthbert in the Jungle* was a *Pitfall* rip-off.

**August:** Tramiel acted fast and purged most of the staff from Atari UK. The 16K Spectrum faded gracefully from the scene. Bits and pieces of info began to crawl out of the woodwork about Acorn's range of business machines. It began to be obvious that MSX wasn't going to make the impact this year that its supporters had hoped — machines looked likely to still be in short supply at Christmas. The cash-flow problems struck again and Oric went out of its way to start rumours by announcing that its creditors were right behind it all the way.

We ran a great many stories about US Commodore 64 software houses tying up staggering deals with UK companies to distribute their sometimes mediocre, occasionally quite magnificent titles over here. Music and micros reared on the scene and the MIDI communications standard was

mentioned rather a lot. Compunet was announced and Oric tried unsuccessfully to sue its ad agency. Dragon software companies fled in droves to other micros.

**September:** Philips was reckoned by some to have acquired an MSX licence. Automata surprised every one by releasing a terminally weird program featuring Ian Dury and E P Thomson. Those waiting for a Samurai/Elan/Flan/Enterprise machine discovered that they would have to carry on waiting.

Acorn announced its ABC range of business micros. Some observers found the machine excessively bulky. Others thought there must be cheaper ways of achieving more or less the same thing. Oric claimed that *Stratos* was not a brand of after-shave.

The MSX manufacturers deemed it financially sound to drag a group of journalists off to the south of France for a gay day trip so they could miss the opening day of the *Personal Computer World Show*. The MSX machines turned out to be a smidgeon over-priced. By now, most people couldn't summon up much enthusiasm for the MSX spec.

**October:** Having failed in its attempt to sue its advertising agency, Oric thought it might as well have a hack at its distributor, Prism. More American Commodore 64 titles — yawn. We said Sinclair wouldn't launch a Spectrum in a new case with a better keyboard. Oric's major suppliers met and said the company was jolly good.

Commodore let slip that it plans a curious 128K machine that looks like a C64 and Plus/4 all rolled into one.

Ocean was not happy that news of its *Frankie Goes to Hollywood* game just slipped out. The deal still got signed. *Your Computer* scrapped its Christmas Show because it feared its exhibitors wouldn't make any money. Sinclair slipped out its Spectrum+ and some thought that there must be better ways of spending £50. Ocean

and Sinclair carved up the Imagine leftovers.

**November:** Mastertronic caught a cold — its *Chiller* soundtrack upset Michael Jackson who thought he'd heard it somewhere before. The QL finally got discs. People using microdrives looked pleased. QL software still on the endangered species list. Still more US C64 material — how much more could there be? Oric wished it to be common knowledge that it had a goodly number of new machines stuffed up its sleeve. Included were a IBM PC-compatible desk and lap-held models, together with the *Stratos*, which now had an IQ of 164. Coleco dithered and then decided that Cabbage Patch dolls were a better profit opportunity than computers.

Commodore and Atari continued to posture at one another and both announced 16-bit 68000-based machines for 1985. IBM took exception to the fact that the Advance ran most IBM software faster and cheaper. Discs for the *Electron* were announced and an up-market QL was planned by Sinclair for the New Year. Sinclair also reckoned that there might be some mileage in a portable version of the Spectrum.

**December:** Lots of people figured that lots of other people had broke into all sorts of electronic databases. BT was somewhat embarrassed. Tramiel continued his attack on his fellow manufacturers and slashed the price of the 800 XL machine.



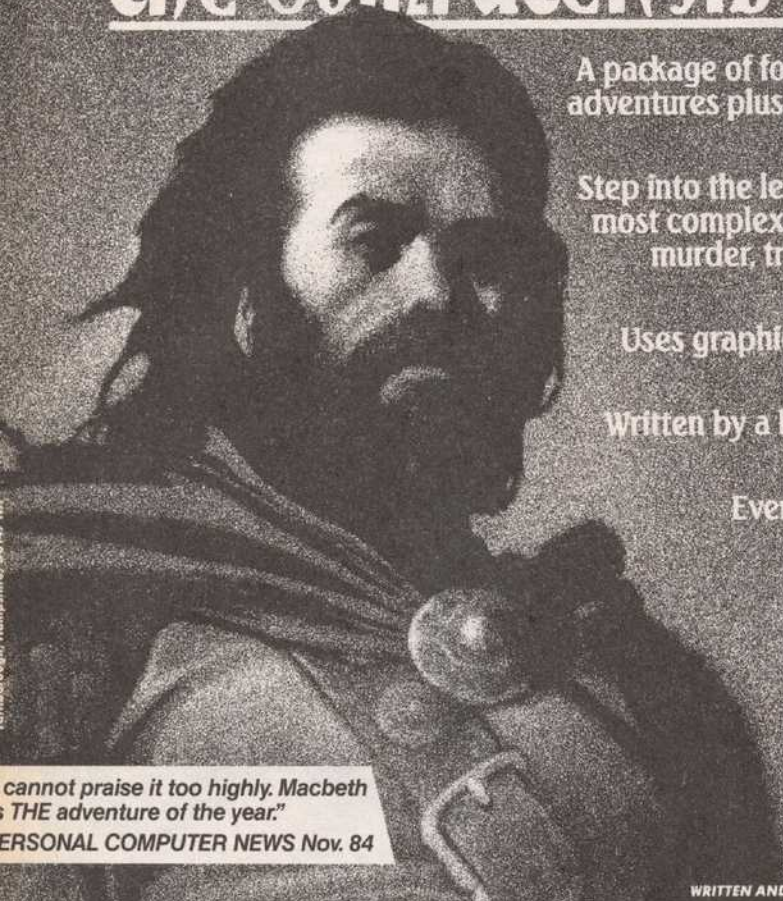
Members of Imagine's team

Late December — the Enterprise looks likely to arrive just in time to miss Christmas. Acorn realised that it had bitten off more than it could chew with its American operation. Imagine employees all resurface — at Ocean, Beyond, Sinclair and Oric.

What about next year? 1985 looks set to be the year of the 16-bit micro. Commodore, Atari, and Acorn all look set to follow Sinclair's lead and produce advanced home micros. But we'll all have to wait and see.

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PCW1284

## Role-play

**Program** *Tower of Despair*  
**Price** £7.95 **Micro** Spectrum  
 48K **Supplier** Games Workshop, 25 Sunbeam Rd, London NW10.

You are in the main hallway of the Keep. Portraits of your ancestors fill the walls.

Also visible:-

A fine, polished oak chest.

LOOK AT PORTRAITS

Your proud antecedents gaze down upon you. Their pointed stores seem to urge you onward to the conflict with Athor.

That Games Workshop has been involved in fantasy role playing games since their invention comes through clearly in this, their first computer adventure game.

Whereas some programmers settle for single line place descriptions with shoddy graphics, *Tower of Despair* must be one of the most literate, atmospheric pieces of writing in the genre. This means that you are quickly drawn into the mood of the quest — in a forest you smell the pine, feel drowsy ... It's like playing Dungeons and Dragons with an exceptionally good Dragon Master.

*Tower of Despair* also has the highest resolution graphics possible — printed ones! From time to time you are referred to pages in the accompanying booklet where you'll find suitably gothic illustrations.

The adventure is a Quilled one — but you'd never have guessed if Games Workshop

weren't so honest. The character set has been redesigned, with illuminated capitals and an archaic script, though this could be unclear if your TV isn't too good.

Most importantly, though, the adventure itself is exciting, calling for both logical thought and the involvement of real role playing — and as it's in two parts there's plenty to be drawn in by. This is a classic, despite the fact that it makes no great innovations. Instead it refines the traditional adventure to perfection.

John Minson



## Roving Ram

**Program** *Magic Micro Mission*  
**Price** £6.95 **Micro** Commodore 64  
**Supplier** Quicksilver, PO Box 6, Wimborne, Dorset.

*Magic Micro Mission* is based on the TV program of the same name. The game is in two parts, the first part being a pretty basic shoot 'em up. You have to destroy all six waves of the defending ships before you are allowed to land and go on to the next stage, which comprises a very simple maze. It is supposed to take place on a

circuit board inside the Magic Micro.

You have to remove all the faulty Rom chips on the board, while avoiding two patrolling Ram chips and a couple of resistors. Once you have completed your task, on one circuit board, you are moved on to the next.

The game is basically very simple, but despite this, quite tricky. Still, the straightforward action soon becomes rather repetitive and interest starts to wane. Both sound and graphics are likewise rather basic, although competent. An uninspiring package.

Richard Corfield



## Pythonesque

**Program** *Arnold Goes To Somewhere Else* **Price** £5.50 **Micro** Amstrad CPC 464 **Supplier** Nemesis Software, 10 Carlow Road, Ringstead, Ketting, Notthants.

One of the nicest things about the release of a new micro is that new, small companies that couldn't have possibly competed in the

crowded and cut-throat Spectrum/Commodore market, have a chance to make a name for themselves.

One such is Nemesis whose Arnold series of text adventures are like a breath of fresh air amongst the more usual, stolid and pedestrian fare. They are also very cheap.

*Arnold Goes To Somewhere Else* is the follow up to *The Trial Of Arnold Blackwood* (also available on the Dragon). It is on the whole not a difficult

continued over the page

## Hot spot

**Program** *Macbeth* **Price** £14.95 **Micro** Commodore 64  
**Supplier** Creative Sparks, 296 Farnborough Road, Farnborough, Hants.

From the brilliant opening graphics sequence, complete with thunder and lightning and genuinely spooky representation of the Three Weird Sisters on the blasted heath, you can tell that "Macbeth" is something special.

This four-adventure package started life as an unusual aid to getting to grips with the Shakespeare classic, but the result is a product which is a delight to play even if "O" Level English is a distant memory.

Bagpipe music (*Scotland the Brave* and *Amazing Grace*) helps to set the original scene

surely the best-written documentation for any computer game yet! — and the plot line follows the text closely.

Text input is highly sophisticated with a wide and, appropriately archaic vocabulary. Don't "kill" that menacing mercenary, "unseam" him.

Three of the adventures are text with graphics, one is the equivalent of an arcade game and the loving care used in all of them for graphics, sound effects and intelligent use of the story is unmistakable.

For the most part you're Macbeth, but in Game 2 you play Lady M, arranging the murder of your sovereign.

There's a psycho-analysis program after each phase, which can be both funny and illuminating, but watch out for the bill.

In case you haven't gathered, I loved this package and it is difficult to leave it alone.

Birmam Wood appears to have come to Dunsinane and, unless I'm much mistaken,



which corresponds to the opening of the play itself. Incidentally, pleas for help on screen lead to hints on where to look in the edited version of the play, supplied with the game —

that's Macduff down the passageway with a very nasty look in his eye.

Barbara Conway







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"I would like to thank all involved for making such an interesting game, especially the riddles"  
NORMAN SCOTTER.

"Please, give me a clue to the £25,000"  
CHARLES COOPER.  
(*Sorry, Charles*)

"I hate this game. I seem to be missing all my favourite TV shows" ADAM BOWLES. (*Poor old Adam*)

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## No cash

**Program Fruit Machine Micro**  
Amstrad CPC464 Price £8.95  
Supplier AMSOFT, Brentwood  
House, 169 Kings Road, Brent-  
wood, Essex.

The popular pub money grabber, the fruit machine, has been translated for the Amstrad, obviously losing in the process much of its appeal — the actual winning of money.

The object of the game is



simple, make as much profit as possible from an imaginary £5 stake, and hopefully making the high score table of successful gamblers.

Pressing space sets the reels

in motion, and if you are lucky they will come to rest on a combination. Then you can either collect your winnings or gamble and often lose them.

Other alternatives include 'nudges,' trying to increase your win by moving the reels into a better position. If you have won over 80p, you can try something called the 'Winner Spinner' feature.

Home micro Fruit Machine games are getting almost as difficult to figure out as their real 'pub' counterparts.

In the end the experience

remains hollow though, because the program won't cough up proper cash when you win.

Greg Pearson



## Reborn

**Program Pitfall II: Lost Caverns** Price £8.99 Micro Spectrum 48K  
Supplier Activation (UK) Inc., 15 Harley House, Marylebone Road, London NW1 5HE

Among all the Willys, Wilfs and Wallys this could be just another Tom, Dick or in this case Pitfall Harry making his Spectrum debut.

There's a lot of Indiana Jones about our hero as he runs, climbs, jumps, swims and even hitches lifts on passing balloons in the 'Lost Caverns' — really a series of platforms forming a vertical maze, inevitably filled with deadly creatures.

The caverns are extremely large though and mapping them, aided by a Hold key, is vital if you're to develop a strategy. It's not merely a ques-

tion of finding your way as the game treats loss of life in a fresh fashion.

You gain points for various discoveries, plus gold collected en route, and you also pass magical healing places, marked by crosses. Make a fatal contact and your ghost returns to the last one of these touched to be re-born, points draining away all the while. It pays never to be too far from a cross, therefore.

Harry is amusingly energetic and the strategy elements are challenging, but there appears to be a bug when using the balloons which necessitates a complete re-Load. It's a pity because despite small characters and a general lack of sophistication, I found it all quite addictive, though somewhat overpriced.

John Minson



## Shoot-out

**Game Black Hawk Price £7.95**  
Micro Commodore 64  
Supplier 296 Farnborough Road,  
Farnborough, Hampshire.

A game for separating the men from the boys which involves both action and strategic skills. As commander of the Black Hawk, the most advanced strike-aircraft yet created, your task is to fly to a distant group of islands and destroy the enemy airfield. On the way, you can expect some opposition from fighter planes, helicopters, missiles and tanks.

To succeed at Black Hawk, you need to master two operating modes. In the attack mode, the plane's onboard computer helps you launch missiles at

enemy installations including anti-aircraft guns, missile launch-pads and command posts. A switch to the defence mode involves you in a straightforward shoot-out with any enemy forces that managed to survive your attack wave.

Various goodies can be collected on the way: double cannons, blitzvigs, etc, but be warned — any fall-off in the pilot's ratio of bombs on target and they will be taken away. It's enough to make grown men weep. Although the scoring is somewhat complex, Black Hawk is attractively packaged, and the eight-page instruction booklet is easy to follow. A lesson for other games manufacturers.

Tom Hussey



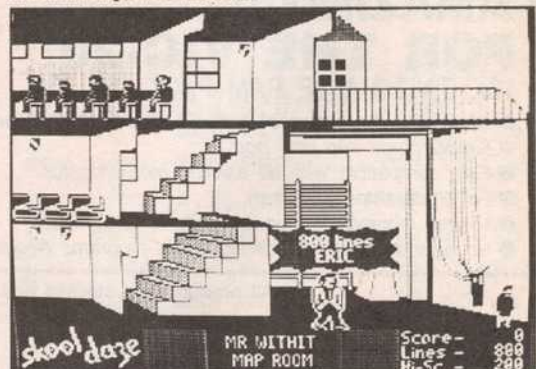
## Anarchic

**Program Skooldaze Price**  
£8.95 Micro Spectrum 48K  
Supplier Microsphere Computer  
Services Ltd., 72 Rosebery  
Avenue, London N10 2LA

If the Bash Street Kids went to Grange Hill then were reduced in size and placed in a microchip, the result could

teachers and avoiding being given lines, that it suffices to say you won't succeed without a lot of experimentation.

Skooldaze is so pleasing because of its attention to detail. Not only does the day divide up into various lessons — and woe betide if you're caught out of class — but the staff and pupils have their own individual characters, ask educational questions and make fatuous comments via speech bubbles.



be Skooldaze. That is the only way to describe this wild, anarchic, hilarious game.

The screen is a window into this seat of learning (learning?) and centre stage stands Eric, who has to retrieve his report from the headmaster's safe or face a fate worse than the cane. The method of saving his skin is so unlikely, involving flashing school shields, antique

In short it's just like real school life... and you can even personalise it by renaming the cast!

The options available range from writing on blackboards to firing catapults, so it's not an easy game to play, but it's quite unique, totally endearing and unlike Eric, this gets top marks.

John Minson





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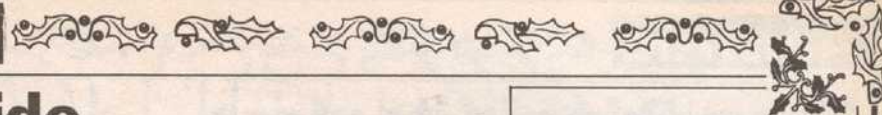
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# Sleigh ride

Festive fun for any Spectrum from the pen of Peter Millar

Here is a short program that is guaranteed to break the ice at your Christmas party. It prints a graphic of Santa Claus riding across the rooftops, then plays

*Jingle Bells*, after which 'Merry Christmas' is flashed up on the screen. Put it up, then watch your TV and Spectrum go flying out of the window after 10 minutes.

## Program Notes

15-30 User Defined Graphics  
30-95 Sets up screen and movement  
100-135 Plays tune  
140-165 Flashes up message  
160-265 UDG data

```

5 REM SANTA © P MILLAR
10 PAPER 1: BORDER 1: CLS
15 REM USER DEFINED GRAPHICS
20 FOR i=1 TO 21
25 FOR a=0 TO 7: READ X: POKE
USA CHR$(i+143)+a,X: NEXT a
30 NEXT i
35 REM SET UP SCENE
40 INK 0: PRINT AT 15,0;"
45 PRINT AT 16,0;"
50 PRINT AT 17,0;"

```

```

55 FOR t=1 TO 10
60 INK 6: CIRCLE 210,140,t: NE
XT t
65 LET h=255: FOR v=104 TO 175
: PLOT (RND*h),v: NEXT v
70 LET a=1
72 REM ENTER NEXT GROUP OF LET
TERS IN GRAPHICS MODE
75 INK 2: FOR y=1 TO 19: PRINT
AT 9,y;" AB
TCFIJIIIIIIK
TDC T ONHL
TEH T PR
UUUUUUU Q 3

```

```

80 LET a=a+1
85 IF a=50 THEN GO TO 140
90 PAUSE 10: NEXT y
95 INK 0
100 REM TUNE
105 BEEP .25,6.5: BEEP .25,6.5:
BEEP .4,6.5: PAUSE 7
110 BEEP .25,6.5: BEEP .25,6.5:
BEEP .4,6.5: PAUSE 7
115 BEEP .2,6.5: BEEP .25,9.5:
BEEP .3,2.5: BEEP .3,4.5: BEEP .
35,6.5: PAUSE 10
120 BEEP .3,7.5: BEEP .3,7.5: B
EEP .4,7.5: PAUSE 1: BEEP .2,7.5:
BEEP .25,7.5: BEEP .3,6.5: BEE
P .3,6.5
125 PAUSE 10: BEEP .2,6.5: BEEP
.2,6.5: BEEP .4,6.5: BEEP .4,4.
5: PAUSE 1: BEEP .25,4.5: BEEP .

```

```

4,6.5: PAUSE 1: BEEP .55,4.5
130 PAUSE 20: BEEP .65,9.5
135 GO TO 75
140 FLASH 1: INK 6: CLS: PRINT
AT 4,1;"

```

Y H A P P A  
M A S

```

145 FLASH 1: PRINT AT 12,4;"
150 PAUSE 250
155 FLASH 0: INK 0: CLS: GO TO
40
160 REM UDG DATA
165 DATA 0,0,0,1,99,246,252,96
170 DATA 60,254,250,255,254,254
,124,60
175 DATA 60,126,255,255,255,255
,255,255
180 DATA 255,255,255,255,255,12
7,63,31
185 DATA 0,126,126,126,126,126,
126,0
190 DATA 0,0,0,126,224,246,30,7
195 DATA 0,0,0,0,0,2052,252,252
200 DATA 12,12,12,12,12,15,15,0
205 DATA 0,0,0,0,0,0,0,0,0,0
210 DATA 0,0,0,0,7,4,4,0,0,0
215 DATA 33,101,63,0,24,0,126,
220 DATA 255,255,224,192,192,12
0,126,0
225 DATA 1,3,7,255,255,255,255,
230 DATA 0,0,0,255,255,255,255,
235 DATA 0,0,0,63,127,255,255,2
55
240 DATA 255,255,255,127,63,31,
13,17
245 DATA 54,108,54,25,9,0,0,0
250 DATA 255,255,255,255,255,10
0,104,54
255 DATA 54,54,108,216,144,0,0,
0
260 DATA 4,4,4,4,4,4,4,4
265 DATA 255,0,0,0,255,0,0,0
300 SAVE "santa" LINE 5

```

## Everything in its place

Part two of Brian Cadge's graphics command program for the CPC 464

This week we finish off with the rest of the assembler listing and some more detail about the workings of the program itself.

The ! Place command simply replaces a previously stored image at the character position given. The coordinates, xpos and ypos are as used by the Locate command, the program automatically takes into account the current mode.

These commands are fairly idiot proof — you cannot display an image which has not yet been defined. However, take care to keep Himem right, as defining more images than you have reserved space for could cause Basic to be corrupted.

The advantages of using these new

commands over using normal UDG characters is that they can be different shapes and can contain as many colours as the mode allows. They also operate a lot faster than using Print, which is useful in fast games.

