

POPULAR **Computing** **WEEKLY**

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Spectrum Plus 2 launches next week

**PCW show
preview issue**

Full story inside

Art Director on the Atari ST

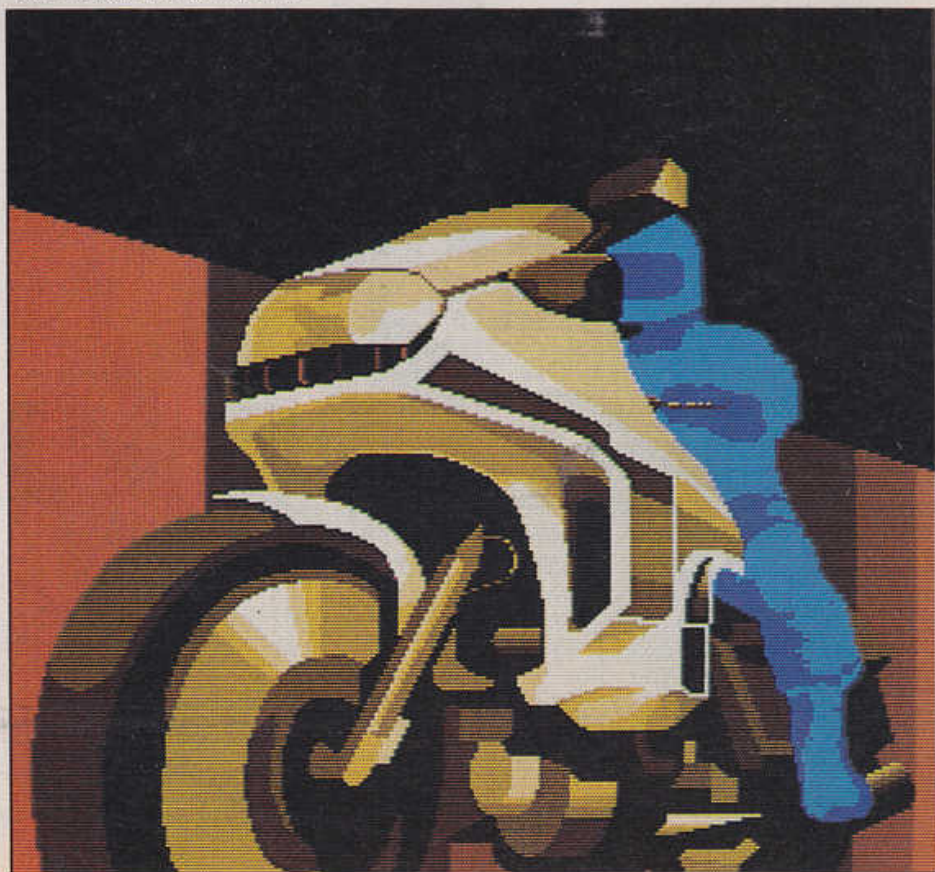
**All the
autumn's
launches on
display**

**Including - new
from Mirrorsoft:
Art Director**

News Desk

**Saga Compliment
and Baby BBC -
full details**

**Commodore 64c's
pricing revealed**



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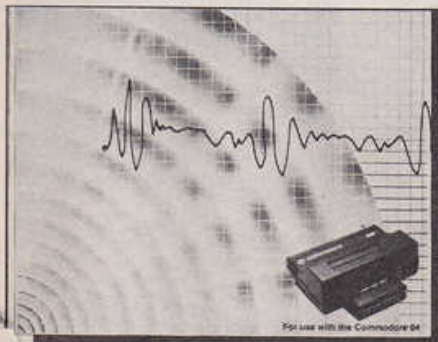
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The seemingly endless *Colossus Chess* series has now reached the Spectrum – and will run up against competition from *Psi Chess*, new from The Edge.



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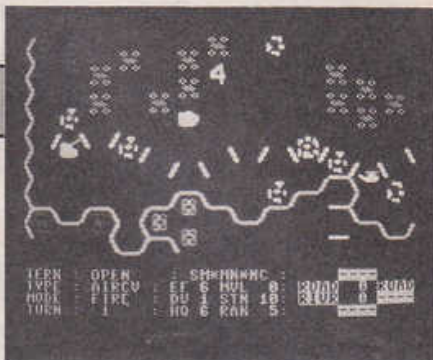
This week's selection includes MikroGen's new hero *Stainless Steel*, *Germany 1985* from US Gold and *L'Affaire Vera Cruz*, from French company Infogrames, which has now set up a UK office.

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The Plus 2: more details

AMSTRAD'S Spectrum Plus 2 will appear at the PCW Show next week and as predicted (see last week's issue) will sell for £149. For this you'll get a grey (that's right, not black) machine with full travel keyboard and built-in tape deck in the style of the Amstrad CPC 464.

The machine is functionally identical to the 128K Spectrum, but has RGB, RS232 and midi ports and an expansion facility for Microdrives, although Amstrad is more likely to produce a disc drive in the way of expansion than to resume Microdrive production.

The Plus 2 also has twin joystick ports, but it is thought that these are non-

standard, and will require special Amstrad/Sinclair joysticks.

Amstrad is also considering badging a disc drive for the machine, with the Opus Discovery a strong contender, but this has the disadvantage of being 3½ inch, while until the PC's launch Amstrad's standard was 3 inch. Information received by *Popular* does, however, indicate that a prototype Sinclair drive for the Spectrum does exist, and that it is 3½ inch.

The drive will fit on to the back of a Spectrum, and according to an eye-witness has various different kinds of output sockets on the back, but as yet no connections to them.

Amstrad 20Mb PC?

AMSTRAD may be poised to confound the pundits next week by launching its full range of PC compatible machines, including a sub-£1,000 version with 20Mb hard disc, in one fell swoop. Until now it has been thought that the company intended to offer only four configurations of single and double disc drive and mono and colour monitor, but the machines' specifications and price have now been so widely leaked that Amstrad may feel it needs a slight edge to avoid creating disappointment among potential buyers.

A further factor will have been the continuing fall in the price of hard disc units, and the fact that many of Amstrad's rivals in the PC market are already selling cheap hard disc models. There is for example the PC 4/8 from Personal Computer Compatible, which is compatible with the AT (IBM's 80286-based follow-up to the PC) and sports 20Mb hard disc and 512K Ram for £995.

With configurations like this becoming more and more common Amstrad may feel if it waits much longer it will miss the boat.



Tandy's portable 102 – 24K and built-in modem for £350. See last week's issue for more details



The Amiga: going for more sales?

Commodore denial on cheap Amiga

COMMODORE is thought to be planning a cheaper version of the Amiga for sale in this country. The machine is to have 256K Ram and single disc drive, TV modulator and will sell without monitor for £700–£800. Commodore UK, however, denies that the machine will appear this year. "If we do anything it won't be before Christmas," says Commodore UK's general manager.

This, of course, leaves the UK, where the Amiga and the 128 have made no significant impact, out of step with the US, but the fact that Commodore's total unit sales increased by 74 per cent while dollar sales increased 128 per cent (ie the company is selling more expensive machines) goes some way to explaining the company's apparent lack of interest in a price war with its home computer rivals.

The company has meanwhile turned in a profit for the first time in 21 months. Commodore International posted a profit of \$1.2 million (about £0.80 million) for the quarter ended June 30. On net sales of \$208.6 million (£139.8 million) this is nothing to write home about, but as Commodore lost \$124 million (£83.1 million) on sales of \$131.9 million (£88.4 million) in the

same period last year it may be a sign that the company is starting to turn the corner.

In order to get this far Commodore has streamlined its operation considerably, cutting stocks and shedding 1,500 people – 30 per cent of its staff. The increase in sales revenue is due in considerable part to the Commodore PCs, the Amiga and the 128. According to Commodore International President Thomas Rattigan these now represent two thirds of the company's revenues.

● COMMODORE'S new 64c is now to be launched at the PCW Show next week, and will retail in this country as part of a £249.99 bundling deal. The earlier version of the 64 – to which the 64c is functionally identical – is being discontinued, and is likely to be discounted heavily by dealers.

The 64c is therefore going to hit the stores at a higher price than its major rival, the £149 Amstrad/Sinclair Spectrum Plus 2, while at the same time Commodore has performed the remarkable feat of competing with itself. The 64 will be much cheaper than the 64c, while the more powerful 128, where it can be found, is also retailing for under £200.



Microprose's Acrojet Microprose to start up new UK company

MICROPROSE, the US company responsible for *F15 Strike Eagle*, *Silent Service* and *AcroJet*, has formed a UK based subsidiary to develop its activities here and in Europe. Earlier this year Microprose announced that it was looking for a UK managing director to improve its profile here, and has now appointed Stewart Bell.

The new company, Microprose Software (UK), will continue to work with US Gold on Atari 800/130 and Commodore 64 software, but will also source Microprose US's IBM, Apple and ST software to UK distributors, and will be looking to send licensed UK software back to the States and to Europe. A UK office should be set up by the beginning of October.

10Mb Amstrad

ACC Computer Services has produced a 10Mb hard disc system for the Amstrad PCW 8256/512 and the Tatung Einstein. The system's basic retail price of £695 includes power supply, controller and host adapter.

Details from ACC Computer Services, 8 Water Street, Abergele, Clwyd LL22 7SH (0745 826235).

Geos on sale

GEOS, the graphic environment to be bundled with the Commodore 64, is to be sold in this country by First Analytical. First will retail it for £49.95.

Details from First Analytical, 6 Newcomen Street, London SE1 1YR. Tel: 01-524 5630.

Full specifications on Acorn's new BBC

ACORN is to launch its new micro, to be called the Master Compact, at the PCW, and is thought to have stocks of 2,000 of the machines ready for sale after the launch date.

According to one software developer who has been working on the new machine it looks like "an RML 480Z — except it's white." The keyboard layout is basically that of the Master, apart from the "@" symbol, which has been moved, and the appearance of a code key and a mysterious extra key that "doesn't seem to do anything."

The back of the machine houses RGB, composite, Acorn-style RS232 port, Econet interface, Atari D-type joystick port, disc port, power socket and Centronics

port. The Centronics port appears to be the same as used on the Atari ST and the IBM PC, perhaps betraying a belated interest in standardisation on Acorn's part. The 3½ inch disc drive to be bundled with the machine fits on to it in an Electron-style L shape, but significantly, although the machine has tape drive software in its Rom, there's no tape socket. Whether or not BBC B software will run on the machine is therefore largely academic, as you'll either need to transfer it to 3½ inch format first, or configure the RS232 as a tape port.

Inside, the machine has four spare Rom sockets, space for an Econet board and a speech chip.

The keyboard, says the de-

veloper, is one of the best he's ever used — far superior to the Master's, while the one-third height disc drive is both compact and fast. He estimates a four-fold speed increase over the Master.

The machine is expected to retail with monochrome monitor for around £400, and colour for £500, and is rumoured to be aimed at the games market. These prices put it well out of range of what the market will bear, but the specifications may give a clue to Acorn's plans. The machine has tape driver software and the disc unit is plug-in rather than built-in. Could Acorn be planning to sell a low-cost version of the machine with plug-in tape deck?

Saga plans new Spectrum

THE launch of the Compliment, Spectrum add-on supplier Saga's first venture into the micro market, has been scheduled for October 20. The Compliment is intended to do for the Spectrum what CST's Thor does for the QL, and will be supplied as a bundled upgrade that will turn the lowly Spectrum into a professional Amstrad-style workstation.

For £344 retail, customers

will get a new keyboard, 3½ inch disc drive with 256K capacity, a high quality printer, Saga's *Last Word* word processing program and *Trans-Express*, the tape/disc/Microdrive transfer program. Saga also hopes to include either a VTX5000 modem or a coupon for a modem. If this comes off it will be likely to be offered in conjunction with Micronet, which offers a free VTX along

with a year's Micronet subscription, but Saga will be trying to negotiate a discount on top of that.

The printer, which will also sell separately at £199.95, gives 150 cps in draft mode, 60 cps in correspondence and 25 cps NLQ (near letter quality). It has parallel interface and pin and friction feed.

Saga's David White refused to be drawn on rumours of full-blown Saga micros for launch in the near future, but he is known to have been interested in hardware production.

Alan Sugar intends to maintain Sinclair as Amstrad's games label, and this will leave both serious Spectrum users and add-on suppliers like Saga high and dry.

Spectrum compatibility will therefore be important for any machines Saga brings out, but will be difficult to achieve. Most of Sinclair's old suppliers hold stocks of Spectrum parts, but a shortage of ULAs means these can't be assembled into complete units, and Amstrad is unlikely to allow further components to be produced.



Saga's 2001 keyboard



Interfaces for the Amstrad

MICRO Control System has launched two interfaces for the Amstrad PCW8256/512. A parallel only interface costs £48.24, while a dual serial and parallel model is £57.65, considerably cheaper than Amstrad's own version.

Details from Micro Control Systems, Electron House, Bridge Street, Sandiacre, Nottingham NG10 5BA. Tel: 0602 391204.

Miraculously free Gold box

FREE mailboxes for Telecom Gold, BT's electronic mail service, are being offered to all purchasers of Miracle Technology modems. The WS4000 and 3000 series modems are included in the offer, and as part of the promotion Telecom Gold and Miracle are to be joint part-

ners in a series of electronic mail seminars to be held in London later this year.

Details from Miracle Technology, St Peters Street, Ipswich IP1 1XB (0473 216141).

Organiser to Transform QL

TRANSFORM is now selling a package which provides a link between the QL and the Psion Organiser. It consists of an RS232 lead plus software to allow file transfer between the two. Other software included is Transform's *Mail List* program for the QL, which allows names and addresses to be recorded, procedures to download to the Organiser to find, display edit and add to *Mail List* files; *Organiser to QL*, allowing existing Organiser files and procedures to be backed up and recovered; and *Organiser to Printer*, which uses the QL as a terminal to

print out from the Organiser.

The complete package costs £39.95, and is to be followed by a similar pack linking *QL Stock Control* to the Organiser.

Details from Transform, 24 West Oak, Beckenham, Kent BR3 2EZ. Tel: 01-658 6350.

PC mouse from Kempston

KEMPSTON has followed up the launch of its mouse for the Amstrad CPC series with a version for the IBM PC and compatibles. The device is a three button optical mouse, driven through an RS232 port, and the full system consists of mouse, Rom driven interface board, RS232 cable, installation guide and test software.

It is compatible with a wide range of mouse driven software, including *Autocad* and

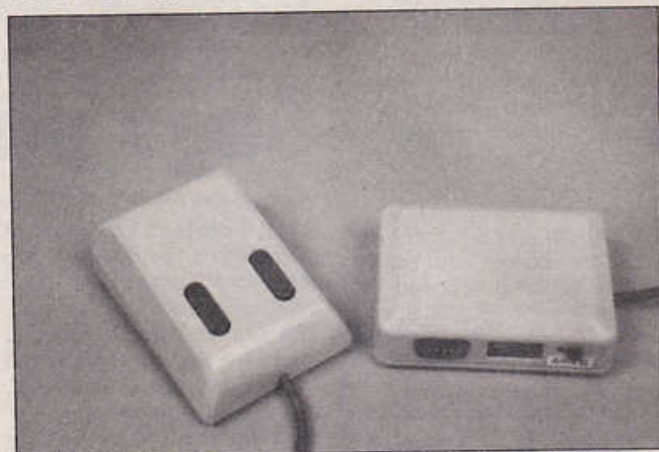
PC Paint, and costs £99.

Details from Kempston, Unit 4, Manton Lane, Bedford MK41 7HY (0234 327544).

Memotech guide is published

PHOENIX Publishing Associates has identified "the recent flurry of interest in the resurrected Memotech" as reason to publicise its new operator's manual for the machine. Whatever, the manual provides an extensive guide to the Memotech's Basic, assembler, system variables and disc systems, and should be of value to owners of the machine. The manual retails at £8.95, or is available by mail from Phoenix at £9.95.

Details from Phoenix Publishing Associates, 14 Vernon Road, Bushey, Herts WD2 2JL (0923 32109).



Diary Dates

SEPTEMBER

3-7 September

Personal Computer World Show

Olympia, London

Details: Software and hardware for home, educational and business computer users.

Price: £2.

Organiser: Montbuild, 01-487 5831.

12-14 September

8th Official Commodore Computer Show

UMIST, Manchester

Details: A wide range of Commodore hardware, software and peripherals.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

26-28 September

Electron and BBC Micro User Show

UMIST, Manchester

Details: Software, hardware and peripherals for BBC machines.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

OCTOBER

3-5 October

The Amstrad Computer Show

Novotel, London

Details: Home and business software and hardware for the Amstrad range.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

30-31 October

Hampshire Computer Fair

Guildhall, Southampton

Details: Business computers.

Price: Free entry by business registration.

Organiser: Testwood Exhibitions, 0703 31557.

NOVEMBER

7-9 November

Electron and BBC Micro User Show

New Horticultural Hall, Greycoat Street, London SW1

Details: Hardware, software and peripherals for the Electron, BBC micro and Master series.

Prices: £3 adults, £2 children, £1 discount for advance booking.

