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Vol 4 No 44

BBC sales block

ACORN'S troubles in the high street have intensified with news that, when existing Acorn stocks are sold, none of the major chain stores at present plan to offer the BBC or Electron over Christmas, with the exception of Dixons/Currys.

The original 32K BBC B model is also now virtually unobtainable, leading to speculation that the model has been discontinued. This suggestion, has been energetically denied by Acorn.

The Dixons/Currys group is now the only large chain to stock the Electron – at a special pack price of £99.99, which includes a data recorder and software.

The independent specialist retailers still stocking Acorn machines are largely keeping to the BBC Plus 64K and 128K micros. They are now finding it increasingly difficult to obtain 32K BBC's and Electron's.

"The standard 32K BBC still sells very well, but it is extremely difficult to get them because Acorn doesn't seem to be making them any more," said one dealer. "Also, there's not a lot of point in buying Electrons since Greens is selling them at £69 up the road."

This view was reinforced by another retailer: "I can't get the 32K BBC B for love nor money – Acorn seems to have stopped manufacturing them. I haven't been able to get hold of the 128K model yet either, but I'm planning to stock it."

"It is not true that we have stopped making the 32K BBC micro," said an Acorn spokeswoman. "And I would have thought it surprising if high street retailers are not going to buy Acorn machines for Christmas."

Retailers are also concerned at the closeness in

continued on page 9 ▶

The Amstrad Graphic Adventure Creator from Incentive works in similar fashion to the Quill, but both graphics and text can be generated from the same package.

It costs £22.95.

MICRO MAGIC

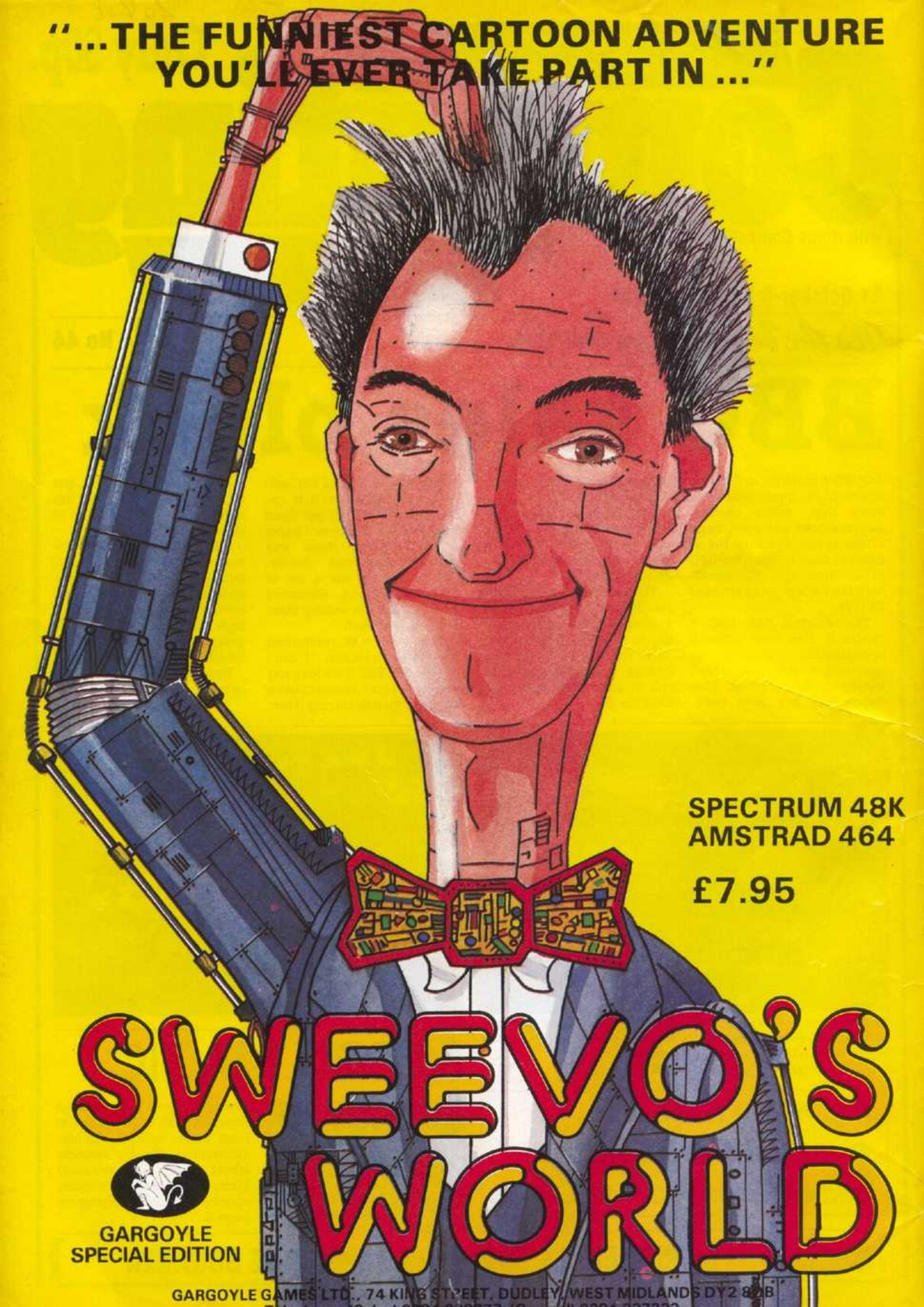
Find out if you have won an Amstrad 6128 this week or at least some special *Popular Computing Weekly* cassette labels. Enter your personal Micro Magic number into our special computer program on page 9.

THIS WEEK'S NEWS

- *1570 DISC DRIVE ARRIVES*
- *RUMBELOWS DROPS SPECTRUM*

INSIDE ⟩ PERIPHERALS GALORE IN HARDWARE BONANZA ⟩

"...THE FUNNIEST CARTOON ADVENTURE YOU'LL EVER TAKE PART IN..."



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EDITORIAL

Why is the question of whether the BBC should take advertising such a sensitive one? After all the BBC has been carrying advertising for its own products – BBC publications for example – for years.

Take its involvement with Acorn to produce the BBC micro. Undoubtedly the arrangement helped promote computer literacy. But it also boosted the BBC's profits through substantial royalty payments on every micro sold.

Even now the BBC's frequent programme coverage of a product with which it has a commercial involvement continues. Not just in micro shows either – the BBC micro still crops up in all sorts of programmes across the network's output.

Yet what is this business interest in Acorn doing for the BBC?

Not a lot. Surely it must at least raise questions about the BBC's editorial impartiality. And now, mainly through Acorn's own much publicised financial difficulties the link is becoming almost an embarrassment. Acorn's products are no longer widely available in the high street and sales have plunged because Acorn has priced itself right out of the market. Further, there is little sign that Acorn either has the resources or has any particular wish to provide an on-going family of new BBC micros. Why are there now three BBC models competing only with each other and all wildly overpriced? Acorn's strategy for the home computer market is a shambles.

And the BBC is now losing out all round. It should have quietly disentangled itself from the Acorn agreement long ago when its computer literacy project was still bearing educational fruit.

But then, presumably, the money looked too good to turn down. Now even that looks like drying up.

Editor David Kelly **News editor** Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Lucinda Lee **Advertisement manager** David Lake **Assistant advertisement manager** Jeremy Kite **Advertisement Executive** Diane Holyoak **Classified executive** David Osen **Administration** Geraldine Smyth **Managing editor** Duncan Scot **Publishing director** Jenny Ireland. **Published by** Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd, 4 Roger Street, London WC1. **Printed by** Greenaway Harrison, Sutton Road, Southend-on-sea, Essex. **Distributed by** S M Distribution, London SW9, Tel 01-274 8811, Telex 261643 © Sunshine Publications Ltd 1985.

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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.

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'The Enterprise gives a musician much greater flexibility in the production and arrangement of music' – pro musician Robert Hartshorne

Drive and monitor for C128 emerge

COMMODORE'S new 128 micro has at last gone on sale with the disc and monitor peripherals required to use the machine to the full – and already prices are being discounted.

The 1570 disc drive and 1901 monitor units were available for the first time at the *Commodore Horizons* Show held at the Tech West Centre in London last weekend.

Although the official prices for the micro, disc drive and monitor have now been set at £269.99, £199.99 and £299.99, respectively, Commodore's dealer at the show, Gultronics, was offering the hardware at special show prices of £259, £189 and £279 for micro, drive and monitor.

Despite the price reduction, bringing the micro/disc drive/monitor combination down by over £40 to £727, this is still over £300 more than Amstrad's CPC 6128.

The *Commodore Horizons* Show was well attended with the number of visitors to the two-day event estimated at well over 7,000.

Holiday package row sparked by Benidorm

FANS of Melbourne House's package holiday adventure *Terrormolinos* may be interested to hear of another title with a remarkably similar plot – *Benidorm* from Little Softie software.

Yet *Benidorm* was written and released on mail order nearly two years ago and *Terrormolinos* was only lanuched this summer.

In *Benidorm* a family, father Cyril, mother Beryl, and children Wayne and Jolene set out for their destination from their home in Slough. In *Terrormolinos*, the mother too is called Beryl and she and children Ken and Doreen also live in Slough. Other features shared by *Benidorm* and *Terrormolinos* include drunken characters and food poisoning, and both programs use seaside postcard-style artwork on the packaging.

"We wrote Benidorm simply as a spoof, our main line of business being bespoke medical software," said Ray Carney of Little Softie. "I'm annoyed that the *Terrormolinos* people are claiming their idea is totally original."

"I have never heard of this other game," said Peter Jones, co-author of *Terrormolinos*. "Obviously Little Softie must have thought up the same concept – certainly if you start planning an adventure game set around a Spanish holiday, features of it will fall into place. He may have thought of it first or not – we had the idea planned before *Hampstead* appeared."

"I can assure you we published *Terrormolinos* in good faith," said Melbourne House's Paula Byrne. "I have absolute confidence in the authors."

Terrormolinos is available for the Spectrum and C64 at £6.95 from most shops, *Benidorm* is available for the C64 on mail order only from Little Softie at 9 Stubham Rise, Ilkley, W. Yorks, for £7.99.

L: Terrormolinos artwork.
R: Benidorm inlay.

Sinclair to 'badge' QL printer

SINCLAIR has now signed an agreement to 'badge' a Seikosha printer for the QL.

The printer is the same model as the unmarked one which was shown at the *Personal Computer World* show, and will be officially launched at Compec, from November 12-14.

The printer is a 9-pin dot-matrix type, with a draft speed of 100 cps and near letter quality speed of 25 cps. It will take both continuous and single sheets of paper.

Data Distributions will be selling the printer, in black livery, for £249.

Rumbelows drops Spectrum as stores plan Xmas ranges

RUMBELOWS has become the first high street store to discontinue sales of Sinclair computers.

It will not make a decision as to whether to restock either the Spectrum Plus or QL until after Christmas.

Rumbelows' Christmas range comprises the Amstrad CPC 464 and 6128, Toshiba's £99 HX-10 package, the Commodore 64 Compendium at £199, and the Commodore 128.

The decision not to take the Spectrum Plus over Christmas has a lot to do with Dixons' £139.99 Spectrum Plus package. "Dixons seems to have tied up that particular area of the market," said Rumbelows' buyer Terry Greenwood. "We have still got a few in stock but we're not going to do a deal with Sinclair."

Most of the other major retail chains, including Boots, Lasky's, Menzies and W H Smiths, are offering Spectrum Plus packs, very similar to Dixons', for sale over the Christmas period.

Boots will also be stocking the QL, Amstrad CPC 464 and 6128, the Commodore Compendium, Toshiba HX-10 and Atari 130XE over Christmas. The Commodore 128 will be sold only in Boots' top 25 stores. Laskys is stocking the Amstrad 464 and 6128, Toshiba HX-10, Atari 520ST, the Commodore Compendium and the C128. Laskys hopes to offer the C128 in two separate packages, one with the 1570 disc drive and one with the disc drive plus Commodore's 1901 monitor. John Menzies will offer a printer pack for the QL featuring Seikosha's CP5 printer for £299.99. The QL will also be available on its own at £199.99. Menzies too has the C64 Compendium, Amstrad's 464 and 6128, and interestingly is hoping for some PCW 8256s for Christmas. W H Smith has the C64 Compendium and Amstrad 464 and 6128. Dixons/Currys is the only major chain to offer the BBC and Electron machines, in addition to its Spectrum Plus pack, Commodore Compendium and Amstrads 464, 6128 and 8256.

More news on page 9

WATCH OUT! IT'S

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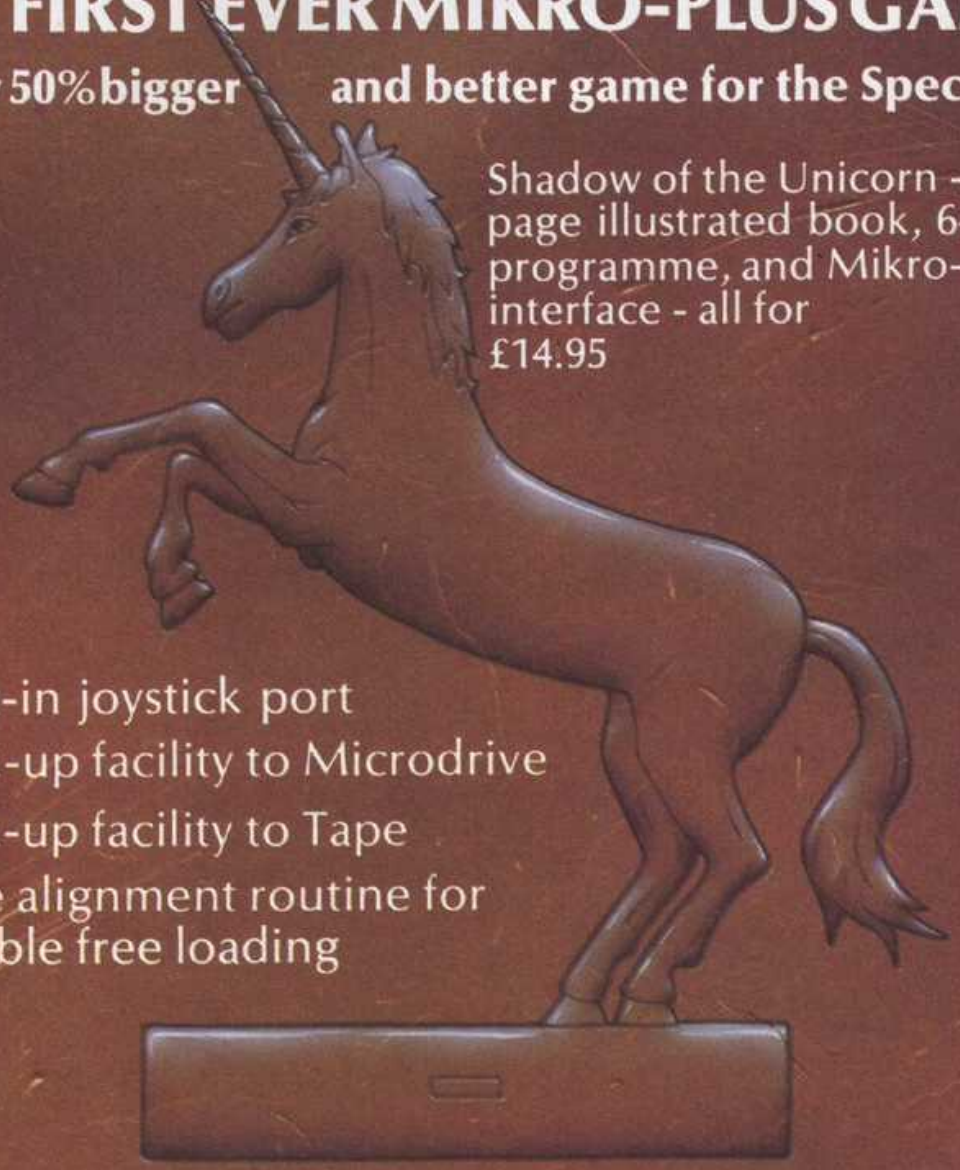

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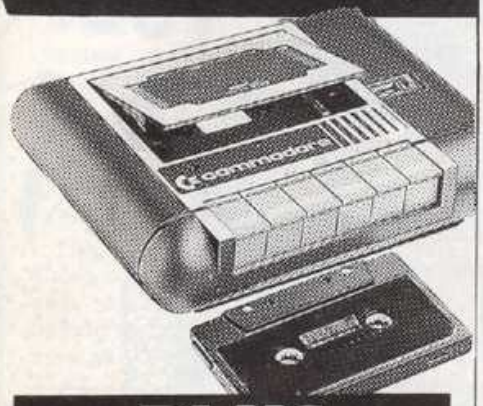

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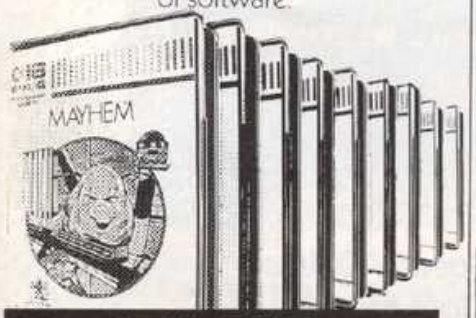

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Come along for - Previews of New Games - Special Offers - £100 Prize Draw - Demonstrations - and lots more !!!

Success of PCW8256 threatens shortage

AMSTRAD'S new PCW 8256 looks like being in very short supply this Christmas as demand outstrips supply.

Although the word processor cum 256K micro has only gone on sale so far at Dixons and some independent shops, sales are already "easily into five figures", according to one spokesman.

He said, "It's a 100% unbelievable success. It has sold out and created waiting lists all over the place. Most people should get their PCW 8256 before Christmas, but it's impossible to tell really."

The success is also threatening to cause a shortage of 3 inch discs. "People keep buying two boxes of discs at a time. We are just about keeping control but it is a tight situation."

At the launch of the PCW 8256 in August, Amstrad planned to produce 30,000 units of the machine this autumn, and stipulated it would be tailoring both marketing and supply to availability.

"The PCW8256s are presold before we get them into stock," said Loretta Cohen of distributor Lightning. "There certainly won't be ample stocks of the machine in the next few months."

The Big Apple holds firm

APPLE Computer has announced preliminary financial results of net profits of $61.2m (about £48m) and sales of over $1.918b (£1.475b) for the year ending September 1985.

Sales are slightly up from 1984, when they totalled $1.516b (£1.163b) but profits are marginally down from $64.1m (nearly £50m).

Around a third of the profits were earned in the last quarter.

"Yes, but once you've seen one Spanish resort, you've seen them all."

Diving deep into the C

LEON Heller – the chairman of Quanta, the QL users' group – is setting up a national C users' group, for those interested in the programming language.

Details from Leon Heller, 8 Morris Walk, Newport Pagnell, Bucks, MK16 8QD.