Moving on to the workings of the program. The program begins by defining the new commands, done by setting up the registers and making a call to the Firmware at \$BCD1 which Logs an RSX onto the operating system.

When a command is encountered, control is passed to the routine via the jump table. The A register then contains the number of parameters passed in the command, and IX points to the last parameter, IX+2 points to the last but one and so on.

The IX register is undefined when the RSX is in Ram.

Two other Rom routines are used. The first is at \$BC1A which returns the screen Ram address of the character position given in HL (H=column, L=row), top left of the screen at position (0,0). This is needed as hardware scrolling used on the Amstrad means that the screen doesn't always start in the same place. The other routine used is at \$BC26, which returns the address in HL of the screen byte which is displayed below the current one addressed by HL. This is needed for the same reason as above.

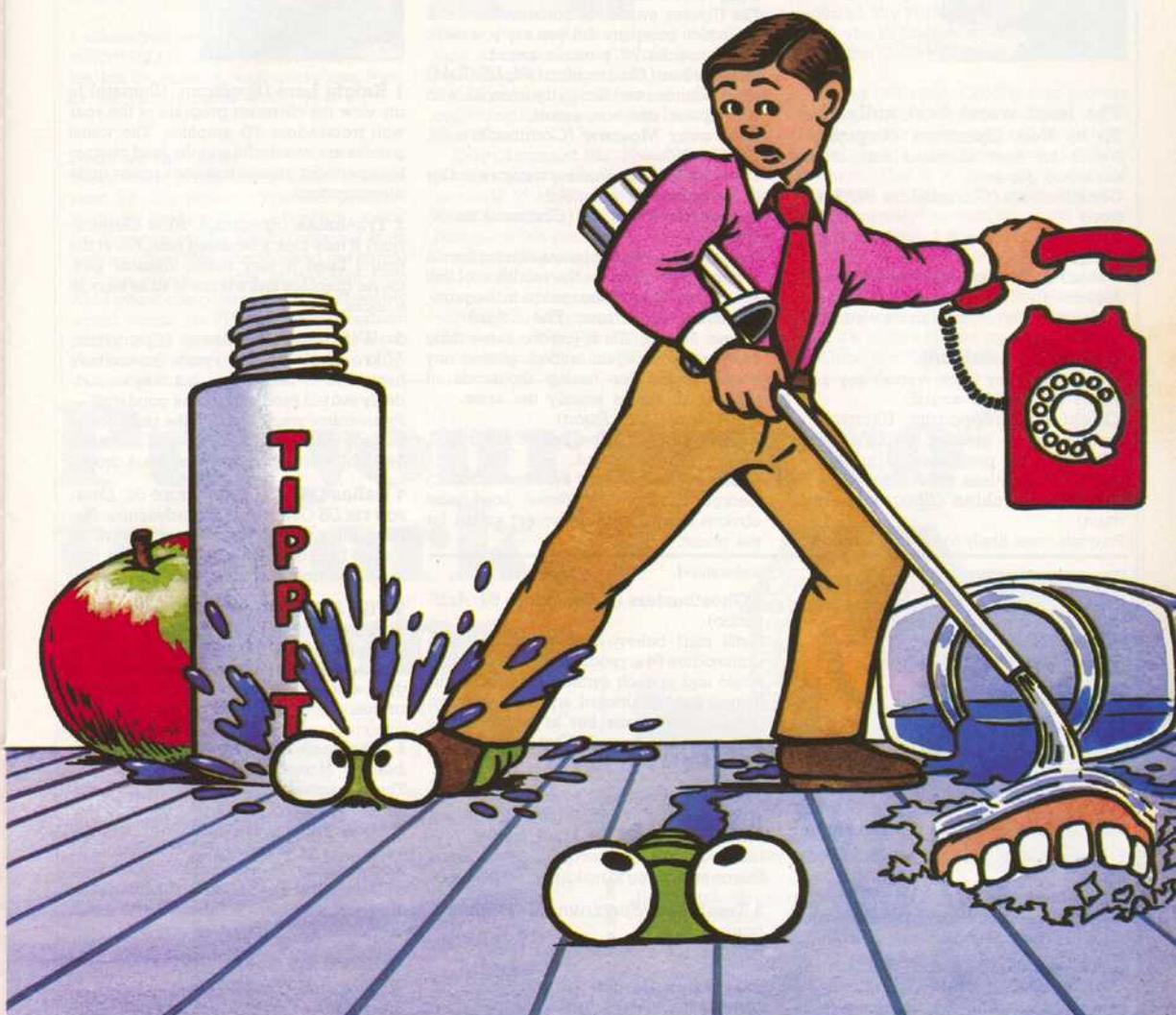
To get the program going on your machine, type in the Basic loader program and Save, then Run it. If all goes well you should get Ready, and you can now New the program and load or type in a program to use the new commands.

It is interesting to note that there is one built in RSX command — try typing ! BASIC.

A71B	22CEA7	450	LD	<VDU>,HL	A77D	41	1000	LD	B,C		
A71E	CD72A7	460	CALL	FETCH	A77E	C5	1010	VLOOP	PUSH BC		
A721	C9	470	EXIT	RET	A77F	E5	1020		PUSH HL		
A722	DD4604	480	PLACE	LD	B,<IX+4>	A780	ED4BD0A7	1030	LD	BC,<HORL>	
A725	04	490		INC	B	A784	41	1040	LD	B,C	
A726	FE03	500		CP	3	A785	CDG2A7	1050	HLOOP	CALL	GETCHR
A728	20F7	510		JR	NZ,EXIT	A788	23	1060		INC	HL
A72A	21BCA7	520		LD	HL,STACK	A789	10FA	1070		DJNZ	HLOOP
A72D	CD53A7	530		CALL	GETADR	A78B	E1	1080		POP	HL
A730	1A	540		LD	A,<DE>	A78C	CDC4A7	1090		CALL	DOWNB
A731	32D0A7	550		LD	<HORL>,A	A78F	C1	1100		POP	BC
A734	1B	560		DEC	DE	A790	10EC	1110		DJNZ	VLOOP
						A792	C9	1120		RET	
								1130			
A735	1A	570		LD	A,<DE>	A793	C5	1140	PUTCHR	PUSH BC	
A736	32D1A7	580		LD	<VERL>,A	A794	E5	1150		PUSH	HL
A739	1B	590		DEC	DE	A795	0600	1160		LD	B,B
A73A	1A	600		LD	A,<DE>	A797	1A	1170	PLOOP	LD	A,<DE>
A73B	FE55	610		CP	05	A798	77	1180		LD	<HL>,A
A73D	20E2	620		JR	NZ,EXIT	A799	7C	1190		LD	A,H
A73F	DD7E02	630		LD	A,<IX+2>	A79A	C60B	1200		ADD	A,B
A742	3D	640		DEC	A	A79C	67	1210		LD	H,A
A743	67	650		LD	H,A	A79D	13	1220		INC	DE
A744	DD7E00	660		LD	A,<IX+0>	A79E	10F7	1230		DJNZ	PLOOP
A747	3D	670		DEC	A	A7A0	E1	1240		POP	HL
A748	6F	680		LD	L,A	A7A1	C1	1250		POP	BC
A749	CD1ABC	690		CALL	#BC1A	A7A2	C9	1260		RET	
A74C	22CCA7	700		LD	<VDU>,HL			1270			
A74F	CD93A7	710		CALL	RESTOR	A7A3	ED5BCCA7	1280	RESTOR	LD	DE,<STORAGE>
A752	C9	720		RET		A7A7	2ACEA7	1290		LD	HL,<VDU>
A753	25	730	GETADR	DEC	H	A7AA	ED4BD1A7	1300		LD	BC,<VERL>
A754	10FD	740		DJNZ	GETADR	A7AE	41	1310		LD	B,C
A756	54	750		LD	D,H	A7AF	C5	1320	PVLOOP	PUSH	BC
A757	5D	760		LD	E,L	A7B0	E5	1330		PUSH	HL
A758	01F000	770		LD	BC,240	A7B1	ED4BD0A7	1340		LD	BC,<HORL>
A75B	37	780		SCF		A7B5	41	1350		LD	B,C
A75C	ED42	790		SBC	HL,BC	A7B6	CD93A7	1360	PHLOOP	CALL	PUTCHR
A75E	22CCA7	800		LD	<STORAGE>,HL	A7B9	23	1370		INC	HL
A761	C9	810		RET		A7BA	10FA	1380		DJNZ	PHLOOP
		820				A7BC	E1	1390		POP	HL
A762	C5	830	GETCHR	PUSH	BC	A7BD	CDC4A7	1400		CALL	DOWNB
A763	E5	840		PUSH	HL	A7C0	C1	1410		POP	BC
A764	060B	850		LD	B,B	A7C1	10EC	1420		DJNZ	PVLOOP
A766	7E	860	GLOOP	LD	A,<HL>	A7C3	C9	1430		RET	
A767	12	870		LD	<DE>,A			1440			
A768	7C	880		LD	A,H	A7C4	060B	1450	DOWNB	LD	B,B
A769	C60B	890		ADD	A,B	A7C6	CD26BC	1460	DWLP	CALL	#BC26
A76B	67	900		LD	H,A	A7C9	10FB	1470		DJNZ	DWLP
A76C	13	910		INC	DE	A7CB	C9	1480		RET	
A76D	10F7	920		DJNZ	GLOOP			1490			
A76F	E1	930		POP	HL	A7CC		1500	STORAG	DEFS	2
A770	C1	940		POP	BC	A7CE		1510	VDU	DEFS	2
A771	C9	950		RET		A7D0		1520	HORL	DEFS	1
		960				A7D1		1530	VERL	DEFS	1
A772	ED5BCCA7	970	FETCH	LD	DE,<STORAGE>	A7D2		1540	OSBUF	DEFS	4
A776	2ACEA7	980		LD	HL,<VDU>						
A779	ED4BD1A7	990		LD	BC,<VERL>						

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# The Popular Vote

**Biased? Opinionated? Unfair? Indulgent? Irrelevant? Cruel? All than and more, the Popular Team mumble on incoherently about the programs they loved and hated in the past year.**



Graham Taylor  
—Features

## The least worst best collection

**Tir na Nog** (*Spectrum, Gargoyle*)  
Award for best animated hair in any adventure game.

**Ghostbusters** (*Commodore 64, Activision*)

Game I'd play even if I didn't have a TV picture award.

**Caesar's Travels** (*Commodore 64, Mirrorsoft*)

Ah, gurgle, gurgle, diddums award for all round niceness.

**Elite** (*BBC, Acornsoft*)

Well, I didn't say there weren't any good games on the BBC award.

**Knight Lore** (*Spectrum, Ultimate*)

Best reason to give up trying to learn machine code programming in despair award for effortless superiority.

**Deus Ex Machina** (*Spectrum, Automata*)

Program most likely to be reported to the



Christina Erskine—News

Some games I've enjoyed. In reverse order.

**7 Caesar the Cat** (*Commodore 64, Mirrorsoft*)

I don't know why I find Caesar the most endearing computer sprite I've ever come across. I don't even like cats that much.

**6 Fantasia Diamond** (*Spectrum, Hewson Consultants*)

Fairly sophisticated, fun, and moderately interactive graphics and text adventure. Though how it took me a week to realise that *Put battery into toy robot* was more acceptable than *Galvanise robot*, *Insert battery*, *Energise toy robot*, etc, I'll never

drugs squad award.

**Deus Ex Machina** (again)

Program that features the most comedy stars who have also appeared in *Carry On* films.

**War of the Worlds** (*Spectrum, CRL*)  
Most rolling about with mirth award for being really terrible.

**Tony Crowther**

The Ulysses award for homelessness and the 'which company did you say you were from?' special PR persons award.

**Strip Poker** (*Commodore 64, US Gold*)  
Most ludicrous emotion to try to evoke with a computer program award.

**Raid over Moscow** (*Commodore 64, US Gold*)

The fluoride in the drinking water award for loony right-wing paranoia.

**Impossible Mission** (*Commodore 64, CBS*)

Donald Sinden award for overacting from a computer program for the rendition of 'kill him my robots' at various points in the game.

**Psytraxx** (*Spectrum, The Edge*)

Samuel Beckett 'life is just the same thing over and over again without getting any better' award for having thousands of screens all almost exactly the same.

**QL Chess** (*QL, Psion*)

It may take 27 attempts before it will load, but it's worth it award.

**Chiller** (*Commodore 64, Mastertronic*)

George Harrison *My Sweet Lord* most obvious copyright infringement award for the music.

understand.

**5 Ghostbusters** (*Commodore 64, Activision*)

I still can't believe that my weedy little Commodore 64 is producing that incredible music and speech synthesis. Friends and flatmates are all amazed, and have great fun pressing the space bar at inappropriate moments. The game? What game?

**4 Football Manager** (all main micros, *Addictive Games*)

Well, all right, it's hardly a game of 1984, but still about the best use I can think of for a home computer. How else are Crystal Palace ever going to make the first division?

**3 Trashman** (*Spectrum, New Generation*)

Puts the romance back into bins.

**2 Summer Games** (*Commodore 64, Epyx/Quicksilver*)

One of the most realistic of *Track and Field* type games, especially as success doesn't depend on thrashing the joystick into an early grave. Wonderful graphics and some rather nice sound effects — specially when



David Kelly—  
Editor

**1 Knight Lore** (*Spectrum, Ultimate*) In my view the cleverest program of the year with tremendous 3D graphics. The visual puzzles are wonderful and the lead character's periodic transformations appear quite disconcerting.

**2 Trashman** (*Spectrum, New Generation*) It may look a bit dated now, but at the time I liked it very much. Unusual plot, clever graphics and it is not at all as easy as it looks.

**3 Witches Cauldron** (*Spectrum, Mikro-Gen*) I'm not quite sure what's happened to Mikro-Gen, but they've suddenly started producing some good stuff — *Pyjamarama* was good, but the graphics in this adventure are very colourful and neat. Besides, I always wanted to be a frog.

**4 Dallas Quest** (*Commodore 64, Data-soft via US Gold*) Very silly adventure. Sue Ellen hires you as the best detective in Texas. I tried to shoot the cat and a flag appeared from the gun which said 'bang'.

**5 Flip & Flop** (*Commodore 64, State-soft*) Much more interesting than *Q-bert*, this confusing topsy-turvy platform game is

gymnasts land flat on their backs, for some reason.

**1 Sherlock** (*Commodore 64, Melbourne House*)

There is something enormously refreshing about the lack of rocky/desolate/wooded/mystical landscapes littered with swords/gems/keys or even toy robots in *Sherlock*. Furthermore, you get a rattling good yarn with plenty of atmosphere and frustration and enlightenment in about equal measures.

**Dodo of the Year**

**War of the Worlds** (*CRL*)

Great idea — but the implementation of the theme tune on the Spectrum was laughable and all those reams of text at the beginning were so tedious. And, as far as I'm concerned, the idea of rescuing "Carrie — the girl you love" was implausible, to say the least.



# The Popular Vote

quite deceiving. Its designer was an architect and it's not easy. Very frustrating.

**6 Yacht Race** (*Spectrum, Hill-MacGibbon*) Hill-MacGibbon has produced a number of excellent simulations, this one dinghy sailing. I tried sailing for the first time quite recently and discovered I was pretty useless. This program proved to be quite useful (unfortunately that was after the event).

**7 Ghostbusters** (*Commodore 64, Activision*) OK, OK. So the gameplay may not be hot, but the music is, well, marvellous. Must be the catchiest tune of the year.

## Dodo of the Year

There was unprecedented competition this year for the most spectacular program 'dodo' for the 12 months — my picks would be *Revenge of the Killer Tomatoes* from Visions (great title, shame about the game) and the official version of *Pac-Man* from Atari who at one point reckoned that people would cough up £14.99 for the Spectrum version of a game they had a thousand versions of already.



John Cook —  
Software

What games will I be playing this Christmas, assuming I can: a) avoid clogging the joystick up with sugar from the mince pies, and b) prevent myself from an unfortunate overindulgence of a certain branded Ginger Wine?

**Elite** (*Acornsoft, BBC B*) comes top of the pile by at least a mile and a half. None of this 'goodwill to all Thargoids' rubbish in the Cook household, I can tell you. Easily the best game this year. When you come down from that adrenalin high, the next best thing you could do is lie back, turn down the lights, turn up the music and tune into the collective unconscious with **Psychodelia** (*Llamosoft, C64, Vic, C16*).

More family fun after the Queen's Speech

with **Ghostbusters** (*Activision, CBM64, Spectrum*). Play the game, see the film, wear the T-shirt, eat the book.

Something to put up on Christmas morning; **Impossible Mission** (*Epyx, CBM64*). The realistic screams of the hero dying yet another painful death should have the whole family awake in no time.

For Boxing Day, when you are bloated through excessive consumption, less energetic and more intellectual stimulation is required. Try **Tir Na Nog** (*Gargoyle, Spectrum*), and let Cuchulainn do the walking for you in this Celtic adventure. It looks pretty, too!

**Drelbs** (*US Gold, CBM64*) may provide welcome relief from alien zapping, as you hop across the atomic grid and through the dark corridor to free your Drelbish brethren. This is a game as quirky and delightful as **Splat** (*Incentive Software, Spectrum*) with, I suspect, an appeal as long lasting.

Finally, if you've been very, very good; eaten your greens, helped old ladies across the road, etc, you might just find a Defender machine in your stocking. But if you've been bad, it's 'Mutant Martha meets, mashes and mutilates the Manic Muffins' for you, m'lud.

# Put your micro to work, at home.

If you reckon there's more to your micro than playing games, but you're baffled by word processing and confused by spreadsheets, then take a good long read of Mike Grace's new book.

**Home Applications** on your micro cuts away all the confusion surrounding the ideas and ideals of the micro at home. It shows you the practical uses, with everyday examples that are within the reach of every micro owner. You'll discover how a database helps you with your domestic chores, and with your hobbies. You'll learn why word processing is worth your while, and how spreadsheets are tailor-made for your personal finances.

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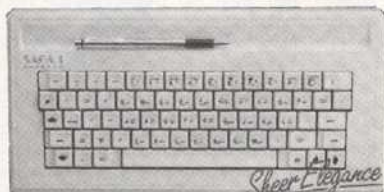
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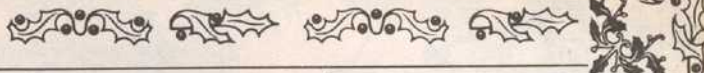
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# In the deep mid-winter

Another seasonal offering for the BBC B written by Philip Woodley

Here is a program that can be put up on the computer just after Christmas dinner, in between opening the presents and the Queen's speech.

It draws an appropriate wintery scene in Mode 2, and plays some Christmassy music. The music can be repeated afterwards by pressing any key. Happy Christmas!