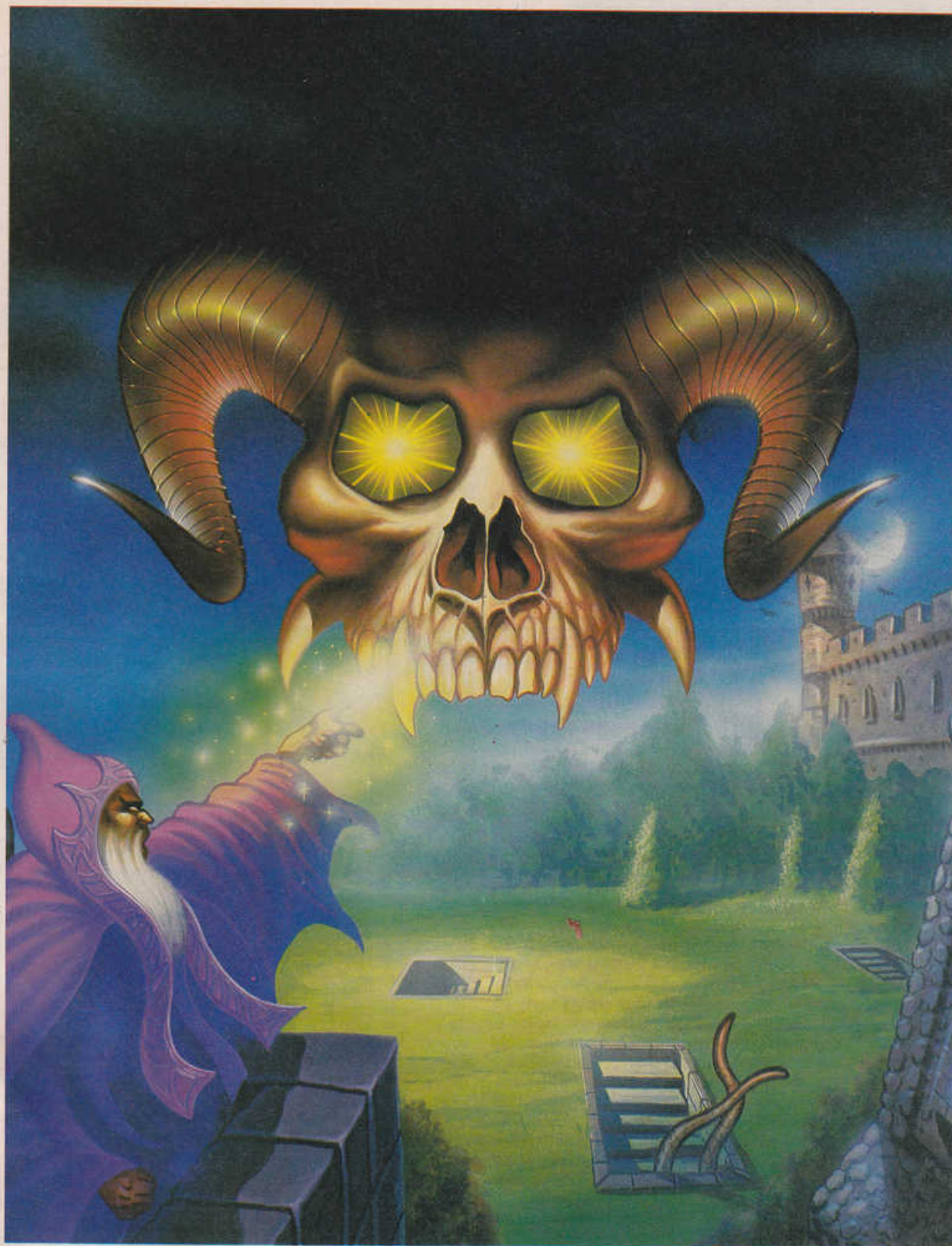
Organiser: Database Exhibitions, 061-456 8835.

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

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Old faces, but new machines

John Lettice predicts that potential hardware buyers will be spoilt for choice this autumn

If the advance publicity on the **Amstrad PC** – practically none of which has been directly generated by Amstrad – is to be believed, next week's *Personal Computer World* show will usher in a new era of low-cost serious computing on the back of the Amstrad PC. Amstrad will have launched the PC series on September 2, the day before the start of the show, and will be relying on the machine's low entry level price of £460 (£399 ex Vat) and blanket coverage in the press to draw the crowds.

The company will be followed down the PC road by

the likes of **Opus** and **Spectrum**, both of whom have moved into the cheap clone market, and by sundry other hardware and software suppliers. The software market will be worth watching, as suppliers fight to bring PC programs down to a level compatible with the hardware's new prices. **New Star**, which has pioneered cheap software for the Amstrad PCW, and **First Software**, which has joined in with a low-cost *dBase II* and promises of a cheap PC integrated package, will be among the companies to watch.

But Amstrad and the PC won't have it all their own way, and could already have been the subject of a pre-emptive strike by **Atari**. The company is thought to be preparing to announce a com-

Basic and operating system from Metacomco, the company which wrote AmigaDOS.

Atari is also thought to be about to announce a cheap laser printer for the machine,

"But Amstrad and the PC won't have it all their own way"

bination of products, and these could include the 2040 ST, a souped-up 2Mb version of the ST with full 68020 processor. The machine will in all probability sport *Micro-soft Write* word processing software, and should have

allowing it to challenge the Apple Macintosh in the electronic publishing field. The company is organising its 1,000 square foot stand as an "Atari Village".

Other stabs at Amstrad will come from **Tatung**, which

The year of the coin-op conversion

John Cook, delirious with anticipation, surveys the software to be launched at the show

Ariolasoft, not content with a single stand, has hired two. One for previewing games, one for selling T-Shirts, games, etc, etc.

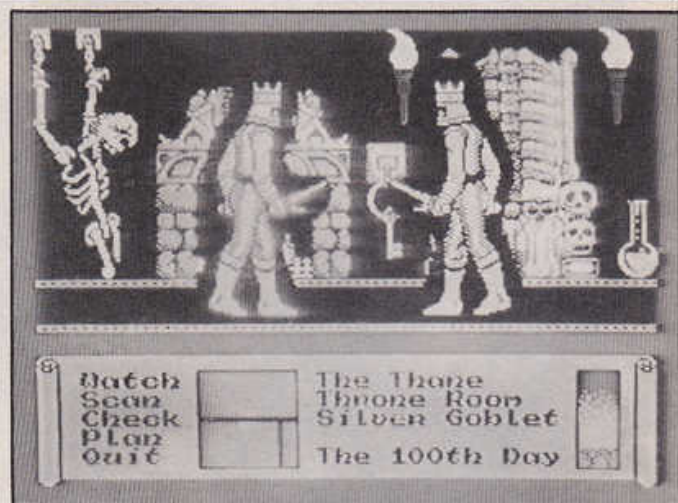
Games being released include *Terrors of Trantos* and the *Seven Cities of Gold* follow up, *Heart of Africa*. Hands on previews number *Deactivators* and the launch of its strategy/adventure label 39 Steps with *They Stole a Million*.

Prepare to be awed at *Marble Madness* running on the Amiga, but if you are into cartoons, watch the videos of *Gobots* and *Centurion* for which Ariola has recently picked up the licences.

When **Beyond** says that it's setting up an Enterprise zone on its PCW stand, the suspicious might think it a dodge to pick up millions in government grants. Worry not. In fact it means that the stand is to largely consist of a mock-up of the bridge of the famous starship of the same name. *Star Trek* mania has started – and although neither the game or any of the actual TV characters are likely to be in attendance, who would pass up the opportunity to sit in That Chair.

Other than this Trekkie shrine, various other titles will be on video demo, to wit: two titles from the emancipated Denton Designs team (*Infodroid* and *Dante's Inferno*), Mike Singleton's *Dark Septre*, and a compilation called *The Best of Beyond*.

Elite says it is pushing the boat out this year, with its three current releases, *Paper Boy*, *1942* and *Scooby Doo* on



show to play, as well as a selection of its £2.99 Classics.

Arcade machines will be available for public use, to promote its next coin-op conversions – although you'll have to fight your way to get to the *Space Harrier* machine. If it gets that faithfully recreated on the Spectrum, Elite MD

"The coin-op craze continues"

Steve Wilcox will be hailed as the new Messiah.

The coin-op craze continues on the **US Gold** stand, with no less than eight on display – the stars being *Gauntlet* and *Express Raider*.

Following up are *Xevious*, *Breakthru* (the ingenious

Breakout sequel), *Infiltrator*, *Super Cycle*, *Hot Wheels* and *Crystal Castles*, plus video demos of other forthcoming releases. One thing's for sure, the arcades are going to be empty from Sept 5-7.

Popular predicts the quiet hit of the show to be **Firebird's Cholo**, again on the BBC B. It looks like a cross between *Mercenary*, *Tay Ceti* and *Hacker* – with a whole load of new elements thrown in. Probably won't be available as a hands on game, but at least you can tell your Grandchildren that you saw it first at the 1986 PCW show!

Odin will be sharing the **Firebird** stand, and the new products will include *Heartland* – now on Amstrad as well as Spectrum – the recent arcade releases of *ICUPS* and





Opus II: in the cheap clone market

will be launching its successor to the Einstein. This machine will be priced competitively with the PCW, but will sport the video chip used in MSX 2 machines, which provides a 512 colour palette and control over pixel colours in hi-res mode. It also features stereo sound and light pen and video camera interfaces, and is to have video frame grabber and hard disc shortly.

Mission AD, plus a preview of its autumn release *Hyper-Ball*. Shades of *Rollerball* here – don't miss it.

Firebird is hitting the show with a combination of video demos and hands on action. Plenty of conversions – Spectrum and Amstrad *Druid* are particularly impressive, with strong supporting cast of Amstrad *Starstrike II* and Silver range goodies including *Warhawk* (CBM), *Bomb Scare* (Spectrum) and finally a Spectrum version of *Thrust*, which is well up to par, after the embarrassment of the Atari and Amstrad jobs which are unlikely to turn up.

"Rainbird... has a strong stable of programs on display"

Originals on display (at least in demo form) for the first time include the latest Torus epic – *The Hive*, *Pandora* (an arcade adventure coded by the soon-to-be-legendary Shahid Ahmad), and *Sentinel* (described as a strategic game of energy, with over 10,000 landscapes). This would normally be casually dismissed as marketing hype, but seeing as Geoff Crammond of *Revs* and *Aviator* fame is behind the design, rate it as worth a look on BBC B (conversions are planned).

Mirrorsoft will be early tar-

Like the PCW, it'll run CP/M software.

Acorn has also picked the show for the launch of its BBC Master Compact (see News Desk). This machine is being spoken of as the company's attempt to break back into the games market, but although it's liable to be backed up by a reasonable sized range of games titles at the launch the high price – of disc versions



gets for PCW owners, with the launch of *Fleet St Publisher* – an advanced version of *Fleet St Editor* which it will also be showing on BBC, Amstrad CPC, PC Compatibles and the ST.

Games include Spectrum and CBM versions of *Strike Force Harrier*, the mind-bogglingly named *Icon John* (Am-

strad) and a whole bunch of impressive American stuff for the 68000 based and PC machines.

All this and an ST adventure from that ex-Imagine, ex-whizz kid, Eugene Evans.

Rainbird – the upmarket branch of British Telecom's Telesoft division – is attending its first PCW show, and have a strong stable of programs on display.

First and foremost, *The Pawn*, running on the Amiga and the Commodore 64 – and personality spotters will have no trouble identifying Anita

of the machine at least – is likely to dampen the machine's impact.

Commodore's belated decision to attend the PCW show has been followed up

"Sinclair is scheduled to return"

by a similarly belated decision to show the new 64c there (see News Desk). The company has, however, booked itself the business hall, which is hardly targeting the 64c's market. A few software houses will, however, be showing the machine on their stands in the home computer, so all is not lost.

Sinclair is scheduled to return to the show under the Amstrad banner, but at least the Spectrum Plus 2 will have

a stand to itself in the home computing hall. But will Alan Sugar visit it?

Last but certainly not least, *Popular Computing Weekly* will be present at the show on stand number 3134. No expense has been spared to bring you a large number of designer T-shirts plus stocks of carrier bags nearly as good as everyone else is dishing out. And as a special show offer the first 100 people to report to the *Popular* stand bearing copies of the current issue will be allowed to buy us a drink.

The PCW show is to be held at Olympia in London, and runs from September 3-7. The first two days are for business, trade and professional visitors. From September 5, the show is open to the public.

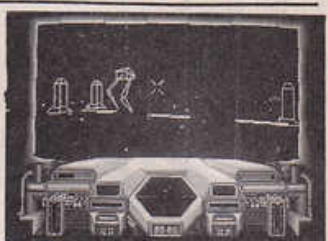
Left: *Deactivators* on Ariola's new Reaktor label. Right: Rainbird's *Star Glider*

Sinclair of *Magnetic Scrolls* lurking somewhere nearby, almost certainly not crossing swords with those nice chaps from **Level 9**, whose acclaimed trilogy *Jewels of Darkness* will be shown, together with another surprise package it is releasing under Rainbird's auspices.

Rainbird will also be publically unveiling *Starglider* – billed as an ST based *Elite* basher – and a new wargame running on the 64 called *Tracker*. Utility fans need not feel left out either, as the *Music System* and *The OCP Art Studio* will be on demo.

Ocean – that tie-in giant – will be offering a whole range of goodies, including some computer games, funnily enough. Stand alone arcade machines will be in evidence to promote its autumn coin-op conversions; *MagMax* and *Terra Cresta* to name but two. Hands-on demos will be hot-off-the-presses stuff as and when it is robust enough to meet the general public, but will certainly include new releases *Parallax*, *Miami Vice* and the recently announced *It's a Knockout* – the antidote to sports simulations.

Video previews will include film extracts from *Highlander* and the movie currently number one in the States, *Top Gun*



– which is eventually destined to be a sophisticated flight simulator. Coming to your home computer soon.

Pride of place on the **Mas-tertronic** stand will be its new Magnum Joystick, for which the price has now been announced – £12.50. It'll be a case of 'look but don't touch' though, as the 'real' launch will be some two weeks after PCW.

Games on show include *Flash Gordon*, the latest David Jones masterpiece, *Storm-bringer* and an Amstrad arcade adventure, *Apprentice*.

Also on show, previews of US budget ST software... yes, ST budget software.

And **Activision** will, of course, be there. Hands on titles include *Hacker II* (this time they start off by hacking into your system) and the immortal *Howard the Duck*.

New **Infocom** adventures will be on hand – if you thought *Legend of the Amazon Women* was gratuitous, try *Leather Goddesses of Phobos* – as well as some fabby Game-star sports simulations.

DirEdit debugged

Like your correspondent, G J Kent (*Popular*, 31 July) I found Alastair Scott's program, Amstrad DirEdit (*Popular* 17 July), most rewarding for the short time spent typing. Mr Kent's suggestion for adding in the standard period after the filenames also worked very well but not before correcting the following bugs which must have crept into the typesetting of his letter.

Line 940 should read: DIM file\$(16), user(16), rw(16), sys(16), er(16), le(16), qa\$(16), qb\$(16).

The entry that went missing was "sys(16)", and in line 570 the symbol between the two quote marks had to be a full stop.

Joseph G Berry
Daventry

Spectrum buccaneers

May I through the courtesy of your Letters page, bring to the attention of your readers news of a new Spectrum User Group, called the Buccaneers.

The aim of the group is to bring together those people fortunate enough to own the best little computer in the world (Alan Sugar, please take note).

I would particularly welcome new members who are able to write their own programs, in any language, who would be willing to pass on tips to those less able. Having

said that, let me hasten to add that all are welcome, regardless of abilities.

Everything comes absolutely free of charge. All the members do is send in a blank C60 tape, plus a suitable sized SAE to cover return postage.

New members may either forward a blank tape or SAE for more details. Why spend all those lonely hours at the computer, when you could share them with a close group, all with the same interests as yourselves?

G T Stavers
24 Eric Close
Forest Gate
London E7 0AY

Near letter quality

In Mr Colston's letter, *Popular*, 24 July, he wrote about low-cost printers.

I have a printer which is not unlike the Brother 1009 in size and shape, but it is excellent value for money in my mind. It is the Centronics GLP printer and for only £99 plus VAT, it can do all this:

It can print text in three different sizes, five cpi (40 characters per line), 10 cpi (80 characters per line), and 17 cpi (132 characters per line), with eight different print modes.

It can take cut sheet paper, roll paper and fan fold (with tractor unit) each up to 10 inches in width.

Its best feature, in my mind, is the Near Letter Quality mode, which prints characters in almost typewriter

quality. The speed of printing is quite fast: 50 characters per second in draft mode, 25 cps in NLQ mode.

Niel Markwick
Welshpool
Powys

Adventure enthusiasts

I am writing to inform readers of a new club which has been recently formed: Micro Adventure Club, for adventure enthusiasts.

We publish a monthly newsletter containing hints and tips, reviews, articles on adventuring, and helpline. Membership lasts for one year (12 issues) and costs only £5.

Anyone wishing to join is invited to contact us at the address below.

Alan S Milns
President
Micro Adventure Club
36 Glenartney Court
Glenrothes
Fife

Private Enterprise

I read in your magazine that Enterprise Computers had gone into receivership, so I thought it was time to remind all Enterprise users of the Independent Enterprise User Group (IEUG). This operates from 12 Whitegates, 100 Station Road, New Barnet, Herts EN5 1QB, and runs subscriptions for Private Enterprise magazine, which keeps

users in touch with new software.

IEUG will be running a stand at the PCW Show at Olympia in September.

The computer is still an excellent system, and it's sad to see the company call it a day, but with some good programmers about, it will continue in use for a long time.

Finally, I am the contact for IEUG in the Swindon area, so anyone living in that area can write to me.

Martin F Wallace
IEUG
61 Peartree Close
Purton
Swindon

Nigerian secrets

When I read the letter on the Nigerian board game Ayo in the issue of *Popular*, 3 July, the name meant nothing to me. However, I have now read David Robery's letter in the issue dated 17 July, and if B Clegg is still interested I may be able to help.

Orbis Publishing Ltd gave away a tape containing versions of *Awari* for the Commodore 64, Vic 20, Spectrum and BBC micros some time ago with an issue of their Home Computer Course. The tape is still in my possession, and if Mr Clegg cares to contact me on 091-273 7865 any evening after 6.0 pm I will be pleased to send it to him.

W H Foggon
Newcastle upon Tyne

Puzzle

Puzzle No 222

Think of a number.

Now write down all whole numbers which can be divided into it exactly - but do not include either the number itself or one.

Then add all of these divisors together and add the total to the number itself. This gives you a new number, so repeat the whole procedure. This should be continued until you are 'stuck' at a number which cannot be increased.

For example, starting with the number 12, you would write down its divisors six, four, three and two. These add up to 15 so this added to 12 gives 27. Continuing in this way we would have the series 12, 27, 39, 55 and 71.

After four steps we would reach 71, which having no divisors except for itself and one

would end the series.

Can you say which starting number in the range one to 1,000, will give you the highest finishing value?

Solution to Puzzle No 217

The horizontal numbers are: 281, 569 and 743. If these are placed in the grid, four additional primes are created: 257, 193, 263 and 167.

There are a total of 143 three-digit primes, so the array P(143) is created to hold these values. However, we are not interested in those primes which contain a zero, or those in which digits are duplicated. A suitable program would test values from 101 to 999 to screen out these factors and only those which pass the tests are entered into the array. This results in 83 values. Clearly, to fill the grid we

need possible triplets of values which do not contain duplicated digits, which can be incorporated into the program. All the values of combinations of triplets are converted into a single string. This string is then tested for duplication of digits. Then, the four other possible primes are extracted from this string and are tested for primality. Values which pass this test are printed out.

Winner of Puzzle No 217

The winner this week is Charles Dheere of Ghent, Belgium, who will be receiving 10.

Rules

The closing date for puzzle No 222 is 16 September.