Acorn trouble

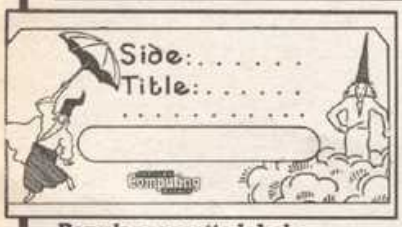
◄ continued from page 1

price between the 64K B Plus and the 128K model. The 64K sells for £469 and the 128K for £499.

"We're expecting an upgrade kit to be made available at a small cost for the 64K," said a dealer in Avon. "Now that the 128K machine has been launched, interest in the 64K has died down."

The Acorn spokeswoman confirmed the existence of the 64-128K up-grade kit: "It is now available for about £30 and the up-grade is carried out by the dealer," she said.

Micro Magic



***Popular* cassette labels**

Popular Computing Weekly

Micro Magic

The Amstrad CPC6128

We are giving away an Amstrad CPC6128 128K micro – worth £399 – every seven days until Christmas. Not only that, but every Micro Magic card is a winner – every card wins a runner-up prize of free Special *Popular Computing Weekly* cassette labels

How to find out if you win this week
To find out if you are a prize winner this week this is what you must do:

1) Key in the computer program listing printed here into your micro and *Run* the program.

2) Input your special **Micro Magic** number as data in the program when requested and press *Enter*.

3) The program will tell you if you have won a prize this week and what it is.

4) If you have won a prize you can claim it by filling in the coupon on the back of your special **Micro Magic** card. **Then send the completed card off to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.**

```
5 PRINT "Input your personal Micro
 Magic number!"
10 INPUT x
15 FOR z=1 TO 3
20 LET t=2 * (x+27)
30 LET x=x + 27
40 LET y=2 * x + 1050
45 NEXT z
50 IF y=573640 THEN GOTO 80
55 IF y=336952 THEN GOTO 70
60 PRINT "Your matching Micro Magi
c number is"iy
61 PRINT "Better luck next week!"
65 GOTO 60
66 STOP
70 PRINT "Your matching Micro Magi
c number is"iy
71 PRINT "You have won an Amstrad
6128!"
75 GOTO 70
76 STOP
80 PRINT "Your matching Micro Magi
c number is"iy
81 PRINT "You have won cassette la
bels!"
85 GOTO 80
```

Micro Magic: Week 5 Program listing

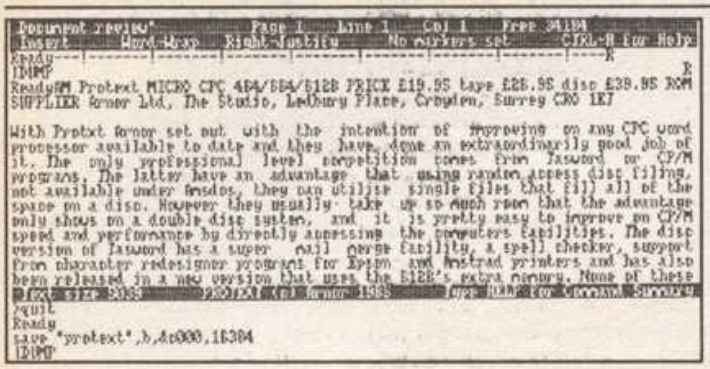
Don't forget to fill in both your name and address, and also both your winning **Micro Magic** answer from this week *and* your special **Micro Magic** number.

5) If you haven't won this week, don't give up hope. Keep your **Micro Magic** card and use it to find out if you win with next week's **Micro Magic** computer program. The same card will last you right through to Christmas, so don't throw it away – you could miss the opportunity to win.

This week's winning Micro Magic Numbers: 573640 and 336952

If you think you've won complete the form on the back of your Micro Magic card and send it to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.

Micro Magic cards can only be obtained in line with the criteria outlined by Scot Press. Participants are entitled to only one card each. Cards and accompanying documentation can be obtained free of charge by writing to Scot Press, 12-13 Little Newport Street, London WC2H 7PP.



Word power

Program *Protext* **Micro** Amstrad CPC **Price** £19.95 tape, £26.95 disc, £39.95 Rom **Supplier** Arnor The Studio, Ledbury Place, Croydon, Surrey CR0 1ET

With *Protext* Arnor sets out with the intention of improving any CPC word processor available to date and it has done an extraordinarily good job of it. The only professional level competition comes from *Tasword* or CP/M programs.

The disc version of *Tasword* has a super mail merge facility, a spell checker, support from character redesigner programs for Epson and Amstrad printers and has also been released in a new version that uses the 6128's extra memory. None of these extras are yet available for *Protext* but they have been promised and in almost every other way there is a tangible increase in power under *Protext*.

One of the noticeable points is speed – paragraph reformatting for example is almost instantaneous. Secondly almost every command is flexible – you can save and print blocks of text, merge text at the cursor position, find and replace can be case independent or specific, global or local, backwords or forwards, words only or strings within words.

Printer control commands such as line spacing or page length can be embedded in the text, as well as text formatting rulers, comment lines, messages that suspend printing until a key is pressed (for prompting a daisy wheel change for example), soft hyphens (they disappear if the word doesn't cross a line break) the list goes on.

I can't emphasise how good it is and the only feature that can be criticised is that if you have a line length approaching 80 cols it overwrites this by several characters before formatting it on to the next line.

The Rom version allows you 40K of free text file space (even on the 6128) and frees you from having to waste disc space with working copies of the program. It is available in cartridge form for £10.00 extra or as a chip for insertion in any Amstrad compatible Rom board. Don't miss it – it is superb!

Tony Kendle

Head banger

Program *Fighting Warrior* **Micro** Spectrum **Price** £7.95 **Supplier** Melbourne House, Castle Yard House, Castley Yard, Richmond TW10 6TF.

What does Egypt mean to you? Sand, camels, pyramids, sand, the odd animated mummy and more sand? Well, Melbourne House is out to prove otherwise with *Fighting Warrior*.

We're back in with the pharaohs with a plot concerning the rescue of a beautiful princess, but what really matters is that your figure is armed with a stave as he battles with assorted baddies on his sand dance from left to right.

This hick with a stick has a similar, though slightly more limited, variety of movements to his oriental counterpart in *Exploding Fist*, he can duck and jump as well as aiming high mid and low blows. The varied opponents, which include a superb kicking dragon, seem to react with a degree of intelligence as they attempt to parry the attacks.

These being ancient times there's a magical element in the shape of vases, the shattering of which may prove beneficial, as well as providing archaeologists with fragments to ponder over in the future! And there are some Cherokees firing arrows from off-screen right adding to your problems.

With its superb animation and high playability this is another sure fire winner for Melbourne House's single-handed combat division, and it's even got the Spectrum to produce a reasonable sound of crunching bone. While not so original as *Exploding Fist* it should still have you battling for hours on end.

John Minson

Dog dodge

Program *One Man and His Droid* **Micro** Spectrum **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2A 4JH.

Arr – I remember the old days when we 'ad dogs and 'erded sheep and they made boring computer games about it for vast prices. Well now we 'as droids to tend the flocks and this 'ere game costs a lot less and it's a whole lot of original fun.

The problem with ramboids, as these intergalactic woolly 'eads is called, is that they only live for twenty minutes, so it's a race against time, and your first problem is to dodge across the field where they're all bounding 'ither and thither.

Once you's made the caverns where they live you 'as to find them and round them up – in the right order, mind – to the teleport. You let one get in before 'is time and you'll 'ave to start all over again.

Now these space sheep are as stupid as their earthbound cousins but luckily they follow just two patterns of movement so you can usually guess where they'll go next.

Still, you'll need your droid's ability to dig 'oles and lie in wait and, 'is tunnelling skills, so that 'e can divert them where you want them. And once you is cleared one cavern there's another nineteen to go.

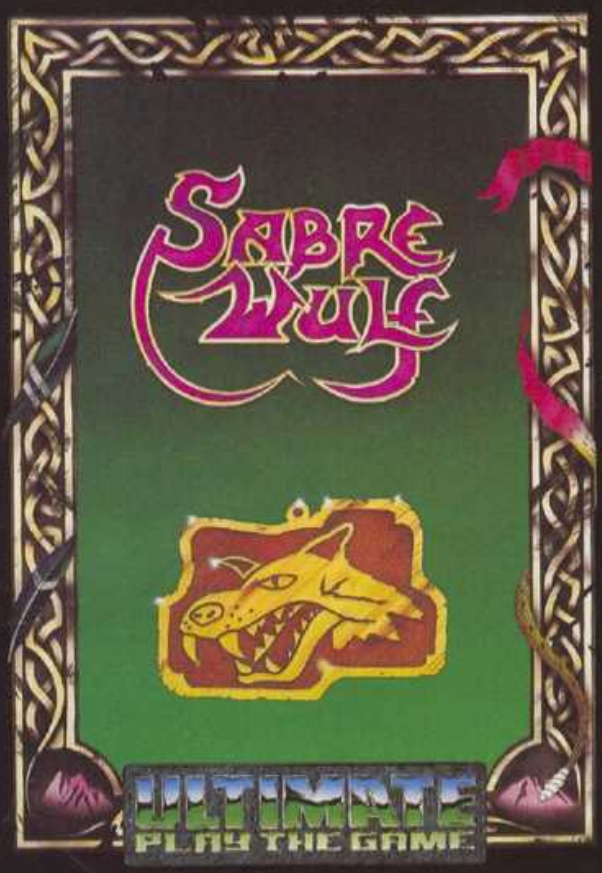
It's a good job though, calling for a fair bit of strategy. I don't mind saying that us shepherd's are decidedly undervalued if that's 'ow cheap you can buy us.

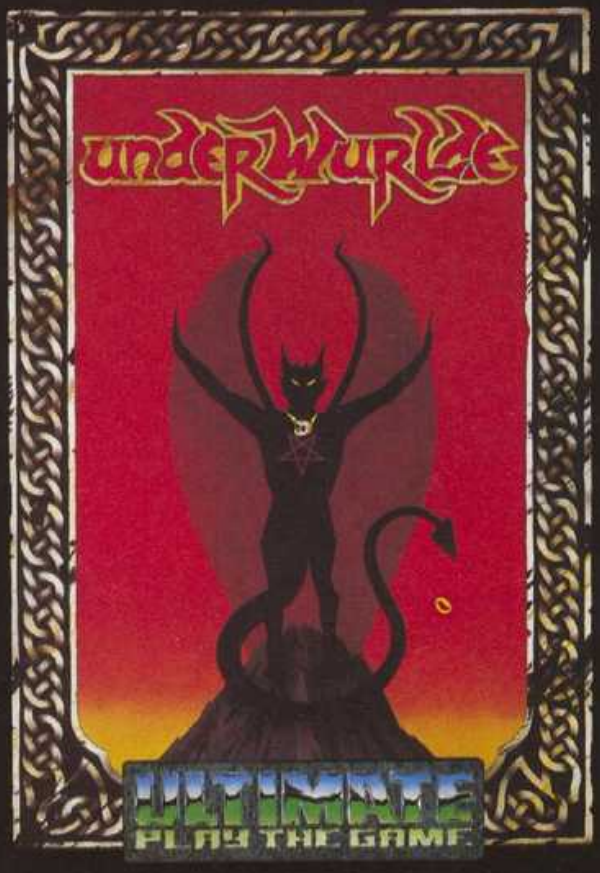
And now I'm off to listen to *The Archers* because old Dan's 'aving a bit of trouble with 'is new neighbours from Altair 3.

John Minson

THE ULTIMATE GAMES FOR THE

COMMODORE 64





Sabre Wulf and Underwurlde are available on the Commodore 64 at £9·95 inc. VAT

FIREBIRD

Firebird Software Wellington House Upper St Martin's Lane London WC 2H 9DL

Space Pilot 2

In the skies above distant planets, in a galaxy far-removed from our own, a battle royal is in progress. Alien fire-power is devastating, their numbers overwhelming and their tactics fiendishly ingenious. Dexterity alone is not enough to ensure survival!
Over 600 sprites are used to add that extra touch of realism to the eight distinct scenarios of breath-taking, futuristic beauty, providing the backdrop against which the Final Drama must be played.

CBM 64 - £7.95

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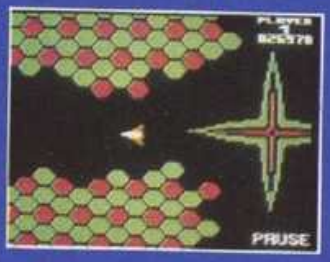

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For the birds

Program *Orm and Cheep: The Birthday Party* **Micro** Commodore 64 & 128 **Price** £7.95 **Supplier** Macmillan Software, 4 Little Essex Street, London WC2R 3LF.

Orm and Cheep are a double act who wow the kindergarten crew with their television series, which could explain my ignorance of their antics. Orm is a worm (literally) while Cheep, his feathered friend, spends his time flapping and chirping.

Today is Orm's birthday and Cheep is flapping around and panicking instead of eating the worm like any self-respecting bird. He has to drop the ingredients into the right jars, find his friends and seat them. On this showing, I wouldn't employ him as my social secretary.

With a little help from you he should succeed though. . .and Macmillan says the game will delight kids of all ages so don't try to shirk your responsibility! The first bit's a doddle – just remember which of four jars contains what. The search for guests – who probably run like mad when they hear Cheep's incessant chirruping – is a journey along screens of paths and even into the subterranean world of the mole. Gather the right friends and when you encounter the non-U animals, such as rat, cat or crow, you can scare them off. The last logic test is considered such fun that you have to do it twice.

Apart from my antipathy to the characters – and I'm sure I'd love them if I was seven again – the game is badly presented. The instructions are unclear and it took several readings before I even knew what to do. The middle section is the most interesting and introduces simple mapping to children but despite its clever use of single key inputs it seems to drag on wearily. By the time Cheep and three friends have slid along a path even fans will be nodding off.

The initial reaction tester, to determine difficulty level, is a good idea and the whole package could have been a useful arcade learning tool but it's unlikely to hold the attention. . . and that applies to kids of any age, Macmillan!

John Minson

Zat all?

Program *Zyto* **Micro** Commodore 64 **Price** £3.99 **Supplier** Rabbit 2-4 Vernon Yard, 119 Portobello Rd.

I am not sure about this one; it's a sort of cross between *'Moon Buggy'* and *'Defender'*, with some adventure and logic problems thrown in. The aim of the game is to penetrate the six levels of the planet Zyto in your combined truck and rocket to collect pieces of a bomb, which once assembled, will blow up the protective walls of the subterranean city, thus allowing you access through to shoot the now defenceless habitation into submission.

The bottom of the screen contains all the usual guages for monitoring fuel, ammo, objects carried, score and time, along with messages which tell you the amount of damage your ship is sustaining through hostile fire or flying into rock walls, which is almost impossible not to do. Next are electric charges which form the logic puzzles consisting of patterned squares, turned off by flying through them at full speed. The trick is to find out which squares turn off which patterns, because flying through a patternless square will turn it on again. All squares have to be blank to allow you to continue past. It's all rather confusing and the instruction insert isn't very revealing.

Graphically the game is quite nice, with some neat sound effects and large sprites and the price is very fair.

Andy Moss

Speed hills?

Program *Mcoder III* **Micro** Spectrum **Price** £12.95 **Supplier** PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

The theory: While machine code sprints like a hare, Basic creeps like a snail. A compiler produces code from the Basic program.

Set against this, most compilers demand a much reduced Basic. They are unable to convert every Basic command into code, often decimal fractions and string handling. *Mcoder III*, claims to handle virtually the whole language, so that 'off the peg' Basic programs can be sped up.

Loading is in two stages to check Basic then transform it, errors necessitate reloading of both the source and *Mcoder*.

The practice: What better way to test these claims than to dust off a book of listings and type in a hitherto tortoise-like arcade game? Ninety minutes later I'm ready to compile but *Mcoder* isn't. Try as I might I can't see why it won't handle a High Score Table.

There's no help in the scanty documentation, and while some programs had an appreciable speed increase, this unhelpful attitude to error trapping spoils what is probably a good choice – if it fails to behave, pester PSS.

John Minson

In tune

Program *Shadowfire Tuner* **Micro** Spectrum/Commodore **Price** £3.95 **Supplier** Beyond Software, Durrant House, Herbal Hill, London EC1R 5EJ

If, like me, you are one of those people who absolutely raved about *Shadowfire*, but lacked the necessary guile and patience to finish it properly by capturing General Zoff and saving Ambassador Kryxix, or if you are a keen follower of Tony Kendle's page and are waiting for him to come up with some *Shadowfire* pokes – wait no more, for here comes the cavalry in the shape of the *Shadowfire Tuner*.

This is a very clever marketing tool, because it lets you play around with the program changing almost anything you want, thus allowing kids to create their own gme against each other.

The whole 'tuning' procedure, like the main game, is icon driven and initially you are presented with the 'ship' screen which allows you to view the whole *Shadowfire* or Enigma craft. From this screen you decide where to place the objects and characters in the game and change the characteristics of each. For example, the weight of every item can be adjusted, personnel can be added and patrol routes changed along with doors both locked and unlocked.

When you have your own set up, the standard *Save game* procedure can be used to enable you to load it into the game in the usual way. Files created by the *Tuner* are fully usable and interchangeable with those created by the *Shadowfire* program, so a previously saved game can be modified.

Personally, I intend to do away with all the guards so I can have the satisfaction of walking Manto straight to Zoff and winning the easy way!

Andy Moss

Chik, toosh, shak!

Hardware *Specdrum* **Micro** Spectrum **Price** £29.95 **Supplier** Cheetah Marketing, 1 Willowbrook Science Park, Crickhowell Road, St Mellons, Cardiff

Cards on table time. I am biased towards all things musical on micros because it seems to me to be one of the genuinely fun things micros can do.

Whereas it is now quite cheap to get yourself a useful little Casio keyboard, the preset drum sounds are usually useless. Almost without exception drum sounds on the cheap keyboards are so irredemably neanderthal, idiotic and plastic sounding that only those people whose ultimate objective in musical life is to play *When the Saints Go Marching In* will find it satisfactory.

Conversely, though, decent drum machines can cost you £300 plus.

Cheetah has now produced an answer. Specdrum gives you, in conjunction with a Spectrum, an excellent drum machine that uses sampled sounds (real drums digitally encoded) which can be played either in real time or notated using a simple screen editing system.

The Specdrum system comes with a 'kit' of eight sounds – bass drum, high hat open, high hat closed (chik and toosh respectively) hand claps (shak), snare (thwak) cowbell (ching), mid tom (thom), low ton (domp) and hand claps (krkkk). Up to three of these sounds can be used simultaneously but in fact the illusion of everything happening at once is quite possible with a bit of smart programming around the beat.

The software that gives you control of all this is mainly excellent. The display lets you choose a song to work on and name it, starting either from scratch or loading in saved drum patterns from tape. Composing a song (which means an ordered sequence of different patterns) is a matter first of crating the individual drum sections then structuring the completed patterns according to the layout of the music you want to use them with.