## Program Notes

Procchurch — Draws church  
 Proctrees — Draws the trees  
 Procset up — Defines the VDU 23 characters  
 Procmusic — Plays the music

```

10 ON ERROR RUN
20 MODE 2
30 FOR S=1 TO 250
40 GCOL 0,8:X=RND(1280):Y=RND(1024)
50 PLOT 69,X,Y:NEXT
60 FOR S=1 TO 250
70 GCOL 0,15:X=RND(1280):Y=RND(1024)
80 PLOT 69,X,Y:NEXT
90 PROCSETUP:PROCTREES
100 GCOL 0,7
110 MOVE 0,200:DRAW850,0
120 PLOT 85,0,0
130 MOVE 850,0:DRAW 1280,150
140 PLOT 85,1280,0
150 MOVE 400,100:DRAW 1200,100
160 PLOT 85,850,0
170 COLOUR 3:PRINTTAB(10,4)CHR#237
180 PRINTTAB(10,5)CHR#238;CHR#239
190 PRINTTAB(10,6)CHR#240
200 PRINTTAB(9,3)"\";TAB(9,6)"/"
210 PRINTTAB(12,3)"/";TAB(12,6)"\"
220 COLOUR 5:PRINTTAB(5,13)"MERRY
    XMAS":COLOUR3
230 VDU 23;8202;0;0;0;0;
240 PROCCHURCH
250 PROCMUSIC:END
260 G=GET:PROCMUSIC
270 DEFPROCSETUP
280VDU 23,230,24,24,24,24,24,24,24,24,2
290 VDU 23,231,24,60,126,255,255,
    255,255,255
300 VDU 23,232,255,255,255,255,255,
    255,255,255
310 VDU 23,233,0,0,0,0,1,3,0,1
320 VDU 23,234,3,7,15,1,3,7,15,31
330 VDU 23,235,0,0,0,0,128,192,0,128
340 VDU 23,237,0,0,0,0,1,1,1,1
350 VDU 23,238,1,2,28,120,24,4,7,3
360 VDU 23,239,0,128,112,60,48,64,
    128,0
370 VDU 23,240,3,3,3,3,0,0,0,0
380 VDU 23,236,192,224,240,128,192,
    224,240,248
390 ENDPROC
400 DEFPROCTREES
410 COLOUR 1:PRINTTAB(3,25)CHR#230
420 PRINTTAB(3,26)CHR#230
430 PRINTTAB(3,27)CHR#230
440 COLOUR 2:PRINTTAB(3,24)CHR#232
450 PRINTTAB(3,23)CHR#231
460 PRINTTAB(2,23)CHR#233
470 PRINTTAB(2,24)CHR#234
480 PRINTTAB(4,24)CHR#236
490 PRINTTAB(4,23)CHR#235
500 COLOUR 1:PRINTTAB(7,27)CHR#230
510 PRINTTAB(7,28)CHR#230
520 COLOUR 2
530 PRINTTAB(7,25)CHR#231
540 PRINTTAB(7,26)CHR#232
550 PRINTTAB(6,25)CHR#233
560 PRINTTAB(6,26)CHR#234
570 PRINTTAB(8,26)CHR#236
580 PRINTTAB(8,25)CHR#235
590 ENDPROC
600 DEFPROCMUSIC
610 RESTORE 620:REPEAT:READ N,L:
    SOUND 1,0,0,1:SOUND 2,0,0,1:SOUND
    3,0,0,1:SOUND 1,-15,N,L:SOUND 2,-
    15,N-48,L:SOUND 3,-15,N,L:UNTIL
    N=0:GOTO 260
620 DATA 129,15,13,5,129,10,117,25,
    129,15,137,5,129,10,117,25,157,20,
    157,10,145,25,149,20,149,10,129,25,
    137,20,137,10,149,15,145,5,137,10,
    129,15,137,5,129,10,117,25,137,20,
    137,10,149,15,145,5,137,10,129,15,
    137,5,129,10
630 DATA 117,25,157,10,157,10,157,
    10,169,10,157,10,145,10,149,25,165,
    25,149,10,129,10,117,10,129,10,121,
    10,109,10,101,45,0,0
640 DEFPROCCHURCH
650 VDU 23,241,24,60,60,60,60,60,60,
    60,60
660 GCOL 0,4
670 MOVE 600,100:DRAW 600,230
680 PLOT 85,950,230
690 DRAW 950,100:PLOT 85,570,100
700 MOVE 950,300:DRAW 1050,300:PLOT
    85,950,100
710 DRAW 1050,100:PLOT 85,1050,300
720 DRAW 1000,365:PLOT 85,950,300
730 PRINTTAB(10,26)CHR#241;CHR#241;
    CHR#241;CHR#241
740 PRINTTAB(15,25)CHR#241
750 ENDPROC
  
```



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WRITTEN AND DIRECTED BY MEL CROUCHER

AUTOMATA thanks everyone who has taken DEUS EX MACHINA to their hearts . . . reviewers, wholesalers, retailers, the media, and most important of all, our public . . . THANK YOU!

(Barry Norman, Radio 4)  
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picture shows BBC/B version (2 colour)

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## Present alms

Help Santa collect his presents on the Dragon 32, with the help of Darren Howe

**S**anta's Present Catch is a half machine code, half Basic program. You are Santa, who appears on the right of the screen with his arms outstretched to catch presents.

The presents fly from left to right across the screen one at a time. Santa must catch ten presents to obtain a score — which de-

pends on the skill level chosen, and time taken to complete this task. You have only two minutes to collect ten presents.

The number of presents you have caught is shown at the top of the screen, and both of Santa's arms must be touching the present to catch it. Finally, a joystick is used to move Santa up and down. Good luck!

### Program Notes

Line No	
40-70	Introduction
80-110	Variable set-up
120-160	Display data
170-230	Santa move (machine code)
240-290	Present move (machine code)
300-380	Screen set-up
390-450	Main program
460-470	Update score
480-630	Score routine
640	Out of time routine



```

10 REM *SANTA'S PRESENT CATCH *
20 REM *WRITTEN BY DARREN HOWE*
30 REM *KENT. *
40 CLS:PRINT " SANTA'S PRESENT CATCH":PRINT@227,"WHICH SKILL LEVEL [1-3] ";
:SCREEN0,1
50 A$=INKEY$:IF A$="" THEN$0 ELSE LE=VAL(A$)
60 IF LE<1 OR LE>3 OR LE<>INT(LE) THEN 40
70 PRINTLE:PRINT@331,"PLEASE WAIT":$SCREEN0,1
80 DIM N$(9),CL$(20),H$(20)
90 FOR I=0 TO 9:READ N$(I):NEXT I
100 DATA BU2U8E2R4F2D8G2L4BR10,BR2R4L2U12G2B010BR10,U2E4R2E2U2H2L4G2B010R0BR4,BU
2F2R4E2U2H2L2R2E2U2H2L4G2B010BR12,BU4R8L8U2E6D12BR6
110 DATA BU2F2R4E2U4H2L6U4R8B0D12BR4,BU2U6E4R4B6G6R4F2D2G2L4BR10,BR2U4E6U2L0B0D12BR
12,BU2U2E2H2U2E2R4F2D2G2L2R2F2D2G2L4BR10,R4E4U6H2L4G2D2F2R6B0D6BR4
120 FOR I=0 TO 9:READ N$(I):POKE I,VAL("&H"+A$):S=S+VAL("&H"+A$):NEXT I
130 DATA 3,FC,0,0,7F,3,CO,0,0,F,FB,0,0,3D,FC,0,0,3F,FC,0,0,F,3,CO,0,3,FC
,0,0
140 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
150 DATA A9,69,A9,69,A9,69,55,55,55,55,A9,69,A9,69,A9,69
160 IF S<4276 THEN CLS:PRINT"INCORRECT DATA IN LINES 100-120":STOP
170 S=0:FOR I=0 TO 9:READ N$(I):POKE I,VAL("&H"+A$):S=S+VAL("&H"+A$):NEXT
I
180 DATA 7E,70,77,12,12,12,8D,80,12,86,1,5B,81,30,2D,3,7E,70,1B,81,10,2E,3,7E,70
,2E,39
190 DATA FC,6F,FE,10,83,10,FC,26,1,39,C3,0,20,FD,6F,FC,7E,70,41,FC,6F,FE,10,83,7
,7C,26,1,39
200 DATA C3,FF,FE,0,FD,6F,FC,12,12,12,BE,6F,FE,10,8E,60,20,8D,70,5C,BE,6F,FC,10,7E
,60,80,8D,70,5C
210 DATA BE,6F,FC,BF,6F,FE,39,7F,6F,F9,5F,A6,A0,A7,85,5C,C1,4,26,F7,30,88,20,7C,
6F,F9,B6,6F,F9
220 DATA 81,8,26,E9,39,8E,7,BC,BF,6F,FE,10,8E,60,0,8D,70,5C,39
230 IF S<15340 THEN CLS:PRINT"INCORRECT DATA IN LINES 130-180":STOP
240 S=0:FOR I=0 TO 9:READ N$(I):POKE I,VAL("&H"+A$):S=S+VAL("&H"+A$):NEXT I
250 DATA 7F,6F,EF,EC,A1,ED,84,30,88,20,7C,6F,EF,B6,6F,EF,81,8,26,EF,39,BE,6F,F0
260 DATA 10,8E,60,20,8D,73,0,B6,6F,F1,94,1F,81,1A,26,4,7E,73,3D,12,BE,6F,F0,30
270 DATA 1,BF,6F,F0,10,8E,60,40,8D,73,0,39,0,86,1,87,73,3C,BE,6F,F0,30,2,BC,6F,F
E,26,4,7F,73,3C
280 DATA 39,30,88,E0,BC,6F,FE,26,4,7F,73,3C,30,88,40,BC,6F,FE,26,3,7F,73,3C,39
290 IF S<11636 THEN CLS:PRINT"INCORRECT DATA IN LINES 220-250":STOP
300 FMODE 1,1:PCLS
310 GET (0,0)-(10,14),CL/G
320 DRAW "C2;BM0,8:R4U2D4R2U4R2U2D8R2D2U12R2U2D16U2R2U12D2R2D8U2R2U4R2D4R2D2U8R2
U2D12U2R2U8D2R2D4U2R2"
330 GET (0,0)-(30,16),HO,G:PCLS
340 DRAW "BM0,0:C4:R255D20L255U20;BM0,19:R255"
350 PUT(4,2)-(34,18),HO,PSET
360 PUT(22,2)-(25,18),HO,PSET
370 DRAW "BM75,16:C3;BU2F2R4E2U2H2L4H2U2E2R4F2B010BR4BU2U8E2R4F2B08G2L4BR10BU2U8
E2R4F2D8G2L4BR10U12R6F2D2G2L4R2D2F4BR4U12R8B06BL2L6D6R8BR4BU4R8BU4L8"
380 EXEC@H7000:TIMER=0:GOSUB 460:SCREEN1,1
390 POKE @H6FF0,RND(9)+7:POKE@H6FF1,0
400 IF TIMER>8000<LE*1000) THEN 540
410 C=C+1:IF C=(4-LE) THEN EXEC@H7315:G=G+1:C=0
420 EXEC @H7006:IF LE<>1 THEN EXEC@H7006
430 IF G<27 THEN 410 ELSE G=0
440 IF PEEK(@H733C)=1 THEN SOUND200,2:SOUND100,2:GOTO 390
450 PLAY "V31:L110:03:0DEFGEFDEC":SC=SC+1:IF SC=10 THEN 480 ELSE GOSUB 460:GOTO
390
460 PUT(156,2)-(176,16),CL,PSET
470 DRAW "BM156,16:C4:"H$(SC):RETURN
480 SCREEN0,0:FOR I=0 TO 8:CLSI:SOUNDI*15+1,2:NEXT I:CLS
490 PRINT@235,"WELL DONE!"
500 PRINT:PRINT " CHRISTMAS IS SAVED!"
510 PRINT:PRINT"YOU SCORED":INT(4000/TIMER*1000#LE)
520 PRINT:PRINT"WOULD YOU LIKE ANOTHER GO ?"
530 0$=INKEY$:IF 0$="" THEN$0 ELSE IF 0$="Y" THEN RUN ELSE STOP
540 CLS:PRINT"YOU HAVE RAN OUT OF TIME ...":PRINT"YOU PICKED UP";SC;"PRESENTS,":
GOTO 520

```

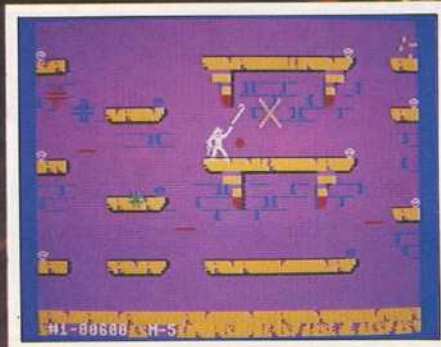
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# The Popular

After boosting our own egos on page 20, this is where *Popular Computing Weekly* hands over to you. We're asking you to vote in our first ever readers' poll — a compilation of the best and worst of 1984.

1

## Game of the year (overall)

This is the one. What do you think is the most stupendous, amazing, unsurpassable, inventive game released this year? What program were you still playing at three o'clock in the morning?

2

## Arcade game of the year

Thumbs aching from megazapping on the 14th attack wave? Palms still moist with tension? Which program is responsible? We want to know the most compulsive, original, action packed, best written, graphically astounding, tension inducing, arcade game of the lot.

3

## Adventure of the year

What adventure had you refusing to sleep or eat? Which produced most effectively that exquisite blend of unbearable frustration with bewitching addictiveness that is the mark of a really excellent adventure?

4

## Business program of the year

Most adverts tell you a micro is suitable for business uses. What program released this year did you find most genuinely useful in your home or small business?

5

## Utility program of the year

A wide section — perhaps a language package for your micro you've found useful. Or a program that lets you design your own games. You decide.

6

## Peripheral of the year

A wide choice here — printers, plotters, light pens, remote control joysticks, midi interfaces. What peripheral really added something to your computer this year?

7

## Best software house

Which software company do you feel brings out consistently good games at a fair price? Customer service is important, too — which company is most helpful/prompt in answering queries?

8

## Most exciting new computer

Not necessarily your own machine but perhaps the one you've been eyeing most lasciviously in the shops. If you had the money, which computer would you buy?



# Readers' Poll

9

## Best programmer

Whose programs have that certain 'something', be it graphics/plot/programming expertise, that makes you look for the name of the author on the inlay rather than the pretty picture on the front?

10

## Most promising new company

A lot of new companies sprang to the forefront with innovative new games in 1984. Which one do you think most deserves to go on to greater things in 1985?

11

## Worst computer

Is it the one that's been gathering all the dust since last Christmas? Or the one they'd have to pay you to take from the shop?

12

## Computer program you most regret buying

You saw the adverts, you saw the enormous box with pull-out poster and enormous booklet, you opened the box and loaded it up. Then you threw it straight out the window in disgust. What program most made you wish that you'd waited until you'd read a review in *Popular* before you bought it?

13

## Most overrated software house

Big names. Enormous advertising budgets. Fleet Street coverage. What software house gets the most coverage, but produces the most rubbish in your opinion? What software house produces software that everyone else thinks is great, but you always find deadly dull — your chance to speak out by voting in this section.

14

## Worst TV/cinema spin-off

Computer game spin-offs from TV, the movies, the Olympics, books, etc, were one of 1984's 'in' things. Which program failed most dismally to live up to the original?

15

## Silliest advertisement

Instead of making you want to rush out and buy the product, this advert left you unsure whether to laugh or cry. Which ad made you feel certain the product must be a dodo.

All you have to do is fill in the spaces beside each category with your choices. If you don't feel qualified to answer any particular section, it doesn't matter, just leave that one blank. Then fill out the form at the bottom, and send it all off to: *Popular Computing Weekly*, Readers' Poll, 12-13 Little Newport Street, London WC2H 7PP.

Entries should reach us no later than Thursday January 10. The results will appear in *Popular Computing Weekly*, January 24.

Remember — all the programs you vote for must have been released later than January 1st 1984.

Name .....

Age .....

Male/Female (delete as appropriate)

Micro/Micros owned (if any) .....

# BACKPACKERS

## GUIDE TO THE UNIVERSE PART 1

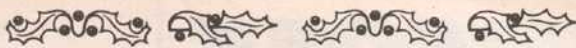
Not just a game...  
...more a way of life



48K Spectrum  
£7.50



Software by **fantasy**



## Lows and highs

*Felling tired and emotional on Boxing Day — Steve Hollywood and Ian Williams may have an explanation*

This program will produce a high resolution graph of your biorhythms on a television or monitor and will, if desired, output the result to a printer using the screen dump routine provided by Psion in their *Easel* program. The program has been written for a 'JM' QL but it has been run on the earlier version successfully.

Biorhythms, or rhythms of life, were first discovered by an Austrian psychologist, Herman Svoboda and a German doctor, Wilhelm Fleiss, working independently around the turn of the century. They both noticed that patients suffering from emotional and physical problems suffered more acutely in regular bouts, or cycles. They identified these periods as being 23 days for physical and 28 days for emotional problems. It appeared that these states, which are common to all human beings, varied by the periods shown in a sine wave pattern; ie there were distinct peaks when those conditions were at their best and corres-

ponding troughs when the emotional and physical states were in poor shape. The third area, that of intellectual performance, was discovered by a Dr Telscher, working on the scores of some of his students. He found that their performance tended to vary in 33 day cycles, much the same way as for the other two states.

Although considerable work has been carried out with regard to accident prevention using this knowledge, it is still not clear how much reliance can be placed on them. Nevertheless, it's a nice party trick to show your friends when they're feeling low (or high!).

Reading the graphs is quite easy. There's a plus (+) and a minus side to the y axis and, in the centre of the X axis, the current date is shown, which you must input by altering the variables in Line 85 as shown in the listing. As each graph is drawn the letters I (intellectual), E (Emotional) and P (Physical) are appended. From there, it's simply a

matter of looking to see which graph peaks where. If they all peak together then it's a good day to tackle something difficult, but if the converse is true then perhaps you should spend a few days in bed!

### Program notes

**Lines 15-20** Load the machine code screen dump by Psion from their *Easel* cartridge. Since the program will do this automatically as soon as you Run it, delete these lines if you don't want a printed copy. If you do want a printed copy then having typed in the program and saved it remove your program cartridge, then place the *Easel* cartridge in mdv1. Place your program cartridge in mdv2, type `Lrun mdv2 - biorhythms` or whatever name you used.

**Line 330** This calls the procedure *messy* which in turn calls *trog*. Between them, these two do all the calculations and checking for leap year, etc.

**Lines 465** This calls the procedure *doit* which draws the graphs.

**Lines 105 - 140** provide suitable invocations of doom, reading the intersection points of the three graphs.

If you do not have a printer, and this program is configured to work with all printers of the Epson range, then amend Line 748 to *pause 1000* and delete Lines 15 to 20.

One other thing: my printer still reads in "\$" as "£" so all "\$" signs should be altered accordingly (/ is the channel prefix for the QL)



```

1 REMark *****
2 REMark *
3 REMark *   BIORHYTHMS   by Steve Hollywood and Ian Williams
4 REMark *
5 REMark *****
10 REMark   Load print dump routine from mdv1
15 start=RESPR(300)
20 LBYTES mdv1_gprint_prt,start
25 REMark *****
30 REMark   Arrays :
35 REMark           N           Contains the number of days in each month
40 REMark           V           Is used to store the number of times the
45 REMark           graphs pass through the axis.
50 REMark           D$         Contains the days of the week
55 REMark           F1$        Mild warnings of doom,etc.
60 REMark           F2$        More horrible invocations
65 REMark           b          Checks syntax of date entry
70 REMark *****
75 DIM N(13),V(20),D$(7,9),F1$(10,40),F2$(10,40),b(10)
80 amp=80
85 Y2=1984:M2=11:D2=18:D3=0:REMark ...M2= current month,D2=current date,Y2=curr
ent year
90 RESTORE 105
95 FOR A=1 TO 7:READ D$(A):NEXT A
100 FOR A=1 TO 12:READ N(A):NEXT A
105 DATA "MONDAY","TUESDAY","WEDNESDAY","THURSDAY","FRIDAY","SATURDAY","SUNDAY"
110 F1$(4)=" TAKE IT EASY ON "
115 F1$(3)=" BE WARE ON "
120 F1$(2)=" WATCH YOUR DIET ON "
125 F1$(1)=" BE-WARE OF BLACK CATS AND THE LIKE ON "
130 F2$(1)=" NOT ATTEMPT ANY HARD WORK ON "
135 F2$(2)=" TAKE A FEW ASPRIN AND REST ALL "
140 F3$=" SAY IN BED ALL DAY ON "
145 WINDOW#1,512,256,0,0
150 PAPER 0
155 MODE 512
160 CLS
    
```

```

165 CSIZE 1,0
170 PRINT TO 15;"BIORHYTHMS":PRINT TO
15;"=====
175 DATA 31,28,31,30,31,30,31,31,30,31,
30,31,31
180 PRINT
185 PRINT "Type in your name and press
the ENTER key."
190 PRINT:INPUT N$
195 IF N$(1)=" " THEN N$=N$(2 TO):GO
TO 195
200 IF N$(LEN(N$))=" " THEN N$=N$(1 TO
LEN(N$)-1)
205 IF N$="" THEN GO TO 160
210 CLS
215 PRINT TO 15;"BIORHYTHMS"\TO 15;
"=====
220 PRINT"\Hi there ";N$
225 PRINT"\Type in your birthdate in
this format:"
230 PRINT"          day.month.year"
235 PRINT"\example:--"
240 PRINT"\If you were born on the 23rd
of October"
245 PRINT"\1960 then enter the data like
this:"
250 PRINT\TO 15;"23.10.60"
255 PRINT"\do not forget the full
stops!!!"
260 PRINT"\Now enter your data....."
265 INPUT e$
270 IF e$(1)="." THEN e$=e$(1 TO
LEN(e$)-1)
275 L=0
280 FOR A=1 TO LEN(e$)
285   IF e$(A)="." THEN L=L+1:b(L)=A
290 NEXT A
295 IF L<>2 THEN GO TO 215
300 D1=e$(1 TO b(1)-1)
305 m1=e$(b(1)+1 TO b(2)-1)
310 IF D1=0 OR m1=0 THEN GO TO 215
315 y1=e$(b(2)+1 TO)
320 IF y1<84 THEN y1=y1+1900
325 IF y1<1880 THEN GO TO 215
330 messy
335 PRINT
340 D=L-10
345 OPEN£6,ser1:BAUD 9600
350 ls=33+LEN(N$ & D2 & M2 & Y2)
355 PRINT£6,CHR$(27);"E";\;TO (40-ls/2);
FILL$( "*",ls)
360 PRINT£6,TO (40-ls/2);"* Biorhythms
for ";N$;" printed on ";D2;"/";M2;"/";Y2;
" *"
365 PRINT£6,TO(40-ls/2);FILL$( "*",ls)
370 PRINT£6,CHR$(27);"e"
375 WINDOW £1,512,256,0,0:CLS
380 SCALE£1,192,0,0
385 LINE 19,0 TO 19,191
390 LINE 19,95 TO 259,95
395 CURSOR 30,49:CSIZE 3,1:PRINT "+"
400 CURSOR 30,180:PRINT "--"
405 CSIZE 0,0:CURSOR 142,98,0,0:PRINT D2
410 FOR x= 19 TO 256 STEP 12
415   LINE x,93 TO x,97
420 NEXT x
425 LINE 138,93 TO 138,97
430 LINE 150,93 TO 150,97
435 LINE 139,91 TO 139,99
440 LINE 151,91 TO 151,99
445 LINE 140,93 TO 140,97
450 LINE 152,93 TO 152,97
455 cy=23 460 c=1 465 doit 470 cy=28
475 c=2 480 doi 485 cy=33 490 c=3495 doit
500 OPEN£6,ser1:PRINT£6
505 PRINT£6:PRINT£6;TO 10;"P = Physical"
510 PRINT£6:PRINT£6;TO 10;"E = Emotional"
515 PRINT£6:PRINT£6;TO 10;"I =
Intellectual"
520 PRINT£6:PRINT£6;TO 20;"Analysis"
525 PRINT£6;TO 20;"=====
530 PRINT£6:PRINT£6;"According to your
biorhythms you should:--"
535 f1=1:f2=1:f3=1:f4=03
540 N$=" "
545 FOR A=10 TO 19
550 IF V(A)=1 THEN PRINT£6;\F1$(f1);N$;
D$(f4):f1=f1+1
555 IF V(A)=2 THEN PRINT£6;\F2$(f2);N$;
D$(f4):f2=f2+1
560 IF V(A)=3 THEN PRINT£6;\STAY IN BED
ON ";N$;D$(f4)
565 f4=f4+1:IF f4=7 THEN f4=0:N$="NEXT "
570 NEXT A
575 GO TO 25
580 DEFINE PROCEDURE messy
585   L=365*(Y2-y1)
590   IF M2>1 THEN FOR x=1 TO M2-1:L=L+
N(x):NEXT x
595   IF m1>1 THEN FOR x=1 TO m1-1:L=L-
N(x):NEXT x 600 L=L+D2-D1
605 Y=INT(v1/4)*4
610 Y=Y+4:IF Y>=Y2 THEN GO TO 625
615   A=Y:trog:IF A=1 THEN L=L+1
620   GO TO 610
625   IF Y=Y2 THEN GO TO 645
630 A=y1:trog:IF A=1 AND m1<3 THEN L=L+1
635 A=Y2:trog:IF A=1 AND M2>2 THEN
L=L+1 640 RETURN
645   A=y1:trog:IF A=1 AND m1<3 AND
M2>2 THEN L=L+1 650 RETURN
655 END DEFINE messy
660 DEFINE PROCEDURE trog
665   IF INT(A/4)=A/4 THEN IF INT(A/100)
<>A/100 OR INT(A/400)=A/400 THEN A=1:RET
urn 670 A=0:RETURN 675 END DEFINE trog
680 DEFINE PROCEDURE doit
685   POINT 19,(amp*SIN(2*PI/cy*D)+95)
690   FOR x=19 TO 259 STEP 2
695     Y=(amp*SIN(2*PI/cy*(D+(x-19)/12)
)+95)700 LINE TO x,Y
705     IF Y<96 AND Y>94 THEN V((x
-19)/12)=V((x-19)/12)+1 710 NEXT x
715 ON c GO TO 720,730,740
720 CSIZE 0,1:CURSOR 261,Y,0,0:PRINT "P"
725 RETURN 730 CURSOR 268,Y,0,0:PRINT
"E" 735 RETURN
740 CURSOR 271,Y,0,0:PRINT "I"
745 CLOSE£6:CALL start,0,0,0,0,0,0,0,0,0
750 RETURN
755 END DEFINE doit