Receivership blues

After reading your news regarding the special offer of an Enterprise 128K plus a TV Fidelity monitor (appeared in late 1985), I have ordered that special pack from McIntyre Marketing for £229 (phone order).

Because of problems with my Visa card, I sent them a cheque on February 25 which has been cashed only one month later.

In April I received a letter from Enterprise Computers, explaining that their contract with McIntyre Marketing had been concluded and that my order had been passed to them.

After many phone calls, I sent to Enterprise a copy of my cheque, proving my payment was effective. On receipt Enterprise answered me that they were willing to send me the pack, but asked me for a supplement (the new price was of £299.95). I sent them a photocopy of your article and maintained my order for £229, the price which had been confirmed to me by McIntyre Marketing by letter and on telephone.

In the beginning of July I received a letter from Grant Thornton, the receiver of Enterprise, telling me of its receivership and asking me full details of the amount owed to me. A second letter informed me that I was an unsecured creditor.

Could you please explain to me what is an unsecured creditor in the British law, and indicate to me which action I could undertake and against who (Grant Thornton, Enterprise, or McIntyre Marketing who had received my cheque first)?

Catherine Stooss
Lausanne
Switzerland

As we understand it, under British law, secured creditors are the government, the inland revenue, and anyone else to whom the directors of the company have written a promissory note. Unsecured creditors are everybody else.

The receiver will firstly pay all the secured creditors and then divide the remainder (if there is any)

between the unsecured creditors.

It may turn out that there is no money left to repay you as an unsecured creditor, and unfortunately there is nothing you can do about it.

Our best advice is to keep in touch with Grant Thornton and await developments. Good luck.

CPC requested again

I was disappointed when my letter, concerning the headings used for Amstrad listings, was published (July 3), for two reasons.

Firstly, you gave my address as Portsmouth, and secondly you seem to have missed the point of my letter entirely.

If a complete novice sees the word "Amstrad" at the top of a listing, how is he/she to know that this program will not run on a PCW machine?

Can we please see "CPC models" in brackets on all appropriate headings in future?

Alan Baker
Bournemouth
(near Portsmouth)

Now that PCW listings are growing in number, rather than being the exception, we take your point, Alan. All Amstrad listings will now clearly state which Amstrad computer they are written for.

Xxxx

There are a few clarifications needed about my Spectrum program, UXB, in order to get it to work properly. On the following lines of code all the characters inside quotation marks should be entered in Graphics mode, ie, "AB" being graphics A and B, and "CS3" being graphics Caps Shift 3.

The lines are 310, 2000, 2010, 3000, 5005, 5010, 6020, 6050, 6090, 7600, 9030.

Ian Grainger
Co Durham

Exbasic explained

I am writing concerning Peter Worlock's review of Exbasic (Popular, July 31). We

at Locomotive Software take great exception to his rather dismissive throwaway opening remarks about Mallard Basic.

We would agree that Mallard Basic is not a toy with which to write zappy games, but after all that's not the market to which PCW computers sell. Mallard offers a very fast superset of the industry standard Basic, compatible across a wide range of micros and operating systems, with file handling far exceeding the capabilities of other Basics. So, rather than just "piddling little business programs", Mallard Basic with Jetsam keyed file handling is suitable for whopping great business suites!

For those who do want to use graphics, GSX is bundled on the PCW. We can supply an information sheet explaining how to use GSX from Mallard, and can supply suitable routines (and enhanced GSX drivers) on disc. (For the information sheet we just ask for a stamped, self addressed envelope, for the disc £6.95.)

Finally, speed. Mallard is fast, very fast. I was surprised to see the review suggested the use of CBasic, since when another magazine ran a comparison of Mallard to CBasic, Mallard came out many times faster.

Howard Fisher
Director of Marketing
Locomotives Software
Dorking
Surrey

Monitor data offer

If any readers don't feel like typing in the 12k of data in my Monitor program for the Commodore 64 then they can get a copy from me for £2 (tape) or £2.50 (disc), with the disc version having a number of extras. Send cheques/P.O.'s, made payable to Mrs M Baker, at 22 North Road, Kinloss, Forres, Morayshire, IV36 0YB.

Mrs M Baker

Ziggurat feedback

I was interested in the Ziggurat, July 31, by Marcus Rowland, entitled "What happened to vector graphics?", but would like to

point out one omission.

Whereas the vector machine will better drive a plotter, and the plotter output with straight angled lines and smooth curves may look better, it is not necessarily more accurate. In fact it really does need a scale to be added to the drawing to maintain any sort of accuracy, whereas the dot matrix drawing produced by a raster machine is self-scaled by the dot spacing, and the paper may shrink or be stretched without altering accuracy (so long as you can actually see the dots).

Our 64 Drawing Board program for the Commodore 64/128 capitalises on this fact, though to maintain a one-to-one relationship between screen and print-out we are restricted to using 40 columns on the screen (but not on the whole drawing) and the printer should have a "square" matrix; that is, one with equal density of dots per inch both horizontally and vertically.

Most Epson-compatible printers have this capability (at 72 dpi) but not, surprisingly, the early Epsoms like the MX80. They can be used, but give a 20% change in aspect ratio, which causes a visual distortion of scale but not, I reassert, a loss of accuracy.

Rather than a revival of vector displays, what I would like to see is higher density dot matrix printers still with a square matrix.

D A G Tait
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Psi and Colossus 4 checkmate

Games come and go but chess goes on forever. And continuing the line this month are two releases for the Spectrum.

The first, *Colossus 4* from CDS, is merely the latest in a line of Colossus programs running on a range of machines. The second, *Psi Chess* from The Edge, is a program completely new to me.

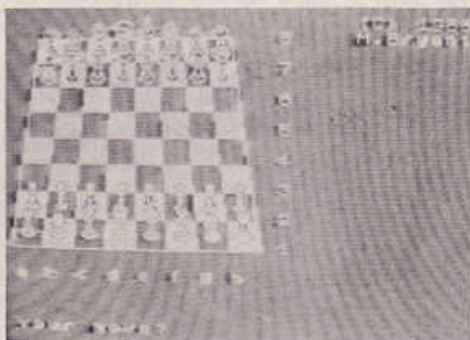
Colossus has rapidly established itself as the chess program for home computers. It may not be the strongest player (although it's one of the strongest), rather it's the number of features that set it apart from the competition.

The level at which *Colossus* plays (ie, the difficulty level) is almost infinitely changeable, while you can take back moves, ask *Colossus* for a hint, change sides in mid-game, or set up board positions and play from there. *Colossus* also has a number of special feature levels for solving chess problems, including self-mates and help-mates.

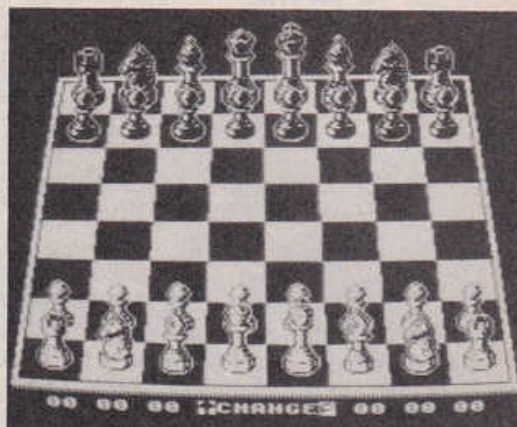
More to the point, most of these features are easy to implement. To take back a move, press *Shift-B*; to force *Colossus* to move, press the *Delete* key.

Finally, controlling the moves can be done algebraically (E2-E4), by joystick, or by cursor keys.

Sadly, the Spectrum ver-



Above: *Psi Chess* – "easier on the eye." Right: *Colossus 4* – "a particularly strong game."



sion lets the side down a bit. It plays as well, all the features are there, but the screen display leaves a lot to be desired. Certainly on our office TV it was very difficult to discern some of the pieces.

By comparison, *Psi Chess* looks great. The 3D display is large enough to be clear, although I still prefer a 2D display for actual play.

It also throws in an alternative chess set, the historic Isle of Lewis men. Unfortunately, this is nothing but a gimmick since the game is totally unplayable with these pieces.

In terms of features, *Psi Chess* runs *Colossus* close, with a large variety of levels, take-back on moves, and the ability to set up board positions. Sadly, it's let down by poor implementation. The feature controls are appalling-

ly conceived, requiring a double key-press to change mode, and then further key-presses to change features.

For example, to take back a move, you must press */* to get into "Change" mode, then *M* and *3* simultaneously to get into "Set-up mode", then *Z* to take back the move, then *M* and *1* simultaneously to get back to "Play" mode.

What's worse is that very few of these commands are easy to remember, and it's all totally unnecessary.

And there are other faults. As far as I could determine, there's no way to force *Psi Chess* to play a move, which can lead to extremely boring sessions at the higher levels of play where the program can conceivably take up to an hour to play one move.

Deciding which of the two

to buy is difficult. If you have a dedicated monitor for your Spectrum, or if you want a particularly strong game, *Colossus* is the one to go for.

If you're a chess novice, *Psi Chess* is easier on the eye. But you'll have to put up with that awful command structure.

Peter Worlock

Program Colossus 4
Chess Micro Spectrum
48/128 Price £7.95
Supplier CDS Software,
CDS House, Beckett Road,
Doncaster DN2 4AD.

Program Psi Chess Micro
Spectrum 48/128 Price
£8 Supplier The Edge,
36-38 Southampton
Street, Covent Garden,
London WC2E 7HE.

Newspool to expand the Amstrad

Newspool is a CP/M utility designed to stretch the performance of your PCW, and in particular it is envisaged as working with the *Newword* word processor.

Once *Newspool* is loaded, it sits at the top of CP/M, not interfering with the running of your favourite programs unless the amount of memory they need is absolutely critical. *Newspool* also needs 16K free in the M drive to use as work space. If anything it is this latter requirement that may prove restrictive to users of the unexpanded PCW 8256 because some programs only just squeeze in.

"On the whole, Newspool is an invaluable aid and works like a dream with Newword word processor"

If you can find room, however, the spooler will work by intercepting everything that is to be sent to the printer at a very fast rate until the 16K buffer is full. If all the text fits into the buffer, control is returned almost immediately to your program allowing you to get on with other things and the spooler takes charge of

the printer.

It is not quite the same as background printing offered by say *Locoscript* because very long files will still cause you to wait around until there is only 16K left. Conversely you gain the advantage that several small documents can be queued up to be printed.

Some programs may have

to be re-installed to stop them waiting for a ready signal from the printer. You also have to be more careful about getting the printout correct because it is correspondingly more complicated to stop it and make changes, but, on the whole, *Newspool* is an invaluable aid and works like a dream with *Newword* word processor.

Tony Kendle

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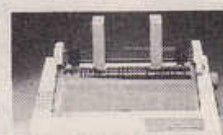
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Polanski strikes back

Mirrorsoft's *Art Director* auditioned by Christina Erskine

With the Atari ST's graphics capabilities, it's not surprising that art packages are beginning to multiply. After *Neochrome* and *Degas*, Mirrorsoft is trying to outdo all predecessors with *Art Director*.

Art Director has been written by the Hungarian firm Andromeda – a different team, you may be relieved to hear, from that part of Andromeda which produced *Caesar the Cat*.

Its brief appears to have been to incorporate every known, and some unknown, graphics/art features into *Art Director* – and to attempt to keep the options simple to use and logical to find.

Thus the package has all the usual pen, brush, airbrush, filling, squares, rectangles, circles, ovals, zooming in on areas of the screen, etc, features that you would expect, plus a host of more sophisticated capabilities.

The nearest thing I've yet seen to *Art Director* is probably Electronic Arts' *Deluxe Paint* on the Amiga. *Art Director* has similar options to rotate your picture, or part of it, stretch it, enlarge or contract it, create a perspective viewpoint of it, change its colour palette, so that, for instance, Botticelli's *Venus* appears in shades of blue rather than brown, and text in a (small) number of different fonts can be added to the screen.

It should also go without saying that full printer dump facilities are in there, in a variety of sizes. You can also view your picture, before printing, in monochrome, to check how it will look in black and white if you don't have a colour printer.

Control of this bewildering array of options is mainly through the mouse, using icon-driven menus, and sub-menus, which appear as dialog boxes in the centre of the screen.

Direct icons control choice of brush width, colours within the brush, airbrush



option, line/picture deletion, fills, choice of text fonts for text insertion, and the colour palette settings.

"Art Director has options to change its colour palette so that Botticelli's Venus appears in shades of blue rather than brown"

A nice touch is the zoom window, which is permanently on screen showing the immediate drawing area around the cursor. The size of area shown can be scaled up or down by the scale icon next to it.

The sub-menus go into greater detail

about the exact settings you need for some functions – perspectives, 'bulging' pictures, extending and rotating, for example; the options to draw circles, rectangles, ovals, etc is also in a sub-menu.

Some keyboard commands are also incorporated, most obviously for writing text over or beside your pictures.

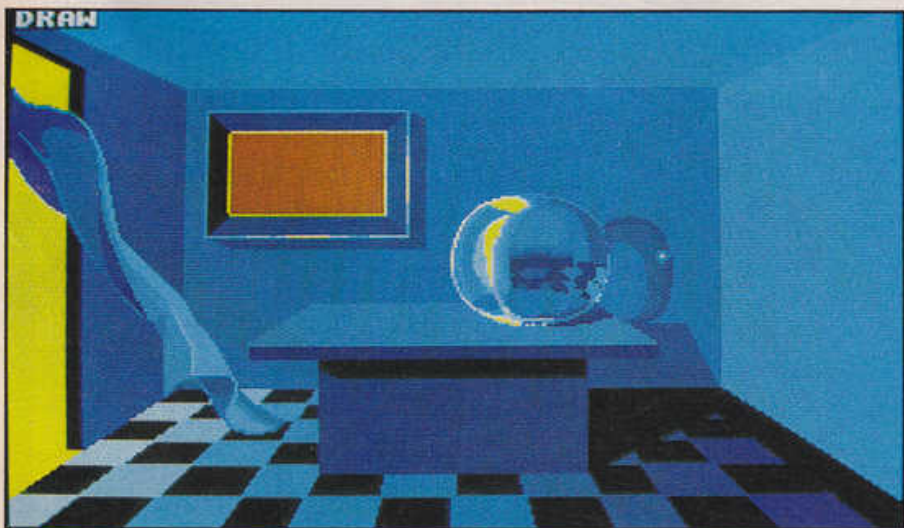
While there is no reason why *Art Director* shouldn't be used by a beginner or computer 'doodler', its capabilities give it a rather wider range of use.

Mirrorsoft itself has been using the program to design sprites for the Amstrad and BBC versions of *Strike Force Harrier*, and the company hopes to sell it to companies such as graphic design houses and storyboard writers.

For these uses, *Art Director's* 'companion' package, *Film Director*, comes into the picture. To be sold separately, *Film Director* lets you take pictures from *Art Director* and fully animate them, then store on to video tape if you wish.

However, if you simply want a decent paint package to grow into rather than out of, Mirrorsoft has placed great emphasis on keeping the immediately accessible icons/menus to the simpler functions. How far this is possible will be seen when the final version is released. Within the package will be sets of demonstration pictures, and screens of ready drawn objects, which you can use, or modify in your own creations.

Both *Art Director* and *Film Director* will be demonstrated at the Personal Computer World show (open to the public from September 5–7). Mirrorsoft plans to release both products at the end of September, for the Atari ST only. Prices have been provisionally set at £49.95 for *Art Director* and £59.95 for *Film Director*. **Mirrorsoft, Maxwell House, Worship Street, London EC2.**



Roll up for the magical module voice

Chris Jenkins speaks up for a revived golden oldie

Launched around 18 months ago to overwhelming apathy from software houses and manufacturers alike, the Commodore Magic Voice



Faculty Enterprises Magic

remains by far the best quality speech synthesiser available for the C64, and now it's available at a reasonable price.

Although only a couple of software packages were designed for it – *Gorf*, *Wizard of Wor*, and some educational games – the Magic Voice creates excellent clear speech using digital samples of real voices. It's limited to a preset vocabulary of 234 words (plus plurals), unlike some products which use an "allophone system" which allows you to construct any word, but at the expense of clarity.

Magic Voice's vocabulary includes numbers, letters, mathematical terms,

the speech. The voice is a fairly strongly-accented American female one, which pronounces "Z" as 'zee'. Concerned educationalists watch out. The unit can be used with a TV or a monitor.

Magic Voice sacrifices a large vocabulary for much higher clarity than the allophone-based units such as Microspeech, Sweet Talker or Superior's Speech. As such it's probably of more use for serious programming rather than

"Faculty Enterprises should be congratulated on this"

fun and games. There's no doubt though that the quality of the speech makes the competition seem even more like daleks gargling underwater, and at this price Faculty Enterprises should be congratulated on reviving this oldie but goodie.

Chris Jenkins

"The voice is a fairly strongly-accented American female one"

colours, computing terms and games phrases. It's housed in a cartridge of the same design as the newer FM Sound Module and Sound Sampler, and has built-in Rom software.

Magic Voice is programmed in Basic using the command *Say "Word"* and a *Rate* command to control the speed of

Product Magic Voice Speech Module
Micro Commodore 64 Price £16.99
Supplier Faculty Enterprises, 29 Rutland Court, Clarence Road, Ponders End, Enfield, Middlesex, EN3 4BJ, 01-805 8054.

9.30am – AND PRODUCT DEVELOPMENT PRECIPITATES A MARKET POSITIONING CRISIS!

Strut, Whelk, Pozer, Souse
Inexpensive Practicum in Antiquities

Sorry lads, but we'll have to drop the 'Sugar free' flash from Mosaic's SNOW QUEEN packaging. They're launching an Amstrad version in August.

Dominic

AND BY NOON AN INSISTENT NEW SHELF PRESENCE HAS BEEN VISUALISED...

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...indicates that the product has strong appeal to more sophisticated, upwardly mobile ABCs, health-conscious and body-aware, probably computer-owners with above-average aspirational values.