The pattern creation section works in two ways. You can either work in real time, choosing and inserting each different percussive beat and building up a complete pattern over a specified number of bars or you can enter each beat using cursor keys on a simplified equivalent of a musical stave.

The excellent part of all this is that the real time and notation ways of working are completely interrelated – your real time drum imputs are automatically notated for you so it is possible to mix the different kinds of inputs easily. This means that the easy-to-play bits like a regular snare pulse can be quickly tapped out in real time and some tricky twiddly bits can be carefully notated.

The individual patterns are then 'filled' and numbered and then *Saved* to tape.

The only criticism I have of the software is that there are some occasions where you go into sub menus and discover that options that are not currently available stay on the screen, eg, often option D for drum play is shown, but pressing D won't do anything until you have 'returned' from some sub menu. It's basically a small point.

The sounds are excellent and it does help if you have a decent amp or hi fi. You'll will need some sort of amplifier whatever you do though – the Specdrum sends its sound signal out via a standard phono lead.

There is promise by Cheetah too, of other sounds on tape for around £3 to give you a totally different kind of drum section.

You can even synchronise your Specdrum to other instruments – it will produce a click impulse into the Spectrum Mic socket. This pulse – put into a multi-track or on to tape could form a click track to trigger Sequencers but the manual is unfortunately very vague on this point. I think you'd need a sync box though – the manual is not helpful on this point and I'd have welcomed a lot more information.

This peripheral should be treated with unrestrained glee by Spectrum owning music buffs.

A decent drum machine for £29.95? Ridiculous!

Graham Taylor

Turbo or not Turbo

Hardware *Turbo 50 cartridge* **Micro** Commodore 64 **Price** £39.95 **Supplier** Robcom, 36 Market Place, London NW11 6JP 01-209 0118

In a sense this isn't a hardware product at all, since the Turbo devices are simply standard commodore-type Rom cartridges. The routines they contain, however, are something special; a range of utilities and new Basic commands which transform the C64.

The Turbo range consists of five cartridges. Turbo 50 is a compendium of the other four, which contains all the utilities available in the range.

Turbo 50 uses no memory, and will not interfere with 99% of Commodore programs. Should it be necessary, you can use *Quit* to deactivate the cartridge, without having to disconnect it from the cartridge port.

Typing *Show* brings up a menu of all the new commands available in several sections. The Basic toolkit is impressive enough, including preprogrammed function keys giving *Autoload, Quit* and *Run*, and so on; *Auto-line number, Delete line, Find string, Highlight error, Retrieve old program, List by page, Renumber, Change screen colours, Hix/dec conversion, Auto key repeat, Reset, Trace*, and more commands.

The fast cassette routines allow Basic programs to be saved in a form which will load up to ten times faster than normal, a boon to programmers fed up with the lethargic Commodore data cassette. There's also a *Merge* facility for combining sections of program. Fast disc *Save/Load* routines, a command to get a disc directory, format a disc, scratch a file, rename files, validate discs and reset the drive are included, as are commands to change device numbers.

That's just the start. Printer commands include Centronics interface software allowing you to use your C64 with a non-Commodore printer; a *Col* command to allow you to define the column width; and translation routines for the Commodore graphic characters. There's also a machine-code monitor with over thirty commnands, which uses only 4K.

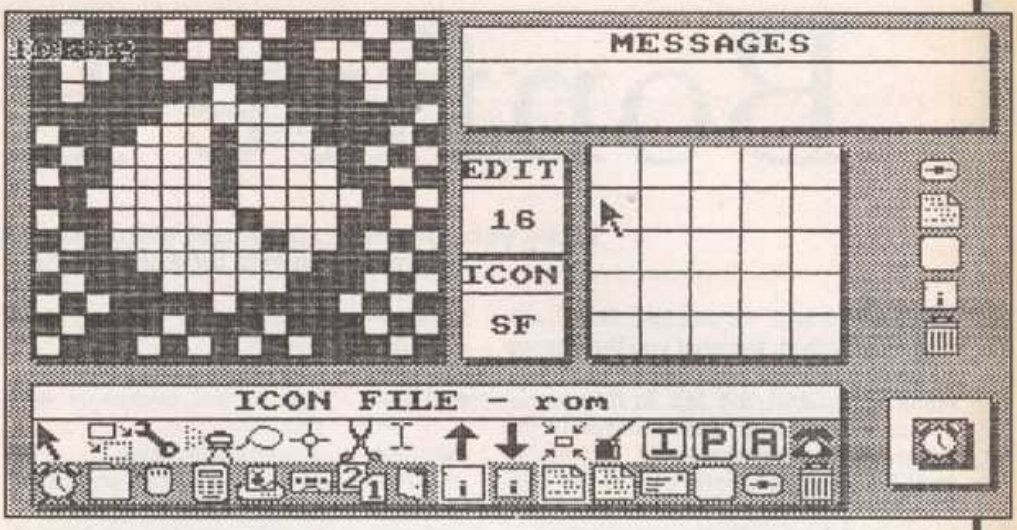
It seems that there should be something here which will be of use to any Commodore 64 user. For the cost, the Turbo 50 seems the best option even though the others are cheaper; Turbo 10 contains everything but the fast disc routines and monitor: Turbo 20 has just the monitor: Turbo 30 has everything but the Centronics software and monitor: Turbo 40 has everything but the fast disc routines: and Turbo 50 has the lot.

The Turbo series go a long way to overcoming many of the limitations of Commodore Basic, Dos, and interfacing.

Chris Jenkins

No toy

Hardware *AMX Mouse* **Micro** Amstrad CPC range **Price** £79 **Supplier** Advanced Memory Systems, Green Lane, Appleton, Warrington, WA4 5NG



The AMX mouse system made its first appearance for the BBC micro and its transition to the Amstrad is not surprising since the two machines have a very similar graphics resolution. What is especially encouraging is that in the months since it first appeared AMX have managed to prevent it becoming dismissed as an expensive toy by producing an impressive range of BBC support software to make use of the hardware's abilities, and the same is planned for the Amstrad.

To set up the system you just fit a box into the joystick socket which is powered via a cable fitted to the monitor-to-computer lead. The box has on its side a BBC-style port into which the mouse itself, presumably unmodified from the BBC version, plugs. Movement of the mouse is then translated into interrupt-driven cursor control codes.

The essential software is a piece of code that installs several RSX extensions to Locomotive Basic and these allow you to set up windows, move icons and pointers (smoothly and at high speed), detect cursor position on screen and read which of the three mouse buttons are pressed – in short all you need to set up a windows/icon-driven program of your own. Because of the lashings of spare memory offered by the CPC compared to the BBC B in high res, software is supplied on cassette but AMX also offer a Rom version which would allow you to use the routines with large programs or, to a degree, with commercial releases such as *Amsword*.

The RSX's mean that you have a remarkably simple to use, but immensely powerful system. The potential of it is illustrated by the fact that the pattern designer, icon designer and *Amx Art* programs that are also supplied on the tape and which are all fast, flexible and very impressive, are written in Basic and can be modified or added to as you wish.

The two designer packages are extremely easy and satisfactory to use and really need little explanation – rather as in an UDG designer you move over a large grid setting the squares to black or white as necessary whilst a small image of the icon changes to show you the result. *Art* is a different kettle of fish altogether – designed to emulate programs such as *MacPaint* and is very good indeed for certain free hand effects using pencil or spray-gun icons, texture filling etc. As a serious artist utility it suffers most from the lack of a magnify option to allow precision drawing and in not allowing you to use the entire screen to draw but some of AMX's demo pictures are truly breathtaking.

Further releases planned are utilities that let you add colours, in many thousands of different shades produced by stippling, to the drawings you have produced using *Amx Art*, *Amx Desk* which provides icon-driven calculator, diary and memo pad functions and also a *Pagemaker* utility for composing A4 sheets for club magazines etc.

Together they add up to one of the most impressive, and certainly the most original, Amstrad peripherals I have seen.

Tony Kendle

Picture this

Hardware Enterprise/Fidelity TV Monitor **Price** £229.95 **Micro** Various **Supplier** Enterprise Computers, 31-37 Hoxton Street, London N1 6NJ

There are a number of good reasons for buying a monitor for your micro ranging from the relatively frivolous, such as the brighter explosions when you zap the aliens, to the crucial – ever try reading 80-column text on a wobbly TV picture while word processing?

There is, however, one good reason for not buying one – cost. Recently though the combination colour television/monitor has set out to change all that. For little over the price of a second telly you can also have the advantages of direct RGB input.

The Enterprise TV monitor is sensibly not dedicated to its namesake computer but via its 21-pin SCART type Euroconnector socket can enliven the displays of a variety home micros, with leads available for BBC, Commodore, Oric, Dragon and Atari. An interface should also provide for the Spectrum. In fact it takes very little investigation to learn that this is a badge version of the 14 inch screen Fidelity CTM 1400.

Television performance is well up to standard, even with a set-top aerial, thanks to the AFC switch, and computer signals received through this socket are still clear and bright though tuning may prove a little tricky. But it can be instructive to switch from this to direct RGB input. I used an Enterprise 128 and certainly the micro's hi-res graphics and colours took on a brighter, sharper quality.

I then moved on to some word processing with no trouble at all reading the 80-column text. The tube is fully corrected for pin-cushion distortion, which is important in text modes and isn't always the case with older TVs.

Sound is also channelled through the monitor and, while 2 watts output should put many computers' internal speakers to shame.

A handsome piece of equipment and despite my quibble about the control flap it represents good value, especially as it may be discounted by up to £30 in certain places.

John Minson

Bonfire Party

Make your political statement with this program for the Spectrum 48K by Andrew Bird

This week, as Bonfire Night approaches, we give you the chance to recreate the events of that infamous November the 5th. In this game, you must move Guy Fawkes around the screen to collect the eight barrels of gunpowder... however, one of the barrels has split and you are leaving a trail of gunpowder behind you... and the end of the trail seems to have caught fire.

Program Notes

Line No	
1-70	Initialise variables etc
100-900	Draw screen 1
1000-2050	Main loop
3000-3090	Guy runs into bonfire
4000-4080	Burning trail catches up with Guy
5000-5200	Screen 2 Win routine
7000-7600	Instructions & Draw screen 2
9000-9050	Graphics
9500-9520	M/code instant screen & sound

Variables

m1, m2, m3	Machine code routines
Dim x, Dim y	Records trail
trail	Speed of burning trail
t1, t2	Parts of trail drawn & burning
gp	Number of times gun powder collected
g$	Displays gp
a, b	Position of Guy Fawkes
i$	Instructions
p	Used to draw towers
data	Used to read data
f, n, d	General purpose loops

NB Underlined capital letters in the listing should be entered in graphics mode.

```
  1 REM  Guy Fawkes Night
  2 REM  By  Andrew Bird
  6 LET m1=30000: LET m2=50012: LET m3=50024
 10 CLS : GO SUB 9000: GO SUB 7000
 20 DIM x(500): DIM y(500)
 30 LET x(1)=20: LET x(2)=20
 40 LET y(1)=15: LET y(2)=15
 50 LET trail=.96: LET t1=2: LET gp=0: LET t2=2: LET a=20: LET b=15
 60 LET g$="##########"
 70 RANDOMIZE
 99 REM  Draw screen 1


100 BORDER 0: PAPER 0: INK 7: BRIGHT 1: CLS
110 PRINT AT 0,0; INVERSE 1; PAPER 7; INK 1;"  GUY FAWKES NIGHT   By A.Bird  "
120 FOR f=1 TO 19: PRINT AT f,0; INK 1;"▌";AT f,31;"▐": NEXT f
130 PRINT AT 20,0; INK 1;"▌"
140 PRINT AT 21,0; INVERSE 1; PAPER 7; INK 1;"                                E=it"
150 FOR f=1 TO 70: PRINT AT INT (RND*17)+3,INT (RND*27)+3; PAPER 2; INK 6;"I"
160 NEXT f
170 FOR f=1 TO 8: PRINT AT INT (RND*14)+5,INT (RND*25)+4; INK 5;"H": NEXT f
180 PRINT AT a,b; INK 5; BRIGHT 1;"G"
200 IF INKEY$<>"" THEN  GO TO 220
210 GO TO 200
220 PRINT AT 0,21; PAPER 1; BRIGHT 1;"          "
900 BRIGHT 0: INK 4
999 REM  Main loop


1000 LET t1=t1+1: PRINT AT a,b; INK 5; BRIGHT 1;"G"
1005 PRINT AT 0,21; PAPER 1; INK 5; BRIGHT 1;g$( TO gp)
1010 IF RND>trail THEN  GO SUB 2000
1015 IF INKEY$="5" AND b>1 THEN  GO TO 1500
1020 IF INKEY$="6" AND a<20 THEN  GO TO 1600
1025 IF INKEY$="7" AND a>2 THEN  GO TO 1700
1030 IF INKEY$="8" AND b<30 THEN  GO TO 1800
1050 IF gp>=8 THEN  PRINT AT 21,0; PAPER 1; INK 7;" You may now leave this scree
n  ";AT 20,31; INK 0; FLASH 1;" "
1060 IF gp>=8 AND a=20 AND b>=30 THEN  GO TO 5000
1100 GO TO 1010
1500 IF ATTR (a,b-1)=69 THEN  LET d=USR m3: LET gp=gp+1: GO TO 1540
1510 IF ATTR (a,b-1)=86 THEN  PRINT AT a,b;" ": LET b=b-1: GO TO 3000
1520 IF SCREEN$ (a,b-1)<>" " THEN  GO TO 1010
1540 LET b=b-1
1550 LET x(t1)=a: LET y(t1)=b
1560 IF x(t1-2)=a THEN  PRINT AT a,b+1;"A"
1570 IF x(t1-2)>a THEN  PRINT AT a,b+1;"D"
1580 IF x(t1-2)<a THEN  PRINT AT a,b+1;"E"
1590 GO TO 1000


1600 IF ATTR (a+1,b)=69 THEN  LET d=USR m3: LET gp=gp+1: GO TO 1640
1610 IF ATTR (a+1,b)=86 THEN  PRINT AT a,b;" ": LET a=a+1: GO TO 3000
1620 IF SCREEN$ (a+1,b)<>" " THEN  GO TO 1010
1640 LET a=a+1
1650 LET x(t1)=a: LET y(t1)=b
1660 IF y(t1-2)=b THEN  PRINT AT a-1,b;"B"
1670 IF y(t1-2)>b THEN  PRINT AT a-1,b;"C"
1680 IF y(t1-2)<b THEN  PRINT AT a-1,b;"A"
1690 GO TO 1000
1700 IF ATTR (a-1,b)=69 THEN  LET d=USR m3: LET gp=gp+1: GO TO 1740
1710 IF ATTR (a-1,b)=86 THEN  PRINT AT a,b;" ": LET a=a-1: GO TO 3000
1720 IF SCREEN$ (a-1,b)<>" " THEN  GO TO 1010
1740 LET a=a-1
1750 LET x(t1)=a: LET y(t1)=b
1760 IF y(t1-2)=b THEN  PRINT AT a+1,b;"B"
1770 IF y(t1-2)>b THEN  PRINT AT a+1,b;"F"
1780 IF y(t1-2)<b THEN  PRINT AT a+1,b;"E"
1790 GO TO 1000
1800 IF ATTR (a,b+1)=69 THEN  LET d=USR m3: LET gp=gp+1: GO TO 1840
1810 IF ATTR (a,b+1)=86 THEN  PRINT AT a,b;" ": LET b=b+1: GO TO 3000
1820 IF SCREEN$ (a,b+1)<>" " THEN  GO TO 1010
1840 LET b=b+1
1850 LET x(t1)=a: LET y(t1)=b
1860 IF x(t1-2)=a THEN  PRINT AT a,b-1;"A"
1870 IF x(t1-2)>a THEN  PRINT AT a,b-1;"C"
1880 IF x(t1-2)<a THEN  PRINT AT a,b-1;"F"
1890 GO TO 1000
2000 LET trail=trail-.02
2010 PRINT AT x(t2),y(t2); BRIGHT 1; OVER 1; INK 6;" ": BEEP .0005,60
2020 PRINT AT x(t2-1),y(t2-1);" "
2030 LET t2=t2+1
2040 IF t2=t1 THEN  GO TO 4000
2050 RETURN


2999 REM  Runs into bonfire
3000 PAPER 6: INK 2
3010 PRINT AT a,b; FLASH 1;"G"
3020 FOR f=1 TO 100
3030 OUT 254,RND*255
3040 NEXT f: BORDER 1: CLS
3050 RANDOMIZE USR m2
3060 FOR f=1 TO 7: PRINT AT f,2; FLASH 1;"                              ": NEXT f
3070 PRINT AT 2,3; FLASH 1;"BAD LUCK.   GUY FAWKES IS";AT 4,3;"BURNING AND THE H
OUSES OF";AT 6,3;"PARLIAMENT ARE NOW SAFE."
3080 FOR f=1 TO 30: RANDOMIZE USR m3: NEXT f
3090 PRINT AT 21,0; PAPER 6; INK 0;"  Press any key to play again.  ": PAUSE 0: R
CLS : GO TO 20


3999 REM  Trail catches up
4000 BORDER 0: PAPER 0: CLS
4010 FOR f=-30 TO 0 STEP .3: OUT 254,f: BEEP .01,f: OUT 254,90-f
4020 PRINT AT a,b; INK 7; OVER 1;"G": NEXT f
4030 PRINT AT a,b;" ": RANDOMIZE USR m3
4040 FOR f=1 TO 50: BEEP .01,30-f: BORDER 1: BORDER 2: BORDER 1: BORDER 0: NEXT
 f
4050 BORDER 1: RANDOMIZE USR m2
4060 FOR f=1 TO 7: PRINT AT f,2; PAPER 6;"                              ": NEXT f
4070 PRINT AT 2,3; PAPER 6; INK 0;"BANG !! GUY HAS BEEN TOO";AT 4,3;"SLOW.THE BU
RNING TRAIL HAS";AT 6,3;"JUST CAUGHT UP WITH HIM."
4080 GO TO 3080
4999 REM  Reach screen two


5000 BORDER 1
5010 RANDOMIZE USR m2
5020 FOR f=0 TO 16: PRINT AT 20,f; PAPER 4; INK 1;"AG"
5030 BEEP .06,-40: NEXT f
5040 PRINT AT 20,18; PAPER 4; INK 7;"H"
5050 FOR f=17 TO 30: PRINT AT 20,f; PAPER 4; INK 1;" G"
5060 BEEP .06,-40: NEXT f
5070 PRINT AT 20,31; PAPER 4;" "
5080 FOR f=0 TO 14: PRINT AT 20,f; PAPER 4; INK 6;"  "
5090 OUT 254,RND*255: PAUSE 2: NEXT f
5100 FOR f=1 TO 10: POKE 50016,INT (RND*255)+1: POKE 50017,INT (RND*10)+205
5110 FOR n=1 TO 4: OUT 254,n*3: OUT 254,100-n*3: NEXT n
5120 LET d=USR m2
5130 NEXT f
5140 BORDER 0: PAPER 0: INK 2: CLS
5150 FOR f=8 TO 14: PRINT AT f,1; PAPER 7;"                                ": NEXT
 f
5160 PRINT AT 9,5; PAPER 7;"W E L L    D O N E !";AT 11,3;"GUY FAWKES HAS JUST B
ONE";AT 13,3;"THE COUNTRY A BIG FAVOUR."
5170 PRINT AT 21,1; PAPER 7;" Press any key to play again "
5180 FOR f=1 TO 30: RANDOMIZE USR m3: NEXT f
5190 IF INKEY$<>"" THEN  GO TO 1
5200 GO TO 5190
6999 REM  Instructions


7000 LET i$="HELP GUY FAWKES as he tries to  blow up the houses of parliament  H
is barrel of gun powder is  leaking and so he must re-fill  it 8 times from the
 ones on  screen 1 before he can place it under the Houses of Parliament. "
7010 LET i$=i$+"  However he cannot cross his  own trail,he must not walk into
any of the bonfires and should  he be too slow the burning trailmay well catch u
p with him.  "
7100 BORDER 5: PAPER 5: INK 0: CLS
7110 FOR f=19 TO 21: PRINT AT f,0; PAPER 4;"                                ": N
EXT f
7115 PRINT AT 20,4; PAPER 4;"THE HOUSES OF PARLIAMENT"
7120 LET p=24: GO SUB 7200
7125 LET p=48: GO SUB 7200
7130 LET p=120: GO SUB 7200
7135 LET p=192: GO SUB 7200
7140 LET p=216: GO SUB 7200
7150 GO TO 7300
7200 PLOT p,24: DRAW 0,56: DRAW 1,12: DRAW 1,-12: DRAW 0,-56: DRAW 14,0: DRAW 0,
56: DRAW -1,12: DRAW -1,-12: DRAW 0,-56
7210 PLOT p+2,80: DRAW 12,0
7220 FOR f=32 TO 64 STEP 16
7230 FOR n=p+6 TO p+10 STEP 2
7240 PLOT n,f: DRAW 0,6: NEXT n
7250 PLOT p+6,f-2: DRAW 4,0: PLOT p+6,f+8: DRAW 4,0: NEXT f
7260 RETURN


7300 FOR p=64 TO 136 STEP 72
7310 FOR f=0 TO 48 STEP 8: PLOT p+f,24: DRAW 7,0: DRAW 0,32: DRAW -6,0: DRAW 0,4
7320 PLOT p+f+3,32: DRAW 1,0: DRAW 0,5: DRAW -1,0: PLOT p+f+3,48: DRAW 1,0: DRAW
 0,5: DRAW -1,0
7340 NEXT f: NEXT p
7350 FOR f=40 TO 208 STEP 168: PLOT f,24: DRAW 7,0: DRAW 0,32: DRAW -7,0
7360 PLOT f+3,32: DRAW 1,0: DRAW 0,5: DRAW -1,0: PLOT f+3,48: DRAW 1,0: DRAW 0,5
: DRAW -1,0: NEXT f
7400 PRINT AT 0,0;
7410 FOR f=1 TO 224: PRINT i$(f);: IF i$(f)<>" " THEN  RANDOMIZE USR m3
7420 NEXT f: BEEP 1,-40: PAUSE 0
7430 FOR f=0 TO 6: PRINT AT f,0;"                                ": NEXT f
7440 PRINT AT 0,0;
7450 FOR f=225 TO 384: PRINT i$(f);: IF i$(f)<>" " THEN  RANDOMIZE USR m3
7460 NEXT f: BEEP 1,-40
7470 PRINT AT 6,0; INK 1;"USE KEYS 5-8 TO MOVE GUY FAWKES.": PAUSE 0
7480 FOR f=0 TO 6: PRINT AT f,0;"                                ": NEXT f
7490 BORDER 1
7500 FOR f=0 TO 18: PRINT AT f,0; PAPER 1; INK 7; OVER 1;"
                ": NEXT f
7520 INK 7: FOR f=1 TO 100: PLOT INT (RND*200)+25,INT (RND*70)+95: NEXT f
7530 FOR f=1.8 TO 3.4 STEP .2
7540 PLOT 100,140: DRAW 12,-12,f: NEXT f
7550 PRINT AT 20,0; PAPER 4;"                                "
7560 RANDOMIZE USR m1
7570 FOR f=60848 TO 60912: POKE f,15: NEXT f
7580 PRINT AT 0,0; PAPER 6; INK 0;"     Press any key to start      ": PAUSE 0
7600 RETURN
8999 REM  Graphics


9000 RESTORE 9010: FOR f=USR "a" TO USR "i"+7: READ data: POKE f,data: NEXT f
9010 DATA 0,0,0,0,255,0,0,0,24,24,24,24,24,24,24,24
9020 DATA 0,0,0,0,7,12,24,24,0,0,0,0,224,48,24,24
9030 DATA 24,24,24,48,224,0,0,0,24,24,24,12,7,0,0,0
9040 DATA 56,56,19,125,187,56,40,108,60,110,94,94,94,94,110,60
9050 DATA 16,8,40,20,42,58,85,183


9499 REM  M/Code
9500 RESTORE 9510: FOR f=0 TO 44: READ data: POKE 50000+f,data: NEXT f: RETURN
9510 DATA 17,240,210,33,0,64,1,0,27,237,176,201,17,0,64,33,240,210,1,0,27,237,17
6,201
9520 DATA 58,72,92,31,31,31,30,0,90,211,254,238,16,67,16,254,29,32,246,251,201
9999 SAVE "GuyFawkes" LINE 1
```