```

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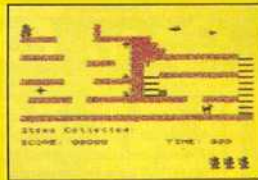
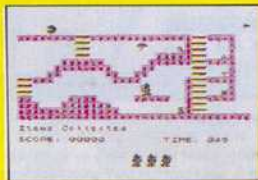
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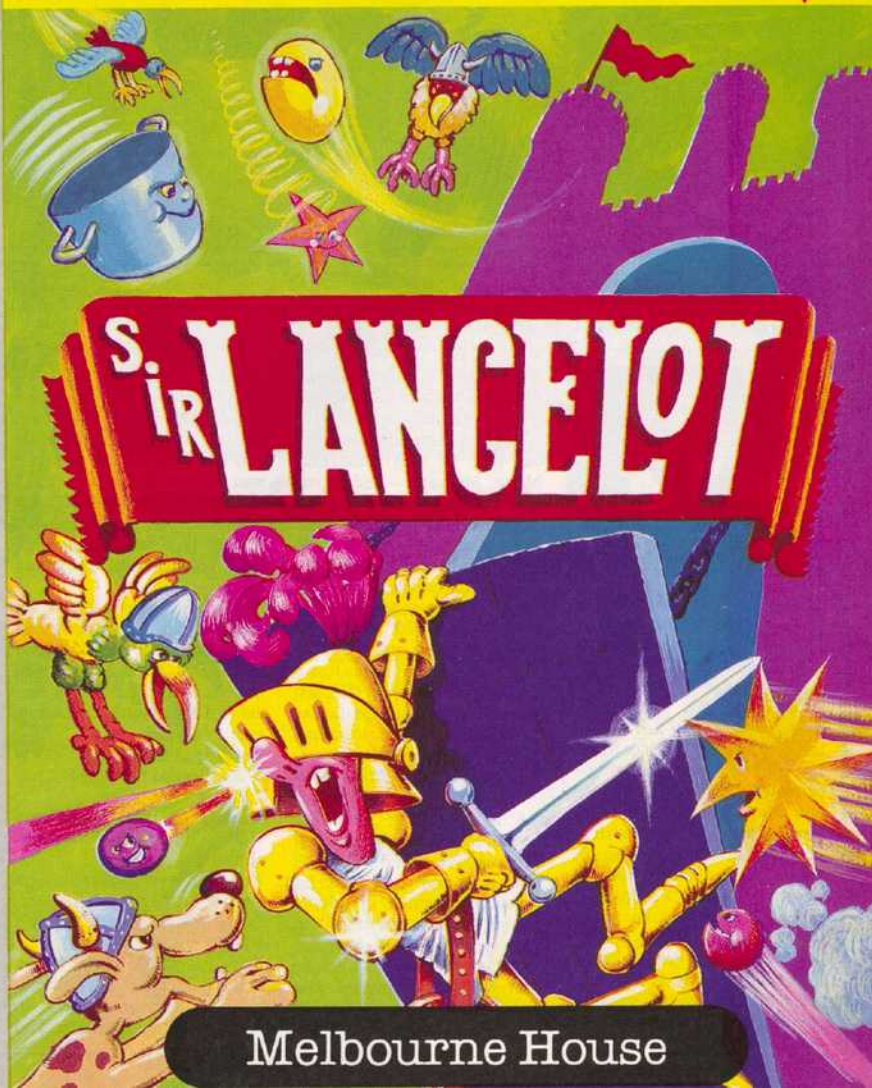
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```

190 FOR P=1 TO 2:NC(P)=0:GOSUB 230:NEXT
200 IF WH THEN PRINT#2,STRING$(2,11);"COMPUTER"
210 LOCATE 1,18:PRINT STRING$(40,210);T=C:CHR$(149)
220 FOR I=1 TO 25:LOCATE 9,I:PRINT T$:LOCATE 32,I:PRINT
T$:\NEXT:RETURN
230 CLS#:PRINT#0:PRINT#0,"PLAYER",STR$(P):RETURN
239 ' ** Look for a character in 'T$. Return
its position in 'L' **
240 AS=UPPER$(INKEY$):IF AS="" THEN 240 ELSE L=INSTR(T$,AS):
IF L=0 THEN RETURN ELSE 240
250 CLS#:PRINT#0:PRINT#0,"I CHOOSE..":
260 PRINT(RND*52+0,5)
270 IF PK1 OR PKP=0 THEN 260 ELSE P1=P:PKP=0:GOSUB 350:
V1=VA:K(P)=K(P)+1:CP
280 DC=INT((13*13)/FOR I1=C TO C+59 STEP 13:IF I1=P1 OR
K(I1) OR PK(I1)=0 THEN NEXT ELSE P=C:II=I:GOTO 300
290 P=INT(RND*(52+0,5)):IF PK1 OR PKP=0 THEN 290
300 D=900-4200*GAME:P2=P:PKP=0:GOSUB 350:V2=VA:IF GAME THEN
PRINT#0,P1:"AND"#2 310 AS=UPPER$(INKEY$) 320 IF V1<V2 THEN
P=P1:GOSUB 410:P=P2:D=20:GOSUB 410:PEN 1:PL=3-PL:RETURN
330 NU=NU+1:GOSUB 600:D=1000:P=P1:T="" :GOSUB 450
D=20:GOSUB 390:GOTO 400 350 GOSUB 400:PW(P):SS=INT((P-1)/13
)+1:VA=P:(SS-1)*13:VA=V-2:T=INT(MD*(SS,VA,1)) 360 PAPER 1:PEN
3*3K$SS+1 OR SS=4): 370B 440:V=V+2:H=H+1:GOSUB 440:H=H-1
370 T=C:CHR$(225+SS):GOSUB 440:H=H+1:V=V-2:GOSUB 440:PAPER
0:PEN 1:RETURN 380 IF GAME THEN J=PL:I=NC(J)+2:ORIGIN 516*
(J-1)+0,I-1:DRAWR 24,0,2:DRAWR 24,1,2:LOCATE #J,5,5:PRINT#J
I,I:\NC(J):RETURN ELSE RETURN 390 FOR KX = 1 TO D:NEXT
RETURN 400 T=STRING$(2,143):C=TS:GOTO 430 410 GOSUB 390:P
(P)=-1:420 PEN 2:DC=STRING$(2,127):T=STR$(P):T=LEFT$(RIGHT
$(T),LEN(T)-1)+C$:2) 430 Hel(C,P,0):V=LC(P,1):GOSUB 440:
T=C:V=V+1:GOSUB 440:V=V+1:440 LOCATE H,V:PRINT T$:RETURN
450 GOSUB 390:T="" :C=TS:GOTO 430
460 P=INT(RND*53):IF P%52 OR PK1 OR PKP=-1 THEN 460 ELSE
PK(P)=-1:GOSUB 420:K(K+1):C(K)=P:V(P)=K:IF K%52 THEN 460 ELSE
PEN 1:RETURN 469 ' ** Computer's intelligence is in "H".
Lower = Thicker ** 470 CLS:W=50:N=35:E=1:NU=0:H=-1:FOR P=1

```

```

TO 52 480 ORIGIN (LC,P,0)-1)*16-1*(26-LF,1))*16:DRAWR N,0:
E:DRAWR 0,-M,E:DRAWR -N,0,E 490 DRAWR 0,M,E:(P=N):K(P)=M:
NEXT:C=STRING$(2,222):RETURN
500 LOCATE 1,19:PEN 3:PRINT"PAIRS":PEN 1
510 PRINT" is a test of observation & memory.":
520 PRINT"You will be invited to 'turn over' two"
530 PRINT"playing cards. If their VALUES match, you"
540 PRINT"win them. You may play AGAIN at another"
550 PRINT"person (Press 'I' PEN 3:PRINT#0: PEN 1
560 PRINT" to start) on the Computer":
570 PRINT"(Press 'I' PEN 3:PRINT"C"):PEN 1
580 PRINT" which leads to play...slowly":E=0:RETURN
590 PEN 2:PRINT#E,")Press 'P' or 'C' now":PEN 1:RETURN
600 IF NOT GAME THEN RETURN ELSE RESTORE 630:V=15
610 FOR I=1 TO 4:READ P7,0,R1),R(2),R(3):FOR J=1
TO 3:SOUND 1,P7,V,7
620 SOUND 2,0,V,7:SOUND 4,R(1),V,7:B=0 XOR 11:BORDER B:NEXT
J,I:RETURN
630 DATA 95,119,319,239,190,119,134,190,239,319,89,119,
284,239
640 DATA 142,119,190,239,159,319 340 P=P2:
650 RESTORE 740:ENV 1,1,15,1,0,15,5,-3,1 ENV 2,1,15,1
660 FOR I=1 TO 24:READ $I):\NEXT FOR I=1 TO 16:STEP 3:READ
A:T(I)=0:0:T(I)=A
670 T(I+2)=A:NEXT FOR I = 13 TO 22:READ A:T(I)=A:NEXT
680 FOR I=1 TO 22:STEP 3:READ A:FOR J=0 TO 2:UK(I+J)=A
:NEXT J,I
690 Z1=1:Z2=0:Z3=0:GOSUB 720:Z2=1:GOSUB 720
700 Z3=1:GOSUB 720:Z3=Z2/2:GOSUB 720:Z1=Z1/2
710 GOSUB 720:FOR I=23 TO 24:UK(I)=0:$I)=0:NEXT Z2=Z2/2:
GOSUB 720:RETURN
720 FOR I=1 TO 24:SOUND 1,$I)*23,30,7:SOUND 2,T(I)*22,30,0,1
730 SOUND 4,UK(I)*21,30,0,2:BORDER RND*27:NEXT: BORDER B:RETURN
740 DATA 142,142,142,107,90,71,80,80,80,80,90,95,107,120,127
,142,127,107,120
750 DATA 95,80,60,284,253,239,179,190,160,179,213,239,190,
160,120,204,426
760 DATA 319,478,426,506,478,319

```

**Pairs**  
by P Hewit

## The Music Box



### Square wave

Paul Allington of Lowestoft (no relation to Duke Allington, I suppose) has written asking if there are any composer packages around for use on his Spectrum and Fuller Master Unit. Unfortunately, I know nothing about the Fuller unit — I'm not even sure if the company still exists. If anybody has information on available software, could they drop me a line and I'll pass the message on to Paul. Otherwise, you could try Fuller Micro Systems at Sweeting Street, Liverpool 2. If anyone's there, I'm sure they'll help.

Inevitably, there are plenty

of other music add-ons (hardware and software) for the Spectrum, and since I've so far ignored this humble machine, I'll try and redress the balance.

At one end of the scale, the Spectrum can be used to control synthesizers through a MIDI interface. Siel can provide you with a complete outfit — synth (if you haven't got one), MIDI interface and a single-track polyphonic, real-time sequencer for about £600 (that's including £500 for the synth.) Siel also produce a Spectrum based expander editor for use with their own expander units only (these are basically extra synthesizers with no keyboard, connected up to your system via MIDI). The address is AHED Depot, Reigate Road, Hookwood, Surrey RH6 0AY.

At the other end of the scale is Sinclair's own Music Master package which sells for £9.95 and uses the Spectrum's internal sound (what sound? I hear you cry), turning the computer into a very simple organ.

In between these two are the

hardware add-ons incorporating PSGs: Dk'Tronics' Three Channel Sound Synthesizer; Trichord from Newtech Developments; and Ricoll Electronics' Sound Generator — to name three which have been brought to my attention. All of these use the MSX standard AY-8910 PSG or a near equivalent, allowing three channel sound (square wave only), programmable noise and programmable attention for volume control or producing envelopes.

Inevitably, the quality of the software provided is what counts here. The Trichord comes with what seems to be a versatile composer package and includes a number of pre-programmed sounds on firmware. It sells for £26.95 including an internal amplifier. The Dk'Tronics device sells at £29.95 and includes the Music Designer program, which is a joystick controlled composer/sequencer. Ricoll's add-on is the most expensive at £45.95 and seems to include only the

most basic software. However, the device does include an internal amplifier and a programmable filter — this last being absolutely essential for serious synthesis.

Addresses: Dk'Tronics, Saffron Walden, Essex CB11 3AQ (tel: 0799 26350); Newtech Developments, 1 Courtland Road, Newton Abbott, Devon TQ12 2JA (tel: 0626 62836); Ricoll Electronics Ltd., 48 Southport Road, Ormskirk, Lancashire L39 1QR. (Ricoll also produce a digital sound sampler for the Spectrum — of which more next week).

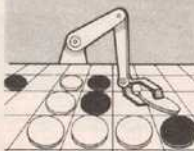
**Gary Herman**

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micros and music.

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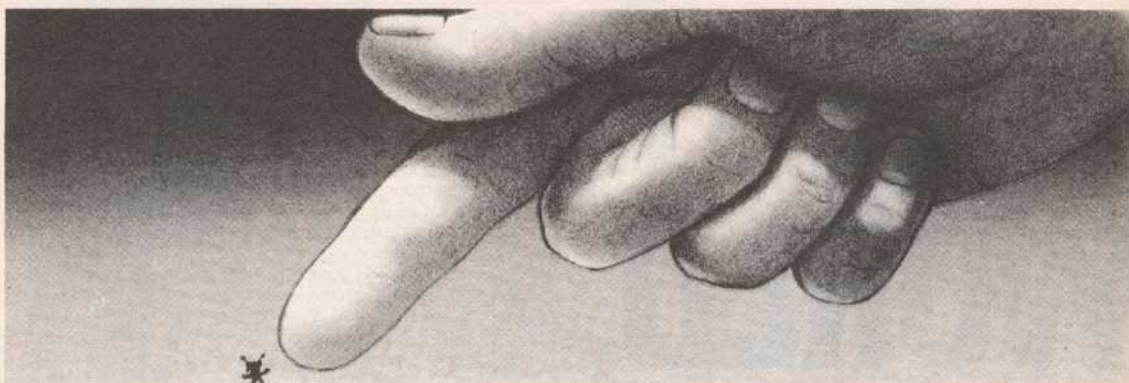
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## Carols

### on Spectrum

Christmas time, and here is a program to help you combat annoying carol-singers. Run it, and your Spectrum will play enough

old favourites to deter all but the most determined wassailers.

#### Program Notes

1-8 Sets up colours, and pauses  
9-40 The Read section for the notes  
50-55 First tune data  
56-105 Second tune data

115-140 Third tune  
200-300 Fourth tune  
300-370 Fifth tune  
400-600 Sixth tune  
9997 Repeat last tune  
9998 Save routine  
9999 Reset colour to original

```

1 RESTORE 50
4 BORDER 0: PAPER 0: INK 6: C
LS
5 CLS : PRINT AT 10,(31-22)/2
: FLASH 1: INK 2: PAPER 7: BRIGHT 1:
: "PRESS ANY KEY TO BEGIN.": PAUSE 0: CLS
8 PRINT "Good king wenceslas"
9 FOR d=1 TO 2
10 LET a=.4
20 READ b,c: IF b=99 THEN RESTORE 50: PAUSE 50: NEXT d: GO TO 56
30 BEEP b,c
40 GO TO 20
50 DATA a,9,a,9,a,9,a,11,a,9,a,9,2*a,4,a,6,a,4,a,6,a,6,2*a,9,2*a,9
51 DATA a,9,a,9,a,9,a,11,a,9,a,9,2*a,4,a,6,a,4,a,6,a,6,2*a,9,2*a,9
52 DATA a,16,a,14,a,13,a,11,a,13,a,11,2*a,9
53 DATA a,6,a,4,a,6,a,6,2*a,9,2*a,9
54 DATA a,4,a,4,a,6,a,8,a,9,a,9,2*a,11
55 DATA a,16,a,14,a,13,a,11,2*a,9,2*a,14,4*a,9,99,99
56 PAUSE 50: PRINT "O come all ye faithful"
67 RESTORE 65: FOR d=1 TO 2
68 LET a=.4
90 READ b,c: IF b=99 THEN RESTORE 65: PAUSE 50: NEXT d: GO TO 90
60 BEEP b,c
    
```

```

61 GO TO 50
65 DATA a,4,a*2,4,a,-1,a,4,2*a,5,2*a,-1,a,6,a,6,a,8,a,9,2*a,6,a,6
66 DATA a,4,2*a,4,a,3,a,1,a,3,a,4,a,6,a,8,2*a,3,a*1,3,a*1,a,4,a,6,a,8,2*a,3,a*1,3,a*1,a*3,-1
67 DATA 2*a,11,a,9,a,8,2*a,9,2*a,8,a,6,a,8,a,4,a,1.4*a,3,a/2,1,a,-1
68 DATA a,4,a,4,a,3,a,4,a,6,2*a,4,1*a,-1
69 DATA a,8,a,8,a,6,a,8,a,9,2*a,8,a,6
70 DATA a,8,a,9,a,8,a,6,a,4,2*a,3,a,4,a,9,2*a,8,2*a,6,a/2,4,2,4
71 DATA 99,99
90 PAUSE 50: PRINT "The first nowell"
91 RESTORE 100: FOR d=1 TO 2
92 LET a=.4
93 READ b,c: IF b=99 THEN RESTORE 100: PAUSE 50: NEXT d: GO TO 115
94 BEEP b,c
95 GO TO 93
100 DATA a/2,6,a/2,4,a*1.5,2,a/2,4,a/2,6,a/2,7,2*a,9,a/2,11,a/2,13,a,14,a,13,a,11,2*a,9
101 DATA a/2,11,a/2,13,a,14,a,13,a,11,a,9,a,11,a,13,a,14,a,9,a,7,2*a,6
102 DATA a/2,6,a/2,4,a*1.5,2,a/2,4,a/2,6,a/2,7,2*a,9,a/2,11,a/2,13,a,14,a,13,a,11,2*a,9
103 DATA a/2,11,a/2,13,a,14,a,1
    