IT'S BEEN ANOTHER LONG DAY

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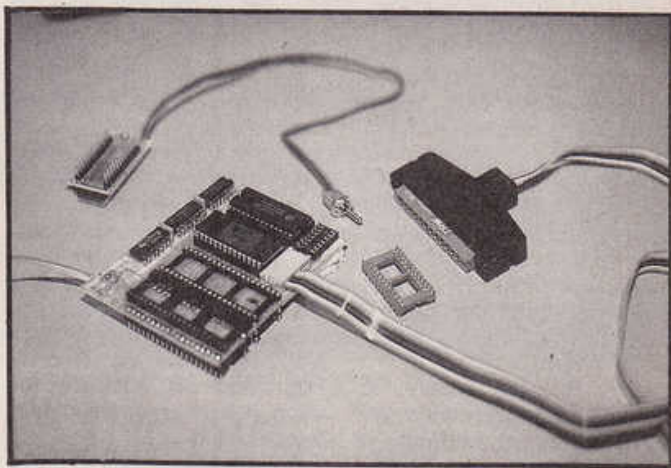
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Faster than a speeding DolphinDOS

Chris Jenkins jumps in the deep end with his Commodore 64 to see how a Dolphin measures up

"DolphinDOS's speed is impressive, claiming to load a 202 block program in five seconds, up to 25 times faster than normal, saving in ten seconds; loading sequential files at 10 times normal speed, and saving at eight times normal speed."



With all the emphasis being placed on the speed of the operating systems of machines like the Atari 520ST and the Commodore Amiga, owners of the more affordable Commodore 64 and 1541 disc drive might be left wondering if there is any way to improve the performance of their notoriously slow disc systems.

In the past, various plug-in cartridges like the Epyx Fastload and Quickdisk Plus have done a lot to improve the saving and loading times of the 1541/64 combination. The real difficulties, though, lie in the Roms of the devices, and only a complete replacement will make a quantum improvement in the system speed. Enter DolphinDOS.

Fitting the system could be an intimidating task, since it involves opening up both the 64 and the 1541, removing chips (which may or may not be soldered into place depending on how old your machines are), drilling holes for switches and so on. Note that a very small number of early 1541s are unsuitable for DolphinDOS — you can check with the distributors if you're unsure. The system can, however, work with the C128.

So what can DolphinDOS do for you? The drive circuit board connects to the 64's user port rather than the serial port, which gives a clue to the secret of the improved operational speed; DolphinDOS is a parallel system, able to transmit information much faster than the normal Commodore serial system.

On powering up the 64 with the Dolphin switch in the on position, you can display a system check by pressing F8. There are four main sections; Ram, which is required for read and write operations, fast load/save, verify and parallel bus. The status report also shows how many tracks have been used on the current disc, and the current disc device number.

DolphinDOS is more than just a quick load/save system. It also includes many of the features of the many popular "programming cartridges". On speed alone, though, the system is impressive, claiming to load a 202 block program in five seconds, up to 25 times faster than normal, saving in ten seconds; loading sequential files at 10 times normal speed, and saving at eight times normal. DolphinDOS can also format and verify 35 or 40 tracks on a disc in less than 20 seconds.

Usefully, all the normal load, save, verify and other Commodore Dos commands can be used with their normal

"All you have to do to scratch a file is use @S: progname. Blissfully simple."

convoluted syntax. However, if you want to save time, DolphinDOS provides many abbreviations. Shift Run/Stop will perform a Load "8.1, Run function. The function keys are preprogrammed with various list, run, load, display directory, save and other functions, and the ampersand symbol is used to replace the tedious Open 15,8,15, Print 15 which is normally needed before transmitting disc commands. So, for instance, all you have to do to scratch a file is use @S:Progname. Blissfully simple.

There are also lots of new disc commands; a scratch lock to prevent you from accidentally deleting important files, a device number change, and a utility to fix the number of tracks on a disc to the normal 35, rather than the 40 which DolphinDOS is capable of reading and writing.

DolphinDOS also includes a screen editor, using the control key in conjunction with letter keys to delete lines, jump the cursor to the top or bottom of the screen, hardcopy the screen to a printer, store text in a memory buffer, and so on. As if this wasn't enough, there's also a machine code monitor, a command to restore a Basic program after a New, and software to support a Centronics printer. A user port expansion card will be available from Evesham Micros to enable you to connect the printer up.

If the effort of fitting DolphinDOS doesn't deter you, the system offers huge advantages to disc users. Disadvantages are that DolphinDOS does not support any tape commands, so the system must be turned off to use a cassette deck; and that some protection techniques on commercial discs conflict with the fast loading system.

However, there are many ways to manipulate the DolphinDOS system short of turning it off, and Evesham's freeze frame device can be used to produce back-ups of memory resident programs which will all reload at increased speed.

Forthcoming versions of Freeze Frame will be able to make ever better use of DolphinDOS's increased operational speed. Also in the works are kernels to allow the 128 to operate in high speed mode, and a switching board to allow you to choose between the new and old kernels for the 128 in 64 mode.

At £69.95, serious 64 users will find DolphinDOS a very attractive enhancement to their micro systems.

Product DolphinDOS Micro Commodore 64/128 **Price £69.95** **Supplier** Evesham Micros, Bridge Street, Evesham, Worcs, WR11 4RY (0386 41989).

Steel yourself for this one

Ricky Steel, teen dream hero, possessed of a stainless character, comes from the home of Wally. An unlikely stable mate for the atrocious handyman, but when the world needs rescuing from the evil Dr Vardos and his androids, you could hardly leave the job to the Weeks, could you?

Ricky is lucky enough to own an auto, Nightwind (no jokes, please), which is several steps up from an Escort as it is built of hyper alloy and has twin firing machine guns. And the fluffy dice look pretty neat, too.

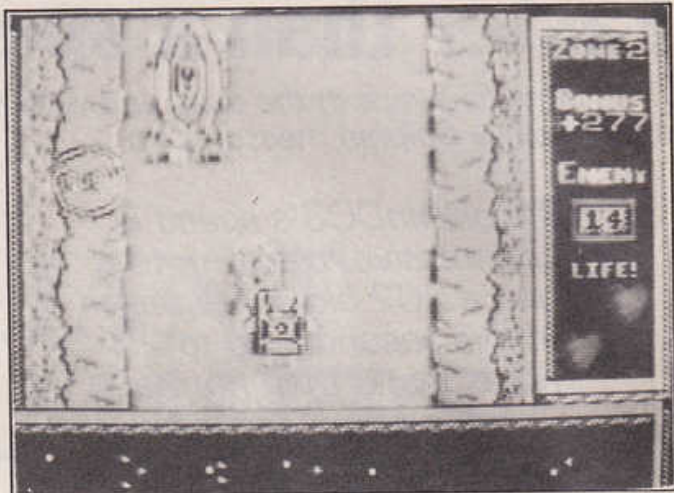
First though, Richard Steel (even more dynamic than his namesake, David), has to walk to his wheels, and that's no quick trip to the garage! The skies are full of choppers

and the land's patrolled by robotic mines so he has to dodge and shoot on his long march up-screen.

Once in the driver's seat life is if anything worse as new menaces take over and Ricky has to drive around blasting everything in sight and avoiding rocks which will scratch his lovely paint-job. And as Nightwind can take to the wing, it's up, up and away for later screens.

Stainless Steel remind those with longer memories of *Spy Hunter*, which was also a charge-along-the-highway-shooting game, seen from a bird's eye view. What this has that *Spy Hunter* didn't are superior graphics, which while they are monochrome, are nicely shaded, and radar.

The whole of the M1 is



shown at the bottom of the screen, with blipping for every menace. As your range of direct vision is severely restricted to half a screen's height, you need this particular aid. Unfortunately, you could still use some warning on the main picture - I found I kept running into androids which came into view all too suddenly.

Maybe I'm a bad driver, but if Mikro-Gen had turned the whole screen on its side, I'd

have liked this more. It's certainly a fun shoot 'em up, but being a teen superhero isn't without its frustrations, either.

Popular Appeal ♦♦♦♦
John Minson

Program Stainless Steel
Micro Spectrum 48K
Price £9.95 Supplier
Mikro-Gen, Unit 15, Western Centre, Bracknell, Berks.

Open the Doors of Doom and Destiny

Call it fate, call it destiny, call it doom - as soon as I loaded *Doors of Doom (Plus)*, I knew exactly what to expect. A zany, whacky arcade adventure with three difficulty levels, featuring a hapless hero armed only with a laser gun, who has to defeat legions of rogue robots in order to find the missing sections of a weapons system which will allow him to assemble the three Doors, in order to pass the test which will allow humanity to become part of the galactic federation ... you get the idea?

Doors of Doom (Plus) is very colourful, accompanied by reasonable music, and has a fair degree of strategy and zapalogy involved. Each time you find a piece of the weapon system, you must find out how to use it, then face losing it when you teleport to the next level. Your task is to eliminate all the robots, keeping an eye on your energy level and picking up cups of tea to revive you.

All this would be perfectly hoopy, but the scrolling is

well jerky (as they say), and your little character seems quite happy to walk through the air in places, as well as on the various bridges, monoliths and girders of the background.

The game's main saving grace is the scenery designer, which allows you to edit the

background to your own taste. In fact, the instructions spend more time explaining this option than dealing with the game itself, giving some indication of how exciting the whole business is. *Doors of Doom (Plus)* - ? I'd hate to see *Doors of Doom (Minus)*.

Popular Appeal ♦♦♦♦
Chris Jenkins

Program Doors of Doom
(Plus) Micro Amstrad CPC
464/664/6128 Price
£9.95 Supplier Amsoft,
Brentwood House, 169
Kings Road, Brentwood,
Essex.

Sitting on the Lap of the Gods

When Mastertronic get it right, they really get it right. Take *Lap of the Gods*, a brilliant variation on an old, old idea - the maze game.

You have to collect effigies, which you then trade in for special tools. Use the tools to gather the Crystals of ZZarn, which are hidden around the mazes, and you're really onto a winner, because a full house means the gods will teleport you back to your own time.

But the whole mission isn't that easy because the tunnels are haunted by Devil Incarnations which have one solitary intention - to stop you going home by stealing your

treasures.

If they touch you three times while you're carrying an effigy, you'll lose it, and just to make things worse, lose three of them and the gods themselves will get a bit narked and remove one of your lives, and one of those useful tools.

Nothing new, you say. Agreed. The gods themselves were young when this plot was hatched, but that doesn't matter when there are so many new twists.

Start with the graphics, which are amusing - in particular the effigies, which resemble rather grumpy heads. Then there's the gameplay,

which is wonderfully well judged. It's difficult, but not infuriatingly so. You'll need your best mapping skills, as your window onto the maze gives you a very restricted view, and a whole lot more, such as working out just what the gods' gifts can do for you.

Lap of the Gods is a well balanced budget title, so lap it up!

Popular Appeal ♦♦♦♦
John Minson

Program Lap of the Gods
Micro Spectrum 48K
Price £1.99 Supplier
Mastertronic, 8-10 Paul
Street, London EC2.

Germany - 1985 style

If arcade games appeal to the hot-shot pilots in us all, then wargames appeal to the would-be generals among us. No need for acres of model terrain, thousands of tiny soldiers, hundreds of model tanks and troop carriers. Just you and your micro.

The latest from US Gold's Transatlantic Simulations label is *Germany 1985* - a product, perhaps, of the American paranoia of recent years (the game was written in 1983).

The scenario is a Soviet incursion into West Germany with either the player or the computer taking control of the attacking Soviet units, or the Nato defenders.

This is a "no nukes" game, so no matter how bad your situation you can't bail yourself out of trouble that way - it's you against the computer with the forces available.

Each side has dozens of units to control - infantry,

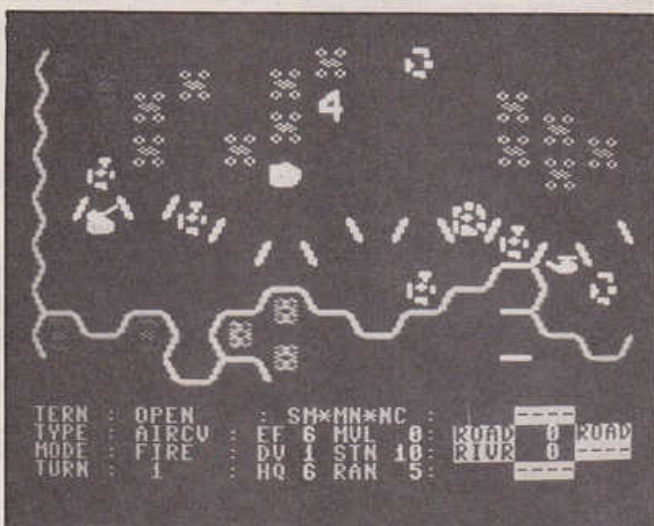
tank battalions, mobile artillery, and air cavalry on the Nato side, and mobile rocket launchers on the Soviet.

There are two game modules - "advance to combat", where many of the units are already in place; and "invasion" where Soviet paratroopers spearhead the assault from the East.

At first *Germany 1985* looks immensely confusing. The play area covers 12 screens, so keeping track of the game is difficult. And the instructions run to several pages of closely set type. However, you can allow the computer to move your forces for you, leaving you to command small numbers of units until you get the hang of things and take more and more responsibility.

Once you've played a few games like this, you'll find things much easier.

The screen display is colourful and clear, and a variety



Screen shot from US Gold's *Germany 1985*

of options allow easy scrolling around the war zone. Victory is determined not only by the number of casualties inflicted, but also by strategic questions such as control of towns and villages, so you'll also have to pay attention to tactical issues like controlling roads and bridges.

My only criticism of the US Gold package is that it omits an overall map of the game area, and a list of reinforcements. There were both part of the original Strategic Simulations Inc package and are referred to in the instructions.

You can play without them, but their omission is irritating.

Otherwise, *Germany 1985* is an excellent wargame, demonstrating SSI's continued pre-eminence in this market.

Popular appeal ♦ ♦ ♦ ♦
Peter Worlock

Program *Germany 1985*
Micro Commodore 64/128 **Price** £9.95 (tape) £14.95 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Vera Cruz: was it the butler?

An attractive young woman is found dead in her apartment. Next to her hand is a gun, on the table is a suicide note. An open and shut case? Maybe. But it's up to you, newly-appointed Detective Sergeant with the St Etienne police, to make sure.

L'Affaire Vera Cruz is the latest release from French software house Infogrames. Vera Cruz is the ex-person on the apartment floor and, as you might expect, things are not as they seem.

The game starts in the apartment. You can examine various objects in the room before heading back to the station where the real investigation begins.

Most of your work will be done at the terminal of the police Diamond Computer Network. Using this hot bit of technology you can contact

other police departments around the country, as well as prison authorities, to follow up the clues you find chez Cruz.

It's difficult to say too much without spoiling the game, but you'll find yourself involved with a very sordid bunch of thugs, murderers and jewel thieves.

Vera Cruz is similar to the first part of *The Fourth Protocol* in that you need to combine police intelligence networks with donkey work performed by your staff.

But *Vera Cruz* is a game of detection - you must assemble the evidence like pieces in a jigsaw and only when you have a perfect fit can you make an arrest.

It's a great game, and one that will have you wandering around mumbling "Who owns the BMW?" and "Who is the old soldier?"

Pop down to your software store and slap the cuffs on a copy.

Popular appeal ♦ ♦ ♦ ♦
Peter Worlock

Program *L'Affaire Vera Cruz* **Micro** Amstrad

CPC464 (Amstrad disc and Spectrum and Commodore versions to follow) **Price** £9.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.



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Games: Arcade Action



Jetsetting with Willy

Tony Kendle with the low-down on cheats

You know, I really did think that I had seen the last of miner Willy in this column but you can't keep an old sprite down. Andy Roberts of St Helens has written with an invaluable cheat routine for the new Tynesoft BBC conversion.

He writes, "This program is an excellent and very accurate conversion of the all time classic enjoyed by other micro owners. Anyway, the following program, when typed in and saved, will give you the following features: you can walk through any monster or killer object; you can fall any distance without dying; a screen transporter (the best of all).

"The transporter lets you jump, at any time, to any required screen. To use it simply press the *Tab* key and the computer will stop. You then have to type in a two figure number (from 02-60), corresponding to the required screen on the map, and, hey presto, you will find yourself on that screen.

"You will notice that I didn't say you can enter 01. On my (original) version of the game, screen 01 (the watch tower) crashes the computer as soon as you get

there" (it really is an accurate conversion!). "If your version does work properly alter *CMP#2* in line 150 to *CMP#1* and the *LDA#2* in line 170 to *LDA#1* before using it.

"To use the program start loading the original as normal. When the first part (the title page) has loaded, stop the tape. When the 'searching' message reappears, press the *Escape* key and type **OPT1.0 <ret>* and *CH. " " <ret>*. Then

"An excellent conversion of an all-time classic"

load the following program, which you have typed in and saved. You will notice that no tape loading messages will be displayed. When loaded, insert the original tape and continue as normal (but without messages). Good luck."

Many thanks for the letter Andy, and the map, but we've left the fun of working that out to the readers who should find it much easier and less frustrating with your pokes.

Charts

Top Twenty

- 1 (1) Speed King
- 2 (3) Thrust
- 3 (6) Ghosts and Goblins
- 4 (4) Ninja Master
- 5 (5) ACE
- 6 (2) Dragon's Lair
- 7 (7) Green Beret
- 8 (16) Video Olympics
- 9 (11) Kane
- 10 (9) Leaderboard
- 11 (12) Jack the Nipper
- 12 (13) Formula One Simulator
- 13 (8) Kick Start
- 14 (17) Kung Fu Master
- 15 (15) Spellbound
- 16 (10) Molecule Man
- 17 (-) Universal Hero
- 18 (20) Knight Games
- 19 (-) Yie Ar Kung Fu
- 20 (-) Skool Daze

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Figures compiled by Gallup/Microscope

Magical mystery tour

Tony Bridge offers help and advice with spells and magic for Red Moon and Magician's Ball, among others



Back in February of this year, Adam Milner sent me a short program to be used with Level 9 adventures *Red Moon* and *Return to Eden* in order to get a list of all the words used. As these things happen, there were a few little bugs in the listing. "It's been a long time, I know, but the corrections to make are these:

In line 10, there should be a space in *BIT* 1

Line 20 should read *FOR A=&4800 to &4F61 ... etc.*

In line 30, the comma (,) before 65 should be a < (smaller than) sign

Line 60 should read *IF PEEK (A)>128 ... etc.*, and there should be a space between the quotation marks ("")

I hope these changes mean you'll be able to use the program properly. The full program can be seen in *Popular*, February 6.

As an example of what can be done, Adam mentions two words that he has gleaned from the list, and their effects. "If you meet an enemy, typing *Bury* will get rid of him forever. This also works for objects. And if you find the room with a line on the floor which you can't cross, then rub the oine and it will be gone."

Red Moon is one of my favourite Level 9 adventures; there are lots of places to be explored before the player has to start thinking hard, and with all the mysterious whispering voices, spells and so on. The whole story is very entertaining and also, it seems to me, gently pulling the leg of all those adventures that take location descriptions seriously (as in "webby junction", "stunningly fantastic chamber", "polished tunnel" and of course the various "crawls" as well as the obligatory "maze of tiny passages"). It is a large map, and much of it is easily discovered, but to reach all parts, you need not Heineken but to swim underwater.