After the overture

Cy Noble continues his music creator for the Beeb

This week we continue with the music creation program for the BBC. The third and final part of the listing will be printed next week.

Please note that to save an envelope you will need to go to the envelope designer menu where you can save or load envelopes separately. Remember to do that before you leave the program. It would be a shame to write your tune using envelopes you've created and be unable to play it back later because you forgot the envelopes to go with it.

'R' <return> will repeat any given sequence of notes, tacking them on from the last note written. You will be asked for the numbers of the first and last notes to be copied. 'B' will stop play back if you hold it down for a while when music is being played back.

You are asked for *channel, envelope* or *volume*, note value, and length for each note and the note is immediately played and confirmation requested. If okay you go on to the next note. All the above menu options work only on the first parameter, *channel*. If you have some sheet music handy you can use that. The note window will give you the values for the note and if you use a length value of eight for quarter notes in 4/4 time (or 6 in 3/4 time) then the rest is a piece of cake. There is a maximum of 255 notes provided for and that should be ample for most purposes. Remember the Beeb requires eight bytes per note, so 250 notes takes up 2K bytes of memory, a sizable fraction of the whole, especially if your tune is going to be used in a *Mode 2* game.

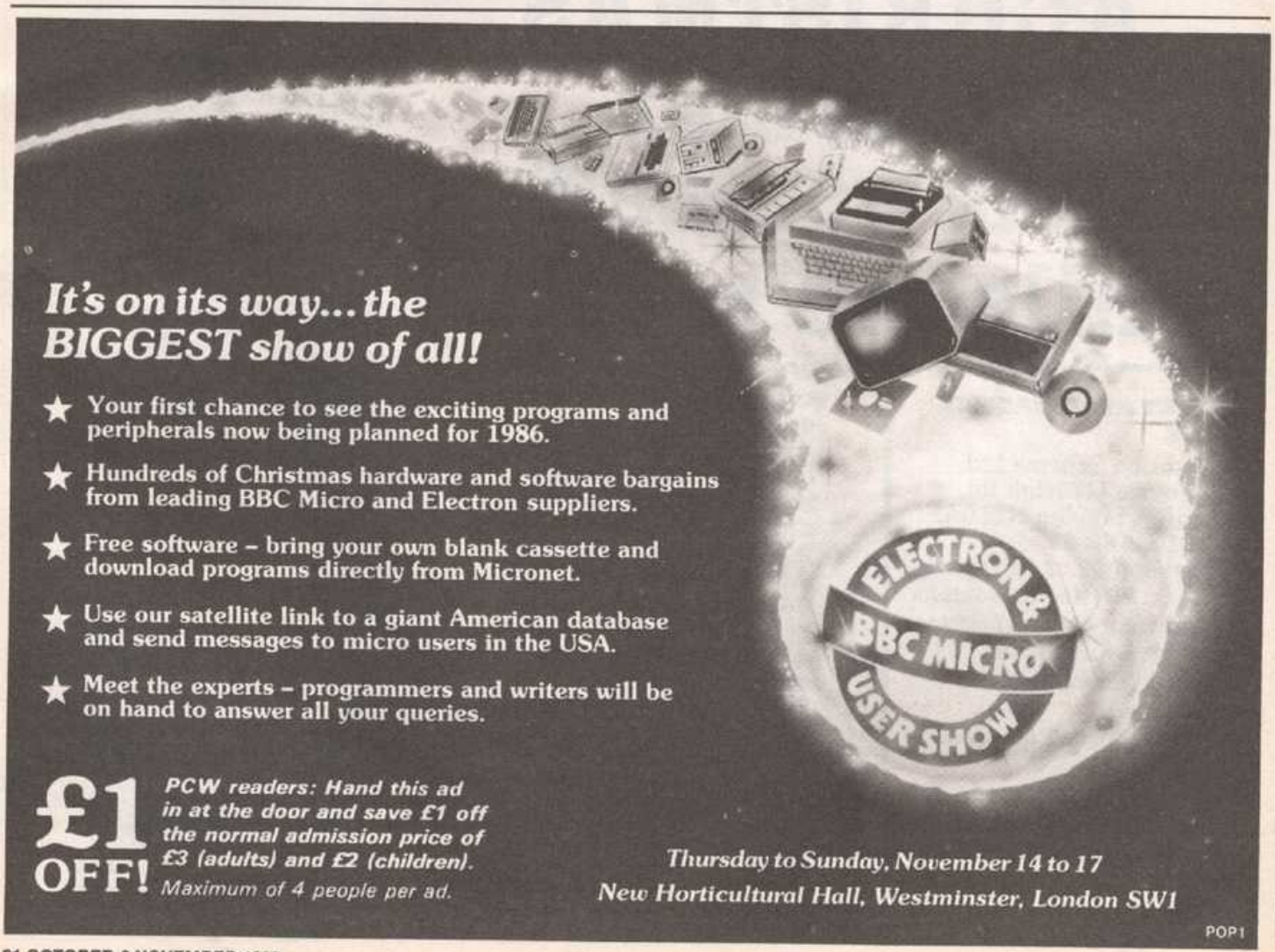
The whole program is menu driven so should not be difficult to use even for a beginner. However, the program is lengthy and complex but that is unavoidable. If you type it in exactly as written it will perform as described – otherwise you could have some very frustrating debugging to do!

```
1160DEFPROCboob:LOCAL I
1170PRINT'"You made a boo-boo"
1180VDU7:I=INKEY(200)
1190VDU11:PRINTSPC(29);
1200ENDPROC
1210:
1220DEFPROCyesno
1230PRINT'"Okay ? (Y/N)"
1240*FX21,0
1250Y%=INSTR("Yy",GET$)
1260ENDPROC
1270:
1280DEFPROCload:LOCAL F,L%,I%,J%,S%,S2% ,F$
1290CLS:*FX21,0
1300PRINT"<RETURN> to escape"
1310PRINT"* for catalogue"'
1320INPUT"Name of tune please ",F$
1330IF F$="" ENDPROC
1340IF F$="*" PROCcat:GOTO1290
1350PROCyesno
1360IF Y%=0 PROCload
1370PROCcassette("PLAY")
1380F=OPENIN F$
1390notes%=BGET#F
1400FOR I%=0TO notes%-1
1410J%=0
1420S%=BGET#F
1430S$=STR$~S%:IFLENS$>1 S$=MID$(S$,1,1)+"0"+MID$(S$,2,1)
1440N%(I%,J%)=EVAL("&"+S$)
1450FOR J%=1TO3
1460N%(I%,J%)=BGET#F
1470REM"PTR#F=PTR#F+1"
1480NEXT:NEXT
1490CLOSE#0
1500LFLAG=notes%
1510ENDPROC
1520DEFPROCcat
1530PROCcassette("PLAY")
1540VDU14:*CAT
1550PROCyesno:VDU15
1560ENDPROC
1570:
1580DEFPROCloadenv
1590LOCAL env$
1600CLS:*FX21,0
1610PRINT"<RETURN> to escape"
1620PRINT" * for catalogue"
1630INPUT"Name of Envelope file to load ",env$
1640IF env$="" THEN 1710
1650IF env$="*" PROCcat:GOTO1600
1660PROCyesno
1670IF Y%=0 PROCloadenv
1680PROCcassette("PLAY")
16901o$="LO."+env$+" 8C0"
1700OSCLI lo$
1710CLS:*MOTOR 0
1720ENDPROC
1730:
1740DEFPROCsaveenv:CLS
1750LOCAL env$,sa$,envnumber
1760PRINT"<RETURN> on its own to escape"
1770INPUT"Name of Envelope file to save "'env$
1780IF env$="" THEN 1850
1790INPUT"Highest Envelope number ",envnumber
1800PROCyesno
1810IF Y%=0 PROCsaveenv
1820PROCcassette("RECORD")
1830sa$="SA."+env$+" 8C0 "+STR$~(&8C0+(16*envnumber))
1840OSCLI sa$
1850CLS:*MOTOR 0
1860ENDPROC
1870:
1880:
1890DEFPROCsave
1900LOCAL I%,J%,S%,tune$
1910CLS:PRINT''''''
1920PRINT"Name that tune (for the file)"
1930PRINT"<RETURN> on its own to escape"
1940INPUT,tune$
1950IF tune$="" THEN 2150
1960IFLEN(tune$)>7 tune$=LEFT$(tune$,7):PRINT"Too long; shortened"'"it to ";
1970PRINTtune$
1980PROCyesno
1990IF Y%=0 PROCsave
2000PROCcassette("RECORD")
2010F%=OPENOUT tune$
2020BPUT#F%,notes%
2030FORI%=0TO notes%-1
2040J%=0
2050S1%=N%(I%,J%) MOD256
2060S2%=(N%(I%,J%) DIV256)
2070IFS2%>0 S2%=S2%*16
2080S%=S1%+S2%
2090BPUT#F%,S%
2100FORJ%=1TO3
2110BPUT#F%,(N%(I%,J%))
2120NEXT
2130NEXT
2140CLOSE#F%
2150CLS:*MOTOR 0
2160ENDPROC
2170:
2180DEFPROCrepeat:LOCAL F%,I%,L%,b%
2190INPUT"Number of first note ",F%
2200INPUT"Number of last note ",L%
2210PROCyesno
2220IF Y%=0 ENDPROC
2230FOR b%=0 TO L%-F%
2240FOR I%=0 TO 3
2250N%(notes%,I%)=N%(F%,I%)
2260NEXT
2270notes%=notes%+1:F%=F%+1
2280NEXT
2290PROCplayback(0,notes%)
2300ENDPROC
2310:
2320DEFPROCedit(C%):CLS
2330LOCAL G$,chan$,channel,env,note,length
2340IF C%>0 THEN 2370
2350PRINT"EDITING"
2360INPUT"No. of note to edit "C%
2370CLS
2380PRINTTAB(0,0);C%;
2390PRINTTAB(4,0);"&";~N%(C%,0)
2400PRINTTAB(10,0);N%(C%,1);
2410PRINTTAB(15,0);N%(C%,2);
2420PRINTTAB(20,0);N%(C%,3)
2430PRINT:PRINT
2440SOUND N%(C%,0) MOD256,N%(C%,1),N%(C%,2),N%(C%,3)
2450INPUT"Channel &",chan$
2460channel=EVAL("&"+chan$)
2470INPUT"Envelope or Volume ",env
2480INPUT"Note value ",note
2490INPUT"Length ",length
2500SOUND channel MOD256,env,note,length
2510PROCyesno
2520IF Y%=0 PROCboob:GOTO 2580
2530N%(C%,0)=channel:N%(C%,1)=env
2540N%(C%,2)=note:N%(C%,3)=length
2550PRINT''"Any more to edit ? (Y/N)"
2560*FX21,0
2570IFINSTR("Yy",GET$)>0 PROCedit(0)
2580IF b%>5 b%=C%-6
2590ENDPROC
2600:
2610DEFPROCplayback(b%,notes%)
2620LOCAL S%,t%
2630IF b%>0 t%=0
2640CLS
```

```
2650FORX%=4TO7:A%=21:Y%=0:CALL&FFF4
2660NEXT
2670t%=0
2680REPEAT
2690IF b%>0 AND N%(b%,0)>4 b%=b%-1
2700IF b%<0 b%=0
2710UNTILN%(b%,0)<4 OR b%=0
2720FORS%=b%TOnotes%-1:*FX21,0
2730I=INKEY(10):IF I=ASC"B" S%=notes%-1
:GOTO2780
2740PRINTTAB(0,t%);S%;TAB(4,t%)"&";~N%(
S%,0);TAB(10,t%);N%(S%,1);TAB(15,t%);N%(
S%,2);TAB(20,t%);N%(S%,3)
2750SOUND N%(S%,0),N%(S%,1),N%(S%,2),N%
(S%,3)
2760t%=t%+1:IF t%>17 t%=17:PRINT
2770GOTO2790
2780IFS%=notes%-1 THEN FORX%=4TO7:A%=21
:Y%=0:CALL&FFF4:NEXT:GOTO2800
2790IF t%>19 t%=19
2800NEXT
2810ENDPROC
2820:
2830DEFPROCbput(N%)
2840BPUT#F%,N%
2850BPUT#F%,0
2860ENDPROC
2870:
2880:
2890DEFPROCinsert(I%):CLS
2900IF I%>0 I%=I%+1:GOTO2950
2910LOCAL N$,C,E,G,L,N,A%,B%
2920INPUT"Number of note next""note wi
ll follow ",N$
2930IF N$="" ENDPROC
2940I%=VAL(N$)+1
2950PRINT'"Preceding note number ";I%-1
2960PRINT''"Channel=";~N%(I%-1,0)
2970PRINT"Envelope=";N%(I%-1,1)
2980PRINT"Note value=";N%(I%-1,2)
2990PRINT"Note length=";N%(I%-1,3)
3000SOUND N%(I%-1,0)MOD4,N%(I%-1,1),N%(
I%-1,2),N%(I%-1,3)
3010PRINT
3020PRINT"Insert note number ";I%
3030INPUT'"Channel &",C$
3040IFC$="" THEN C=0:GOTO3060
3050C=EVAL("&"+C$)
3060INPUT"Envelope=",E
3070INPUT"Note please", N
3080INPUT"Length please",L
3090PRINT''"Correct ? Y/N"
3100SOUND C MOD4,E,N,L
3110PROCyesno
3120IF Y%=0 ENDPROC
3130FOR A%=notes% TO I%+1 STEP-1
3140FOR B%=0TO3
3150N%(A%,B%)=N%(A%-1,B%)
3160NEXT:NEXT
3170notes%=notes%+1
3180N%(I%,0)=C:N%(I%,1)=E
3190N%(I%,2)=N:N%(I%,3)=L
3200IFI%<6 I%=6
3210PROCplayback(I%-6,notes%)
3220ENDPROC
3230:
3240DEFPROCdelete(N%):CLS
3250LOCAL I%,J%:*FX21,0
3260IF N%>0 THEN 3280
3270INPUT"Number of note to delete ",N%
3280PRINT"Confirm delete ";N%;" Y/N"
3290PROCyesno
3300IF Y%=0 ENDPROC
3310FOR I%=N% TO notes%
3320FOR J%=0TO3
3330N%(I%,J%)=N%(I%+1,J%)
3340NEXT:NEXT
3350notes%=notes%-1
3360ENDPROC

3370:
3380DEFPROCsync:LOCAL S%,I,note
3390INPUT"How many notes in the chord "
,S%
3400IF S%=0 ENDPROC
3410IF S%>4 PRINT"Stupid ! 4 notes max.
":GOTO3390
3420FOR I=0TOS%-1
3430INPUT"One of the note numbers ",not
e
3440H%(0,I)=note:NEXT
3450FOR I=0TOS%-1
3460N%(H%(0,I),0)=N%(H%(0,I),0)MOD256
3470N%(H%(0,I),0)=N%(H%(0,I),0)+&100*(S
%-1)

3480NEXT
3490PROCplayback(note-S%+1,notes%)
3500ENDPROC
3510:
```

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Change your standards

Connect your Commodore 64 up to a Centronics printer with the help of a soldering iron and ***Eric Deghaye***

Those of us who have used the MPS 801 printers and their equivalents on the Commodore 64 know about their limitations. So a logical choice is to buy a better printer such as an Epson and use it instead. But there is one big problem: Commodore has not provided anything else than the serial interface to hook printers on. The problem can be solved by the purchase of a serial Centronics interface, but the price of these can be prohibitive. Another solution is to buy a cable that runs off the user port into a Centronics plug. This will work only with software which has provisions for such a setup, such as *Easyscript* or with the software supplied with the cable.