```

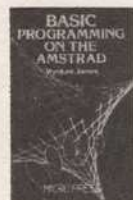
## Book Ends



**Book The Amstrad Program Book** Price £5.95  
Micro Amstrad Supplier Phoenix Publishing Associates Ltd, 14 Vernon Road, Bushey, Herts WD2 2JL

While there is no longer severe program starvation for the Amstrad, choice is still relatively low and prices are high, so a book of listings could prove tempting to the new owner. I would not, however, recommend this one.

It succeeds in committing most of the sins that make such volumes a waste of money. All the old favourites are here from the Basic Bomber to the adventure which lacks just that vital quality. In addition several programs are less than two pages in length, though this does at least mean not too much time is wasted typing them in!



### John Minson

**Book Basic Programming on the Amstrad** Price £7.95  
Micro Amstrad Supplier Micro Press, Castle House, 27 London Road, Tunbridge Wells, Kent

As the Amstrad is a likely first micro there must be a need for books like this which provide an introduction for the computer virgin.

Wynford James has taken a positive 'hands on' approach, and having reassured that no keyboard input can damage the

machine, urges the reader to experiment, which is obviously the best way to learn.

This approach leads to most areas being introduced via practical examples, and while it leads to certain topics being discussed in an unexpected order (eg string variables before numeric ones) it works because it is fun. There is also a good chapter on tidy, structured programming.

While the book is obviously limited in depth — its treatment of sound is particularly brief — it should provide a firm foundation for the novice.

### John Minson



**Book The Commodore Disk and Printer Handbook** Price £7.95  
Micro Commodore Supplier Phoenix Publishing Associates Limited, 14 Vernon Road, Bushey, Herts WD2 2JL

Though the addition of disk drives and printers vastly expands the capabilities of any micro, it also creates a whole new language which must be learnt before they can be mastered to their best advantage.

Concentrating on the Commodore 1541 disk drive and 1526 printer, plus a final chapter on the Epson RX-80 printer, this book aims to tame these peripherals for the owner who already has a good knowledge of Basic.

Though the initial discussion of the new commands you'll encounter is a trifle dry, it is well stocked with tips and warnings, and is clearly laid out. Then follows practical application of this new knowledge in the development of several data-handling programs. It will take a fair while to absorb the information contained here but should help new disk owners greatly.

### John Minson

```

3,a,11,a,9,a,11,a,13,a,14,a,9,a,
2,a,6
104 DATA a/2,6,a/2,4,a*1.5,2,a/
2,4,a/2,6,a/2,7,2*a,9,a/2,14,a/2
13,2*a,11,a,11,1.5*a,9,a,14,a,1
3,a,11,a,9,a,11,a,13,a,14,a,9,a,
2,a,6
105 DATA 99,99
115 PRINT "White shepherds wat
ched thier flocks by night.":
RESTORE 120: FOR n=1 TO 2
116 READ b,c: IF b=99 THEN REST
ORE 120: PAUSE 20: NEXT n: PAUSE
50: GO TO 200
117 BEEP b*1.5,c: GO TO 115
120 DATA a,5,a*1.5,9,a/1.5,9,a,
7,a,5,a,10,a,10,a,9,a,7,a,9,a,12
,a,12,a,11,a*2,12
130 DATA a,9,a*1.5,14,a/1.5,12,
a,10,a,9,a,7,a,5,a,4,a,9,a,7,a,5
,a,5,a,4,a*2,5
140 DATA 99,99
200 RESTORE 220
205 PRINT "Hark the herald ang
els sing."
206 RESTORE 220: FOR n=1 TO 2
210 READ b,c: IF b=99 THEN REST
ORE 220: PAUSE 20: NEXT n: PAUSE
50: GO TO 300
215 BEEP b,c: GO TO 210
220 DATA a,2,a,7,a*1.5,7,a/1.5,
5,a,7,a,11,a,11,a,9,a,14,a,14,a*
1.5,14,a/1.5,12,a,11,a,9,a*2,11
225 DATA a,2,a,7,a*1.5,7,a/1.5,
5,a,7,a,11,a,11,a,9,a,14,a,9,a*1
.5,9,a,1.5,6,a,6,a,4,a*2,a,9
230 DATA a,14,a,14,a,14,a,7,a,1
2,a,11,a,11,a,9
235 DATA a,14,a,14,a,14,a,7,a,1
2,a,11,a,11,a,9
240 DATA a*1.5,16,a/1.5,16,a,16
,a,14,a,12,a,11,a*1.5,12,a,9,a/1
.5,11,a/1.5,12,a*1.5,14,a/1.5,7,
a,7,a,9,a*2,11
250 DATA a*1.5,16,a/1.5,16,a,16
,a,14,a,12,a,11,a*1.5,12,a,9,a/1
.5,11,a/1.5,12,a*1.5,14,a/1.5,7,
a,7,a,9,a*2,7

```

```

260 DATA 99,99
300 LET s=2: PRINT "It came up
on the midnight clear."
310 FOR n=0 TO 1: RESTORE 330
315 READ b,c: IF b=99 THEN PAUS
E 20: NEXT n: PAUSE 50: GO TO 400
320 BEEP b*1.5,c: GO TO 315
330>DATA a/s,5,a/s,7,a,9,a,7,a,
a/s,7,a/s,9,a,10,a,9,a,7,a/s,
a,12,a,9,a/s,10,a/s,12,a,14,a*s,
12
340 DATA a/s,9,a/s,10,a,12,a,12
,a,9,a,5,a,10,a,9,a,7,a/s,5,a/s,
,a/s,9,a/s,10,a,12,a,9,a,7,a*s,
12
350 DATA a,5,a,4,a,2,a,4,a,2,a,4,a,7,a*
s,5,a/s,4,a,2,a,9,a,7,a,5,a,4,a,
,a*s,0
360 DATA a,0,a,12,a,10,a,9,a/s,
7,a/s,9,a,10,a,9,a,7,a/s,5,a/s,7
,a/s,9,a/s,10,a,12,a,9,a,7,a*2,5
370 DATA 99,99
400 PRINT "O little town of Be
thlehem."
410 FOR n=0 TO 1: RESTORE 430
420 READ b,c: IF b=99 THEN PAUS
E 20: NEXT n: PAUSE 50: GO TO 5
425 BEEP b,c: GO TO 420
430>DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,12,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
440 DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,12,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
450 DATA a,7,a,11,a*(s*1.5),14,
a,16,a,14,a,12,a,11,a,9,a,7,a,9,
a,11,a,12,a*s,14,a*s,2,a*s,7,a*s
,11,s*a,9,a*s,7,a*(s*1.5),2
460 DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,12,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
600 DATA 99,99
9997 RESTORE 450: GO TO 420
9998 SAVE "C CAROLS" LINE 1
9999 POKE 23693,56: BORDER 7

```

## Xmas Holly

on Spectrum

This short and simple program will add a seasonal touch to your TV or monitor screen If you print it out it could also be useful for last minute Christmas cards.



```

1 REM "*** XMAS HOLLY ***"
2 REM * SINLCAIR SPECTRUM *
3 REM "by E.A.DUNCAN-DUNLOP"
4 REM 1 DAN-Y-LAN ABERKENFIG
5 REM Nr BRIDGEND MID GLAM
20 LET C=25: LET B=7
25 PAPER 0: INK 4: CLS
30 FOR A=5 TO 230 STEP 40
40 PLOT a,b
50 LET C=(RND*40)+10
60 DRAW C,C,1
70 DRAW -C/3,-C/5,-2
80 DRAW -C/2.5,-C/5,-2
90 DRAW -C/5,-C/3.4,-2
100 DRAW -C/10,-C/3,-2
110 REM other half of leaf
120 DRAW C/2.5,-C/10,-2
130 DRAW C/3.4,C/5,-2
140 DRAW C/3.4,C/3.4,-2
150 DRAW 0,C/2,-1
160 NEXT A
170 LET B=B+50
180 IF B<150 THEN GO TO 30

```



Xmas Holly  
by E Duncan Dunlop



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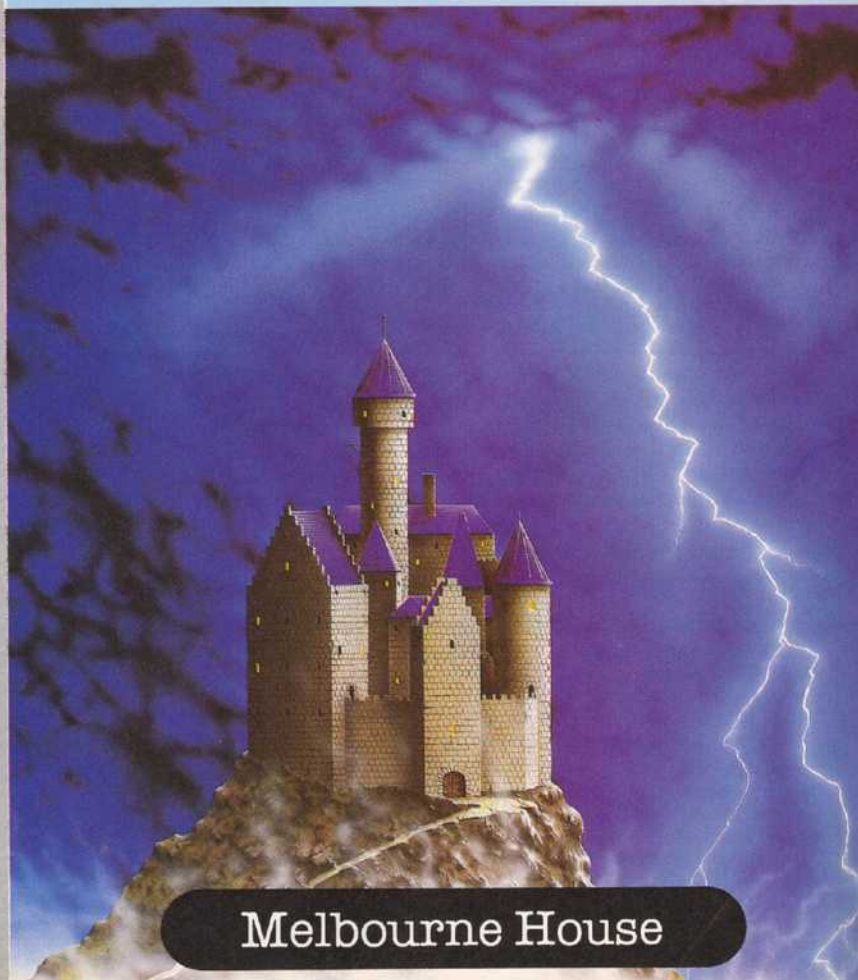
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## Data Read

### on Spectrum

Have you ever spent ages frantically trying to find the last error in machine-code data statements? It can be very tiring on the eyes, trying to check hundreds of numbers from a M/C listing.

However, if you own a Currah micro-speech and ZX Spectrum it is possible for

the speech synthesizer to read out the data to you without you once looking at the screen. Simply type in the program exactly as listed and *Run* it. The program will then ask you for the start line of the data statements.

If you want you could try modifying the program so that it *Peeks* a block of M/C rather than *Reading* it from data statements. It would also be a simple matter to modify the program for any speech synthesizer for any computer. If you have a speech reco-

gnition unit it may even be possible to read out the data to you without you once looking at the screen. Simply type in the program exactly as listed and *Run* it. The program will then ask you for the start line of the data statements.

If you want you could try modifying the program so that it *Peeks* a block of M/C rather than *Reading* it from data statements. It would also be a simple matter to modify the program for any speech synthesizer for any computer.

```
9500 LET keys=0: RESTORE 9509:
DIM b$(10,10): FOR a=0 TO 9: REA
D b$(a+1): NEXT a
9501 INPUT "Start of data statem
ents ":f: RESTORE f
9502 READ a: LET a$=STR$ a
9503 IF a<0 THEN LET s$="m(ii)
(nn)uz": PAUSE 10: LET a=ABS a
9504 LET a$=STR$ a
```

```
9505 FOR b=1 TO LEN a$:
9506 LET c=VAL a$(b): LET s$=b$(
c+1)
9507 PAUSE 60: NEXT b: LET s$="k
om(ar)"
9508 GO TO 9502
9509 DATA "n(or)t","wu(nn)". "t(n
uu)","(dth)r(ee)","f(oo)r","f(ii
)v","sik","sevn","(ai)t","n(ii)
n"
```

Data Read  
by N Osborn

## Memory Search

### on Amstrad

The program enclosed is a fast memory search. It will search through the whole 64K of computer memory in 16 seconds for any given string.

A blow by blow description follows:

#### Program notes

- Line 10. Set up windows.
- Line 20. Create a dummy string (F\$) and prompt user.
- Line 30. This method to input user commands is not the most efficient when only two options are required, it was included as an interesting way to accept keys. It can be used with any number of keys, on any computer supporting the *Instr* function. (you

- can do away with the *Upper\$* if required. Note the leading space in the quotes is required to catch null entries.
- Line 40. Catches any illegal key pressed.
- Line 80. Accepts string to search for (if required).
- Lines 60, 70. Accepts string of values which are concatenated into the search string.
- Line 80. Accepts starting address. The complex part at the end converts those nasty negative values BASIC returns when you take the value of a number larger than &7FFF.
- Line 90. Sets up a counter (A) to step through the memory. Converts the address into MSB/LSB form. Note we can't use amstrads modulus division here as it falls over at values greater than &7FFF, (not a bug, its only supposed work on integers!). The pokes are the heart of the routine. Basic has

stored the address of the dummy string (F\$). We poke the new values into this area and fool the system into thinking the string lives elsewhere, at our address. The *Instr* function is used to check this string for the search string.

- Line 100. Prints the current address being searched, closes the loop, and finishes.
- Line 110. Subroutine to display the address of any matching bytes.
- Notes. All values can be entered in decimal or hex (preceded by &). The routine can be converted to other machines which support the *Instr* command. The pokes on line 90 may have to be replaced with: *Poke VARPTR(F\$)+1, A-M\*256 :Poke VARPTR(F\$)+2,M*. The window commands may be omitted for other machines.