What is required for underwater travel is the flask from the windy store room, the gas mask from the tiny door in the small neat room down the pothole, and the tubing.

Once you've sorted this out, you'll find a couple of interesting objects. One of these, the cloak, can be worn, and will

protect you from the unwelcome advances of the statue at the dark junction near the bone room. Incidentally, you'll also find a neatly-guarded chimney above the forge.

After killing the blacksmith, you must put out the fire using the fan and then prise open the grating with the crowbar, the other object from the flooded tunnel.

There are many objects to be found, and of course, you will not be able to carry them all, nor indeed, are they all useful. But if you read the cassette inlay, you'll notice that the escape spell will transport you, back to the start along with any possessions.

Deposit any treasure you wish to leave behind in the stone house and return to the mound (with the dulcimer!) and cast escape again when you will be returned to the original location. But the dulcimer (found in the castle) has another use: you could also try playing it.

Exploring, picking up objects and casting spells are not the only things to be done in this game; there is also plenty of fighting to be done. To combat the extremely dangerous and bloodthirsty creatures that you meet, you must make sure that you are equipped with the necessary armour (ring, shield and chain mail) and weapons (axe dagger sword and of course magic – or should I say magik?).

Don't forget that, like other magik in the game, the *Cast Zap* spell doesn't work if you're carrying iron weapons or armour. If you're wounded, use the potion from the hospital south of the straw-filled room. But as you will know,

the ghosts of the creatures slain by you may return for revenge (which is a good reason for not blasting away at everything you come across), in which case the best course open to you is to run after using the shield – valour is the better part of cowardice! (Incidentally Adam, in *Fantasia Diamond*, you'll need to lay the green book of music on the floor before the conductor will do his bit).

Magik, or even just plain old, common-or-garden magic, features in many adventures in one way or another, even though Level 9 makes it an art form.

The Magician's Ball, from Global Software, is another adventure making good use of spell casting. Not nearly as complex as *Red Moon*, of course, but the graphics are very pretty and actually reflect the action much of the time. The hoops can be used for travel, although it can become a rather complicated procedure.

First, you must become Azul, drink the ale until you can talk to the tree (I like this part, very true-to-life!), then get the tree, Azul and Caro to the place where the demon was, near the start. Now, drop the hoop and tell the tree to enter the hoop and do the same. Then you can command the tree to kill the magician.

Next week, we'll deal with some more magic. Not in the scenario, perhaps, but rather in the way in which the whole adventure is presented, programmed and written. It is *Hitchhiker's Guide to the Galaxy* from Infocom, which despite much nit-picking from lesser software houses, retains my vote as the greatest adventure-writing company around.

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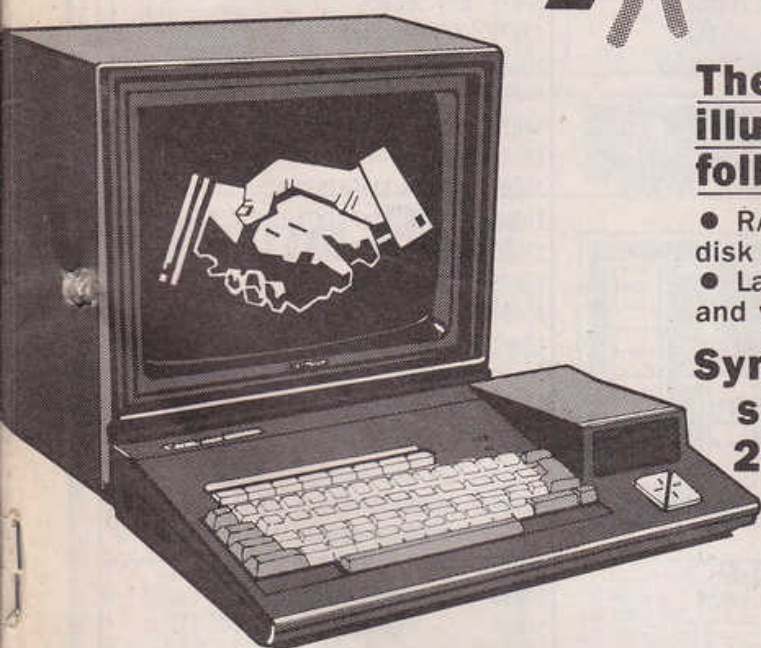
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Coordinates

By I. S. Fisher

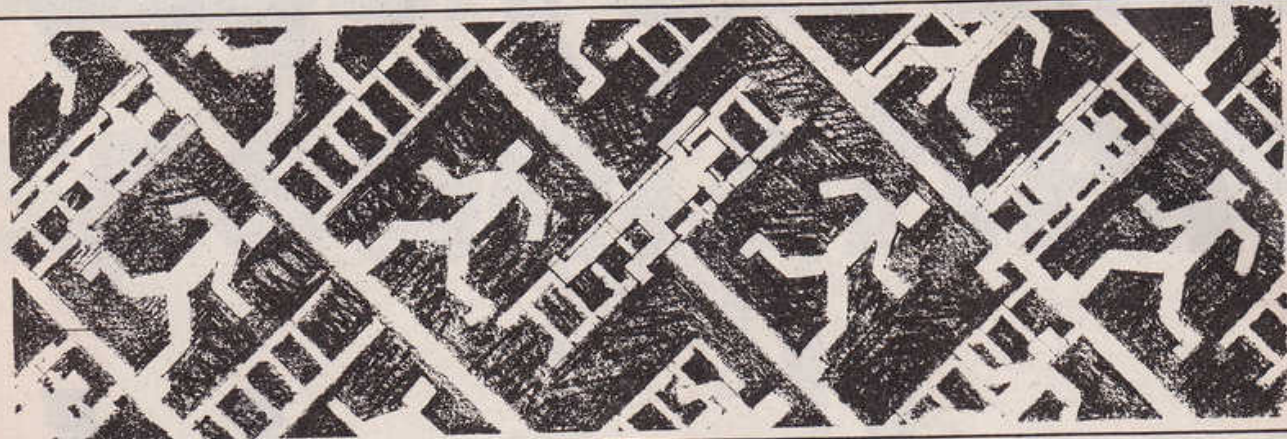
This program was written to aid the programmer in working out the coordinates for correctly positioning text and graphics.

To use the subroutine type *Coord* and the screen mode required will be re-

quested. Then, a window will appear containing information about the screen mode, current window and the three types of coordinates. Pressing keys 0 to 7 will change the current window being worked in. Then, pressing either C, A or G, representing text positioning by pixel, text by character squares and graphics respectively, will select the coordinate

system you wish to work with. If you choose C or A then you will be asked for the text to be positioned. Do so and you can position the text with the cursor keys.

Pressing *Enter* enables you to change window or choose another type of coordinate system. Pressing *Escape* exits the routine altogether.



```

10000 Define PROCEDURE set_up
10001 current=1
10002 cx=0:cy=0:ax=0:ay=0:gx=0:gy=0
10003 INPUT#0;"Which mode [4/8] ";m
10004 MODE m
10005 m=m/4
10006 OPEN#9,scr:PAPER#9,7:INK#9,0
10007 WINDOW#9,116*m,62,480-(116*m),154
10008 CLS#9
10009 PRINT#9," Window = #1 "
10010 PRINT#9," Mode = ";m*4
10011 PRINT#9,"-----"
10012 PRINT#9,"Cursor - "
10013 PRINT#9,"Graphics - "
10014 PRINT#9,"At - "
10015 END Define set_up
10016 Define PROCEDURE COORD
10017 set_up
10018 REPEAT loop
10019 wind
10020 choice
10021 IF CODE(INKEY#)=27
10022 BEEP 1000,10
10023 EXIT loop
10024 END IF
10025 END REPEAT loop
10026 CLOSE#9
10027 END Define COORD
10028 Define PROCEDURE wind
10029 key=CODE(INKEY#)
10030 AT#9,0,14
10031 IF key<=55 AND key>=48
10032 PRINT#9:key-48
10033 current=key-48
10034 END IF
10035 END Define
10036 Define PROCEDURE choice
10037 key=CODE(INKEY#)
10038 SELECT ON key
10039 =99:BEEP 1000,10:curs
10040 =97:BEEP 1000,10:att
10041 =103:BEEP 1000,10:graph
10042 END SELECT
10043 END Define
10044 Define PROCEDURE curs
10045 INPUT#0,"Enter text ";text$
10046 key=CODE(INKEY#)
10047 SELECT ON key
10048 =192:cx=cx-1
10049 =200:cx=cx+1
10050 =208:cy=cy-1
10051 =216:cy=cy+1
10052 =10:BEEP 1000,10
10053 GO TO 10063
10054 END SELECT
10055 OVER#current,-1
10056 FOR n=1 TO 2
10057 CURSOR#current,cx,cy
10058 PRINT#current,text$
10059 END FOR n
10060 AT#9,3,11:PRINT#9;" "
10061 AT#9,3,11:PRINT#9,cx;"",cy
10062 GO TO 10046
10063 OVER#current,0
10064 END Define curs
10065 Define PROCEDURE graph
10066 key=CODE(INKEY#)
10067 SELECT ON key
10068 =192:gx=gx-1
10069 =200:gx=gx+1
10070 =208:gy=gy-1
10071 =216:gy=gy+1
10072 =10:BEEP 1000,10
10073 GO TO 10083
10074 END SELECT
10075 OVER#current,-1
10076 FOR n=1 TO 2
10077 LINE gx-5,gy TO gx+5,gy
10078 LINE gx,gy-5 TO gx,gy+5
10079 END FOR n
10080 AT#9,4,11:PRINT#9;" "
10081 AT#9,4,11:PRINT#9,gx;"",gy
10082 GO TO 10066
10083 OVER#current,0
10084 END Define graph
10085 Define PROCEDURE att
10086 INPUT#0,"Enter text ";text$
10087 key=CODE(INKEY#)
10088 SELECT ON key
10089 =192:ax=ax-1
10090 =200:ax=ax+1
10091 =208:ay=ay-1
10092 =216:ay=ay+1
10093 =10:BEEP 1000,10
10094 GO TO 10104
10095 END SELECT
10096 OVER#current,-1
10097 FOR n=1 TO 2
10098 AT#current,ay,ax
10099 PRINT text$
10100 END FOR n
10101 AT#9,5,11:PRINT#9;" "
10102 AT#9,5,11:PRINT#9;ay;"",ax
10103 GO TO 10087
10104 OVER#current,0
10105 END Define att

```

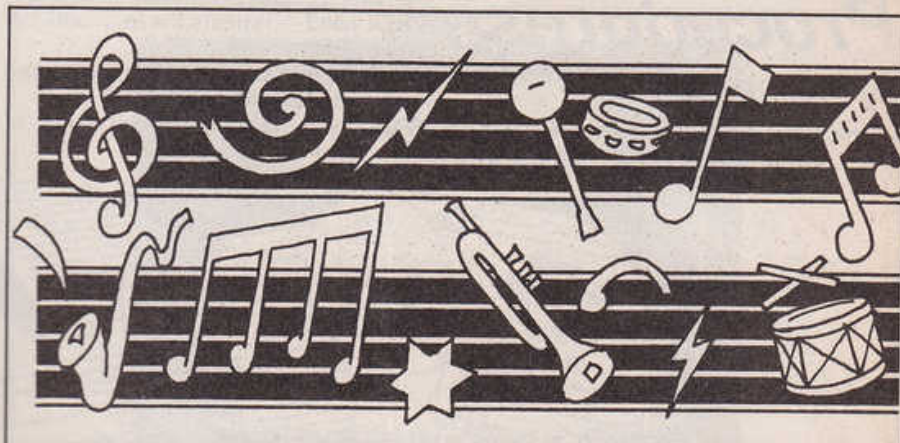

Metronome

by Robert Keeble

This program for the BBC is a metronome simulation for those musicians who are metronomeless.

You are first asked for the number of beats per minute, upon the entry of which a metronome is displayed complete with the beat. Pressing escape enables you to enter a new beat per minute rate.

'Q' and 'S' turn the sound off and on respectively.



```

10 ONERRORRUN
20 C%=FALSE
30 A%=TRUE
40 D%=-15
50 MODE1
60 PROCdisplay
70 PROCinput
80 VDU23,1,0;0;0;0;
90 PROCcalculate
100 PROCbase
110 END
120 DEFPROCdisplay
130 PROCbox
140 PRINT
150 PRINT
160 ENDPROC
170 DEFPROCinput

```

The Metronome"

```

180 INPUT TAB(0,2)"Beats per minute? "
190 PRINT TAB(0,2)"Beats per minute= "
200 ENDPROC
210 DEFPROCcalculate
220 step%=60/bpm%*100
230 ENDPROC
240 DEFPROCbase
250 B%=TIME
260 IFINKEY(-82)D%=-15
270 IFINKEY(-17)D%=0
280 IFTIME>B%+step% THEN PROCanimate
290 IF C% THEN C%=FALSE:GOTO250
300 GOTO 280
310 ENDPROC
320 DEFPROCanimate

```

```

330 IF A% GCOL0,0:MOVE 600,200:DRAW 500
,800:GCOL0,2:MOVE 600,200:DRAW 700,800
340 IF A%=FALSE GCOL0,0:MOVE 600,200:DR
AW 700,800:GCOL0,2:MOVE 600,200:DRAW 500
,800
350 SOUND 1,D%,5,1
360 IF A% THEN A%=FALSE:ELSE A%=TRUE
370 C%=TRUE
380 ENDPROC
390 DEFPROCbox
400 GCOL 0,1
410 MOVE400,200
420 DRAW 800,200
430 DRAW 600,800
440 DRAW 400,200
450 PLOT 85,800,200
460 ENDPROC

```

Programming: Commodore 128

Queue Bert

by S Wightwick

The object of this joystick driven game is of course to paint each column of the pyramid whilst avoiding the green ball. The fire button is used to paint.

This program, which will be printed over two weeks, provides a basic Q*Bert game which can readily be built upon.



```

READY.
100 PRST:GRAPHIC 1,1:WIDTH 1:008=" 0"
101 CIRCLE 1,20,9,3,5,254,95:CO=0
110 DRAW 1,18,11 TO 22,11:PRINT 1,20,0
115 DRAW 0,18,7 TO 19,7
120 DRAW 0,21,7 TO 22,7
125 DRAW 0,15,9 TO 21,9
130 CIRCLE 1,40,18,6,5:PRINT 1,40,18
135 CIRCLE 0,43,18,7,5,250,320
140 CHRR 1,10,1:"GAME OVER"
145 SSHAPE R#9,2,32,23
150 SSHAPE R#29,5,52,26
155 SSHAPE C#72,5,95,26
160 SSHAPE D#95,5,118,26
165 SSHAPE E#118,5,141,26
170 SSHAPE F#141,5,164,26
175 SPRAY R#1
180 SPRAY R#2,DIM Q(30):SPRAY F#5
185 SPRAY C#3:SPRAY D#4:SPRAY E#5
190 SLOW:GO TO 880
195 N#0:L#10:SC=100:U#=" 0" R#0
200 R#223:R#35:N#1
205 GRAPHIC 3,1:COLOR 0,1:COLOR 4,1
210 COLOR 1,16:COLOR 2,13:COLOR 3,12
215 CHRR 1,0,0:"LIVES"
220 CHRR 1,27,0:"SCORE" COLOR 1,2
225 FOR C#1 TO 100
230 X=INT(RND(1)*159)

```

```

235 Y=INT(RND(1)*159)+15
240 DRAW 1,X,Y: SOUND 1,500,1:NEXT CC
245 COLOR 1,16:D#75:S#80:V#11:R#1
250 IFR1<3THENR1#7:R2#223:R3#23:N#1
255 RESTORE R2#R2-23
260 FOR D#1 TO 10:READ VC
265 NEXT D:R3#R3-VC:N#N#4
270 FOR R#1 TO R1
275 FOR X#D TO S STEP 20
280 SOUND 1,900,20,1,1,10,3
285 SOUND 2,1200,30,1,1,10,3
290 SOUND 3,1300,35,1,1,10,3
295 CIRCLE 1,X,Y,8,7,270,60
300 PRINT 1,X,Y
305 DRAW 3,X-7,Y TO X-7,Y+47
310 DRAW 3,X-4,Y+7 TO X-4,Y+50
315 DRAW 3,X-7,Y+47 TO X-4,Y+50
320 DRAW 3,X-7,Y TO X-4,Y+7
325 PRINT 3,X-6,Y+30
330 DRAW 2,X-4,Y+7 TO X-4,Y+7
335 DRAW 2,X-4,Y+7 TO X-4,Y+50
340 DRAW 2,X-4,Y+7 TO X-4,Y+50
345 DRAW 2,X-4,Y+50 TO X-4,Y+50
350 PRINT 2,X,Y+12
355 DRAW 3,X-4,Y+7 TO X-4,Y+50
360 DRAW 3,X-7,Y TO X-7,Y+47
365 DRAW 3,X-4,Y+50 TO X-7,Y+47
370 DRAW 3,X-4,Y+7 TO X-7,Y
375 PRINT 3,X-6,Y+30

```

```

380 DRAW 3,X-4,Y+7 TO X-4,Y+50:NEXT
385 D#D-10:S#S-10:V#V+23:NEXT
390 R#0:L#L+1
395 FOR J#1 TO 20:Q(J)=1:NEXT J
400 REMARK SET UP SPRITES
405 MOVSPR 1,153,100:MOVSPR 2,163,50
410 SLEEP 1
415 COLLISION 1,835:L#L+1
420 IF L#0 THEN 745
425 X#153:Y#100:X#163:Y#50:J#1
430 SPRITE 1,1,3,0,1,0,0
435 SPRITE 2,1,6,0,0,0,0
440 X#75:Y#157
445 L#STR(L)+"" CHRR 1,5,0,L#F
450 CHRR 1,32,0,U#
455 IF JOY(2)<0 THEN 465
460 GO TO 455
465 REMARK MAIN PROGRAM
470 IF C#1 THEN COLLISION 1:C#0:GOTO400
475 C#153:2#103
480 IF JOY(2)=1 THEN X#X+20:Y#Y-23:L#1:X#X+10:Y#Y+23
485 IF JOY(2)=3 THEN X#X+20:Y#Y+23:L#1:X#X+10:Y#Y+23
490 IF JOY(2)=5 THEN X#X-20:Y#Y+23:L#1:X#X-10:Y#Y+23
495 IF JOY(2)=7 THEN X#X-20:Y#Y-23:L#1:X#X-10:Y#Y-23
500 IF JOY(2)=12 THEN L#1:GO TO 630
505 MOVSPR 1,X,Y

```


Procedures

by Colin Speed

This basic extension gives the following commands for Spectrum

*REPEAT — defines the start of a loop.
 *UNTIL cond — repeats the loop until the condition is met.
 *PCLEAR — clears both the procedure stack and the repeat-until stack.
 *PPOKEa,b — pokes a 16 bit value 'b' into 'a' and 'a+1'.