To most of us, including myself in a previous programming life, the ins and outs of how all this works was a mixture of technical wizardry and incomprehensible software. But after many a sleepless night and gallons of coffee all this became quite simple. In order to understand how a parallel interface works, a bit of background theory is necessary. If you just want to get on with it and build the interface, skip the following paragraphs.

The parallel interface

A eight bit number consists of a combination of eight electrical pulses, a '0' is represented by about 0 volts and a '1' by about five volts. There are two ways of communicating these pulses: one pulse at a time, so to transmit an eight bit digit, you need a succession of eight pulses travelling on one wire (in theory), or all eight pulses at a time, requiring eight wires in total, one for each pulse. The former method is known as 'serial', the latter as 'parallel'. I'll let you guess why.

A Centronics interface is in fact a parallel way of transmitting data. But you need more than eight wires to communicate with a printer. First the printer must have a reference timing from the computer, which is supplied by the *Strobe* output, then the printer also wants to know what the computer uses as ground voltage level, and finally, the printer must be able to tell the computer when it is ready to receive the next byte. The communication goes as follows: the computer checks if the printer is ready by looking at the *Aknlg* (acknowledge) line. If this is satisfactory, it sends the data on the eight wires. When the printer receives these, it changes the state of the *Aknlg* line to tell the computer not to send more data, processes the data it has just received and when it has finished, changes the *Aknlg* line again to let the computer know it is ready to accept more data.

On the C64 user port, the *Strobe* and *Ground* lines are present. All we need to do now it to define which lines we are going to use for data and the reception of the *Aknlg* signal.

The software

I have included two programs: one in 6502 source code for those who want to do it the hard way and understand how it works, and a Basic program for the not so courageous ones who just want to get it going. The Basic program takes care of everything; just load it and run it when you switch the computer on and that's it. The printer can be enabled or disabled by just typing *'%'* or *'&'* and *Return*, it has the same effect as typing *Open 4,4: CMD 4*, but unlike the *Close 4*, the *'&'* command does terminate all output to the printer.

So much for the software side of things, next week we finish with the construction of the cable and its instructions for use.

Assembly Listing

```
1590  !-------------------------------------------------
1600  !THIS ROUTINE OPENS THE PRINTER CHANNEL
1610  !-------------------------------------------------
1620  !
1630  OPEN        LDA #<OPR                 !REROUTE OUTPUT ROUTINE
1640              STA VECOUT
1650              LDA #>OPR
1660              STA VECOUT+1
1670  !
1680              LDA #$7F
1690              STA CIAICR                ! SET CIA INTERRUPT CONTR REG.
1700              LDA #$FF
1710              STA DDREG                 !SETS DATA DIRECT REG. TO O/P
1720              LDA #$0
1730              STA DPB                   !
1740              JMP INTERP                !GO BACK TO BASIC CONTROL
1750  !
1760  !-------------------------------------------------
1770  !NOW ALL THE CLOSE ROUTINE DOES IS TO
1780  !PUT THE OUTPUT ROUTINE VECTOR BACK TO ORIGINAL
1790  !-------------------------------------------------
1800  !
1810  CLOSE       LDA #$CA                  !RESETS THE O/P VECTORS
1820              STA VECOUT
1830              LDA #$F1
1840              STA VECOUT+1
1850              JSR $0073
1860              JMP INTERP
1900  !-------------------------------------------------
1910  !THE HEART OF THE BEAST.....
1920  !THIS IS WHERE ALL HAPPEN
1930  !WHENEVERA CHARACTER IS OUTPUT, CONTROL IS
1940  !GIVEN TO THIS ROUTINE.
1950  !IT SETS THE CHARACTER TO BE PRINTED,SAVES IT
1960  !ON THE STACKS AND WAITS UNTILS THE PRINTER IS
1970  !READY BY CHECKING WITH CIAICR.
1980  !WHEN READY, IT PULLS THE CHAR FROM THE STACK
1990  !AND SENDS IT AWAY.....
2000  !-------------------------------------------------
2010  !
2030  OPR         JSR COUT
2040              PHA
2050              LDA #$10
2060  WTLOOP      BIT CIAICR
2070              BEQ WTLOOP
2080              PLA
2090              STA DPB
2100              CLC
2110              RTS
```

```
1100  !=================================================
1110  !=================================================
1120  !
1130  !ACIVATE PROGRAM WITH SYS 52992
1140  !
1150  !ENABLEPRINTER WITH % (PERCENT)
1160  !
1170  !DISABLEPRINTER WITH & (AND)
1180  !
1190  !=================================================
1200  !
1210  DPB         = $DD01                   ! DATA PORT B
1220  DDREG       = $DD03                   !DATA DIRECTION REGISTER
1230  CIAICR      = $DD0D                   !CIA INTERRUPT CHECK REGISTER
1240  COUT        = $FFCA                   !OUTPUTS CHAR TO CMD DEVICE
1250  VECOUT      = $0326                   !CHROUT ROUTINE VECTOR
1260  INTERP      = $A7AE                   !RETURN POINT TO INTERPRETER LOOP
1270  XEC         = $A7E7                   !RETURN POINT TO EXECUTE BASIC
1280  !
1290  !=================================================
1300  !
1310              * = $CF00
1330  !
1340  !-------------------------------------------------
1350  !SETVECTOR AT $0308 TO COME AND CHECK WITH OUR
1360  !ROUTINE FIRST WHEN COMMANDS ARE ENTERED
1370  !
1380  !-------------------------------------------------
1390              LDA #<TEST
1400              STA $0308
1410              LDA #>TEST
1420              STA $0309
1430              RTS
1450  !-------------------------------------------------
1460  !THIS ROUTINE CHECKS IF THE CHARACTER ENTERED
1470  !IS EITHER A % OR A &
1480  !-------------------------------------------------
1490  !
1500  TEST        JSR $0073
1510              CMP #37                   !IS THE NEXT CHAR A '%'
1520              BEQ OPEN                  !OPEN PRINTER CHANNEL
1530              CMP #38                   !IS IT A '&'
1540              BEQ CLOSE
1550              JMP XEC                   !IF AFTER ALL THIS FUSS NONE OF
1560  !THECHARS HAVE BEEN FOUND THEN RETURN TO BASIC
1570  !
```

Basic Listing

```
10 B=0
20 READ A : IF A = -1 THEN SYS 52992:END
30 POKE 52992 + B,A
40 B=B+1
50 GOTO 20
100 DATA169,11,141,8,3,169,207,141,9,3,96,32,115,0,201,37,240,7,201,38
110 DATA240,34,76,231,167,169,72,141,38,3,169,207,141,39,3,169,127,141,13,221
120 DATA169,255,141,3,221,169,0,141,1,221,32,115,0,76,174,167,169,202,141,38
130 DATA3,169,241,141,39,3,32,115,0,76,174,167,32,202,241,72,169,16,44,13
140 DATA221,240,251,104,141,1,221,24,96,-1
```

Analytical Amstrad

A testing time in store for Chemistry students on the 464 – written by ***Roger Walton***

Many examination syllabuses for Chemistry at aged 16+ require students to be able to identify simple salts when given the results of tests on them. This requires quite a lot of practice if the student is to be confident in interpreting the results of such tests.

The aim of this program is to allow you to do this on an Amstrad CPC 464 computer. The program is an adaptation of similar programs seen on other machines but it takes advantage of the Amstrad's window commands to produce a clear and attractive screen display.

The user is asked to choose which one of 40 salts to try to identify. He is then given a short description of the salt and invited to choose a test. The tests used are fairly standard except that the Devarda's Alloy test for nitrate ion has been chosen in preference to the older "brown-ring" test.

The student may choose to guess the identity of the salt at any time. Alternatively, if the student types *Stop* the identity of the salt is revealed and the student may choose another chemical. Help with the interpretation of the tests is given by typing *Help*.

If you find the prospect of typing in this listing daunting, I can supply a copy upon receipt of a blank cassette and £2.50. My address is: 9 Tilmire Close, Heslington Lane, York YO1 4NG

```
100 'this version R Walton,
110 GOSUB 1880: 'instructions
120 DIM a(8,40),a$(40),k$(31),p$(40)
130 FOR tests=1 TO 8
140 FOR   subs=1 TO 40
150         READ a(tests,subs)
160     NEXT subs
170 NEXT tests
180 FOR subs=1 TO 40
190   READ p$(subs)
200 NEXT subs
210 GOTO 960
220 PRINT CHR$(7):LOCATE 5,25:PRINT"press <space-bar> to continue."
230 hold$=INKEY$:IF hold$=" " THEN 240 ELSE 230
240 MODE 2
250 WINDOW #2,2,36,3,22 : 'used for list of tests
260 WINDOW #1,40,79,2,21: 'used for test results
270 WINDOW #3,5,79,23,25: 'used for main questions
280 CLS
290 PRINT TAB(5) "CHEMICAL ANALYSIS."
300 GOSUB 1690
310 MOVE 4,380:DRAW 290,380
320 DRAW 290,80:DRAW 4,80
330 DRAW 4,380
340 MOVE 5,50:DRAW 635,50
350 MOVE 635,54:DRAW 5,54
360 CLS#3: PRINT #3,"Which chemical do you wish to test (1 - 40): ";:PRI
NT CHR$(7):INPUT #3, j$
370 i$=LEFT$(j$,2)
380 IF i$<"0" OR i$>"9" THEN 360
390 j=VAL(LEFT$(j$,2))
400 IF j<1 OR j>40 THEN 360
410 CLS#1:PRINT #1,"Results of tests on substance";j;":"
420 PRINT#1,a$(j)
430 CLS#3:INPUT #3, "which test (1 - 8): ",i$
440 IF UPPER$(i$)="STOP" THEN 620
450 IF UPPER$(i$)="GUESS" THEN 540
460 IF UPPER$(i$)="HELP" THEN 1980
470 i$=LEFT$(i$,1)
480 IF i$<"0" OR i$>"8" THEN 430
490 i=VAL(i$)
500 IF UPPER$(i$)="GUESS" THEN 540
510 ON i GOSUB 1800,1810,1820,1830,1840,1850,1860,1870
520 LOCATE #1,1,y+1:PRINT #1, i;" ";:PRINT #1,USING "&"; k$(a(i,j))
530 GOTO 430
540 CLS #3:PRINT#3,"What is your guess? "
550 INPUT #3,f$
560 f$=UPPER$(f$)
570 IF f$=p$(j) THEN 610
580 CLS#3:PRINT#3,"Sorry --- substance ";j;" is not ";f$
590 FOR delay=1 TO 3000:NEXT
600 GOTO 430
610 CLS#3:PRINT#3,"Well done!  Substance ";j;" is ";f$:GOTO 630
620 CLS#3:PRINT #3,"Substance ";j;" is ";p$(j)
630 INPUT #3,"Do you wish to try another (y/n)? ",a$
640 a$=UPPER$(LEFT$(a$,1))
650 IF a$="Y" THEN CLS#1:GOTO 360
660 IF a$="N" THEN CLS#3: LOCATE 1,25:END
670  DATA 1,2,3,4,5,6,6,1,2,3,4,5,6,6,1,2,3,4,5,6
680  DATA 6,1,2,3,4,5,6,6,1,2,3,4,5,6,2,3,4,6,3,4
690  DATA 10,7,7,7,9,8,7,10,7,7,7,8,7,9,10,7,7,11,7,9
700  DATA 8,10,7,7,7,7,7,7,10,7,7,7,7,7,11,11,7,7,8,8
710  DATA 16,12,12,12,13,14,15,16,12,12,12,13,14,15,16,12,12,12,13,14
720  DATA 15,16,12,12,12,13,14,15,16,12,12,12,13,14,12,12,12,15,12,12
730  DATA 17,17,17,17,17,17,17,17,17,18,17,17,17,17,17,19,17,17,17,17,17
740  DATA 17,17,17,17,17,17,17,17,17,17,18,17,17,17,17,17,18,17,19,19
750  DATA 21,22,22,20,20,20,21,22,20,21,22,20,22,20,20,21,22,20,22,20
760  DATA 20,22,20,20,22,21,21,22,20,22,20,21,22,22,20,20,20,22,20,20
770  DATA 24,25,26,23,23,23,24,26,23,24,25,23,25,23,23,24,25,23,25,23
780  DATA 23,25,23,23,26,24,24,25,23,26,23,24,26,26,23,23,23,26,23,23
790  DATA 27,27,27,28,27,28,27,27,29,27,27,28,27,27,29,27,27,27,27,27
800  DATA 28,27,28,28,27,27,27,27,27,28,27,29,27,27,27,27,27,29,27,27,27
810  DATA 30,30,30,30,31,30,30,30,30,30,30,30,31,30,30,30,31,30,31
820  DATA 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,31,31,30,30,30,30
830  DATA AMMONIUM CHLORIDE,LITHIUM BROMIDE,SODIUM IODIDE
840  DATA POTASSIUM SULPHATE,COPPER NITRATE,IRON (II) SULPHATE
850  DATA IRON (III) CHLORIDE,AMMONIUM IODIDE,LITHIUM CARBONATE
860  DATA SODIUM CHLORIDE,POTASSIUM BROMIDE,COPPER SULPHATE
870  DATA IRON (II) BROMIDE,IRON (III) NITRATE,AMMONIUM CARBONATE
880  DATA LITHIUM CHLORIDE,SODIUM BROMIDE,POTASSIUM NITRATE
890  DATA COPPER BROMIDE,IRON (II) NITRATE,IRON (III) SULPHATE
900  DATA AMMONIUM BROMIDE,LITHIUM SULPHATE,SODIUM SULPHATE
910  DATA POTASSIUM IODIDE,COPPER CHLORIDE,IRON (II) CHLORIDE
920  DATA IRON (III) BROMIDE,AMMONIUM SULPHATE,LITHIUM IODIDE
930  DATA SODIUM CARBONATE,POTASSIUM CHLORIDE,COPPER IODIDE
940  DATA IRON (II) IODIDE,LITHIUM NITRATE,SODIUM NITRATE
950  DATA POTASSIUM CARBONATE,IRON (III) IODIDE,SODIUM SULPHITE,POTASSIU
M SULPHITE
960 k$(1)="no definite colour"
970 k$(2)="crimson colour"
980 k$(3)="persistent yellow colour"
990 k$(4)="lilac colour"
1000 k$(5)="apple-green colour"
1010 k$(6)="yellow sparks produced"
1020 k$(7)="no apparent change"
1030 k$(8)="acidic gas evolved"
1040 k$(9)="brown gas evolved"
1050 k$(10)="white solid forms on cool sides of       test-tube"
1060 k$(11)="colourless gas evolved which             relights a glowing
splint"
1070 k$(12)=k$(7)
1080 k$(13)="pale blue precipitate"
1090 k$(14)="dirty-green precipitate"
1100 k$(15)="reddish-brown precipitate"
1110 k$(16)="alkaline gas evolved on warming"
1120 k$(17)=k$(7)
1130 k$(18)="acidic gas evolved, turning              limewater chalky"

1140 k$(19)="acidic gas evolved on warming,       decolourising potassiu
m manganate (VII)"
1150 k$(20)=k$(7)
1160 k$(21)="white precipitate, turning grey"
1170 k$(22)="yellow precipitate"
1180 k$(23)=k$(7)
1190 k$(24)="precipitate dissolves in dilute ammonia"
1200 k$(25)="precipitate dissolves in                concentrated ammoni
a"
1210 k$(26)="precipitate does not dissolve."
1220 k$(27)=k$(7)
1230 k$(28)="heavy white precipitate"
1240 k$(29)="light fluffy precipitate"
1250 k$(30)="no ammonia produced"
1260 k$(31)="ammonia produced"
1270 a$(0)=",soluble in water"
1280 a$(1)="white solid"+a$(0)
1290 a$(2)=a$(1)
1300 a$(3)="white crystalline solid"+a$(0)
1310 a$(4)=a$(3)
1320 a$(5)="blue crystalline solid"+a$(0)
1330 a$(6)="pale-green crystalline solid"+a$(0)
1340 a$(7)="yellow solid"+a$(0)
1350 a$(8)=a$(1)
1360 a$(9)=a$(1)
1370 a$(10)=a$(3)
1380 a$(11)=a$(3)
1390 a$(12)=a$(5)
1400 a$(13)="pale-green solid"+a$(0)
1410 a$(14)="pale-brown crystalline solid"+a$(0)
1420 a$(15)=a$(1)
1430 a$(16)=a$(1)
1440 a$(17)=a$(3)
1450 a$(18)=a$(3)
1460 a$(19)="light-fawn solid"
1470 a$(20)=a$(6)
1480 a$(21)=a$(14)
1490 a$(22)=a$(1)
1500 a$(23)=a$(1)
1510 a$(24)=a$(3)
1520 a$(25)=a$(3)
1530 a$(26)="blue-green solid"+a$(0)
1540 a$(27)=a$(13)
1550 a$(28)="pale-brown solid"+a$(0)
1560 a$(29)=a$(3)
1570 a$(30)=a$(1)
1580 a$(31)=a$(1)
1590 a$(32)=a$(1)
1600 a$(33)=a$(19)
1610 a$(34)=a$(13)
1620 a$(35)=a$(1)
1630 a$(36)=a$(1)
1640 a$(37)=a$(1)
1650 a$(38)=a$(28)
1660 a$(39)=a$(3)
1670 a$(40)=a$(3)
1680 GOTO 220
1690 PRINT#2,"The tests available are:":PRINT#2
1700 PRINT#2,"1. Flame test"
1710 PRINT#2,"2. action of heat on solid"
1720 PRINT#2,"3. action of NaOH on solution"
1730 PRINT#2,"4. action of dilute hydrochloric       acid on solution"

1740 PRINT#2,"5. action of dilute nitric acid and   silver nitrate on so
lution"
1750 PRINT#2,"6. action of ammonia solution          after test 5"
1760 PRINT#2,"7. action of dilute hydrochloric       acid and barium chlo
ride on        solution"
1770 PRINT#2,"8. heat with Devarda's alloy and       sodium hydroxide"
1780 PRINT#2:PRINT#2,"    (GUESS / STOP / HELP)"
1790 RETURN
1800 y=3:RETURN
1810 y=5:RETURN
1820 y=7:RETURN
1830 y=9:RETURN
1840 y=11:RETURN
1850 y=13:RETURN
1860 y=15:RETURN
1870 y=17:RETURN
1880 CLS:MODE 1:PRINT TAB(10)"CHEMICAL ANALYSIS."
1890 PRINT:PRINT"The object of this program is to try"
1900 PRINT:PRINT"to identify some salts by carrying"
1910 PRINT:PRINT"out simple tests on them."
1920 PRINT:PRINT:PRINT
1930 PRINT  "When you think you know the answer,"
1940 PRINT: PRINT  "type:       GUESS       as your choice."
1950 PRINT:PRINT:PRINT"If you want to quit the program,"
1960 PRINT:PRINT  "type:       STOP        as your choice."
1970 RETURN
1980 CLS #3
1990 INPUT #3,"HELP with which test (1 to 8) ",tests$
2000 tests=VAL(tests$):IF tests<1 OR tests>8 THEN 1980
```