```
5 REM Memory search by Mark Rice. Viking Software 1984
10 MODE 1:WINDOW 1,40,1,3 :WINDOW #1,20,40,10,20 :WINDOW #2,1,20,10,10
20 CLS :F$=SPACE$(250) :PRINT "S>tring or B>yte search ?"
30 ON INSTR(" SB",UPPER$(INKEY$)) GOTO 30,50,60
40 GOTO 30
50 INPUT "Search string ":S$:GOTO 80
60 PRINT "Enter bytes (null to end)"
70 INPUT ">":B$:IF B$<>"" THEN S$=S$+CHR$(VAL(B$)):GOTO 70
80 INPUT "Start address ":A$:S=VAL(A$)-(VAL(A$)<0)*65536
90 CLS #1 :FOR A=S TO 65535 STEP 200 :M=INT(A/256)
:Poke @S$+1,A-M*256 :Poke @S$
+2,M :F=INSTR(F$,S$) :IF F<>0 THEN GOSUB 110
100 PRINT #2,HEX$(A,4) :NEXT :GOTO 20
110 PRINT #1," "HEX$(A+F)"H":A+F :RETURN
```

Memory Search  
by M Rice

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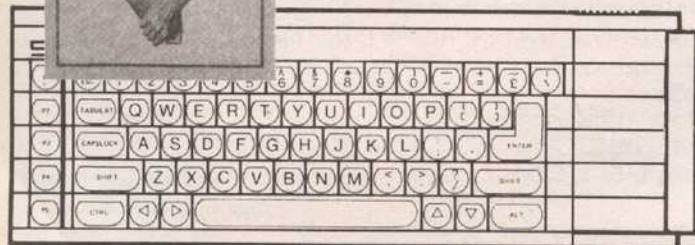
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## A warrior's tale

**A**cross the frozen lakes and forests of the snow-covered land shines the vast saffron moon. The deep snow muffles all sound, even the shriek of a small animal, surprised by a larger predator.

But not all is desolation and fear. A narrow track, now almost hidden by an earlier snowfall, winds through the trees, leading to a small resting-place, a haven in the bleak land. The surrounding snow is bathed in warm light from the misted windows. Let's draw closer...

Flames from the roaring, crackling fire paint the walls with their light and wake the amber heart of the hot wine. "Come now, lad, tell us the story!", cackles one of the group around the fire. "At the turn of the year, we must all repay, with a good tale, the master of this comfort-house for his attentions during the last twelve-month. Even strangers, so — let us hear thine."

He is speaking to a young warrior, sitting in the midst of these old men, his broadsword and leather shield close by his side.

"Aye, I will tell you a story — but not for mine host, welcome though his ministrations have been in this cold night. No, I shall relate my tale for the sake of my master, The Grand Elf. He is sore pressed in this festive season and has sent me in his place. Now, fill your jugs with wine and listen to what he has to tel you..."

From beneath his chain mail, the warrior brings forth a crumpled sheaf of papers.

Following the words with a calloused finger, he begins to read, slowly and haltingly: "As Old Father Time turns his back on 1984 and hobbles off, young 1985 prepares to take over. Winston Smith didn't emerge from his cocoon and the world didn't end as some predicted. But it has been a pretty important year for us computer-users.

"And especially for that most important section, the adventurer (of course, we are a special breed!). Arcade games have become extremely sophisticated in the last year, but to me they have all become the same: at this time last year, even I, ancient as I am, would eagerly await the release of a new Arcade Hit. In the last few months however, along with younger players of my acquaintance, I have become rather bored with the latest *Fred Eats a Hamburger* or *Cosmic Cabbages from Cricklewood*. But adventures have gone from strength to strength. The genre has been, and still is, under attack from those who would wring commercial advantage from any quarter — 'Ah!', they say, 'These Adventure things seem to be quite popular. Get the programmers on it, bung in a four-colour cassette insert, give away a few thousand quid, and we'll clean up'. This may seem cynical, but there is an awful lot of trash at the top end of the market (price-and package-wise), but super stuff at the lower end. Adventures, you see, don't necessarily rely on super-fast machine-coding, although that makes the whole thing even better — no, even slow response times can be forgiven, as long as both scenario and atmosphere are interesting."

Here the young warrior stops and gazes meaningfully at the faces around him, before carrying on "You will, I think, expect me to concentrate on the main adventures of the year in this retrospective. 1983 brought us *The Hobbit*, probably the most influential program (at least in Britain); influential, that is, in bringing adventures to the attention of many who would otherwise have thought the genre boring. *Valhalla* was the other main adventure of 1983, and both these programs are still with us.

"1984, meanwhile, has seen the release of *Lords of Midnight* and *Doomdark's Revenge*. LOM has been as influential as the others mentioned, and there is surely no need for an introduction.

"Another event has made an impact, and

that is the release, on Compunet, of MUD — the Multi-User Dungeon. This is an interactive and dynamic adventure, which changes daily and according to who is playing at the time. For those of you already hooked, look out for the regular series of articles in *Micro Adventurer* by one of the authors, Richard Bartle.

"More good news for Commodore owners was the release of many of the Infocom masterpieces at a very affordable price (although only on disc) — now how about the Atari, Apple and IBM versions? In fact, CBM 64 software is getting better and better, witness *Macbeth*, which I spoke about recently.

"A feature becoming more widely-used is the cash prize. While *Eureka's* 25,000 green ones is impressive, the more modest £400 from Incentive Software for the first adventurer past the winning post of *The Ket Trilogy* is linked to a much better adventure. Rumour has it that the prize has now been won, and by one of the Corner's correspondents, to boot!



"Meanwhile, Level 9 consolidated their position as producers of the most interesting home-grown games available. It has added excellent graphics to develop the atmosphere of its games.

"The Amstrad, I think, will be around for a long while, thanks to the built-in monitor. Because of this, the display is probably the best of the home micros, and there are already some pretty good adventures for the machine, such as the *Arnold* series from Nemesis Software.

Although it would be easy to discuss the well-publicised adventures of 1984, for me the important programs are the less well-known adventures."

Laying down the sheaf of papers, the warrior stops "Here my master has paused to gather his strength. The Grand Elf has enjoined me to return here, at the same time, in fourteen days. Then I shall complete his tale. To give thee good cheer until then, he sends his wish that you enjoy this season of goodwill. And he hopes to see you here again in the New Year, safe and well."

"Aye, lad, well done!", answers one of the old men, nodding slowly. "Thy master is surely a sage scribe, whose thoughts must be slowly digested and pondered. Raise thy cups to The Grand Elf and the noble pastime to which he devotes his waking hours!"

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## Accidental loss

R. Watson of Dundee, writes:

**Q**I have a Dragon 32 and I have been trying to write a piece of code that will enable me to restore a program that has been accidentally *Newed*.

I have not had any success at all so far. Is this actually possible on my machine, and if so how?

**A**One method that you could use is to include the routine below in your programs. Once it has been included, then to restore a *Newed* program, simply enter *EXEC 32750*.

10 CLEAR 200,32749  
20 DATA 158,25,159,131,49,2,159,27,  
159,29,159,31,57  
30 FOR t = 1 TO 14  
40 READ a: POKE 32749 + t,a  
50 NEXT t

## 16K upgrade

J. Wennton of Billingham, Cleveland, writes:

**Q**After previously buying my children a Sinclair Spectrum 16K in December 1982, I have been disappointed at their lack of interest. They say it is outdated and that all the games they have/borrow are 48K.

To help rekindle their interest (and my interest) could you please advise:

1. Do we sell and buy a BBC?
2. What is the best way to upgrade to 48K?
3. Which are the best and most useful add-ons?
4. Can we upgrade the machine past 48K?

**A**I sympathise with your problem — the 16K ma-

chine has always suffered from a lack of software, and indeed could be said to be outdated, due to its limited memory capacity.

I will try and answer your questions one by one, as honestly as I can, bearing in mind that I am as prejudiced as the next man.

I would not sell and buy a BBC, firstly because the second hand market for 16K Spectrums is not good, and secondly because the software you have already bought will be wasted.

The simplest way to upgrade to 48K is to buy a 32K rampack. This is available from most computer shops that stock the Spectrum. From your point of view the best add-ons would seem to be those which will assist game playing. I would recommend a programmable joystick (such as that manufactured by Cambridge Computing).

As far as upgrading the machine past 48K is concerned, the answer is yes you can upgrade, but for what?

There is very little software that makes use of the extra memory available, so I would not suggest that as a course of action for you. Personally, I have never found the Spectrum's memory size to be a major problem.

## Amstrad advice

Andrew Hayward of Chellaston, Derby, writes:

**Q**I am on the brink of buying the Amstrad CPC464 computer as my second home micro. I'm writing to you to ask for your advice. Do you think the Amstrad is going to be a contender in the future against the Spectrums and the Commodores? If so, how well is it backed up by software houses compared with the older micros after their first few months on the market?

**A**The Amstrad is certainly here to stay. I think that it will retain a good share of the home computer market, although more software becoming available will not harm its cause.

A number of software houses that have already made

their names (and their money) in the Spectrum/Commodore software market are already offering, or developing Amstrad versions of their popular games (and other software). I would say that there is not as much software available for the Amstrad as there was for some of the more established micros at the same time in their development, but this is more than compensated by the quality of the Amstrad offerings which is significantly higher.

## Compatibility problem

**Q**With the launch of Commodore's new computers, does this mean Commodore are phasing out the Vic 20?

If so will I be able to play their future games on my Vic 20 with a 16K (switchable) expansion pack.

**A**The Vic 20 does not appear to play any part in Commodore's plans for the home computer market in the future. This means that Commodore supplied software for the Vic will not be produced in the future, although some software houses will continue to produce games for this once-popular computer. Software produced for the new Commodore machines will not be any more compatible with the Vic than is the Commodore 64.

It has always seemed ludicrous to me that home computing should be the one area in the computer field where hardware manufacturers seem to strive to ensure that their customers end up with machines that have a limited life, ie, are not compatible with more advanced or more powerful computers that are produced later.

Commodore is not alone in this attitude, Sinclair has done exactly the same with the ZX81, Spectrum and QL. None of

these machines is capable of running software produced for the other.

I think that maybe it is time that the manufacturers started considering the enhancement sales market as well as the new or second computer sales market (which must be starting to dry up now).

## Mathematical mystery

A. Crawley of Penrith, Cumbria, writes:

**Q**I am trying to find out how to calculate  $\pi$  to any given accuracy (more accurately than usually stored in the computer's Rom). I know it must be possible since various posters and books have shown the expansion of  $\pi$  correct to many, many decimal places. What method is used and is it possible to adapt it for a home computer?

**A**The calculation of  $\pi$  to masses of decimal places has kept mathematicians busy for some considerable time. Many books have been written on the subject of how to use 'calculating engines' to assist in the calculation of even more obscure decimal places. There is indeed an established method for the calculation of  $\pi$  which is documented in more books than I have had hot dinners.

The calculation is suitable for programming on any computer that allows floating point arithmetic to be performed. You need this type of capability to achieve the degree of accuracy required.

It may be simpler for you to simply store a value for  $\pi$  (obtained from one of the books you have seen) that has more decimal places than you require, and simply round up to the decimal place required by the particular calculation you are to perform.

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**FOR SALE. BBC B AND SHARP** cassette recorder and books and software. Worth up to £80 for only £325. Ring 01-643 9061 after 6 p.m. Quick sale preferred.

**48K SPECTRUM, EXCELLENT CONDITION,** excellent condition, very little used. Also, tape recorder; both boxed, plus fifteen games, including "Hobbit" £100. Tel: Jim, 01-485 2251

**SELLING OR BUYING** a used computer/equipment in London and the home-counties? The Computer can help you! Tel: 0375 742434 (anytime).

**COLOUR MONITORS, 14", 2nd user,** excellent condition, no case, £119.50 inc. Tel: Lucas (0482) 702999/701437.

**DRAGON 32** with cassette player and some software plus book of programs. £100 plus postage. Phone: 0443 731000 anytime. Ask for David.

**SELLING OR BUYING** a used computer/equipment in London and the home-counties? The Computer can help you! Tel: 0375 642434 (anytime).

**TIGG 4A B/W TV RECORDER.** TS 232, speech, min. mem. ex basic teatator, + more. £375 o.n.o. (0926) 54118 (eves.).

**QL CHRISTMAS BARGAIN.** Later version hardly ever used hence reason for sale. Boxed with printer cable and game. Any offer over £300. Tel: 01-390 2352.

## Computer Swap 01-437 4343

Free readers entries to buy or sell a computer. Ring 01-437 4343 and give us the details.

## Acorns for sale

**BBC £300** free s/w + data s/w, 2 weeks old. Tel Birmingham 475 2566. **ACORN 280** processor as new with compatible disk drive £650 will separate or include micro. Tel: 0736 87500.

**ACORN ELECTRON** plus tape recorder plus software, magazines and all necessary leads. Will swap for Commodore 64 with C2N or £195. Tel: Sheffield (0742) 585377.

**BBC B 051.2** + Acorn DFS £349 ono, £299 without DFS. Tel: Jason on 091 273 9558 EP44 printer/typewriter, roll holder, mains adaptor, extra paper, (new £280) £199 ono. Tel: Jason on 091 273 9558.

**BBC B** with disk interface and 200K ????. Drive Books + Mags. Sell £500. Mike 01-602 0277 evs.

**BBC WITH TAPE RECORDER** + 200 games £350. Mark Sullivan Tel: Bristol 564596.

**ACORN 48K** for sale with over £100 worth of software. Lots of books and magazines. 5 Oric owners. Tel: 021 744 9345.

**BBC B WITH DISC** interface, accessory cable, guarantee, welcome cassette, instruction manual and software games. All £385 ono. Upgrading through company IBM PC. Tel: 01-340 1097 after 5.30 pm.

**BBCB OS 1.2.2** Joysticks over £150 of software + b/w Sanyo monitor worth £160 and all manuals for £370 ono. Tel: Townbridge 02212 69912 after 5pm.

**QUICKSHOT DELUXE** joystick for BBC B £15 ono, Beebugshot sprite utilities 40 track disc £8. Both in excellent condition and original packing with full instructions. Tel: (0264) 4628 evs.

**ACORN ELECTRON** + tape recorder, £60 worth of s/w. Still under guarantee. £195 ono. Tel: 0742 385377.

**BBC B £300** worth of software, joystick interface, data recorder £350. Tel: Meek (Staffs) 384174.

**BBC MODEL A** for sale, 2 years old, little used, manual etc. £200. Tel: 01-668 3940.

**ELECTRON BBC** Tape recorder + games + 2 extra books, mags £220. Tel: Billingham 551049 after 4pm.

**BBC B 100K** disk drive, £525. Epson FX80 printer £325. Tel: Welwyn Gardens 23684.

**BBC Doctor Who** £5. Brand new, not used. Tel: 01-550 8332.

**BBC Model 32K, OS 1.2** + disk drive + s/w and mags. All leads. 6 months old. Hardly used. Excellent condition — as new. Reason for sale. Bargain £520 ono. Tel: 04024 42642.

## Commodores for Sale

**COMMODORE MPS 801** printer, VIC computer + cassette unit, stack mother board, 32K Program Aid + Super Expander Cartridge, Game Cartridge Cassette, Books + many extras £300. Tel: 0253 691392.

**CBM 64 + C2N** cassette recorder Quickshot daystick, 2 Joysticks, Top games, 2 months old. £240 ono. Tel: Romford 69186 6-9pm.

**VIC 20** + C2N recorder, joystick, cartridge and cassette + Basic Part I + others still guaranteed. Excellent condition £110. 0282 21239.

**FOR SALE** Commodore Vic 20 C2N 16K switchable RamPack software, Quickshot deluxe Joystick Philips V7001 Monitor game. Still under guarantee £245.

**WANTED** CBM/Pet printer and/or disk drive, working or will consider non-working unit. Please phone (0244) 675717.

**WILL SWAP** Cathy personal stereo walkman for CBM64 tape to tape copier or software. Phone Dartford 79745 after 5pm. Ask for Kevin.

**COMMODORE + C2N** cassette unit. £50 of software, quickshot Joystick all in original packaging £150 ono. Tel: 0744 895150.

**VIC-20** 16K switchable Ram + dustcover and Introduction to Basic parts I and II, joystick, 2 books magazines — over 100 games £70. Phone Derek 950 0685.

**COLECO VISION** + Turbo + Atari convert + 13 games £145. Tel: 01-852 5224.

**AMSTRAD CPC 464** Colour monitor + £40 of Amstrad s/w. 6 weeks old. £310 one. Tel: Aylesbury 0296 25479.

**VECTREX GAMES SYSTEM**, built in screen, built in game + 7 cartridges + 2 joysticks. £130 sell £50. Tel: 01-837 7763.

**MICRO VITEX** colour monitor £150 one. Tel: 0760 337461.

**SWORD MS** Boxed unused with guarantee only £100 save £50. Finnee forces to sale. Tel: 0629 56771.

**AMSTRAD CPC 464** £60 of s/w £180. 18 Blakely Court, Blakely, Manchester 9.

**SHARP MZ80K**, Built in monitor + cassette, instruction manual + s/w. £180. Tel: 0254-329 88, anytime.

**NAMAL SPEECH** Super Talker for Spectrum with a little knowledge and a soldering iron could convert for ZX81 only £20. Telephone 0223 835510.

**BOOKS FOR SALE** Assembly Language Programming on the BBC Micro, Creating Adventure Programs on the BBC Micro, and Computer Programming in Basic. £7.50 the lot. Phone: Chelmsford (0245) 50432.

**TI99/4A ADVENTURELAND** software, unused £3.50 plus 50p postage. Mr Thorpe 32 Genshesk-pk, Dunmurry, Belfast, BT17 9BA. Belfast 623001.

**WHITE KNIGHT** platform type game for the TI-99/4A, only £4.95 including p & p. Make cheques/PO payable to M. Davies, 7 Mardon Close, Thornbury Plymouth, Devon PL6 7NY — Basic

**QL FOR SALE** £370 all leads 8 micro-drive cartridges plus psion software 2 books on psion software. Phone Sean, 01-940 0573 after 5pm.

**TI99/4A EDUCATIONAL SOFTWARE** modules. Demolition Division £6. Alligator mix £6. Early Reading £6. Music Maker £12. Texas Program Book £3. All including postage etc. Tel: Warwick (0926) 498388.

**FOR SALE** Electronic games, Astronars £10.50, Galaxy Invaders £7.50, Excellent Condition. Also Amstrad software, Harrier Attack £6.00 and Roland in Caves £6.00. Phone after 5pm, tel: (0)253 718387.

**FERGUSON 14"** colour TV/monitor. Excellent picture on BBC computer or similar. Only 5 months old and virtually unused. Bargain at £190. Tel: Mendham 7130 evenings.

**SINCLAIR QL** latest PM version unused £375 one. Tel: Mendham 7130.

**96K LYNX** + Joystick and interface, software and tape recorder, hi-res graphics, 8 colours, sound worth £390+, only £210. Southend 231926.

**EPSON HX20** with micro cassette £225. Tel: Erclinton 384 (Worcs).

**32K EAST LONDON ROBOTICS** Expansion £15. Brand new, unwanted gift. Tel: 0698 833689.

**TEXAS TI99/4A** Computer extended basic, speech synthesiser, books, leads, s/w £120. Will split, tel: 01-992 6548.

**VIC 20** Cassette 32K switches 6 rom, joystick £200 worth of cartridges + cassettes inc. Jelly monster, jetpac etc. £199. Tel: Farnworth 75133.

**CBM 64** 2 months old £200 of original s/w. £250 one. Tel: Steve on Slough 873 583 office hours — 01-570 2012 evs.

**VIC 20**, 16K switchable memory, C2N cassette deck, joystick, Vix revealed book, manuals, 4 cartridges + cassette.

s/w le: Matrix + jet pack £100. Tel Ripley Derbyshire 48007.

**CBM 64**, Cassette unit, joystick, £150 of bought s/w top little books range. Boxed, v.g.c. sell £290 one may swap for synthesiser Tel: 051 645 7820.

**CBM 64** + C2N recorder, joystick, reference manual + s/w £195. Berk-hampstead 4566.

**COMPLETE CBM** business system Inc. CBM 64 1541 disk drive, MPs dot matrix printer, easy script m/p C2N cassette unit, easy stock, stock system, cassette, controller, 7 games joystick, manual + books. £600. Tel: Aysgarth 329 after 6 pm.

**VIC-20** software banko 16K £5 Jet-pack 8K £4 Arcadia £2 bewitched £3 panic £4 M.L.B.A.T.E.T. £2 avenger £6 skaramble £3 paratroopers £3 sub hunt £1 3D maze £1 or the lot for £30 one. (01) 517 3522.

**CBM 64** Software originals for sale, including Hobbit, Solo flight, Caesar, system 15000, black hawk etc. Most ½ price. Wanted the quick please phone 061 862 5024 after 7.

**VIC20** with C2N cassette deck, 32K switchable rampack, super expander, joystick, light rifle, 33 games including jetpac, skyhawk, computer war, 9 books, magazines dustcover. £190 one. Phone Ongar (0277) 362517.

**CBM printer** MPS 801 + paper; £169 Tel: Gromes barrow 375 evs. deliver.

**VIC 20 STARTER PACK**, Joystick, games, book. 29 games worth £300. Quick sale £150 or swap for Spectrum + extras. Phone: Mark (eve's or weekend) 01-423 1305, will separate.

**CBM/PET SOFTWARE** and spare parts, including RAM chips, C2N recorder, keyboard and monitor, various roms, software (mainly games) on disks and cassettes. Any offers? (0244) 675177

**38-CBM 64** original games inc. Quovadia, Hobbit, Revenge, Encounter, Loco, S. Express, Pamarama, Solo, Beachhead, R.O. Moscow, Zaxxon, M.Mole, Guardian, P. Pigeon, Colossus, Chess 2-0, etc. cost £300+-. Can't split £80+ 01-863 5113 ask for Deepak.

**VIC 20 Super expander** cartridge £18. Machine code monitor cartridge £18. Lightpen + s/w £18. Programmers reference guide £5. All excellent condition. Phone 061-494 1187 after 6pm.

**VIC 20** lots of software, books and the court cartridge. 8K expansion cassette recorder. Will accept £90 one or swap for CBM64 with c2n recorder. Tel: 0636 711714

**VIC 20** computer, FwN cassette unit, 16K Rampack, Intro to Basic Part I, Quickshot joystick £180 of software. Cost over £400. Sell for £175 one.

**CBM 64** cassette recorder + software + Commodore 64 Exposed book + mags in folders, Teach Yourself Computing in various computer languages. Worth £100. Will take £60 one. Quick sale. Tel: 01-743 3619.

**VIC 20** original software for sale at ½ to 1/5 price. Including: Perils of Willy, Cosmic Firebirds and many others. Ring (0743) 60890 after 7pm. Between Monday and Thursday. (Michael).

### Dragons for sale

**DRAGON TO MCP-40** Tandy CGP-115 screen dumps, any pmode, colour/b&w picture, two sizes, bidirectional, £4.50. Cheque/p.o. to Ian Elkington, 11 Wharfedale Gardens, Batdillon, Shipley, West Yorks BD17 6SN.

**DRAGON 32** plus 2 joysticks with tape recorder and software. £35 one. Tel: 0491 35849 (Oxfordshire).

**DRAGON HARDWARE**: Hi-res £12, DASM 110, Quickshot I £7, Sprint £7, Textstar (word processor) £5, Dragon

Trek £3, Space Shuttle and Cruising £2.50 each. All 1st class condition and under ½ price. Tel. Craig on Wickford 66351.

**DRAGON 32**, 80 games + 4 cartridges inc: chess, 2 joysticks, dust cover, £150. Tel: 01-647 7504.

**DRAGON 32** + joystick, 6 games and 4 manuals £110 one, (0934) 813046.

**DRAGON 32**, in box, under guarantee + joystick, books, mags, s/w, tapes, cartridge + more 185. Peter van Die-men. 32 Floyd Road, Charlton SE7 8AN London.

**DRAGON 32**, Cassette recorder, 3 joysticks, books + mags + dust cover, £400 of original s/w, 46 Best Arcade Titles. £150 the lot. As new. Hornchurch 44866.

**DRAGON 32** — lots of s/w. Cassette recorder + joystick. Worth in excess of £500. £150 one. Tel: (0222) 596 585 after 8pm.

**DRAGON** software: Ninja Warrior, Cuthbert Goes Digging, Frogger, Donkey Kong, Katapilla Attack, Electron, Devil Assault, Skramble, Mr Dig, Planet Invasion, Juniors Revenge, £4.00 each. Chess cartridge £10. Others £3. Hayward Heath 458 782.

**CASHBOOK** Program for Dragons either tape or Dragon DOS versions. Please specify £3.50 Peter Leach 95 Donegore Drive, Antrim BT 41 1DZ.

**DRAGON 32**, boxed, new leads. 2 joysticks + software including Hunchback, Defender, Spacewar, Invaders Revenge. Will sell for £120 or swap for 48K Spectrum, still under guarantee. Woking 73863.

**DRAGON 32K** original software. Ring of Darkness, Pettigrews Diary, Knife of Kishtu, Treasure Tome, Inspector Clouseau, Quest, Volcanic Dungeon, Dragonopoly, Active Software Compendium £2.50 pair. Joysticks £6 Phone (0703) 420016.

**DRAGON 32** with books, mags, software including The King, Ugh!, Pettigrews Diary and more, with cassette recorder. Will sell for £180 one. Phone 861705 after 6pm.

**DRAGON, MSX, Atari, Vic-20** Programmer wanted to convert Spectrum program currently in market. 45% of all sales paid. Write to: S. Johnson, 78 Naim Street, Crookes, Sheffield S10 1UN.

**DRAGON** disk drive for sale. Package consists of Cumana disk drive, Delma DOS, manual, demo disk + 1 free disks. Almost 200k storage/disk. £200 one. Ring Wayne on Leeds (0532) 551631.

### Ataris for sale

**ATARI 400/800 XL** s/w for sale. Inc. Donkey, Dig Dig, Frogger etc. All originals from 5 p & p. 021 378 2112.

**ATARI 600XL**, 1010 program recorder, Pole position and others, notes, magazines, books, manuals, joystick etc. Worth £200, sell for only £120. Telephone Ashbourne 42869 after 5pm Stephen.

**ATARI DATASOFT** Basic compiler cost £70 sell for £50 or part exchange for Teletext decoder board or chip sets. Tel: Millon 2998 after 5 pm.

**ATARI 400**, under guarantee, cassette recorder, manuals, lots of s/w, excellent condition, boxed £110 one. Perth 2526.

**ATARI 800XK, 64K 1010**, Cassette unit, £400 of original s/w. Extra manual, joystick, guarantee, boxed £600. Sell £315 one. Tel: 01-554 1640.

**ATARI 400/800** software all original mostly cartridge (inc. Pole Position, Donkey Kong, Dig Dig etc.) £5 each or 10 for £45 or 20 for £80. Tel (021) 749 4603 (Pete).

**ATARI** owner's put your children to the test. A month program for children between 8 + 11 years old. Please ring 01-639 8857. For more details (one only).

**BARGAIN!** Atari 400 + basic + recorder + s/wara + joysticks + leads etc + books and program listings. Must sell £75 one. Canterbury (0227) 450631.

**ATARI 400** 16K plus recorder plus basic and £150 of s/w including pole position French vgc manuals also leads and magazines vgc bargain at £150 one. Telephone Leicester 738791.

**ATARI** Joystick to fit Tandy model I £12.00 one only. Tel: M Dawson 041 552 4722.

**ATARI 600** Recorder, £200 of original s/w £180 one. Tel: Romford 61591.

**BBC B** + Watford DFS, exmon, disk doctor, tanders drive plus disks, replica, speech synthesiser, tape recorder plus leads, joystick, computer desk + chair colour TV just more £750. Tel: Hitachi 815662.

**ACORN ELECTRON** — computer cassette recorder £50 of s/w 6 months old under guarantee. £190 one. Tel: Sheffield 551235.

**BBCB** with wordwise + graphics rom + lots of s/w books and joystick all for £300. 14" colour monitor £150. Tel: Simon 0732 833163.

**BBCROMS** for sale, Addcom. Exmon 1.1, beebfont, micronet, extensions, sleuth, graphics, also much original software. Will sell for half cost price, or swap for synthesiser equipment call Stuart on 061 485 2848.

**ATARI 400** Basic cartridge, several games on cartridges including Dig Dug, Centipede only 4 weeks old. Unwanted gift. Cost £145. Sell £70 0329-287684.

**"ACORNSOFT"** programs on cassette for BBC model "B" monsters, invaders, draughts, etc. 3 original cassettes in packs as new. Accept £3.75 each or £20 the lot (0244) 675717.

**CBM 1541** Disk drive. CBM serviced. condition as new, inc games disk £180. Ring Roger 01-890 3107.

**COMMODORE 64** original software space pilot, harrier attack, psitron £3.00 each. Grandmaster, quill £6.00 each one or swap. Telephone (0789) 841034. Ask for Daniel.

**CBM 64** + cassette deck, joystick, £240 original s/w £270 one Tel: Craig 061 643 0899.

### Computer Swap 01-437 4343

Free readers entries to buy or sell a computer. Ring 01-437 4343 and give us the details.

### For Sale

**INTELLIVISION WITH CARTRIDGE** £60 o.n.o. One year old. Other cartridges available. Spike Vectrex cartridge £10. Acrontron cartridges £5-8. All excellent condition with original packaging. Cartridges include postage. Tel: 01-802 8724 evenings.

**ACORN Z80** package complete with twin 40180 disc drive £650 o.n.o. Will separate, or include micro for £1000. Tel: 0736 87500.

**PET COMPUTER** built-in V.D.U., cassettes of programs, games etc. includes cassette unit, good working order. Could deliver N.W./Midlands/London area. Bargain! £135 o.n.o. (0244) 675717.

**KNIGHT LORE** (original) £5. Also Underwinder and Sabre Wulf £5 each. All have original leaflets. Postage and



**TEXAS TI99/411.** Boxed as new. Complete with Adventure Module, two adventure tapes and teach yourself basic tape £50 o.n.o. Fareham (0329) 286292.

**TX80 EPSON PRINTER** — 100 cps parallel printer — brand new cond. Offers? Tel: 01-881 2525.

**CYRUS IS CHESS 16K/48K Spectrum**, brand new!!! Only £6. Letters only to: Mr S. P. Stratford, 87 Dachworth Turn, Leverstock Green, Hemel Hempstead, Herts. HP2 4PE.

**VECTREX VIDEO GAME**, built-in CRT screen, two games, light pen. Swap for microdrives, modem or any computer bits or sell. Phone 01-540 9368 after 6 p.m.

**COMPUTERS FOR SALE** very cheap price accepted. Dragon 32 plus joystick and software. Offers. Also Oric, Atmos, both mint condition. Write to 1 Heol-y-Graig, Crynant, Neath or Tel. Crynant 750952.

**VIDEO GENIE EG 3003.** Built in cassette 16K. Lots of software books, manuals. All in good condition. Offers phone 958 8516

**JUPITER ACE ZX-PRINTER** adapter board and software (for 19K or 8K machine). Yours for a fiver. J. Kennedy, 32 Bayview Road, Bangor, Co. Down, N. Ireland, BT19 2R.

**WANTED** Faulty dragon or bits of dragon anything in any condition. Good price paid. Tel: 0362 87327.

**WANTED** Aquarius. Any form send details to C. Sully Four Winds CWM Lane Rogerton Newport Gwent NP1 9AF. £15 for basic machine extra for peripherals. Tel: Newport 895242.

**WANTED** Jupiter ace £15 with extras. Tel: Newport 895242.

**WANTED** Acorn atom disk drive and any other peripherals. Tel: 041 639 6482.

**CASTLE COLDIZ/Toothpaste tubes** (K-tel) £5. Codename smut £4. Both spectrum word processing book £8. Home applications (hardback) by Sunshine £7. All for £20. Swap for ZX printer and paper. Preston (0772) 724992.

**URGENTLY** required for Xmas ZX Spectrum microdrive and Interface 1 £202 721529.

**ACORN** electron 32K + joystick + joystick interface + 10 games + 10 mags. will swap for spectrum 48K + interface 1 + microdrive or will sell for £220. Worth £310. Tel: (0386) 83089.

**WANTED** ZX microdrive and profesal keyboard. Must be in excellent condition. Will swap each for £60 of games or pay £18 for microdrive, £15 keyboard. Tel: Granemouth 486120 after 7pm.

**WANTED** Speech synth for Vic-20 also vic-tapes 3 4 and 5 urgent. To Michael Croly 33 Kicks Road, Moolands, Lancaster Lanes.

**CB SUPER 7** built in SWR etc swap for printer RS 232 interface CB Harvard CB 40 Shannel Swap for ZX printer Tel: R. Dyre — 0795 26592.

**WANTED** simple BBC arcade game written by reader for school project so has to be original urgent. Willing to pay up to a £5 on your tape please try — very urgent. Tel: Conn on 01-868 4124.

**WANTED** 2nd hand dragon computer. Tel: 0335/43729 Contact Miss Elaine Ritchie — (Private advert).

**SWAP** Apple IIT 48K + disk drive + modem + w/p s/w. For dragon 64 and disk drive + OS/Flex. Or sell. £320. Tel: 01-673 7877 Wed (eves).

**WANTED** CBM64 + CBM diskdrive Tel: 0705 473968 after 6pm.

**WANTED** 16/48 magazine tape no. 11 and 30 hour basic spectrum version. Tape or book. Phone after 7 pm 01-800 667.

**SWAP ATARI** 400, recorder, joystick,

books, magazines, value £260 for CBM64 only. Phone East Grinstead (0342) 312297.