*PAUSExx — same as normal Pause instruction except it cannot be cut short by a key press.

To use any of the new commands the following line must be entered first, and also immediately after any Clear statements.



programmers.

*DEFPROCname — defines the start of a named procedure.

*ENDPROC — defines the end of the current procedure.

*PROCname — executes the named procedure.

*DISABLE — turns off the break key.

*ENABLE — turns on the Break key.

*ONERROR:GOTOxx — diverts the program to line xx every time an error occurs.

*ERROFF — returns error handling to normal.

Poke Peek 23613+256*Peek23614,0:
 Poke Peek 23613+256* Peek
 23614+1,250

Finally, if you don't want to type the listing in send £1.50 to Colin Speed, 104 Monmouth Road, Yeovil, Somerset BA21 5NW.

```

>
1 REM *****
2 REM *
3 REM * PROCEDURES *
4 REM *
5 REM * by C.Speed *
6 REM *
7 REM *****
8 REM :
10 CLEAR 63999: LET add=64000
20 FOR n=1 TO 43
30 READ a$,a: LET tot=0
50 FOR f=1 TO LEN a$ STEP 2
60 LET x=16*(CODE a$(f)-48-7*(a$(f)>"9")
  )+CODE a$(f+1)-48-7*(a$(f+1)>"9")
70 POKE add,x
80 LET tot=tot+x: LET add=add+1
90 NEXT f
100 IF tot<>a THEN PRINT "ERROR IN DAT
A - Line ";n*10+190: BEEP .5,0: STOP
110 PRINT AT 0,0;"LINE ";n*10+190;" OK"
120 NEXT n
130 PRINT "DATA OK"
140 SAVE "PROCEDURES"CODE 64e3,970
150 POKE PEEK 23613+256*PEEK 23614,0: P
OKE PEEK 23613+256*PEEK 23614+1,250
160 PRINT "Now you can try the new com
mands"
200 DATA "3A3A5CFE0B285FDCB017E2007210
0FAE5C3B712214CFD",2490
210 DATA "FD7E00FE0C2808FE102804FE14200
BCB4628072100FAE5",2156
220 DATA "C37D1BCB4E28133A3A5C32815C231
1425CEDA0EDA0AF12",2363
230 DATA "C3C6FACD0313FD3600FF2A595CCDA
7112100FAE5C3B412",2949
240 DATA "2A5D5C2B7EFE2A20A2DD21D1FADDC
B007E20982A5D5CE5",2789
250 DATA "DD4600DFCBEFDD23DDBE002013E71
0F4FD3600FFFD3626",3072
260 DATA "00E1DD6E01DD6602E943060DD09D
D23DD23E1225D5C18",2403
270 DATA "C7FE0D280BFD36000BFE3AE1C207F
AE5FD3600FFFD3601",3071
280 DATA "7EC0E12100FAE521B712E5C3761B2
100FAE5FD3600FFC3",3127
290 DATA "761B0764656670726F633DFB07656
E6470726F6373FB04",2327
300 DATA "70726F639AFB0670636C65617260F
C0672657065617499",2626
310 DATA "FC05756E74696CC4FC0564706F6B6
520FD06656E61626C",2602
320 DATA "655AFD0764697361626C654FFD076
F6E6572726F7265FD",2643
330 DATA "066572726F6666A0FD05706175736
5ABFD80CBAFFE4138",2915
340 DATA "29FE5B3025E7CBAFFE413806FE5B3
00218F3DFFD360006",2659
350 DATA "CDA2FA2A78FC1178FC1313A7ED527
CB5C2C6FAFD360006",3204
360 DATA "C307FACDA2FA2A78FC1178FC1313A
7ED527CB5CA6CFB2A",3304
370 DATA "78FC2B2B2278FC11425C010300E
DB0C3C6FACBAFFE41",2839
380 DATA "DA6CFBFE5BD26CFB0601E7CBAFFE4
13807FE5B30030418",2913
390 DATA "F2DFFD360006FD7076CDA2FA2A535
C7EFE28D259FC2323",3136
400 DATA "5E2356237EFE2A28031918ECE5D50
60711D1FA23131AE",2185
410 DATA "E6DFC253FC10F5E52A5D5CFD46765
81600A7ED52D1131A",2990
420 DATA "AEE6DFC253FC2310F5131AFE0D280
5FE3AC253FC2A78FC",3064
430 DATA "E52178FC11200019EBE1A7ED52282
A21455CED5B78FCED",2867
440 DATA "A0EDA07E3C1213ED5378FCD1E12B2
B2B2B7E32435C237E",2574
450 DATA "32425C3E0132445CC3C6FAD1E1FD3
60007C307FAD1E119",2783
460 DATA "C3C4FBFD360019C307FACDA2FA217
8FC117AFC73237221",3136
470 DATA "00FD1102FD732372C3C6FA7AFC000
0000000000000000",1806
480 DATA "000000000000000000000000000000
000000000000CDA2",367
490 DATA "FA2A00FD0120001100FDEB090100F
DA7ED52CA4CFCC519",2584
500 DATA "21455CEDA0EDA07E3C1213E173237
2C3C6FACD821CDA2",3073
510 DATA "FA2A00FD1102FDA7ED52CAF9FCDD
52D3812A7200F2A00",2799
520 DATA "FD11445C2B010300EDB8C3C6FA2A0
0FD2B2B22200FDC3",2447
530 DATA "C6FAFD360000C307FA02FD0000000
0000000000000000",1462
540 DATA "000000000000000000000000000000
00000000CD7A1CFDCB",811
550 DATA "007ECA07FACDA2FACDA22D3813201
1C5CDA22DD1380A20",2654
560 DATA "08C5E1732372C3C6FAFD36000AC30
7FA000000CDA2FA21",2756
570 DATA "4CFDCBC6C3C6FACDA2FA214CFDCB8
6C3C6FAFD36000BDF",3873
580 DATA "FE3AC207FAE7FECC207FAE7FD360
0FFCD821CFDCB007E",3673
590 DATA "CA07FACDA2FACDA22DDA45FDC245F
D214CFDCBCE237123",3498
600 DATA "70FD3600FFC3C6FACDA2FA214CFDC
B8EC3C6FACD821CFD",3900
610 DATA "CB007ECA07FACDA2FACDA22DDAEDF
CC2EDFC78B1CAC6FA",4154
620 DATA "760B18F7",400

```


Small print on the Amstrad CPC

by Alastair Scott

Type in the following program, save it then run it and correct any errors. You will now have two new commands added to Locomotive Basic.

Gcol, paper, pen will set the graphics paper and pen colours, which cannot be done directly on the CPC464.

The other new command is *Sprint* which will print the specified text at graphics co-ordinates x,y in the current graphics colour, but in specially defined half width characters which double the number of columns available. The command should be used thus:

```
464 :a$="text"+Chr$(0): Sprint,x,y, a$
664/6128 :Sprint,x,y,"text"+Chr$(0)
```

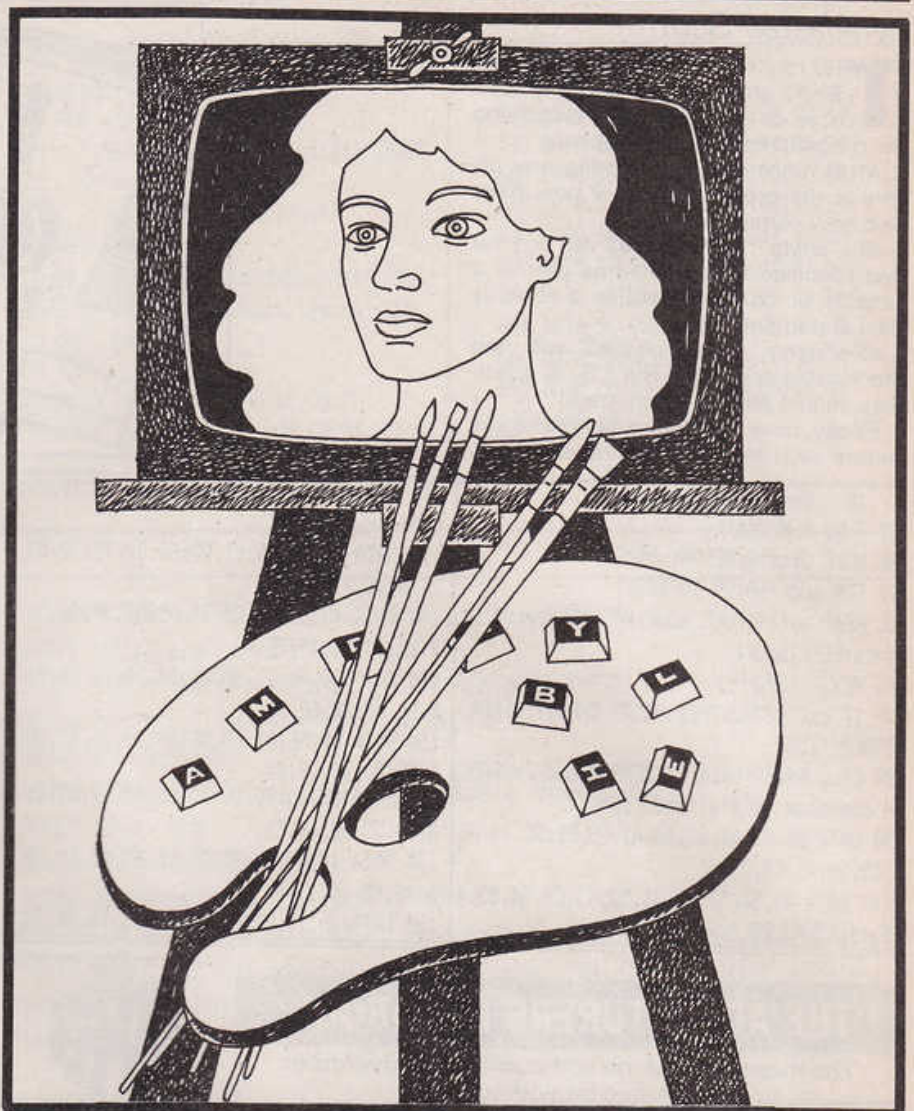
The utility was designed for use in Mode 0 but can be used in any mode if the following *Pokes* are implemented after every change.

Poke &9D5B,8 for Mode 1

Poke &9D5B,4 for Mode 2

Poke &9D5B,16 for Mode 0

Also note that this utility cannot be used with programs which utilise the *Memory* or *Symbol After* commands. In addition, any other machine code routines must be placed beneath Himem.



```
10 Small Print
20 by Alastair Scott
30 MODE 1:CALL &BC02:PRINT"PLEASE WAIT":PRINT
40 SYMBOL AFTER 256:MEMORY &CFF:SYMBOL AFTER 32
50 RESTORE 470:cs=0
60 FOR a=&9D00 TO &9DA3
70 READ a$:POKE a,VAL("%"+a$):cs=cs+PEEK(a)
80 NEXT
90 IF cs<>20536 THEN PRINT CHR$(7)"Error in RSX data!":END
100 CALL &9D00
110 RESTORE 230:cs=0:addr=&9600
120 FOR a=1 TO 96
130 READ a$
140 FOR b=1 TO 8
150 POKE addr,VAL("%"+MID$(a$,b,1)+"0")
160 cs=cs+PEEK(addr):addr=addr+1
170 NEXT b,a
180 IF cs<>79744 THEN PRINT CHR$(7)"Error in SYMBOL data!":END
190 MODE 0:&BC0L,3,14
200 a$=" IGCOL and IPRINT commands installed!"+CHR$(0)
210 IPRINT,20,300,a$
220 CALL &BB18:MODE 1:END
230 DATA 00000000,44444040,AAAA0000,0AE0EA00
240 DATA 4EC46E40,A244BA00,AE0A4A00,26400000
250 DATA 48888B40,42222240,04EA4000,044E4400
260 DATA 00000448,000E0000,00000440,22448B00
270 DATA 4AAAAA40,4C4444E0,EA2EB8E0,EA242AE0
280 DATA 8BAAE220,EBE22AE0,EABEAEE0,E2222220
290 DATA EAA4AAE0,EAEE2AE0,04400440,04400448
300 DATA 02484200,00E0E000,08424B00,EA264040
```

```
310 DATA EAAEB8E0,EAEEAA00,CAACAAC0,EABBB8E0
320 DATA CAAAAAC0,EABCB8E0,EABCB8B0,EABAAAE0
330 DATA AAEEAA00,E44444E0,E2222AE0,AAACAA00
340 DATA B888B8E0,AEAAAA00,AEAAAA00,EA4AAAE0
350 DATA EAAEB8B0,EA4AAAC0,EAEECA00,EAEE2AE0
360 DATA E4444440,AAAAAAE0,AAAAAA40,AAAEAA00
370 DATA AA444AA0,AAE44440,EA248AE0,E88888E0
380 DATA B8442200,E22222E0,4EA00000,0000000E
390 DATA EAB848E0,00E2AE0,8BEAAAE0,00EABAE0
400 DATA 22EAAAE0,00EAE8E0,00EBC8B0,00EAAE2E
410 DATA 8BEAAAE0,40C444E0,206222AE,8BAACAA0
420 DATA C44444E0,00AEAA00,00EAAAA0,00EAAAE0
430 DATA 00EAAEB8,00EAAE22,00EAB8B0,00EBE2E0
440 DATA 44E44460,00AAAAE0,00AAAA40,00AAEEA0
450 DATA 00AA4AA0,00AAAE2E,00E248E0,264C4620
460 DATA 44404440,BC464CB0,AE800000,EEEEEEEE
470 DATA 21,9F,9D,CB,7E,C0,CB,FE,01,00,07,21
480 DATA FF,95,11,FF,9D,7E,12,0B,23,13,7B,81
490 DATA 20,F7,01,23,9D,21,40,9D,C3,D1,BC,2B
500 DATA 9D,C3,36,9D,C3,90,9D,53,50,52,49,4E
510 DATA D4,47,43,4F,CC,00,FE,03,C0,3E,00,32
520 DATA 36,B7,3E,96,32,37,B7,DD,6E,00,DD,66
530 DATA 01,23,4E,23,46,C5,DD,6E,02,DD,66,03
540 DATA DD,5E,04,DD,56,05,01,10,00,DD,E1,C5
550 DATA D5,E5,CD,C0,BB,E1,D1,D1,DD,7E,00,FE
560 DATA 00,28,16,C5,D5,E5,CD,FC,BB,E1,D1,C1
570 DATA E5,D5,E1,AF,ED,4A,E5,D1,E1,DD,23,18
580 DATA DA,3E,00,32,36,B7,3E,7E,32,37,B7,C9
590 DATA FE,02,C0,DD,7E,00,CD,DE,BB,DD,7E,02
600 DATA C3,E4,BB,00,00,00,00,00,00,00,00,00
```


Programming: Amstrad CPC

by Alastair Scott

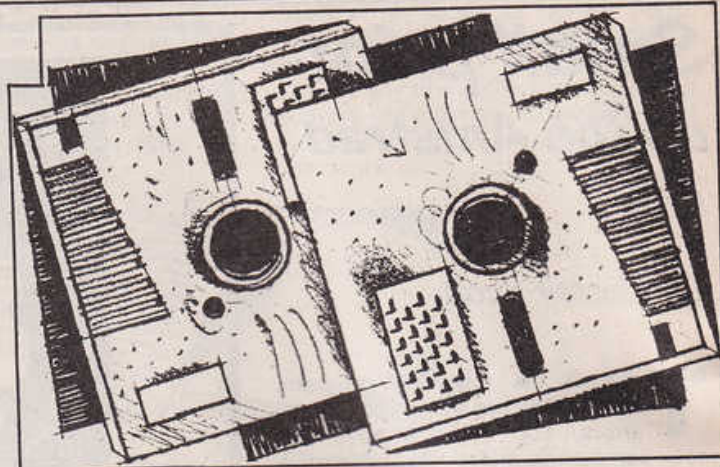
This routine will search through any Basic program and find any variable or text specified, displaying the program lines where it occurs.

After running and correcting any errors in the program you will now have two new commands.

`a$="string":Tsearch.@a$` will find the text specified which could be part of a variable or contained within a `Print` or `Rem` statement.

`a$="string":Vsearch.@a$` will find the variable specified. The `!`, `$`, `%` specifiers should always be omitted.

Finally, note that you must press a key before each line number is revealed.



<pre> 10 ' Search Routines 20 ' by A.M.Scott 30 MODE 2:cs=0:MEMORY &A0FF 40 FOR addr=&A100 TO &A207 50 READ byte\$:POKE addr,VAL("&"+byte\$):c s=cs+PEEK(addr) 60 NEXT 70 IF cs<>28792 THEN PRINT CHR\$(7)"DATA ERROR!":END 80 CALL &A100:PRINT"ITSEARCH and IVSEARC H commands initialised.":END 90 DATA 01,09,A1,21,20,A1,C3,D1,BC,11,A1 ,C3,24,A1,C3,29 100 DATA A1,56,53,45,41,52,43,C8,54,53,4 5,41,52,43,C8,00 </pre>	<pre> 110 DATA 00,00,00,00,CD,2E,A1,18,1B,CD,2 E,A1,18,28,FE,01 120 DATA C0,DD,66,01,DD,6E,00,7E,32,05,A 2,23,4E,23,46,ED 130 DATA 43,03,A2,C9,3A,05,A2,5F,16,00,1 B,2A,03,A2,19,7E 140 DATA C6,80,77,3A,05,A2,DD,21,70,01,D D,66,03,DD,6E,02 150 DATA DD,56,01,DD,5E,00,22,06,A2,7D,B 4,C8,00,00,00,00 160 DATA 00,00,00,00,CD,82,A1,DD,E5,E1,1 B,19,23,E5,DD,E1 170 DATA 18,D8,DD,E5,E1,DD,E5,D5,C1,0B,0 B,0B,0B,D5,11,04 180 DATA 00,19,ED,5B,03,A2,C5,1A,BE,28,0 </pre>	<pre> B,C1,0B,23,78,B1 190 DATA 20,F0,D1,DD,E1,C9,3A,05,A2,47,1 A,BE,20,ED,23,13 200 DATA 10,F8,CD,B7,A1,18,E4,3E,0D,CD,5 A,BB,3E,0A,CD,5A 210 DATA BB,DD,E5,E5,D5,C5,2A,06,A2,CD,D 5,A1,C1,D1,E1,DD 220 DATA E1,CD,06,BB,C9,11,10,27,CD,F0,A 1,11,E8,03,CD,F0 230 DATA A1,11,64,00,CD,F0,A1,11,0A,00,C D,F0,A1,11,01,00 240 DATA AF,37,3F,ED,52,38,03,3C,18,F7,1 9,C6,30,E5,CD,5A 250 DATA BB,E1,C9,00,00,00,00,00 </pre>
---	---	--

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Speedload

by Peter Selwyn

This Amstrad CPC routine enables you to save and load programs at a baud rate of 3600. Once you have removed any errors from your listing the machine code may be saved by entering *Save "file name.bin",B,&8000,&61*. Then, when ever you want to use the routine enter *Memory &7FFF:Load "filename.bin" &8000:Call &8000* to set the machine code up, and *Fast* to put the Amstrad into Speedload mode.