Peek & Poke

Lost Adventure

N R Wild of Brosley, Shropshire, writes:

Q I own a Commodore 64 and since buying the cassette version of *The Quill* I have been hidden away in my little room writing adventure after adventure. However, in my latest epic, like a fool, I saved the game into the *Save Adventure* part of the menu and not the *Save Database*. I have tried and tried to retrieve it but to no avail. I have contacted Gilsoft, but no-one there could help me. I would be very grateful if you could help me with this problem. The version of *The Quill* that I have is AO2.

A Bad news I am afraid. . . unless you keep an old copy of your *Quill* database, you have indeed lost all your work. The *Save Adventure* option saves the interpreter code together with the adventure database, which means that you cannot use the load options of *The Quill* to reconstitute your data.

There seem no real method of retrieving the situation other than starting again. I know that you won't want me to say this but why did you not save the database after you saved the adventure? Anyway whatever the reasoning was I am afraid that the old chestnut piece of advice is going to be trotted out once again. . . if you are developing a piece of software, using a generator or not, always *Save* to a different cassette (or disc)!

Crashed out

R Sims of Camberley, Surrey, writes:

Q My setup consists of a 48K Spectrum and interface 1 housed in DK'Tronics keyboards plus one microdrive. I also have a prism Micronet adaptor and an Alphacom 32 printer. Problems seem to occur when running Backgammon or Scrabble. If the adaptor is connected all is OK. If this is disconnected and the printer attached all is still OK. However, if both devices are connected the programs keep crashing – the printer need not be plugged in. I always type *'Rand USR 0'* before loading, any ideas?

A This seems to be a power supply problem. I can't quite understand why you get this with few games, but I suggest that you get your machine checked. You can test if things are ok before loading by *Pokeing* a high address in Ram (as close to 48k as possible), with a value and then *Peeking* it to ensure that it has not changed. If the value has changed then you have a Ram problem. If no change has taken place then I suspect the tapes.

Neat conversion

Peter Baker of Reading, writes:

Q How I wish I could find a neat way of going from decimal to binary.

A The last time I was asked for a *neat* way I got carping letters. All I am going to say this time is that this is just *a* method!

```
10 INPUT d
20 FOR i=1 TO 8
30 LET w=INT(d/2)
40 LET b=d - 2*w
50 LET d=w
60 PRINT AT 9,15-i,b
70 NEXT i
```

This works for all positive integers up to 255. For other integer you are on your own.

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As well as these programs "Disc Disector" incorporates a whole host of useful utilities including the following: **Fast Format**, **Selective Menu Maker**, **Disc Editor** (new sophisticated machine code version), **Scratch/Unscratch**, **Fastcopy**, **Rename**, **Fastload** (four times faster), etc. etc.
This program is an **essential purchase** for the 1541 user.

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Customers with earlier versions may return them along with £9.95 for "V3.0".

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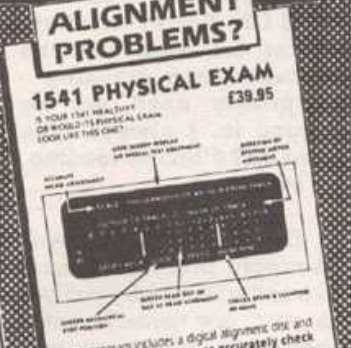

The program includes a digital alignment disc and software which allows you to **accurately check and correct** disc drive alignment. The instruction booklet is **very detailed**. Also includes quiet drive stops to **stop** that "hammering" thus preventing further problems.

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Adventure – the final task

The final instalment of Adventure for the QL – written by ***Philip Sproston***

The end is at last in sight! This week we conclude the listing – the final result being a fine arcade adventure for you to while away those non-programming hours.

If you would like a copy of the program, but don't have the constitution for all that typing, then send a formatted microdrive to Philip Sproston at Marloes, Borrowby, Thirsk, North Yorkshire, together with £3.50, and he'll return it with the program on.

```
7270 CSIZE 3,1:AT 4,8:INK 6:PRINT 'd':INK 7:CSIZE 0,0:MESSAGE 'THIS
IS A TREASURE CHEST':ENTER
7280 CSIZE 3,1:AT 4,8:INK 4:PRINT 'e':INK 7:CSIZE 0,0:MESSAGE 'THESE
 ARE SOME STAIRS LEADING DOWN':ENTER
7290 CSIZE 3,1:AT 4,8:INK 2:PRINT 'f':INK 7:CSIZE 0,0:MESSAGE 'THESE
 ARE SOME STAIRS LEADING UP':ENTER
7300 CSIZE 3,1:AT 4,8:INK 5:PRINT 'g':INK 7:CSIZE 0,0:MESSAGE 'THIS
IS A ROPE LEADING DOWN':ENTER
7310 CSIZE 3,1:AT 4,8:PRINT 'h':CSIZE 0,0:MESSAGE 'THIS IS A LARGE H
OLE':ENTER
7320 CSIZE 3,1:AT 4,8:INK 5:PRINT 'j':INK 7:CSIZE 0,0:MESSAGE 'THIS
IS A SUPPLY OF WATER':ENTER
7330 CSIZE 3,1:AT 4,8:PRINT 'k':CSIZE 0,0:MESSAGE 'THIS IS A SHIELD'
:ENTER
7340 CSIZE 3,1:AT 4,8:PRINT 'm':CSIZE 0,0:MESSAGE 'THIS IS A HORRIBL
E SMELLY MONSTER':ENTER
7350 MESSAGE 'IF A MONSTER GETS YOU, YOU ARE DEAD':ENTER
7360 MESSAGE 'IF YOU RUN OUT OF ABILITY YOU ARE DEAD':ENTER
7370 MESSAGE "THE KEYS ARE"
7380 AT 5,2:PRINT "'>'=RIGHT '<'=LEFT"
7390 AT 8,8:PRINT "'^'=UP":AT 9,7:PRINT "'v'=DOWN"
7400 AT 12,1:PRINT "'SPACE'=DROP A PIECE":AT 13,3:PRINT "OF TREASURE
 CHEST":ENTER
7410 CLS:CSIZE 3,1:AT 4,5:PRINT "G O O D  L U C K":CSIZE 0,0
7420 FOR C=1 TO 32:SCROLL 4:END FOR C:END DEFine INSTRUCT
7899 STOP
7900 DEFine PROCedure ENTER:INK #0,COL:CSIZE #0,3,1:PRINT #0;"PRESS
ENTER":INK #0,7
7910 IF KEYROW(1)<>1 THEN GO TO 7910
7920 IF COL=4 THEN COL=5:GO TO 7940
7930 COL=4
7940 CLS#0:CSIZE #0,0,0
7950 END DEFine ENTER
7999 STOP
8000 L=1:A=50:P=0:H$(1)='NOTHING':H$(2)=H$(1):D$='':I$='':PR$='1':U$
='N':SDATE 1985,1,1,0,0,0
8100 LEVEL L:UPSCREEN:SCREEN:I$=' '
8110 RAN 20:E=0:RAN 20:D=0:IF A$(E,D)<>' ' THEN GO TO 8110
8120 W=0
8199 REMark CONTROL
8200 SETSCR:GO TO 3500
8300 IF M$='Y' AND W>0 THEN MONSTER
8500 IF U$<>'Y' OR L<>1 THEN GO TO 8600
8510 A$(10,10)=' ':AT 9,9:PAPER 2:INK 0:FLASH 1:PRINT 'f':PAPER 0:IN
K 7:FLASH 0
8520 IF D=10 AND E=10 THEN OUT:STOP
8530 BEEP 0,W/2+200,W*5,W*4,W*3,W*2
8600 IF W<30 THEN GO TO 8700
8610 IF W=30 THEN MESSAGE 'OY! YOU!!'
8620 IF W=34 THEN MESSAGE 'ARE YOU PLAYING THIS GAME OR NOT?'
8630 IF W=40 THEN MESSAGE "CODEY! I'M WAITING!!!":W=15:A=A+(A<50)
8700 W=W+1:GO TO 8200
8900 MESSAGE 'OH BUM I SEEM TO HAVE REALLY BOTCHED THIS UP. WHAT SHO
ULD I DO NOW?'
9000 DEFine PROCedure MESSAGE (M$)
9010 LOCal C,W,P,Q
9020 PAPER 7:INK 0:FOR C=8 TO 12
9030 SCROLL #8,10:NEXT C:REMark AT C,24:PAPER 7:INK 0:PRINT '
     ':NEXT C
9040 W=0:P$='':P=23:Q=8:FOR C=1 TO LEN(M$)
9050 P$=P$&M$(C):W=W+1
9060 IF M$(C)=' ' THEN
9070 IF P+W>35 THEN
9080 Q=Q+1:P=23
9090 END IF
9150 AT Q,P:PRINT P$
9160 P=P+W:P$=' ':W=0
9170 END IF
9180 NEXT C
9200 IF P+W>35 THEN
9210 Q=Q+1:P=23
9220 END IF
9230 AT Q,P:PRINT P$
9800 PAPER 0:INK 7:END DEFine
9900 PAPER 2:INK 7:PRINT 'ABCDEFGHIJKLMNOPQRSTUVWXYZ':'abcdefghijkla
nopqrstuvwxyz'
9998 STOP

9999 DELETE MDV1_ADVENT:INPUT #0,"DELETED";D$:SAVE MDV1_ADVENT:STOP
10000 DATA 'aaaaaaaaaaaaaaaaaa','a  a  a a    a'
10010 DATA 'a  a   a a  a a','a aba a a  aaaaa'
10020 DATA 'a aaaa a a   aaa','a  a  a    a'
10030 DATA 'a   a  a aaaaa','a a  aaa    a'
10040 DATA 'a a   aaa    a','a aaaaa ah   aaaaa'
10050 DATA 'a  a  a  a  a','aag a  a  a  a'
10060 DATA 'aaaaa     a aaaaa','a  a  a  a  aa'
10070 DATA 'a a   aaaah a  aa','a a     aaaa  aa'
10080 DATA 'a aaa a       a','a   a aaaaa aaaa'
10090 DATA 'a  a a a    aaaa','aaaaaaaaaaaaaaaaaa'
10099 REMark 2
10100 DATA 'aaaaaaaaaaaaaaaaaa','a    a   a a ha'
10110 DATA 'a aaaa a a a a a a','a  a aa a a a a'
10120 DATA 'aaaa a   ae a  a','a a  aa aaaa aaaa'
10130 DATA 'af a a  a h    a','a  a   h  aaa a'
10140 DATA 'aaaa aaaaaaaaa    a','a a      a   aaa'
10150 DATA 'a aa  a  a  aaa','a    a a a ae aaa'
10160 DATA 'a   aaa a a aaaaaa','aaa ae  a     a'
10170 DATA 'a a  a aa a  a  a','a a      aaa a aa'
10180 DATA 'a  aaa     a aa','a    a aaaaa aa'
10190 DATA 'aaaa  a  a    aa','aaaaaaaaaaaaaaaaaa'
10195 REMark 3
10200 DATA 'aaaaaaaaaaaaaaaaaa','a a     a  a  a'
10210 DATA 'a a  ba aaaa a  a','a a aaaa a   aaaa a'
10220 DATA 'a a     aaa a a a','a          a'
10230 DATA 'a aaaaaa a  a a','a    ga  a a  a'
10240 DATA 'a    a  a a  a','a   a    aa  a'
10250 DATA 'a  aj   jaab  a','a  a     af a  a'
10260 DATA 'a af     a aj a','a aaaaaa a   a a'
10270 DATA 'a          a','a  ab aaab aa  a'
10280 DATA 'aaa a   aaa a  a','ab aa aa  a aaaaa'
10290 DATA 'a  af aa  a   fa','aaaaaaaaaaaaaaaaaa'
10295 REMark 4
10300 DATA 'aaaaaaaaaaaaaaaaaa','a        g   a'
10310 DATA 'aaaa a        a','a   a aaaaaaaaaa'
10320 DATA 'a   a        e','aaaa a aaaaaaaaaa'
10330 DATA 'a   a        a','a   a   a a a  a'
10340 DATA 'aaaa  aaaaa aaaaa  a','af   a       a'
10350 DATA 'a   a aaaaaaaaaa','aaaa ah      fa'
10360 DATA 'ag   a aaaaaaaaaa','a   a       ha'
10370 DATA 'aaaa a aaaaaaaaaa','a   a       a'
10380 DATA 'a   a aaaaaaaaaa','aaaa a       a'
10390 DATA 'af          ee','aaaaaaaaaaaaaaaaaa'
10395 REMark 5
10400 DATA 'aaaaaaaaaaaaaaaaaa','a      b      a'
10410 DATA 'aaaaaaaaaaaaaaaa a','a        a a'
10420 DATA 'a aaaaaaaaaaaa a a','a af       a a a'
10430 DATA 'a a    f   a a a','a a aaaaaaaa a a a'
10440 DATA 'a a ah    a a a a','a   a  aaa a a a a'
10450 DATA 'a a a  a  a a a a','a a a  ag fa a a a'
10460 DATA 'a a a  aaaaa a a a','a a a       a a a'
10470 DATA 'a a af     a a a','a a aaaaaaaaa a a'
10480 DATA 'a a       a a','a aaaaaaaaaaaaaa a'
10490 DATA 'a   j       a','aaaaaaaaaaaaaaaaaa'
10495 REMark 6
10500 DATA 'aaaaaaaaaaaaaaaaaa','aea          a'
10510 DATA 'a a aaa   aaaaaa a','a a aga   a    a a'
10520 DATA 'a a a aaaaa    a a','a a a          a a'
10530 DATA 'a a a  a a aaaea a a','a a a  aaaaaaaa a a'
10540 DATA 'a a a  a a a a a a','a a a          a a'
10550 DATA 'a a a  afa a a a a a','a a ah aaaaaaaa a a'
10560 DATA 'a a a       a a','a a a aaaaaaaaaa a'
10570 DATA 'a a a a       a','a a a aaaaaaaaaa a'
10580 DATA 'a a a   ae    a','a a a a  aaaaaa  a'
10590 DATA 'a  afa       a','aaaaaaaaaaaaaaaaaa'
10595 REMark 7
10600 DATA 'aaaaaaaaaaaaaaaaaa','a hafa  a gag  a'
10610 DATA 'a  aa aa aaa aaa a a','a  a a  a  a aea'
10620 DATA 'a          aaa','a aaaaa  a    a'
10630 DATA 'a a  a  a    a','a a  a  a  a    a'
10640 DATA 'a a  a  a    a','a a  ba  a  a    a'
10650 DATA 'a a  aj  a    a','a a  a  a  a    a'
10660 DATA 'a a afa  a    a','a a  aa  a  a    a'
10670 DATA 'a aaa aa  aaaaa a','a    aa    f a'
10680 DATA 'a          a','a aaaaaaaaaaaaaa a'
10690 DATA 'ae   j      a','aaaaaaaaaaaaaaaaaa'
10695 REMark 8
10700 DATA 'aaaaaaaaaaaaaaaaaa','aaaaaaq  gghhh hha'
10710 DATA 'aaaaaaaaa g g h h a','aaaagga      h a'
10720 DATA 'aaag   qaaa g   a','aagag g  aaaaa  g a'
10730 DATA 'aa gag  aaaa   ga','aa gag  gaa g  g ga'
10740 DATA 'ag     ga    ga','a aag g aaa  g a'
10750 DATA 'a  aaaaaaaaq   a','a  aaaaaaaa  a a'
10760 DATA 'a   aaaaaaa aaa a','afa  aaaa    a a'
10770 DATA 'aaaa   a aa   afaa','aea    a  aa aafa'
10780 DATA 'a aa   aaa   a a','a a          a'
10790 DATA 'a          a','aaaaaaaaaaaaaaaaaa'
10795 REMark 9
10800 DATA 'aaaaaaaaaaaaaaaaaa','a   aa          a'
10810 DATA 'a aa aa  a  aaaaaa','a aa aa aaaa   a aa'
10820 DATA 'a aa aa aaa  aaaa a','a aa aa  fa    a a'
10830 DATA 'a aa aaaaaa a aaaa a','a aa aa    a ag  a'
10840 DATA 'a aa aa aaaaa aaa  a','abaa aa   a    a a'
10850 DATA 'a aa aa  a   a  a a','a aa aa   a aaa a a'
10860 DATA 'a aa aa  a afaaa ja','a aa aa    a    a'
10870 DATA 'a aa aaaaaaaaaaaa a','a aa aaaaaaaaaaaa a'
10880 DATA 'ahaa          a','aaaaaaaaaaaaaaaaaa'
10895 REMark 10
10900 DATA 'aaaaaaaaaaaaaaaaaa','aj          ba'
10910 DATA 'a       f   a','a          a'
10920 DATA 'a aaaaa  aaaa  a','a af ba a  a  a'
10930 DATA 'a a  a a f   a','a a  a a    a'
10940 DATA 'a a  a a     a','a a aaa  aaaa  fa'
10950 DATA 'a a j     a  a','a a       a  a'
10960 DATA 'a a       a  a','a ab    a  a  a'
10970 DATA 'a a  a  aaaa a a','a          a'
10980 DATA 'ab  a a ababa a a  a','a a a a a a a a a'
10990 DATA 'a          a','aaaaaaaaaaaaaaaaaa'
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C64 bonanza

This week is dedicated to the Commodore 64 – after a relative drought of *Pokes* we have recently been very fortunate to receive a marvellous selection of material, mostly as a result of the excellent work of our regular correspondent Kenneth Devlin in Inverkip. He has sent in so much good stuff that I can't squeeze it all into one column but for those that can't wait to see more look out for our *Arcade Addicts Handbook* where you will find Commodore *Pokes* galore and much more besides. This week I have also included the promised *Pokes* from Stephen and David Chandler which appear after those from Kenneth.

Kenneth has also kindly pointed out a few corrections to Commodore *Pokes* that were printed in previous issues – *Automania* (Vol 4 no. 29) *Poke* 2249,9 not 249,9: *Hexpert* (Vol 4 no. 24) *Poke* 21875, 173/ *Poke* 21872,173. *Hovver Bovver* (Vol 4 no. 24) *Poke* 38680,96 (lives). *Skramble* (Vol 4 no. 24) *Poke* 8609,173 (infinite lives) *Poke* 3808,168/ *Poke* 3809,0/ *Poke* 3810,234 no collisions.

Chinese routines

His first new routine is for *China Miner* – yes I know we've done this before but just to illustrate the sort of problems that crop up it seems that the version on the *SoftAid* cassette has a new turbo loader that makes it hard to get into. Enter this program:

```
10 T=0: For A=20000 To 20023: Read B: Poke A,B: T=T+B: Next
20 If T<>2493 Then Print "DATA ERROR": End
30 Data 169, 43, 141, 40, 3, 169, 78, 141, 41, 3, 96, 169, 255, 141, 63, 3, 169, 2, 141, 64, 3, 76
40 Data 237, 246
```

Type *Run*. If *Data Error* appears then check listing. Type *New*. Then enter this line:

```
10 Poke 20001,237: Poke 20006,246: Sys 20000: Sys 679
```

Type *Sys 20000/*. Now press *Shift Runstop* to load the loader program.

Once all the program has loaded an error message will appear on the screen but you ignore this. Now enter the following *Pokes* without clearing or scrolling the screen (this is because the machine code is stored in the first ten lines). *Poke* 1053,0/ *Poke* 1055,8/ *Poke* 1056,128/ *Sys* 1052/.

Arabian trickery

The machine will appear to reset but do not worry. *Poke* 34497,0 to stop collision detection. *Poke* 34631,173 infinite lives. *Poke* 34516,169/ *Poke* 34517,5/ *Poke* 34518,234 – no need to collect objects. *Sys* 33127 to start mining.

Arabian Nights: This is very tricky to get into; if you try the following do not switch off the speech. *Load* the game as normal. When the title screen appears and the music plays, reset the computer – the music will stop but nothing else will happen. Press *Restore*. Press the joystick fire button. Hold down the *Runstop* key. Just before the speech for the first screen the machine will return to Basic. *Poke* 21954,169 fall from any height *Poke* 22953,173 infinite lives *Poke* 22473,0 no collision on collecting screens *Poke* 22768,169 : *Poke* 22769,0 : *Poke* 22770,234 for no collisions on raft/flying carpets part *Sys 20636*.

Falcon Patrol 2: Enter this short program:

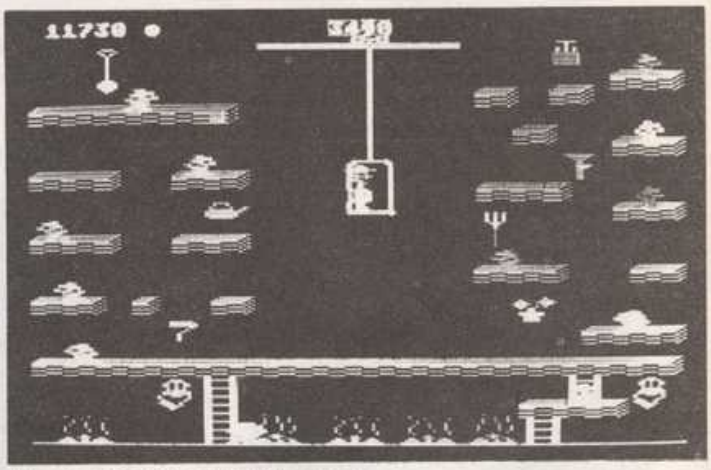
```
10 t=0 : For a=2000 to 20037 : Read b: Poke a,b : t=t+b : Next
20 If t<>4641 Then Print "data error":End
30 Data 169, 43, 141, 40, 3, 169, 78, 141, 41, 3, 96, 169, 192, 141, 62, 3, 169, 255, 141, 4, 3, 76
40 Data 237, 246, 120, 162, 253, 189, 21, 192, 157, 21, 3, 202, 208, 247, 88, 96
```

Type *Run* – if *Data Error* appears then check listing. Type *New*. Now enter this 10 *Poke* 49424,87 : *Poke* 49425,241 : *Sys 20024 Type Sys* 20000/

Now press *Shift Runstop* to load the game loader. Once the program has loaded press *Return* twice. Finally *Poke* 28768,165 for infinite lives. *Poke* 36617,6 to make life easy *Sys* 28672 to start.

Strangeloop : Press *Runstop-Restore* when saving the game position *Poke* 45486,173 lives. *Poke* 44217, infinite fuel. *Sys 865* to start. *Brian Bloodaxe*: Load as normal and then try *Runstop-Restore*. If it doesn't work reset the computer. *Poke* 38270,165 infinite lives. *Poke* 39079,165 infinite energy. *Sys* 39142 – if this does not work try *Sys* 39145 (it depends on when you break the program).

Pyjamarama : Load "",1,1/ *Poke* 2218,200/ *Poke* 2219,8/ *Poke* 2248,169/ *Poke* 2249,16/ *Poke* 2250,141/ *Poke* 2251,13/ *Poke* 2252,68/ *Poke* 2253,76/ *Poke* 2254,247/*Poke* 2255,9/ *Run/*. *Kong: Poke 30624,173* (lives). *Poke* 7760,96 removes link screen. *Sys 12128*. *Skramble: Poke* 8609,173 (lives). *Poke* 3808,169 : *Poke* 3809,0 : *Poke* 3810,234 – no collision. *Spacewalk: Poke* 52959,160 : *Poke* 21296,169 : *Poke* 21297,0 : *Poke* 21298,234 : *Poke* 21210,169 : *Poke* 21211,0 : *Poke* 21212,234 – infinite lives.



***Bounty Bob:* US Gold strikes back**

Jungle story

Jungle Story: Poke 52959,160 infinite lives *Orbitron : Poke* 52960,169 : *Poke* 52961,0 : *Poke* 52962,234 lives. *Chiller:* Load as normal and press *Run/Stop Restore Poke* 22957,173 for infinite energy and *Sys* 50758.

Cylu: Poke 39409,173 infinite fuel. *Hungry Horace:* Load game as normal and reset the machine. *Poke* 5856,164 *Sys* 2304 *Scuba Dive : Poke* 3584,173: *Poke* 19079,173 : *Poke* 19080,0 : *Poke* 19081,234 *Hunchback : Poke* 22521,173 lives *Poke* 22282,169 : *Poke* 22283,0 : *Poke* 22284,234 no collisions. *Sys 16384. Mr Wimpy : Poke* 21074,173 : *Poke* 21091,30 infinite salt, *Poke* 19228,169 : *Poke* 19229,0 : *Poke* 19230,234 no colisions in first part. *Poke* 26593,169 : *Poke* 26594,0 : *Poke* 26595,234 no collisions in second part.

Bounty Bob Strikes Back: Type *Load* and when ready appears type *Poke* 1010,76 : *Poke* 1011,248 : *Poke* 1012,252 and then type *Run*. When loading finishes again type *Poke* 29719,169 : *Poke* 29720,0 : *Poke* 29721,141 : *Poke* 29722,119 : *Poke* 29723,0. then type *Sys* 11877 and you are invincible. On level 1 after getting coffee pot type 8 and press F7 to go to level 8, after getting flower pot type 1 and press F7 to go to level 4. On level 10after getting the pitchfork type 5 and hit F7 to go to level 14.

Suicide Express : As above *Load. Poke* 1010,76 : *Poke* 1011,248 : *Poke* 1012,252 and then *Run. Poke* locations 26222 up to 26226 with 234. *Poke* 26227,243. *Sys* 33792. *Daley's Decathlon*: On the javelin hold down fire and run as normal. Still holding fire. The javelin will go straight up and a spaceship will come down. *Frak:* When you get a high score type *American Express* while *shiftlock* is switched on to get the cheat mode. *Booty:* Hold down K,E,V,I,N and you can then press the back arrow to change levels.

Tony Kendle

Mind your manors

There can be only about three adventurers who have not heard of *The Quill*, and those are living half a mile from the source of the Amazon. I believe that this utility, the *tabula rasa* or blank page of adventure-writing, is one of the most important programs for any home computer user to be released in the last five years.

In America, several other graphic adventure-writers have been released, although as far as I have seen, these are attractive but fairly useless for serious players.

The problem with early version of *The Quill*, and one which most reviewers have seized upon with glee, is the fact that most *Quill'd* adventures tend to look the same – once you've seen the typical *Quill* response (*You have with you nothing at all* and *OK Bye have a nice day*) then there are no more surprises.

Since its release some two or three years ago Gilsoft has produced a number of up-dates for the program, the first of which was Serial C. This is the version that new purchasers of the program will receive, but is also available as an update for just £2.99 to anyone who still has the original tape. Version C goes some way toward allowing the author to customise the responses within the adventure.

Static illustrations

The second advance was *The Illustrator*, as the graphics-creating part of *The Quill's* suite of programs. This utility costs as much as the main program, but transforms the basic database. A sophisticated graphics editor allows the writer to create static illustrations to accompany *Quill* locations or create title screens. Even so, there is still some inflexibility here; the picture can be quite slow to draw, and once complete, the player must then press a key in order to get on to the text part of the game (and quite often, isn't let in on his secret!)

Now the limitations of both *The Quill* and *The Illustrator* have been largely answered by the latest release from Gilsoft called *The Patch*. This allows the programmer to use a split screen, choosing the ratios of graphic to text (the picture will scroll up as you input text), and also offers several ready-made sound effects as well as one or two character sets. Other facilities include save-to-buffer and editing of some of the system messages.

As it is only the alternative typefaces that use up the memory, you can see that this is going to be a necessary adjunct to *The Quill*. It'll cost you £5.99, and works, of course, with the main *Quill* and *Illustrator* programs.

With prices for the main programs running at £17 each (£23 for the Commodore and Amstrad disc versions), the whole suite is not cheap. But with them the imaginative author can produce a sophisticated adventure that will stand up to any others on the market.

There's an exciting new adventure development program from the Ram Jam Corporation, but it is only available to software houses and those writers with a good idea, which allows for graphics, sound and roving characters.

For Amstrad owners, Incentive has just this week released *The Graphic Adventure Creator* which would appear at first to be an excellent utility. More of it soon.

So that's the package – how has it been used recently? That's the question that I shall be concentrating on in the next couple of weeks, and if I hear a groan, then all I can say is: 'Read on, because there are some smashing programs about!'

A couple of new adventures to be released by Gilsoft are *The Hollow*, again from Tom Davies, an excellent writer, and *Madcap Manor* written by those Mindbenders, Paul Styles and Brian Jenkinson. An innovation here is the fact that both graphic and text versions are offered, one on each side of the cassette.

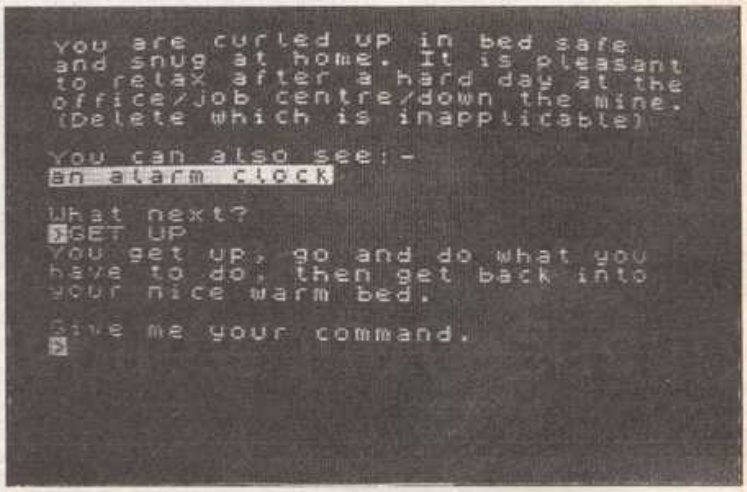
The two versions of *Madcap Manor* are similar in most respects, except for small detail changes – for example, the found objects are rather different, and some of the more complex problems are missing in the graphic version, due no doubt to the extra memory required to service the excellent graphics, drawn by Steve Green.

Falling asleep one day, you dream that you are miraculously transformed into Inspector Le Gles, the famous Belgian detective. Starting off, you find that, coming straight from your bed, you must find some clothes, and then you can explore the Manor. See! Mrs Crumble the cook relaxing with her sherry trifle! Play *Swan Lake* on the Music Room's grand piano! See Fleet the butler's rude tattoo!

Madcap Manor is the home of great looniness, and this is made even worse by the characters wandering about, with whom you can hold conversations and gain clues as to what is going on – the closest yet to character inter-reaction in a *Quill*'d adventure. The logic, however, sometimes goes awry (I was able to start the engine of the car in the garage before finding the starting handle).

The Hollow, on the other hand, appears to be a completely different game on each side of the cassette, so must also rate as good value. The player is required to find the remaining seven pieces of magical medallion while travelling in the mystical land of Moylan (you start with three pieces). Tom Davies, an adventure writer those programs I have admired for years, has dreamt up a scenario which uses very long and atmospheric descriptions throughout – I didn't find the adventure itself particularly atmospheric, but this may be because I haven't yet progressed very far, being held up by the necessity of finding a spell to get past a very strange bird.

The graphic version boasts very colourful and very fast graphics, by Tom himself, and good points include the fact that you can ask for *Help* and for once get quite a detailed clue to the particular problem worrying you at that location. Uniquely, the player is offered an easy way to progress, or a hint at the correct solution which may be rather harder to figure out. The program makes full use of the graphics, and the player can ask for a redescription in text only, or with the graphic; and pictures can be drawn only at the first visit to a location, or at every visit. There are some bad points – surely the program should say *I don't understand* when it actually says *Doing that is of no use to you?* That's being clever!



Madcap Manor

However, these are a couple of new good-value adventures from the home of *The Quill*, and they should give even experienced players a few weeks hard thinking.

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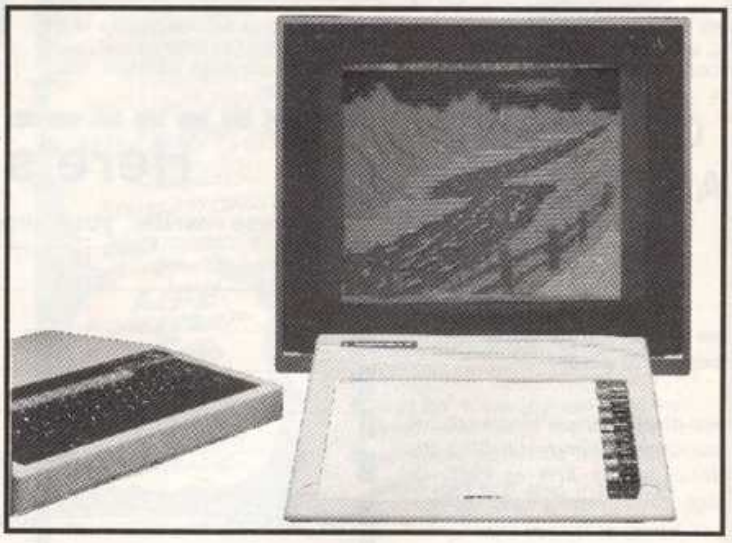

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Mission One on Amstrad. Can someone tell me how to get past the droid on level 2. Stephen Long, 77 Chiltern Gardens, Dawley, Telford, Shropshire (0952 502804).
Hobbit on BBC. How do I get out of the dungeon and how do I open the trapdoor? Also how do I get rid of the pale bulbous eyes? P Gates, 8 Mountview Road, Hornsey, London N4.
Dragontorc on Spectrum. Where can I find the locate spell in the druid's last sancturary? How do I locate Morag? Christian Barnard, 19 Windmill Avenue, Armagh, co Armagh, co Armagh, N Ireland.
Emerald Isle on Amstrad. Where is the long rope? Which mountain do I move? Dudley Brooke, 4-21 High Street, Cheam, Surrey SM3 8RF.

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4	(3)	Finders Keepers	(Mastertronic)	£1.99
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4	(2)	Frank Bruno's Boxing	(Elite)	£7.95
5	(3)	Way Of The Exploding Fist	(Melbourne House)	£9.95
6	(-)	Paradroid	(Hewson Consultants)	£7.95
7	(-)	Hacker	(Activision)	£9.95
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4	(4)	Fighting Warrior	(Melbourne House)	£9.95
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6	(1)	Fairlight	(The Edge)	£9.95
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9	(-)	Hacker	(Activision)	£9.95
10	(6)	Bored of the Rings	(Silversoft)	£6.95

Bubbling Under

ACE/**Spectrum/C64/C16 (Cascade)**; Kennedy Approach/**C64 (Microprose/US Gold)**; Monty On The Run/**C64/Spectrum (Gremlin Graphics)**; One Man and His Droid/**Spectrum (Mastertronic)**; Quest For the Holy Grail/**Spectrum (Mastertronic)**; Soul of a Robot/**Amstrad (Mastertronic)**; Robin of Sherwood/**Various (Adventure International)**.

All figures compiled by Gallup/Leisurescope

Top Twenty

1	(1)	Way of the Exploding Fist *(Spectrum/C64/Amstrad)*	**Melbourne House**
2	(-)	Impossible Mission *(Spectrum/C64)*	**Epyx/US Gold**
3	(2)	Frank Bruno's Boxing *(Spectrum/C64/Amstad)*	**Elite**
4	(10)	Hacker *(Spectrun/C64/Amstrad/Atari)*	**Activision**
5	(12)	Finders Keepers *(Spectrum/C64/Amstrad)*	**Mastertronic**
6	(-)	Who Dares Wins II *(C64)*	**Alligata**
7	(19)	Formula One Simulator *(Spectrum/C64/C16)*	**Mastertronic**
8	(4)	Daley Thompson's Supertest *(Spectrum)*	**Ocean**
9	(6)	Fighting Warrior *(Spectrum/C64)*	**Melbourne House**
10	(9)	Shadow Of The Unicorn *(Spectrum)*	**Mikro-Gen**
11	(3)	Fairlight *(Spectrum)*	**The Edge**
12	(13)	Summer Games II *(C64)*	**Epyx/US Gold**
13	(15)	Action Biker *(Spectrum/C64)*	**Mastertronic**
14	(17)	BMX Racers *(Spectrum/C64/C16)*	**Mastertronic**
15	(14)	Graham Gooch's Test Cricket *(Spectrum/C64)*	**Audiogenic**
16	(7)	Spy vs Spy II *(C64)*	**Beyond**
17	(-)	World Series Basketball *(Spectrum/C64/)*	**Imagine**
18	(-)	Beach-Head *(Spectrum/C64/Amstrad/BBC/Atari/Electron)*	**Access/US Gold**
19	(11)	Bored Of The Rings *(Spectrum/C64/BBC)*	**Silversoft**
20	(5)	Now Games *(Spectrum/C64)*	**Virgin**

Figures compiled by Gallup/Leisurescope

Readers' Chart No 48

1	(1)	Way of the Exploding Fist *(Spectrum/C64/Amstrad)*	**Melbourne House**
2	(5)	Fairlight *(Spectrum)*	**The Edge**
3	(4)	Now Games *(Spectrum/C64)*	**Virgin**
4	(2)	Daley Thompson's Supertest *(Spectrum)*	**Ocean**
5	(6)	Summer Games II *(C64)*	**Epyx/US Gold**
6	(3)	Hypersports *(Spectrum/C64)*	**Imagine**
7	(-)	Red Moon *(Spectrum/C64/BBC/Electron/Amstrad)*	**Level 9**
8	(8)	Soft Aid *(Spectrum/C64)*	**Various Artists**
9	(7)	Frank Bruno's Boxing *(Spectrum/C64/Amstrad)*	**Elite**
10	(-)	Karateka *(C64)*	**Broderbund/Ariolasoft**

Winning phrase No 48: "Fifty-one shopping days till Xmas, dear", from D Shanson of Palmers Green, London, who receives £25. Honourable mentions to J Burnett of Camberley, Surrey with "Eire's polar expendition hoists flag at Southend" and Peter Leicester of Sale, Cheshire with "Sexpot Selina plays footsie with Andy".

Now voting on week 50 – £25 to win

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

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 50 closes at 2pm on Wednesday November 6 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .....

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My top 3: Voting Week 50

1.....

2.....

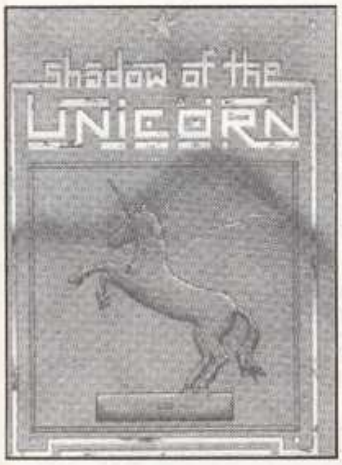
3.....

My phrase is: .....

New Releases

MYTHIC BEAST

Shadow of the Unicorn, not a mythical program at all, has turned up. This is the first program to use MikroGen's new *Mikro Plus* interface which gives you a tape test utility, a joystick port and an extra 16K. This ought to give



you bigger games with more, and more detailed graphics.

Little wonder then that *Shadow of the Unicorn* is a large adventure with lots of graphics. It seems to be a hybrid of dozens of other games: the characters have a similar style to *Wally* games; you control multi players like *Midnight*, many of the backgrounds look like *Valhalla* and you can look in various directions *à la Tir na Nog*. You get a book telling the story of baddies and goodies which reads like the usual fodder of pseudo-myth and mystic runes.

First impressions of the game were pretty disappointing, the graphics are nowhere near Gargoyle standard, and the backgrounds are pretty basic looking in places. The animation is also nothing beyond what you might see in the average budget game. Though the adventure is clearly big it isn't for example any bigger than *Midnight* – a lot smaller, in fact.

If that extra memory is being used anywhere it must be in the logic and gameplay. I found some evidence for this in the small amount of time I could spend on the game. There are lots of interesting locations and odd characters (most of whom I have slaughtered so far) so I think it may, in the end, prove to be a fairly compulsive complex game. An immediate Gosh Wow it isn't, though.

Program *Shadow of the Unicorn*
Price *£14.95*
Micro *Spectrum*
Supplier *MikroGen*
Unit 15
Western Centre,
Bracknell

EASY PLAY

Camel Software has recently issued a music program for the Amstrad called *Toolbox 2*. It differs from other music programs in its intention – not to teach you much about music but simply to get you in the position of playing music quickly and easily.

It gives you the chance to play your Amstrad in a similar way to those Casio 'one key' facilities where after recording the sequence of notes you require, you then time them by pressing a single key in step with a rhythm unit. Each press of the key

'releases' a note of the tune. This facility is available on all three sound channels of the Amstrad and so a three part tune is possible.

There are other facilities like transposition and a preset rhythm and altering the sound timbre has been kept to the business of fiddling with the envelope shape.

It's quite a well designed package and for those with no knowledge of music is a relatively cheap buy.

Program *Toolbox 2*
Price *£5.95*
Micro *Amstrad*
Supplier *Camel Micros*
Wellpark,
Willeys Ave
Exeter

Pick of the week

DISC DRIVEN

Tron was the great SF Christmas movie of about three years ago, and was probably one of the first films to produced spin-off video arcade machines. To my knowledge it produced two – one simply entitled *Tron* (a compilation of four 'sub-games') and more relevantly here, one entitled *Discs of Tron*. This one was a 'Walk-in' machine where you sat down in semi-darkness, were bombarded by stereo sound and proceeded to play a game against the computer which can only be described as duelling by playing a cross between squash and frisbee. This was fun – and at last it has found its way onto a home computer in the shape of a new one from Artic called *Discs of Death*.

Programmer Ian Rich has done a great job, considering the limitations of the Spectrum. The 3-D perspective is good, and although the graphic display doesn't look impressive, what's important is that the game plays very well indeed. There are three skill levels . . don't start on number three – it's fast!

At £6.95 perhaps it's not quite as competitivly priced as it might have been, but if you are looking for an original and challenging arcade game, this could be it.

Program *Discs of Death*
Price *£6.95*
Micro *Spectrum*
Supplier *Artic Computing*
Main Street
Brandesburton
Driffield

Program	*Type*	*Micro*	*Price*	*Supplier*
The Worm in Paradise	Ad	Amstrad	**£9.95**	Level 9
Physics Revision	Ed	Amstrad	**£14.95**	Amsoft
Formula	S	Amstrad	**£1.99**	Mastertronic
Chemistry Revision	Ed	Amstrad	**£14.95**	Amsoft
Web War	Arc	BBC	**£9.95**	Mirrorsoft
The Worm in Paradise	Ad	Commodore 64	**£9.95**	Level 9
Mission Asteroid	Arc	Commodore 64	**£14.95**	US Gold
Skooldaze 64	Arc	Commodore 64	**£6.95**	Microsphere
Scrabaeus	Arc	Commodore 64	**£9.95**	Ariolasoft
Underbeings of Croth	Ad	Dragon 32	**£3.95**	Maridan
Mazerace	Ed	Dragon 32	**£3.95**	Maridan
Spellbox	Ed	Dragon 32	**£3.95**	Maridan
Mordon's Quest	Ad	Enterprise	**£7.95**	Enterprise
Star Strike 3D	Ad	Enterprise	**£7.95**	Enterprise
Jet Set Willy II	Arc	MSX	**£7.95**	Software Projec
MSX Pastfinder	Arc	MSX	**£11.95**	Activision
Accounts	Ut	PCW8256	**£99.95**	Sagesoft
Payroll	Ut	PCW8256	**£69.99**	Sagesoft

ON THE ROAD

I'm not going to spend too much time talking about *3D Grand Prix* – one of the new Amsoft Gold range for the Amstrad machines. We've all seen what the Amstrads can do when programmed well – viz Ultimate/Gargoyle and many others – it's such a pity that there is such a lot of overpriced dross for them – some of it produced by Amsoft itself.

Amsoft clearly regards 3D Grand Prix as 'something a bit special', so when it arrived on my desk, it was up and running faster than you can say 'you cannot be serious'. Now I'm a 1.27 *Revs* man myself. . . quite a coincidence really, as it took exactly that long to realise exactly how unplayable *3DGP* was.

I persevered – it got worse. None of the excitement of *Pole Position* – there is no impression of speed and challenge. None of the realism of *Revs* – the car manoeuvres like a tank and the opposition are more like moving brick walls. There is some pretty background scrolling – but what's the use of the icing if there isn't a cake to put it on in the first place? I think everyone concerned would do well to forget about this one.

Program *3D Grand Prix*
Price *£9.95*
Micro *Amstrad CPC's*
Supplier *Amsoft*
Brentwood House
169 Kings Road
Brentwood
Essex
CM14 4EF

MAKE MUSIC

When the MSX machines started appearing here the only one I managed to raise any enthusiasm for was the Yamaha CX5 MSX Synthesizer. This wonderful machine lets you create music in up to eight parts using the same sort of sound techniques utilised in the famous in the famous DX7 – which just about everybody from James Last to Philip Glass has at least two of.

It seems though that even the CX5 hasn't been doing too well and if you look around you'll find some excellent discounts in the specialist music shops. Having had one for a while I can only suggest that if you like making music you go out and buy one immediately.

The justification for all this blurbage is the fact that Rittor music have released a music writing package for the CX5 which would seem at first glance merely to duplicate what's available on Yamaha's own *Composer* cartridge.

In fact the *FM Musiwriter* is a rather different entity, which turns the CX5 into a flexible Casio rather than a tool for serious composing. This has some good as well as bad aspects but certainly the package does not use the machine to the full.

Bad points first, you are stuck with 3/4 or 4/4 as a rhythmic choice (where would this leave Stravinsky?). You cannot use sounds you have created yourself and are stuck with the sometimes dodgy presets, and you have to use fixed chords – your own notated music has to be monophonic.

On a machine capable of

almost infinite musical variety using eight notes, it seems absurd that it should be so restricted. However, the package does have one obvious advantage – it is a lot easier to use than the *Composer* program precisely because you don't have to insert each chord or write in the percussion parts.

The program is divided into four sections, editing of the score where you insert the actual notes, bar divisions, key signatures, etc. Page Two concerns rhythm and repeats. Rhythm is the usual misture of Casio/home organ sounds – Disco, Waltz, etc, a marginal improvement over the CX5's existing presets. There are similar pages for chords and overall music perameters like key signature and tempo.

Instructions like *Play A7* or *Switch on Waltz rhythm* are inserted onto the score at the appropriate place. Although it is easy to use and the manual is also clear, the end results tend to have a sort of home organ feel about them, probably because of those rhythms, so if it's Philip Glass Polyrhythmic density you're after forget it. If you feel in need of a very basic, very helpful package that will do a lot of musical work for you, albeit with slightly bland results, this is worth looking at.

Program *FM Musiwriter*
Price £29.95
Micro *CX5*
Supplier *Rittor Music*
24 Broomgrove
Gdns.
Edgeware
Middx.

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.

Activision, 15 Harley House, Marylebone Road, London NW1, 01-486 7588. **Amsoft,** Brentwood House, 169 Kings Road, Brentwood, Essex, 0277 230222. **Ariolasoft,** Retail. **Artic,** Main Street, Brandesburton, Driffield, YO25 8RL, 0401 43553. **Digital Integration,** Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey, GU1S 3AJ, 0276 684959. **Enterprise,** 31-37 Hoxton Street, London, N1 6NJ, 01-739 4282. **Infinite,** 73 Alcester Road, Moseley, Birmingham 13. **Level 9,** 229 Hughenden Road, High Wycombe, Bucks HP13 5PG, 0494 26871. **Maridan,** Birchmore Cottage, Nairdwood Lane, Prestwood, Great Missenden, Bucks HP16 DQQ. **Mastertronic,** Park Lorne, 111 Park Road, London NW8 7JL, 01-402 3316. **Microsphere,** 72 Rosebury Road, London N10 2LA, 01-883 9411. **Mikro-Gen,** Unit 15, The Western Centre, Western Road, Bracknell, Berks, RG12 1RW, 0344 427317. **Mirrorsoft,** Headington Hill Hall, Oxford OX3 0BW. **Sagesoft,** NEI House, Regent Centre, Gosforth, Newcastle-upon-Tyne NE3 3DS, 091 284 7077. **Sinclair,** Stanhope Road, Camberley, Surrey, GU15 3PS, 0276 686100. **Software Projec,** Bearbrand and Complex, Allerton Road, Woolton, Liverpool L25 7SF, 051 428 9393. **US Gold,** US Gold, Unit 10, The Parkway Ind. Centre, Heneage Street, Birmingham B7 4LY. **Virgin Games,** 2-4 Vernon Yard, Porobello Road, London W11 2DX.

Intelligent woman

George Bernard Shaw found a mass market for his plays and philosophy, and he suggested that part of his success was due to pitching his arguments so that they would be understood by an imagined 'typical' reader.

That reader he described as 'an intelligent woman', and he even wrote a pamphlet entitled *The Intelligent Woman's Guide to Socialism* which, despite the title, was intended to be read by everybody.

Perhaps the home computer industry could benefit by copying Shaw and appealing to the 'intelligent woman': it may be the only way to avoid the depressing fate of becoming just another specialist male interest with an ever-dwindling band of loyal devotees.

There is absolutely no evidence to indicate that the microcomputer industry as a whole gives a moment's thought to its almost exclusively masculine appeal, but should it do so it would see the inevitability of the current "boy's toy" image. Homicidal aliens, fighter aircraft simulations and warlock armies all appeal directly and unapologetically to the youthful male imagination. It is a strange fate for the mathematically pure and sexless counting engine that is the microchip.

When the copywriting hacks first undertook to awaken consumers to the wonders of microtechnology all sorts of promises were made on behalf of computers. What was not taken fully into account was that a typical system of computer, tape recorder and television was good for almost nothing except playing arcade games.

The last 18 months have seen the inexorable ascent of the computer game. Clever machine code, links with personalities from the entertainment world and multi-thousand pound marketing have attracted a public who think they are 'computing' when in fact they are only playing games. Home computers are the most exciting development in entertainment since the invention of television, but playing games should not be seen as something special just because it involves a computer, and home computers should not be seen as purely games machines for teenage boys.

In response to mild protest from alienated women, some software houses issued programs specifically aimed at the 'female' market, but computerised cooking and silicon chip knitting patterns have rightly been exposed as patronising as well as a waste of time.

However, just when home computing appeared to be resigning itself to becoming an essentially masculine hobby, a radical change in direction took place.

The market has stopped expanding outwards and has now started to move upwards: home computers have become useful. The latest machines – like the Amstrad 8256 – have large memories, fast storage, reliable hardware and free business software.

Price cuts have now put computer/disc/monitor/printer packages within the reach of most pockets.

The result is a substantial increase in computer ownership from people who would not consider themselves to be computer literate, but who nevertheless have a use for wordprocessors, spreadsheets and databases and who may even be tempted eventually into buying a chess game or a good adventure.

The functional computer system, then, is the trend which is developing from the hiatus of the last year and a half.

Computers are at last beginning to appeal to the intelligent woman.

Mike Lloyd

Dicey business

Puzzle No 181

In the 'ghost' sum below, a two-digit number is multiplied by a single-digit number. To the resulting two-digit product is added another two-digit number which gives a final result, also of two digits.