**BASIC COMPILER** urgently wanted for Oric-1 computer, willing to pay high price. Phone (0742) 304-316 or write to: John Hayes, 24 Whitworth Road, Crossopool, Sheffield S10.

**PROGRAMMER WANTED** to convert spectrum program currently on market to dragon Vic-20, Oric, Atari etc. 45% of all sales paid write to S. Johnson, 78 Nain Street, Crookes, Sheffield S10 1UR.

**SWAP 4K** Aquarius plus twenty games, two manuals and two program books boxed as new for any working spectrum might be able to collect if interested please phone s/a/a 720588.

**SWAP** My G7000 with fourcartridge and BMX helmet for any 48K spectrum with leads will collect if in Glasgow area phone 041 942 0074 after 5pm.

**WANTED C.B.M. 64** adventure games, by Channel 8, level 9, or ones written by you will pay good prices. Write to Neil Reynolds 55 Leam Cres Solihull West Mids B92 8PB.

**WANTED AMSTRAD CPC464** (either model) for 48K spectrum cassette recorder, joystick plus interface and software, cost £300 + write to C. Sully, Four Winds CWM Lane, Rogerton Newport Gwent NP1 9AF if interested.

**VIC-20** M/C programmer wanted to convert spectrum program currently on market 45% of all sales paid for full retail 1541 DISK DRIVE 1 year old, CBM serviced, as new £145. Tel: Roger 01-890 3107.

**VIC20 CASSETTE**, introductory books + games. £35.00 Tel: 67759 (daytime).

**CBM 64 SOFTWARE** for sale, games creator, gas-kit, plus many more, most games half price and in excellent condition. Phone 0254 852 779 (Simon).

**CBM 64 SOFTWARE** J.Lander, Sea wolf, Lazarian, Soccer— £5. Attack Mutant, revenge, H/bover— £4, S/ pipeline £3, Hustler, Kick-off— £3, Caesar/c £4, Hunchback, Mr Wimpy £3, F/forest £4, Gridtrap £4, Labyrinth £2. Ring 593 6579.

**CBM 64** (v.g.c.), cassette unit, dust cover, leads, manuals, books, listings and software including Colossus chess, Hover Bover, etc. Only £190 ono. Tel: Jason 01-949 5086, after five pm.

**UNREPEATABLE BARGAIN** CBM64 excellent Christmas present, unwanted gift. Worth £199, my price £149. Quick sale. Contact John after 4pm weekdays, wend 061 881 4496.

**VIC 20 C2N** + cartridge + many cassette games, 15 originals. Offers around £50.00. Tel: 01-642 7351 after 4pm.

**CBM PET 2001** £50.00 or swap for any computer. Tel: Tom 07842 45491.

**CBM 64 C2N** Joystick, s/w. Introduction to basic, part I (still boxed) plus 26" colour TV desk. Value over £500 will accept £250. Tel: (0734) 883238 nr. Duxbury.

**ORIGINAL VIC20 S/W** Skyhawk, Hopper, Artoids, Engine Shed. £3 each. £10 the lot. Football Manager + Cricket £1.50. Tel: 0704 69383.

**VIC 20** cassette unit, joystick, Intro to Basic Part I & II, dust cover, 16K Switchable Pampaq, 2 Books, mags, over 100 original games £110. Tel: 01-950 0685, Derek.

**DRAGON 32** + modem + speech + s/w. Swap for any other computer. Tel 061-620 7369.

**BRITISH SILVER** coin collection and 18c diamond ring for a Spectrum + Printer accessories. Tel: 01-966 7384

**WANTED** Spectrum VTX 5000 modem. Tel: 01-858 0253 (London).

**ZX PRINTER** Will accept £30 or swap

for Curran Microspeech. Tel: Taddington (Beds.) 3265 or will also swap for ZX Interface 1.

**WANTED** Microdrive, Interface 1 + cartridges. Swap for Stonechip programmable joystick interface + £60 s/w incl. Full Throttle, Hurg, Stagecoach, Blade Alley, Deathchase, Atic Atac, Chuckie Egg. Phone (0287) 32561 (after 4pm if on weekdays).

**STACK** Light Rifle with software + Joystick + £50 software etc. Cost £110 swap for Interface 1 or Microdrive or Spectrum modem or sell for £50. Phone: (0342) 713422.

**SWAP** my 16K ZX81 computer with £35 worth of software + £40 for a 48K Spectrum. Ring (0424) 442565 evenings. Ask for Graham.

**SWAP Q/Shot II** plus program — able Interface used once plus seven original software titles for one complete Curran Microspeech. Please phone Hinckley 614597 evenings

**SWAP** Trickstick plus games for ZX or Alphacom 32 printer. Phone Bruce on Hornchurch (04024) 59745 after 4pm.

**SWAP** Kempston Interface + Quicks-hot Joystick for Alphacom Printer. Phone: Douglas on 907-1294 or sell for £15.

**WANTED** for Spectrum, Original Ant Attack and Bugaboo, good price paid. Tel: Crynant 750952 or write to Andrew, 1 Heol-y-Craig, Crynant, Neath, SA10 8TF

**WANTED:** GCP115 or MCP40 printer plotter for Dragon 32: priced around £80. Tel: Clapham 560 (Yorks).

**FOR SALE:** Fuller Orator. Sell for £20 or swap for Amstrad MP1 or Amstrad firmware, manual or Amstrad software. Write to Derek Scott, 26d Harden Place, Hawick, Roxburghshire Scotland.

**TEXAS T1 99/4A** Disc drive or other hardware. Tel: 0404-850699.

**SWAP** Currah Speech unit for microdrive without Infrace 1 or swap Prism VTX 5000 modem for Interface 1 and microdrive. Phone: (0707) 42065 after 7pm.

## Spectrums for sale

**SPECTRUM 48K** + printer + Rat joystick + software. Only 6 months old. Swap for CBM 64 or £140. Phone 979 7509 and ask for Jonathan after 4.30.

**48K SPECTRUM**, Interface 1, microdrive, 3 cartridges, ZX Printer, recorder £80 + S/W ie. Hobbit, Jelpac, Backgammon, Football Manager, Zeus Assembler + more. Microdrive + m/c books. £200. Tel: Earl Shilton 45358 (Leicester).

**48K SPECTRUM** keyboard, Interface 1, programmable joystick, Seikosha GP 505 printer + some software. Cost over £360. Will sell for £220.00 or will split. Tel: Edinburgh 031-5573875 after 7pm. Ask for Tom.

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 Problem .....  
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 Address .....

send it to us, and a fellow adventurer may be able to help.

Remember — the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

**The Hulk on Spectrukm.** How do you get the egg and what do you do with it? P West, 10 Grange Avenue, Scarborough, N Yorks.

**Ship of Doom on Spectrum.** How do you use the sonic screwdriver? How do you get the key from the glass case? Can you melt the ice? Gaving Read, 45 Avenue Road, Falsgrave, Scarborough, N Yorks.

**Rescue from Castle Dread on Vic 20.** I have reached the castle but how do you use the barrel there, or get in? Tom Maskell, 36 Southampton Road, Lymington, Hants.

**Fantasia Diamond on Spectrum.** How do I open the music room door? I have the diamond, violin, baton and books. Rod Jones, 18 Buttermere Drive, Allestree, Derby.

**Golden Apple on Spectrum.** Can you move the lever without breaking it? How do you light the gas

lamp? How do you cross the ravine? How do you climb the cliff? Andrew 'Davros' Simmons, 3 High Street, Drybrook, Glos.

**Mountains of Ket on Spectrum.** I cannot get past the dragon or the skull. Robert Mowe, 25 Saxham Street, Stowupland, Stowmarket, Suffolk.

**Knights Quest on Spectrum.** How do you rescue the princess? Where do you find a light to enter the dark tunnel? A Watters, 40 South Grange Avenue, Prestonians, East Lothian, Scotland.

**Fantasia Diamond on Spectrum.** How do you cross the river and what does 'wait for it' mean? John Whelan, 114 Laburnum Grove, Runcoorn, Cheshire.

**Heroes of Karn on Commodore 64.** How do you kill the spider, get past the witch and kill the vampire? P M Berry, Pay Office, 1 Gordons,

BFPO 24.

**Lords of Time on Spectrum.** How do I get past the caverns? Brian Finnerty, 23 Towersey Drive, Thame, Oxon.

**Inca Curse on ZX81.** How do you get out of the fire room alive? Which articles do you need to get down the porthole? Seth Feltham, 141 Piccasso Way, Shoeburyness, Essex.

**Adventureland on Vic20.** I cannot get past the bear which is blocking my way. Gareth Pemberton, 51 Redhouse Lane, Bredbury, Stockport, Cheshire.

**Inca Curse on Spectrum.** I cannot put the tyre out in the tyre room. Please help. Stuart Langridge, 17 Admiral's Road, Park Gate, Southampton.

**Old Father Time on BBC.** I am stuck in the clearing and lost in the forest. Scott Kelly, 12 Pollock

Road, Bearsden, Glasgow.

**Special Operations on Spectrum.** I cannot get into the compound. Michael Cooney, off Galway Road, Roscommon, Co Roscommon, Eire.

**The Hobbit on Spectrum.** Once through the wine cellar, how do you find lake town and 'bard'? where is the key for the mountain-side door? John Osbourne, 28 Edwin Avenue, Woodbridge, Suffolk.

**Voodoo Castle on BBC.** How do you get the ju-ju bag? Jason Wright, 99 Carter Drive, Collier Row, Romford, Essex.

**Hobbit on Commodore 64.** I am trapped in the goblins dungeon. I have found the key and I have the sword, the rope, the golden key, the map and the curious key. Chris Barnes, 19 Scaulway Key, Clifton, Nottingham.

**Hobbit on Spectrum.** How do I escape from the goblins dungeon? How do I escape down the river from the elevenkings halls? James Haslam, 6 Sittingbourne Avenue, Bush Hill Park, Enfield, Mddx.

**Valhalla on Spectrum.** I cannot find Ohir and I have had the program for three months now. Help! Paul Waggett, 9 Lexton Drive, Churchtown, Southport, Merseyside.

**Curse of the Werewolf on Vic20.** How do you get into the castle that is guarded by the zombie. Guy Cliffe-Jones, 25 Somerset Road, Edgebaston, Birmingham.

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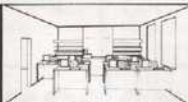
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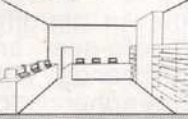
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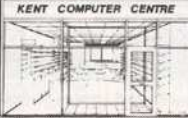
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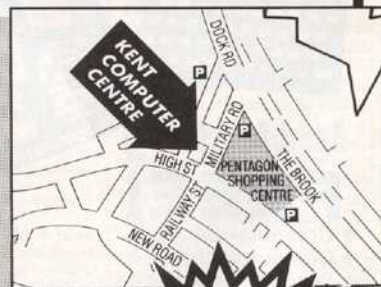
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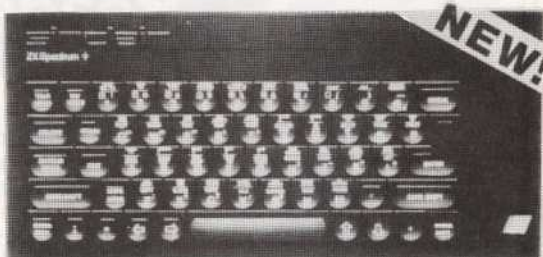
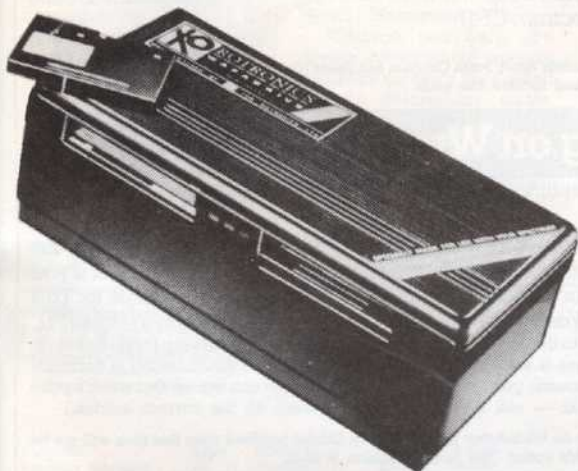


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  - (-) Alice in Videoland (Audio Gemic)
  - (-) Jet Set Willy (Software Projects)
  - (10) BMX Racers (Master Tronic)
  - (-) Beach Head (Centrosch)
- (Figures compiled by Boots/Websters)

- Spectrum**
- (2) Daley Thompsons Decathlon (Ocean)
  - (3) Jet Set Willy (S/Project)
  - (-) Cyclone (Vortex)
  - (4) Full Throttle (Micromega)
  - (-) World Cup (Artic)
  - (5) Matchpoint (Sinclair)
  - (-) Tornado Low Level (Vortex)
  - (-) Pyramarama (Mikroton)
  - (-) Beach Head (Centrosch)
  - (-) Avalon (Hewson)
- (Two titles tie for 9th position)  
 (Figures compiled by Boots/Websters)

- Dragon 32**
- (2) Hunchback (Ocean)
  - (5) Chuckie Egg (A & F)
  - (9) Dragon Chess (Oasia)
  - (4) Cuthbert in Space (Microdeal)
  - (1) Manic Miner (Software Projects)
  - (7) Mr Dig (Microdeal)
  - (10) Sprite Magic (Knight Software)
  - (3) Hungry Horace (Melbourne House)
  - (8) Kriegerpiel (Beyond)
  - (-) Bug Driver (Master Tronic)
- (Figures compiled by Boots/Websters)

- BBC**
- (4) Scrabble (Leisure Genius)
  - (3) Elite (Acorn)
  - (-) Horse Lord (Century)
  - (-) Challenger (Master Tronic)
  - (10) Duck (Firebird)
  - (5) Football Manager (Additive)
  - (-) Gold Digger (Firebird)
  - (8) Mini Office (Database)
  - (3) Elite (Acorn)
  - (8) Jet Pac (Ultimate)
- (Figures compiled by Boots/Websters)

- Atari**
- (1) Attack of Mutant Camels (Llamasoft)
  - (2) Zaxxon (Centrosch)
  - (4) Gridrunner (Llamasoft)
  - (5) Slinky (Centrosch)
  - (7) Encounter (Hi-Tech)
  - (-) Sub Commander (Thorn EMI)
  - (-) Tank Commander (Thorn EMI)
  - (-) Pacman (Atari)
  - (-) Centipede (Atari)
  - (10) Crazy Kopter (E/Soft)
- (-) Sleepie Jack (E/Soft)  
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- Amstrad**
- (7) Snooker (CDS)
  - (9) Harrier Attack (Amstrad)
  - (8) Forest of Worlds End (Interceptor)
  - (-) Code Name Mat (Amsoft)
  - (-) Chords (Micro Power)
  - (-) Chess (Amstrad)
  - (10) Star Commando (Terminal)
  - (-) Roland in the Cave (Amsoft)
  - (-) Harrier Killer (Amsoft)
  - (-) Roland on the Ropes (Amsoft)
- (Figures compiled by Boots/Websters)

# Diary

Event	Dates	Venue	Admission	Organisers
<b>Which Computer? Show</b> (over 18s only)	Jan 15-17 (1985) 10.00am-5.00pm Jan 18 10.00am-4.00pm	NEC Birmingham	Free in advance from organisers	Clapp and Poliak 01-861 5061
<b>Hi-Technology and Computers</b> in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-3.00pm Jan 25 11.00am-3.00pm Public: Jan 26 11.00am-6.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01-930 1612
<b>Apriect and Sirius Computer</b> Show	Feb 5-7 10.00am-6.00pm	Kensington Town Hall London W8	Free in advance from organisers	Paradox 01-241 2354
<b>The LET '85 International</b> Trade Show	Feb 17-18 10.00am-6.00pm Feb 19 10.00am-4.00pm	Olympia 2 London W6	Free in advance from organisers	Turret-Wheatland 0923 777000

# Readers' Chart No 4

- (1) Daley Thomson's Decathlon (*Spectrum/C64*)
- (2) Knight Lore (*Spectrum*)
- (5) Underwulde (*Spectrum*)
- (-) Booty (*Spectrum/C64*)
- (6) Beachhead (*C64*)
- (3) Elite (*BBC/Electron*)
- (4) Ghostbusters (*C64*)
- (-) Kokotoni Wilf (*Spectrum/C64*)
- (-) Sherlock (*Spectrum/C64*)
- (-) Match Point (*Spectrum/C64*)

**Ocean**  
**Ultimate**  
**Ultimate**  
**Firebird**  
**US Gold**  
**Acornsoft**  
**Activision**  
**Elite**  
**Melbourne House**  
**Psion**

**Week 4: Winners** - Simon Aston, Tedder Road, South Croydon and Stuart Masters, Corbets Tey Road, Upminster, Essex who share the £100 'pot' and receive £50 each.

## Now voting on Week 6 — £50 to win

Each week Popular is compiling its own special software top ten chart — compiled by YOU.

All you have to do to vote is to fill in the form below with the names of your current three favourite software titles (or copy the form on to another sheet if you don't want to damage your magazine) and send it off as soon as possible to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

We will send £50 each week to the person who correctly predicts that week's top three. If there is no winner then that week's prize is automatically added to the chart on which voting is currently taking place, and so on until someone gets it right! (If there is more than one winner that week's prize — whatever the 'pot' stands at — will be split equally between all the correct entries.)

Voting for Week 6 closes at 2pm on Wednesday January 2 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final.

Name.....	My top 3: Voting Week 6
Address .....	1.....
.....	2.....
.....	3.....



## COMPELLING

What with *Elite's* continuing chart dominance it's possibly inevitable that most other BBC releases are tending to be overshadowed including a re-



of puzzles. There is also an adventure equivalent of becoming *Elite* — venture far enough into the adventure and you may enter the Master section — an area so difficult that if you go in you will not be able to leave.

It's silly to attempt a serious analysis of an adventure as large as this until it's been around a while and time has been spent with it. My brief session has led me to believe it's pretty compelling. I found a lot of interesting looking locations and solved one puzzle only to be killed. I'm going back for more, though.

**Program** Acheton  
**Price** £17.95  
**Micro** BBC  
**Supplier** Acornsoft  
London Road  
Wellingborough  
Northants NN8 2RL

cent group of releases from Acornsoft. Of these several are of more than passing interest and Acheton may keep Tony Bridge's postbag full for weeks.

Apart from anything else, it is text adventure so vast it's contained on two discs. It understands fairly complicated sentences like, for example, Take all but lamp and bottle and Drop the Keys. Several commands can be linked with each response appearing to each part of the conjoined sentence on screen but separately — so you can work out what bit didn't get the response you hoped for.

There are no graphics, but the screen is split into two sections, descriptions and command/result. There are 350 locations to explore, treasure to collect for points and dozens

Amstrad owners into adventuring have been kept occupied (almost singlehandedly) by the *Arnold Blackwood* series of adventurers by Nemesis Software. The third section has recently been completed and is entitled *The Wise and Fool of Arnold Blackwood*.

Although text only, the screen design for the program has been carefully considered so that descriptions, inputs, objects and responses are clearly delineated.

The blurb for the game boasts that there are no sudden deaths, ie, merely going East rather than West isn't going to leave you impaled on a spear or blasted by a death ray. All

that happens in the game is you go no further, unable to penetrate any further into the labyrinthine mysteries and hating yourself for being such a dummy.

Characters from previous Arnolds turn up here — Mexican Pete, Lord Erbus; Rochdale features heavily as do grave-stones and daffodils. There are cinematic references aplenty for buffs and conspiracy theorists will enjoy the paranoia that pervades the adventure.

**Program** *The Wise and Fool of Arnold Blackwood*  
**Price** £8.50  
**Micro** Amstrad CP464  
**Supplier** Nemesis  
10 Carlow Road  
Ringstead  
Kettering  
Northants NN14 4DW

Herefordshire — you discover your cottage is the subject of much rumour, perhaps it contains a mystery, or treasure even...pretty creepy eh?

The different sections of the screen display are highlighted in different colours, I suspect that the game is more funny than serious since the first couple of locations contained a dog with money, a Commodore computer, a suit and other silly objects — very rustic.

**Program** *Country Quest*  
**Price** £8.50  
**Micro** Commodore 64  
**Supplier** Wye Valley  
Parton House  
Kinnersley  
Herefordshire

## RUSTIC

*Country Quest* is an adventure for the Commodore 64 is the classic text mould — something of a rarity among recent Commodore releases. The plot appears to entirely lack dragons and mystic orbs — another big bonus.

The story begins with you taking a holiday in darkest

## PENGUINS

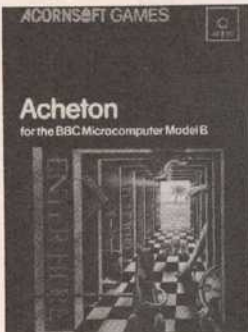
*Manic Miner*, the program that spawned a million inferior copies has reappeared, with a version for the Amstrad. How well does Willy travel? What's the music? Are there still penguins? These, I know, are the crucial questions Amstrad owners will ask.

A close examination of the various screens in the demo mode (I never got past the sixth screen by legitimate means) reveals that they are almost exactly the same as the Spectrum ones almost pixel by pixel.

If you have an Amstrad you will, I'm afraid, have to buy *Manic Miner* or else deny arcade games altogether.

**Program** *Manic Miner*  
**Price** £  
**Micro** Amstrad  
**Supplier** Amsoft  
Brentwood House  
169 Kings Road  
Brentwood  
Essex

## WISE AND FOOL



## This Week

Program	Type	Machine	Price	Supplier	Logo	Ut	Amstrad	£19.95	Kuma
Fantasia Diamond	Ad	Amstrad	£7.95	Hewson	Sim	Arc	BBC	£7.95	CSM
Jewels of Babylon	Ad	Amstrad	£6.00	Interceptor	Statix	Arc	BBC	£7.95	Psion
Wise and Fool of AB	Ad	Amstrad	£6.50	Newesis	Country Quest	Ad	Commodore 64	£5.50	Wye Valley
Manic Miner	Arc	Amstrad	£7.95	Amsoft	Dungeons of Ba	Ad	Commodore 64	£12.95	Quicksilva
Technician Ted	Arc	Amstrad	£7.95	Hewson	3D Lunattack	Arc	Commodore 64	£7.95	Hewson
Heathrow Internation	S	Amstrad	£7.95	Hewson	Big Ben	Arc	Commodore 64	£7.00	Interceptor

## PICTURES

As has been said many a time in this and other columns the *Quill* adventure writing system has single-handedly raised the inventiveness of text adventures by allowing people with good ideas to implement them without recourse to machine code. The *Quill* allowed for the creation of text only adventures, but the latest development from Gilsoft, *The Illustrator* changes all that — now your *Quill* adventures can be illustrated.

The *Illustrator* is designed to be used after the basic text adventure has been created. What you get is a rather good artist program where each picture you create is assigned to a particular location — a cursor moves around the screen under keyboard control, you choose colours, rate of movement (for fine lines the cursor can be moved — one pixel at a time).

One very sophisticated feature of the program is a subroutine which enables you to define pictures for use within other locations — thus, for example, in a dungeon location

or a maze section you might want some very similar looking rooms, perhaps the windows and doors may all look the same. Simply design one window and one door and *voila*, as many as you want. The 'scale' feature lets you have bigger and smaller versions of a designed shape — an excellent feature.

Shapes can be filled with any of 255 different kinds of shading and for those with a meticulousness bordering on the insane, there is a freestyle plotting option that lets you switch on individual pixels.

All in all you're getting just about the best designer program I've seen for the Spectrum which just happens to be compatible with the *Quill*. One other amazing detail — the system works by using overlays meaning that effectively no extra memory is used; in fact, Gilsoft say you get an extra 5K — leaving a total of 35K for your adventure. You have the technology, now let's have the ingenious adventures.

**Program** *The Illustrator*  
**Price** £14.95  
**Micro** Spectrum  
**Supplier** Gilsoft  
 30 Hawthorn Road  
 Barry  
 South Glamorgan

## SANTA

All things considered, there are not too many Christmas programs around, ie, programs which feature Santa Claus, reindeer, chimneys, toys, Christmas trees and the like. Probably this is because the merry season doesn't last long enough — when it's over who's going to buy your *Perils of Santa Claus* epic?



Pick of the week

## QL QUEEN

The almost mythical QL chess program is finally here and it is, quite simply, the best chess program available on any micro, not only because it beats the pants off pretty much every other chess program (and most human players) but because the graphics are stunning.

The chess board is presented edge on — the back appearing 'higher' than the front — thus you look on the proceedings as you would playing a normal game rather than from the top down as in all previous efforts. This means that the highly detailed chess pieces appear to move around and behind one another — a startling effect.

Every option you could conceivably want is provided — take back move, set up positions, change ends, hint (very useful), analysis (you can see the computer trying out different ideas), next best and so on. Particularly useful — the levels are defined according to how much time they take to respond, the choices range from a second or so to four minutes, so you know how long you'll need to wait for the next move. The 'when the hell is this machine going to decide to do something' syndrome ruined

many a computer chess program.

Psion's *Chess* is something of a salvation for QL owners, there should just be time to slip one into the Christmas stocking and have something to play with on the machine other than the four utilities — it augurs



well for future software if this is what the QL is capable of. Incidentally, the blasted thing said 'bad or changed medium' four times before it loaded.

**Program** *Chess*  
**Price** £19.95 (£14.95 through Club)  
**Micro** QL  
**Supplier** Sinclair Research  
 Stanhope Road

*Merry Xmas Santa* is one of the exceptions and comes from Icon Software for the BBC. Your task is to guide Santa across the rooftops delivering presents to all the houses. Try to avoid the slope of the roof (or you'll slip to a snowy death) and, on later screens, rather lame looking

snowballs.

Here and there, there are bonuses in the form of cake, pudding and sherry. The graphics are played as you leap across the rooftops. But arcade addicts be warned, technically it's nothing special — quite slow in fact, and whilst later



## This Week

Castle of Jasoom	Arc	Commodore 64	£12.95	Quicksilver
Monopoly	S	Commodore 64	£12.95	Liesure Genius
Space Shuttle	S	Commodore 64	£9.95	Activision
Mubungy	Ad	Dragon	£1.99	Snips
Cecil Plays 21	S	Dragon	£1.99	Snip
Craps	S	Dragon	£1.99	Snip
Telepath	Ut	Dragon	£1.99	Snip
QL Chess	S	QL	£19.95	Sinclair

Airwolf	Arc	Spectrum	£6.95	Elite
Technician Ted	Arc	Spectrum	£5.95	Hewson
Highway Code	Ed	Spectrum	£6.95	Rose Software
Physics O Level	Ed	Spectrum	£6.95	Rose Software
Panzer Attack	S	Spectrum	£5.95	Lothlorien
Space Shuttle	S	Spectrum	£7.95	Activision
The Illustrator	Ut	Spectrum	£14.95	Gilsoft

Key: Ad — adventure/Arc — arcade/Ed — education/  
 S — strategy-simulation/Ut — utility



screens get additional hazards they are all basically the same — not much variety here. But in a generous Christmas mood of warmth and fellow feeling, I will say that little children might love it and for them the simplicity may be a bonus.

**Program** Merry Xmas Santa  
**Price** £7.95  
**Micro** BBC B  
**Supplier** Icon Software  
65 High Street  
Gosforth  
Tyne & Wear

## HAZARDOUS

*Airwolf* is the latest Spectrum release from Elite, makers of *Kokotoni Wilf* — the game is based on the popular blam-blam helicopter program. Usually TV spin offs are pretty dire, but *Airwolf* is graphically excellent and as a game it's not at all bad.

The idea, inevitably perhaps, is to pilot your copter through some incredibly difficult and dangerous terrain to rescue several important scientists and thus redeem the free world for another week.

The first obstacle you come across may be enough to make you give in — your path is blocked by an enormous wall which you must blast a path through using a slightly wobbly laser.

There are hazards to be negotiated, missiles, things to be blasted and some very detailed background graphics. Probably the only thing stopping the program from being absolutely whizzo is the relatively small number of screens (about 12) which seems a little small, but since I never get beyond about the second screen, perhaps that doesn't matter all that much. If you're a fan of the TV program you'll probably love it.

**Program** *Airwolf*  
**Price** £8.95  
**Micro** Spectrum  
**Supplier** Elite  
55 Bradford Street  
Walsall WS1 3QD

## SPACED OUT

Activision's *Space Shuttle* is a program that purports to be an extremely authentic recreation of shuttle flight, complete with



docking, re-entry and a trillion calculations necessary for a successful flight. It's important to stress that *Space Shuttle* is primarily a simulation, not an arcade game, although some of the thrills involved may be similar.

Thankfully an overlay is provided to indicate the main control keys — there are 17 of them. Vital also is an option to take a simulator flight which lets you try out most manoeuvres without the usual risks.

An extensive manual indicates just how complicated flying the shuttle can be — an almost endless list of things that affect other things and factors that have to be considered — successful tasks require very precise flying indeed.

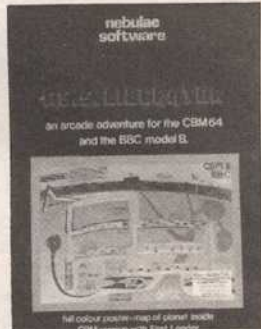
The graphics are reasonable, and the manual good. If you accept that it isn't 'blast a minute' but more a question of subtle control manipulation, you'll like it a lot.

**Program** *Space Shuttle*  
**Price** £7.99/£9.99  
**Micro** Spectrum/  
Commodore  
**Supplier** Activision  
15 Harley House  
Marylebone Rd  
London NW1

## WARNING

And now a special request. *F.S.S. Liberator* is a program that's been out a while, but I've never seen it, ie, it wasn't sent for review and I haven't seen reviews elsewhere. However, I was sent a copy of it by a retailer who thought it was so bad people ought to be warned about it.

*F.S.S. Liberator* is an amazingly bad program, a really poor version of *Scramble* with ugly blocks making up the mountain



landscape and nasty sprites for spaceships and missiles.

The problem with this one is that it all comes in a big box with a stupid colour poster thrown in — you'd be forgiven for thinking this was going to be something pretty special. There are two possibilities here; the manufacturers Nebulae Software really haven't got any idea what a good game is and have moved into the software field from double glazing or selling ropey video tapes.

Or alternatively, they know the game is awful, but figure (not incorrectly) that nice packaging may be enough to dupe enough retailers into stocking the thing.

**Program** *F.S.S. Liberator*  
**Price** £7.50  
**Micro** Commodore  
**Supplier** Nebulae Software  
Kilroot Park  
Carrickfergus  
Co Antrim

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

## This Week

**Activision**, 15 Harley House, Marylebone Road, London NW1, 01 486  
**Amsoft**, Brentwood House, 169 Kings Road, Brentwood, Essex, 0277 230222  
**CSM**, Suite 38, Strand House, Great West Road, Brentford, Middlesex TW8 9EX, 01 560 4191  
**Elite**, 55 Bradford Street, Walsall WS1 3QD, 0922 611215  
**Gilsoft**, 30 Hawthorne Road, Barry, South Glam. 2CF 6BLE, 0222 41361  
**Hewson**, 7 Grahame Close, Blewbury, Oxon OX11 9QE, 0235 832939  
**Interceptor**, Interceptor Micro's, London House, The Green, Tadley Hampshire, 07356 71 145  
**Kuma**, Kuma Computers, 12 Horseshoe Park, Pangbourne, RG8 7JM, 07357 4335  
**Liesure Genius**, 3 Montagu Row, London W1H 1AB, 01 935

4622  
**Lothlorien**, 56a Park Lane, Poynton, Cheshire, SK12 1AE, 0625 876642  
**Nemesis**, 10 Carlow Road, Ringstead, Kettering, Northants NN14 4DW  
**Psion**, 22 Dorset Square, London NW1 6QG, 01 723 940B  
**Quicksilver**, Palmerston Park House, 13 Palmerston Road, Southampton, Hampshire SO1 1LL, 0703 20169  
**Rose Software**, 148 Widney Lane, Solihull, West Midlands B91 3LH, 021 705 2895  
**Sinclair**, Stanhope Road, Camberley, Surrey, GU11 3PS, 0276 686100  
**Snip**, PO Box 20, Woking, Surrey, GU21 3QW  
**Wye Valley**, Parton House, Kinnersley, Herefordshire, 05446 202



Close shot of a keen-looking youngster in what is obviously his father's suit

**STEVE F LOADER:**  
"My name's Steve Loader and ever since being allowed to keep my review model I have been considered an expert on MSX computing."

After a small technical hiatus we eventually settle on a close-up of a smoothly dressed young woman

**TERESA BLASE:**  
"As a leading journalist I specialize in writing copy that does not offend our advertisers. I'm here to prove that there is no sexism involved in this evening's proceedings."

After the sound of the stage manager trying to start some applause we return to our host

**WOGAN**  
"In a moment we'll be seeing the contestants, but first please welcome The Morris Dancers with their version of *All I want for Christmas*."

The start of the routine is accompanied by the sound of televisions being switched off all over the country...

If MSX computing does take off then things could become almost that trivial.

The Japanese are not known for resting on their laurels — even if a manufacturer is producing a highly successful machine, there is likely to be a new model every year.

Yet, unable to change the basic components, will Panasonic bring out a computer with a built in alarm clock/radio?

Could Canon build a machine that automatically rewinds the cassette once the tape has loaded?

At least it would give us something more to consider than measurements, trim and matching accessories.

Jeff Naylor

## Simple Simon

### Puzzle No 138

The pantomime season is upon us — and here is our very own version of 'Simple Simon'.

Once upon a time there lived a poor orphan boy called Simple Simon. He was very good and always ate his greens, but the villagers teased him cruelly. One day while walking through a lonely part of a dark forest he rescued an old lady from the grip of robbers. But, unexpectedly, she turned out to be a good fairy in disguise.

"For this kind act," she said, "remember these words — 'Your lucky number is 13 less than 13 times the product of its digits!'" With this she vanished in a puff of smoke.

Now it so happened that at the Royal Palace, the King was counting his money in the royal vaults when the door slammed shut. The only way it could be opened was by means of a five-digit combination known only to the King, who was not able to communicate it through the thick walls. A plea went out for anyone who might know the combination. Simple Simon stepped forward, much to the amusement and derision of the people. Remembering the good fairy's words, he entered his choice of number, and the door of the vault swung open. Simon was amply rewarded, no-one ever teased him again, and everybody lived happily ever after.

Can you say what the combination was?

### Solution to Puzzle 133

The following numbers also share the same property as Tommy's age: 12, 18, 28, 32, 44, 45, 50, 52, 63, 68, 75, 76, 92, 98 and 99.

Taking numbers in the range two upwards, the program extracts their whole number divisors and tests to determine if the product is equal to the square of the original age.