Medium sets the computer at 2000 baud while *Slow* is for 1000 baud.

```
460 MEMORY &7FFF
470 FOR addr=&8000 TO &8060
490   READ byte$:byte=VAL("&"+byte$)
500   POKE addr,byte
510   sumcheck=sumcheck+byte
520 NEXT addr
530 IF sumcheck<>&2A60 THEN PRINT "Data
input error, please check typing":END
540 CALL &8000
550 REM
560 DATA 21,5C,80,CB,4E,C0,CB,CE
570 DATA 01,11,80,21,5D,80,CD,D1
```

```
580 DATA BC,25,80,C3,41,80,C3,41
590 DATA 80,C3,4A,80,C3,4A,80,C3
600 DATA 53,80,C3,53,80,73,6C,6F
610 DATA F7,53,4C,4F,D7,6D,65,64
620 DATA 69,75,ED,4D,45,44,49,55
630 DATA CD,66,61,73,F4,46,41,53
640 DATA D4,21,4D,01,3E,19,CD,68
650 DATA BC,C9,21,A7,00,3E,32,CD
660 DATA 68,BC,C9,21,5C,00,3E,05
670 DATA CD,68,BC,C9,00,00,00,00
680 DATA 00
```

High scores

by D Stewart

The following QL routine provides the facility to incorporate a high score table in your own programs. The first procedure is *High_table (n)* which initialises the table with room for 'n' entries.

The second procedure, *Insert_high_table (name\$,score)* is used to insert a players name and score into the table at the appropriate position. The high score table itself can be displayed by using *Print_high\$*.

A final note that all characters from array section (n,15) to (n,20) must be either a space or a digit else the program will crash.

```
30000 DEFine PROCedure high_table (n)
30010 LOCAL a:entries=n
30020 DIM high$(n+1,20):FOR a=1 TO n:high$(a)=FILL$(" ",19)&"0"
30030 high$(a,1 TO 14)="Sinclair QL":NEXT a
30040 END DEFine
30050 DEFine PROCedure insert_high_table (name$,score)
30060 LOCAL n,m
30070 FOR n=1 TO entries
30080 IF high$(n,15 TO)< score THEN
30090 FOR m=entries TO n STEP -1:high$(m+1,1 TO)=high$(m,1 TO):NEXT m
30100 high$(n,1 TO)=name$:high$(n,21-LEN(score) TO)=score:END DEFine
30110 END IF :NEXT n:END DEFine
```

Transfer

by Endaff Bowen

This routine for the QL has two functions, both concerned with the screen display.

Suppose, for example, a Mode 8 picture was loaded into a Mode 0 screen then the true eight colours would be lost unless you typed *Scr_on 8* which would show the eight colours while the computer was still in Mode 0.

The second function, *Scr_off*, turns the display off, although commands can still be entered. *Scr_on mode* turns the display back on again.

```
"9000 DEFine PROCedure SCR_ON (Screen_Mode)
9010 reg=16514
9020 IF Screen_Mode=0 OR Screen_Mode=8
9030 POKE_W 131072-reg,Screen_Mode
9040 RETURN
9050 END IF
9060 PRINT #0,"Wrong Mode. 0 or 8"
9070 STOP
9080 END DEFine
9100 DEFine PROCedure SCR_OFF
9110 reg=16514
9120 POKE_W 131072-reg,2
9130 END DEFine
```


Programming: Peek & Poke



With Kenn Garroch

Basic Structuralism

A Benjamin of Harrogate, North Yorks, writes:

Q I am interested in learning how to program in Basic but, with an eye to learning other programming languages in the future (Pascal, C, etc), I wonder if you could tell me the difference between the so-called structured Basics, and the others?

A Structuring in a programming language is the ability to break the program down into easily understood segments. To aid this, all Basics have the structures *If..Then* and *For..To..Next* (the former is not really a structure in most versions of Basic since it can only be on one line). The *If* is used to test a condition, such as *A=10*. If this is true, then the statements after the *Then* are executed, ie:

If condition *Then* statements to be executed if condition is true (all on the same line).

In most Basics, only the statements on the same line after the *Then* are executed, although some versions of the language do it properly, with:

If condition *Then*: section of code to be executed if the condition is true (as many lines as you like),

Else: Section of code to be executed if the condition is false (as many lines as you like),

Endif: Rest of the program.

The *For..To..Next* structure is common to all Basics, and most programming languages. A counter is defined

after the *For* command and incremented or decremented by a certain amount, every time the loop is executed. When the counter reaches the value given after the *To*, the loop executes until the *Next* and then exits to the rest of the program. If the counter has not reached the *To* value, the section of program with the loop is executed again, eg:

For *T=1 To 10*: section of code to be repeated 10 times,

Next *T* (note that in most Basics, the *T* is optional). When this loop ends, *T* will usually be equal to 11, although some Basics increment the counter at the beginning, not the end. The *Step* command can be used to make the loop count backwards, ie, from 10 to 1 - *Step -1* - or in different amounts (*Step 0.5*).

Other structures are available in some Basics, which include *While..Wend*, *Repeat..Until*, *Case*, procedures and functions.

Advanced Structuralism

T Sommers, of Redruth, Cornwall, writes:

Q In some of the books on programming I've read, there is reference to the term 'data structure'. Could you tell me what one of these is and how it works?

A data structure is a method used in high level computer languages for grouping information. The methods of defining and accessing the structures varies from language to language, but the idea is the same for them all. For example, if there is a program that needs to access a set of information about books, each book will have a title, author, price, publisher, ISBN number, and so on. These facts

are common to all books and so a data structure can be defined to hold them. Once defined (call the structure 'book'), an array of books can be set up. Since the format of the structure is the same for each book, it can be manipulated as a single object, so:

```
DEFStruct: book
Title: string
Author: string
Publisher: string
Price: Integer
ISBN: String
Quantity: Integer
EndStruct
```

This is a definition of the data structure for books. The array of books ('Library') could be set up with:

Library: Array (1..1000) of book

This would give access to 1000 different books. In the program, it is now quite possible to do things like:

Library(1)=Library(10)

which will put the information for book 10 into book one. Getting at the information of the book itself is done by the dot command:

```
for t=1 to 10
print Library(t).Title
next
```

This would print the first ten titles. This method of structuring data is very useful for setting up information in such a way that the program is easy to understand (which is very important with a long complex program, when you need to alter it after a year or so).

Garbage Collection

M. Brumpton of Clapham, London, writes:

Q I have an Amstrad CPC 464, and I have written a program that prints out statements of accounts for various firms. In this pro-

gram I have stored 12K of variables: *Name\$(200)*, *Addr1\$(200)*, *Addr2\$(200)*, *Addr3\$(200)*, *Addr4\$(200)*, where *Name\$(i)* are the names, and *Addr\$(i)* are the addresses, etc.

My problem is that when I come to save this file of addresses, after the computer encounters an 'Openout "Data"', there is a wait of one or two minutes before the computer responds with *Press Play and Record* then any key, and another wait, just as long, when it finishes saving.

There is also a wait when any command referring to the tape deck is made, such as *Cat* and sometimes the operation of the program stops for a time. I have tried forcing a garbage collection (whatever this is) by using *Print Fre(" ")*, but it does not seem to help. The waiting is most infuriating, could you please help me?

A I presume you are doing something like this:

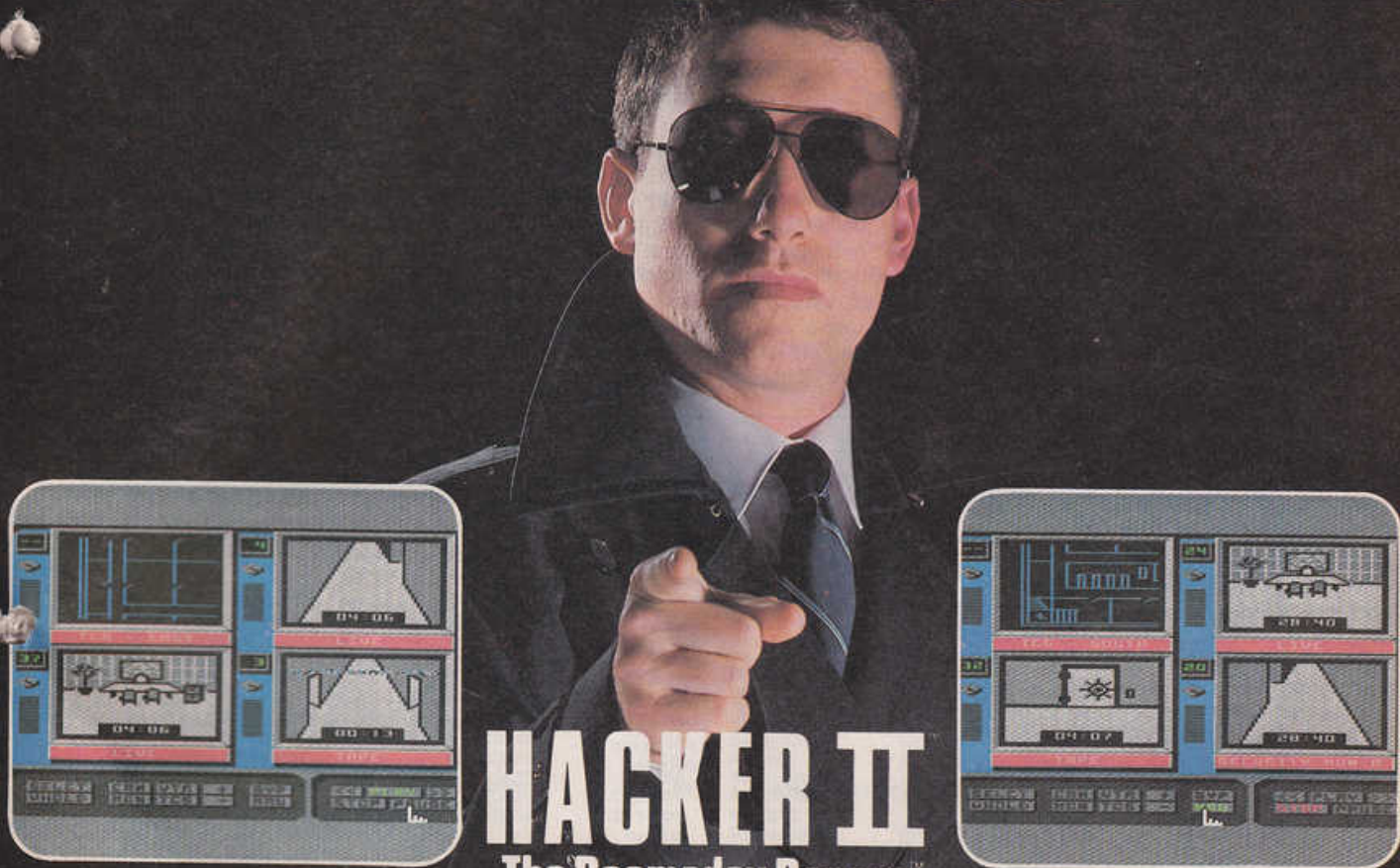
```
10 DIM NAME$(200), ADDR1$(200), ADDR2$(200), ADDR3$(200)
20 FOR T=0 TO 200
30 NAME$(T)="AAAAAAAAA": ADDR1$(T)="BBBBBBBBBBB"
40 ADDR2$(T)="CCCCCCCCC": ADDR3$(T)="DDDDDDDDDD"
40 NEXT T
50 REM THE LAST BIT JUST FILLS UP THE ARRAYS A LITTLE
60 OPENOUT "DATA"
80 FOR T=0 TO 200
90 PRINT #9,NAME$(T),ADDR1$(T),ADDR2$(T),ADDR3$(T)
100 NEXT
```

I've tried this and the wait is only about two seconds. What the Amstrad does in those two seconds is to fill up its 2K data buffer with information to be saved. It is possible that if your program is very large, and/or you are doing a lot of string handling, the Amstrad may have to shuffle a few things around to make space for a buffer, though I think this is unlikely especially since you performed a *Fre* making the computer do a garbage collection (free up any disused string space). Take another look at the way in which you are saving the data and try to shorten the program a little if it is very long.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW, 12-13 Little Newport Street, London WC2R 3LD*

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Electronic mail services for the armchair letter-sender

David Wallin transmits the best

This week's column concentrates on the big four electronic mail services: Comet, One-to-One and MicroLink (in association with Telecom Gold).

In my opinion, MicroLink offers the most and the best features of all the services, I myself use the service mainly for electronic mail (within the UK), sending and receiving of telexes and sending telexmessages. Although these are the main features (Telecom Gold was originally just an e-mail service), there are many others; you can order rail tickets, flowers and theatre tickets, get free telesoftware, have the spellings in your e-mail checked, download weather maps and many other things. There is not enough room here to detail MicroLink along with the other three services and we'll look at MicroLink in greater detail in the near future.

MicroLink is a closed user group (CUG) on Telecom Gold, run by Database Publications. (Similarly, Micronet is a CUG of Prestel), Telecom Gold can be joined by other methods, these include; directly from Telecom Gold, via Crown-Link (another CUG) and via the Tandy Computer Club.

Mailbox numbers are issued to you and have the characteristic format of xx:\$\$\$yyy. The xx refers to the system you are on (if you join via MicroLink then the system is 72). The \$\$\$ is three letters that will either be an abbreviation of your business/name or a mnemonic of the company via which you joined, ie: TCC: Member of the Tandy Computer Club; JNL: Signifies a Journalist; MAG: Joined via MicroLink; PCE: Pace Micro Electronics; TAN: Tandata Holdings.

Lastly, the yyy is a number from three to five digits long. There is a 'help' mailbox for MicroLink users, appropriately 72:MAG999.

MicroLink helps to make using Gold easier, by giving menus for the beginner. All mailboxes which start 72:MAG belong to MicroLink users, you have probably noticed, most Gold mailboxes seem to start 72:MAG.

My mailbox number on Telecom Gold is 72:MAG30190. If you are a member of Gold then when you write to me let me know your mailbox number so I can add it to a readers' directory I am setting up. Alternatively, leave me a message on Gold.

One-to-One was set up to directly compete with Telecom Gold and although it does not seem as popular (it has many less features, in some ways it is cheaper, although you might not think so to look at the chart below).

On all Gold services (MicroLink, Crown-Link, etc) you must pay to 'store' information or messages on the central computers disc. With One-to-One, this is free. The system has about 10,000 subscribers, all of whom may be e-mailed for free.

Telex facilities are available to reach the 1-75m Telex users world wide. Courier service enables you to have a message delivered *anywhere* in the UK in *under two hours*.

Registration is much higher than that of MicroLink, which probably puts off home users, but the system is still very good and definitely worth looking into, especially if you plan to store large

amounts of information on the central computer.

All of the services offer telex facilities (for MicroLink and Comet, an extra £10 is charged). Telexes may be sent to any of the 96,000 telex users in this country, any of the 1.5-1.75 million users worldwide and with MicroLink to any ships at sea (the other services may offer ship telex services, I'm not sure). Telexes may also be received.

With MicroLink, sending a telex is very simple, you just type *Telex (Return) Input (Return)* and type in the telex. I believe all the other services have easy to use telex facilities.

Receiving telexes is different and seems complicated but in fact it is simple. You may have seen written somewhere something like 'Telex: 265871 MONREF G Quoting Ref. 72:MAG30190' (this is my telex number).

	Comet	EasyLink	One-to-One	MicroLink
Send Telex	Yes	Yes	Yes	Yes
Receive Telex	Yes	Yes	Yes	Yes
Electronic Mail	Yes	Yes	Yes	Yes
Letters	No	No	Yes	No
Database	No	No	Yes	Yes
Radio Paging	No	No	Yes	Yes
Telexmessages	Yes	No	No	Yes
International E-Mail	No	No	No	Yes
Translations	No	Yes	No	Yes
Courier Service	No	No	Yes	No
Teleshopping	No	No	No	Yes
Notice Board	No	No	Yes	Yes
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Other phone numbers that might be useful are: Telecom Gold: 01-403 6777, Crown-Link: 0323-647647, Prestel: Freephone 2296.				

Improving your Midi connections

Mark Jenkins on how to equip your micro with Midi

Occasionally we're asked about the musical applications of unusual micros, or micros which don't seem at first glance to have any hope of entering the world of music. Granted, some older models are way behind in the compositional stakes — there's not much available for the ZX81 any more, for instance.

But it's odd that relatively powerful micros such as the Sinclair QL and Research Machines ZX models don't have any music packages available. The explanation, of course, is largely down to sales figures, and the fact that many music packages are developed in the US or Japan and so will not be aimed at largely UK-based micros. In France there are several useful Midi packages available for the Thomson micros, but you won't see any over here!

There's one way to connect virtually any micro to Midi, and that's by converting the output of some other port such as an RS232 port. Almost all micros have

RS232 available as an add-on or, as in the case of the Sinclair QL, as standard.

As far as we know, only one company has thought to market an RS232-to-Midi converter, namely Hinton Instruments. Its MidiC interface has an external power supply, Midi in and out sockets and an RS232 socket, and has built-in software so that it will run with any suitably equipped machine.

either eight-bit binary or Ascii Hex format. The interface itself costs £300 (£350 with battery backup to retain recorded patterns) and an RS232 interface cable for a QL, for instance, is £15.00. Contact Hinton for latest prices and updates.