```
  * *  × (times)
    *
  ---
  * *  + (plus)
  * *
  ---
  * *
  ---
```

If the stars are replaced by the correct digits it will be found that each of the nine digits 1 to 9 has been used once and once only.

Can you fill in the correct values?

Solution to Puzzle No 176

For any given starting point, counting round the circle of cards as described, a specific score would be achieved. The program below tests each of the possible 144 starting positions and prints out each respective score. If these results are examined it will be seen that the only score that is duplicated by consecutive start points is a score of six. (The start points are 15 and 16, 32 and 33, 111 and 112, and 128 and 129.)

```
10 DIM C(144),S(144)
20 FOR START=1 TO 144
30 FOR N=1 TO 144:C(N)=N:NEXT N
40 PS=START
50 IF C(PS)=0 THEN GOTO 100
60 M=C(PS):C(PS)=0:S(START)=S(START)+1
70 PS=PS+M
80 IF PS>144 THEN PS=PS-144
90 GOTO 50
100 NEXT START
110 FOR N=1 TO 144:PRINT N,S(N):NEXT N
```

This does not determine my age exactly, but this was not asked for!

Winner of Puzzle 176

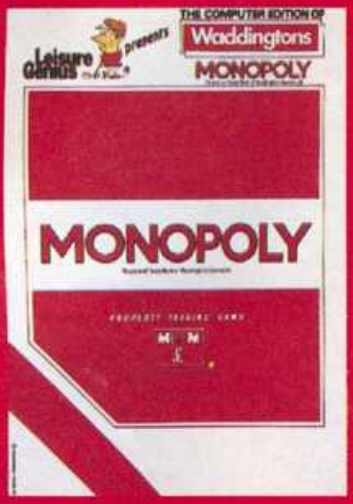
The winner is Don Macleod of Dingwall, Rossshire, who receives £10.

Rules

The closing date for Puzzle 181 is November 27.

The Hackers

Ingenious...



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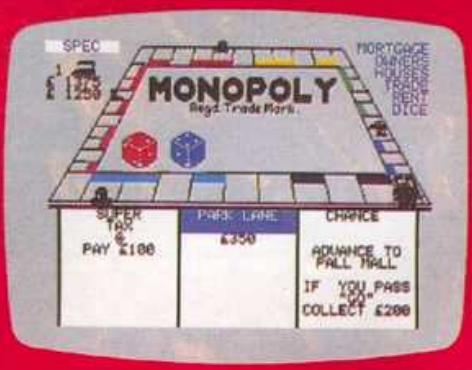
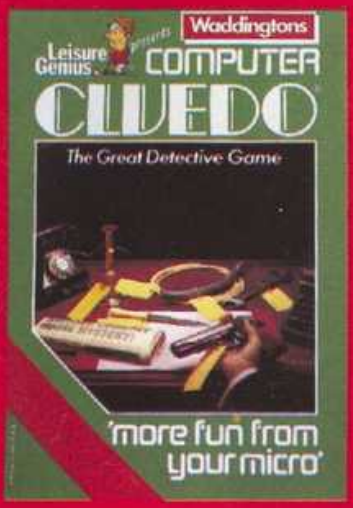


Cat. No. 040 £9.95



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