```
10 LET AGE = 220 LET SQUARE = AGE * AGE
30 LET P = 140 FOR N = 2 TO AGE - 1
50 LET D = AGE / N
60 IF D = INT(D) THEN LET P = P * D
70 NEXT N
80 IF P = SQUARE THEN PRINT AGE
90 LET AGE = AGE + 1
100 IF AGE > 100 THEN STOP
110 GOTO 20
```

### Winner of Puzzle No 133

The winner is Mr P E Webber of Ridgeway Rd, Salisbury, Wiltshire, who receives £10.

### Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for Puzzle No 138 is 4 January 1985.

## MSX contest

Last week I was given (temporarily, I might add) seven MSX computers to review for this magazine.

It was really quite difficult because they were all, to all intents and purposes the same machine with only superficial differences. In fact, it was hard not to turn the review into a beauty contest...

### Loud tuneless fanfare

Mix out of the opening titles to a shot of our host, a large Irishman with a winning personality.

**WOGAN (for it is he):**

"Hello and welcome to the 1985 MSX United Kingdom contest. We've a star-studded evening for you tonight, and, as you know, it is our task to choose just one computer to go on to represent the United Kingdom in the MSX World competition. But first, let's meet the judges"

Cut to a close-up of a rather world-weary man

**GARY KNOALL:**

"Good evening. I'm much more interested in real computers — you know, anything American costing over £1,500 — but I'm here tonight to lend some credibility to the proceedings."

## The Hackers



Cronies and Frogs in Mikro-Gen's Progs....

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a hopping good  
programme



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