But keep in mind that Midi is simply a binary language transmitted in a serial manner, and that any interface which can produce the correct levels can be made to speak Midi (the Sinclair Spectrum Plus has Midi without even having a proper Midi socket). The Midi interface uses just



three pins of its five-pin Din connector; one for earth, one for loop return and one for live. The circuit is a five milli-amp current loop, where 'current on' signifies a zero (data low) and 'current off' signifies a one (data high).

The transmission rate has to be closely fixed to 31.25 Kbaud (31,250 bits per second) and transmissions are arranged in packages of 10 bits (start bit, eight data bits, stop bit). Once you've organised that, you're away.

If you're really interested in learning more about Midi you need the Midi 1.0 specification available from Sequential at the address given below. And if you've been using, or would like to be able to use, an out-of-the-ordinary micro for musical applications, please let us know.

*Sequential Postbus 16, 3640 Mijdrecht,
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*Hinton Instruments, 168 Abingdon Road,
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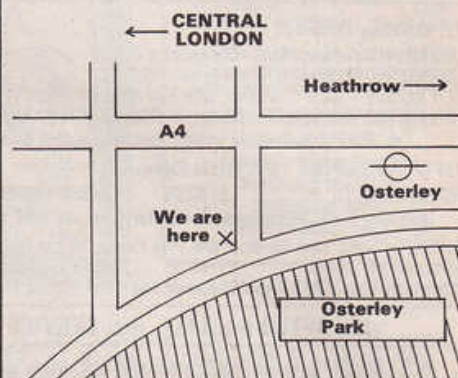
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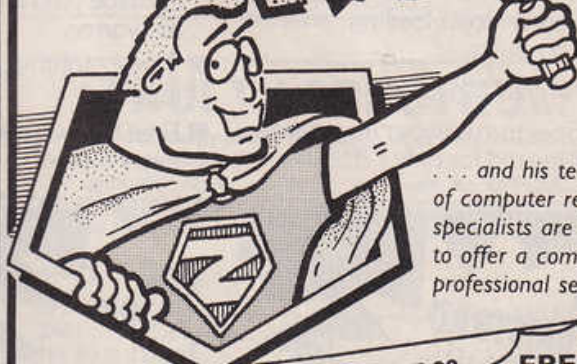
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New Releases

Pick of the week

John Cook looks through this week's new arrivals

Amstrad CPC

Program *The Fourth Protocol*
Type Strategy **Micro** Amstrad CPC **Price** £14.95
Supplier Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

Program *Powerplay* **Type** Strategy **Micro** Amstrad CPC **Price** £9.95 (tape) £12.95 (disc) **Supplier** Arcana Software Design, Avondale Workshops, Woodland Way, Kingswood, Bristol, Avon BS15 1QH.

Program *L'Affaire Vera Cruz*
Type Strategy **Micro** Amstrad CPC **Price** £9.95 (tape) £14.95 (disc) **Supplier** Infogrammes, Mitre House, Abbey Road, Enfield, Middlesex.

Program *Melbourne Draw*
Type Utility **Micro** Amstrad CPC **Price** £14.95 (tape) £24.95 (disc) **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey KT1 4DB.



Program *Impossible Mission*
Type Arcade **Micro** Amstrad CPC **Price** £9.99 (tape) £14.99 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program *Mission Elevator*
Type Arcade **Micro** Amstrad CPC **Price** £9.95 (tape) £14.95 (disc) **Supplier** Micropool, 4 Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

getting a little more reciprocal – what with Infogrammes, Loricels, Ere Informatique and the like. Now add another name to the ever growing list, Micropool.

Micropool have kicked off in this country with *Mission Elevator*, a nicely worked version of a coin-op that did quite well around a year back.



Add a hint of adventure, strategy elements, a time limit, some great touches of humour together with smooth and colourful graphics – what you have is a little cracker of a game. I only hope it doesn't get drowned in the mass of titles that are released and announced this time of year.

Whatever, it's very highly recommended.

Amstrad PCW 8256/8512

Program *Biology 1* **Type** Educational **Micro** Amstrad PCW **Price** £12.95 **Supplier** School Software, Meadowvale Estate, Raheen, Limerick, Ireland.

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Program *Physics 1* **Type** Educational **Micro** Amstrad PCW **Price** £12.95 **Supplier** School Software, Meadowvale Estate, Raheen, Limerick, Ireland.

Program *Paperboy Type*
Price £9.95 **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Birmingham.

At last, here it is, that long awaited coin-op conversion – and potential *Paperboys* everywhere will be glad to know that it's well up to scratch.

OK, the main display is single colour, but that tricky sideways scroll has been well executed, and the gameplay is as close to the original as you could want. The only things I can recall being missing are the radio controlled cars that nag you if you go too slow and the groupie with the 'I Luv Paperboy' placard in the adoring crowd at the end of each level.

I know several people who were slightly disappointed with the Spectrum *Ghosts n' Goblins* when compared to the

stunning Commodore version – I think they'll be pleased with this one.

Another soon-to-be-released Spectrum game from Elite we managed to get a peek at was the long awaited *Scooby Doo*. In this, you play the part of everyone's favourite dog (my third favourite as it happens, after Snoopy and Boot) who must run along platforms and up ladders avoiding and zapping some brilliantly animated nasties, to rescue a member of the gang (trapped in a giant test tube).

Again, the main display is single colour, but the sprites are big and very well done – what more would you expect of the Carter/Follis Gargoyle team? Gameplay is a bit thin on the ground, but I can't remember the cartoon ever being intricate of plot either.

If only they were giving away free Scooby Snacks as part of the deal...

Program *Better Maths Type*
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Program *Collapse Type*
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Program *Ultima IV Type*
Price £19.95 (disc only) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

BBC/Electron

Program *System Delta Type*
Price £64.95 (Rom) **Supplier** Minerva Systems, 69 Sidwell Street, Exeter, Devon EX4 6PH.

Program *Myorem Type*
Price £9.95 (tape) £12.95 (disc) **Supplier** Robico Software, 3 Fairland, Llantrisant, Mid-Glamorgan CF7 8QH.

The one-way tide of British software from Us to Them appears to be

C16/Plus 4

Program Jail Break Type Arcade **Micro** C16/Plus 4 **Price** £2.99 **Supplier** Bug-Byte, Victory House, Leicester Place, London WC2.

Program Matrix/Laserzone Type Arcade **Micro** C16/Plus 4 **Price** £6.95 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

CBM 64

Program Gods and Heroes Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Aftermath Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Spiky Harold Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Collapse Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Heart of Africa Type Strategy **Micro** Commodore 64 **Price** £14.95 (disc only) **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

Program Droids Type Arcade **Micro** Commodore 64 **Price** £7.95 (tape) £9.95 (disc) **Supplier** Anglossoft, PO Box 60, Coventry CV1 5SX.

Program Ultima IV Type Adventure **Micro** Commodore 64 **Price** £19.95 (disc only) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program Rebel Planet Type Adventure **Micro** Commodore 64 **Price** £9.95 (tape)

£14.95 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program Powerplay Type Strategy **Micro** Commodore 64 **Price** £9.95 (tape) £14.95 (disc) **Supplier** Arcana Software Design, Avondale Workshops, Woodland Way, Kingswood, Bristol, Avon BS15 1QH.

The single English trait that has sold three million copies of *Trivial Pursuit* in the UK and keeps tens of millions glued to radio and TV when programmes like *Mastermind* and *Brain of Britain* are on, is vanity.

Quietly (sometimes not so quietly), everyone thinks they are that little bit smarter than everyone else – while collectively, we know we are better than everyone else – and getting all the right answers in a quiz game is a typically understated way of rubbing it in.

Yet, while there have been several attempts to get a quiz format on to a home computer, to date they have been dismal to a man. So it's nice to see a program like *Powerplay*. *Powerplay* combines a

can answer a question first. Only, to earn the right to move a piece, first you must answer a question correctly (you choose one out of four options). Getting it right lets you move, and also earns you Brownie points with Zeus, which you can save up to 'mutate' into a more powerful piece... only then your questions get harder.

Nicely balanced, this is an original game worthy of the highest praise... it's been out on the BBC for a while, but now Amstrad and Commodore owners can get to grips. You can write your own questions too – and use them once the 2000 odd supplied have run out.

Of course, with *Trivial Pursuit* being launched at the PCW show, you might be tempted to hold off – but rest assured that *Powerplay* is a different kettle of fish altogether. A genuine original idea, compared to a rehashed version of something you've probably already got in a box (which you have already paid handsomely for to boot).

Domark's latest will get to Number One, of course, on name alone – but I would say the smart guys will save themselves a fiver and take a look at *Powerplay*.

£7.95 **Supplier** CRL, 9 Kings Yard, Carpenters Road, London E15.

Program Dekorating Blues Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Death Ball Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Free Text Database Type Utility **Micro** Spectrum (with Microdrives) **Price** £9.75 **Supplier** Roybot, 45 Hullbridge Road, Rayleigh, Essex SS6 9NL.

Program Buccaneer Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Kane Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Xarg Type Arcade **Micro** Spectrum **Price** £9.99 **Supplier** Electric Dreams, 31 Carlton Crescent, Southampton, Hants SO1 2EW.

Program Terrors of Trantos Type Adventure **Micro** Spectrum **Price** £8.95 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

Program Rescue from Doom Type Adventure **Micro** Spectrum **Price** £2.50 **Supplier** D Edgar, 1 High Parksail, Erskine, Scotland PK8 7HY.

Program Dynamite Dan II Type Arcade **Micro** Spectrum **Price** £7.95 **Supplier** Mirrorsoft, Purnell Book Centre, Paulton, Bristol.

Program L'Affaire Vera Cruz Type Strategy **Micro** Spectrum **Price** £8.95 **Supplier** Infogrammes, Mitre House, Abbey Road, Enfield, Middlesex.

MSX

Program International Karate Type Arcade **Micro** MSX **Price** £7.95 **Supplier** Endurance Games, 28 Little Park Gardens, Enfield, Middx EN2 6PG.

Program L'Affaire Vera Cruz Type Strategy **Micro** MSX **Price** £9.95 **Supplier** Infogrammes, Mitre House, Abbey Road, Enfield, Middlesex.

Program BC II – Grog's Revenge Type Arcade **Micro** MSX **Price** £9.95 **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Spectrum

Program Room 10 Type Arcade **Micro** Spectrum **Price**



quiz format with a simple board game represented on screen, which has up to four players pitting their wits and reactions against each other. You start off with four pieces placed on the corner of a square grid – with the object to wipe everyone else off the board. You do this by landing on an occupied square and challenging the tenant. You then play off by seeing who

Luck of the Irish

Having read the article by David Ridge on running a software company, I thought my own experiences might be of interest. Until a couple of months ago I was a partner in the only software house (that I know of) in Northern Ireland producing games.

It started three and a half years ago as an idea at a party. I was then a data processing programmer maintaining CBasic programs and writing DBase II packages.

One of us, Colin Gordon, went to town and quickly wrote a working game. This was the prototype *Cityfighter* for the Spectrum.

A bit of capital came from a third partner and we were in business from January 1984.

We got an order from a distributor for a few hundred Spectrum tapes, so that set us off on the production road. But unfortunately the world didn't go wild over *Cityfighter*.

The summer of 1984 was a bit of a bleak time. What kept us going was some business software and a Turbo tape system which we sold to other software houses.

We took on a programmer on the YTP scheme and helped him complete a game he had started, called *Moris Meets the Snobugs* the sale of which gave us a lot of contacts with mainland UK software houses.

Then we came in contact with Mogul software, run by an Irishman. He brought us some work doing a conversion of a 64 game called *Fire-Ant* on to the Amstrad and

C16. From the *Moris* contacts we also got to convert *Frankenstein* for PSS and *Redcoats* for Lothlorien, both on to the Amstrad.

So the start of 1985 saw us with some work, though not a great deal. Mogul had asked us to convert from 64 to Amstrad its game *Murphy*. We did that, but then Mogul had pulled out of the software field, leaving us with a game and no money.

Now *Murphy* is the same game as *Gilligans Gold* by Ocean who lacked an Amstrad version, so we phoned them up. Ocean took it in a flash and asked us to start doing conversions for them. From this point, Choice Software never looked back.

The work has come thick and fast since then and the following Amstrad games were written by Choice. *Daley Thompson's Decathlon* (and *Supertest*), *Beachhead*, *Raid*, *Kung Fu Master* and *Rambo*. I should give credit to Colin for most of these as he deserves the praise.

With the increase in workload came more staff and by the end of '85 there were five full time staff plus two partners.

From the start of 1986 *Kung Fu Master*, *Rambo* and *Supertest* were done for Ocean, a Spectrum version of *Theatre Europe* for PSS and three versions of *Johnny Reb II* for Lothlorien. I left in May to do my own thing, but Choice still continues.

We didn't make a fortune. The first year was awful but years two and three brought

in a decent income plus a car. Had I gone back to business software I would have made more money and have smaller bags under the eyes, but it was worth it.

From these two and a half years I would offer some advice to anyone considering doing original or conversion work on a freelance basis.

Doing business with software houses: avoid royalties if you can and get a one-off payment.

On the subject of conversions: try and get the agreement for doing versions of the game on other computers. It isn't that hard to move software and it is even easier if they have the same processor. Learning 6502 is easy if you know Z80, though it's much nicer rewriting a 6502 program on to Z80.

Get a good development system. If you program on the micro direct then you are making life incredibly hard for yourself.

The cheapest system I have ever seen was two Spectrums linked by a cassette lead. The most expensive was a mainframe (£60,000+) Vax computer.

The cheapest way to get such a system is to borrow or take as payment one from the people you are doing work for. The Tatung Einstein is a very popular machine for this purpose. I used one with our own customised assembler and a full screen editor.

Finally don't expect to make a million.

David Bolton

NEXT WEEK

Special Supplement

The Amstrad PCW micros

From light pens, 8256 upgrades and small business software packages to communications... the PCW supplement takes you through the wide variety of hardware and software that is now available.

Hardware

Paying Saga a Compliment - its latest printer on the market is the model to be bundled with Saga's Compliment micro. John Lettice investigates.

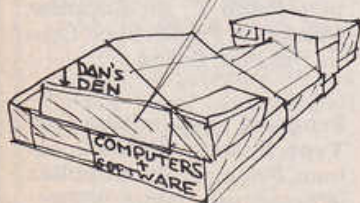
More power to your Amstrad CPC: Vortex is bringing out a 5¼ inch disc drive for the CPC series. Will this give you a wider range of available CP/M programs? Find out in John Mawhood's article next week.

Games

A couple of treats in store for the discerning games player. FTL, the new label from Gargoyle's top programming team, gets the colour treatment, as does the long-awaited *Fist II*, sequel to last year's block-busting *Exploding Fist*.

Hackers

The basic mouse won't really help you very much...



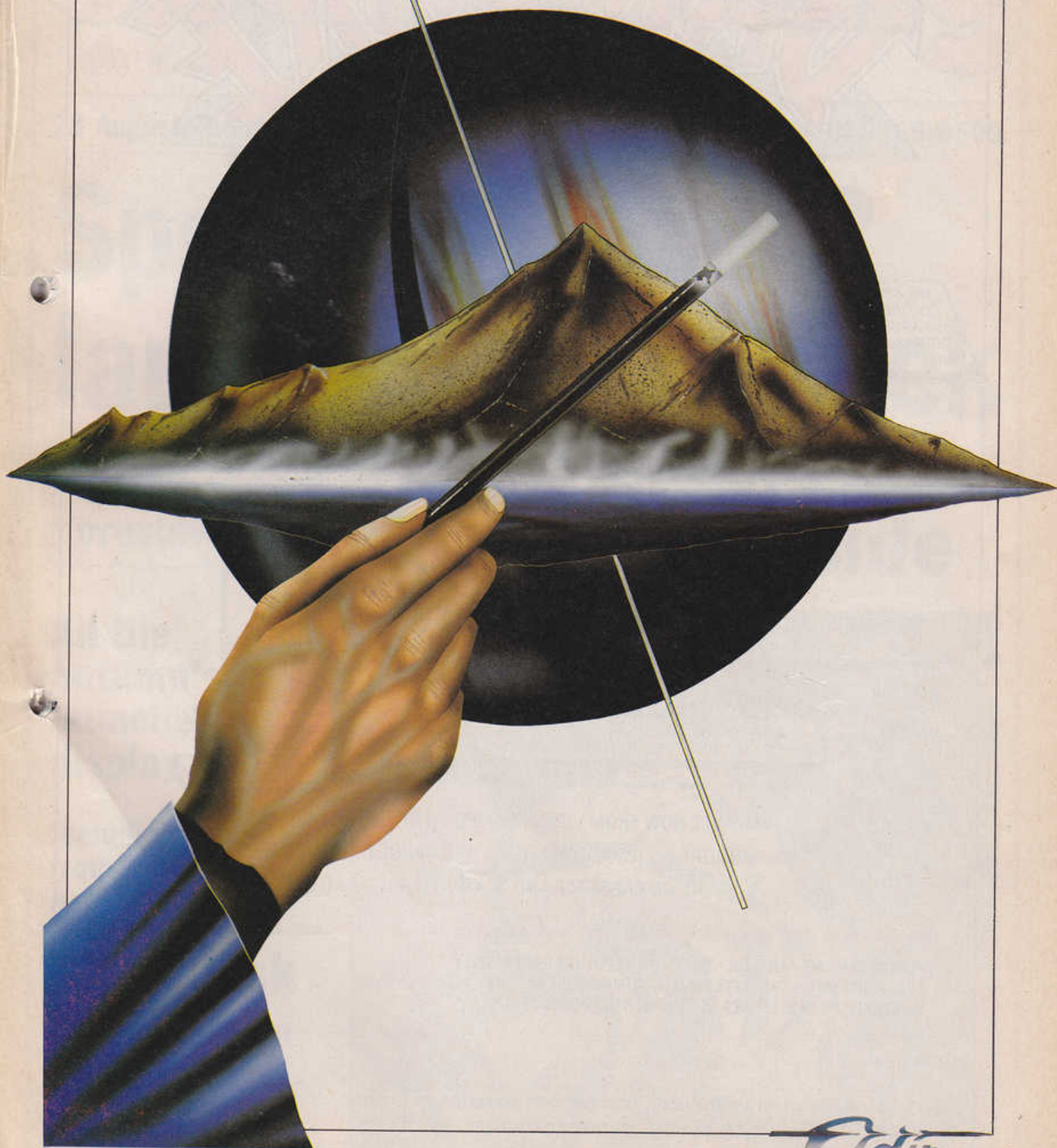
but the mark II has some extra features which make it a bit simpler to use



And when we move up to the mark III things get REALLY simple



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